All-in-One DC Charger

User Manual

To users

Thank you for choosing our All-in-One DC Charger product! In order to use this product safely and conveniently, please make sure that you read this manual carefully before using so as to realize a long-lasting and reliable performance of the product via correct operation.

Product Guarantee

You will have easy access to the maintenance services provided by our company through the purchase contract or relevant approved procedures.

Disclaimer

1. Out-of-warranty period;
2. Disassemble or modify the product without authorization;
3. Violate product operation or usage specifications;
4. Human failure;
5. Losses caused by force majeure or other external factors.

Notice

Occurrence of any disclaimers aforementioned shall not be covered by the warranty policy.

Customer Service

Our company offers comprehensive technical support to our valued customers. Users can reach out to the nearest office, customer service center, or technical department for assistance.

Related Instructions

1. This manual is provided with the product. Please keep it properly so that you can check it at any time when needed. If this manual is accidentally lost or damaged, please request it directly from the manufacturer;
2. This manual pertains specifically to the standard All-in-One DC Fast Charger product. The content may not be applicable to other models.
3. The copyright of this manual belongs to our company and all rights are reserved. The content is subject to change without prior notice.

Related Symbols

The following symbols may appear in this manual. Corresponding meanings as below:

Symbol	Description
 Danger	Used to warn imminent dangers that, if not avoided, will result in death or serious injury.
 Warning	Used to warn a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 Caution	Used to warn a potentially hazardous situation which, if not avoided, may result in moderate or minor injury.
 Notice	Used to convey equipment or environment safety warning information. It may lead to equipment damage, data loss, compromised performance or other unpredictable results if not avoided. "Notice" here does not involve personnel injury.
 Explanation	Used to highlight important/key information, best practices, tips, etc. This is not safety warning information and does not involve information related to personnel, equipment or environmental hazard.

Contents

Chapter 1 General Information

1.1 Disclaimer and warranty conditions

Kstar is not liable for any damages, losses, costs or expenses resulting from the improper handling, installation and use of the product described in this document and product related features, in particular resulting from non-compliance with the instructions of this document and other applicable regulations and standards (e.g. installation, transport, occupational health, digital security, and other safety standards).

Any modification, manipulation, or alteration not expressly agreed with the manufacturer, concerning either hardware or software, shall result in the immediate nullification of the warranty.In the event that the instructions set out in this manual are not strictly complied with, any warranty applicable to this EVSE will be rendered null and void with immediate effect. Any deviation to the instructions contained in this manual must be approved (in writing) prior to such deviation is executed by Kstar or authorized Service partners. In the event that Kstar suffers any damage as a result of the non-compliance with the instructions set out herein, Kstar reserves the right to seek recourse for such damages from the party causing such damages.

The use of any adaptors, conversion adapters or cord extension are not permitted, and will render any warranty null and void. In addition, Kstar does not accept any liability for any damages caused as a result of not following this instructions.

1.2 How to use this document

Make sure that you know the structure and contents of this document. Read the safety chapter and make sure that you know all the instructions. Follow the steps in the procedures fully and in the correct sequence.

The document is intended for these groups:

• Owner of the EVSE

• Electrical designers and System integrator

• Transporters and Handlers

• Qualified installers

• User

1.3 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 BMS, and control the power delivery to the EV
CHAdeMO	Abbreviation of CHArge de Move; a standard charging method for electric vehicles
DC	Direct current
ECU	Equipment Control Unit; a control unit used to handle the system protection and the charging module control and distribution
EV	Electric vehicle
OCPP	Open charge point protocol; open standard for communication with charge stations
PE	Protective earth (ground)
RCBO	Residual current breaker with overload
RCD	Residual current device; a device that breaks an electrical circuit when it detects a current leakage
RFID	Radio-frequency identification; a method of charging authentication
SoC	State of charge; the level of charge of an electric battery relative to its capacity. 0%=empty; 100%=full
SPD	Surge protection device; a device intended to protect electrical devices from voltage spikes in AC circuits
TCU	Transaction Control Unit; intelligent hardware to handle the human-machine interface, metering, transaction, and communication with back office

Table 1-1 Terminology Explanation

Chapter 2 Safety

2.1 Safety Precautions

- Disconnect the power supply to the Kstar EV Charger during the entire installation procedure.
- The load capacity of the grid must meet the requirements of the Kstar EV Charger.
- Connect the Kstar EV Charger to a grounded, metal, permanent wiring system. Otherwise, use the equipment-grounding conductor with the circuit conductors and connect it to the equipment grounding terminal or lead on the product.
- Unqualified personnel must keep a safe distance during the entire installation procedure.
- The connections to the Kstar EV Charger must comply with all applicable local rules.
- Only use electrical wires of sufficient gauge and insulation to handle the rated current and voltage demand.
- Protect the wiring inside the Kstar EV Charger from damage and do not obstruct the wiring when you perform maintenance on the cabinet.
- Keep the cabinet away from all water source.
- Protect the Kstar EV Charger with safety devices and measures as specified by local rules.
- Wear proper personal protective equipment such as protective clothing, safety gloves, safety shoes, and safety glasses when necessary.

