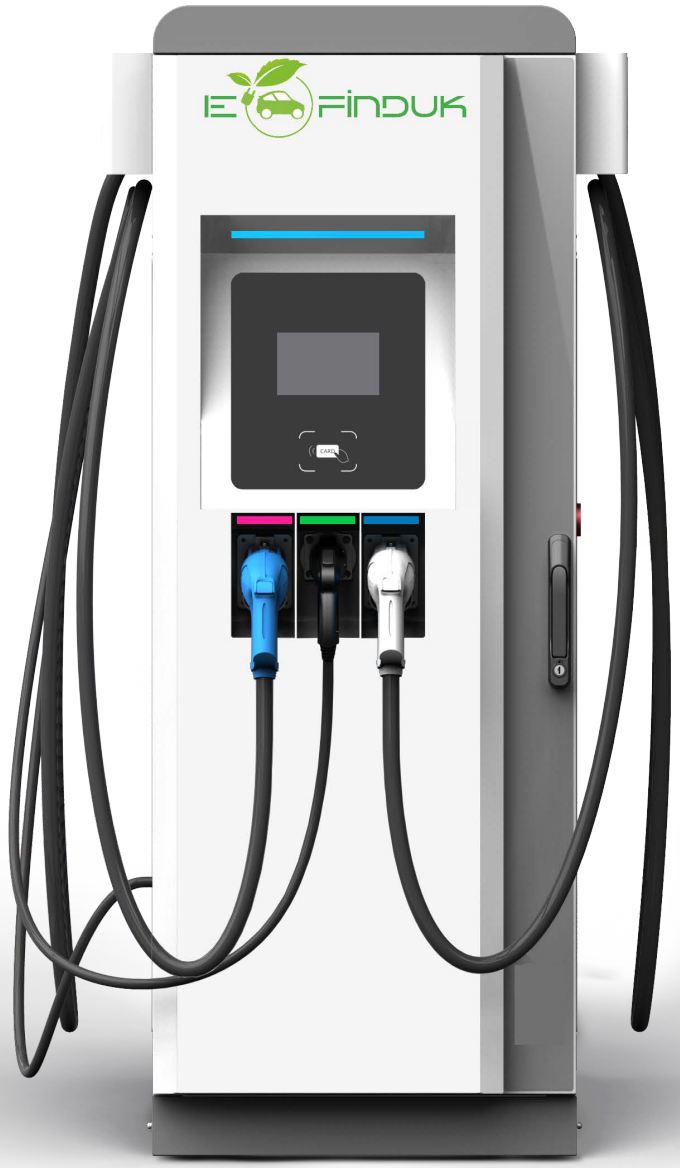
PWR GOLD POWER DC CHARGER
40kW-120kW User Manual



POWER ELEKTRONİK

Endüstriyel Güç Sistemleri
Industrial Power Solutions

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PWR GOLD POWER DC CHARGER 40kW-120kW

User Manual

Copyright Information

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Safety Precautions

Please read the operating instructions and precautions carefully before starting the operation to reduce the accident. The “Caution, Warning, and Danger” items in the product and product manuals do not represent all safety precautions that should be followed, and are only supplementary to various operational safety precautions.

In the operation of our products and equipment, we must abide by the safety regulations of relevant industries and strictly abide by the relevant equipment precautions and special safety instructions provided by Power Elektronik SAN. A.Ş.

Electrical Safety

High Voltage

Danger Some parts of the power system are operated with high voltage. Direct contact or indirect contact with these parts through wet objects can be fatal.

The installation of AC power equipment must comply with the safety regulations of relevant industries. Personnel performing AC equipment installation must have high-voltage, AC, and other operational qualifications.

It is strictly forbidden to wear conductive objects such as watches, bracelets, rings, etc. on the wrist during operation.

When you find that the cabinet is watered or wet, turn off the power immediately. When operating in humid environment, moisture should be strictly prevented from entering the equipment.

On the switches and buttons that are not allowed to be operated during installation, the prohibition operation sign must be hung.

Danger Construction operations on high voltage lines may result in fire or electric shock. The area where the AC cable is routed and routed must comply with local regulations and specifications. Only those with qualifications for high voltage and AC operation can perform high pressure operation.

Tools

Warning Special tools must be used for various operations of high voltage and alternating current

Thunderstorm

Danger It is strictly forbidden to carry out high voltage and alternating current in thunderstorms.

In thunderstorms, strong electromagnetic fields are generated in the atmosphere. Therefore, in order to avoid lightning damage to the equipment, it is necessary to do a good grounding of the equipment in time.

Static Electricity

Caution Static electricity generated by the human body can damage static-sensitive components on the board, such as large-scale integrated circuits (ICs). Before touching the device, holding the card, circuit board, IC chip, etc., in order to prevent the human body from damaging the sensitive components, you must wear an anti-static wrist and ground the other end of the ESD-preventive wrist.

Short Circuit

Danger It is strictly forbidden to short-circuit the positive and negative poles of the power distribution system DC power supply or short-circuit the non-grounding pole to the ground. The power supply equipment is a constant voltage DC power supply equipment, and short circuit will cause equipment burnout and personal safety hazard.

The polarity of the cables and interface terminals must be strictly checked during DC live working.
DC power distribution operation space is compact, please pay attention to choose operating space before any operation.
Operation must use insulation tools.
When charging operation, you must pay attention to the tension of the hands, wrists and arms to prevent the tool or the human body from moving too much and causing accidents.

Others

Sharp corner of object

Warning Wear protective gloves when handling equipment by hand to prevent cuts from sharp objects.

Power cable

Caution Make sure the cable label is correct before connecting the cable.

Signal line

Caution The signal cable should be bundled separately from the power cable. The distance between the straps is at least 150mm.

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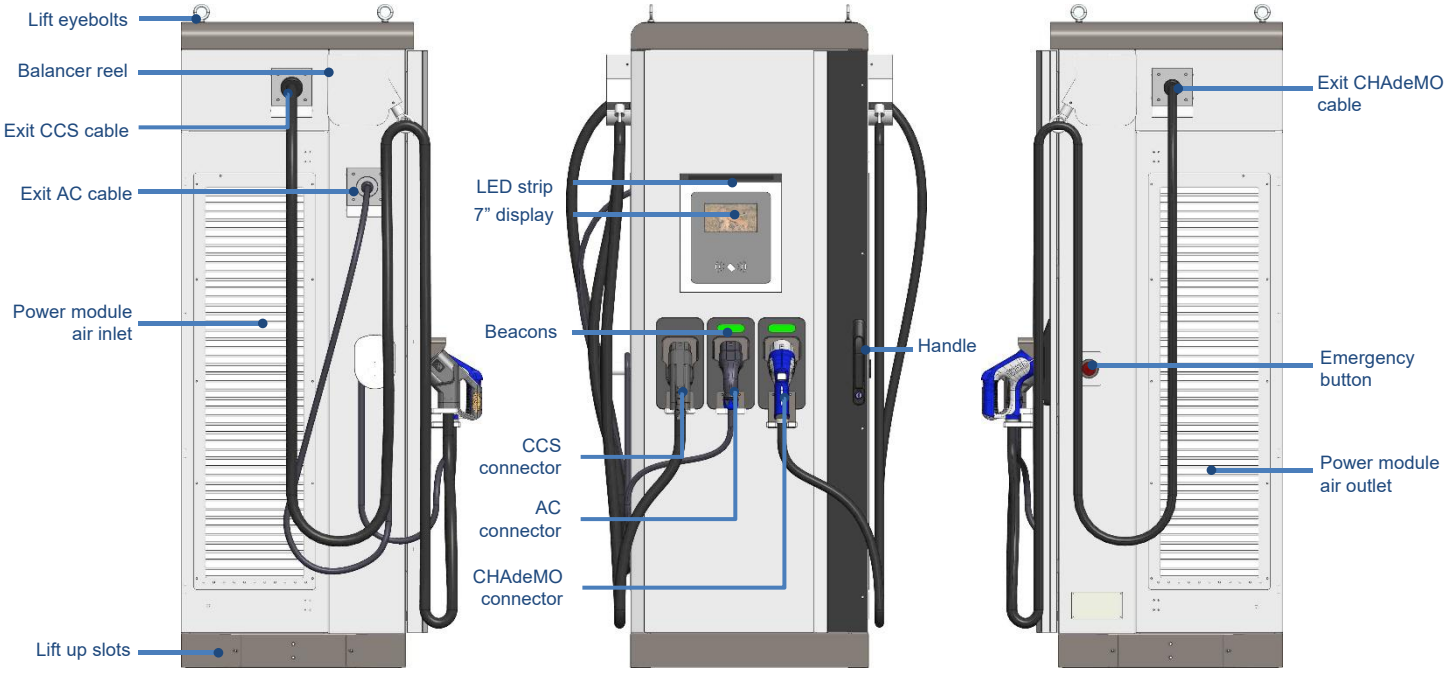
Table of Contents

❶ Overview

The GOLD POWER CHARGER DC fast charging station is a dual DC outlets (CHAdeMO and CCS) 60 to 120kW (max up to 160kW) fast charger with an optional Type-2 AC output up to 22kW that can be configured to meet different charging needs of both European and North American customers. It supports simultaneous charging and balancer reel for advanced cable management.
With user-friendly interface display and control guidance function, customers can complete the charging process easily.
It is IP54 rated which makes it suitable for outdoor & indoor public charging, and commercial places charging application.

