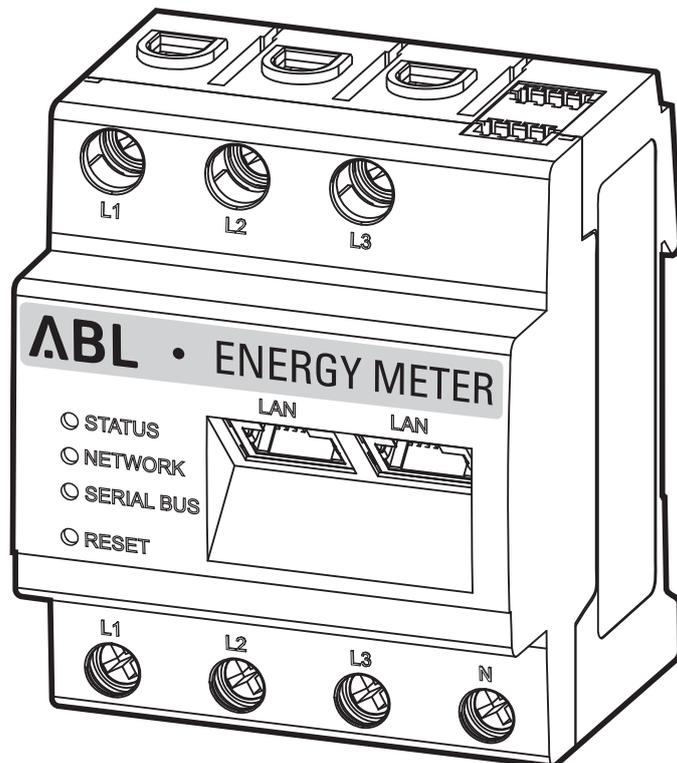


ABL ENERGY METER

Installation manual



Contact

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Contents

| | |
|--|-----------|
| Contact | 2 |
| Technical information | 5 |
| <hr/> | |
| Introduction | 6 |
| General | 6 |
| Introduction to the ABL Energy Meter | 7 |
| Identification of the ABL Energy Meter | 7 |
| Items supplied | 7 |
| Compatible products | 8 |
| Connections and controls | 8 |
| <hr/> | |
| Mechanical and electrical installation | 9 |
| Phase rotation within a charging group | 10 |
| Electrical connection for direct measurement without current transformer | 10 |
| Electrical connection for indirect measurement with current transformers | 13 |
| Data cabling to the ABL Energy Meter | 15 |
| <hr/> | |
| Setting up the ABL Energy Meter | 17 |
| Setting up the current transformers via the ABL Energy Meter web interface | 17 |
| Setting up load management via the ABL Configuration App | 19 |
| <hr/> | |
| Appendix | 22 |
| Technical specifications | 22 |
| Operation of the ABL Energy Meter at 55 °C ambient temperature | 22 |
| Data cable recommendations | 23 |
| LED statuses | 23 |
| Functions of the reset button | 24 |
| Licences | 24 |
| Error codes | 24 |
| Disposal advice | 25 |
| Intellectual property & copyright | 25 |

Technical information

This document explains how to install and configure the ABL Energy Meter. It is recommended that all working steps described in this document are carried out by qualified specialist electrical contractors only.

For the individual or group installation of all eM4 wallboxes in conjunction with the ABL Energy Meter, additional technical information is required, which is provided in the installation instructions for the Wallboxes eM4 Twin and eM4 Single.

The technical data of the ABL Energy Meter and the Wallboxes eM4 Single and eM4 Twin are also summarised in product-specific data sheets.

| Technical information | User | Specialist electrical contractor |
|--|------|----------------------------------|
| • Energy Meter quick start guide | ✓ | ✓ |
| • Energy Meter installation instructions (this document) | ✗ | ✓ |
| • eM4 Single installation instructions | ✗ | ✓ |
| • eM4 Twin installation instructions | ✗ | ✓ |
| • Data sheets (Energy Meter, Wallbox eM4 Single, Wallbox eM4 Twin) | ✓ | ✓ |

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/en. Please visit:



<https://www.ablmobility.de/en>

Introduction

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.
- Descriptions that require an additional step are marked with an arrow.

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.

ATTENTION

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.

NOTE

Indicates important information for operation or installation

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

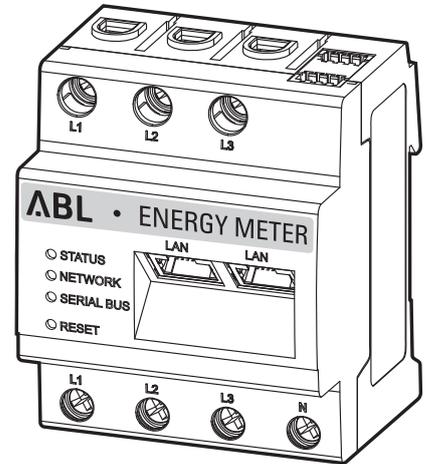
- Actions marked with this symbol should be carried out as required.
- Passages marked with this symbol contain valuable additional information.

Introduction to the ABL Energy Meter

The ABL Energy Meter makes it possible to set up dynamic load management for the Controller variants of the eM4 Twin and eM4 Single wallbox, which can also be used for intelligent distribution of charging power in group installations. With direct measurements, the Energy Meter, which is designed as a top-hat rail module, can measure up to 63 A, while measurements up to 1,000 A are possible in connection with external current transformers. The Energy Meter ensures optimal use of the available grid connection and at the same time protects the house connection from overload. The **ABL Configuration App** or the **ABL user interface** can be used to easily put the Energy Meter into operation and to monitor the current charging current and the building load.

