Wallbox eMH2

Installation manual

Contact

∧BL

ABL SURSUM
Bayerische Elektrozubehör GmbH & Co. KG

Albert-Büttner-Straße 11
91207 Lauf an der Pegnitz
Germany

☎ +49 (0) 9123 188-0
🖨 +49 (0) 9123 188-188

✉ info@abl.de
🌐 www.ablmobility.de

Customer Service

☎ +49 (0) 9123 188-0
✉ service@abl.de
🌐 www.ablmobility.de/de/service/support/

Contents

Additional technical information

Additional technical information is required to install your wallbox on one of the separately available mounting poles, as well as regarding further accessories. It is contained in separate documents.

In addition, the technical data for your wallbox are collated in product-specific data sheets. You can download these documents from the ABL website using the following link:

https://www.ablmobility.de/en/service/downloads.php

> **(!) NOTE**
>
> **Displaying the additional information on a computer, tablet or smartphone**
> Additional technical information is made available in the Portable Document Format (PDF).
> - To display PDF files, you need the free Adobe Acrobat Reader or comparable software.

You can find further information about our product range, as well as about separately available accessory components on our website at **www.ablmobility.de**. Please visit:

https://www.ablmobility.de

Intended use

The Wallbox eMH2 is used for charging private or company vehicles in your own garage or in a group installation in company or hotel car parks. With a charging capacity of up to 22 kW, the wallbox is configured for the especially rapid charging of electric vehicles, with several options to connect to the device – either via an integrated charging cable with Type 2 charging connector, or via an integrated Type 2 charging socket and a separately available charging cable.

Information in this document

This document explains how to install, configure and commission the Wallbox eMH2: It is recommended that all working steps described in this document are carried out by a qualified specialist electrical contractor only.

	User	Specialist electrical contractor
Installation manual (this document)	✗	✓
Additional technical information		
■ Data sheets	✓	✓
■ Operating manual	✓	✓
■ ABL Configuration Software manual	✗	✓

Safety and user information

General

This manual describes all working steps required to install and/or operate the product it concerns.

Certain sections of this manual are specially formatted for quick and easy reference.

- Descriptions listing equally valid options are indicated by bullet points.
1 Descriptions listing operating steps are numbered in chronological order.

⚡ DANGER!

Indicates life-threatening electrical voltages

Sections marked with this symbol indicate electrical voltages that present a danger of loss of life or grievous bodily injury.

- Actions marked with this symbol must not be carried out under any circumstances.

⚠ WARNING!

Indicates important actions and further hazards

Sections marked with this symbol indicate further hazards that may result in damage to the product or to other connected components.

- Actions marked with this symbol must be carried out with special care.

① NOTE

Indicates important information for operation or installation

Sections marked with this symbol indicate further important information and features necessary for successful operation.

- Actions marked with this symbol should be carried out as required.
- Passages marked with this symbol contain valuable additional information.

Safety information

The safety notices serve to ensure the proper and safe installation, as well as subsequent safe operation of the device.

⚡ DANGER!

Violation of the safety information

Disregard of or actions contrary to the safety information and instructions contained in this manual may lead to electric shock, fire, severe injury and/or death.

Please pay attention to the following points:

- Please read this manual carefully.
- Heed all warnings and follow all instructions.
- Keep this manual in a safe place where it can be accessed at all times: The contents of this manual, and the safety notices in particular, must be available to all users of the product.
- Only use accessories intended and sold for the product by ABL.
- Only use charging cables that comply with the IEC 61851 standard.
- Do not install this device in close vicinity to running water, water jets or areas subject to flooding.
- The product must not be installed in explosive atmosphere areas (EX areas).

- Mechanical installation should be carried out by qualified specialist personnel.

- Electrical installation and testing must be carried out with reference to local rules by a qualified specialist electrical contractor, who, on the basis of their specialist training and experience, as well as their knowledge of the relevant standards, is able to assess and carry out the working steps described in this manual and recognise potential hazards.

⚠ **WARNING!**

Notification or approval requirement for charging stations

Please note that electrical grid operators, energy suppliers or national regulations may require notification of or approval for the installation or operation of a charging station.

- The product must only be operated after final approval by a qualified specialist electrical contractor.

- In case of installation faults, or malfunctions that can be traced back to faulty installation, always contact the contractor who carried out the installation first.

- The product must not be covered with stickers or other objects or materials.

- No liquids or receptacles containing liquids must be placed on the product.

- Please note that operating a radio transmitter in the immediate vicinity (< 20 cm) of the product may lead to malfunctions.

- This device is not intended to be used by persons (including children) with limited physical, sensory or mental abilities or lack of experience and/or knowledge, unless they are supervised by someone responsible for their safety or have received instructions on how to use the device.

- Children must be supervised so that they do not play with the device.

- Do not under any circumstances make alterations to the product. Any disregard of this instruction represents a safety risk, fundamentally breaches the guarantee provisions and may void the warranty with immediate effect.

- Malfunctions affecting the safety of persons, connected electric devices or the device itself must be resolved by a qualified specialist electrical contractor.

- Should one of the following malfunctions occur, please contact the specialist electrical contractor who has carried out the installation of your wallbox and accessories:
  - The product housing has been damaged mechanically, or the housing cover has been removed or can no longer be closed.
  - Sufficient protection against splashing water and/or foreign objects is no longer provided.
  - The product does not function properly or has been otherwise damaged.

User information

- Ensure that the rated voltage and rated current of the product comply with the parameters of your local electricity grid and that the rated output is not exceeded during operation.

- Local safety regulations regarding the operation of electrical devices for the country in which you operate the product always apply.

- To disconnect the product completely from the electricity grid, the power supply must be interrupted using the upstream safety switches and fault current protection devices (if present) in the domestic power distribution.

- Never operate the product in a confined space.

- Ensure that the product can be operated without any strain pulling on its components.

- Make sure that the product is always closed and locked when in use. All authorised users must be aware of the 'unlock' position of the key.

- You must under no circumstances make any changes to the housing or the internal wiring of the device: Any disregard of this instruction fundamentally breaches the guarantee provisions and voids the warranty with immediate effect.

- Only have the product repaired by a qualified specialist electrical company.

⚠ **WARNING!**

Proof of professional qualification

In order to carry out repairs on or exchange electrical components, proof of completion of an ABL training course may be required: For this purpose, please contact ABL technical support (see "Contact" on page II).

ⓘ **NOTE**

Changes to functions and design features

Please note that all technical details, specifications and design characteristics of the product may be changed without prior notice.

Introduction to the Wallbox eMH2

Congratulations on the purchase of your new Wallbox eMH2 by ABL!

Our smart all-rounder with billing function for domestic and commercial applications is the ideal solution for charging your private or company vehicle in your own garage, or in a group installation in company or hotel carparks.

With a charging capacity of up to 22 kW, the wallbox is configured for the especially rapid charging of electric vehicles, which can be connected to the device in a flexible manner – either via an integrated charging cable with Type 2 charging connector (fixed cable variant), or an integrated Type 2 charging socket (socket variant) and a separately available charging cable.

The Controller and Extender variants of the Wallbox eMH2 are also available as a bundle with backend solutions by reev, which offer an intuitive interface for the administration and invoicing of all charging operations.

Further information on technical data is available in the appendix from page 52.

Identifying your wallbox

The model variant of the Wallbox eMH2 can be unambiguously identified on the rating plate located on the inside of the housing cover. Please verify the information listed below on the rating plate.

The following information is especially relevant:

- Model number and indication of product category (Controller or Extender)
- External power supply
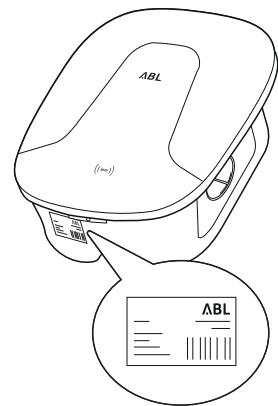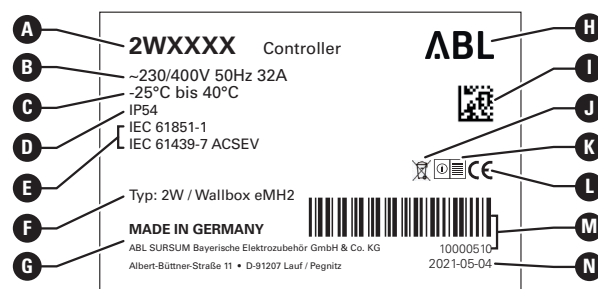
A	Model number and category (Controller or Extender)	**F**	Indication of type/production series (2W or Wallbox eMH2)
B	Power supply data	**G**	Manufacturer and manufacturer's address
C	Ambient temperature range	**H**	Manufacturer's logo
D	Degree of protection (housing)	**I**	DataMatrix code/product number
E	Standards	**J**	Disposal advice
K	'Read instructions' advice		
L	CE label		
M	Barcode/serial number		
N	Date printed		

Components included with the wallbox

The product is delivered including the following components:

- Wallbox eMH2, 1 pc
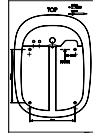
- Housing cover key, 1 pc

- Wall plugs 8 × 40 mm, 4 pcs

- T20 panhead screws, 6 × 60 mm, 4 pcs
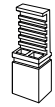
- Drilling template, 1 pc

- Label for marking the charge points according to DIN EN 17186-2019, 1 pc

  - For charging station with socket

  - For charging station with cable

- Operating manual & safety information (multilingual), 1 pc

- Plug-in jumpers for terminating data bus, 6 pcs

Stand-alone variants of the eMH2 also include:

- RFID teach-in card, 1 pc

- RFID user tag cards, 5 pcs

Bundled variants of the eMH2 also include:

- reev onboarding letter, 1 pc (Controller only)

- reev RFID card, 2 pcs

- QR code sticker, 1 pc

- Controllers only: LTE USB stick with SIM card (preconfigured), 1 pc

> **(!) NOTE**
>
> **Checking the components included**
>
> Check immediately after unpacking whether all components are included: should any components be missing, please contact the dealer from whom you purchased the wallbox.

Accessories

The following accessories for the Wallbox eMH2 are available separately:

- **CONFCAB**

Configuration kit for connecting all ABL charging stations to a Windows PC for configuration via specific software applications by ABL
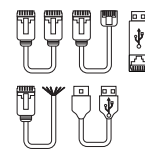
- **LASTMZ1**

External energy meter for connection to a Controller charging station or external control unit

- **LASTMZ2**

Coil sensors for connection to the energy meter LASTMZ1

■ **E017869**

For all eMH2 model variants, except bundle products: Set of ID tag cards (5 pcs)
to extend user pool

■ **POLEMH2**

Galvanised sheetmetal mounting pole for direct installation of a Wallbox eMH2

h = 1,647 mm, w = 285 mm, d = 180 mm
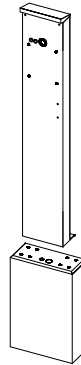
■ **EMH9999**

Precast concrete foundation for outdoor ground installation of the POLEMH2

h = 650 mm, w = 430 mm, d = 190 mm
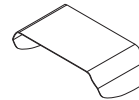
■ **WPR12**

Weather shield for installation on an exterior wall or the mounting pole
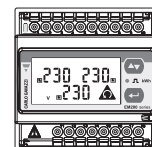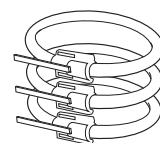POLEMH2

h = 142 mm, w = 395 mm, d = 225 mm

■ **CABHOLD**

Cable holder with charging plug receptacle for installation on an exterior wall or
the mounting pole POLEMH3

h = 187 mm, w = 76 mm, d = 105 mm

■ **E3BLTE1**

Accessory package with LTE USB stick and LTE antenna for installation in ABL
Controller wallboxes

■ **E3BWLAN**

USB WiFi dongle for installation in ABL Controller wallboxes

■ **TE001**

Multipurpose measuring device for security checks according to IEC/EN61557,
as well as for testing charging stations via the adapter TE002, suitable for TN,
TT, and IT protective earthing systems
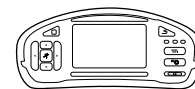
■ **TE002**

EVSE and vehicle simulation adapter according to IEC 61851 for checking the
function and electrical safety of charging stations

■ **LAK32A3**

Type 2 charging cable according to IEC 62196-2, up to 32 A 240/415 V AC,
3-phase, length ca. 4 m
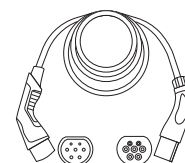
- LAKC222

Type 2 charging cable according to IEC 62196-2, up to 20 A 240/415 V AC,
3-phase, length ca. 7 m

- LAKK2K1

Type 2 to Type 1 adapter cable according to IEC 62196-2, up to 32 A 230 V AC,
single phase, length ca. 4 m

You can find further information on **ABL** charging stations and accessories at
www.ablmobility.de.

Installation

It is recommended to have the entire installation of the wallbox carried out by a qualified specialist electrical contractor.

> ⚠ **DANGER!**
>
> Dangerous electrical currents
>
> Electrical installation, as well as final testing and certification for operation must be carried out by a qualified specialist electrical contractor, who, on the basis of their specialist training and experience, as well as their knowledge of the relevant standards, is able to assess and carry out the working steps described in this manual and recognise potential hazards.

Installation site requirements

Your wallbox is suitable for outdoor use. Please note, however, that the permissible ambient conditions (see "Technical specifications" on page 52) must be adhered to in order to guarantee the functionality of your wallbox at all times.

- The installation site must be freely accessible.

- The mounting surface must be level and solid.

- The mounting surface must measure at least 437 × 328 mm (height x width).

- The installation height should be between 120 and 140 cm (ground to bottom edge of housing).