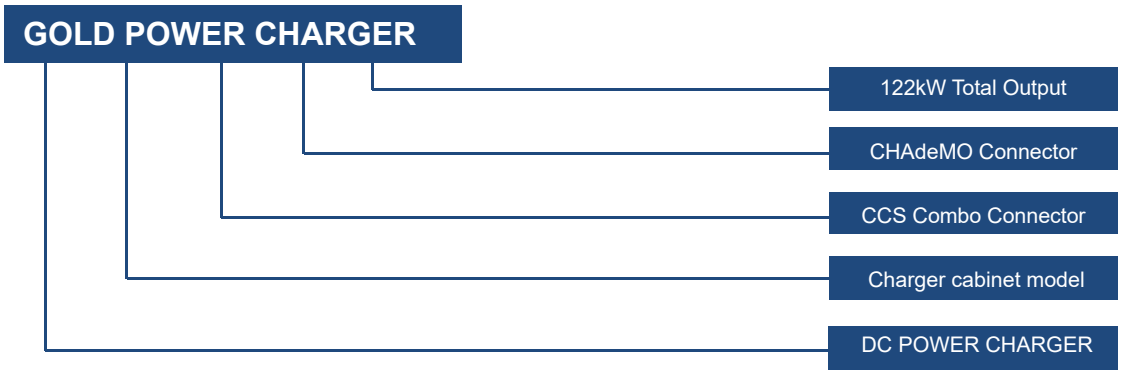


1.1 Main Features

- **Modular design**, convenient for daily system upgrade and maintenance. Each module has undergone repeated iterations and long-term verification to ensure the stability and reliability of the system.
- Its **metal casing and semi-gross coating** ensure the appearance of the texture and meet the long-term outdoor use.
- Compliant with **OCPP 1.6** and above enables it to connect to the global EV charge management platform without additional integration and matching.
- It **CCS, CHAdeMO and AC multiple charging outlets** option which make it suitable for various EV charging simultaneously and reduce unnecessary extra charger purchase costs.
- The **7-inch display** and **unique UI** offer good user-friendly and convenient charging operation. It can display at outdoor high-brightness environment and adapt to -30~70°C environment.
- The **lit LED light strip** allows users to quickly find the location of the charger at night and perform accurate operations.
- **Mobile app integration** feature provides users the convenience of remote operation and real-time charging status reminders.
- **Linux embedded operating system**, with 32-bit embedded processor as the core unit, supports Ethernet, 3/4G communication.
- **Remote upgrade and local upgrade functions**, which can upgrade the charger software locally or remotely when needed.
- Adopts **1.0S multi-function watt-hour meter** to accurately measure the charging.

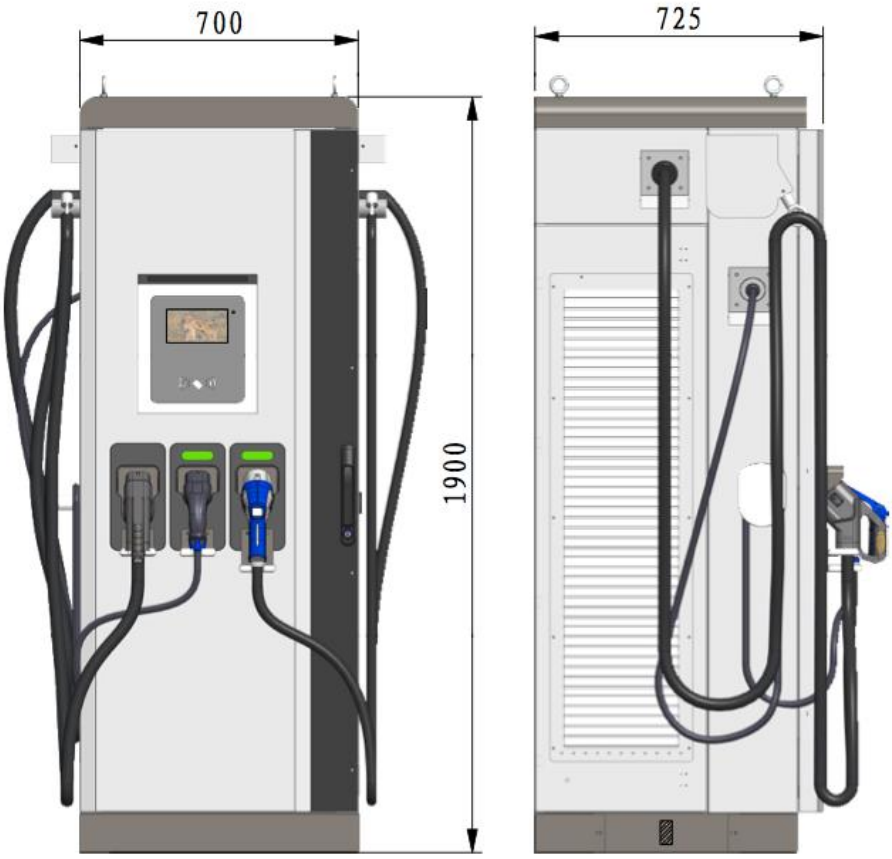
1.2 Model Description

The model description of the charging system is shown as below.



1.3 Dimensions

Dimensions in mm.



1.4 Technical Parameters

Specification	Model	PWR GOLD POWER DC CHARGER 40kW-120kW User Manual
Structure Description	Application scenes	Parking lot/Public charging station
	Housing material	Metal case
	Dimension (L x W x H)	700 x 725 x 1900mm
	Installation method	Floor-stand type
	Cable routing	Bottom inlet wiring, top outlet wiring
	Weight	320kg
	Cable length	5m
	Compliance	IEC 61851, IEC 62196, CHAdeMO
	Outlet numbers	3
Electrical Specification	Input voltage	400V +/-10% 3-phase + PE + N
	Input frequency	50Hz/60Hz
	Connector type	AC: Type-2 tethered cable, DC: CHAdeMO JEVS G105, CCS Combo-2
	Rated power	CHAdeMO: 60kW, CCS Combo: 100kW, AC up to 22kW
	Measuring accuracy	Level 0.5
	Output voltage	CCS: 200-750V, CHAdeMO: 200-500V, AC: 400V
	Output current	CCS: 0-200A DC, CHAdeMO: 0-125A DC, AC: 32A
	Efficiency	≥94%
	Power factor	≥0.99
Function Design	User Interface	7” touch screen, Emergency button, LED indicator, RFID reader
	Communication	CAN, PLC, PWM
	Ethernet	10/100 BaseTX (TCP-IP)
	Cellular	LTE modem, GPRS/3G/4G
	Interface protocol	OCPP 1.6 JSON
Environment Condition	Application place	Indoor/Outdoor
	Working temperature	-30 °C – +55 °C
	Working humidity	5% – 95% without condensation
	Altitude	< 2000m
	Protection grade	IP54
	Cooling	Fan cooling
	MTBF	17520 hours
	Security design	Over/under voltage protection, overload protection, current leakage protection, grounding protection, over temp protection, lightening surge protection

❷ Installation

2.1 Safety regulations

The working voltage inside the charging system is very high and the current is very big. To ensure personal safety, the following regulations should be observed at all times:
1. Only those who have been trained in the charging system and have a good knowledge of the charging system can install the charging system. Always observe the precautions for safety precautions and local safety regulations during installation.
2. To operate inside the charging system, make sure the charging system is cut off the power supply. The mains input of the charging system must be disconnected.
3. Put the power supply unit in a locked room, and keep the key by the person in charge of the power supply unit.
4. Distribution cable routing should be reasonable and protective, avoid touching these cables when operating power supplies.