The following measured values are recorded and stored by the ABL Energy Meter:

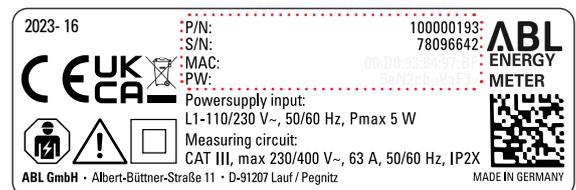
- Voltage
- Current
- Active power
- Reactive power
- Apparent power
- Active energy (electrical work)
- Reactive energy
- Power factor



Identification of the ABL Energy Meter

A rating plate attached to the side of the ABL Energy Meter and another supplied in the package are used for identification purposes. The rating plate contains the following important information:

- **S/N:** Serial number
- **MAC:** MAC address
- **PW:** Factory-assigned password for logging in to the user interface of the ABL Energy Meter



Always check the rating plate before installation.

NOTE

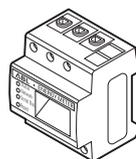
Type rating on the packaging

There is another rating plate on the packaging of the ABL Energy Meter which contains general information such as the product number and serial number. However, it does not show any access data for communication between the integrated web server of the ABL Energy Meter and a computer.

Items supplied

The ABL Energy Meter is supplied with the following components:

- ABL Energy Meter, 1 pc.



- ABL Energy Meter quick start guide (1 document per language)



- Rating plate, 1 pc.



- Warning sticker, 2 pcs.



! NOTE

Checking the components included

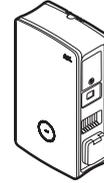
Check immediately after unpacking whether all components are included: should any components be missing, please contact the dealer from whom you purchased the ABL Energy Meter.

Compatible products

The ABL Energy Meter is offered as a separate accessory for the following ABL products.

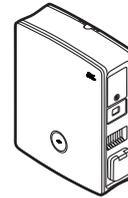
• Wallbox eM4 Single Controller

Charging station from ABL with one charging point for use as a Controller in a group installation, either as a variant with a permanently integrated charging cable or with a charging socket



• Wallbox eM4 Twin Controller

Charging station from ABL with two charging points for use as a Controller in a group installation

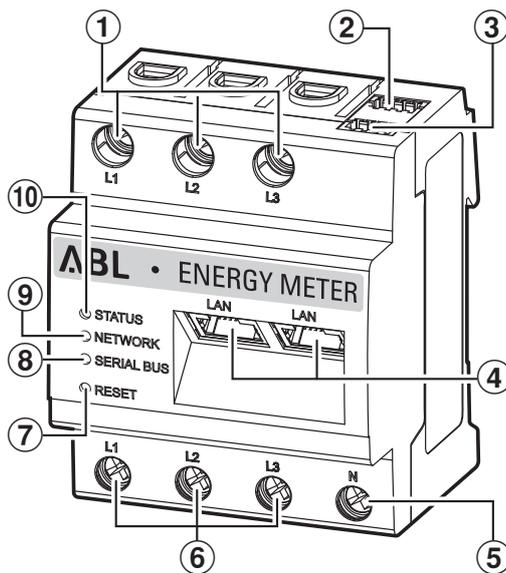


You can find further information on **ABL** charging stations and accessories at www.ablmobility.de.



Connections and controls

The ABL Energy Meter has the following connections, displays and operating elements:



Description

- ① Outer conductor L1, L2, L3 outputs
- ② RS485 A connection (without function)
- ③ RS485 B connection (without function)
- ④ 2 × LAN connection
- ⑤ Neutral conductor N
- ⑥ Outer conductor L1, L2, L3 inputs
- ⑦ Reset button
- ⑧ Serial bus LED for RS485 (without function)
- ⑨ Network LED
- ⑩ Status LED

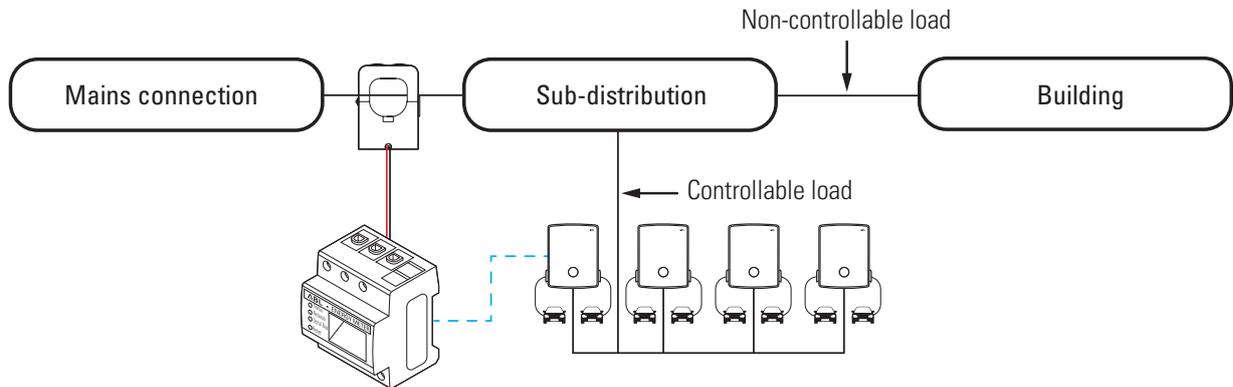
Mechanical and electrical installation

To control all charging currents, the ABL Energy Meter communicates with the Controller charging station in the group installation, which then dynamically distributes the charging currents in the group based on the currents measured by the Energy Meter and the settings in the ABL Configuration App. The ABL Energy Meter measures the current either for the total current of the system or for a section within this system.

Total current measurement

For total current measurement, the Energy Meter is installed either directly or via cable type current transformers (see illustration) on the individual phases of the house supply cable.

- This measurement takes into account both the building load and the consumption of the charging stations in the group.



