MaxiCharger DH480

User Manual

Version 1.0

CE Model

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1. Using This Manual

This manual describes the installation and use of the MaxiCharger DH480. Prior to installation, read through this manual to become familiar with the instructions of this charging station to ensure a successful installation and smooth operations.

1.1 Signal Word

DANGER

Indicates an imminently hazardous situation with a high risk level which, if the danger is not avoided, will cause death or serious injury.

WARNING

Indicates a potentially hazardous situation with moderate risk level which, if the warning is not obeyed, can cause death or serious injury.

CAUTION

Indicates a potentially hazardous situation with a medium risk level which, if the caution is not obeyed, may cause minor or moderate injury or damage to the equipment.

ESD PROTECTION AREA

Indicates certain electronic components that are sensitive to electrostatic discharge and must be protected to prevent damage.

NOTICE

Provides helpful information such as additional explanations, tips, and comments.

1.2 Target Group

This documentation is intended for:

- Owner of the Charging Station (see *2.2 Owner Responsibilities*)
- Installation Engineer (see *2.3 Installation Engineer Qualifications*)

1.3 Revision History

Version	Date	Descriptions
V1.0	2025.02	Initial version

1.4 Terminology

Term	Definition
AC	Alternating current
CCS	Combined charging system, a standard charging method for electric vehicles
CCU	Charging control unit: a control unit used to communicate with the BMS (Battery Management System) and control the power delivery to the EV
DC	Direct current
ECU	Equipment control unit, a control unit used to detect equipment status and control the operation of equipment.
EV	Electric vehicle
MCB	Miniature circuit breaker
MCCB	Molded case circuit breaker
OCPP	Open charge point protocol, open standard for communication with charge stations
RBU	Routing business unit, used for communication control and provides communication function including 4G/5G, Wi-Fi, and Ethernet.
RCD	Residual current device; a device that breaks an electrical circuit when it detects a current leakage

Term	Definition
RFID	Radio-frequency identification; a method of charging authentication
SPD	Surge protective device
TCU	Transaction control unit; intelligent hardware to handle the human-machine interface, metering, transaction, and communication with back office

1.5 Access to Public Documents

Customers can scan the QR code on the main screen of the charging station to access public documents, including the equipment's manuals.

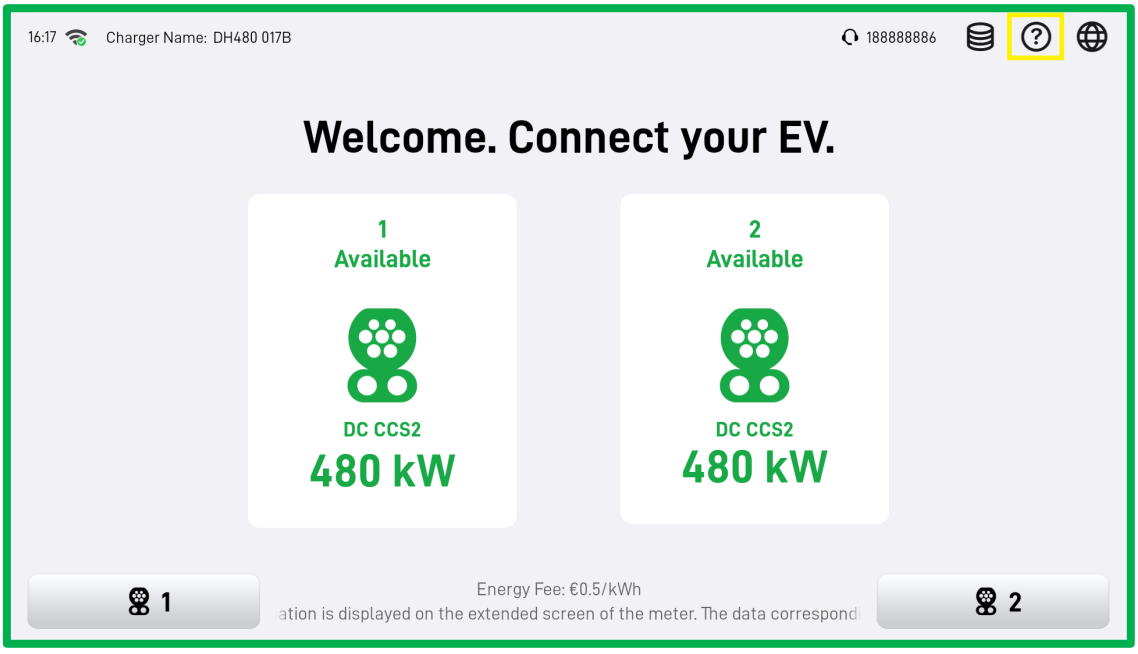


Figure 1-1 User Manual Access Screen (1)

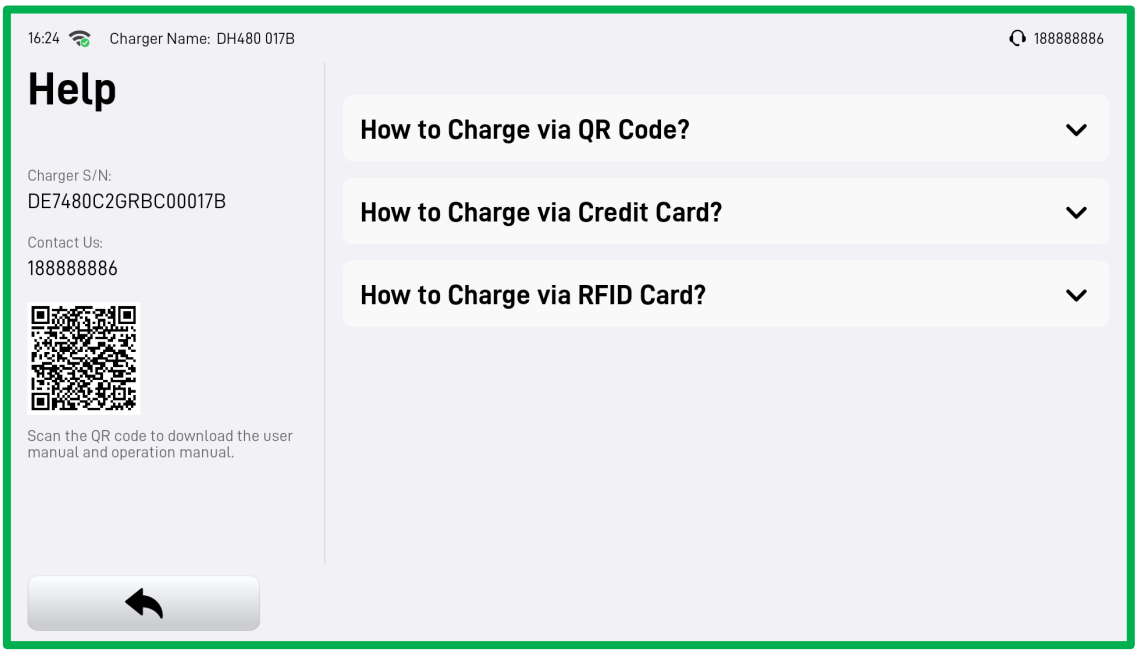


Figure 1-2 User Manual Access Screen (2)

2. Safety

The safety messages herein cover situations of which Autel is aware. Autel cannot know, evaluate or advise you as to all of the possible hazards. You must be certain that any condition or service procedure encountered does not jeopardize your personal safety.

- Preview the standard operating procedures and ensure that local building and electrical codes are reviewed before installing the charging station.
- Read the manual before installing or using the charging station.
- Do not install or use the charging station if the enclosure is broken, cracked, open, or has any other indication of damage.
- The information provided in this manual in no way exempts the user of responsibility to follow all applicable codes or safety standards.
- This document provides instructions for the charging station and should not be used for any other product. Before installation or use of this equipment, review this manual carefully and consult with a licensed contractor, licensed electrician or trained installation expert to ensure compliance with local building codes and safety standards.

2.1 Safety Warnings

- Ensure there is no voltage on the AC input cables during the complete installation procedure.
- Keep unqualified personnel at a safe distance during installation.
- All electrical wires used in the installation must comply with local rules to meet the rated current and voltage demand.
- Ensure the load capacity of the grid is in accordance with the charging station.
- Ensure the charging station is connected to a grounded, metal, permanent wiring system. Otherwise, an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment grounding terminal or lead on the product.
- Ensure the connections to the charging station comply with all applicable local rules.
- Ensure the wiring inside the charging station is protected from external factors. The cabinet doors should open and close freely without obstructing the wiring.
- Ensure there is no damage to the gasket that may cause water intrusion.
- Protect the charging station with safety devices and measures that the local rules specify.
- Installation personnel must have the correct protective equipment such as protective clothing, safety gloves, safety shoes, and safety glasses.

2.2 Owner Responsibilities

The owner runs the charging station for commercial or business use or has authorized a third party to use it. The owner should protect the user, other employees or third parties when the charging station is in use. The owner bears the responsibilities as follows:

- Know and obey the local codes and ordinances.
- Ensure all employees and third parties are qualified to operate the charging station.
- Ensure the charging station has installed the protective devices.
- Ensure all the protective devices are installed after installation or maintenance.
- Ensure the space around the charging station is sufficient to carry out installation or maintenance work.
- Ensure there is a plan in place in case of an emergency.
- Ensure there are no safety hazards on the site.
- Have a site operator available who undertakes the safe operation of the charging station and all the coordination of work if the owner takes no part in the work.
- Ensure the installation engineer follows the local codes and ordinances, the installation instructions, as well as the specifications of the charging station.

2.3 Installation Engineer Qualifications

- Fully understands the equipment and its safe installation procedures.
- Qualified according to local regulations to carry out the installation work.
- Able to follow all the local regulations and this manual to complete the installation of the charging station.

2.4 Usage Instructions

Do not operate the charging station and immediately contact the manufacturer if any of the following situation arises:

- Damage on the enclosure, charging cable or charging handle
- Lightning has struck the charging station
- Fire or flames at or near the charging station
- Any sign of water damage on the charging station

2.5 Usage Environment

The recommended usage environment during the warranty period is as follows:

- Avoid use in marine environments or on land near strong pollution sources, and in environments with only simple shelter. Otherwise, it may easily lead to product corrosion, water ingress and other problems, causing module failure. The resulting functional abnormalities or component damage are not covered by the warranty. Pollution sources refer to areas within the following radius:
  - 0.5 kilometers from salt water (e.g. ocean).
  - 3 kilometers away from heavy pollution sources such as metallurgy, coal mines, and thermal power plants.
  - 2 kilometers away from medium pollution sources such as chemical industry, rubber, electroplating and so on.
  - 1 kilometer away from light pollution sources such as food, leather, and heating boilers.
- For applications in offshore environments, the module shell may be subject to spot corrosion or the life of the entire machine may be shortened, so you need to choose carefully. Please consult the relevant service department for details. The offshore range value is an area within the following radius: 0.5 kilometers to 3.7 kilometers from salt water (such as the ocean).

2.6 Signs on the Charging Station

Symbol	Risk Description
	Hazardous voltage that gives risk of electrocution
	Ground/Earth connection

2.7 Disposal Instructions

Potential hazardous substances of the charging station can have a negative impact on the environment and human health if the waste is not handled properly. Dispose any waste as needed to protect the environment and promote the reuse and recycling of the materials.

- Obey the local rules when discarding parts, packaging materials or the charging station.
- Discard electrical and electronic equipment separately in compliance with the WEEE-2012/19/EU Directive on waste of electrical and electronic equipment.
- Do not mix or dispose the charging station with the household waste.

2.8 Cyber Security

NOTICE

This section is applicable to the Ethernet and Wi-Fi connection.

The charging station can use a network interface for connection and information and data communication. The owner bears the responsibility of a secure connection between the charging station and the owner's network or any other networks.

Appropriate measures shall be taken by the owner to shield the charging station, the network, the system, and the interface from any security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information. These measures may include firewall building, authentication methods, data encryption, and anti-virus programs installation, etc.

Autel is not liable for damages and/or losses pertaining to the security breaches described above.

3. General Introduction

This charging station is designed to charge an electric vehicle (hereinafter called EV). The charging station provides you with safe, reliable, fast, and smart charging solutions.

Intended Use

This charging station is intended for the DC charging of EVs. It is intended for both indoor and outdoor use.

- Fleet
- Highway
- Commercial Parking
- Others

NOTICE

- When operating charging stations without a cable management system (CMS) and the charging cables are longer than 7.5 meters, use cable management devices such as cable reels and cable bridges to prevent cable tangling, wear, or tripping.
- The images and illustrations depicted in this manual may differ slightly from the actual product.

DANGER

- The equipment must be operated as described in this manual or other related documents released by Autel. Failure to comply may result in human injury and/or damage to the property.
- Use the equipment only as intended.
- For the connection between the equipment and electric vehicle, no additional cables are required. A charging cord shall not be altered to extend or divide the cable length.
- Adaptors or conversion adapters are not allowed to be used.
- Cord extension sets are not allowed to be used.
- The use of Y-cables or similar devices is not permitted.
- National application guidelines and specifications for charging stations must be taken into account.

ESD PROTECTION AREA

The equipment contains components and assemblies that are susceptible to electrostatic discharge (ESD). Appropriate ESD measures should be taken to protect the electronics during any work on the equipment:

- Wear a grounding bracelet and ground it at one of the potential equalisation points on the charging station, e.g. on the doors.
- If the gloves are used, they must be ESD compliant.