2.2 Distances requirements

The minimum distances surrounding the charger should be followed to allow proper circulation of air flow:
- The obstacles on the left and right side of the charger should be more than **500 mm** away from the cabinet.
- The obstacles in front and rear of the charger should be more than **1000 mm**.

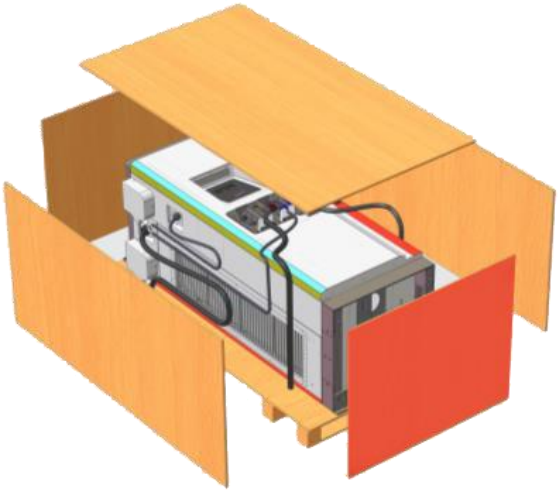
2.3 Installation preparation

1. Unpacking inspection

When the goods arrives, inspect the charger carefully to see if any damage during the shipping.

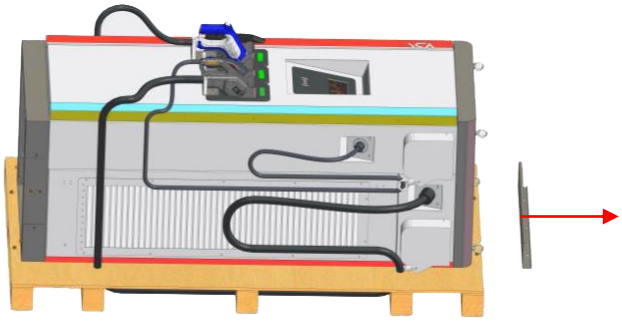
Note:
If any damage caused by the forwarder is not indicated in the delivery note during the receipt of the charger station, Power Elektronik will not be held responsible for the cost of repair/replacement.

Unpack the wooden case following below steps.
I. Open the crate and remove all boards except the one at the bottom of the charger in red.

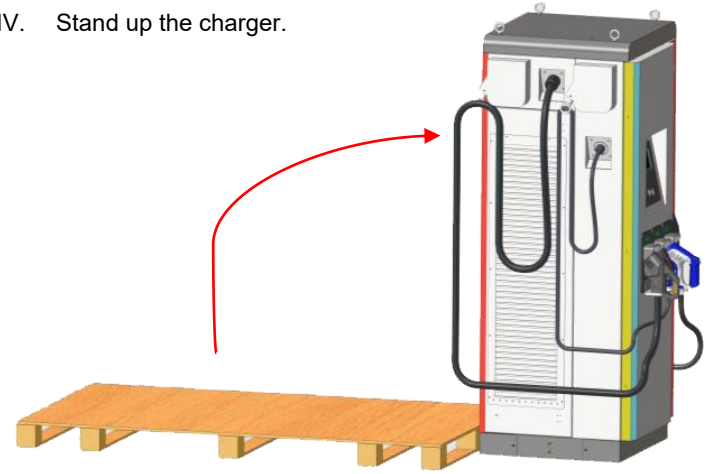


II. Unscrew the 4 bolts from the last board. And then remove it.

III. Unscrew the 2 bolts at the top of the charger from the crate. Remove the fixed metal panel.

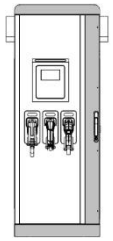


IV. Stand up the charger.



After unpacking completed, check the items inside one by one following the packing list enclosed.

Items included:

Charger cabinet	CCS combo-2 connector	CHAdeMO connector	AC charging connector	EV charging module	Mounting screws	Access key	RFID card
							
1	1	1	1	5	4	2	10

2. Cable

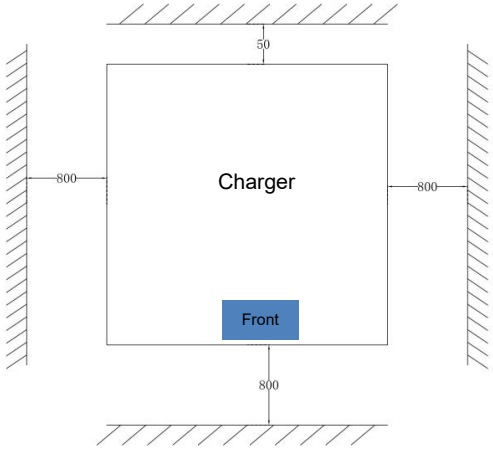
Cable selection should comply with relevant electrical industry specifications.
The AC cable is recommended to be RVVZ type cable with a voltage rating of 550/750V or higher and a temperature rating of at least 70°C. The user determines the cross-sectional area of the input and output cables of the charging cabinet according to table below.

Connectors	Maximum current allowed	Minimum cross-sectional area	0.5V pressure drop and maximum length under the minimum cross-sectional area	Maximum cross-sectional area	0.5V pressure drop and maximum length under the maximum cross-sectional area
DC charging cabinet AC input	250A	70mm^2	5m	120mm^2	10m
Note: When the wiring distance is less than 30m, it is recommended to estimate the cross-sectional area of the line according to the current density of 2.5A/mm^2.					

The cross-sectional area of the system ground cable should be the same as the largest distribution cable, but not less than 35mm^2. Ground bus terminal block is M10 screw.

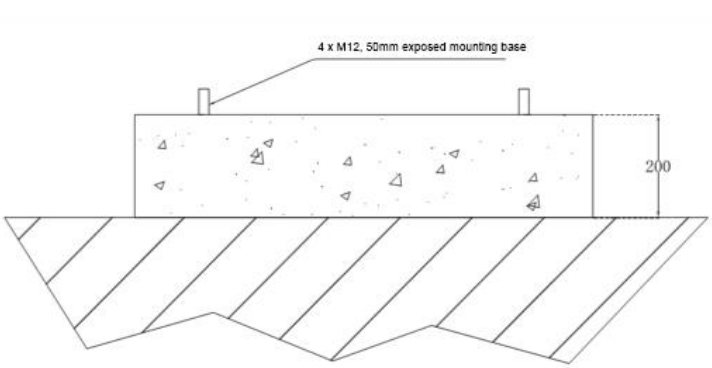
3. Concrete foundation

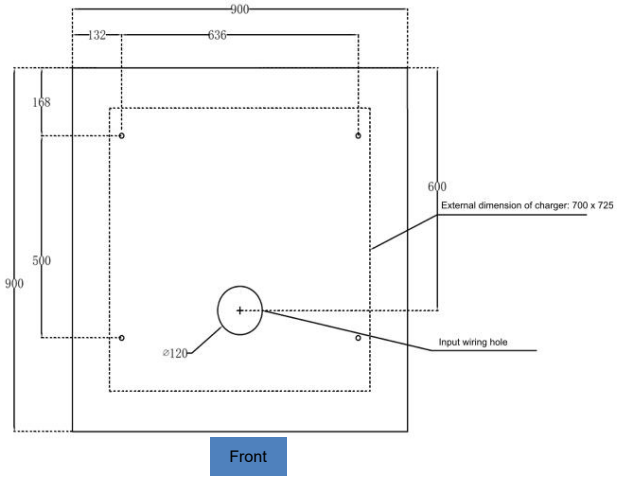
Note:
When installing the Charger, respect the minimum distances space for maintenance and safety reasons.



Unit: mm

I. To prevent any accidental water leaching, need to add the concrete foundation.
   a. The recommended dimension of concrete foundation is 900mm (L) x 900mm (W) x 200mm (H)
   b. The foundation is no less than 200mm +/-5mm above the horizontal level.
   c. The vertical inclination of the foundation is no more than 5%.
II. 4 x M12 stainless steel expansion studs embedded into the foundation in advance.
III. An input wire hole is required to be reserved on the foundation, and the dimensions are indicated in the figure below.