! ATTENTION

Authorisation requirement by the grid operator

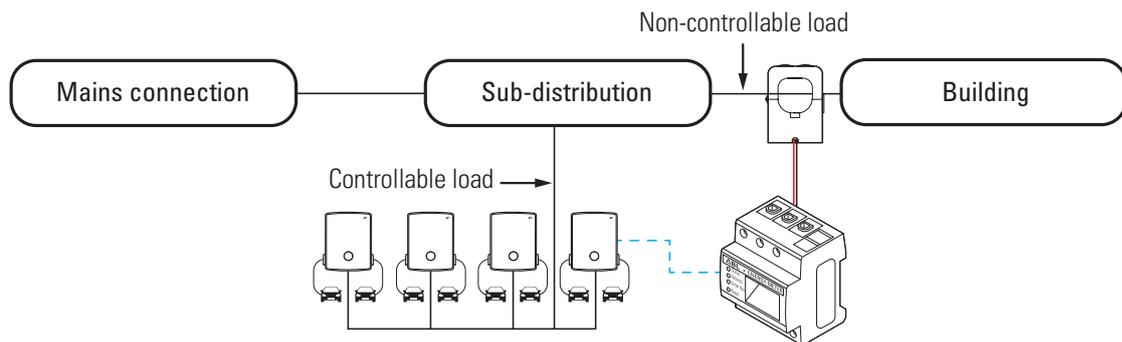
Please note that the position of the Energy Meter for total current measurement may need to be authorised by your local grid operator.

- Contact your local grid operator for further information.

Section current measurement

For section current measurement, the Energy Meter is installed directly or via cable type current transformers (see illustration) downstream of the tap for the charging stations, but upstream of the building load.

- This measurement takes into account only the building load and not the consumption of the charging stations.



! ATTENTION

Direct measurement or measurement via current transformer

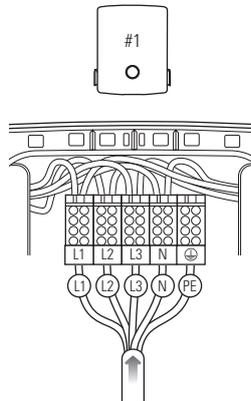
With direct measurement, the conductors are connected directly to the ABL Energy Meter: In this case, after the mechanical and electrical installation, you can start setting up directly via the ABL Configuration App.

If you use cable type current transformers for measuring the individual phases, the current transformer ratio must first be set in the ABL Energy Meter web interface (see "Setting up the current transformers via the ABL Energy Meter web interface" on page 17) before setting up load management via the ABL Configuration App (see "Setting up load management via the ABL Configuration App" on page 19).

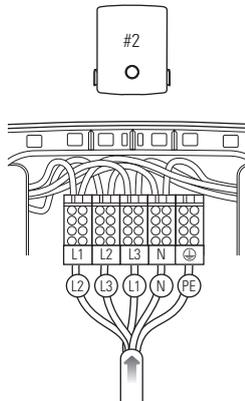
Phase rotation within a charging group

To avoid a phase imbalance within a charging group, the phase rotation must be adjusted according to the following diagram during the electrical installation of the Wallbox eM4 Twin and eM4 Single:

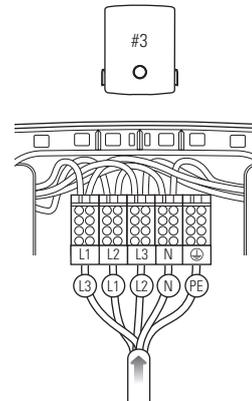
Wiring diagram
Wallbox 1, 4, 7 etc.



Wiring diagram
Wallbox 2, 5, 8 etc.



Wiring diagram
Wallbox 3, 6, 9 etc.



| | | | | | | | | | | | | | | | |
|----------------|----------------------|----|----|---|----|--------------------|----|----|---|----|--------------------|----|----|---|----|
| Wallbox | eM4 – 1 (Controller) | | | | | eM4 – 2 (Extender) | | | | | eM4 – 3 (Extender) | | | | |
| Terminal block | L1 | L2 | L3 | N | PE | L1 | L2 | L3 | N | PE | L1 | L2 | L3 | N | PE |
| Supply | L1 | L2 | L3 | N | PE | L2 | L3 | L1 | N | PE | L3 | L1 | L2 | N | PE |
| Wallbox | eM4 – 4 (Extender) | | | | | eM4 – 5 (Extender) | | | | | eM4 – 6 (Extender) | | | | |
| Terminal block | L1 | L2 | L3 | N | PE | L1 | L2 | L3 | N | PE | L1 | L2 | L3 | N | PE |
| Supply | L1 | L2 | L3 | N | PE | L2 | L3 | L1 | N | PE | L3 | L1 | L2 | N | PE |
| Wallbox | eM4 – 7 (Extender) | | | | | eM4 – 8 (Extender) | | | | | eM4 – 9 (Extender) | | | | |
| Terminal block | L1 | L2 | L3 | N | PE | L1 | L2 | L3 | N | PE | L1 | L2 | L3 | N | PE |
| Supply | L1 | L2 | L3 | N | PE | L2 | L3 | L1 | N | PE | L3 | L1 | L2 | N | PE |

...

NOTE

Phase rotation in a single-phase mains system

The connection diagram shown above applies to 3-phase mains systems. If you are using a single-phase mains system, the L1 supply cable must always be connected in each wallbox!

Detailed information can be found in the installation instructions for the Wallboxes eM4 Single and eM4 Twin (www.ablmobility.de/en > Support > Downloads > Operation manuals > Wallboxes).

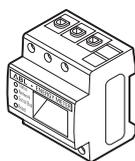
Electrical connection for direct measurement without current transformer

The ABL Energy Meter is a standard DIN rail module that must be installed on a DIN rail in a distribution box. Depending on the type of measurement, installation in the distribution board for the house supply cable (total current measurement) or in the sub-distribution board for the building (section current measurement) is recommended.

When connecting the individual phases directly to the ABL Energy Meter, it must be ensured, by fitting an upstream fuse, for example, that the maximum permitted current per phase is not exceeded.

You will need the following tools and components for the installation:

- ABL Energy Meter, 1 pc.



- Phillips screwdriver



- Side cutters



- Stripping tool



- Warning sticker



DANGER

Danger from electrical voltages

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

ATTENTION

Specifications for electrical installation

- The entire installation must be carried out by a qualified specialist electrical contractor!
- The electrical supply cable must be powered off during the entire installation.
- The connection to the power grid must only be made live for subsequently setting up the Energy Meter after installation is complete (see page 15 onwards).

ATTENTION

Use of a meter fuse or circuit breaker

The end user must be able to isolate the ABL Energy Meter from the power supply by means of a freely accessible meter fuse or an additional circuit-breaker.