2.2 Owner Responsibilities

To protect the EV charger user, other employees, or third parties, the owner bears legal responsibility for the operation of the charger and has the following responsibilities:

- Identify any hazards (in terms of a risk assessment) resulting from the working conditions on the site.
- Know and implement all local rules.
- Install protective devices before operating the Kstar EV Charger.
- Make sure all protective devices are installed after installation or maintenance work.
- Prepare an emergency plan that instructs people what to do in case of an emergency.
- Make sure that all employees and third parties are qualified in accordance with the applicable local rules to perform their work.
- Make sure that there is sufficient space around the Kstar EV Charger to safely do maintenance and installation work.
- Identify a site operator who is responsible for the safe operation of the Kstar EV Charger and for the coordination of all work, if the owner does not do these tasks.
- Make sure that all qualified installation engineers obey local rules and installation instructions, and adhere to the specifications of the Kstar EV Charger.

2.3 Installation Engineer Qualifications

The installation engineers must:

- Be qualified in accordance with all applicable local rules to do the work.
- Be completely familiar with the Kstar EV Charger and its safe installation.
- Obey all local rules and the instructions in the installation manual

2.4 Usage Instruction

Do not use the EVSE if the safety or the safe use of the EVSE is at risk. In these cases immediately contact the manufacturer.

This includes, but is not limited to, these conditions:

- An enclosure has damage.
- An EV charge cable or connector is damaged.

- Lightning struck the EVSE.
- There was an accident or risk of fire at or near the EVSE.
- Water entered the EVSE.
- The EVSE is hit by any object (vehicle, fallen tree, etc).
- The EVSE shows signs of vandalism.

2.5 Disposal Instructions

To avoid negative effect on the environment and human health due to potential hazardous substances, dispose of parts according to local laws and guidance. Proper disposal of this product will allow for the reuse the materials and protect the environment.

2.6 Cyber Security

This product and its features are designed to be connected to and to communicate information and data via a network interface. The owner and site operator agree to use the product and its features at their sole risk, in its judgment. It is the manufacturer's responsibility to provide connectivity to the customer's backend.

Thereafter it is the owners and the site operator's sole responsibility to provide and continuously ensure connection between the manufacturer's network and the owner's and/or site operator's network or any other network (as the case may be).

The owner and site operator shall establish and maintain any appropriate measures (such as but not limited to the installation of firewalls, application of authentication measures, encryption of data, installation of anti-virus programs, etc) to protect its network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of

data or information. Use of embedded software and Kstar systems by owner and site operator is at your sole risk and quality, accuracy, and performance efforts are with you. Kstar is not liable for damages and/ or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and/or theft of data or information.

Chapter 3 Product Introduction

Synopsis

This chapter mainly covers five aspects: product introduction, operating environment and parameters, model description, system composition, and product specifications.

3.1 Product Introduction

The All-in-One DC Fast Charger is a product specially designed to provide fast charging functions for electric vehicles. It has a wide output voltage range and is suitable for various EV models. The product adopts a modular design coming with such features as convenient expansion, flexible configuration, high IP rating and comprehensive protective functions. It supports independent outdoor installation while covering a small area. The favorable human-computer interaction makes user operations more convenient and faster.