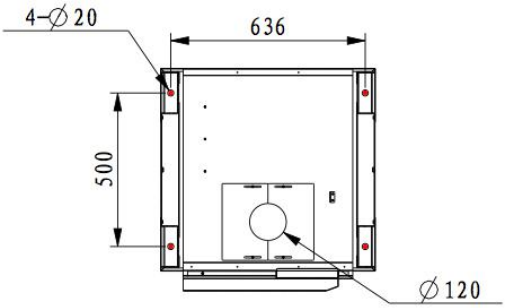
Unit: mm

2.4 Charger installation

Steps:

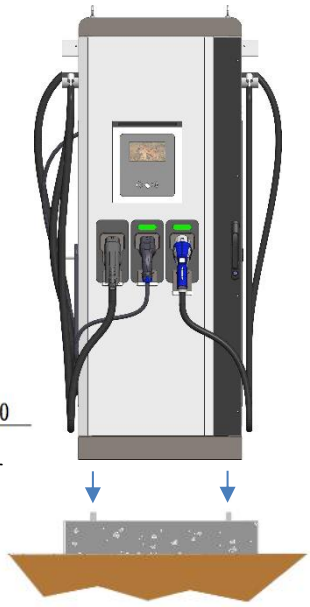
1. Lift the charger with the forklift at the bottom slots or raise it up with eyebolts at the top.

2. Place the charger onto the concrete base of the final location against the holes at the bottom of the charger.
3. Fix with 4 screws against the expansion studs at bottom of the charger.



Holes (in red) at the bottom of the charger

Unit: mm



2.5 Wiring

- Make sure the main switch wiring (MCCB or fuses) of the AC power supply are cutting the electricity supply during installation.
- Have a qualified electrician perform power distribution operations.
- Ensure that all electrical components are in good condition.

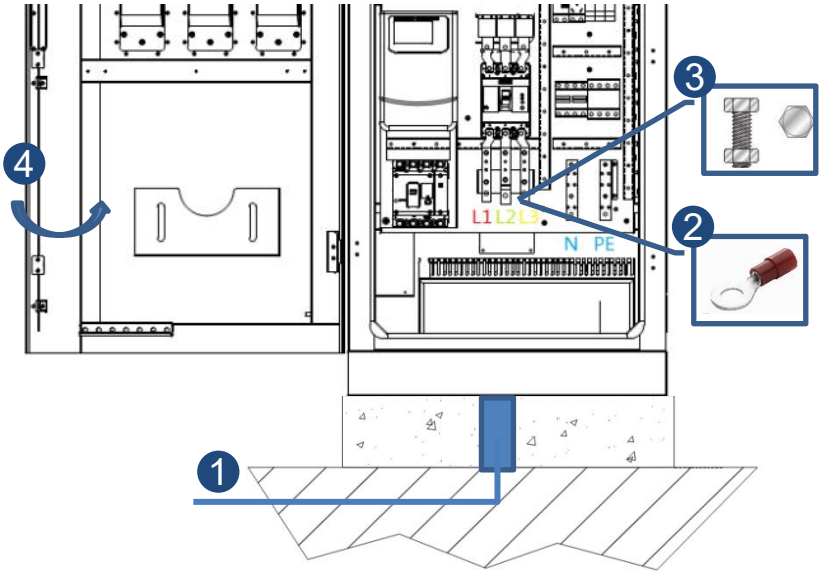
Note:

I. The AC input cable is selected according to Current Regulations according to the maxim DC Charger output power configuration (120kW), nominal site AC voltage and AC distribution cable overcurrent protection device.

II. The site AC distribution shall be equipped with protection devices against AC cable overcurrent, short circuit and lightning strike. The AC distribution overcurrent protection device rating shall not be less than 1.5~2 times the actual DC Charger input power rating.

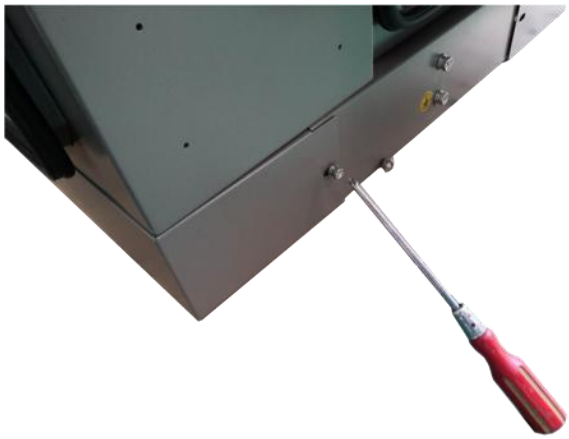
Steps:

1. Lead the AC power cord into the bottom of the charging pile from the cable entry hole reserved on the cement base
2. Use a hole diameter of 10.5mm metallic electric terminal aligned with the required cable cross section according with the power of the Charge Point (100kW DC).
3. Use the M10 screw and washer provided in order to connect the electric terminals.
4. Check all safety labels are correctly placed. Close the Charger's door. The Charger has a security switch (anti-tamper protection) installed that will avoid any charging session if the doors are opened.

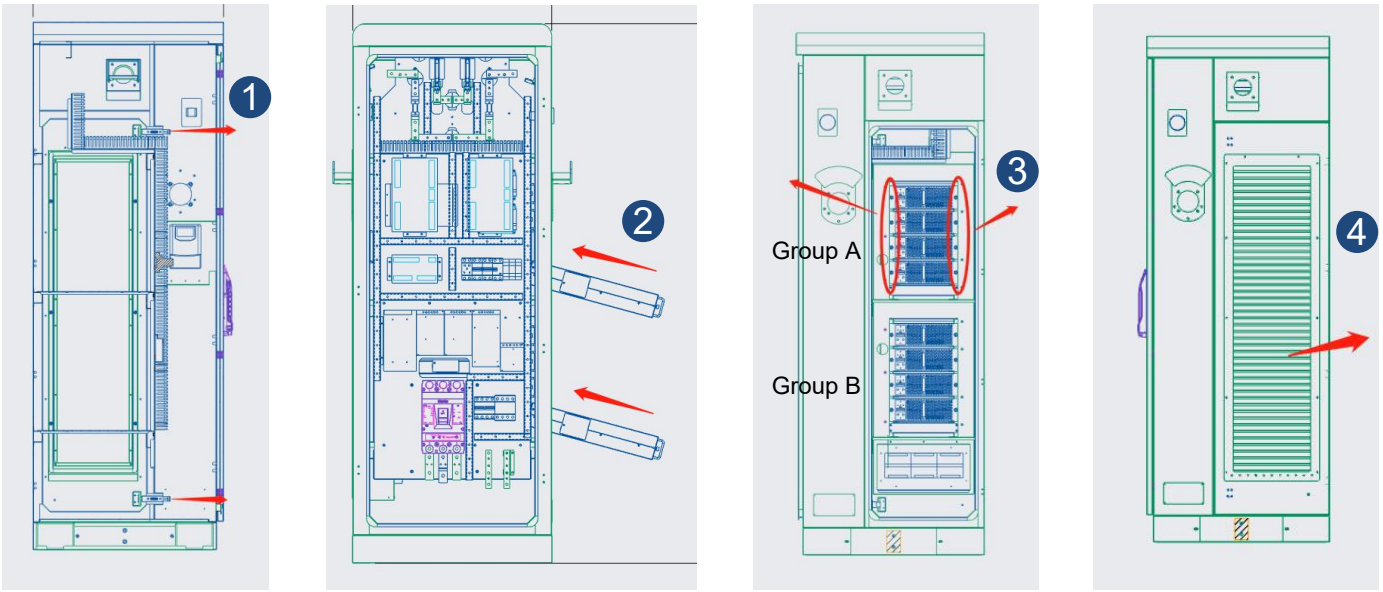


Note:
The three-phase L1, L2, L3 wiring sequence must be consistent with the electricity standard of the located country. Otherwise it will case some equipment inside display failure/alarm.

5. Fix 2 metal panels at the charger bottom. Fasten with screws.



2.6 Charging module installation



Steps:

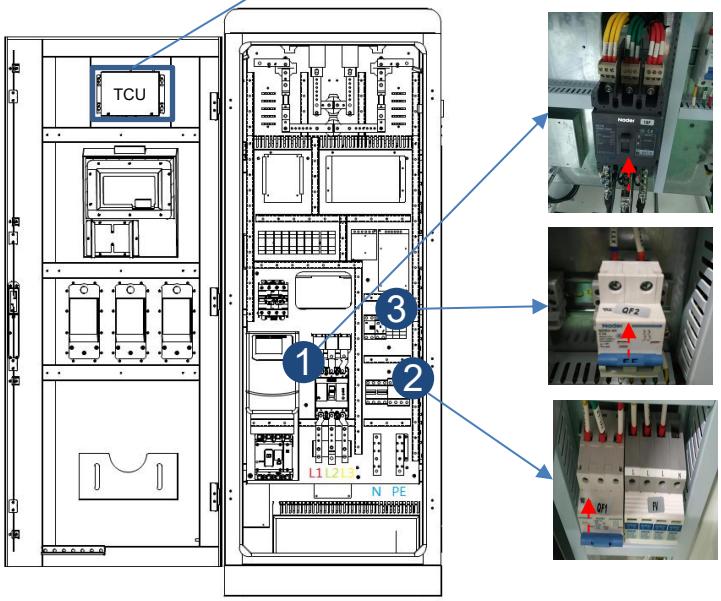
1. Internal side lock pulls outside to open ventilation covers on the both side of the charger.
2. **Install the charging modules into the slots which have the same address mark as the modules, see the right figure.**
3. Tighten the modules with the screws on both sides.
4. Place the ventilation cover back and fix to the cabinet.
5. Charger module address dialing
   a. The modules are divided into two groups, Group A and Group B.
   b. For 100kW DC output, need to install 3 modules into the slots of Group A from top to bottom and 2 modules into Group B.
   c. Group A, the dialing address from top to bottom is 80, 88, 90.
   d. Group B, the dialing address from top to bottom is 60, 68, 98.