- Minimum distances to other technical installations must be observed. A minimum distance of 50 cm is recommended.
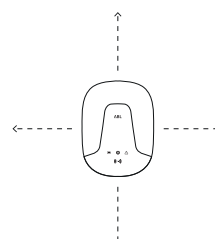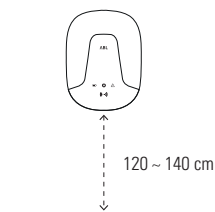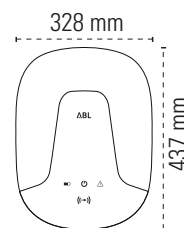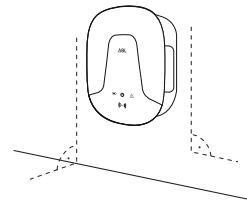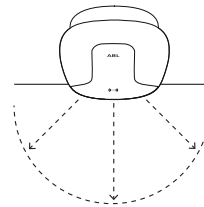
- Ideally, the installation site should provide a ready connection to the electricity grid. Otherwise, a separate power supply cable must be installed.
- In order to operate group installations, suitable data cables must also be installed in the installation site (see also "Preparing and fixing the wallbox in place" on page 16 as well as "Data cable connections" on page 19).
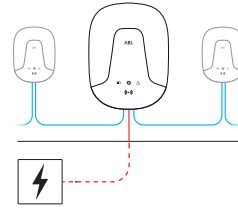
Tools and accessories required

For mechanical installation, you will need the following components included with the wallbox:

- Drilling template, 1 pc

- T20 panhead screws, 6 × 60 mm, 4 pcs

- Wall plugs 8 × 40 mm, 4 pcs

- Housing cover key, 1 pc

In addition, you will need the following tools:

- Electric drill

- Bit (Torx T20)

- 8 mm ∅ drill bit suitable for the respective mounting surface

- Pencil

- Spirit level

- Tape measure

- Screwdriver (Phillips head)

- Screwdriver (Torx)

- Pliers

- Hammer

- Utility knife

- Wire stripper

- Voltage tester

- Vehicle simulation adapter

- Multi-purpose installation tester

Preparing the installation site

As a matter of principle, the electrical supply cable in the domestic power distribution must be switched off for the entire duration of mechanical and electrical installation. The connection to the power grid must only be made live for the purpose of commissioning, after electrical installation is complete.

> ⚠ **DANGER!**
>
> Dangerous electrical currents
>
> Always observe the 5 safety rules:
> 1   Cut power source
> 2   Secure all cut-off devices
> 3   Verify absence of voltage
> 4   Ground and short-circuit
> 5   Cover or bar access to adjacent components under voltage

Proceed as follows:

1   Cut crosswise into the marks for the fixing points on the drilling template using the utility knife.
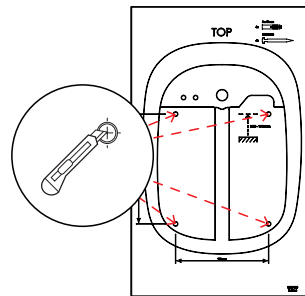
2   Using the spirit level, align the drilling template level and plumb on the mounting surface.
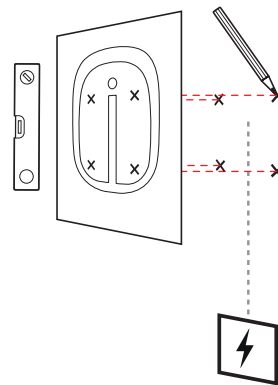
3   With the pencil, mark the fixing points in the mounting position.

4   Pre-drill the marked fixing points with the electric drill and drill bit (∅ 8 mm).
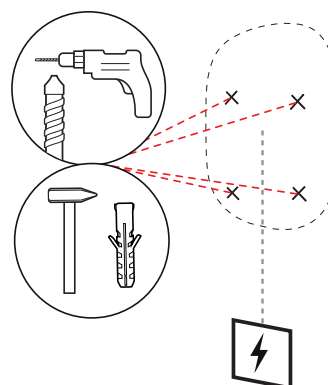
5   Drive the wall plugs into the fixing points with the hammer.

6 Insert two of the included panhead screws into the two upper fixing points using the screwdriver (Torx) or the electric drill and Torx bit.

- The distance between screw head and wall must measure 4 mm.
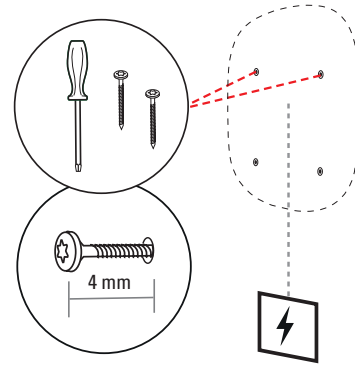
Preparing and fixing the wallbox in place

Continue to prepare the wallbox:

7 Open the housing cover of the wallbox with the housing cover key and put it aside.
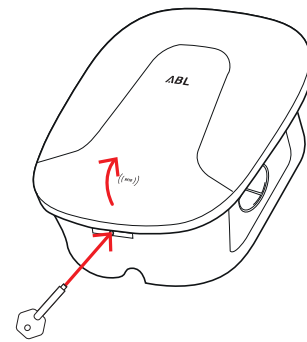
8 Loosen the screw of the internal electronic components cover using the screwdriver (Torx) and put it aside.

- Keep the screw in a safe place.
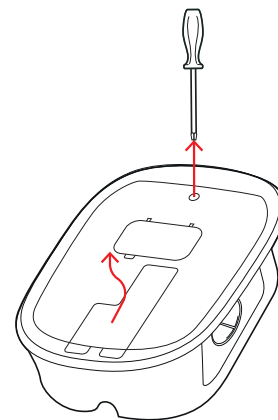
9 Use the utility knife to cut an opening for the power supply cable into the large rubber grommet in the housing base.

- For wiring up group installations, you must also make cuts into the two smaller grommets for the data cables (see "Data cable connections" on page 19).
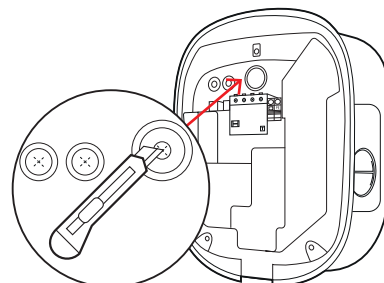
10 Insert the power supply cable (red) through the large
rubber grommet into the housing base.

- The back of the housing has a cable guide for
surface-mounted power supply cables.
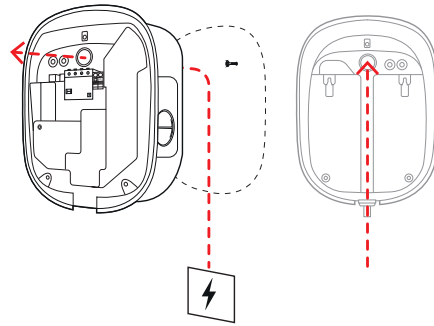
- For wiring up group installations, you must insert
the data cables (blue) through the small grommets
in the housing base.
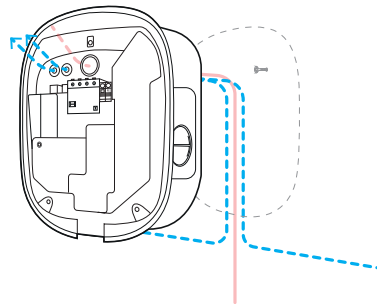
11 Hang the housing base onto the panhead screws you
inserted at the installation site in **Step 6**.
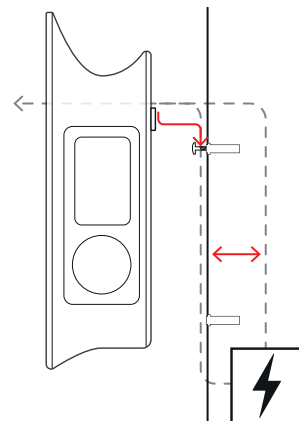
12 Fix the housing base to the mounting surface by
inserting the two remaining panhead screws into
the two lower fixing points using the screwdriver or
electric drill with Torx bit.
- Select a torque that will not distort the housing
base.
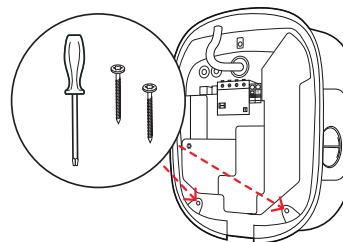
Electrical connection of the wallbox

> ⚡ **DANGER!**
>
> Dangerous electrical currents
> - Electrical connection must be carried out by a qualified specialist electrical contractor!
> - Ensure that the power supply cable remains disconnected from the electricity grid.
> - Deactivate the RCCB in the wallbox and/or in the domestic power supply.

Proceed as follows to connect the power supply cable inside the wallbox:

1 Cut the supply cable to the required length with the pliers/wire stripper.

- For wiring up group installations (see next section), you must also cut the data cables to the required length.
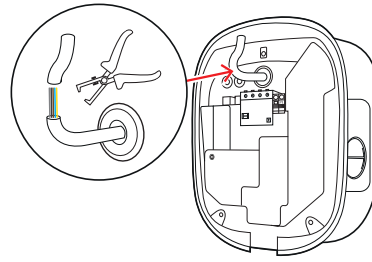
2 Insert the individual conductors of the power supply cable into the respective terminals of the RCCB and tighten them using the screwdriver (torque: 2.5 to 3 Nm).

- End ferrules must be fitted on flexible conductors.
- Operate the spring-loaded mechanism of the PE terminal and attach the protective earth conductor.
- Use the connection patterns listed below to allocate the individual conductors.
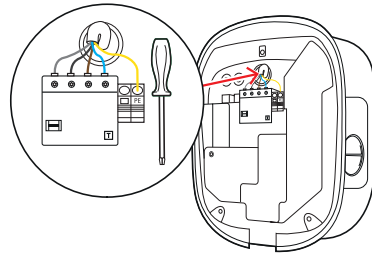
Connection pattern for 3-phase TN system

Designation	Conductor colour	Marks for
Phase 1 current-carrying conductor	Brown	⑤ – L1
Phase 2 current-carrying conductor	Black	③ – L2
Phase 3 current-carrying conductor	Grey	① – L3
Neutral	Blue	N
Protective earth	Green-Yellow	PE

Connection pattern for 1-phase TN system

Designation	Conductor colour	Marks for
Phase 1 current-carrying conductor	Brown	⑤ – L1
Neutral	Blue	N
Protective earth	Green-Yellow	PE

⚠ **WARNING!**

Allocation of wire colours

Please note that the colour-coding convention used above is not internationally standardised.

⚠ **WARNING!**

Checking the connection

Please ensure that the conductors that are pre-fixed to the RCCB terminals remain attached correctly after connecting the power supply cable.

❗ **NOTE**

Single-phase operation of the Wallbox eMH2

If desired, the 3-phase Wallbox eMH2 model variant can also be connected and operated on a single phase at terminal ⑤ – L1: However, in this case the rated output for the wallbox will not be achieved.

> ⚠ **DANGER!**
>
> Dangerous electrical currents
>
> The electronic components of your wallbox will be damaged if a voltage above 250 V is applied between the ⑤ – L1 current-carrying conductor and the neutral conductor!

Data cable connections

In group installations, a Controller wallbox can control up to 15 Extender wallboxes after connecting the respective data cables. The Controller wallbox then centrally manages backend communication, charge current distribution, and many other functions.

- For wiring up, the internal bus interfaces of the Controller and Extender variants must be connected serially using suitable data cables (see "Data cable recommendations" on page 54).
- Inserting the data cables is described in **Step 10** in section "Preparing and fixing the wallbox in place" on page 17.
- The data bus interfaces are manufactured either as spring terminals (until mid-2021) or established via the RJ45 ports of the Easy2Install interfaces (called E2I in the following, from mid-2021).

> ⓘ **NOTE**
>
> Data bus system compatibility
>
> The Wallbox eMH2 bus interfaces are completely downstream compatible. Wiring up spring terminals as well as E2I interfaces in mixed group installations is possible at any time, as long as the correct terminal allocation is kept consistent between the two systems. This allocation scheme is illustrated in section "Allocation schematic from spring terminal to Easy2Install interface" on page 55.
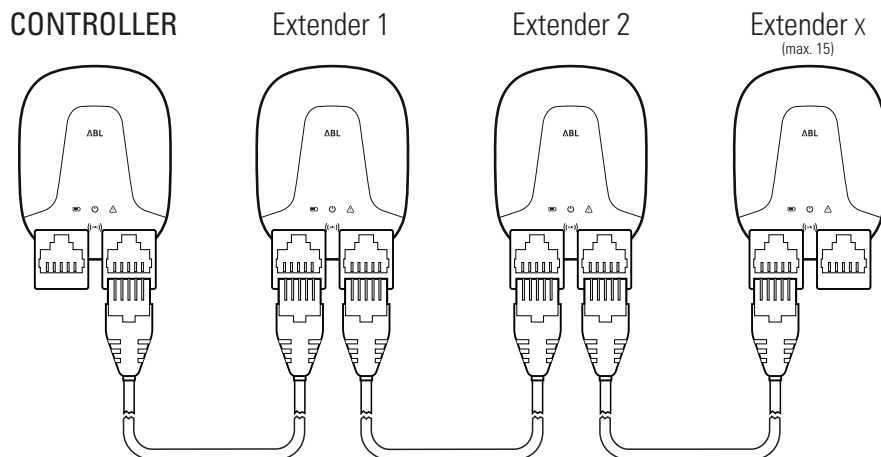
Example of a group installation via E2I interfaces

> ⚠ **WARNING!**
>
> Mixed installation of ABL charging stations
>
> Thanks to the common bus formats and interfaces, it is possible to connect up and operate charging stations from different product series with each other and with the control units 1V0001/2. Configuration/connecting up follows the schematic as described in the following.
>
> - However, please note that connecting up and operating calibration law compliant together with non-calibration law compliant charging stations in the same group is not possible!

Proceed as follows to connect the wallboxes via the E2I interfaces:

1 Connect the RJ45 plug of the first data cable to one of the E2I interfaces in the upper left of the connections area inside the housing cover of the Controller wallbox.
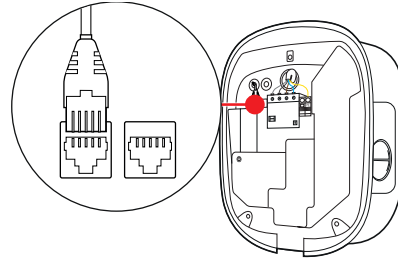
2 Connect the RJ45 plug of the incoming data cable with the left hand side E2I interface in the connections area of the first Extender wallbox.