3.1 Type Plate

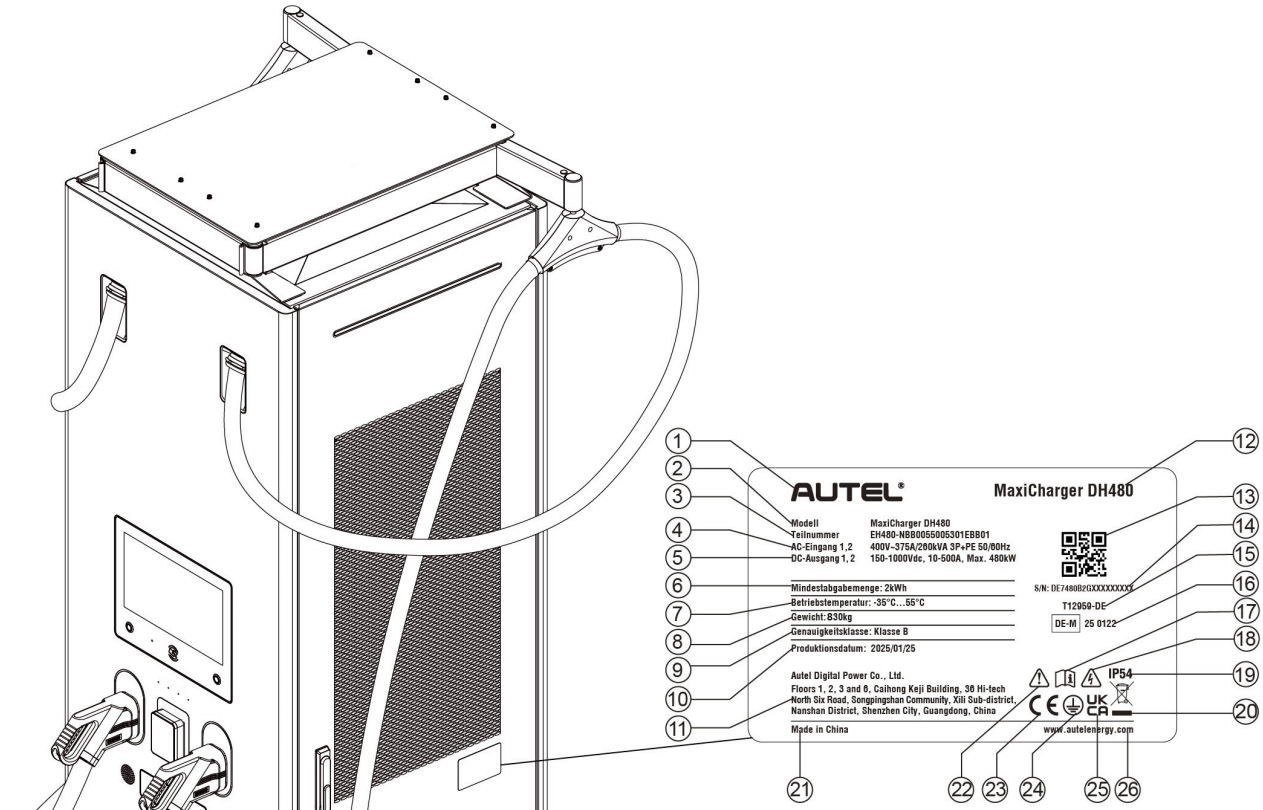


Figure 3-1 Type Plate

1. Manufacturer
2. Type Code
3. Part Number
4. Input Information
5. Output Information
6. Minimum Measured Energy Value
7. Operating Temperature
8. Weight
9. Accuracy Class
10. Production Date
11. Manufacturer Address
12. Product Series
13. Serial Number (QR code)
14. Serial Number (plain text)
15. Type Examination Certificate Number
16. Metrology Marking
17. Instruction Manual
18. Dangerous Voltage with Risk of Electric Shock
19. IP Protection Class
20. Waste from Electrical and Electronic Equipment
21. Country of Manufacture
22. General Risk
23. CE Marking
24. Protection Class 1
25. UK Conformity Tested
26. Manufacturer Website

3.2 Product Overview

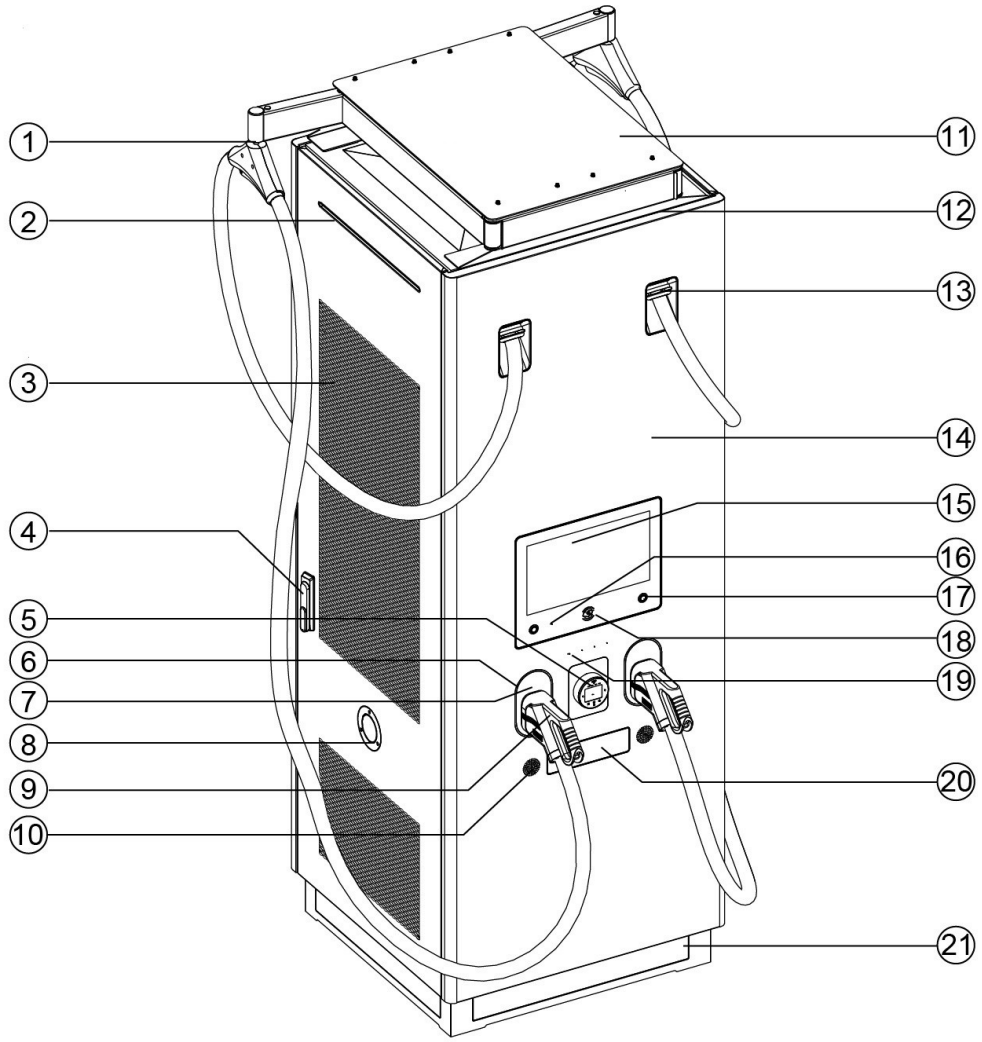


Figure 3-2 Product Overview (Outside)

1. CMS
2. LED Indicator (Refer to *Table 3-1*)
3. Vent
4. Handle Lock
5. POS Device
6. Socket Indicator
7. Socket
8. Emergency Stop Button
9. Charging Handle
10. Loudspeaker
11. Antenna
12. Main Cabinet
13. Waterproof Cable Fixing Connector
14. Front Door
15. Touchscreen
16. Ambient Light Sensor
17. Operation Button
18. RFID Reader
19. Microphone
20. Meter
21. Base

NOTICE

Autel can deliver the charging station with different payment terminals. The available options vary depending on the region of the installation. Consult Autel's customer service to obtain more information about the different payment options.

Table 3-1 Indicator Descriptions

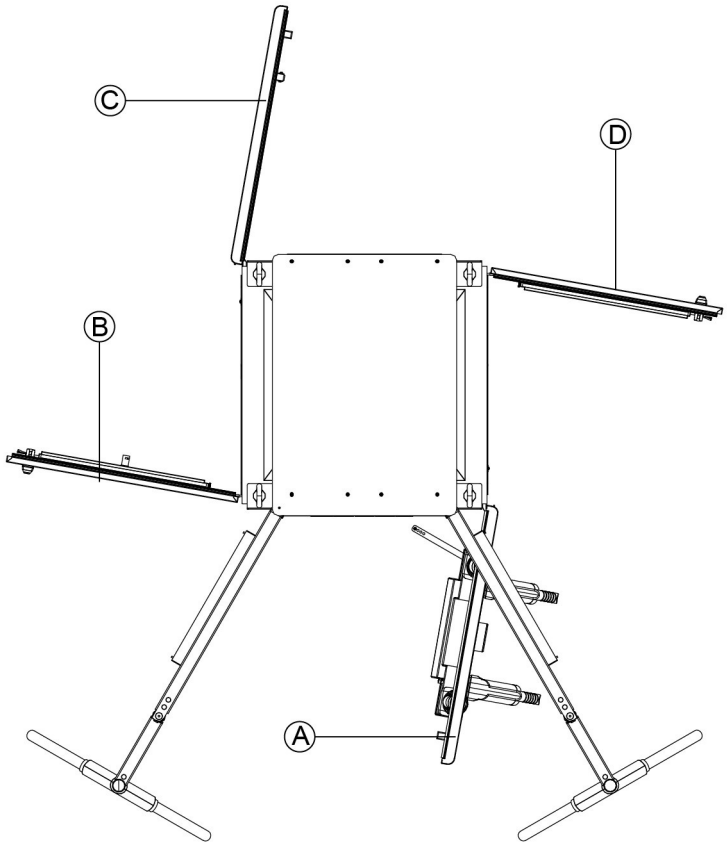
Charging Status	Color		Description
	Top Indicator	Socket Indicator	
Standby Mode	Solid Green	Solid Green	A charging handle is available.
EV Connected	Solid Blue	Solid Blue	An EV is connected to the charging station.
Charging	Breathing Blue	Breathing Blue	Indicates the charging progress.
Charging Completed	Solid Blue	Solid Blue	An EV is fully charged or has stopped charging. The charging handle is still connected to the EV.
Reservation	Solid Cyan	Solid Cyan	The charging station is reserved.
Error	Solid Red	Solid Red	An error has occurred.

Table 3-2 Description of the Four Doors of the Charging Station

No.	Description
A	Front Door
B	Left Door (with the emergency button)
C	Rear Door
D	Right Door

WARNING

- Except for carrying out maintenance work, it is not recommended to open door A and door C.
- Ensure all the doors are locked before operating the charging station.



Top View

Figure 3-3 Four Doors of the Charging Station

3.3 Principle Diagram

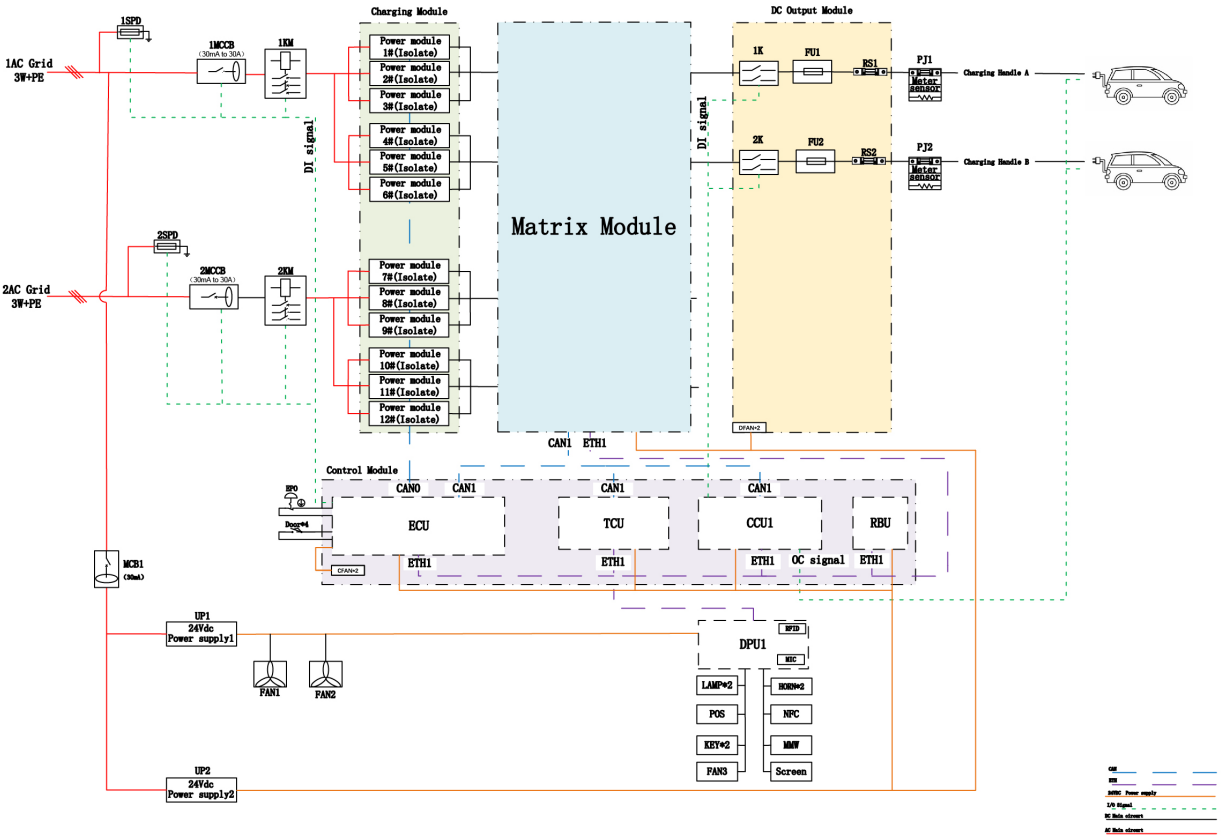


Figure 3-4 Principle Diagram

3.4 Cloud Service Portal

Autel provides a set of cloud-based tools to commission, monitor, and troubleshoot the charging station. For more information, contact your Autel e-Mobility representative.