Note:
When power on the charger, please double check the displayed dialing address is consistent with the label attached to the module. See the address in above figure for more info.

2.7 4G wireless router/modem connection

The system has been installed the controller (TCU) which can support the 3G/4G Wireless communication. Customers can insert the local SIM card and 3G/4G network card into the controller to activate this function. The wireless 3G/4G communication needs to be set and configured according the local telecom operator environment.

2.8 Power on the charger



Steps:

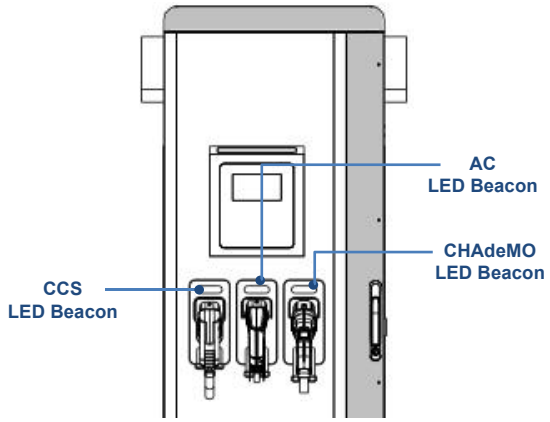
1. Switch on the MCCB to power on AC input. Check whether the voltage is normal with multimeter.
2. Switch on the Lightning Protector Breaker.
3. Switch on System Power Supply Breaker. Check whether the voltage is normal with multimeter
4. Check whether all the beacons are illuminated in green, the screen display is .

❸ Operation

The DC Charger is operated via the LCD Touch screen on the front panel. Charging progress can be started by RFID Card, scanning a QR Code and Smartphone Applet control (need operation platform and Ethernet support and smartphone applet) or manually.

3.1 Beacons

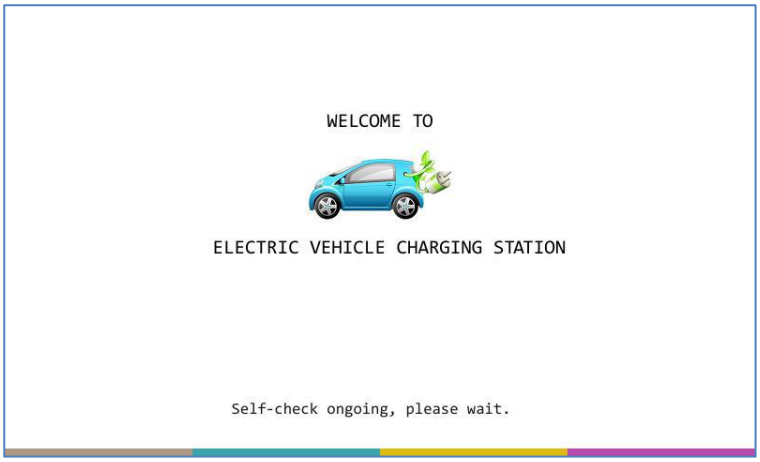
Over each connector there is a beacon light, it indicates the state of charge in which the connector is located.



Colors	Action	Status
	Always on	Standby
	Always on	Connected
⇄	Flicker	Charging
	Always on	Completed
⇄	Flicker	Fault

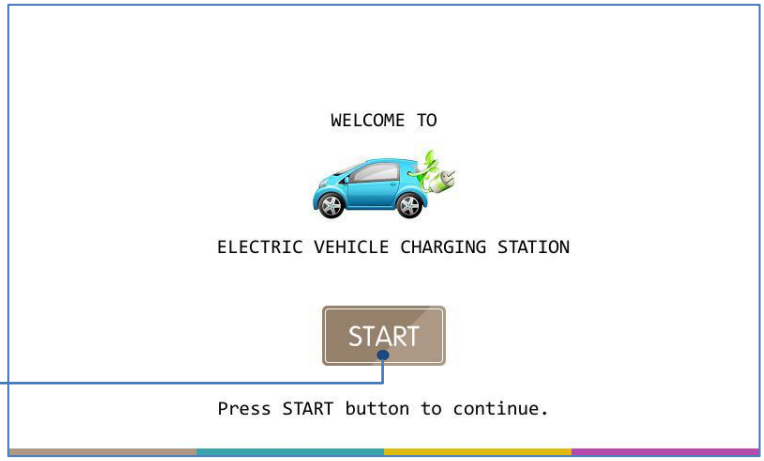
3.2 Boot up

When the charger powers on, the below **Boot Up interface** shows the customer Logo.



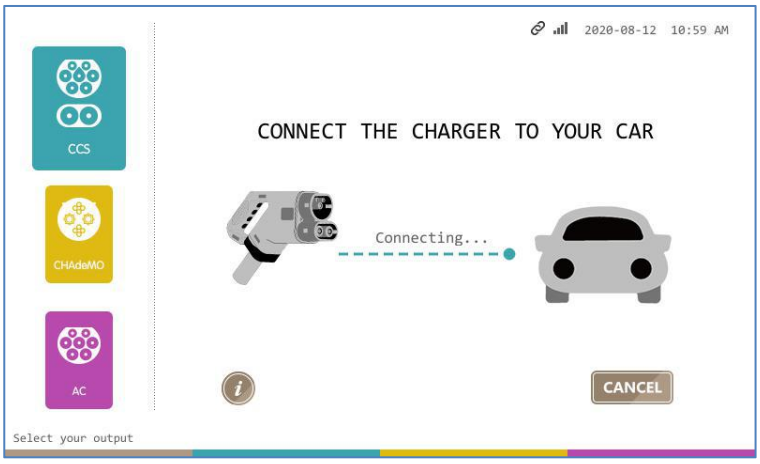
3.3 Standby

After boot up self-checking completed, the display automatically enters the **Standby interface**.



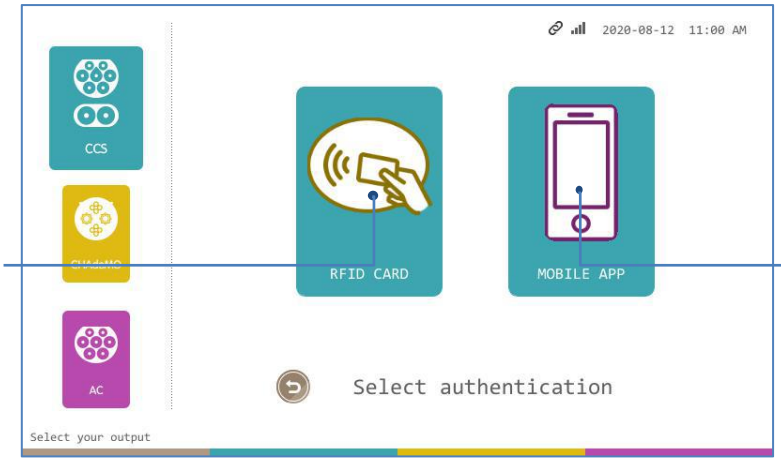
3.4 How to Charge

1. **Press the START button of Standby Interface to enter Connection interface.**
2. **Select the plug compliant with your vehicle on the display and connect the charger to your car. Wait for connection status checking completed successfully.**



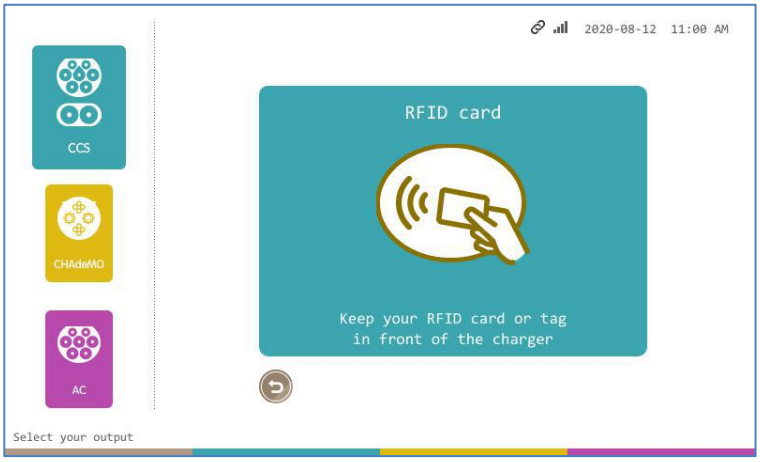
Note:
I. The system leaves user 180s for connection, if times out, display will return to Standby interface.
II. If press Cancel button, display will return to Standby interface.