  • Connect the RJ45 plug of the outgoing data cable with the right hand side E2I interface in the connections area of the first Extender wallbox.
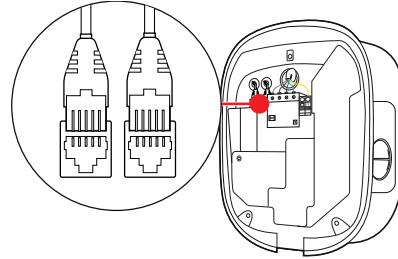
(!) NOTE

Continuation of the wiring diagram

Connect all subsequent Extender wallboxes according to this method, **except for the last Extender wallbox**.

---

3 Connect the RJ45 plug of the incoming data cable with the E2I interface in the connections area of the last Extender wallbox.
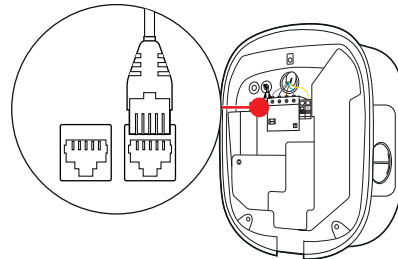
⚠ WARNING!

Terminating the data bus

For correct communication, the data bus must be terminated. The circuit board of the E2I interface provides two pairs of pin contacts marked **CONTROL** and **METER** for this purpose.

---

4 Connect the pin contacts located to the left of the RJ45 ports and marked **CONTROL** and **METER**, using a jumper for each.

  • Carry out this process of terminating the data buses in the first (2 jumpers) and last (2 jumpers) charging station in the group.
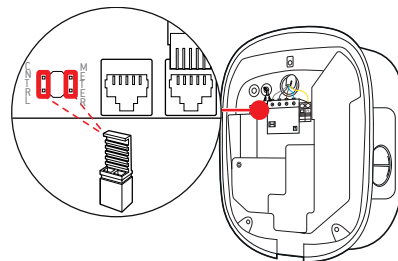
Commissioning the wallbox

To commission the wallbox, the power supply cable must be connected to the electricity grid.

⚡ **DANGER!**

Dangerous electrical currents

The following working steps must be carried out with the utmost care: There is a risk of electric shock if conductive components are touched.

1 Switch on the MCB in the domestic power distribution box.

- As soon as the wallbox is connected to the electricity grid, the green LED will begin to pulsate, the other LEDs will remain OFF.
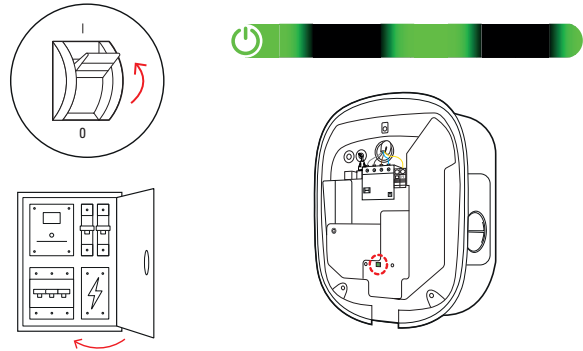
⚠ **WARNING!**

Checking the RCCB and MCB

Should the LED not pulsate, check the RCCB and the MCB inside the Wallbox eMH2 and switch the pivot levers to position **I** if necessary.

2 Measure the voltage at the RCCB terminals using the voltage tester.

- In single phase installations, the voltage is measured between the phase and neutral conductors.
- In 3-phase systems, all phases are measured against each other (400 V) and all phases are measured against the neutral conductor (230 V).
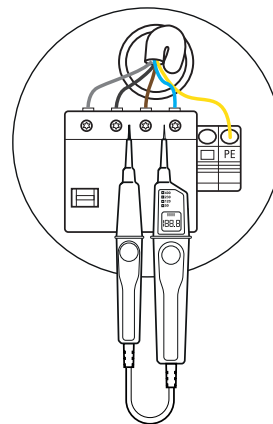
⚠ **WARNING!**

Conducting all necessary checks

Now conduct all locally required checks and testing of the wallbox and its electrical installation. These include the following tests:

- Effectiveness of protective earth conductor connections
- Insulation resistance
- Loop impedance
- Voltage drop
- RCCB tripping current and tripping time
- Rotating field testing

as well as additional tests according to local regulations.

3 Use the installation tester and the vehicle simulation adapter to conduct all other required checks.
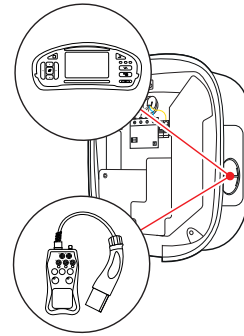
4 Replace the electronic components cover onto the housing base and fix it into place with the screw you removed in **Step 8** of section "Preparing and fixing the wallbox in place" on page 16.
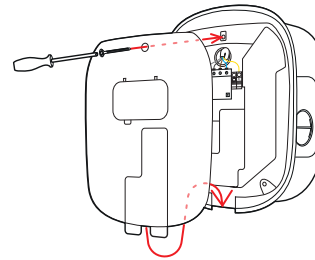
5 Hook the housing cover onto the upper edge of the housing base and lock it using the housing cover key.
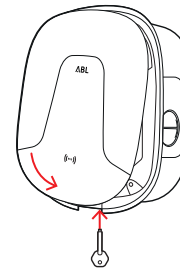
6 Use the vehicle simulation adapter to conduct a functional test of the charging function.
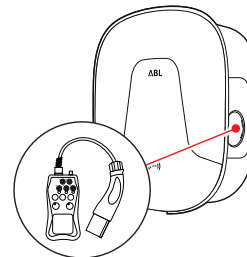
The installation of the Wallbox eMH2 is now complete and the wallbox is ready for operation.

Connecting the E3BWLAN

For integration into an existing WiFi network, any Controller wallbox can be retrofitted with the WiFi dongle **E3BWLAN**, which can be ordered separately as an optional accessory (see "Accessories" on page 10).

> ⚠️ **WARNING!**
>
> Installing the WiFi dongle
> - This manual only describes how to connect the **E3BWLAN** inside the wallbox and set up the communication with a WiFi network (see from "Setting up data communication" on page 34), but not how to configure the external WiFi network. Contact your network administrator for this task.
> - Connecting the WiFi dongle must be carried out by a qualified specialist electrical contractor.

Proceed as follows:

1 Open the housing cover of the wallbox with the housing cover key and put it aside.
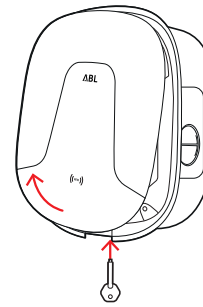
2 Disconnect the wallbox from the electricity supply via the integrated RCCB and MCB.
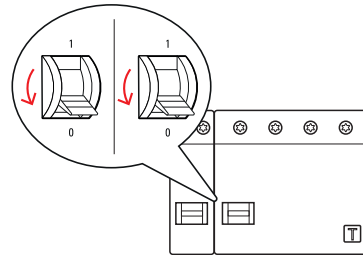
3 Loosen the screw holding the internal electronic components cover in place using the screwdriver (Torx) and put it aside.

- Keep the screw in a safe place.
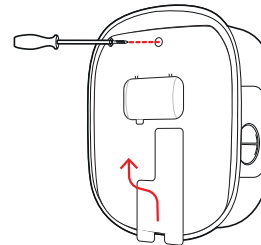
4 Locate the 5V USB switch in the left hand central connections area on the inside of the housing cover of the wallbox and insert the **E3BWLAN** into the Type A socket of the switch.

- If the 5V USB switch is already occupied by another device (e.g. an LTE USB stick), unplug this device in order to be able to plug in the WiFi dongle.
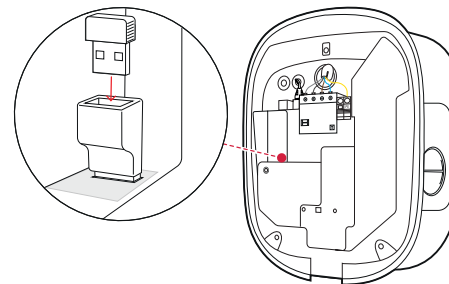
> ⓘ **NOTE**
>
> **Setting up communication via the WiFi dongle**
>
> Setting up the **E3BWLAN** for use with your wallbox is described from section "Setting up data communication" on page 34 onwards.

5 Replace the electronic components cover onto the housing base and fix it into place with the screw you removed in **Step 3**.
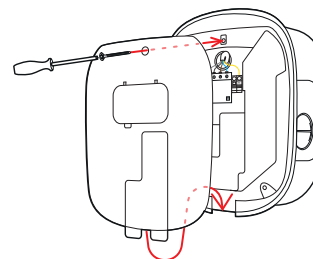
6 Switch the electricity supply of the wallbox back on.
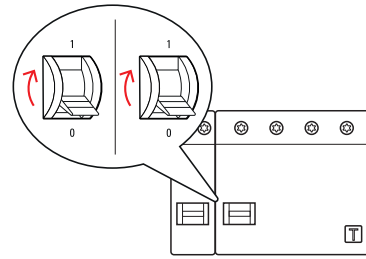
7 Hook the housing cover onto the upper edge of the housing base and lock it using the housing cover key.
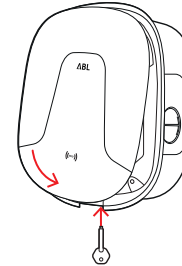
Installing and connecting the E3BLTE1

For wireless communication with a backend, all Controller wallboxes can be retrofitted with the **E3BLTE1**, which can be ordered as an optional accessory (see "Accessories" on page 10).

> ⚠ **WARNING!**
>
> Installing the LTE USB stick
>
> - This manual only describes connecting the LTE USB stick, the installation of its LTE mobile network antenna, as well as setting up communication (see from "Set-up via the Charge Point Administration application" on page 31), but not the configuration of the associated backend: You can obtain information about registration with a backend from the respective backend provider.
> - Installation of the LTE USB stick must be carried out by a qualified specialist electrical contractor.

For installation in the Wallbox eMH2, you will need the following components from the LTE accessory package **E3BLTE1**:

- LTE USB stick, 1 pc

- LTE mobile network antenna with rear adhesive patch and antenna cable, 1 pc
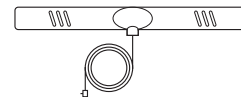
Proceed as follows:

1 Open the housing cover of the wallbox with the housing cover key and put it aside.
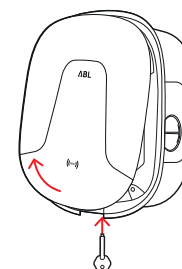
2 Disconnect the wallbox from the electricity supply via the integrated RCCB and MCB.
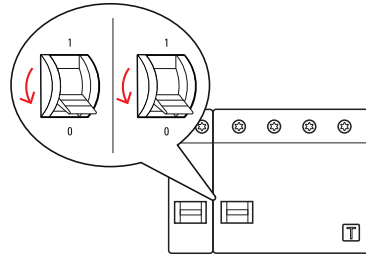
3 Loosen the screw holding the internal electronic components cover in place using the screwdriver (Torx) and put it aside.

- Keep the screw in a safe place.
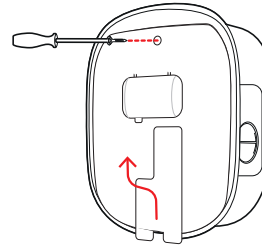
4 Degrease the area on the right hand side of the internal lining using an alcohol swab.
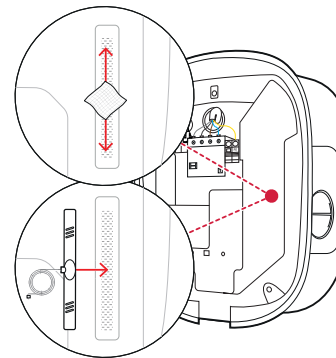
5 Remove the rear protective foil from the LTE antenna and stick it to this position.
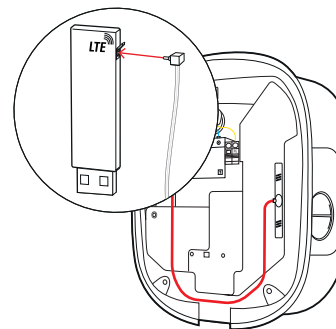
6 Lay the antenna cable along the edge of the internal lining to the connections area on the inside of the wallbox.

7 Open the connection marked **LTE1** in the upper part of the LTE USB stick, and carefully insert the plug of the antenna cable there.
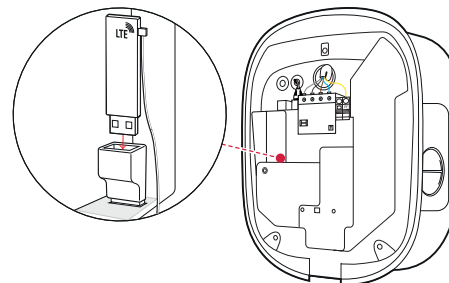
8 Plug the LTE USB stick into the Type A port of the USB switch.

**9** Replace the electronic components cover onto the housing base and fix it into place with the screw you removed in **Step 3**.
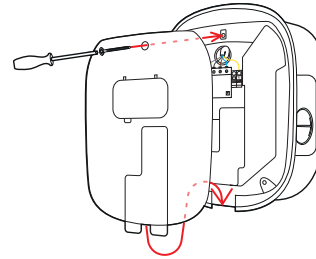
10 Switch the electricity supply of the wallbox back on.
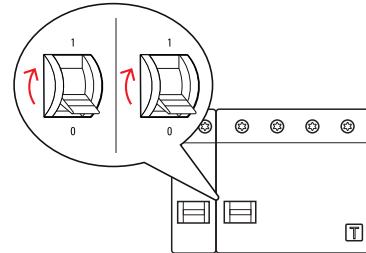
> (!) **NOTE**
>
> Setting up communication via LTE USB stick
>
> Setting up the LTE USB stick for use with your wallbox is described from section "Setting up data communication" on page 34 onwards.