3.5 Interface

The operator cannot change any parameters, including legal and non-legal parameters. If the operator wishes to change a non-legal parameter, such as displaying advertisements on the home screen, the operator must contact Autel to discuss the feasibility of the proposed changes. If the proposed changes are deemed reasonable and feasible by the operator, Autel will implement the changes via wireless communication between the backend and the charge controller. However, neither Autel nor the operator can change legally relevant parameters.

4. Operation

4.1 Emergency Situations

If there is an emergency, push the **emergency stop button**. Then the charging station will stop all charge sessions and the touchscreen will display the following message:

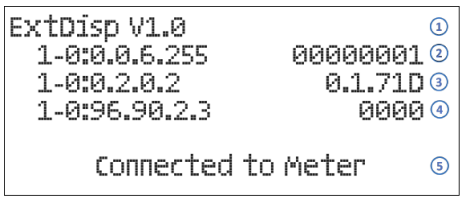
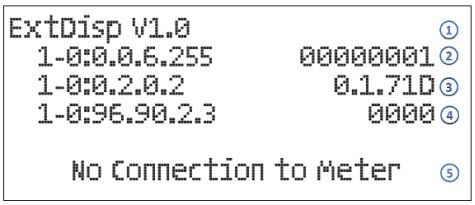
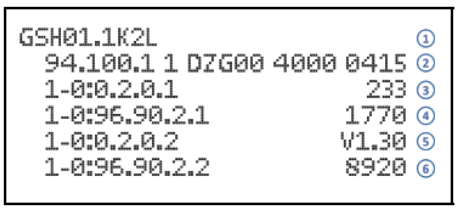
Figure 4-1 Fault Message Screen (not legal relevant)

Reset the charging station after an emergency (making sure that the situation is safe again first): Turn the emergency button clockwise to release it. The charging station will start, the message will disappear from the touchscreen, and the charging station will resume normal operation.

4.2 Meter Display

The external display of the meter can be found at door with charging handle(s), and the displays of different status are as follows:

Table 4-1 Meter Display Descriptions

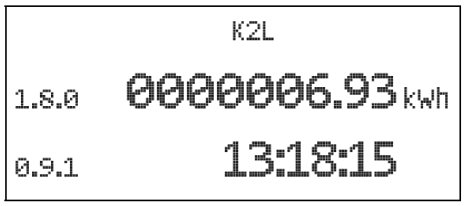
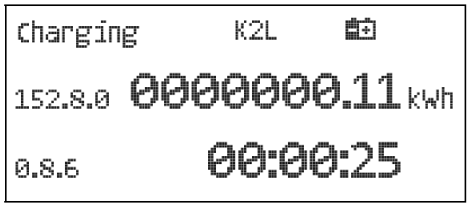
<table>
<tr><th>Status</th><th>Display/Figure</th><th>Description</th></tr>
<tr><td>Meter Connected</td><td> 
</td><td>
<table>
<tr><th>Line</th><th>OBIS</th><th>Information</th></tr>
<tr><td>1</td><td></td><td>Type</td></tr>
<tr><td>2</td><td>1-0:0.0.6.255</td><td>Reserved for future use</td></tr>
<tr><td>3</td><td>1-0:0.2.0.2</td><td>Firmware version</td></tr>
<tr><td>4</td><td>1-0:96.90.2.3</td><td>Firmware checksum</td></tr>
<tr><td>5</td><td></td><td>Pairing status</td></tr>
</table>
</td></tr>
<tr><td>Meter Not Connected</td><td> 
</td><td>
<table>
<tr><th>Line</th><th>OBIS</th><th>Information</th></tr>
<tr><td>1</td><td></td><td>Type</td></tr>
<tr><td>2</td><td>1-0:0.0.6.255</td><td>Reserved for future use</td></tr>
<tr><td>3</td><td>1-0:0.2.0.2</td><td>Firmware version</td></tr>
<tr><td>4</td><td>1-0:96.90.2.3</td><td>Firmware checksum</td></tr>
<tr><td>5</td><td></td><td>Pairing status</td></tr>
</table>
</td></tr>
<tr><td>Initialisation Display Meter</td><td> 
</td><td>
<table>
<tr><th>Line</th><th>OBIS</th><th>Information</th></tr>
<tr><td>1</td><td></td><td>Type designation of the meter</td></tr>
<tr><td>2</td><td>94.100.1</td><td>Meter-ID according to DIN 43863-5 [3]</td></tr>
<tr><td>3</td><td>1-0:0.2.0.1</td><td>Application Firmware Version</td></tr>
<tr><td>4</td><td>1-0:96.90.2.1</td><td>Application Firmware Checksum</td></tr>
<tr><td>5</td><td>1-0:0.2.0.2</td><td>Metering Firmware Version</td></tr>
<tr><td>6</td><td>1-0:96.90.2.2</td><td>Metering Firmware Checksum</td></tr>
</table>
</td></tr>
<tr><td>Meter Public Key Display</td><td>
</td><td>The Meter Public Key Display shows the following information from the connected GSH01:

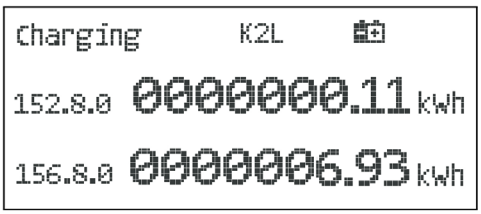
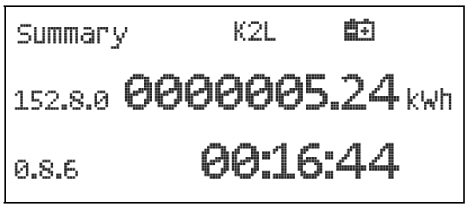
1. Meter-ID according to DIN 43863-5 [3]

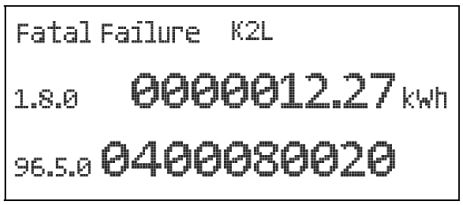
2. Public Key as QR-Code

This display is shown once per turn for 5 seconds in the Normal Operation Display, Charging Display and the Charging Summary Display.

By short presses on either user button, this display can be called up in the above mentioned displays.</td></tr>
</table>

Normal Operation Display		– During the *Normal Operation Display*, all meter readings obtained from the meter in general outside of a charging process as well as general information of the meter can be displayed as shown in the figure. – During the scrolling display, the *Meter Public Key Display* is displayed once per cycle for 5 seconds. – The values to be displayed are rotated according to a configurable interval. The standard setting is 6 seconds. – All billing relevant values are displayed in the upper line and all informative values in the lower line. – The registers in the bottom line (informative registers) can be altered by the user at any time. – The general information of the meter is displayed with symbols in the headline. An explanation of the displayed symbols can be found in section *4.3*. – Starting a charging session during the *Normal Operation Display* results in a transition to the *Charging Display*. – If a fatal error occurs within this state, the display will enter the *Fatal Error Display*.
Charging Display		– The backlight remains on during charging. – All billing relevant values are displayed in the upper line and all informative values in the lower line as illustrated in the figure. – The values are rotated by the configured time period. – During the scrolling display, the *Meter Public Key Display* is displayed periodically for 5 seconds. – Charging is displayed in the left half of the headline. All other shown symbols are described in more detail in section *4.3*. – The registers in the bottom line (informative registers) can be altered by the user at any time.

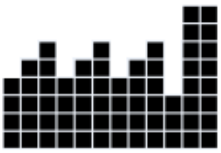
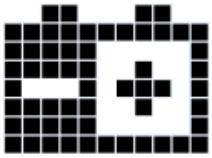
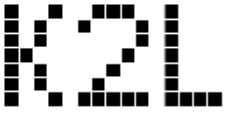
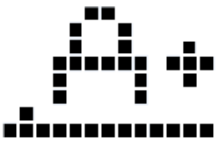
		– If a fatal error occurs within this state, the display will enter the *Fatal Error Display*. – After stopping the charging session the display transits into the *Charging Summary Display*.
		The data following 152.8.0 represents the energy for each charging order, while the data following 156.8.0 represents the compensated energy recorded in the OCMF data.
Charging Summary Display		– The backlight remains on during the *Charging Summary Display*. – The *Charging Summary Display* is a summary of the charging process that has just been carried out. – All meter values necessary for a complete billing procedure should be shown to the customer as shown in the figure. – All values are also displayed in rotation. – All billing relevant values are shown in the upper line of the display whereas all informative values are displayed in the lower line. – "Summary" is displayed in the left half of the headline. – During the scrolling display, the *Meter Public Key Display* is displayed periodically for 5 seconds. – All other symbols are described in section *4.3* in more detail. – The display will repeat the rotation 18 times; one iteration takes 10 seconds. – All listed registers are written to the meter during production. – The registers in the bottom line (informative registers) can be altered by the user at any time. – If a fatal error occurs within this state, the display will enter the *Fatal Error Display*.

Fatal Error Display		If the meter detects a fatal failure, the external display ED-DC-01 will show Fatal Failure in its headline. The other displays are not affected as long as the meter is providing the data.

4.3 Meter Display Symbols

During *Normal Operation Display*, *Charging Display* and *Charging Summary Display* some symbols can be visible. These symbols extend the displayed information by meter status information flags. The following symbols are possible:

Table 4-2 Display Symbols

Status	Symbol	Description
Production Mode		Indicates a currently active production mode of the meter. This Mode is only available during production of the meter. The symbol remains visible as long as the production mode is active.
Assembling Mode		Indicates a currently active assembling mode of the meter. This mode is only available during assembly of the charging point. The symbol remains visible as long as the assembling mode is active.
Charging		Indicates charging, either during active charging or while viewing the summary.
Measurement Mode		Indicate the currently active line loss energy measurement mode of the Meter is K2L, which means that the meter calculates the line losses according to a given line impedance.
Start Current Reached		Indicate that the measured current reached the starting threshold. At this point the meters is within the measurement range and starts measuring.

4.4 Display Descriptions

General charging procedure:

1. Park an EV with the charging port within reach of the charging handle.
2. Plug in the vehicle.
3. Start the charge session.
4. Stop the charge session.

4.4.1 Standby Screen (not legal relevant)

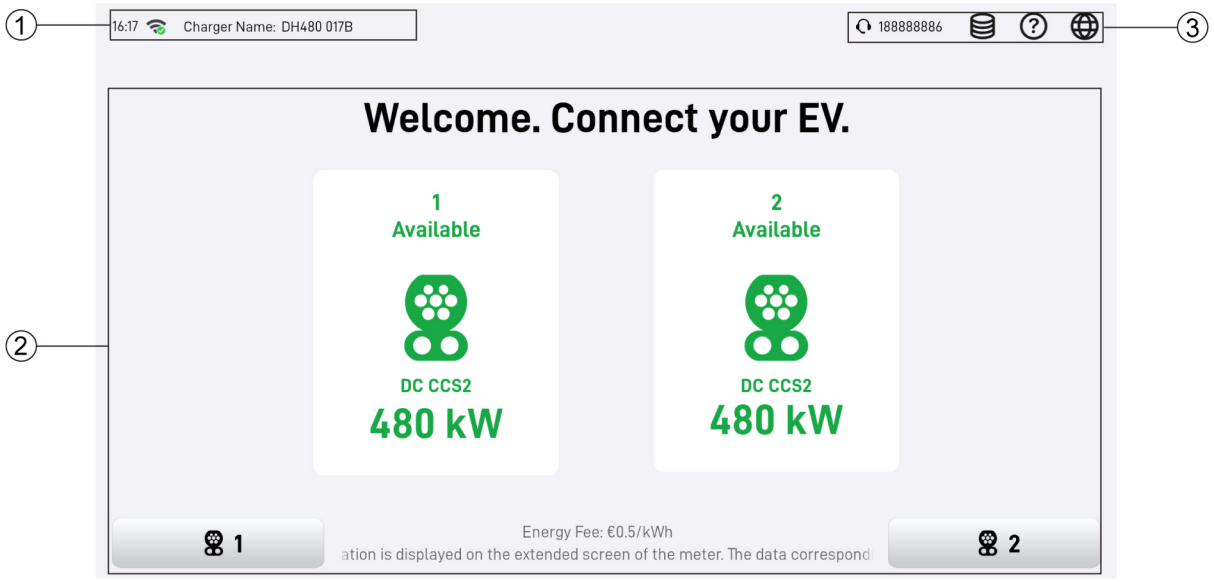


Figure 4-2 Standby Screen

1. Time, Internet icon, and charging station name — an x appearing at the lower corner of the Internet icon indicates the charging station is not connected to the Internet
2. Standby screen
3. Service hotline, pricing details, user guide, and language options

After a charging handle is successfully connected to the EV, the charging station can automatically recognize the charging handle and the corresponding charging handle's Authorization screen will appear.