3. **After connection is established, the display will enter authentication selection interface.**

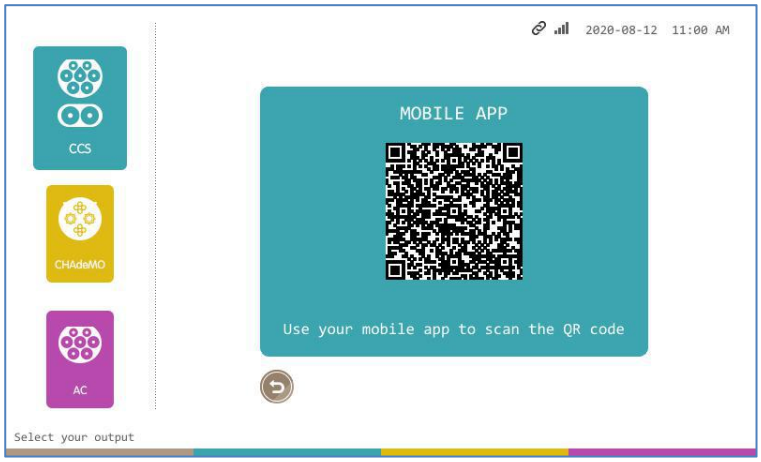


4. **You can choose to use RFID card or mobile app for authentication by pressing the corresponding icon on the authentication selection interface.**

4.1 If you choose RFID card for authentication, **swipe your membership card** at hand.

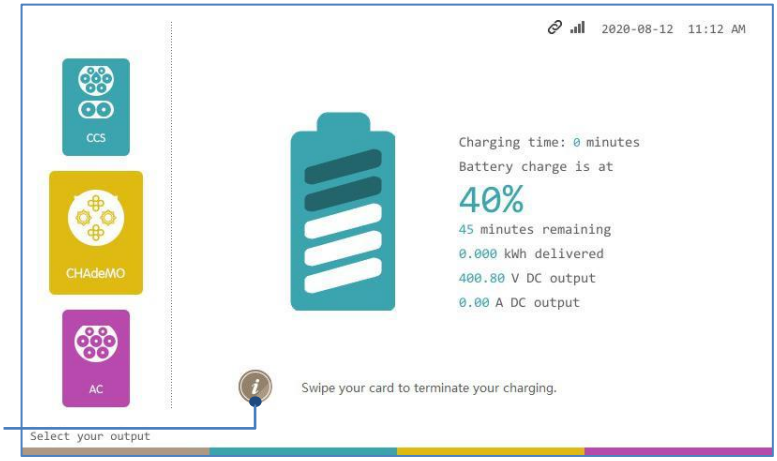


4.2 If you choose mobile app for authentication, **scan the QR code with your smartphone application**.



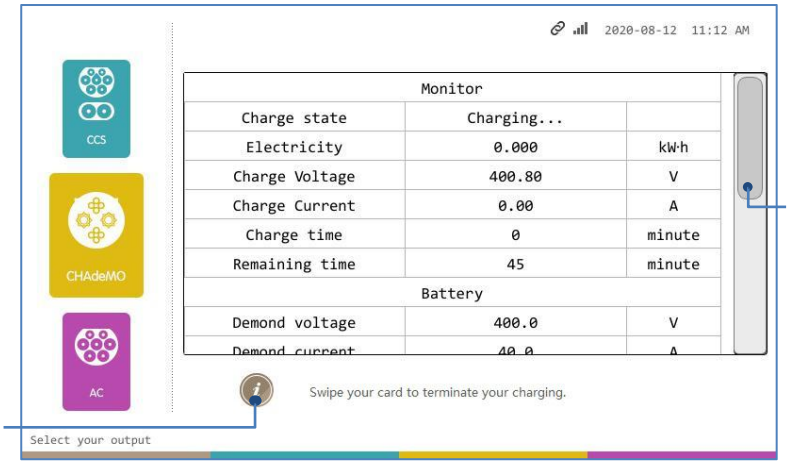
Note:
I. User CARDS are uniformly issued by operators.
II. If you choose QR code scanning, the authorization will be performed on your smartphone application.

5. After authentication passed, the charging will start. The display will show the charging details interface.



Press the info icon for more detailed charging data

Press the info icon, more detailed charging data will be displayed on the screen.



Use this slider to view more detailed data

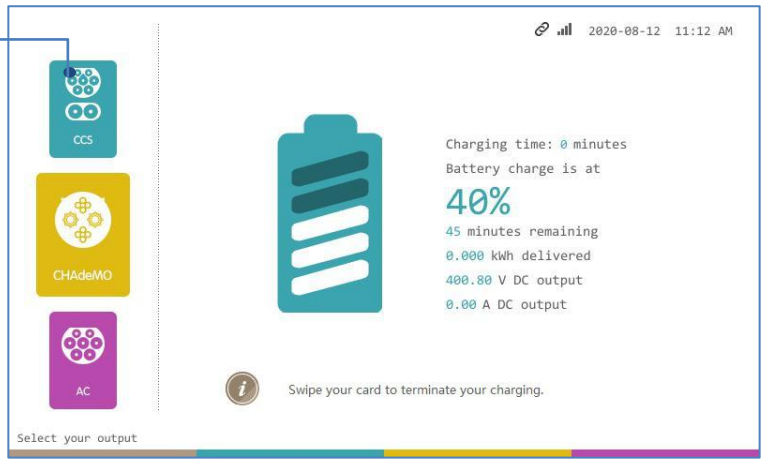
Press the info icon again to return to charging details interface

Note:
I. The detailed data table will automatically disappear after shown up for 60 seconds.
II. User can return to the charging information interface by pressing the info icon again.

3.5 Simultaneous Charging

If another user comes to start another charging, follow below steps to initiate.

1. **Select the plug which is compliant with your car and not popped out. Connect the charger to your car.**

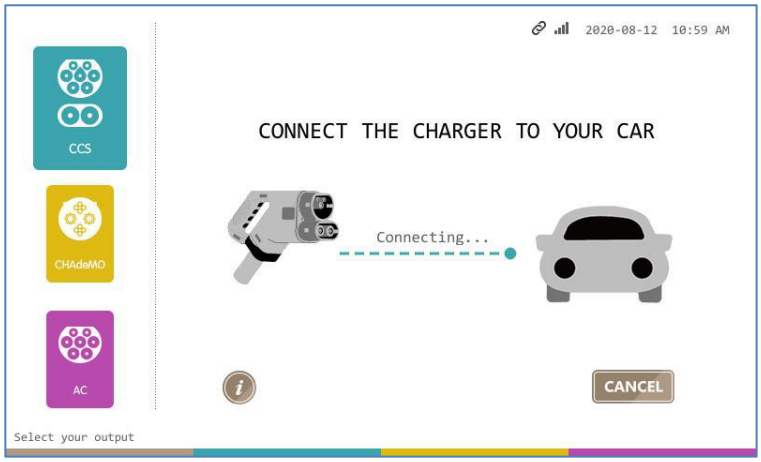


Note:

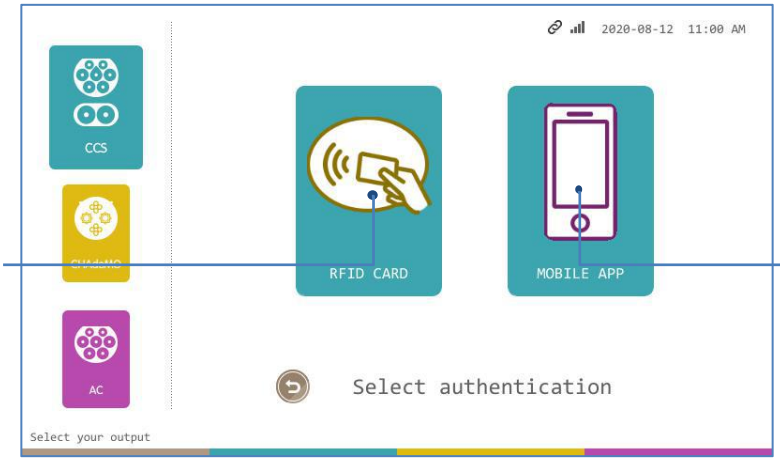
I. Simultaneous charging is only available for the EV which has different charging plug compared to the first charging car.