11 Hook the housing cover onto the upper edge of the housing base and lock it using the housing cover key.
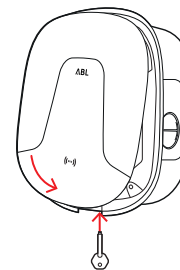
Affixing the label in accordance with DIN EN 17186-2019

In accordance with DIN EN 17186-2019, a graphical indication of the compatibility of vehicles and the charging infrastructure is mandatory for commercial use. Your charging station therefore comes with a sticker which the operator must position near the charge point after the installation has been completed.

Wallbox eMH2 with charging socket

- One sticker with black writing on a white background is supplied for this variant.
- ABL recommends affixing the sticker in the position shown on the right-hand side.
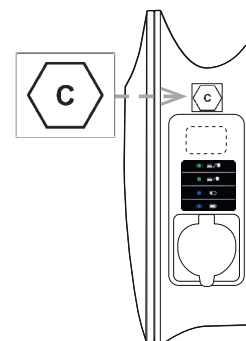
Wallbox eMH2 with charging cable

- One sticker with white writing on a black background is supplied for this variant.
- ABL recommends affixing the sticker in the position shown on the right-hand side.
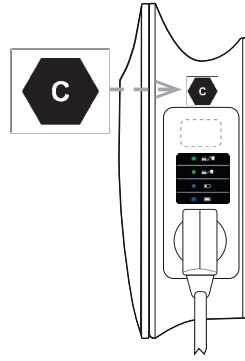
> ⓘ **NOTE**
>
> Further information on labelling
> - The charging cables optionally available from ABL are marked accordingly by default.
> - In the case of purely private use, there is no obligation to affix the sticker to the charging station.
> - The sticker can be reordered as an accessory in case of switching from private to commercial use at a later date.

Configuring the Wallbox eMH2

The Wallbox eMH2 Controller and Extender variants are delivered pre-configured for operation within a group installation. However, you can also operate a Controller or Extender Wallbox eMH2 on its own.

Stand-alone operation of a Controller wallbox

The Controller wallbox can be operated in its preconfigured state as a single charging station, but in this case without the option of authorising charging procedures via RFID.

Should you wish to bar or allow the charging function via RFID registration, you must configure and operate the wallbox using a suitable backend. ABL recommends the backend product by the provider **reev**, who is offering solutions that are specifically tailored to the Wallbox eMH2. For further information, please visit:

https://reev.com

> **(!) NOTE**
>
> Compatibility with backend providers
>
> Your Wallbox eMH2 is compatible with various backends for managing the charging infrastructure.
>
> - To check the compatibility of your Wallbox eMH2, please contact the desired backend provider.

Stand-alone operation of an Extender wallbox

In principle, Extender wallboxes are factory preconfigured to operate in combination with a Controller wallbox.

However, with the **ABL Configuration Software** you can set up an Extender wallbox for stand-alone operation without Controller or backend. You can download the **ABL Configuration Software** free of charge in the **Service > All downloads > Software** section at www.ablmobility.de.

You will need the following separately available accessories to configure the wallbox for stand-alone operation:

- Windows PC (laptop recommended) with one free USB port
- Configuration Cable CONFCAB (available from ABL as an optional accessory, see "Accessories" on page 10).

Section "Data cable connection with the computer" on page 30 describes how to connect the wallbox to the computer using CONFCAB: To configure the wallbox via the **ABL Configuration Software**, please read the **ABL Configuration Software manual** carefully, which is contained in the installation folder of the software and also embedded in the application.

> **(!) NOTE**
>
> Language selection for the ABL Configuration Software manual
>
> Please note that the manual for the **ABL Configuration Software** is only available in **German** and **English**.

Operation and address allocation in a group installation

In group installations, up to 16 charge points can be set up, managed and invoiced centrally via a Controller wallbox (or an external control unit): in the peak configuration, one Controller Wallbox eMH2 can control 15 Extender Wallboxes eMH2 this way.

In order for communication to function properly across the system, each wallbox must be uniquely identified by the following bus addresses:

Bus	Possible address range
Charge controller	1 to 16
Energy meter	1 to 16
RFID	1 to 16

Allocating bus addresses in group installations

Controller and Extender Wallboxes eMH2 are factory preconfigured with the following bus addresses:

	Charge controller	Energy meter	RFID
Controller	1	1	1
Extender	3	3	3

> **(!) NOTE**
>
> Basics of address allocation
> - Bus addresses in the system are allocated from wallbox to wallbox in ascending order.
> - Up to 16 unique bus addresses may be allocated.
> - The upper limit address value of 16 will not be reached in smaller systems.

The address allocation for a system with the maximum configuration is shown below:

	Charge controller	Energy meter	RFID
Controller	1	1	1
Extender 1	2	2	2
Extender 2	3	3	3
Extender 3	4	4	4
Extender 4	5	5	5
Extender 5	6	6	6
Extender 6	7	7	7
Extender 7	8	8	8
Extender 8	9	9	9
Extender 9	10	10	10
Extender 10	11	11	11
Extender 11	12	12	12
Extender 12	13	13	13
Extender 13	14	14	14
Extender 14	15	15	15
Extender 15*	16	16	16

*With this wallbox, the upper limit address value of 16 is reached.

Configuration via software

The functional set-up of Controller and Extender wallboxes is carried out via the **ABL Configuration** and **Charge Point Administration** software applications.

ABL Configuration Software

The **ABL Configuration Software** is an application for Windows PCs, and is used to set up the following wallbox parameters:

- Automatic allocation of bus addresses to charge controllers, energy meters, and RFID modules
- Manual allocation or change of bus addresses
- Setting an Extender charging station up for stand-alone operation
- Setting up a maximum current and activating load imbalance detection
- (De)activating the internal load management
- (De)activating the RFID access restriction
- Management of RFID cards
- Enabling/locking the charging station

Software access

Free download at www.ablmobility.de

Description

Separate manual embedded in the application, and also contained in the installation folder.

Charge Point Administration

Charge Point Administration is an application embedded in the Single Board Computer (SBC) of the Controller wallbox, which is opened via the browser application of a Windows PC, and serves to set up the following and additional parameters for the group installation:

- Setting up system configuration
- Setting up static or dynamic load management for the system
- Displaying and setting up OCPP configuration
- Backend connection
- Displaying system status information
- Displaying wallbox parameters in the group
- Order of wallboxes in the system
- Setting up data communication

Software access: Access via http://169.254.1.1:8300/ after connecting a Controller wallbox to a PC

Description: ➜ "Set-up via the Charge Point Administration application" on page 31 ff.

In both cases, the Controller Wallbox eMH2 must be connected to a suitable computer via the configuration kit CONF-CAB (see next section).

Data cable connection with the computer

To connect the Wallbox eMH2 to a Windows PC, you will need the configuration kit CONFCAB (separately available accessory), which makes the wallbox's modbus interfaces compatible with the computer's USB port. Using CONFCAB components, any charging station from the Wallbox eMH2 product series can be connected by cable:

- ① USB extension cable
- ② USB to RJ45 adapter
- ③ RJ45 to individual strands patch cable
- ④ RJ45 to RJ12 patch cable
- ⑤ RJ45 to RJ45 patch cable

Proceed as follows to connect the Wallbox eMH2 with the computer by cable:

Controller Wallbox eMH2 with spring terminals (until mid-2021)

1 Open the housing cover of the Controller wallbox and remove the electronics component cover as described in section "Preparing and fixing the wallbox in place" on page 16.

2 Connect the patch cable ③ to the spring terminals located to the left of the MCB and RCCB.

3 Connect the USB extension cable ① to one of the computer's USB ports.

4 Use the USB to RJ45 adapter ② to connect the patch cable ③ to the USB extension cable ①.

The wallbox is now connected to the computer by cable.
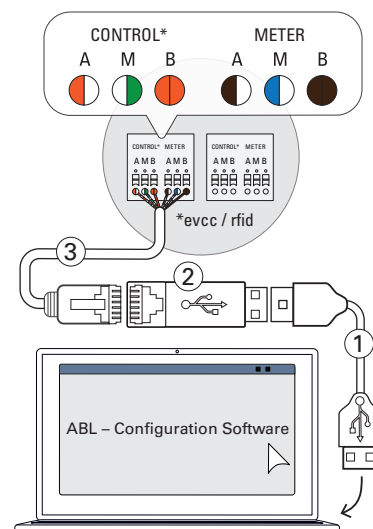
> ⓘ **NOTE**
>
> Data cabling via LOMK218
>
> All Wallboxes eMH2 with spring terminals can also be connected to a computer using the cable set LOMK218. You can find further information on this topic in section "Data cabling via LOMK218" on page 55.

Controller Wallbox eMH2 with E2I interface (from mid-2021)

1 Open the housing cover of the Controller wallbox and remove the electronics component cover as described in section "Preparing and fixing the wallbox in place" on page 16.

2 Connect the patch cable ⑤ to one of the RJ45 ports of the E2I interface located to the left of the MCB and RCCB.

3 Connect the USB extension cable ① to one of the computer's USB ports.

4 Use the USB to RJ45 adapter ② to connect the patch cable ⑤ to the USB extension cable ①.
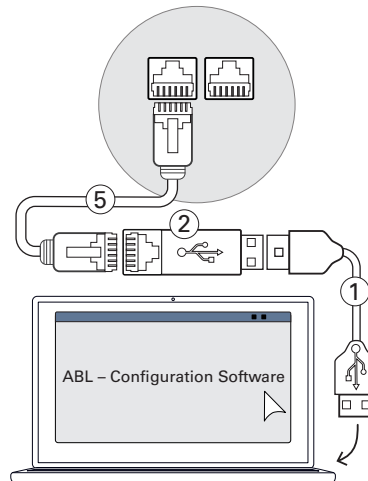
The wallbox is now connected to the computer by cable.

> ⚠ **WARNING!**
>
> Data cabling using CONFCAB
>
> Only use the cables and adapters contained in the CONFCAB kit to connect your Wallbox eMH2 to the computer. Otherwise, faultless communication cannot be guaranteed.

You can now start setting up the wallboxes using the **ABL Configuration Software** . For this purpose, download the current version of the software, and follow the instructions in the manual, which is embedded in the software and also contained in the installation folder:

https://www.ablmobility.de/en/download-neue-configuration-software.php

Set-up via the Charge Point Administration application

After all Extender wallboxes have been configured, the entire Controller-Extender system can be set up for operation using the **Charge Point Administration** online application.

> ⓘ **NOTE**
>
> Updating the application
>
> The working steps described below refer to version **1.7** of the **Charge Point Administration** application.
>
> - Please check in advance which version is installed on your system and ensure that you update to version **1.7** or higher.
> - The instructions included in the installation package describe step by step how to perform the update.

The application offers a role-based concept that restricts the editing of selected parameters.

▪ Owner	The **Owner** may view all information about the application and the installed charging stations, perform updates and set up data communication in the system.
▪ Installer	The **Installer** makes fundamental changes to the system properties. This person must therefore be a qualified electrician, who, on the basis of their specialist training and experience, as well as their knowledge of the relevant regulations, can assess and carry out the working steps described in this manual and recognise potential hazards.

WARNING!

Registration as a qualified electrician required

The working steps described below for setting up the system must be carried out in the **Installer** role.

- Contact a qualified specialist electrical contractor if the following working steps need to be carried out.

1 Switch the Controller wallbox on.
- Always wait for two minutes until the SBC has completed set-up.

2 Connect an RJ45 data cable to the SBC of the Controller wallbox and the computer.
- The SBC network socket is located in the central connections area on the inside of the wallbox.
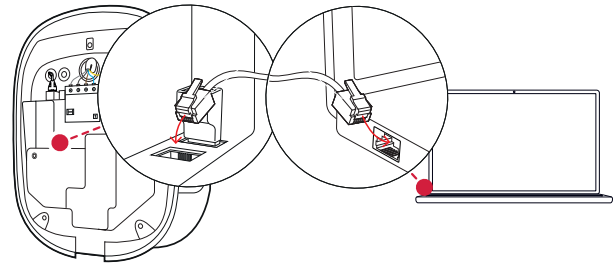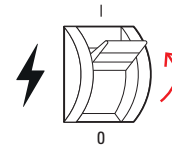
3 Open a web browser on your computer and enter the following address: http://169.254.1.1:8300/. This opens the **Charge Point Administration** online application, where you are automatically logged in with the **Owner** role.
- If you are unable to connect to the application, check your computer's network settings and, if necessary, adjust them as follows:

Network	169.254.0.0
Subnet mask	255.255.0.0
Address	169.254.1.2

4 Click the **Change role** selection menu in the top right and select the **Installer** role.

5 Click the **Products > Installation** tab, navigate to the bottom of the screen and click the **Add products** button.
- This opens the **Products > Catalog** tab.

NOTE

Filter functions in the product catalogue

The **Products > Catalog** tab lists all compatible Extender charging stations in the **Catalog** view.

- You can enter the product number of the desired charging station directly via the **Model** search field.
- You can filter all hits displayed using additional criteria such as **Revision**, **Product line**, **Type** etc.

6   Search the product catalogue for the desired charging station, select the highest revision for that model and click the **Add products** button at the bottom of the screen.

-   The selected charging station is now displayed in a separate overview in the **Catalog**.

7   Use the selection list at the bottom to enter the desired number and click the **Save** button.

-   These Extender charging stations are then displayed together with the Controller in the **Products > Installation** tab.