3.1.1 Product Appearance

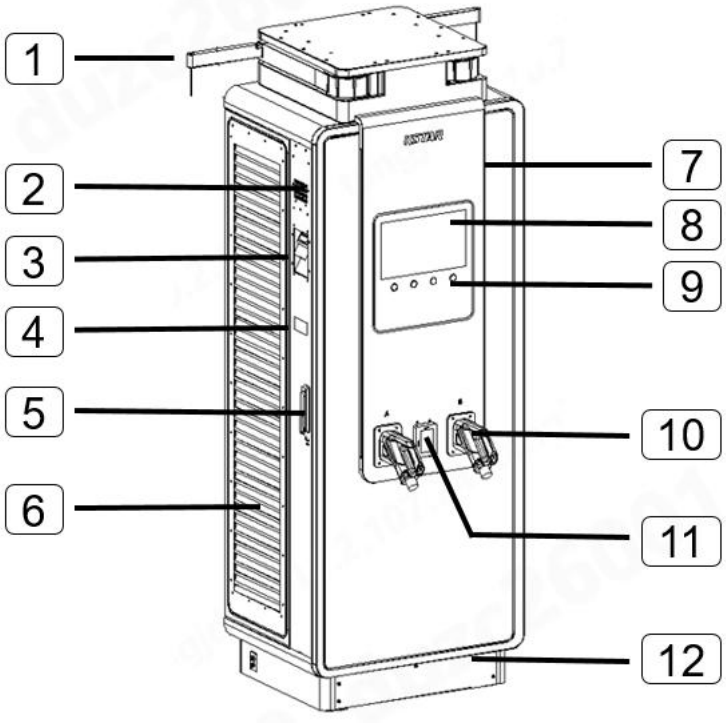


Figure 3-1 Appearance of All-in-One Model

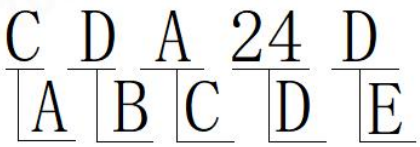
1. Cable management system：Make charging cable easier to be handled.
2. Venting hole: Prevent water condensation and improve heat dissipation.
3. Charging cable output hole: Output port of charging cable.
4. Power meter: Monitor power usage for each connector.
5. Door lock: Improve safety protection.
6. Air vent: Vent the air to outside by fans
7. Indicator light：Indicate charging status
8. Screen：control and monitor charging procedures
9. Physical button：Assist on controlling charging procedures
10. Charging connector：Connect between charging cable and EV.
11. POS terminal: Credit card payment machine.
12. Base: Keep the space between charger and foundation.

3.1.2 Lighting Introduction

Indicator Light	Name	Status	Description
Blue Light	Running Indicator	Always on	Standby
		Flashing	The charging connector is connected but does not start
Green Light	Charging Indicator	Always on	The charging connector is not disconnected after charging is completed
		Flashing	Charging
Red Light	Fault Indicator	Flashing	The charger is malfunctioning and cannot work.

Table 3-1 Explanation of Status Light

3.1.3 Product Model



Field	Description	Value
A	Product Category	C: Charger
B	Product Series	D: DC Charger
C	Charger Type	A: All-in-one
D	Rated Output Power	12: 120 kW 18: 180 kW 24: 240 kW 30: 300 kW 32: 320 kW 36: 360 kW 40: 400 kW 48: 480 kW
E	Charging Connector Quantity	S: Single Connector D: Dual Connector