If no operation is performed for a period of time on the Authorization screen, the Standby screen will appear. Manually select the charging handle on the touchscreen to exit the standby screen.

NOTICE

The displayed power may vary depending on the different configuration of the charging station.

4.4.2 Authorization Screen (not legal relevant)

CAUTION

- Before starting a charge session, observe the screen for any abnormality, such as an error message. Check the surroundings and the charging station for any abnormality or damage as well.
- **DO NOT** operate the charging station if the screen displays an error message. Contact Autel technical support.

When the Authorization screen appears, you can use any of the following methods to start a charge session:

- RFID card
- Credit card (optional)
- Scan the QR code on the screen
- Plug & Charge (supports the ISO 15118 PnC function)/Autocharge

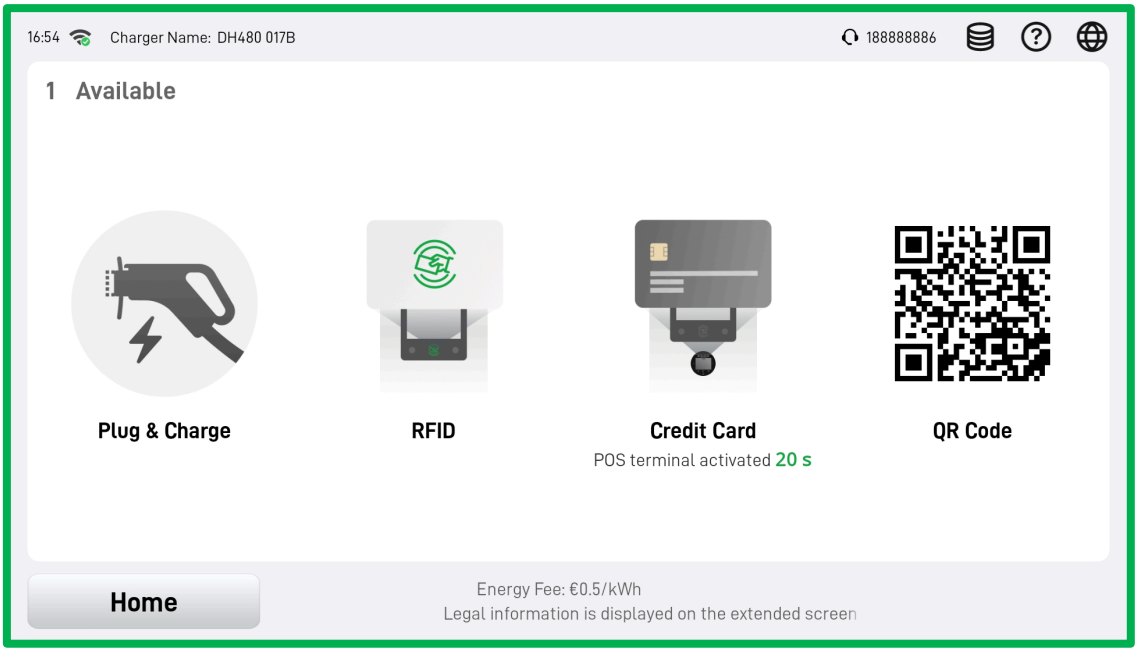


Figure 4-3 Authorization Screen

NOTICE

Do not swipe multiple credit cards/RFID cards stacked together. Use only one credit card/RFID card for the swiping operation. Stacking multiple cards may cause charging initiation failure.

4.4.3 Start Charging Screen (not legal relevant)

The charging station enters communication with the EV following a successful authorization. The charge session will start automatically after passing safety tests.

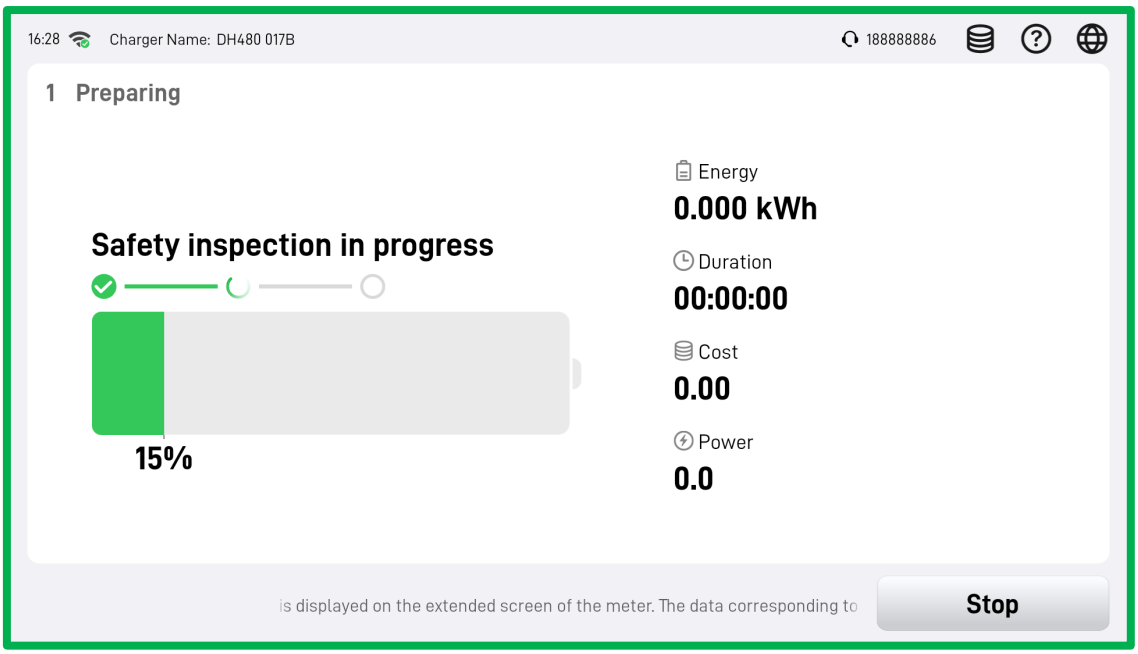


Figure 4-4 Connecting Screen

4.4.4 Charging Screen (not legal relevant)

Information about the charging process, energy, charging duration, cost, and power will appear on the Charging screen.

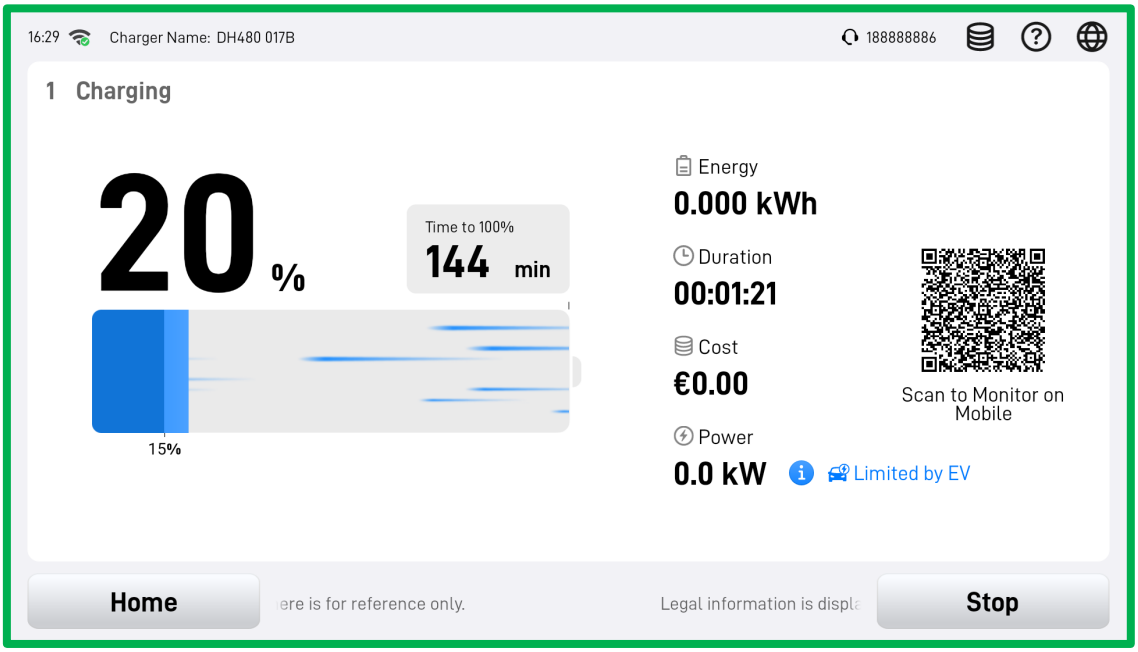


Figure 4-5 Charging Screen

4.4.5 Stop Charging Screen (not legal relevant)

The way to stop charging will vary depending on the way to start charging:

- Credit Card/Plug & Charge/Autocharge: Tap the **Stop** button on the touchscreen.
- QR Code: Tap the **Stop** button on the Charging screen of the Autel Charge app.
- RFID Card: Tap the RFID card on the card reader again to finish charging.

NOTICE

The charge session stops automatically when the battery is full.

Once the charging stops, the transaction details will appear on the screen. If needed, click the **E-Mail** icon on the screen and enter your email address to obtain the charging order details, the public key, and OCMF data.

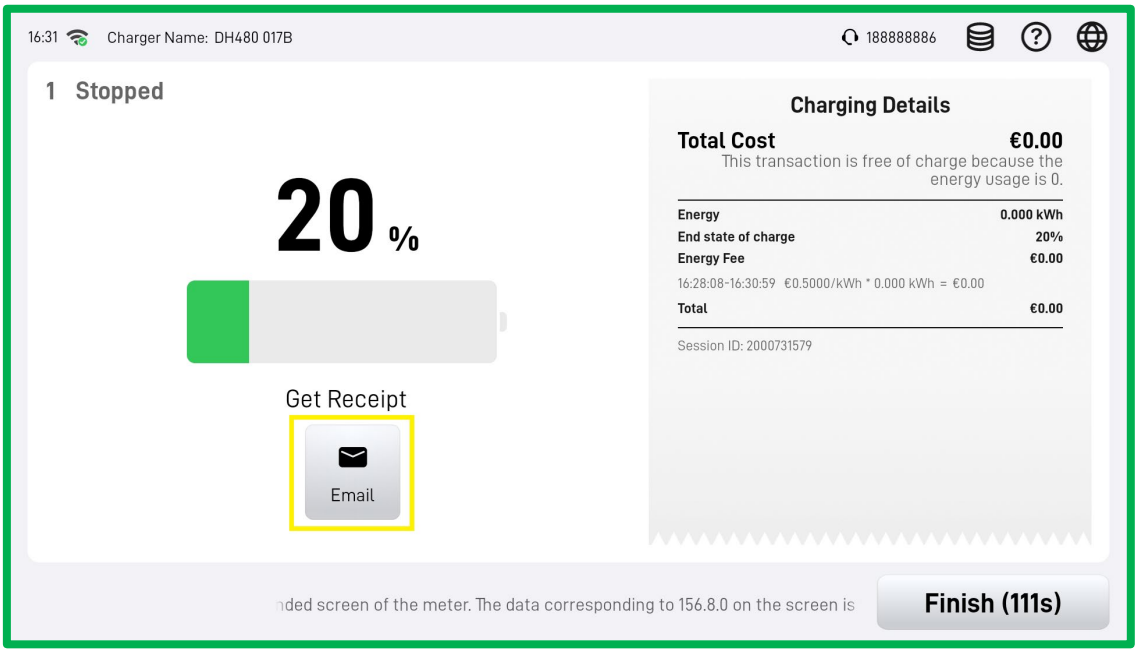


Figure 4-6 Charging Details Screen

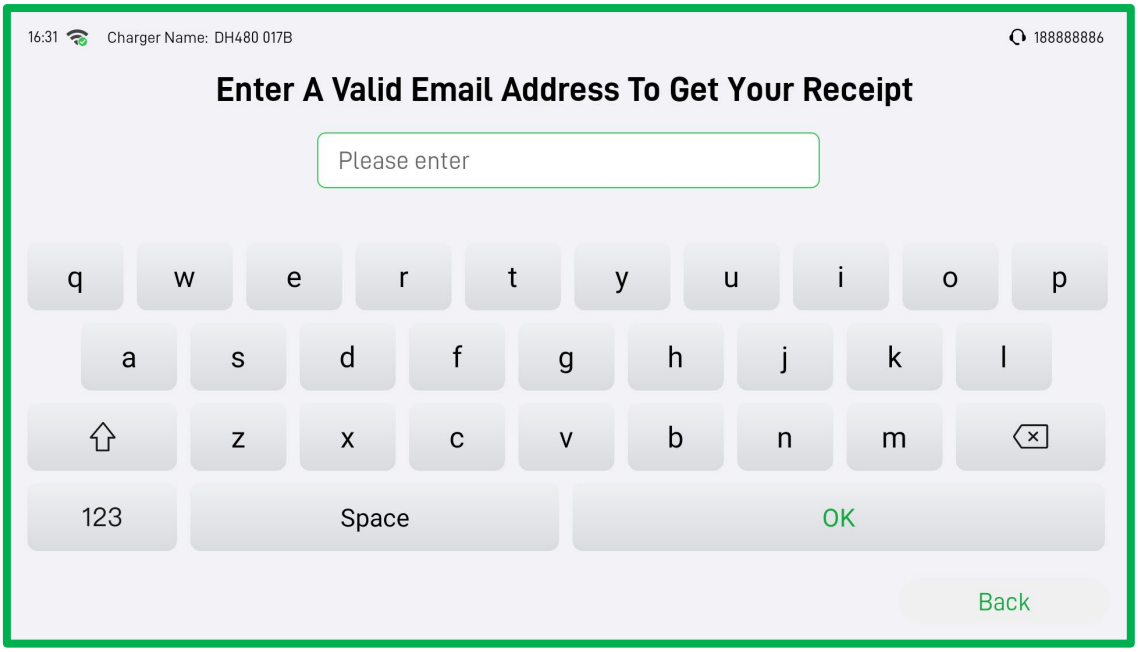


Figure 4-7 Entering the E-mail Address Screen

The charging order details are as follows.