-   The **Cancel** button returns you to the **Products > Catalog** list without making a selection.
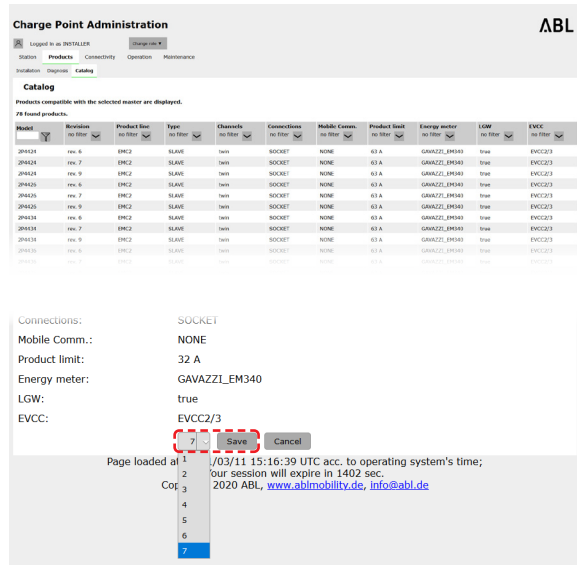
> **(!) NOTE**
>
> **Completing the system configuration**
>
> Repeat these steps to add all additional Extender charging stations in the system.

8   Navigate to the bottom of the **Products > Installation** tab and click the **Create new configuration** button.

9   Once the current system configuration has been successfully checked, you can restart the system with the **Perform reconfiguration** button.

-   After restarting, the entire system is displayed in the **Station > Overview** tab.

10   Switch to the **Overview > Details** tab: this shows at a glance whether your system is set up correctly.
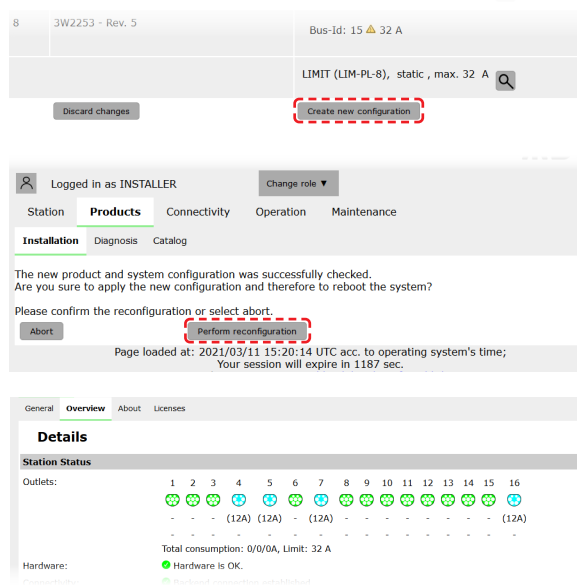
After you have set up all Extender charging stations for the Controller, you must also define the maximum available current for the entire system.

To do so, proceed as follows:

11   Make sure you are still logged into the **Charge Point Administration** application in the **Installer** role.

-   If not, change your role as described in step **4**.
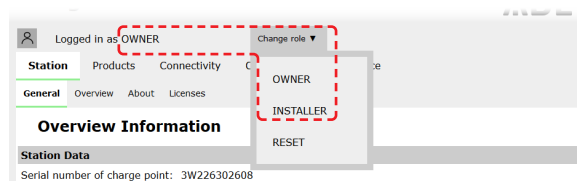
12 Switch to the **Products > Installation** tab, and, in the **Actions** column, click the **(M)** button for the Controller charging station marked with ≡.
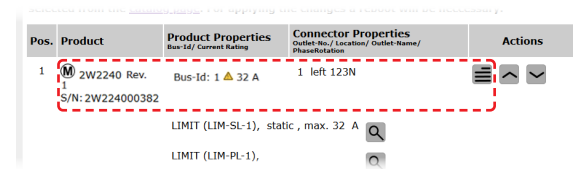
13 In the **Maximum Value** field in the **LIMIT (LIM SL-1)** section, enter the desired maximum current (for example: **32 A**) for the entire system.
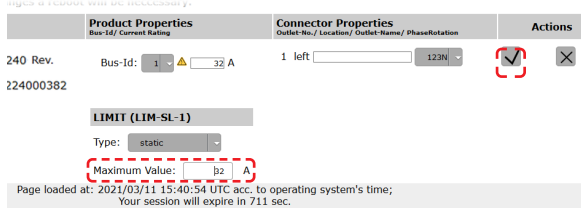
- Confirm with the ✓ button on the right.

14 Switch to the **Operation > Load Management** tab and enter the same value in the **Maximum Current** field in the **Basic Settings** section that you entered for the **Maximum current** in step **13** (for example: **32 A**).
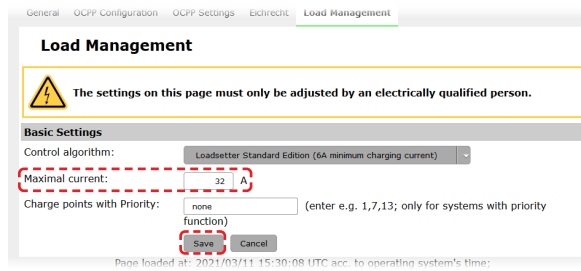
- Confirm with the **Save** button.

15 Switch to the **Maintenance > System** tab and click the **Hard reset** button in the **System Restart** section.
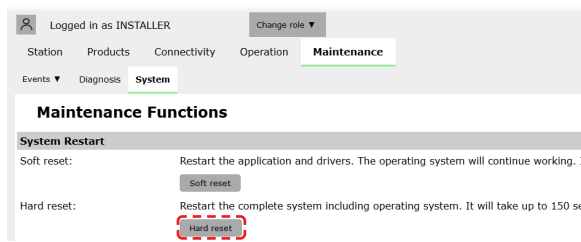
- Your Controller/Extender system will now restart with the selected settings.

The Extender wallboxes are now correctly registered in your Controller/Extender system and configured for load management. To communicate with a backend, you will also need to set up the **Connectivity** in the **Charge Point Administration** application.

Setting up data communication

The Wallbox eMH2 offers three interfaces for data communication with an external network or a backend:

- LAN (wired via internal RJ45 interfaces)
- LTE (wireless via LTE USB stick **E3BLTE1**: preinstalled for bundle products, otherwise available separately, see "Accessories" on page 10)
- WiFi (wireless via separately available WiFi dongle **E3BWLAN**, see "Accessories" on page 10)

Data communication is also set up via the **Charge Point Administration** application: the application must therefore be open and the connection to the Controller charging station established. You can carry out the working steps described below either as **Owner** or **Installer**.

> **(!) NOTE**
>
> **Data communication for Controller charging stations only**
>
> Please note that Extender charging stations can only be integrated into a network via a Controller charging station, not directly.

Connection via the LAN interface

In the central connections area behind the electronic components cover, each Wallbox eMH2 has an RJ45 socket for connecting an Ethernet cable. Via the RJ45 socket of the Controller charging station, a connection can be established between the SBC and a router, and thus to an OCPP backend.

1 Controller with Extender charging station(s)

2 Router

3 Internet

4 Backend (e.g. **reev**)
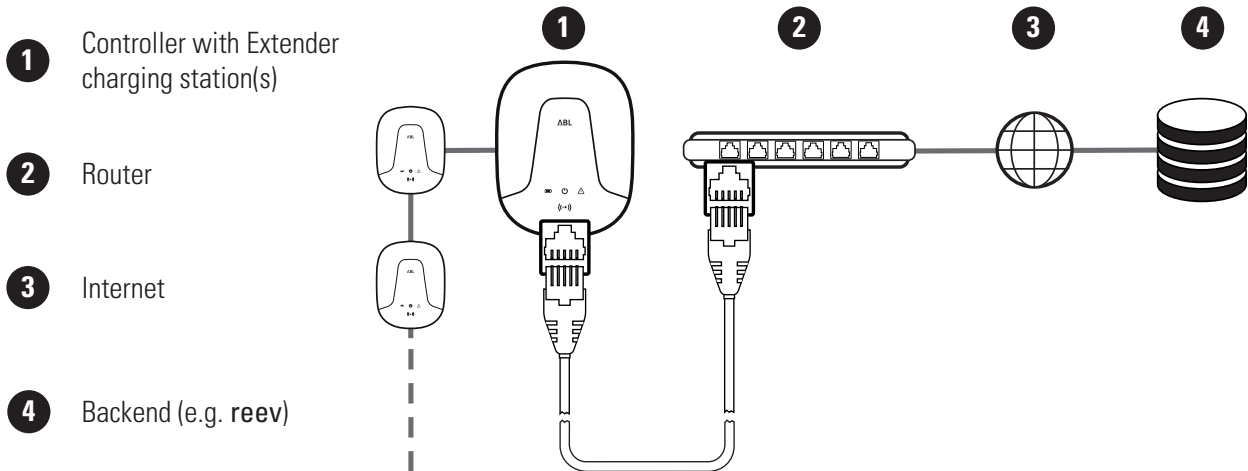
- The Controller charging station automatically receives a specific IP address via the router's DHCP server.
- The IP address assigned by the router can be individually recognised and reached via the MAC address of the Controller charging station.
- The Controller/Extender system must be connected via a suitable CAT cable to a router with Internet access to which your computer is also connected.

Proceed as follows to set up communication via the LAN interface:

1 Click the **Connectivity** > **LAN** tab and make sure that an IP and MAC address are specified for the **eth0** connection.

- This is the IP and MAC address of the Controller charging station.

2 Click the **Connectivity** > **Cellular** tab and delete all data for the mobile access point (APN), if present.

3 Switch to the **Maintenance** > **System** tab and click the **Hard reset** button in the **System Restart** section.

- Your Controller/Extender system will now restart with the selected settings.
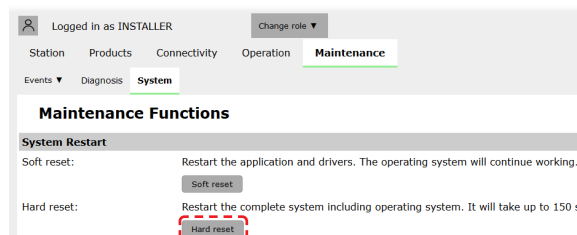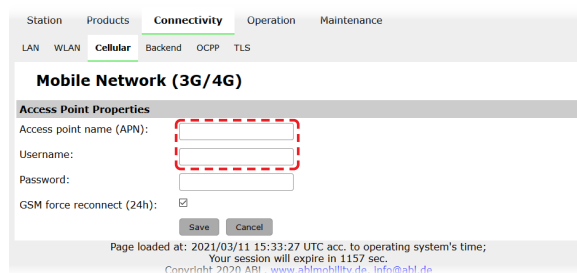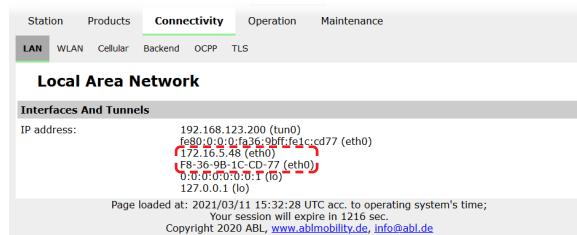
A LAN connection can now be established between the Controller charging station and the backend via WebSocket or WebSocketSecure.

> **(!) NOTE**
>
> **Communication with the backend**
> - The router's firewall must be set up in such a way that communication is possible between the charging station and the OCPP backend.
> - You can obtain all the access data from your backend operator. A description of the set-up can be found on page 38.

Connection via the LTE interface

An LTE USB stick is factory pre-installed at the SBC in the connections area behind the electronic components cover in every Wallbox eMH2/reev backend bundle. You can retrofit all other Controller Wallboxes eMH2 for LTE functionality using the LTE accessory package **E3BLTE1** (see "Accessories" on page 10 and "Installing and connecting the E3BLTE1" on page 24). A mobile network connection can be established between the SBC and an OCPP backend via the LTE USB stick of the Controller charging station.

1 Controller with Extender charging station(s)

2 Backend (e.g. **reev**)
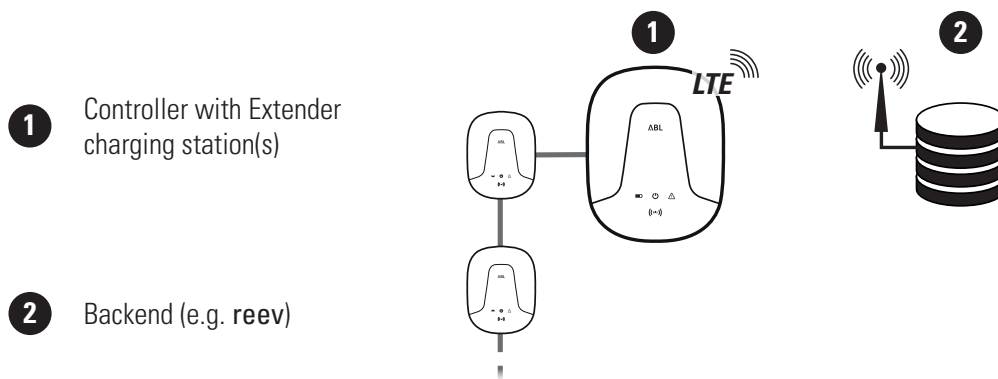
- In order to establish a mobile network connection with an OCPP backend, a suitable SIM card must be installed in the LTE USB stick when commissioning. You can find information about installation in the manual accompanying the LTE USB stick.
- The SIM card is usually included with your backend subscription: in this case, you will also receive the activation data from your backend operator.

Proceed as follows to set up communication via LTE:

1 Click the **Connectivity > Cellular** tab and enter the information provided by your backend operator for the **Access point name (APN)**, **Username** and **Password**.
- Confirm by clicking the **Save** button.

2 Switch to the **Maintenance > System** tab and click the **Hard reset** button in the **System Restart** section.
- Your Controller/Extender system will now restart with the selected settings.
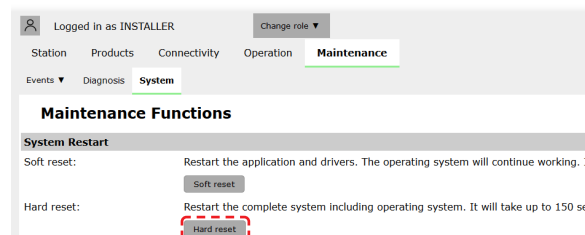
A connection can now be established between the Controller charging station and the backend via mobile network communications.