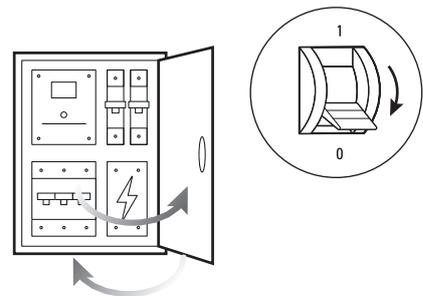
ATTENTION

Note on the correct assignment of the phases

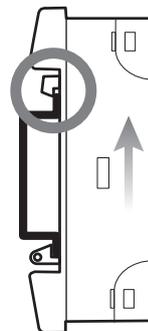
Make sure that the phases are assigned correctly throughout. Otherwise, the ABL Energy Meter will provide incorrect measured values.

Proceed as follows:

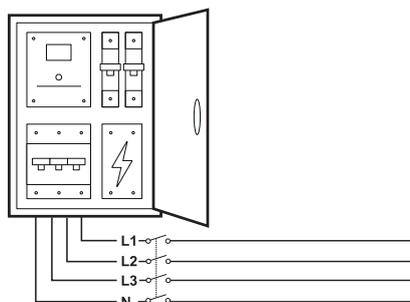
- 1 Power off the house supply cable upstream of the distribution board and secure it against being switched on again.



2 Install the Energy Meter on a DIN rail in the distribution board.



3 Locate the cables for the current measurement in the distribution board.

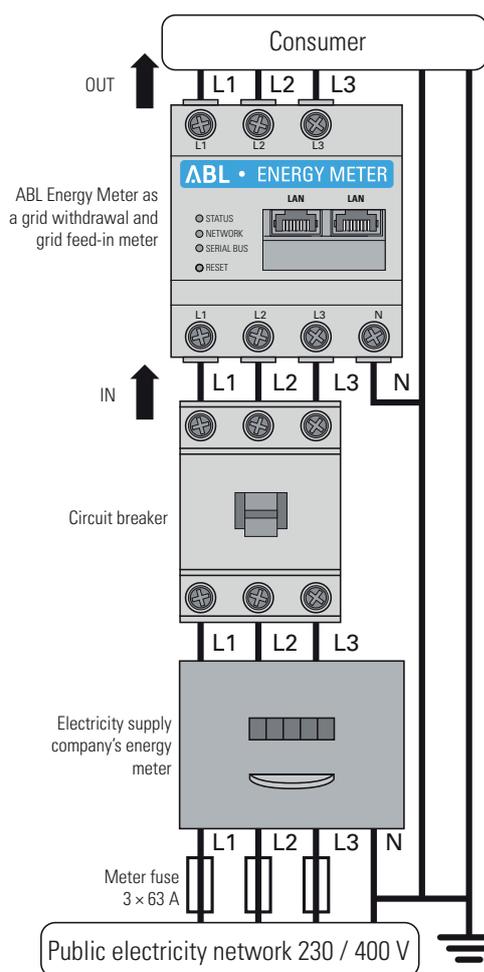


4 Connect the cables to the ABL Energy Meter.

- Pay attention to the permissible connection cross section and the tightening torque for the screw terminal (see "Technical specifications" on page 22).
- For a three phase power network, connect the outer conductors **L1**, **L2** and **L3** and the neutral conductor **N** to the ABL Energy Meter as shown in the connection diagram.
- For a single phase power network, connect the outer conductor **L1** and neutral conductor **N** to the ABL Energy Meter as shown in the connection diagram.

| Designation | Explanation |
|-------------|-----------------------------|
| L1, L2, L3 | Outer conductor |
| N | Neutral |
| OUT | Meter output, consumer side |
| IN | Meter input, mains side |

Direct measurement connection example



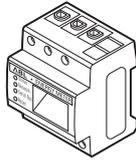
This completes the electrical connection for direct current measurement. The next step is to set up data communication with the Controller (see "Data cabling to the ABL Energy Meter" on page 15).

Electrical connection for indirect measurement with current transformers

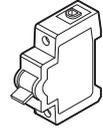
The Energy Meter must also be installed in a distribution box for indirect measurement via cable type current transformers. Depending on the position of the current measurement, you will need to use the distribution board for the house supply cable (total current measurement) or the sub-distribution board for the building (section current measurement). The distance between the Energy Meter and the current transformers is determined by the length of the connection cable permanently connected to the cable type current transformers.

You will need the following tools and components for the installation:

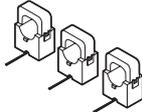
- ABL Energy Meter, 1 pc.



- Fuse 10/16 A, 3 pcs.



- Cable type current transformers, 3 pcs.



- Phillips screwdriver



ATTENTION

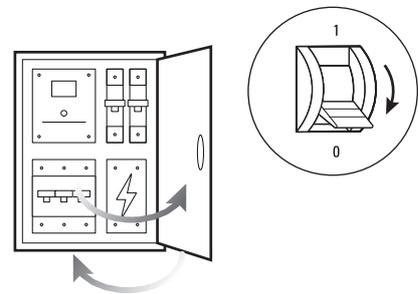
Specifications for connecting two lines in one terminal

Please observe the following specifications for the connection cables for current and voltage measurement:

- If the cross-sections of the two connection cables for current and voltage measurement differ (greater than $\pm 0.5 \text{ mm}^2$), you should clamp these cables together in a suitable double-wire end sleeve.
- It is not permitted to connect a stranded and a rigid cable together in one terminal.

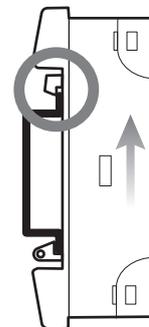
Proceed as follows:

- 1 Power off the house supply cable upstream of the distribution board and secure it against being switched on again.