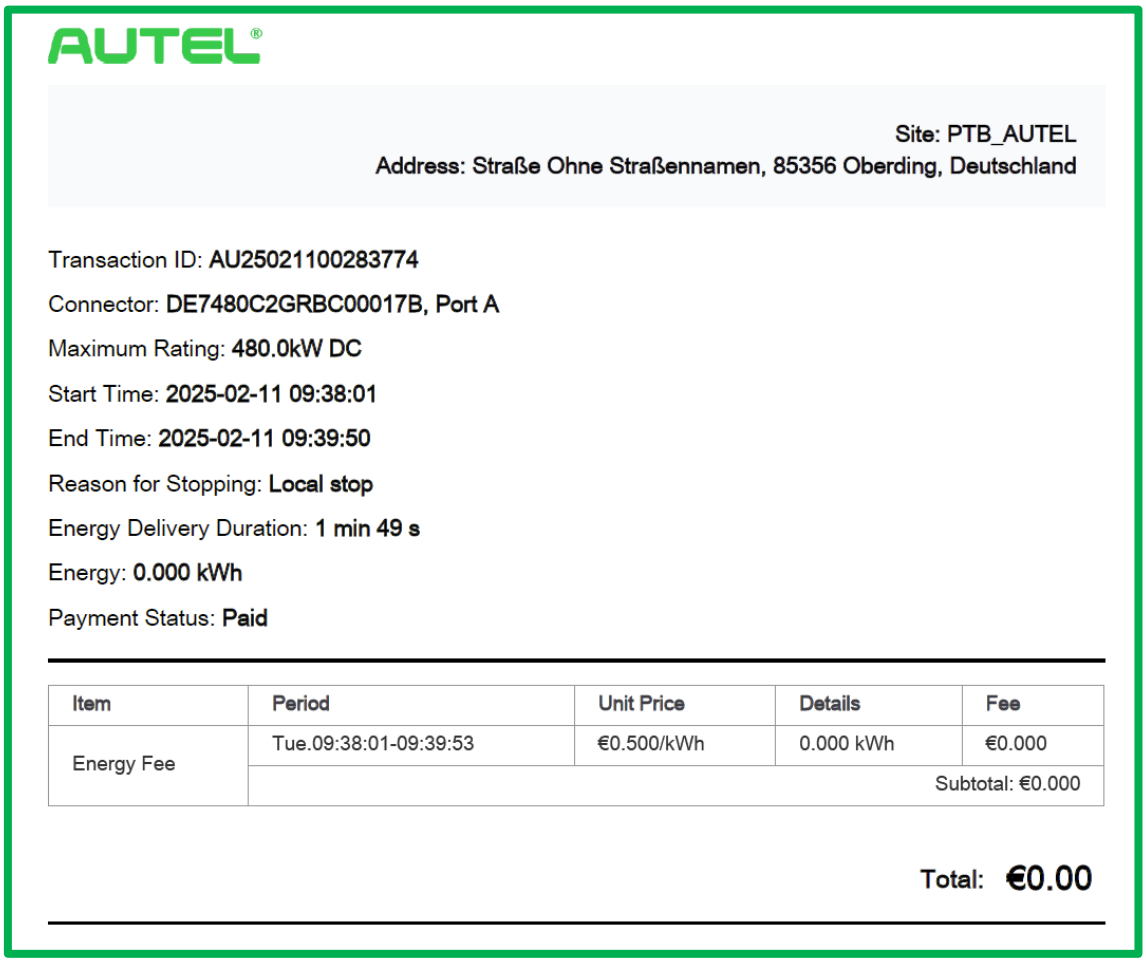


Figure 4-8 Charging Order Details

When a meter communication error occurs, the screen is as follows:

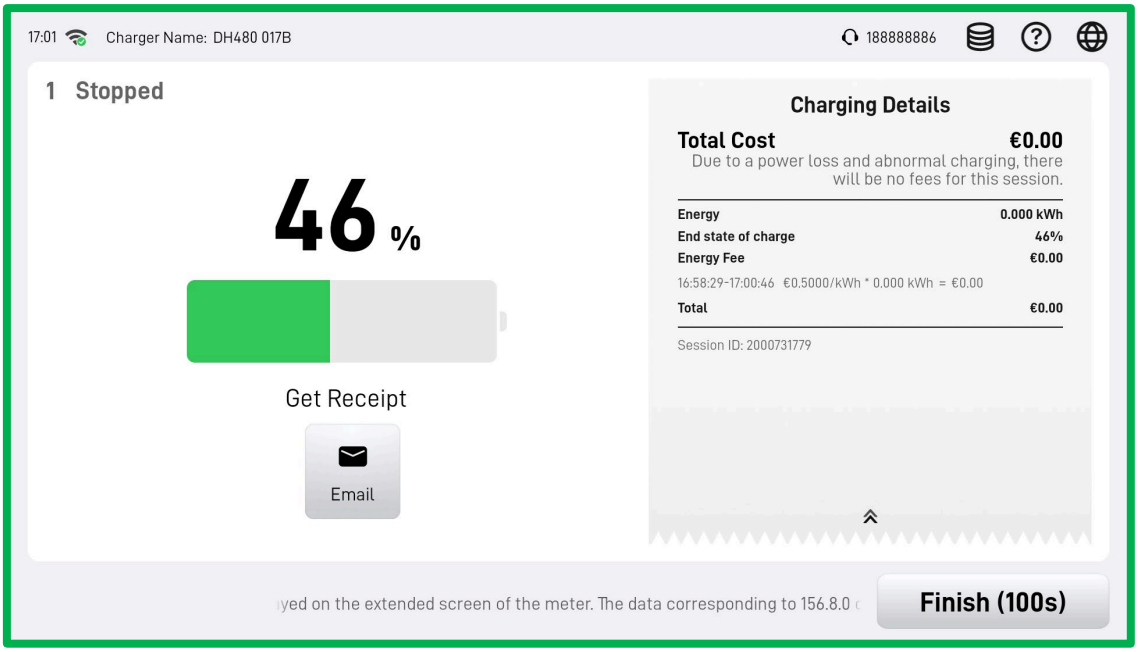


Figure 4-9 Meter Communication Error Screen

WARNING

- **Do Not** cover the vent during charging.
- **Do Not** clean or operate in your EV during charging.

4.5 Autel Charge App Guide

The Autel Charge app allows you to track, manage, and optimize EV charging at your location. With our app, you are able to start and stop charging remotely and track your EV battery health while charging.

After downloading and installing the Autel Charge app, open the app and log in with your phone number or email. If you do not have an account yet, register with your phone number first. Then follow the procedures below to start charging.

4.5.1 APP-Layout

4.5.1.1 Main Screen

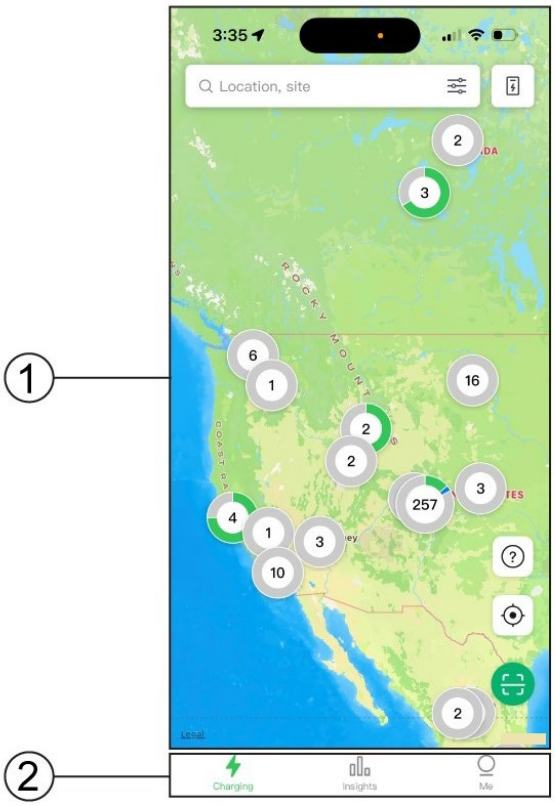


Figure 4-10 Autel Charge APP Main Screen

1. Map
2. Charging station information, charging statistics, and profile

4.5.1.2 Personal Data

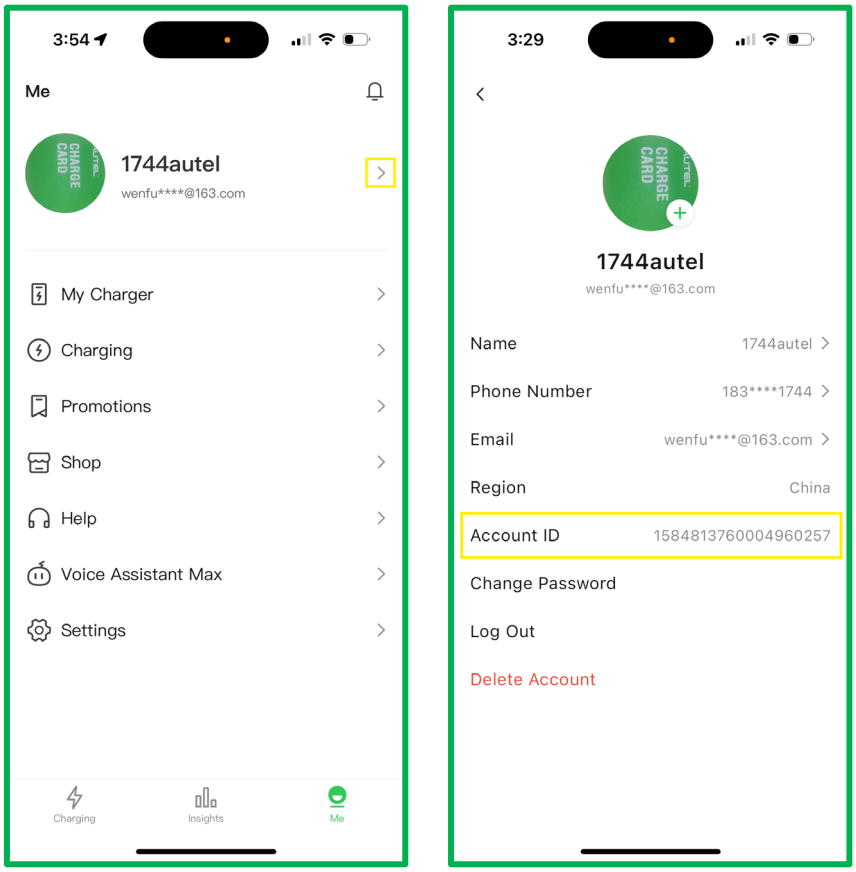


Figure 4-11 Autel Charge APP Personal Data

NOTICE

Account ID is included in OCMF data.

4.5.2 Charge via APP

STEP 1

Open the Autel Charge app, tap “**Scan**” at the bottom right corner and scan the QR code on the screen of the charging station.

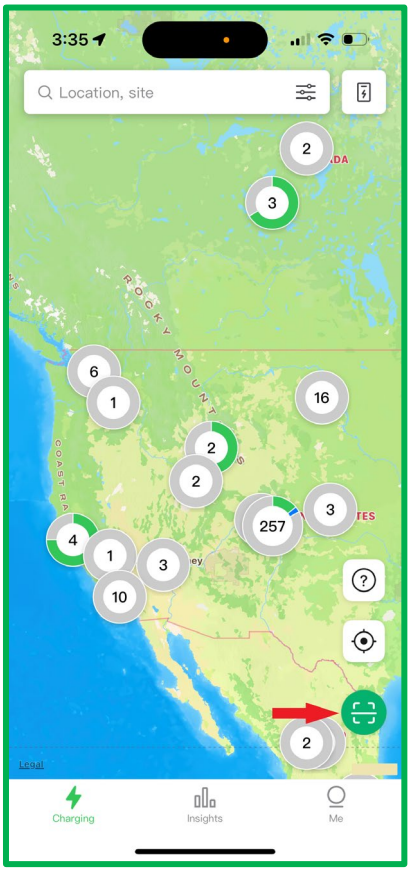


Figure 4-12 Autel Charge APP “Scan”

STEP 2

Tap “**Start**” to start charging.