Connection via the WLAN interface

ABL offers the WiFi dongle **E3BWLAN** as an optional accessory (see page 10) for each Controller Wallbox eMH2: The installation is described in the section "Connecting the E3BWLAN" on page 22. After installation, a connection can be established between the SBC and a WiFi router and thus to an OCPP backend.

1   Controller with Extender charging station(s)

2   WiFi router

3   Internet

4   Backend (e.g. **reev**)
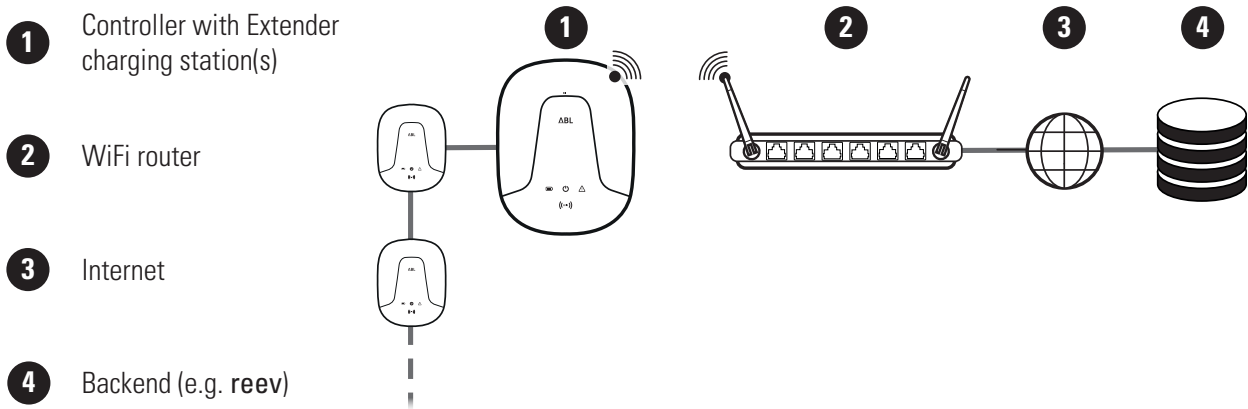
Proceed as follows to set up communication via WiFi:

1   Click the **Connectivity > Cellular** tab and delete all data for the mobile access point (APN), if present.

2   Switch to the **Connectivity > WLAN** tab and enter the information for **Service Set Identifier (SSID)** and the **Passphrase** for the network.
- Confirm by clicking the **Save** button.

3   Switch to the **Maintenance > System** tab and click the **Hard reset** button in the **System Restart** section.
- Your Controller/Extender system will now restart with the selected settings.
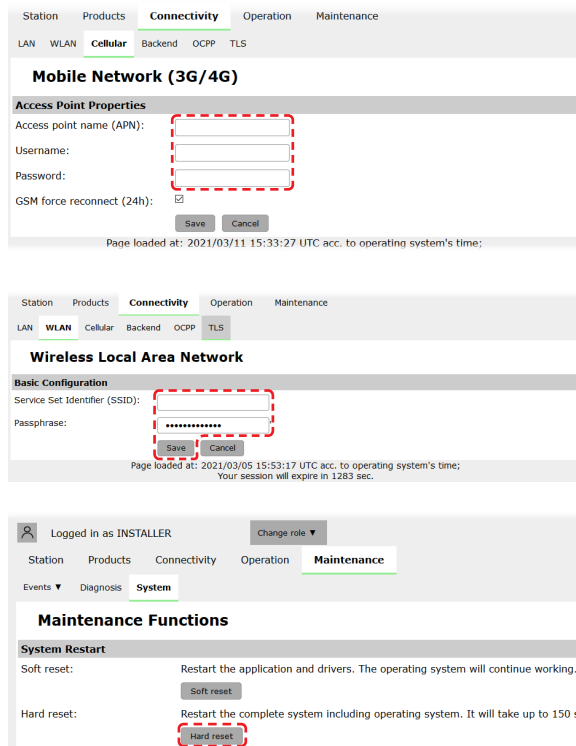
A WLAN connection can now be established between the Controller charging station and the backend via WebSocket or WebSocketSecure.

> **! NOTE**
>
> **Communication with the backend**
> - The router's firewall must be set up in such a way that communication is possible between the charging station and the OCPP backend.
> - You can obtain all the access data from your backend operator.

Setting up an OCPP backend

The backend operator will provide all the information required for registering your Controller/Extender system, which you then need to enter via the **Charge Point Administration** application.

> **(!) NOTE**
>
> Supported network protocols
>
> Communication between the Controller/Extender system and the backend can take place via the following network protocols:
>
> - **http:// (SOAP)**
>   If communication is set up via SOAP, the local port and path for the endpoint (the Controller charging station) must be specified.
> - **ws:// (WebSocket) / wss:// (WebSocketSecure)**
>   If communication is set up via WSS, you must check that the TLS certificates are correct and upload the server certificate if necessary.

Proceed as follows to set up communication with the backend:

1 Click the **Connectivity > OCPP** tab.
- In the **OCPP version** selection box, select the OCPP version supported by the backend.
- Under **Central system address (URL)**, enter the Internet address of your backend provider.
- In **Chargebox ID**, enter the OCPP name of the Controller/Extender group.

- Only for SOAP:
  - » **Local port:** Enter a port address between 1000 and 10000 or use the default (**7890**).
  - » **Local path:** Enter the path of the local endpoint here.

2 Confirm by clicking the **Save** button.

3 Only for WSS: Click the **Connectivity > TLS** tab and check the TLS versions and certificates shown here.
- Contact your network administrator if necessary.

Completing the set-up

After setting up communication with the backend, the group installation is complete.

1 Close the **Charge Point Administration** application via the browser window.

2 Disconnect the computer from the wallbox by unplugging the RJ45 data cable from the SBC of the Controller charging station (and the computer).

3 Replace the electronic components cover onto the housing base and fix it into place with its proper screw.

4 Hook the housing cover onto the upper edge of the housing base and lock it using the housing cover key.
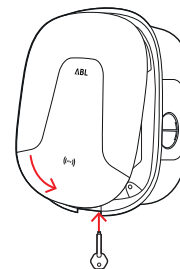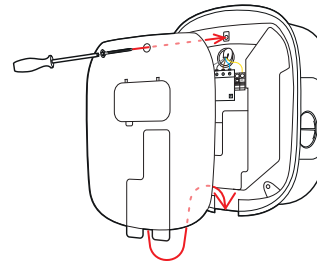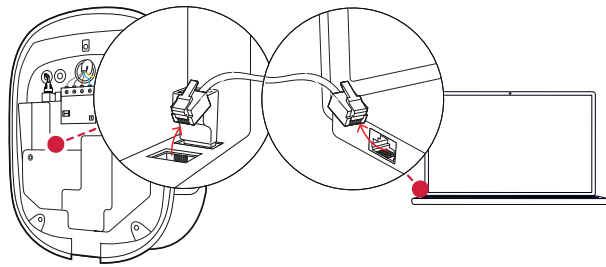
Manual RFID card administration

For all other Wallboxes eMH2 (except product bundles), the **E017869** package of 5 ID tag cards is available, which can be configured for use as a teach-in card (1 pc) and RFID user cards (4 pcs) using the **ABL Configuration Software**.

Using the teach-in card, ID tag cards can be registered on the user list of the wallbox, and then used to authorise charging procedures. In addition, the user list of the wallbox can be reset, and all previously registered ID tag cards can be deleted using the teach-in card.

> ⚠ **NOTE**
>
> Administering RFID cards via the ABL Configuration Software
>
> Before use, you must set up one of the cards from the **E017869** as a teach-in card using the **ABL Configuration Software**.
>
> ■ Setting up the ID tag cards from the accessory set **E017869** is carried out in the **Individual configuration** > **Advanced configuration** > **Access control via RFID** tab of the **ABL Configuration Software**, and is described in the accompanying manual.

Proceed as follows to register an ID tag card manually at the wallbox:

1 Ensure that the wallbox is switched on and ready for operation.

- When the wallbox is ready for operation, the green LED pulsates.

2 Hold the teach-in card in front of the RFID icon on the housing cover.

  • If the teach-in card is accepted, the Wallbox eMH2 will emit 10 short acoustic signals.

  • The teach-in card can now be removed.
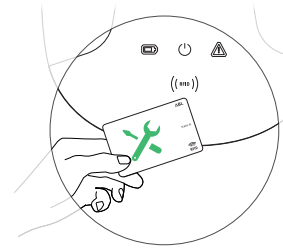
3 Now, hold a not previously registered ID tag card in front of the RFID icon on the housing cover within 10 seconds.

  • If the Wallbox eMH2 emits two short acoustic signals, the ID tag card has been registered and can be removed.
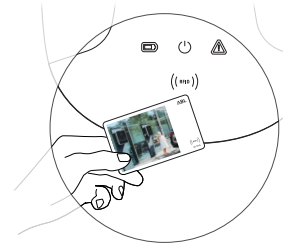
You can repeat steps **2** and **3** in order to register further ID tag cards on the wallbox's user list.

⚠ WARNING!

RFID module error message

If an ID card tag is already registered on the user list, or if no further cards can be registered in the memory of the wallbox, the Wallbox eMH2 will emit one sustained acoustic signal (ca. 1 second long).

If required, you can reset the user list saved in the wallbox in order to prevent authorisation of previously registered user ID cards.

Proceed as follows to reset the currently saved user list of a wallbox:

1 Disconnect the wallbox from the power supply.

  • Flip the pivot lever of the internal RCCB or MCB to the **0** position.
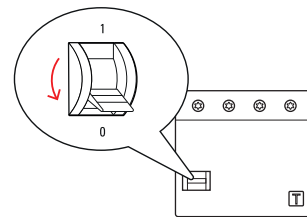
2 Hold the teach-in card in front of the RFID icon on the housing cover and then reconnect the wallbox to the power supply.
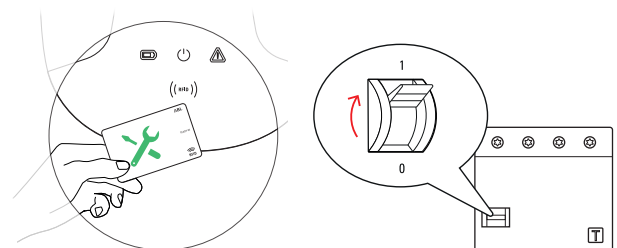
3 Hold the teach-in card in front of the RFID icon while the wallbox emits one sustained acoustic signal (ca. 3 seconds long).

  • Then remove the teach-in card.

The wallbox's user list has now been deleted. To obtain authorisation via the RFID module, new ID tag cards must be registered.

Charging procedure

After installation and configuration, the eMH2 is ready for operation immediately, and can now be used to charge an electric vehicle.

Please follow these steps to charge your vehicle using the Wallbox eMH2:

1 Park your electric vehicle so that its charging inlet can be easily reached with the charging cable's charging connector.

2 Check the LED indicators of the wallbox:

- When the wallbox is ready for operation, the green LED pulsates.

3 Prepare the charging cable of the wallbox and the vehicle's charging inlet.

- **Wallbox with charging cable**
  Slightly lift up the charging connector and pull it downwards from its storage compartment. Open the charging inlet at the vehicle and plug in the charging connector.
- **Wallbox with charging socket**
  Open the charging inlet at the vehicle and plug in the charging connector. Then open the charging socket lid on the wallbox and plug in the charging connector.
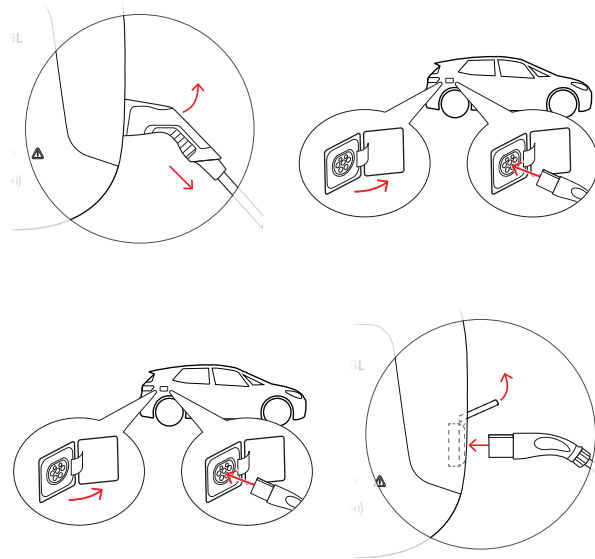
4 Check the LED indicators of the wallbox:

- If the wallbox is waiting for authorisation of the charging procedure by the user, the green LED is ON.

> ⓘ **NOTE**
>
> **Operating the Wallbox eMH2 with or without backend**
>
> Depending on the model variant, the Wallbox eMH2 can be operated with or without a backend.
>
> - **Controller variant:** An eMH2 Controller wallbox must always be operated with a backend.
> - **Extender variant:** An eMH2 Extender wallbox may be operated with a Controller and its backend, or, by modifying its configuration, as a stand-alone wallbox without backend.

5 Hold a valid RFID card in front of the RFID icon on the housing cover.
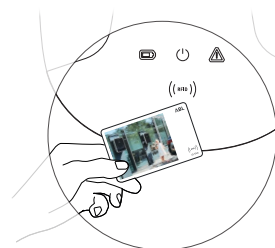
6 Check the LED indicators and acoustic signals of the wallbox.

- During verification of RFID card authorisation:
  - » The green LED is ON.
  - » The blue LED pulsates.
  - » The wallbox emits a short acoustic signal.
- When the RFID card is accepted:
  - » The green LED turns OFF.
  - » The blue LED pulsates.
  - » The short acoustic signal is emitted twice.
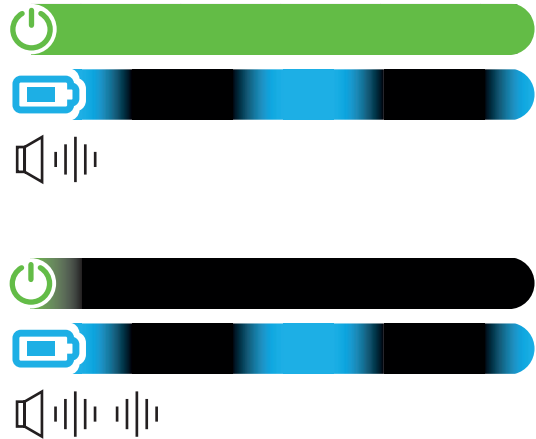
> **(!) NOTE**
>
> **Authorisation of the RFID card is refused**
>
> If the RFID card is rejected, the red LED flashes and a long acoustic signal is emitted.
>
> - **Operating the wallbox with a backend:** Please contact the issuer of the RFID card.
> - **Operating the wallbox without backend:** Make sure that the RFID card has been registered at the RFID reader.