II. Both AC and DC charging support simultaneous charging.

2. **Wait for connection status checking completed successfully.**



3. **After connection is established, the display will enter authentication selection interface.**



4. **Follow the same authentication steps in “How to Charge” section to complete charging process.**

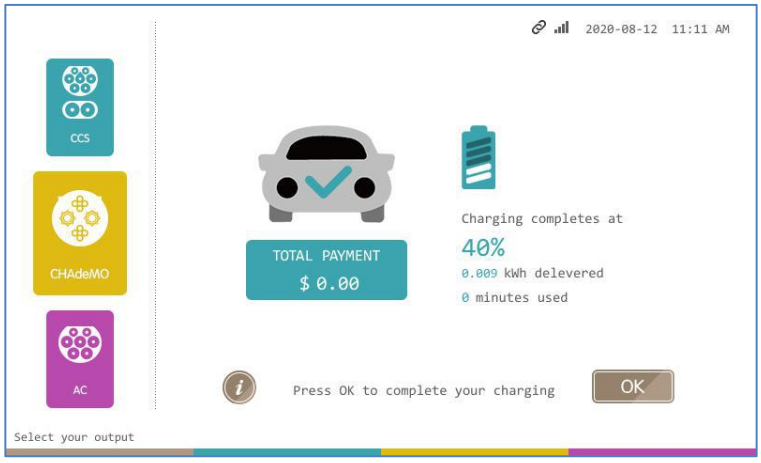
3.6 How to Stop

A. Card swiping to start charging mode.

1. Swipe the card again to stop charging.
2. Enter Billing interface automatically.

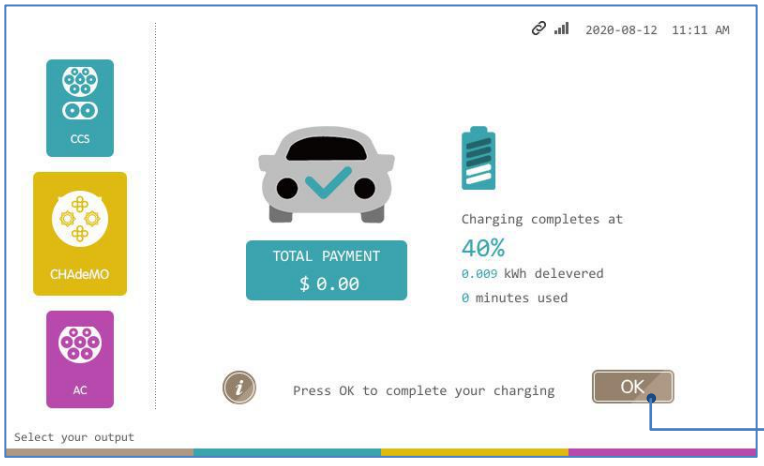
B. Smartphone APP to start charging mode.

1. Operate on the mobile APP to stop charging.
2. Enter Billing interface automatically.



3. Press the information icon on, the display will show more detailed information.

3. Press OK button to complete charging process. Charger connection interface displays. Unplug the connector and return it to the charger holster.



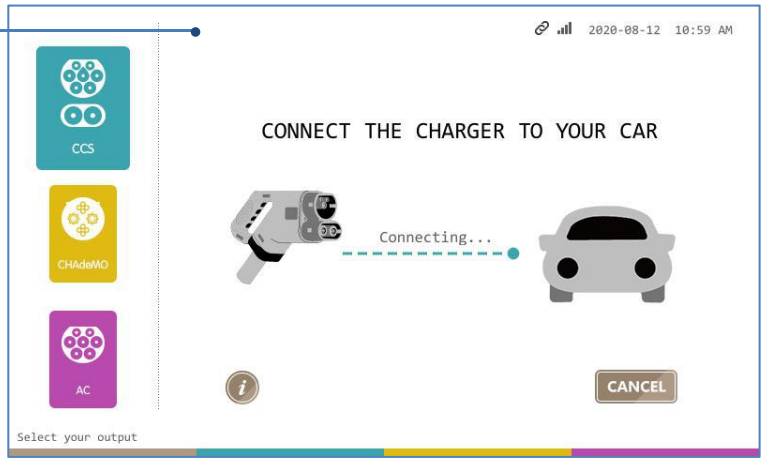
4. Unplug the connector and return it to the charger holster.

3.7 Maintenance

3.7.1 How to enter maintenance interface

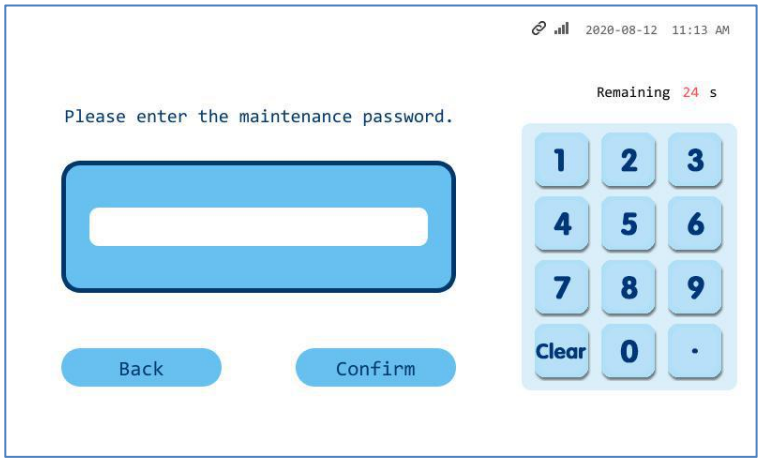
1. Click the top left area of the screen to initiate Maintenance interface.

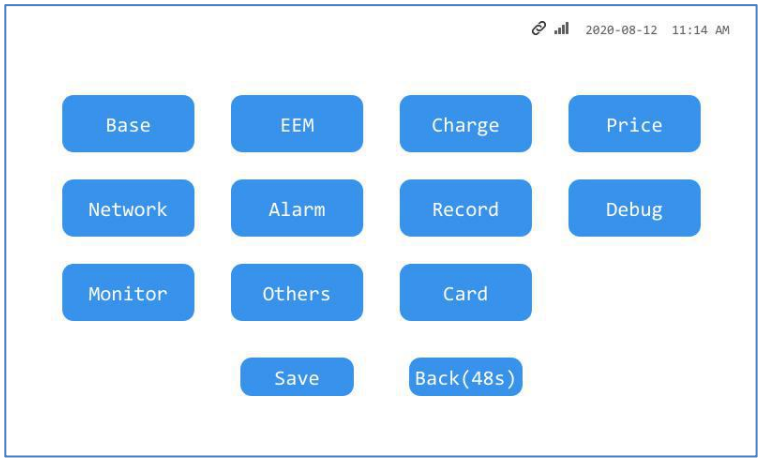
The hidden Maintenance interface button is here. Press and hold this area for 1 second to enter Maintenance interface.



2. Input password for verification to enter Maintenance interface.

Note:
- The default password of all interfaces is 12345678.
- You can customize the password for each permission in the subsequent settings interface.