Table 3-2 Model Naming rules

3.1.4 Product Internal Layout

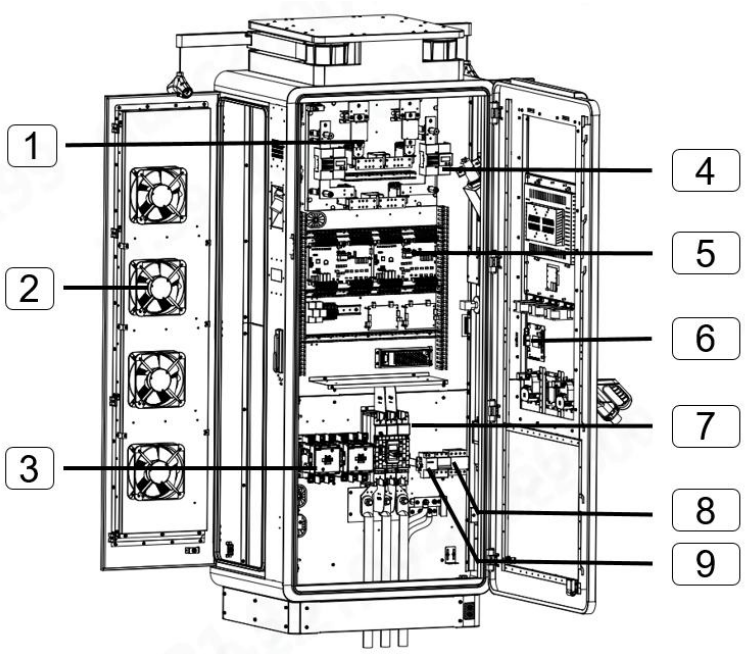


Figure 3-2 Internal Layout of All-in-One Model

1. DC Fuse
2. Venting Fan
3. AC contractor
4. Power meter
5. CCU Board
6. TCU Board
7. MCCB
8. SPD with breaker
9. RCBO

3.1.5 Working Principle

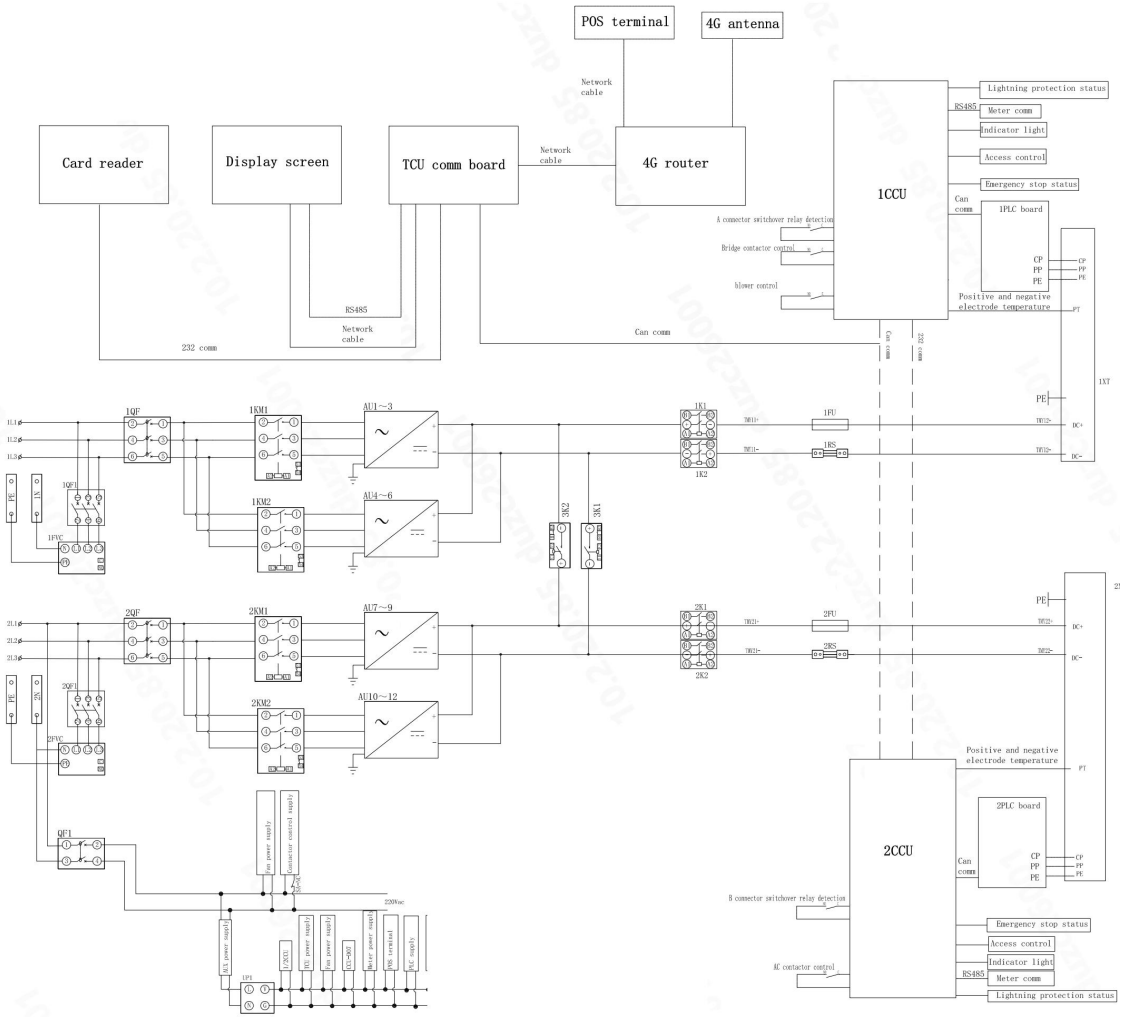


Figure 3-3 Working Principle View

3.1.6 Product Composition

The All-in-One DC Fast Charger is mainly composed of a charging controller, charging module, power cabinet, billing control unit and power distribution unit.

3.1.6.1 Charging Controller

The electrical interface of the charging controller includes charging connection control guidance, PLC communication, AC sampling and control, charging module communication, and cooling system control.

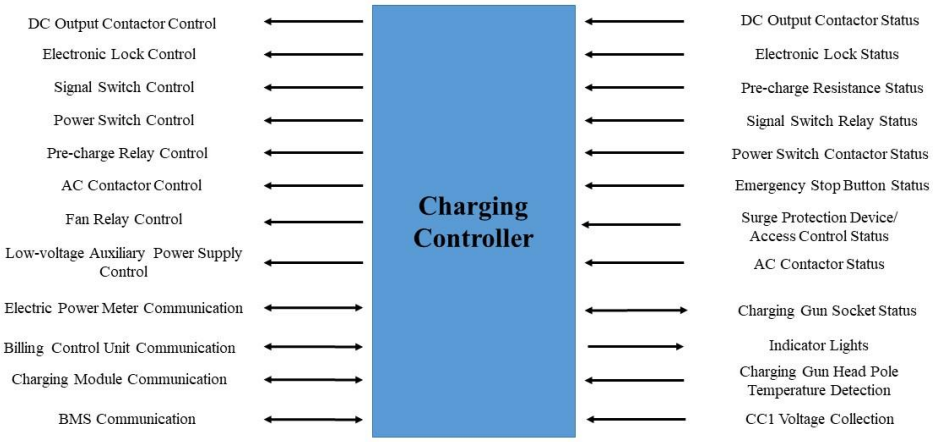


Figure 3-4 Diagram of Charging Controller Interface

3.1.6.2 Charging Module

The charging module is an important part of the charger. It converts three-phase AC into high-voltage DC to provide stable power for the battery. The main charging module types and parameters are as follows:

Item	Technical Parameters
Rated Power	40kW
Environmental Conditions	
Operating Temperature	-40 ℃ ~ 75 ℃ (full capacity output between -40 ℃ ~ 55 ℃; derating output when exceeding 55℃; shut down when exceeding 75℃)
Relative Humidity	5%～95%
Input Features	
AC Working Voltage Range	AC320V～AC530V
AC Input Power Frequency	50Hz±1Hz
Input Power Factor	≥0.98

Harmonic Current Limits	≤5%
Output Features	
Output Voltage Range	200V～1000V
Constant Power Range	300V～1000V
Voltage Stabilization Accuracy	≤±0.5%
Steady Flow Accuracy	≤±1%
Voltage Ripple Factor	≤1%
Efficiency	≥95.2% (rated input voltage 380V AC, output 1000V DC, 50% ~ 100% load current)
Protection Features	
Overvoltage protection, overcurrent protection, over temperature protection, under voltage protection, undercurrent protection, phase loss protection, fan failure protection and other functions	
Other Features	
IP Rating	IP20
Noise	Level II
Heat Dissipation Method	Forced air cooling: air comes in from the front and comes out from the back

Table 3-3 Charging Module Technical Parameters

Explanation

The above are only some of the module parameters. Please consult the sales team for specific parameters.

3.1.6.3 Power Distribution System

This system provides power distribution for the charger, and models with different powers have different specifications of incoming circuit breakers which are all compatible with TN-S and TN-C-S system. You can refer to the following model table to match the charger's superior circuit breaker.

Output Power	120kW	160kW	180kW	240kW
Input Circuit Breaker	250A/400Vac	400A/400Vac	400A/400Vac	500A/400Vac
Copper Cable Diameter (mm²)	3*70+2*35	3*95+2*50	3*120+2*70	3*185+2*95

Table 3-4 Charger Power and Distribution Specification Matching Table--240kW

Output Power	300kW	320kW	360kW	400kW	480kW
Input Circuit Breaker	400A 2-pole	400A 2-pole	400A 2-pole	400A 2-pole	500A 2-pole
Copper Cable Diameter (mm²)	2*(3*150+2*70)	2*(3*150+2*70)	2*(3*185+2*95)	2*(3*185+2*95)	2*(3*240+2*120)

Table 3-5 Charger Power and Distribution Specification Matching Table----480kW

3.1.6.4 Billing Control Unit

The billing control system provides functions such as billing, communication with the background monitoring and management system, and human-computer interaction for the charger.

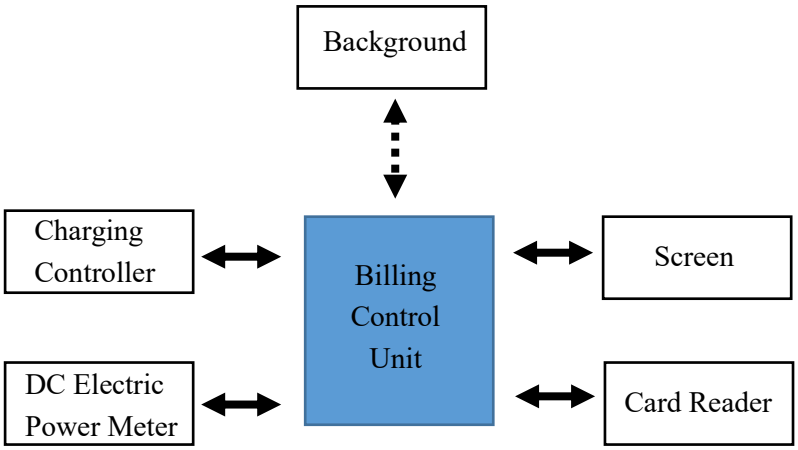


Figure 3-6 Diagram of Billing Control Unit

3.2 Product Dimensions

Type	Power	Dimension	Socket Height*
	kW	mm (W*D*H)	h(mm)
DC Charger	120-240kW	850*650*2200	900
	300-480kW	850*850*2200	900

Table 3-5 Charger Dimension and Socket Height

*Note: This figure meets the requirements ranging from 0.5m to 1.5m.