7 Check the LED indicators of the wallbox:

- When the wallbox initiates the charging procedure following a request by the vehicle, the blue LED is ON.
- When the charging procedure is paused or completed, the blue LED pulsates.

> **(!) NOTE**
>
> **Interruption or completion of the charging procedure**
>
> The charging procedure may be paused by the vehicle. Otherwise, the charging procedure is automatically terminated by the vehicle upon completion. These two possibilities can only be distinguished by checking the displays inside the vehicle.

8 Unplug the charging connector from the electric vehicle's charging inlet and close it.
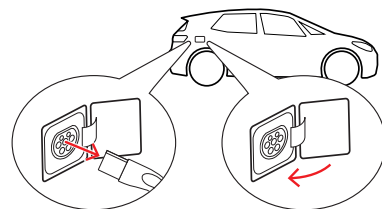
9 Store the charging cable ready for the next charging procedure.

- **Wallbox with charging cable**
  Replace the charging connector in its storage compartment.
- **Wallbox with charging socket**
  Unplug the charging connector from the charging socket and store the charging cable: the charging socket flap closes automatically.
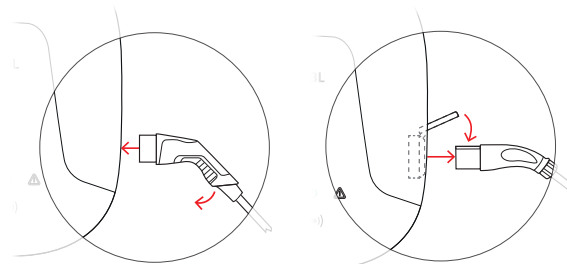
10 The wallbox is ready for operation and awaits the next charging procedure:

- When the wallbox is ready for operation, the green LED pulsates.

> ### (!) NOTE
>
> **Removing the charging cable from a wallbox with charging socket**
>
> If the wallbox has a charging socket, the charging cable should be unplugged from the charging socket after every charging procedure. Otherwise, communication between the wallbox and the vehicle may be disrupted during subsequent charging procedures.

Error resolution and maintenance

Under certain circumstances, malfunctions may occur during operation that prevent or restrict charging. The Wallbox eMH2 independently detects errors and indicates them in the form of cyclically repeating LED flash patterns.

Identifying errors

The following errors may occur:

Error F1

Description	Flash pattern
Per cycle, the red LED flashes once, followed by the green LED flashing four times.	

Cause	Suggested solution
The main contactor of the wallbox does not open.	■ Check the RCCB of the wallbox and bring its pivot lever into the I position if necessary. ■ Switch the electricity supply for the wallbox off and then back on again. This should automatically reset the error. ■ Should the error persist, take the wallbox out of operation (see page 51) and contact a qualified specialist electrical contractor to resolve the error.

Error F2

Description	Flash pattern
Per cycle, the red LED flashes once, followed by the green LED flashing three times and the blue LED flashing once.	

Cause	Suggested solution
The firmware has detected a disallowed operating state during an initial or periodic self-test.	■ Switch the RCCB of the wallbox off and then back on again. This should automatically reset the error. ■ Should the error persist, take the wallbox out of operation (see page 51) and contact a qualified specialist electrical contractor to resolve the error.

Error F3

Description	Flash pattern
Per cycle, the red LED flashes once, followed by the green and blue LEDs alternately flashing twice.	

Cause	Suggested solution
The internal DC fault current module has detected a DC fault current.	■ When this error occurs for the first time, the charging procedure is interrupted for 30 seconds and then restarted automatically. If the error occurs again immediately, the charging procedure is terminated permanently: A new charging procedure is only possible after disconnecting the vehicle from the wallbox. ■ There is possibly an electrical fault in the charging system of the vehicle. Do not charge the vehicle, and immediately contact a qualified specialist repairer. In addition, consider the notices provided in the operating manual for the vehicle.

Error F4

Description	Flash pattern
Per cycle, the red LED flashes once, followed by the green LED flashing once and the blue LED flashing three times.	

Cause	Suggested solution
Bus communication is not available inside the wallbox, or within the Controller-Extender group installation.	■ Disconnect the wallbox from the electricity supply and check the data cabling. Then switch the electricity supply back on. This should automatically reset the error. ■ Should the error persist, take the wallbox out of operation (see page 51) and contact a qualified specialist electrical contractor to resolve the error.

Error F5 (variants with charging socket only)

Description	Flash pattern
Per cycle, the red LED flashes once, followed by the blue LED flashing four times.	

Cause	Suggested solution
The self-test performed by the wallbox has detected an error because the charging cable plug could not be locked inside the charging socket of the wallbox.	■ The wallbox automatically reinitiates the self-test after 30 seconds: after two failed self-tests, the charging procedure is terminated permanently. ■ Should the error occur again, check the position of the plug in the charging socket, or unplug it and plug it back in. ■ Should the error persist, take the wallbox out of operation (see page 51) and contact a qualified specialist electrical contractor to resolve the error.

Error F6 (variants with charging socket only)

Description	Flash pattern
Per cycle, the red LED flashes once, followed by the green and the blue LED flashing twice each.	

Cause	Suggested solution
The charging cable's current rating is incorrect.	■ The wallbox automatically reinitiates the charging procedure every 60 seconds. Should the error occur again, check the position of the plug in the charging socket, or unplug it and plug it back in. ■ Should the error persist, take the wallbox out of operation (see page 51) and contact a qualified specialist electrical contractor to resolve the error.

Error F8

Description	Flash pattern
Per cycle, the red LED flashes once, followed by the green LED flashing twice.	

Error F8

Cause

- A short circuit has been detected between the pilot contact CP and the protective earth PE.
- The vehicle's communication interface is faulty.

Suggested solution

- The wallbox automatically reinitiates the charging procedure every 60 seconds.
- If the error persists, check the charging cable and/or the charging socket of the wallbox. If you detect any damage, take the wallbox out of operation and contact the dealer from whom you have purchased the wallbox.
- If no damage is detected when checking the charging cable and socket, the vehicle must be checked: please contact a qualified specialist repairer.

Error F9

Description

Per cycle, the red LED flashes once first, followed by the green LED flashing three times and then the blue LED flashing once.

Flash pattern

Cause

The current monitoring module has detected that the charging current is exceeding the preset maximum current.

Suggested solution

- The wallbox automatically reinitiates the charging procedure every 60 seconds. If the error persists, the wallbox and/or the vehicle must be checked: please contact a qualified specialist electrical contractor or a specialist repairer.

Error F10

Description

Per cycle, the red flashes once first, followed by the green LED flashing twice and then the green and blue LED flashing twice.

Flash pattern

Cause

The temperature monitoring device has detected a temperature above 80° Celsius inside the housing.

Suggested solution

- The temperature monitoring device interrupts the charging procedure. After 10 minutes, the charging procedure is reinitiated automatically. If the temperature inside the housing remains at between 60° and 80° Celsius at this time, error code F17 (see below) is shown and the charging current is limited to 6 A.
- The charging procedure is re-initiated as soon as the temperature inside the housing falls to below 60° Celsius.
- If the error repeats or persists, the wallbox must be cooled and/or shaded more effectively at the installation site.
- Should the error persist, please take the wallbox out of operation (see page 51) and contact a qualified specialist electrical contractor to resolve the error.

Error F11

Description

Per cycle, the red and green LEDs flash once first, followed by the green and blue LEDs flashing three times.

Flash pattern

Error F11

Cause	Suggested solution
The main contactor of the wallbox does not close.	■ The wallbox automatically re-initiates the charging procedure after 30 seconds and repeats this process twice. After three failed reinitiation attempts, the charging procedure is terminated. ■ If this error persists and the charging procedure is not initiated automatically, the wallbox must be taken out of operation and checked: please contact the specialist electrical contractor who has carried out the installation of your wallbox and any accessories.

Error F15

Description	Flash pattern
The red LED flashes once per cycle and the blue LED is permanently ON.	

Cause	Suggested solution
The current monitoring device has detected a load imbalance between the phases, and has reduced the maximum charging current to 20 A. Charging operations are still possible.	■ Disconnect the charging cable from the vehicle (socket variants: and from the socket) and then plug it back in. ■ Should this not reset the error, please check the electrical connection and parameters for the wallbox and set the charging current to a value above 20 A. ■ If the error cannot be resolved, please contact the specialist electrical contractor who has carried out the installation of your wallbox and any accessories.

Errors F16 and F17

Description	Flash pattern
The red LED flashes once per cycle and the blue LED is permanently ON.	

Cause	Suggested solution
■ Data transfer to the integrated current monitoring device is disrupted: The maximum charging current is limited to 10 A while this error persists. Charging operations are still possible. ■ The temperature monitoring device has detected a temperature above 60° Celsius inside the housing: The maximum charging current is limited to 6 A. Charging operations are still possible.	■ The charging output is limited until the error has been reset or the temperature inside the housing has fallen to below 60° Celsius. ■ If the error repeats or persists, the wallbox must be cooled and/or shaded more effectively at the installation site. Please contact a qualified specialist electrical contractor to check and resolve the error, or to move the installation site of the wallbox.

⚠ **WARNING!**

Taking the wallbox out of operation in the event of persistent malfunction

Should the wallbox keep displaying error messages, please take it out of operation (see further below) and contact a qualified specialist electrical contractor to resolve the error.

General operational malfunctions

Under certain circumstances, other malfunctions may occur.

Description

The electric vehicle is not recognised.

Cause and suggested solution

- The charging cable is not properly plugged in.
  - Remove the charging connector from the vehicle's charging inlet and plug it back in.
  - **For wallboxes with charging socket:** also remove the charging connector from the charging socket of the wallbox and plug it back in.
  - Check the charging cable and replace it if required.

Description

The red LED of the wallbox flashes once every 10 seconds and the blue LED is continuously ON.

Cause and suggested solution

- The wallbox has detected an error that limits the charging current. The wallbox will remain in this operating state until the error is resolved.
  - Remove the charging connector from the vehicle's charging inlet and plug it back in.
  - **For wallboxes with charging socket:** also remove the charging connector from the charging socket of the wallbox and plug it back in.
  - Contact a qualified specialist electrical contractor to have the error resolved.

Description

The LEDs of the wallbox are not functioning.

Cause and suggested solution

- The wallbox is not connected to the electricity grid.
  - Check the internal RCCB and switch it back on if required.
  - Check the upstream circuit breaker in your domestic power distribution and switch it back on if required.
  - Have a qualified specialist electrical contractor check the power supply cable and restore it if required.
- The wallbox is defective.
  - Please contact a qualified specialist electrical contractor to have the error resolved.
  - Should the wallbox have to be replaced, please contact the dealer from whom you have purchased your wallbox.

⚠️ **DANGER!**

Dangerous electrical currents

Should the charging cable, the charging plug or connector show visible damage, you must under no circumstances perform another charging procedure. Take the wallbox out of operation and contact a qualified specialist electrical contractor.

Testing the RCCB

To ensure the continuing safe operation of the wallbox, the function of the RCCB must be tested regularly according to locally applicable regulations (e.g. every 6 months in Germany): For this purpose, the RCCB has a push button with which to initiate the test function.

Proceed as follows to test the RCCB:

1   Open the housing cover of the wallbox with the housing cover key and put it aside.

2   Open the access flap of the internal electronic components cover.

3   Locate and press the push button engraved **T** or marked **Test**.

   - The RCCB must now trip and flick its pivot lever into the centre position.

4   Now flip the pivot lever first to the **0** position and then back to the **I** position.

5   Close the access flap, hook the housing cover onto the upper edge of the housing base and lock it using the housing cover key.
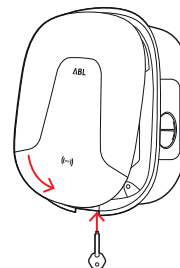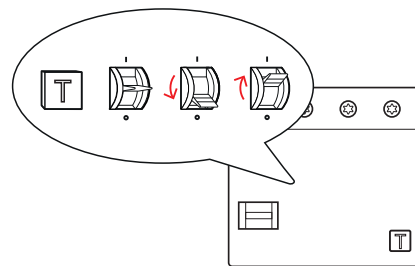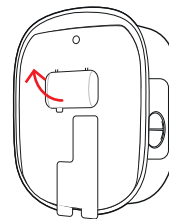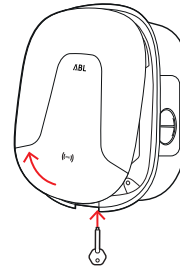
⚠ **DANGER!**

Dangerous electrical currents

Should the RCCB malfunction during testing, you must not continue to operate the wallbox under any circumstances!

   ▪ Contact a qualified specialist electrical contractor to have the error resolved.

Taking the Wallbox eMH2 out of operation

In case of severe malfunctions or damage to the device, you must take the Wallbox eMH2 out of operation. To do so, proceed as follows:

1 Open the housing cover of the wallbox with the housing cover key and put it aside.
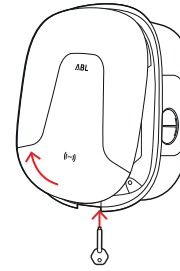
2 Open the access flap of the internal electronic components cover.
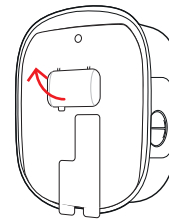
3 Flip the pivot lever of the internal RCCB to the **0** position.