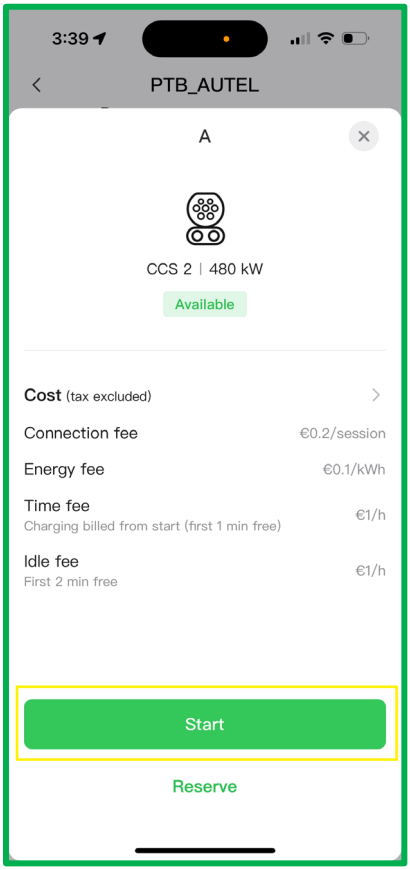


Figure 4-13 Autel Charge APP “Start”

STEP 3

Charging.

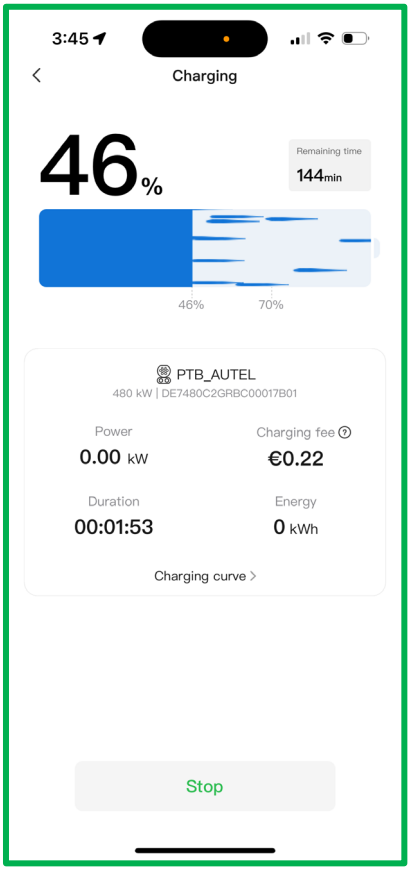


Figure 4-14 Autel Charge APP "Charging"

STEP 4

Tap "**Stop**" button to complete the charging process.

4.6 Authentication of Measurement

After completion of the charging process, your mobility service provider provides the signed measured values relevant under calibration law. This data can be delivered as an email. You can use the free S.A.F.E. transparency software (https://www.safe-ev.de/de) to check the measured values for authenticity.

Inform the mobility service provider if incorrect readings are displayed during the authenticity check. The following uses the Autel cloud platform as an example.

4.6.1 Retrieval of Measured Values and Public Key

The signed measurement values and public keys are sent by e-mail after stopping charging and entering the e-mail address (see Section *4.4.5*).

AUTEL

Charge Stopped

Session ID: AU25021100246854

Name: PTB_AUTEL

Transaction Details: Duration 2 min 0 s， Energy 0.0kWh， Fees €0.00

Start Time: 2025-02-11 08:43:30

End Time: 2025-02-11 08:45:30

Connector ID: DE7480C2GRBC00017B_1

OCMF

Public Key:

3056301006072A8648CE3D020106052B8104000A0342000435078B5C761514E3509B7F8A137B8D1CB0182E7ED9F857ADF81B422C6215904F026FA1DD294EF94689F42D4261D3984EB3358F8A7CD4FCBA0CC383B69A743D9D

OCMF|{"FV" : "1.0","GI" : "DZG-GSH01.1K2L.B","GS" : "1DZG0028266501","GV" : "233","PG" : "T665","MV" : "DZG","MM" : "GSH01.1K2L.B","MS" : "1DZG0028266501","MF" : "233","IS" : true,"IT" : "LOCAL","ID" : "1584813760004960257","CT" : "EVSEID","CI" : "DE48000017","RD" : [{"TM" : "2025-02-11T15:43:30,000+0800 I","TX" : "B","RV" : 0.000,"RI" : "01-00:98.08.00.FF","RU" : "kWh","RT" : "DC","EF" : "","ST" : "G"},{"TM" : "2025-02-11T15:45:30,000+0800 I","TX" : "E","RV" : 0.000,"RI" : "01-00:98.08.00.FF","RU" : "kWh","RT" : "DC","EF" : "","ST" : "G"}],"U" : [{"TM" : "2025-02-11T15:43:30,000+0800 I","TX" : "B","RV" : 1247.001,"RI" : "01-00:9C.08.00.FF","RU" : "kWh","RT" : "DC","EF" : "","ST" : "G"},{"TM" : "2025-02-11T15:45:30,000+0800 I","TX" : "E","RV" : 1247.001,"RI" : "01-00:9C.08.00.FF","RU" : "kWh","RT" : "DC","EF" : "","ST" : "G"},{"TM" : "2025-02-11T15:43:30,000+0800 I","TX" : "B","RV" : 0.0028,"RI" : "01-00:8C.07.00.FF","RU" : "Ohm","RT" : "DC","EF" : "","ST" : "G"},{"TM" : "2025-02-11T15:45:30,000+0800 I","TX" : "E","RV" : 120,"RI" : "01-00:00.08.06.FF","RU" : "s","RT" : "DC","EF" : "","ST" : "G"}]}|{"SA" : "ECDSA-secp256k1-SHA256","SD" : "304402202DE82CFD0409826C41C9A08088AC123E119C7D1B59162A01557DBE144A097C92022062D888667A0CD0541002335267F83FEAB18654E79C867B9686CB2D382E217B53"}

The display cuts off decimal places. The charging energy is determined and calculated internally with a higher resolution than that shown on the meter display.

The charging details recorded by the OCMF are verified by the charger and cannot be changed. The required transparency software to verify the OCMF data packet is called S.A.F.E. Transparency Software. Download it to your computer: https://www.safe-ev.de/de/transparenzsoftware.php (only compatibility with S.A.F.E. Transparency Software 1.3.0 is guaranteed).

Figure 4-15 Email with Measured Values and Public Key Screen

If you did not receive the email, you can check the readings in “**Me**” - “**Charging**” - “**Charge History**” via Autel Charge APP. If you did not receive the OCMF data, the charging process will not be billed.

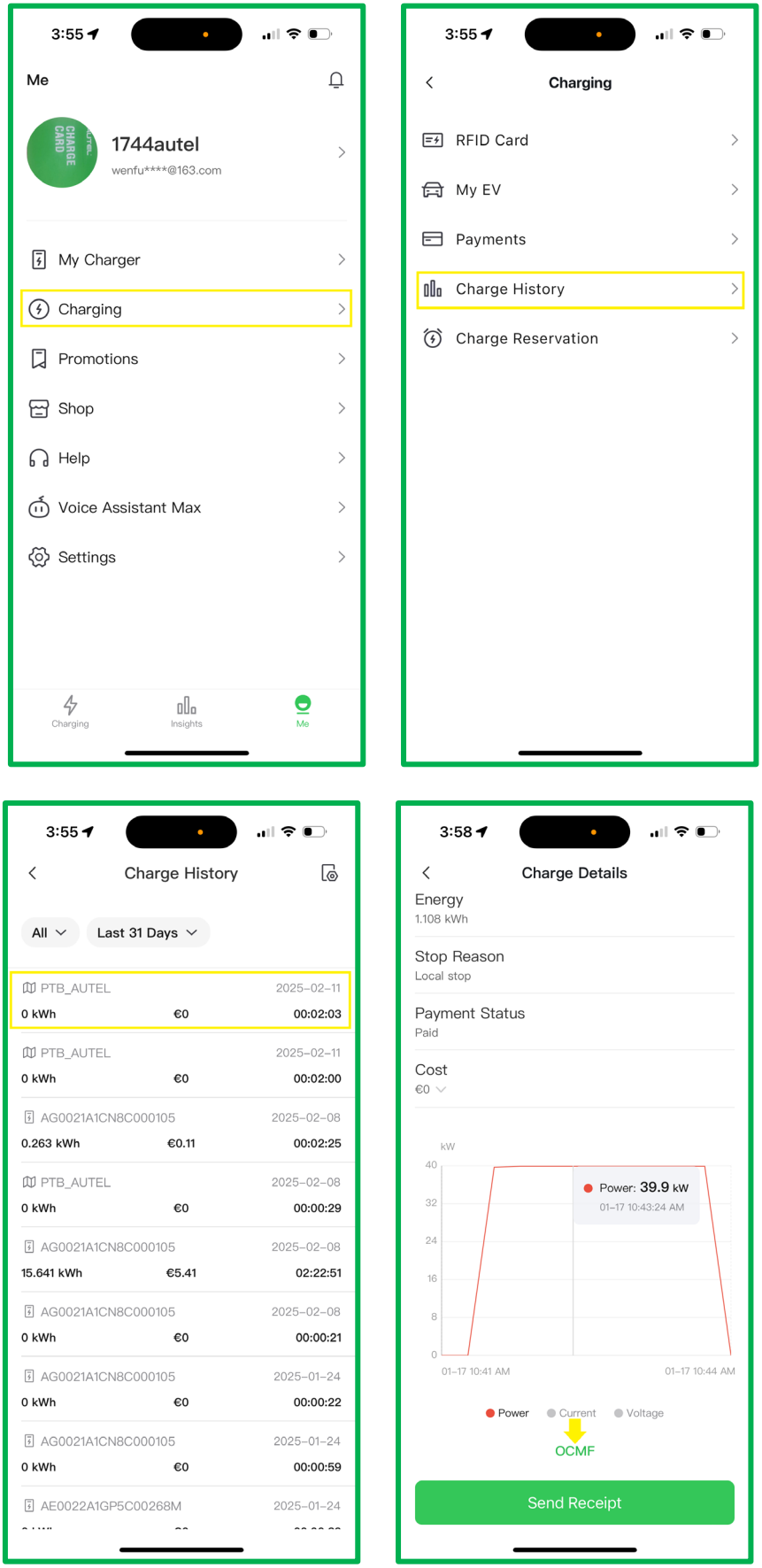


Figure 4-16 OCMF Screens

The public key is required to verify or validate the data packets with the transparency software. Each charging point has its own public key. The public key can be obtained by scanning the data matrix on the external display of the DC meter, which can be read through the viewing window on the corresponding side of the plug. By comparing the public key read on the external display of the DC meter with the public key retrieved from e-mail or APP, the user ensures that the signature of the meter value cannot be tampered with.

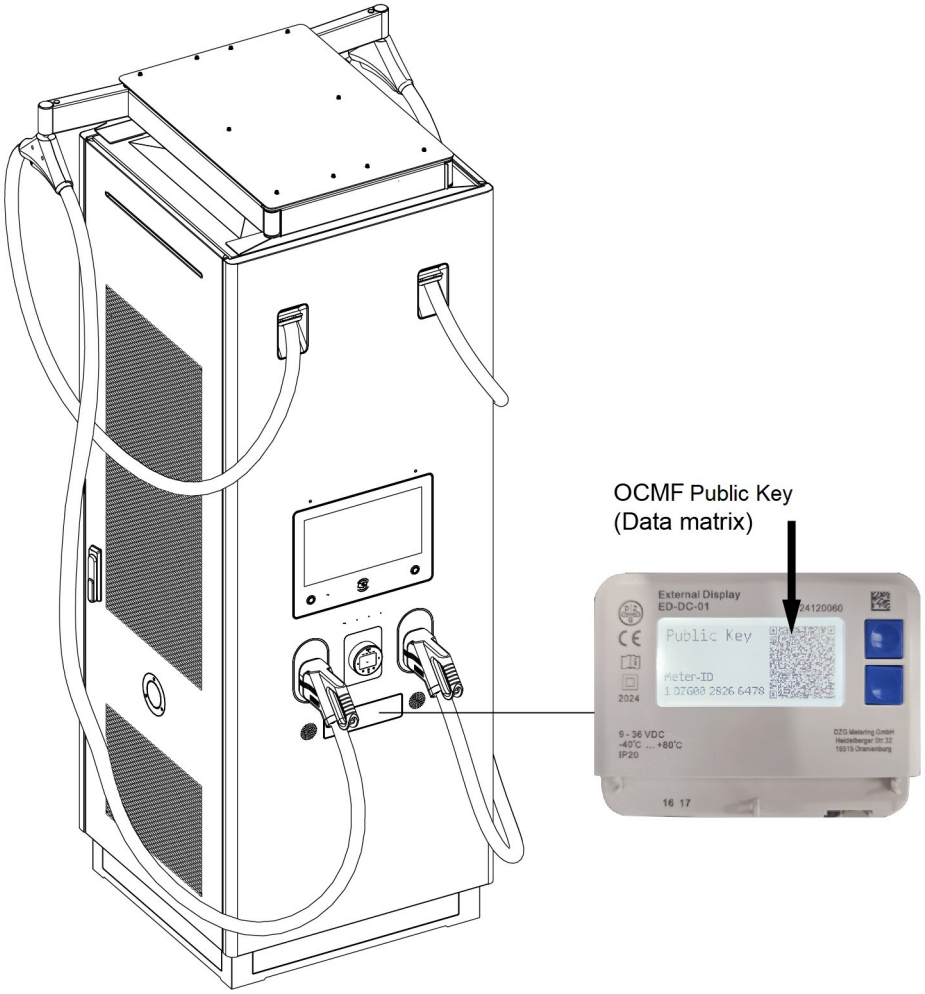


Figure4-17 Location of the Public Key

4.6.2 Installing the Transparency Software

1. Download the S.A.F.E. transparency software to your computer at https://www.safe-ev.de/de/transparenzsoftware.php. (Compatibility is only guaranteed with the S.A.F.E. transparency software 1.3.0 or the latest version).