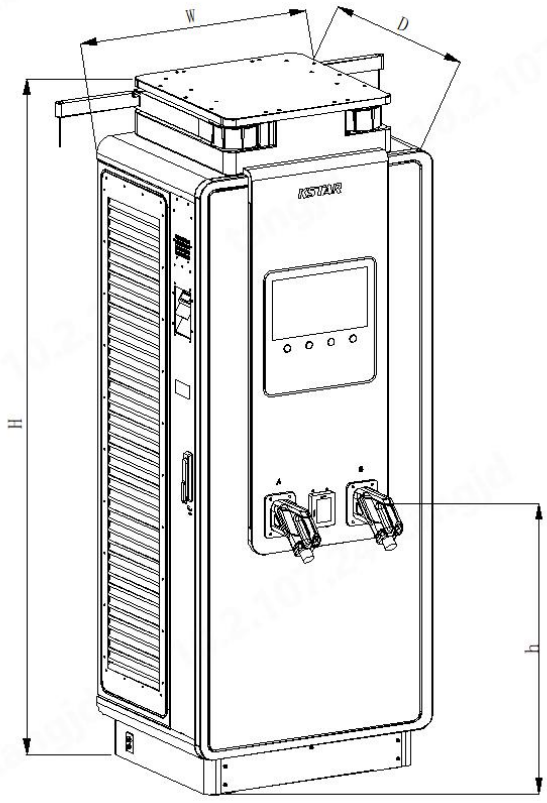


Figure 3-7 Diagram of Appearance Dimensions (unit: mm)

Chapter 4 Transportation and Reception

Synopsis

This chapter mainly introduces the processes and related precautions during the transportation, handling and receiving of products.

4.1 Site Preparation

- The installation site is prepared.
- The appropriate service wiring, circuit protection, and metering are in place at the installation site.
- If you choose to use a cellular network to communicate with the Kstar EV Charger, the cellular coverage at the installation site should be consistently strong. Use a cellular signal detection device to ensure the signal is above -90 dBm. If the signal is below-90 dBm, install repeaters to boost the strength of the cellular signal. Repeaters are often required when installing the Kstar EV Charger in underground environments such as in an underground garage or enclosed parking space.
- There is enough space available around the installation site to use a forklift or other lifting equipment, to unpack, and to allow people to work freely.
- All the parts and tools are available.
- You have read through the installation procedure.

4.2 Product Transportation

The All-in-One DC Fast Charger contains mechanical and electrical equipment. Improper transportation and handling may cause damage and lead to the product malfunction. Please ensure the safety and quality of the product during transportation and handling. Precautions related to transportation and handling are as follows:

1. Please try to choose smoother transportation methods (such as rail transport or shipping). When selecting road transport, opt for well-maintained highways to avoid excessive bumps
2. Please strictly follow the instructions on the outer packaging during the transportation;
3. Please make sure that inclination angle is less than 5°. If the inclination angle is too large, it may cause the charger to tip over, which may easily cause casualties or other accidents;
4. During transportation, the charger should be protected from excessive mechanical impact;
5. The charger transportation process should ensure that there is no rain or bad weather. If it cannot be avoided, please take protective measures;
6. Please use mechanical tools when unloading and transporting;
7. The equipment must be handled by professionally trained staff. You can use a forklift to unload the packaging box from the vehicle for placement, with the forklift in the middle to ensure symmetry.
8. In order to avoid tipping over, please use ropes to securely fasten the entire packaging box to the forklift before moving it while manual supervision is required. The cabinet must be moved carefully to avoid damage to the equipment caused by any impact or falling.

4.3 Product Reception

All-in-One DC Fast Charger products have been conducted with strict quality assurance testing and inspection before shipping. Users are advised to carefully inspect the equipment upon receipt to ensure that it has not been damaged during transportation.

After the product is received, users can either install or not install it immediately. In order to provide users with a better receiving solution, the simulated receiving process is given below for reference. Please choose one according to the actual circumstance.

The following is a diagram of the receiving process simulation:

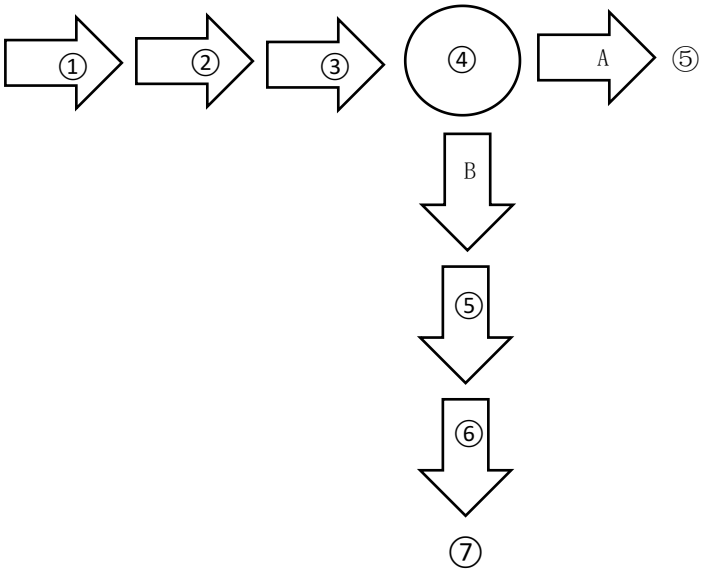


Figure 4-1 Diagram of Receiving Process

The diagram shows the receiving process under two conditions, namely condition A and condition B, where:

A——Instant installation

B——Postponed installation

In the figure above:

①——Arrival;

②——External Inspection;

③——Internal Inspection;

④——Acceptance Completed;

A: ⑤——Complete Receiving.

B: ⑤——Sealing;

⑥——Storage;

⑦——Complete Receiving.

4.3.1 External Inspection

After arrival, the charger shall be inspected externally, including the outer packaging and the exterior of the product.

What to check:

1. Whether the outer packaging has been unpacked;
2. Whether there are obvious damages or collision marks in the outer packaging;
3. Whether the exposed parts of the equipment are damaged, such as structural deformation, paint peeling, etc.

4.3.2 Internal Inspection

1. After unpacking, please carefully check whether all parts inside the equipment are complete or damaged;
2. Check the accessories against the packing list to ensure all items are complete.

4.3.3 Storage

After receiving the product, it's recommended to store the product properly according to the following requirements.

Content	Requirements
Storage Environment	Safe and clean
Temperature	-40℃～ 70℃
Humidity	5% ~ 80% (no condensation)
Storage Time	The total transportation and storage time should not exceed 6 months. If it exceeds 6 months, re-calibration of performance is required.

Table 4-1 Product Storage Environmental Requirements

Notice

● If the equipment has been unpacked, it must be repacked according to the original packaging requirements;

● Prolonged exposure of the equipment to the external environment after unpacking may cause damage and result in the voiding of the manufacturer's warranty.

4.3.4 Attention

1. If any damage, loss or other abnormality is found during inspection, please report it to the carrier immediately; if you find hidden damages, please also report it to the carrier as well as the local offices of product supplier;
2. It is recommended that users move the product as close as possible to the installation site (or move it to a storage location) before unpacking and inspecting it. Be careful during the unpacking process to avoid scratches or bumps;
3. When unpacking, it is recommended that users consider the reusability of the packaging box;
4. If you find that the goods have been unpacked when picking up the goods, please check whether there is any information on the delivery note. If not, please contact the relevant department;
5. During the delivery process, if damage is found, please indicate the corresponding damage on the delivery note and submit a damage claim to the carrier.

Chapter 5 Equipment Installation

Synopsis

This chapter mainly introduces some preparations that should be done before installing the equipment, including installation preparations, installation precautions, cabinet installation and electrical parts installation, etc.

5.1 Installation Process

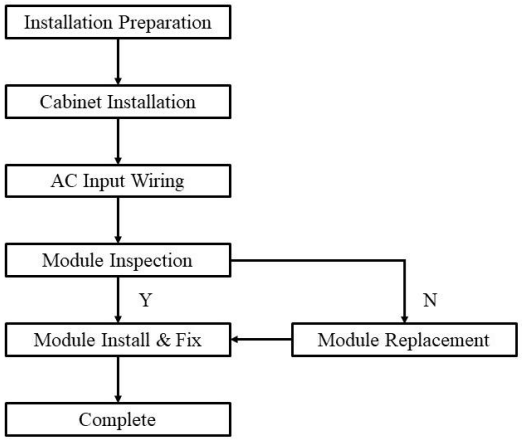


Figure 5-1 Installation Process

5.2 Installation Preparation

5.2.1 Installation Environment Requirements

The protection level of the All-in-One DC Fast Charger is IP54. Based on EMC emissions and noise levels, the chargers are designed to meet installation requirements in industrial environments.

In order to ensure that the charger can be operated safely and efficiently, be sure to comply with the following requirements when selecting the installation environment:

1. The installation site should be dry and flat, not prone to water accumulation, and easy to operate and maintain;

2. There are no flammable gases or combustible items in the installation space nearby;
3. The usage environment indicators of the product should be controlled within the range specified by the Charger Performance Parameters in this manual (see the table in Chapter 3, Section 3);
4. It must not be installed around pools or waterway valves (faucets). If it has to be installed around the above-mentioned environments, the net distance must be maintained at least 1 meter;
5. It is recommended to add a canopy when using the product outdoors;
6. The distance between the upper part of the product and obstacles should not be less than 150mm. The distance requirements between the surrounding area and obstacles are shown in the figure below (unit: mm).