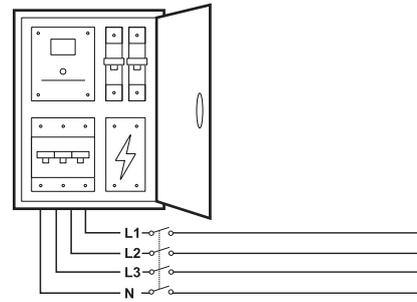


- 2 Install the Energy Meter on a DIN rail in the distribution board.

- The distance from the current transformers is determined by the connection cables of the transformers.



3 Locate the cables for the current measurement in the distribution board.



4 Lead the outer conductors L1, L2 and L3 through one current transformer each.

5 Connect a cable for the secondary current measurement to each current transformer at terminals k/s1 and I/s2.

- Pay attention to the permissible connection cross section of the ABL Energy Meter (see "Technical specifications" on page 22).

6 Connect the connecting cables for the current measurement to the ABL Energy Meter (see also box below).

- Pay attention to the permissible tightening torque for the screw terminals (see "Technical specifications" on page 22).

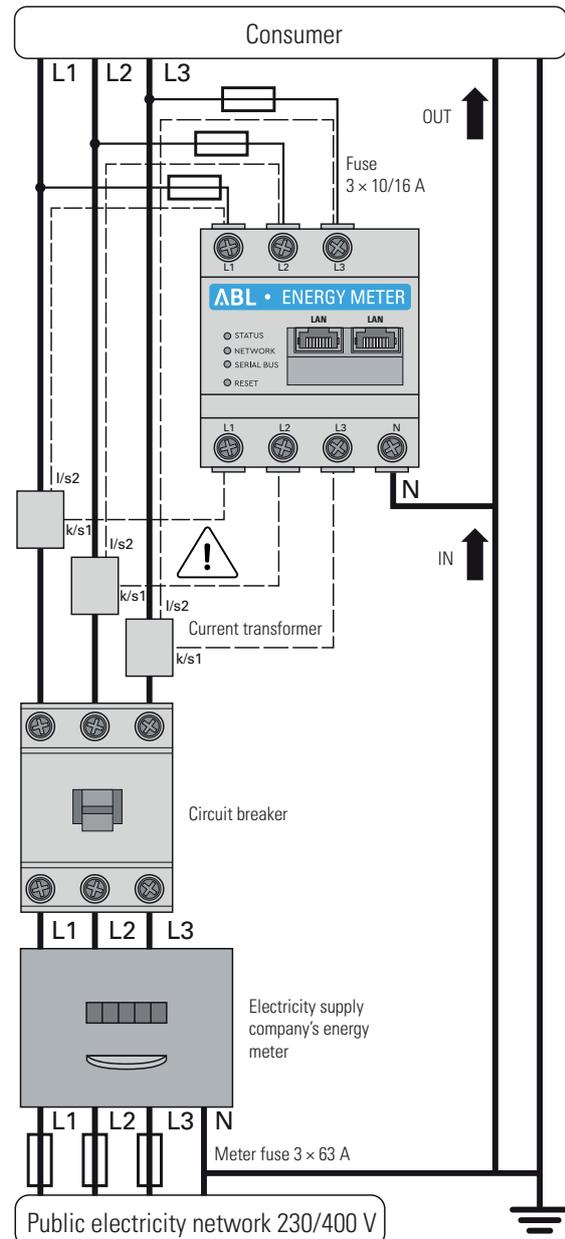
7 Connect the connecting cables for the voltage measurement to the ABL Energy Meter (see also box below).

- Pay attention to the permissible tightening torque for the screw terminals (see "Technical specifications" on page 22).

8 Connect the connecting cables for the voltage measurement to the outer conductors L1, L2 and L3.

| Designation | Explanation |
|-------------|-----------------------------|
| L1, L2, L3 | Outer conductor |
| N | Neutral |
| OUT | Meter output, consumer side |
| IN | Meter input, mains side |

Connection example for measurement with current transformers



! ATTENTION

Note on the correct assignment of the phases

Make sure that the phases are each assigned correctly. Otherwise, the ABL Energy Meter will provide incorrect measured values.

 **DANGER**

Danger of death by electric shock at the current transformer terminals

The ABL Energy Meter is supplied with two warning stickers which advise the user to read these instructions and which are intended to protect against electric shock and other hazards caused by high currents.

- Due to the type of connection, there is a mains voltage of 230 V present at conductors k/s1 and l/s2 of the current transformers.
- To prevent accidents, apply the warning stickers at this location on site.



 **ATTENTION**

Use of a meter fuse or circuit breaker

The end user must be able to isolate the ABL Energy Meter from the power supply by means of a freely accessible meter fuse or an additional circuit-breaker.

 **ATTENTION**

Setting the current transformer ratio

To measure the individual phases, the current transformer ratio must be set using the ABL Energy Meter web interface (see "Setting up the current transformers via the ABL Energy Meter web interface" on page 17) before setting up load management via the ABL Configuration App (see "Setting up load management via the ABL Configuration App" on page 19).

Data cabling to the ABL Energy Meter

After the mechanical and electrical installation, you must connect the ABL Energy Meter to the communication module of the Controller Wallbox eM4 Twin/Single via a LAN data line/Ethernet cable.

 **NOTE**

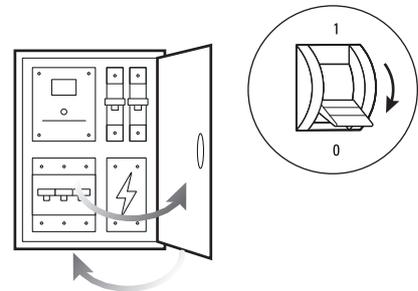
LAN connection via a router or switch

If data communication within the charging group is to be wired, all wallboxes must be connected via LAN cable to a central DHCP-capable router and/or a switch.

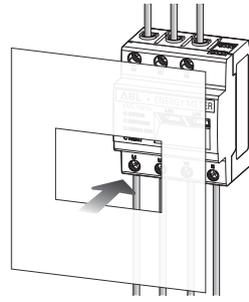
- In this case, the ABL Energy Meter must also be connected to this router/switch via a LAN cable.
- **When using cable type current transformers:** To set up the ABL Energy Meter via the web interface, a suitable computer must also be connected to these central routers/switches.