2. Make sure that the JAVA framework is installed in a current version or in the required version 4.

3. Launch the transparency software with a double click.

4.6.3 Data verification

1. Open the transparency software.

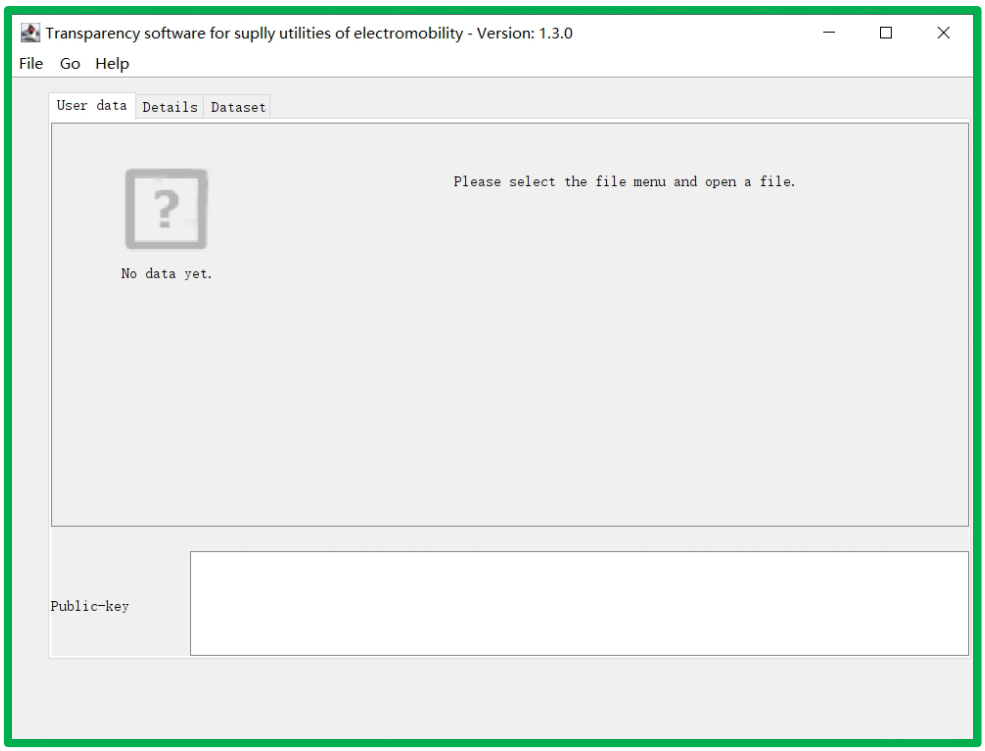


Figure 4-18 Transparency Software Startup Screen

2. The accounting data is loading.

Under the “File” section you will find three options: “Open”, “Manual data input” and “Quit”. Select the “Manual data input” function.

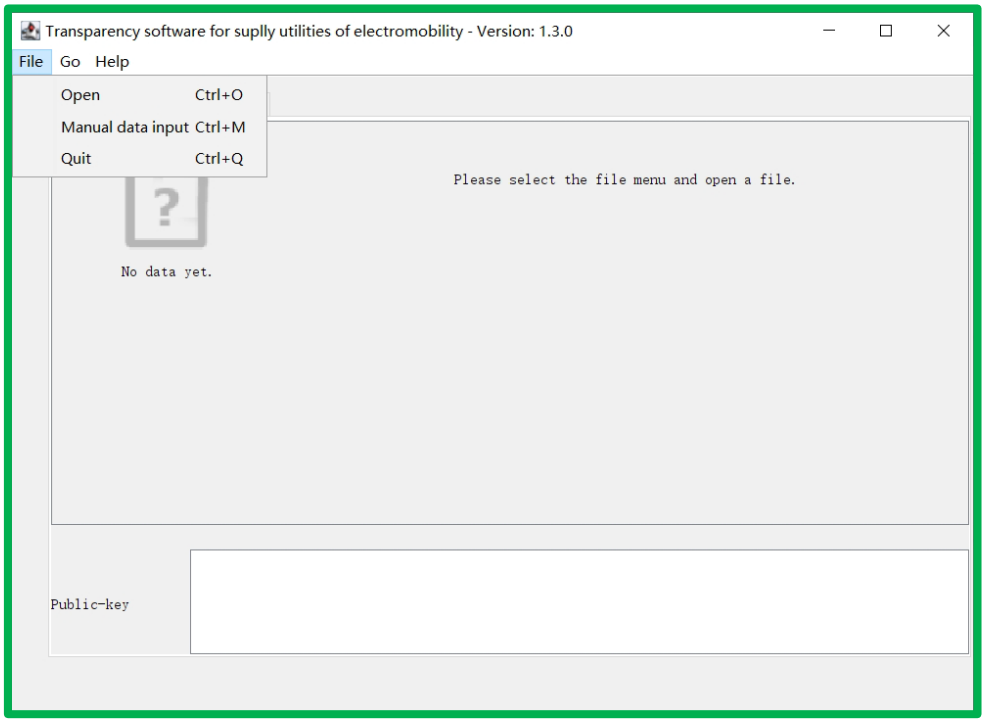


Figure4-19 “Data” Menu Screen

3. Enter the OCMF readings/data tuples provided to you and the charging station's Public Key.

Figure 4-20 Data Input Screen

4.6.4 Test Result

The transaction with negative verification result is not calculated. After the verification, the custody transfer information of the signed record is displayed.

– Positive verification result

If the digital signature of calibration law is valid, the transparency software shows a green check mark.

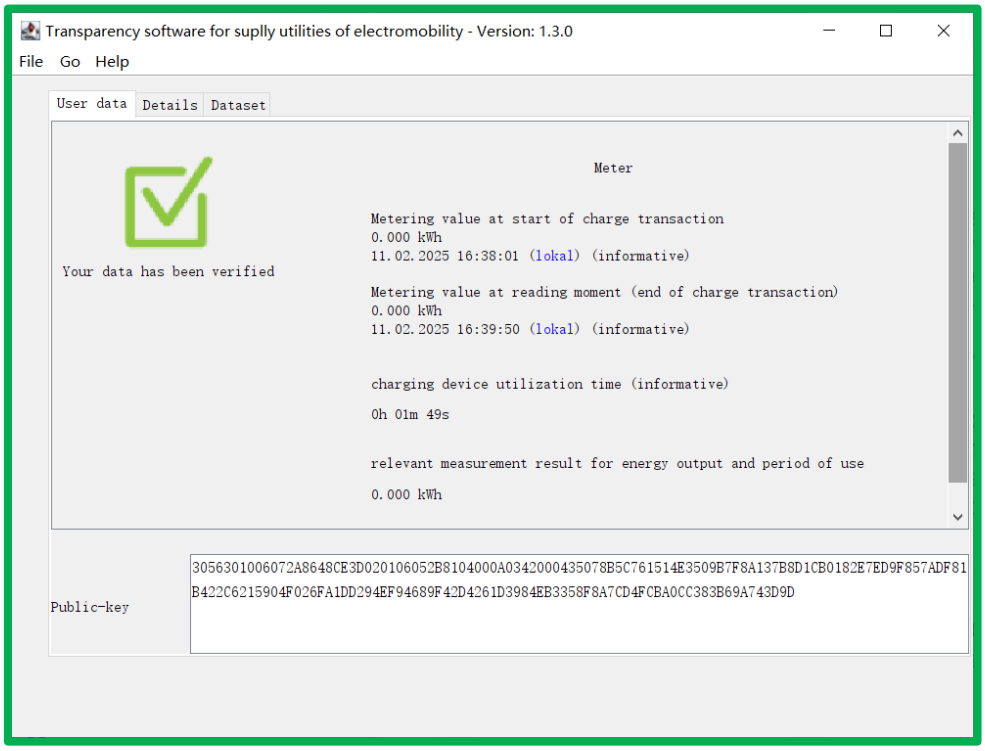


Figure 4-21 Positive Test Screen

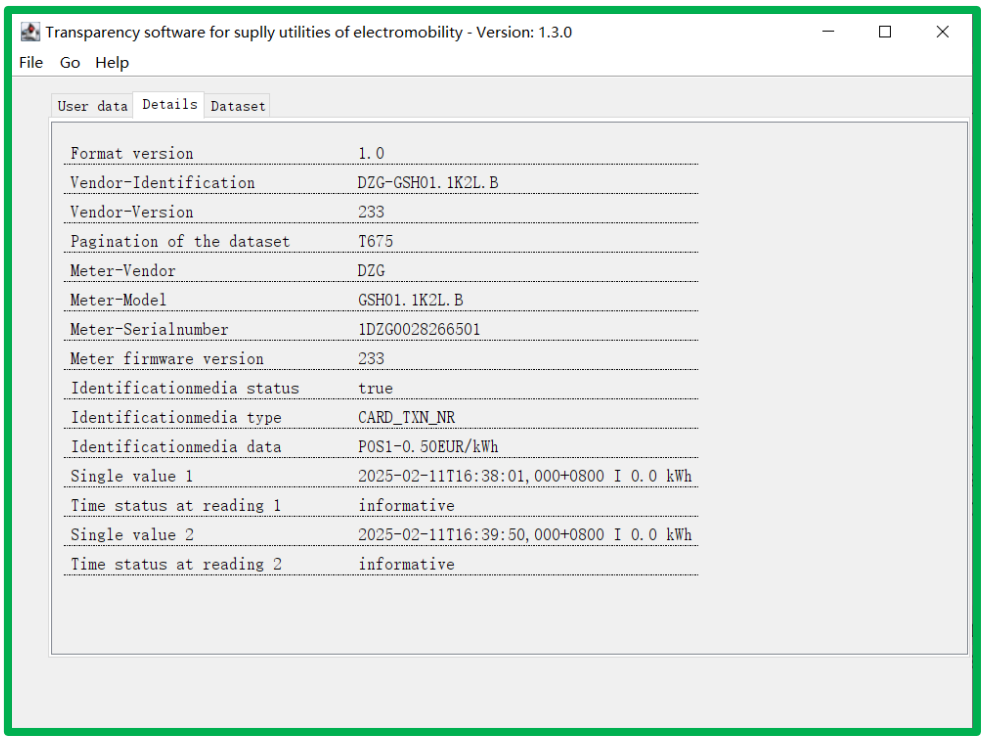


Figure 4-22 Test Details Screen

The transparency software simultaneously displays the starting meter reading and the stopping meter reading and calculates the total amount of energy delivered.

– Negative verification result

If the calibration law data is manipulated and the check no longer works, the transparency software detects this and displays a red cross.

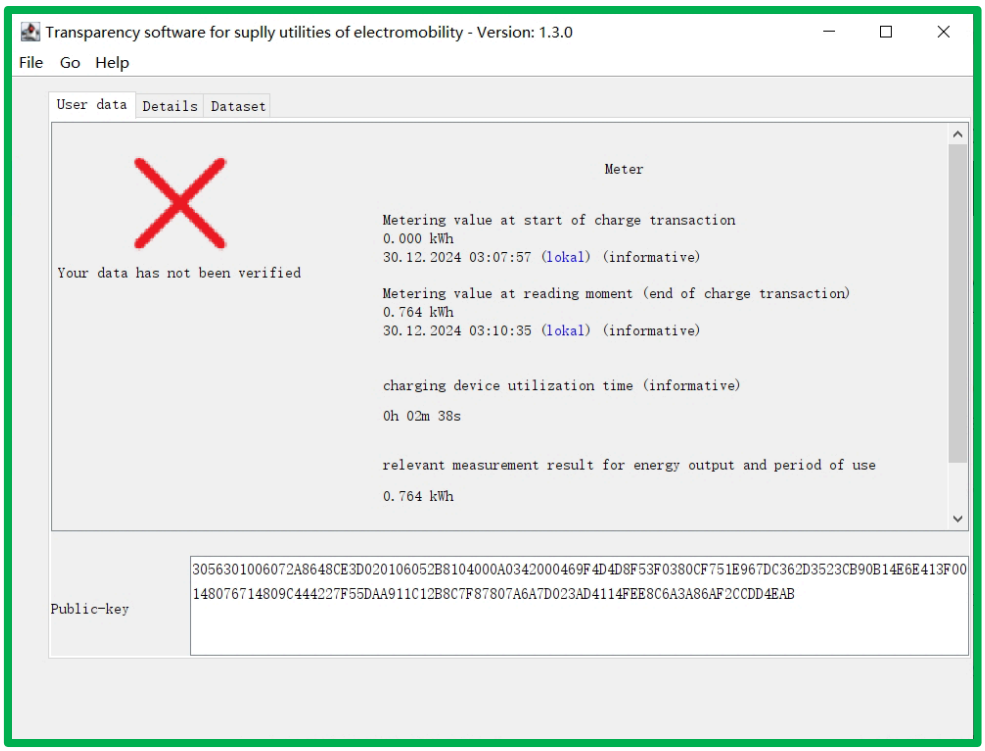


Figure 4-23 Negative Test Result Screen

In case of a negative check result we recommend the following:

- Check whether the entered data and public key are correct.
- Check whether the public key entered belongs to the charging station at which the charging took place.

NOTICE

Each charging point at a charging station has its own public key. Use the public key of the charging point at which you have charged.

Notify the mobility service provider if your entries are correct and a negative check result was generated.