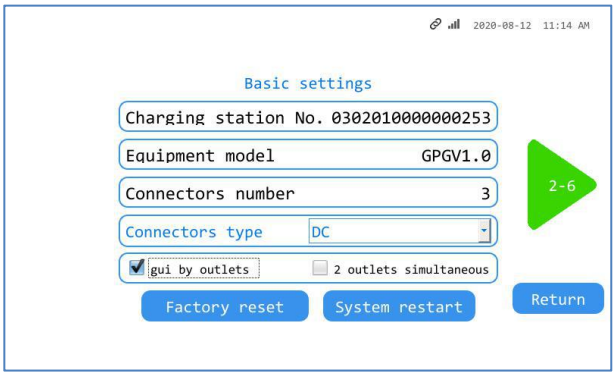


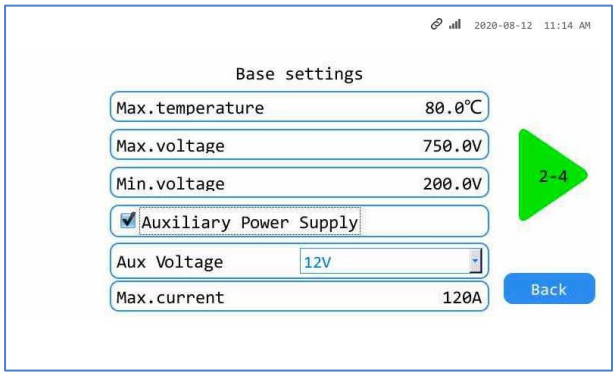


- At Maintenance interface, you can perform parameter setting query, charging record of the charging facility, fault record query, management card binding and data export and etc.
- The modified value will be saved after clicking Save button, and will be effective after clicking Back button to restart.
- Maintenance interface can only be accessed in the non-charging state.

3.7.2 What parameters to configure

1. General setting

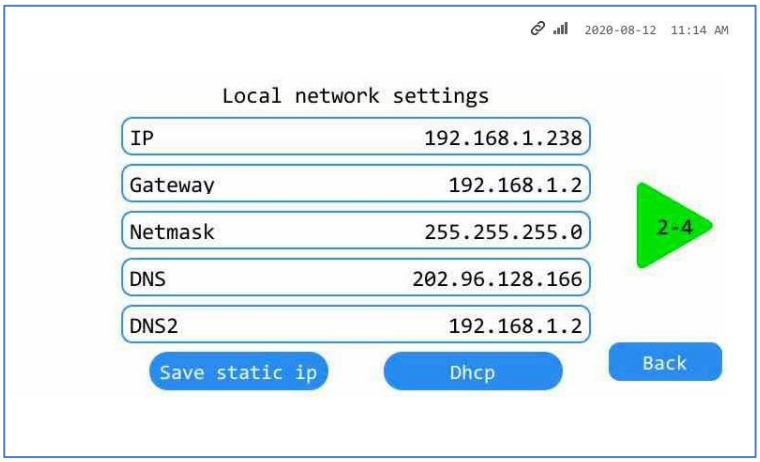




2. Network and OCPP setting

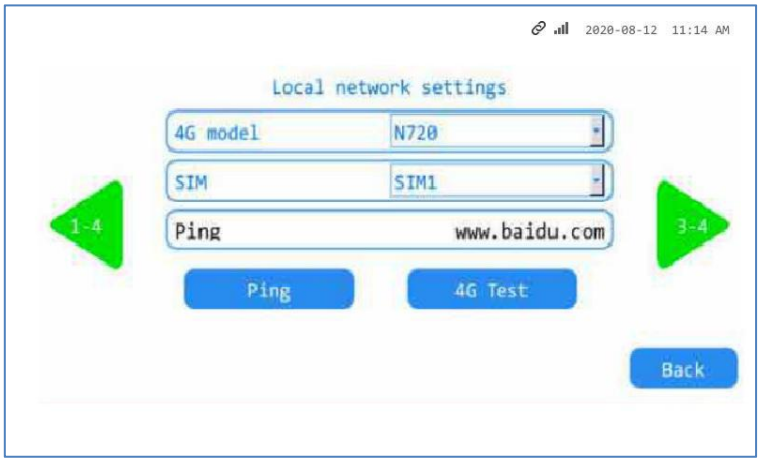
I. Local network setting on Page 1.

Input the corresponding parameters or click DHCP to obtain the network configuration parameters automatically.



II. LTE network setting on Page 2.

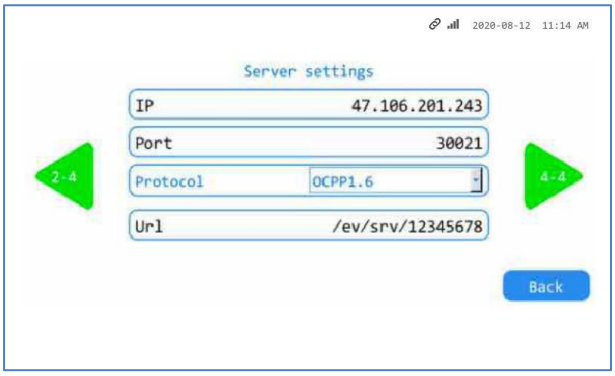
Install the 4g module of the specified model inside the charging station and choose the corresponding parameters to use the LTE networking function.

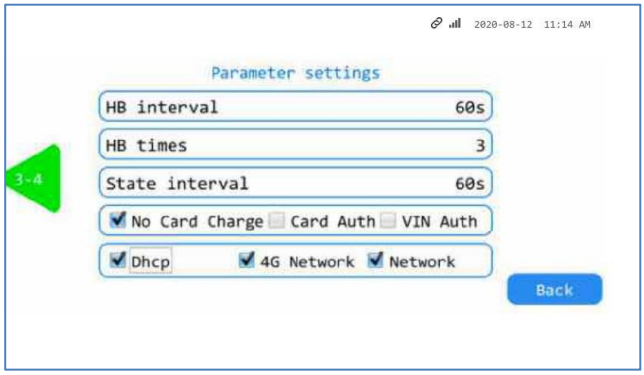


III. OCPP setting on Page 3 & 4.

After the charging station is successfully connected to the network, input OCPP configuration parameters obtained from the charging platform operator. Afterwards the charger will automatically perform OCPP connection.
The parameters include:

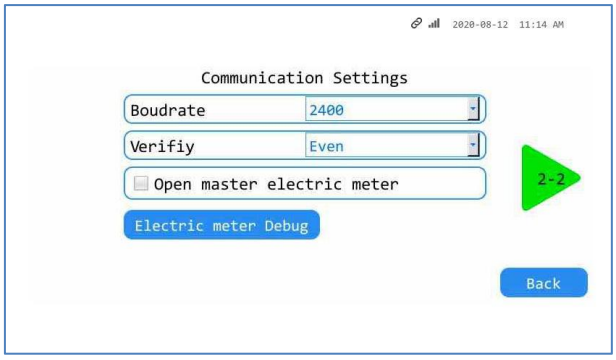
a. IP address
b. Port
c. OCPP version
d. Server URL
e. Heartbeat





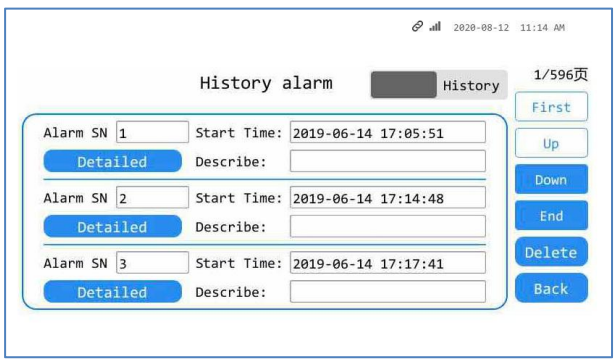
When communication is established, above parameters will be combined following this rule: ws:// IP + Port + Url

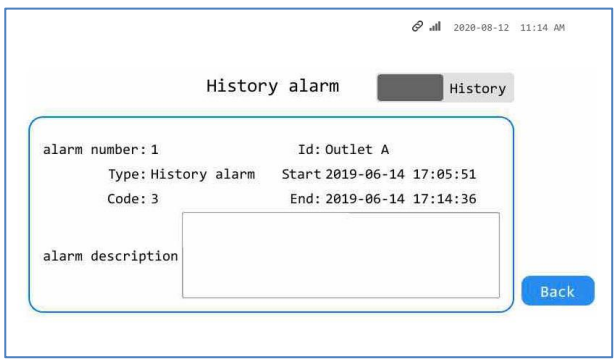
3. Meter management setting



4. Charging record

5. Fault record





4 Routine maintenance

The charging station needs to be regularly checked and perform routine maintenance operations. The specific daily maintenance contents are as follows:

- Prohibit non-professionals from opening the charger housing and turning on / off the power.
- When the front door is open, it is forbidden to touch any metal parts except the case and door handle.
- Do not operate flying wires, connecting wires and jumpers.
- Check the operating status of the charger monthly, such as MCCB, switches, lightning arresters, charging connectors, charging modules and etc..
- Check the power limit and single-phase line connection of the distribution box every month.
- Clean the internal dust of the charger once a month.
- Use a dry cloth to clean the dirt of the charging connector monthly, wipe it, and keep the charging connector dry. Do not drag on the ground during use to avoid abrasion

CONTACT US

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