Proceed as follows:

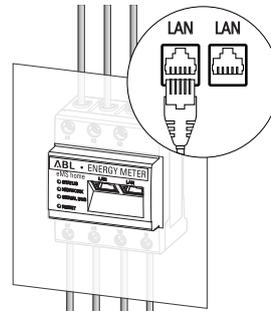
- 1 Ensure that the house supply cable upstream of the distribution board is powered off and secured against being switched on again.



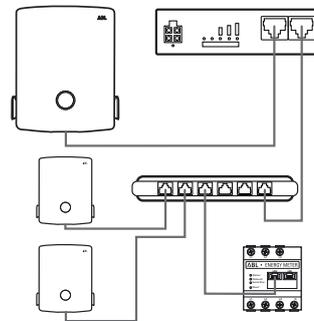
- 2 Cover the ABL Energy Meter with an electronics cover or the contact protection in the sub-distribution.



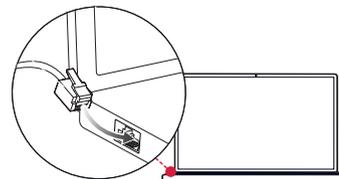
- 3 Connect a network cable to one of the LAN interfaces of the ABL Energy Meter.



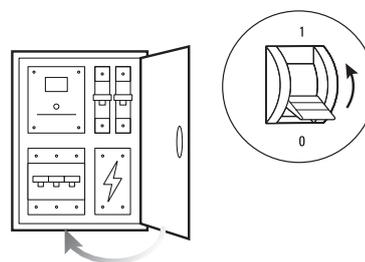
- 4 Connect the network cable to a router or switch to which the Controller wallbox (and other Extenders) is connected.



- 5 Connect a PC/laptop to the router or switch using an additional network cable.



- 6 Reconnect the house connection to the mains.
• The LEDs on the ABL Energy Meter light up during start-up.



You can then start setting up the ABL Energy Meter.

Setting up the ABL Energy Meter

The ABL Energy Meter is prepared ex works for load management of a charging group with ABL Wallboxes eM4 Single and eM4 Twin. The ABL Energy Meter is integrated into the charging group during installation and configuration of the wallboxes via the free **ABL Configuration App**, which is available as an application for mobile devices such as smartphones and tablets. You can download the app for the following operating systems on a mobile device:

| Platform | Operating system | Link |
|----------|--|--------------------------|
| Apple | iOS 15 or higher / iPadOS 15 or higher | Apple App Store |
| Android | Android 10 or higher | Google Play Store |

Alternatively, you can find more information under the following link:



www.ablmobility.de/en > Electrical contractors

Setting up the current transformers via the ABL Energy Meter web interface

For indirect current measurement via cable type current transformers, however, the transformer ratio of the current transformers must first be stored in the ABL Energy Meter. The ABL Energy Meter is set up via the web interface, which is optimised for the current version of the following web browsers:

- Google Chrome
- Mozilla Firefox
- Apple Safari
- Microsoft Edge

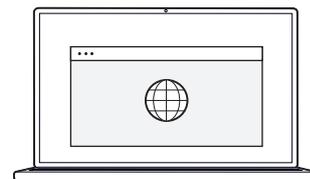
! NOTE

Direct measurement without current transformer

If you have connected the ABL Energy Meter for direct measurement, you do not need to make any changes via the web interface, and can start the setup directly via the ABL Configuration App (see "Setting up load management via the ABL Configuration App" on page 19).

Proceed as follows to set the current transformer ratio via the ABL Energy Meter web interface:

- 1 Start one of the above-mentioned web browsers on your PC/ laptop and enter the IP address of the ABL Energy Meter.



! NOTE

Determining the IP address in the network

If a DHCP server is active in the network, you can check in the configuration interface of the DHCP server which IP address is assigned to the MAC address of the ABL Energy Meter.

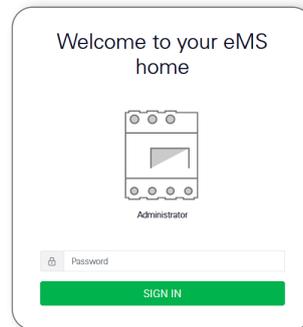
You will find the MAC address on the rating plate attached to the side of the ABL Energy Meter as well as on the rating plate included separately in the package (see on page 7). A DHCP server is integrated as standard in many common router models.

NOTE

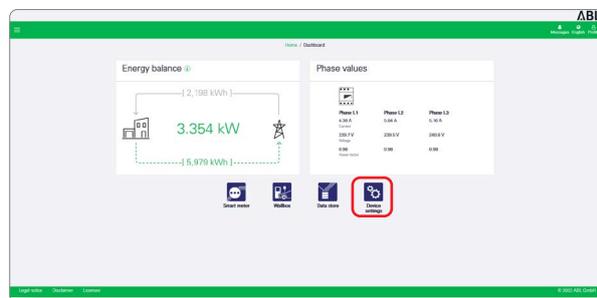
Automatic detection in home and workplace networks

On Windows computers, the UPnP service automatically detects the ABL Energy Meter on the same network and displays it in the network environment. This allows users to find the unit on the network even if they do not know the IP address. To be able to do this, your local network must be set to 'Home network' or 'Work network' but not to 'Public network'.

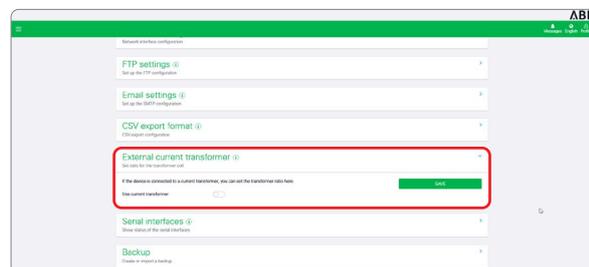
- 2 The login window will then appear in the browser: Enter the factory-set password here to log in to the ABL Energy Meter web interface.
 - You will find the password on the rating plate attached to the side of the ABL Energy Meter or the rating plate included in the package (see on page 7).