5. Technical Specifications

5.1 General Specifications

Table 5-1 Product Specifications

	480 kW (Air Cooling)
AC Input	
AC Input Capacity	520 kVA
Earthing System	3P + PE
Input Voltage	3-phase 400 VAC ± 10% (2 routes)
Input Frequency	50/60 Hz
Grid Type	TN-S, TN-C, TN-C-S, TT (Requires external RCD) When connected to the TN-C system, the grounding continuity must be ensured. When connected to the TT system, the equipment enclosure must be grounded.
Power Factor	≥ 0.99
Overvoltage Category	AC Side (Input) OVC: III
Harmonic Distortion (THDi)	< 5%
Maximum Current (each route)	416 A
DC Output	
Output Power	480 kW
Output Voltage	CCS2: 150-1000 V
Max. Number of Outputs	2
Charging Mode	2*CCS2
Output Current	380 A (Max. 500 A)
Peak Efficiency	96%

	480 kW (Air Cooling)
General Characteristics	
Dimensions of the Cabinet (W x D x H)	782 mm x 782 mm x 2287 mm
Weight	Approx. 830 kg
Mounting	Floor Standing
Touchscreen	15.6-inch LCD Touchscreen
Connectivity	4G/5G (Dual SIM Card) Wi-Fi Ethernet
Software Update	OTA updates via web portal, FTP, FTPS, HTTPS
Cable Length	5 m 7.5 m (Optional)
Standby Power	≤ 85 W (Typical value)
Rated Service Breaking Capacity	35 kA
Emergency Button	Yes
Enclosure Type	Zinc Aluminum Magnesium Alloy
Internal RCD	Optional
Enclosure Rating	IP54/IK10
Communication to the EV	ISO/IEC 15118 with PnC DIN 70121
User Interface	
Status Indication	Standard
RFID Protocols	ISO 14443 A/B ISO/IEC 15693 MIFARE
Credit Card Readers	Payter Apollo PAX IM30 Castles S1U2

	480 kW (Air Cooling)
Communication Protocols	OCPP 1.6J OCPP 2.0.1 (Optional)
Cable Management System	Standard
User Authentification	AutoCharge Plug & Charge APP RFID Card QR Code Credit Card (Optional)
Environmental Specifications	
Humidity	≤ 95% RH, non-condensing
Operating Altitude	≤ 2000 m
Operating Temperature Range	–35 to +55 °C
Storage Temperature Range	–40 to +70 °C
Noise	≤ 55 dBA (Silent mode)
Environmental Conditions	
Mechanical Environmental Conditions	M1
Electromagnetic Environmental Conditions	E2
Safety and Compliance	
Protection	Surge, overcurrent, undervoltage, overvoltage, tilt sensor, access protection, over-temperature protection, short circuit and overload protection
EMC Compliance	EMC Class A
Safety Standards	IEC 61851-1 IEC 61851-23 IEC 61851-21-2 IEC 61000

	480 kW (Air Cooling)
Certification	CE UKCA PTB (REA-Dokument 6-A/PTB-A 50.7/PTB-A 50.8)
Warranty	
Design Life	10 Years
Warranty	24 months, warranty extension possible

5.2 Detail AC Input Specifications

Table 5-2 Detail AC Input Specifications

Parameter	Power Rating (kW)									
	Cabinet	120	160	200	240	280	320	360	400	440	480
	One Route	80	80	120	120	160	160	200	200	240	240
Rated Input Current (A)		127	127	189	189	251	251	313	313	375	375
Recommended Input Circuit Breaker One Route (A)		160	160	250	250	320	320	400	400	500	500

5.3 Charging Module Location Specifications

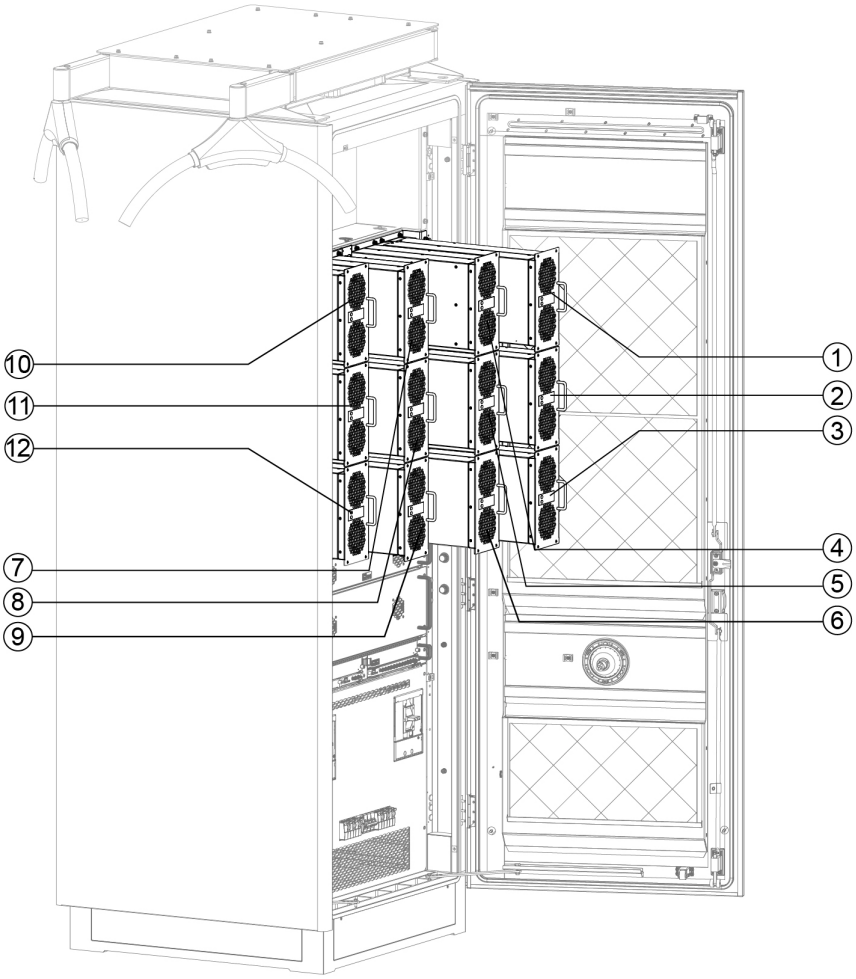


Figure 5-1 Charging Module Location

Table 5-3 Charging Module Installation Specifications

Rated Power	Number of Modules	Location
120 kW	3 PCS	3, 6, 12
160 kW	4 PCS	3, 6, 9, 12
200 kW	5 PCS	2, 3, 6, 9, 12
240 kW	6 PCS	2, 3, 5, 6, 9, 12
280 kW	7 PCS	2, 3, 5, 6, 9, 11, 12
320 kW	8 PCS	2, 3, 5, 6, 8, 9, 11, 12
360 kW	9 PCS	1, 2, 3, 5, 6, 8, 9, 11, 12
400 kW	10 PCS	1, 2, 3, 4, 5, 6, 8, 9, 11, 12
440 kW	11 PCS	1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12
480 kW	12 PCS	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

NOTICE

- Ensure the charging module is properly installed. The handle at the charging module should be at the right side and outward-facing.
- Seal the slots where the charging modules are not inserted.
- For replacing the charging modules, refer to related *Spare Part Replacement Manual*.

5.4 Wireless Communication Parameters

Table 5-4 Wireless Communication Parameters

Type	Operating Band/Frequency	Max. Transmit Power (dBm)
2.4G wifi	802.11b/802.11g/802.11n	18
4G	GSM900	35
	DCS1800	33
	WCDMA Band 1/WCDMA Band 8	25
	LTE: Band 1/Band 3/Band 7/Band 8/Band 20/Band28/Band 38/Band 40	25
	GNSS: GPS, GLONASS, Galileo, BDS, QZSS	N/A
5G (optional)	GSM900/DCS1800	25
	WCDMA Band 1/WCDMA Band 8	25
	LTE TDD: Band 1/Band 3/Band 7 /Band 8/Band 20/Band 28/Band 38 /Band 40/Band 42/Band 43	25
	FDD: n1/n3/n8/n20/n28/n38/n42/n43/n75/n76	25
	FDD: n77/n78	28
	GNSS: GPS, GLONASS, Galileo, BDS, QZSS	N/A
RFID	13.56 MHz	11.06
Radar	24.00-24.25 GHz	0.59

NOTICE

- This equipment has been tested and found to comply with the limits for a EN 300 440 v2.1.1 receiver Category 3.
- These limits are designed to provide reasonable protection against harmful interference in a residential installation.
- When placed in the vicinity of other device(s) radiating in the band 24~24.25 GHz this device will inadvertency trigger on.
- Please take appropriate measure to mitigate this eventuality.

6. Calibration Law Statement

Notes on accuracy of measurement according to type examination certificate I

Conditions for the operator of the charging device, which the operator must fulfil as a necessary prerequisite for the intended operation of the charging device.

The operator of the charging device is the user of the measuring device in the sense of § 31 of the MessEG.

1. The charging equipment is only considered to be used in accordance and compliance with the legal metrology regulations if it is not exposed to environmental conditions other than those for which its type examination certificate was issued.

2. When registering the charge points with the Federal Network Agency, the user of this product must also register the PK specified on the charging column for the charge points in their registration form! Without this registration, operation of the charging station in compliance with calibration regulations is not possible. Weblink:

https://www.bundesnetzagentur.de/DE/Sachgebiete/ElektrizitaetundGas/Unternehmen_Institutionen/HandelundVertrieb/Ladesaeulen/Anzeige_Ladepunkte_node.html

3. The user of this product must ensure that the reverification period for the components in the charging device and for the charging device itself is not exceeded.

4. The user must permanently store the signed data packets read out from the charging device - in accordance with the pagination, (also) on hardware dedicated for this purpose in his possession ("dedicated memory"), - keep them available for authorized third parties (operation obligation for the memory). Permanently means that the data must be stored not only until the conclusion of the business transaction, but at least until the expiry of possible statutory appeal periods for the business transaction. For billing purposes, no substitute values may be formed for non-existent data.

5. The user of this product shall provide an operating manual in electronic format to users of measured values who receive these measured values from this product from him and use them in business transactions. In doing so, the user of this product must refer in particular to No. "II Requirements for users of measured values from the charging device".

6. The user of this product is subject to the obligation to notify according to § 32 MessEG (excerpt):

§ 32 Obligation to notify (1) Anyone who uses new or renewed measuring instruments must notify the authority responsible under state law no later than six weeks after commissioning.

7. To the extent deemed necessary by relevant authorities, the complete contents of the dedicated local memory or the memory present at the charge point operator, including all data packets of the billing period, must be made available by the user of the measuring device.

II Requirements for users of measured values from the charging device (EMSP)

The user of the measured values must comply with § 33 of the MessEG:

§ 33 MessEG (citation)

§ 33 Requirements for the use of measured values

(1) Values for measured variables may only be specified or used in business or legal transactions or for measurements in the public interest if a measuring device was used as intended and the values can be traced back to the respective measurement result, unless otherwise stipulated in the statutory ordinance pursuant to Section 41 number 2. Other federal regulations that serve comparable protective purposes continue to apply.

(2) Anyone who uses measured values must ensure, within the scope of their possibilities, that the measuring device meets the legal requirements and must have the person using the measuring device confirm that they are fulfilling their obligations.

(3) Whoever uses measured values must

1. ensure that invoices, insofar as they are based on measured values, can easily be traced by the party for whom the invoices are intended in order to check the measured values given and

2. if necessary, provide suitable aids for the purposes specified in number 1.

For the user of the measured values, this regulation gives rise to the following specific obligations regarding the use of measured values in accordance with calibration law:

1. The contract between EMSP and customers must clearly state that subject of the contract is only the supply of electrical energy and not the duration of the charging service.

2. The time stamps on the measured values come from a clock in the charging column that is not certified according to measurement and calibration law. They must therefore not be used for the purpose of tariffing the measured values.

3. The EMSP must make the billing-relevant data packages available to the customer at the time of billing, including the signature, as a data file in such a way that they can be checked for integrity using the transparency and display software. These can be provided via channels that have not been checked under calibration law.

4. The EMSP must make available to the customer the transparency and display software associated with the charging device to check the integrity of the data packets.

5. The EMSP must be able to show in a verifiable manner which means of identification was used to initiate the charging process associated with a specific measured value. This means that it must be able to prove for every business transaction and billed measured value that it has correctly assigned the personal identification data to them. The EMSP must inform its customers of this obligation in an appropriate manner.

6. The EMSP may only use values for billing purposes that are available in a dedicated memory that may be available in the charging facility and/or in the memory of the operator of the charging facility. It is not permitted to create substitute values for billing purposes.

7. The measuring capsule is able to detect an error in the form of a difference in the meter register readings between charging processes. This error is displayed as the status term “meter reading difference” in the transparency software. The EMSP must monitor and evaluate this status term and must not use values for billing purposes for which a “meter reading difference” occurs. This also includes the charging process that precedes the process in which this “meter reading difference” was detected.

8. The EMSP must make appropriate agreements with the operator of the charging facility to ensure that the data packets used for billing purposes are stored for a sufficient period of time in order to be able to fully complete the associated business processes.

9. In the event of a justified notification of need for the purpose of carrying out verifications, diagnostic tests and use of monitoring measures, the EMSP must provide suitable means of identification to enable authentication on the specimens of the product belonging to these operating instructions, used by them.

10. All of the above obligations apply to the EMSP as the meter user within the meaning of Section 33 MessEG even if it obtains the meter readings from the charging facilities via a roaming service provider.

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