- Also flip the pivot lever of the internal MCB to position **0**.
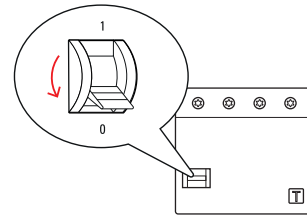
4 Close the access flap, hook the housing cover onto the upper edge of the housing base and lock it using the housing cover key.
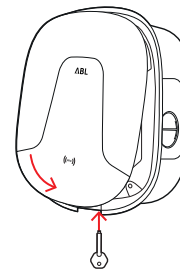
5 Open your domestic power distribution box, disconnect the power supply cable from the electricity grid via the MCB and close the distribution box.
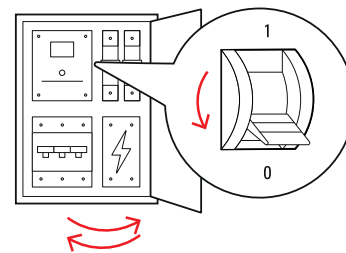
The Wallbox eMH2 is no longer connected to the electricity grid and can be removed by a qualified specialist electrical contractor if required.

⚠ **DANGER!**

Dangerous electrical currents

Always measure the voltage between the phases and the neutral conductor of the power supply cable before you start dismantling the wallbox.

Maintenance

Except for testing the integrated RCCB, the Wallbox eMH2 is basically maintenance-free. However, we still recommend the wallbox is regularly cleaned and the function of its charging interfaces checked:

- Use only a dry cloth for cleaning the wallbox. Do not use aggressive cleaning agents, waxes or solvents (such as cleaning fluid or paint thinner) as they may dull the wallbox displays.
- The wallbox must under no circumstances be cleaned with a pressure cleaner or similar device.
- Check the fixed charging cable or the charging socket of the wallbox regularly for signs of damage.

Appendix

Technical specifications

Controller series

Model code	2W2240*	2W2241
Rated voltage	230/400 V	
Grid frequency	50 Hz	
Current	32 A	
Maximum output	22 kW	
Charging connection	Type 2 charging socket, 1 pc	Type 2 charging cable, 1 pc
Phase system	3-phase	
Terminal blocks	Direct connection to RCD, PE to rail mount terminal block, max. 5 × 16 mm²	
Residual Current Devices	Type A RCD, 30 mA	
DC fault current detection	DC-RCM, $I_{\Delta n\,d.c.} \geq 6$ mA	
Overcurrent protection	Integrated into firmware, disconnection at 110% after 100 seconds, at 120% after 10 seconds.	
Energy meter	MID compliant	
Load switching	Contactor, 4-pole	
Weld detection	Contactor welding trips RCD	
RFID	ISO14443A/B, UID (4 Byte/7 Byte) only	
Backend communication	OCPP 1.6 via LAN or LTE/WIFI (optional)	
Compliance standards	IEC 61851-1	
Control / customisation	Internal RS485 interface, bus system	
Ambient temperature	-30°C to 40°C	
Storage temperature	-30°C to 85°C	
Relative humidity	5 to 95%, no condensation	
Class of protection	I	
Degree of protection (housing)	IP54	
Overvoltage category	III	
Impact strength	IK08	
Dimensions (H × W × D)	437 × 328 × 170 mm	
Weight per unit	approx. 8 kg	approx. 10 kg

* Structurally identical variant with one charging socket with shutter: 2W2242

Extender series

Model code	2W2230*	2W2231
Rated voltage	230/400 V	
Grid frequency	50 Hz	
Current	32 A	
Maximum output	22 kW	
Charging connection	Type 2 charging socket, 1 pc	Type 2 charging cable, 1 pc
Phase system	3-phase	
Terminal blocks	Direct connection to RCD, PE to rail mount terminal block, max. 5 × 16 mm²	

Model code	2W2230*	2W2231
Residual Current Devices	Type A RCD, 30 mA	
DC fault current detection	DC-RCM, $I_{\Delta n\,d.c.} \geq 6$ mA	
Overcurrent protection	Integrated into firmware, disconnection at 110% after 100 seconds, at 120% after 10 seconds.	
Energy meter	MID compliant	
Load switching	Contactor, 4-pole	
Weld detection	Contactor welding trips RCD	
RFID	ISO14443A/B, UID (4 Byte/7 Byte) only	
Backend communication	via Controller wallbox	
Compliance standards	IEC 61851-1	
Control / customisation	Internal RS485 interface, bus system	
Ambient temperature	-30°C to 40°C	
Storage temperature	-30°C to 85°C	
Relative humidity	5 to 95%, no condensation	
Class of protection	I	
Degree of protection (housing)	IP54	
Overvoltage category	III	
Impact strength	IK08	
Dimensions (H × W × D)	437 × 328 × 170 mm	
Weight per unit	approx. 8 kg	approx. 10 kg

* Structurally identical variant with one charging socket with shutter: 2W2242

Stand-alone series

Model code	2W2222
Rated voltage	230/400 V
Grid frequency	50 Hz
Current	32 A
Maximum output	22 kW
Charging connection	Type 2 charging socket with shutter, 1 pc
Phase system	3-phase
Terminal blocks	Direct connection to RCD, PE to rail mount terminal block, max. 5 × 16 mm²
Residual Current Devices	Type A RCD, 30 mA
DC fault current detection	DC-RCM, $I_{\Delta n\,d.c.} \geq 6$ mA
Overcurrent protection	Integrated into firmware, disconnection at 110% after 100 seconds, at 120% after 10 seconds.
Energy meter	MID compliant
Load switching	Contactor, 4-pole
Weld detection	Contactor welding trips RCD
RFID	ISO14443A/B, UID (4 Byte/7 Byte) only
Compliance standards	IEC 61851-1
Control / customisation	Internal RS485 interface, bus system
Ambient temperature	-30°C to 40°C
Storage temperature	-30°C to 85°C

Model code	2W2222
Relative humidity	5 to 95%, no condensation
Class of protection	I
Degree of protection (housing)	IP54
Overvoltage category	III
Impact strength	IK08
Dimensions (H × W × D)	437 × 328 × 170 mm
Weight per unit	approx. 8 kg

Standards and guidelines

General standards

2014/30/EU	EMC Guideline
2011/65/EU	RoHS Guideline
2012/19/EU	WEEE Directive
2014/35/EU	Low voltage directive

Standards governing electromagnetic interference (EMV)

IEC 61851-21-2	Conductive charging systems for electric vehicles – Part 21-2: EMC requirements for off board electric vehicle charging systems

Device safety standards

IEC 61851-1 Ed. 3	Electrical equipment for electric road vehicles - conductive charging systems for electric vehicles – Part 1: General requirements
IEC 60364-7-722 Ed. 1	Low voltage installations - Part 7-722: Requirements for special installations or locations - Supply of electric vehicles

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The absence of explicit identification of trademarks used in this manual must not lead to the conclusion that a name is free from the rights of third parties.

Data cable recommendations

The following data cables are recommended for wiring up the bus interfaces in the Wallbox eMH2:

Designation	Cross section	Number
Cat5e	from at least 0.14 mm²	1 cable per connection between two wallboxes
Cat6	from at least 0.14 mm²	

⚠ **WARNING!**

Selecting suitable data cables

Please note that these are recommendations only: the conductor cross-section must be adjusted according to the cable length by the specialist electrical contractor responsible for installation.

Allocation schematic from spring terminal to Easy2Install interface

For mixed data cabling connections using E2I interfaces as well as spring terminals within one group installation, the below allocation schematic must be followed. For each length of cable between these two interface systems, one un-braided RJ45 to individual strand Ethernet/patch cable (1 pc) is required.

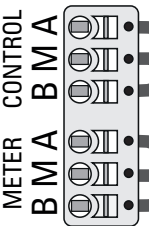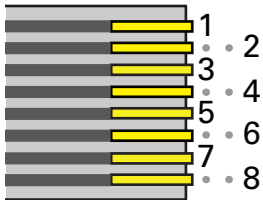The following allocations are then made:

- Controller/Extender with spring terminal to Extender with Easy2Install interface

  In this configuration, the individual wire strands of an Ethernet cable (CAT5e or above), which has been unbraided at one end, are connected to spring terminal **R** of the Controller or Extender charging station, while the RJ45 plug of the Ethernet cable is inserted into the left hand side Easy2Install interface of the next Extender charging station.

- Controller/Extender with Easy2Install interface to Extender with spring terminal

  In this configuration, the RJ45 plug of the Ethernet cable is inserted into the right hand side Easy2Install interface of the Controller or Extender charging station, while the unbraided wire strands of the Ethernet cable are connected to spring terminal **L** of the next Extender charging station.

In both cases, the individual wire strands of the Ethernet cable must be allocated as illustrated below.

Spring terminal		RJ45 plug	
Top view of terminal	ABL bus allocation	PIN allocation	Top view of RJ45 plug
	CONTROL A	1	
	CONTROL M	3 & 6	
	CONTROL B	2	
	METER A	7	
	METER M	4 & 5	
	METER B	8	

> ⚠ **WARNING!**
>
> Identical allocation of wire strands
>
> Please note:
>
> - As no standard exists for the allocation of wire strands colours to the contacts of an RJ45 plug, the above illustration only shows the allocation of the RJ45 contact to the spring terminal contact.
>
> - These allocations must be followed consistently, otherwise faultless communication within the system is impossible.

Data cabling via LOMK218

In case of all Wallboxes eMH2 with spring terminals (until mid-2021), you can, instead of the configuration kit CONF-CAB, also use the cable kit LOMK218 for data cable connections to a computer.

However, the following limitations apply:

- The LOMK218 can only be used in conjunction with the ABL Configuration Software up to version 1.6. From version 1.7 and above, you must always use the configuration kit CONFCAB.

- Using LOMK218, either the CONTROL or the METER bus of the wallbox can be accessed, but not both at the same time. To set up the charge controller and the RFID module, the RS485 to RJ12 adapter from LOMK218 must therefore be connected to terminals **A**, **M** and **B** for the **CONTROL** bus. To set up the energy meter or the logging gateway (if present), you first need to disconnect the RS485 to RJ12 adapter, and then connect it to terminals **A**, **M** und **B** for the **METER** bus.

You can find further information in the Installation and User Guide LOMK218 (➜ www.ablmobility.de/en > Service > All downloads > Operation manuals > Accessories).

The following is a schematic illustration of data cabling using the LOMK218:

Connection to CONTROL bus	Connection to METER bus
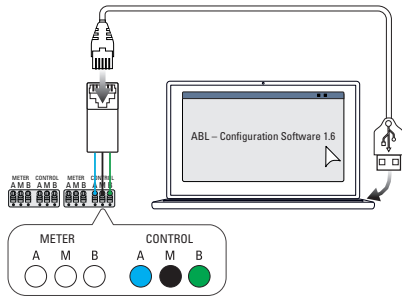
Configuration: Charge controller and RFID module   Configuration: Energy meter and LGW
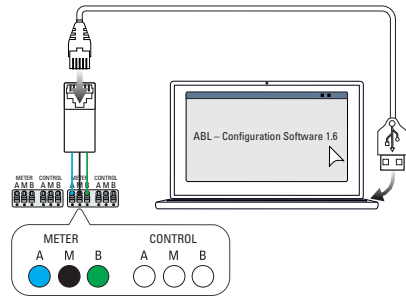
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Version 0301764_EN_c, date: 06/08/2021

Dimensions

Drilling template

The Wallbox eMH2 comes with a drilling template (see illustration below) for marking the fixing points. Should the drilling template have been lost, you can obtain the drilling dimensions from the illustration below.

CE certification and compliance declaration

The Wallbox eMH2 carries the CE mark. A copy of the declaration of compliance is displayed below.

ZERTIFIKAT / CERTIFICATE   **ABL**

EU - KONFORMITÄTSERKLÄRUNG
EC - DECLARATION OF CONFORMITY

Name des Herstellers **Name of manufacturer**	ABL SURSUM Bayerische Elektrozubehör GmbH & Co. KG Albert-Büttner-Straße 11 91207 Lauf an der Pegnitz, Germany
erklärt, dass das Produkt **declares that the product**	Ladestation für Elektrofahrzeuge, Charging station for electric vehicles
Type-Nr. **Ref. No.**	Wallbox eMH2
die Forderungen folgender **europäischer Richtlinien** **erfüllt:** **is in conformity with the** **following European** **Directives:**	☒ Niederspannungsrichtlinie/Low Voltage Directive 2014/35/EU ☒ EMV Richtlinie / EMC Directive 2014/30/EC ☒ RoHS Richtlinie / RoHS Directive 2011/65/EU ☐
Angewendete (harmonisierte) **Normen:** **Applied (harmonized)** **standards:**	IEC 61851-1:2017 IEC 61851-21-2:2018 IEC 61000-6-2:2005 IEC 61000-6-3:2006, AMD1:2010 VDE-AR-N 4100:2019-04

Diese EU-KONFORMITÄTSERKLÄRUNG gilt für alle im Anhang gelisteten Produkte.
This EC-DECLARATION OF CONFORMITY is valid for all products in the annex.

Jahr der Anbringung der **CE-Kennzeichnung:** **Year of declaration:**	2018

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ABL SURSUM GmbH & Co.KG Lauf / Pegnitz
Lauf / Pegnitz

_18.04.2019_

Datum Date	Unterschrift Helmut Mann Signature Leiter Entwicklungslabor und Zertifizierung

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien und beinhaltet jedoch keine Zusicherung von Eigenschaften.
This declaration certifies the conformity to the specified directives but contains no assurance of properties.

ABL SURSUM Bayerische Elektrozubehör GmbH & Co. KG	Albert-Büttner-Straße 11 D-91207 Lauf / Pegnitz	Tel. +49(0) 9123 188-0 info@abl.de Fax +49(0) 0123 188188 www.abl.de

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Disposal advice

The crossed out rubbish bin symbol indicates that electrical and electronic devices including accessories must be disposed of separate from household refuse.

The materials are recyclable as marked. The reuse or recycling of materials, or other forms of repurposing of old devices make an important contribution towards protecting the environment.

MADE IN GERMANY