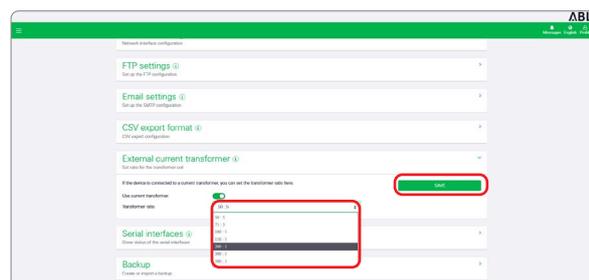
- 3 Click the **Device settings** option in the web interface.



- 4 Navigate to the **External current transformer** section and activate the **Use current transformer** option.



- 5 Use the **Transformer ratio** drop-down menu to select the appropriate value for the current transformer used and then click on the **SAVE** button.



The current transformer ratio is now set and you can close the web interface again.

Setting up load management via the ABL Configuration App

Load management is set up during the setup of your charging group via the ABL Configuration App. The following requirements must be met:

- You must have selected the Controller/Extender operating mode via the ABL Configuration App at the start of setup.
- You must have established a wireless connection between the ABL Configuration App and the Controller wallbox.
- You must have assigned a specific password to the Controller wallbox, which you can use to access the current configuration at any time.

NOTE

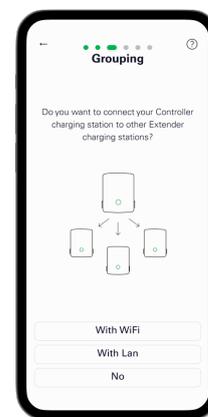
Instructions for setting up via the ABL Configuration App

The onboarding process is described in detail in the installation instructions for the Wallboxes eM4 Single and eM4 Twin in the "Setting up communication via the ABL Configuration App" section. You can find these installation instructions by navigating to **Support > Downloads > Operation manuals > Wallboxes** at www.ablmobility.de/en.

Proceed as follows to add the ABL Energy Meter to your charging group:

- 1 Open the **Grouping** screen and select the **With Lan** connection method.

→ On the following page, select the **Static Configuration** option, enter the IP addresses for the host and the wallbox and tap **Continue**.

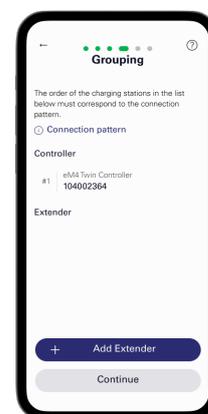


ATTENTION

Installation by a qualified specialist electrical contractor

The configuration of the charging group must always be carried out by a qualified specialist electrical contractor. You must therefore confirm in the following dialogue box that you are professionally trained and have knowledge of the relevant regulations of a specialist electrical contractor.

- 2 Add one or more Extender charging stations to the Controller in the **Grouping** screen and then tap **Continue**.



3 To integrate the ABL Energy Meter into the charging group, tap **Yes** on the **Add external energy meter** screen.

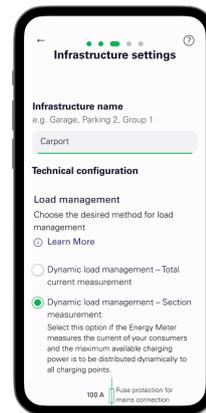
- The LAN network is then searched and the ABL Energy Meter is displayed in the selection list.



4 After you have tapped on the ABL Energy Meter in the selection list, the **Infrastructure settings** screen is displayed.

→ You can name the charging infrastructure here.

→ Depending on the current measurement principle (see page 9), select here whether dynamic load management is to be set up on the basis of total current measurement or section current measurement.



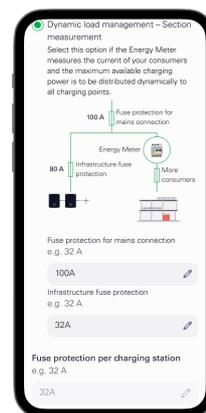
! NOTE

Displaying hidden content in the app

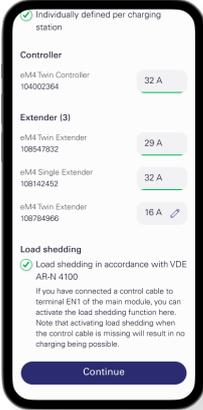
Due to the display size of mobile devices, not all information can be displayed in the **Infrastructure settings** screen: Scroll down the screen to display and access further information.

5 Regardless of the selected current measurement (Figure: Section current measurement), you can set further parameters for the charging infrastructure here:

- Fuse protection for mains connection
- Infrastructure fuse protection
- Shared or individual fuse protection per charging station
- Activation of load shedding in accordance with VDE AR-N 100



6 Once you have configured all the settings, tap **Continue** on the **Infrastructure settings** screen.



The ABL Energy Meter is thus integrated into the charging infrastructure and takes over the dynamic load management within the charging group based on the selected settings. You can now choose to exit the ABL Configuration App or change further settings via the Control Board if required.

Appendix

Technical specifications

General

| | |
|---|--|
| Interfaces | 2 × LAN (10 / 100 Mbit) 2 × RS485 (half-duplex, max. 115200 baud) |
| Class of protection | II |
| IP rating | IP2X |
| Connection cross section in line with EN 60204 | 10 – 25 mm ² * *Mechanical: 1.5–25 mm ² (e.g. for connecting external current transformers) |
| Tightening torque for screw terminals | 2.0 Nm |
| Weight | 0.3 kg |
| dimensions | 88 × 70 × 65 mm |
| Ambient temperature in operation | -25 to +45 °C |
| Ambient temperature during transportation / storage | -25 to +70°C |
| Relative humidity (non-condensing) | up to 75% annual average, non-condensing |
| Max. altitude during operation | 2000 m above sea level |

Mains power supply

| | |
|---------------------------------------|--|
| Starting current | < 25 mA |
| Supply voltage / frequency | 110 V AC ±10 % / 60 Hz ±5 % or 230 V AC ±10 % / 50 Hz ±5 % |
| Internal consumption P _{max} | 5.0 W |

Measuring current circuit for measurement category III

| | |
|--|-------------------|
| Limit current I _N / outer conductor | 63 A |
| Rated voltage | max. 230/400 V AC |
| Frequency range | 50/60 Hz ± 5 % |

Operation of the ABL Energy Meter at 55 °C ambient temperature

The following conditions apply to operation of the ABL Energy Meter at ambient temperatures up to 55 °C:

- The ABL Energy Meter must not be run continuously at ambient temperatures of 55 °C



Danger of death by electric shock or fire

Live components carry potentially fatal voltages.

- The Fuse protection must not exceed 32 A. External current transformers should be used for higher currents.
- The ABL Energy Meter must be connected with cables that are at least 10 mm² in cross section and no less than 1 m long.

Data cable recommendations

The following data cables are recommended for wiring up the bus interfaces in the Wallbox eM4:

| Designation | Cross section | Number |
|-------------|------------------------------------|------------------------|
| Cat5e | from at least 0.25 mm ² | 1 cable per connection |
| Cat6 | from at least 0.25 mm ² | between two wallboxes |

ATTENTION

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.
- The length of the data lines within the group installation must not exceed 100 m.

LED statuses

Status LED

| Colour | Status | Description |
|--------|------------------|---|
| Orange | Illuminated | ABL Energy Meter is starting |
| Green | Flashing slowly | |
| Green | Illuminated | ABL Energy Meter ready for operation |
| Green | Flashing rapidly | Firmware update in progress |
| Orange | Flashes 2x | Confirmation for resetting the network settings via the reset button or confirmation for resetting the device password (see "Functions of the reset button" on page 24) |
| Red | Illuminated | Restart ABL Energy Meter (see "Functions of the reset button" on page 24) or contact Customer Service (see "Contact" on page 2) |
| Red | Flashing | |

Network LED

| Colour | Status | Description |
|--------|------------------|-------------------------|
| – | Off | No connection |
| Green | Illuminated | LAN connection active |
| Green | Flashing slowly | Auto-accept mode active |
| Green | Flashing rapidly | Network activity |

Serial bus LED

| Colour | Status | Description |
|--------|------------------|---------------------------------------|
| – | Off | No activity in the bus |
| Green | Flashing rapidly | Data communication active |
| Green | Flashing slowly | Scanning active |
| Red | Illuminated | Error – Overcurrent |
| Orange | Flashing | Error - remote station not responding |

Functions of the reset button

Restart ABL Energy Meter

→ Use a pointed object to press and hold the reset button ① for just over 6 seconds.

The ABL Energy Meter then restarts.

Reset the password for the web interface

→ Press the reset button ① as follows:

→ 1 × long (between 3 and 5 seconds),

→ then within 1 s: 1 × short (0.5 second)

If the command was recognised correctly, the Status LED ② flashes orange twice. The password for the web interface is reset to the factory default (see **Rating plate** on page 7).

Reset network settings

→ Press the reset button ① as follows:

→ 1 × short (0.5 second),

→ then within 1 s: 1 × long (between 3 and 5 seconds).

Resetting the network settings activates DHCP, among other things. If the command was recognised correctly, the Status LED ② flashes orange twice.

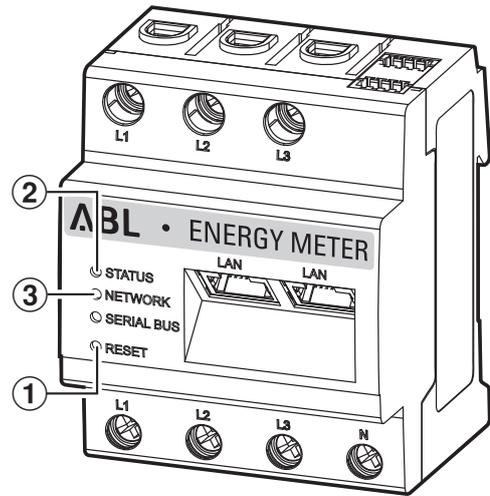
Activate auto-accept mode

→ Press the reset button ① as follows:

→ 1 × long (between 0.5 and 2 seconds),

→ 1 × short (0.5 second).

If the command was recognised correctly, the Status LED ② flashes orange twice. The network LED ③ then flashes green once: Auto-accept mode is now active.



Licences

This product also contains open source software that was developed by third parties. This includes the GPL and LGPL licenses.

The licence texts containing the associated information can be found on the ABL Energy Meter web interface in the footer under **Licenses**.

Error codes

Some apps display error codes in the front end for warning or error messages. Based on these error codes, you can find further information on the type of malfunction from the following tables.

| Error code | Error description and remedy |
|------------|---|
| 100 | The backup could not be imported. Please repeat the process. |
| 101 | The backup could not be created. Please repeat the process. |
| 102 | The backup could not be created. Please repeat the process. |
| 103 | The backup could not be imported. Please check the backup used and repeat the process. |
| 104 | The backup could not be imported. Please check the backup used and repeat the process. |
| 105 | The backup could not be imported. Please check the backup used and repeat the process. |
| 106 | The backup could not be imported. Please check the backup and password used. Then repeat the process. |
| 107 | The firmware upgrade could not be imported. Please check the update used and repeat the process. |

| Error code | Error description and remedy |
|------------|--|
| 108 | The system is in safe mode. Please import a valid backup or reset the device to the factory settings. |
| 109 | The time could not be synchronised successfully. To do this, check the NTP server, the time zone and your Internet connection under Device settings. |
| 110 | The firmware could not be imported, an internal error has occurred. |
| 111 | The firmware is not compatible with this device. |
| 112 | The firmware is not compatible with this product. |
| 113 | The firmware signature is incorrect. |
| 114 | The signature could not be verified. |

Error codes – Web application

| Error code | Error description and remedy |
|------------|---|
| 500 | To protect against data loss, the device is in safe mode and no more data will be written. <ul style="list-style-type: none"> • Please contact Customer Service. |

Disposal advice



The crossed out trash can symbol indicates that electrical and electronic devices including accessories must be disposed of separately from household waste.

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.

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