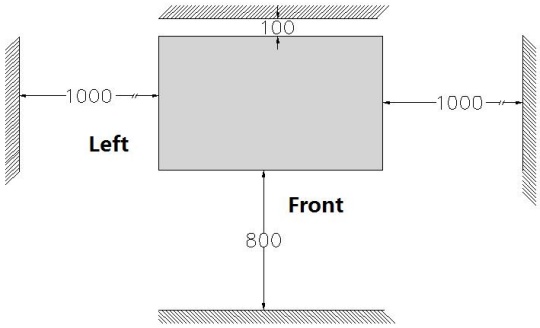


Figure 5-2 Schematic Diagram of the Distance between Charger and Obstacles (unit: mm)

7. Choose a site where the charging cable is of sufficient length to be connected to the EV charge port. The standard length of the charging cable is 5 meters, but a 7 meter cable is also available.
8. Take into account the limited reach of a wheelchair user.
9. Determine appropriate ground anchoring locations where concrete exists or can be installed (no asphalt surfaces).
10. Consider locations where it will be easy to add future stations.25
11. Determine optimum conduit layout to minimize linear conduit costs to multiple parking spaces. If possible, avoid or minimize trenching requirements.

12. Evaluate existing electrical infrastructure to determine if the existing utility service and electrical panel capacity is sufficient. Identify costs for any necessary upgrades
13. and/or a new dedicated electrical panel. We recommend you invite a certified electrician to evaluate available capacity and identify any upgrades that may be required.
14. If a dedicated EV electrical panel is required, choose a panel location in close proximity to the existing electrical supply.
15. Measure cellular signal strength to ensure adequate cellular coverage at the installation site. To ensure adequate signal strength in underground or enclosed parking structures, cellular repeaters may be required.
16. We recommend you avoid locations under trees where sap, pollen or leaves would fall on the Kstar EV Charger and increase the station owner's site upkeep workload.
17. For stall parking, we recommend you use perpendicular parking stalls that allow a vehicle to enter either front-first or rear-first, to better accommodate the varied charge port locations on different EVs. Diagonal stall parking is not advised.

 **Notice**

● The air inlet and outlet of the product must be left enough open space to meet the heat dissipation needs.

● Using product in an environment where rated requirements are exceeded may lead to an equipment failure or compromised performance. Please consult us before use so that we can provide a suitable solution.

5.2.2 Foundation Preparation

The product is recommended to be installed on a concrete foundation. The standard foundation dimension diagram for installation is as follows. Please note that the following foundation dimension may change depending on local construction regulation or relevant law.

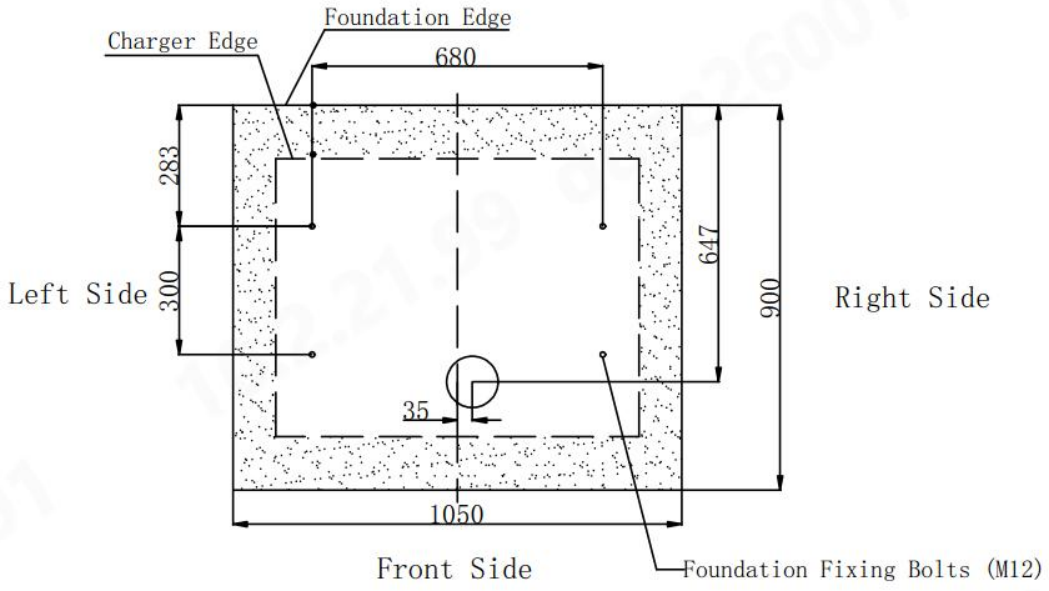


Figure 5-3 Diagram of Standard Foundation Dimension (unit: mm)--240kW

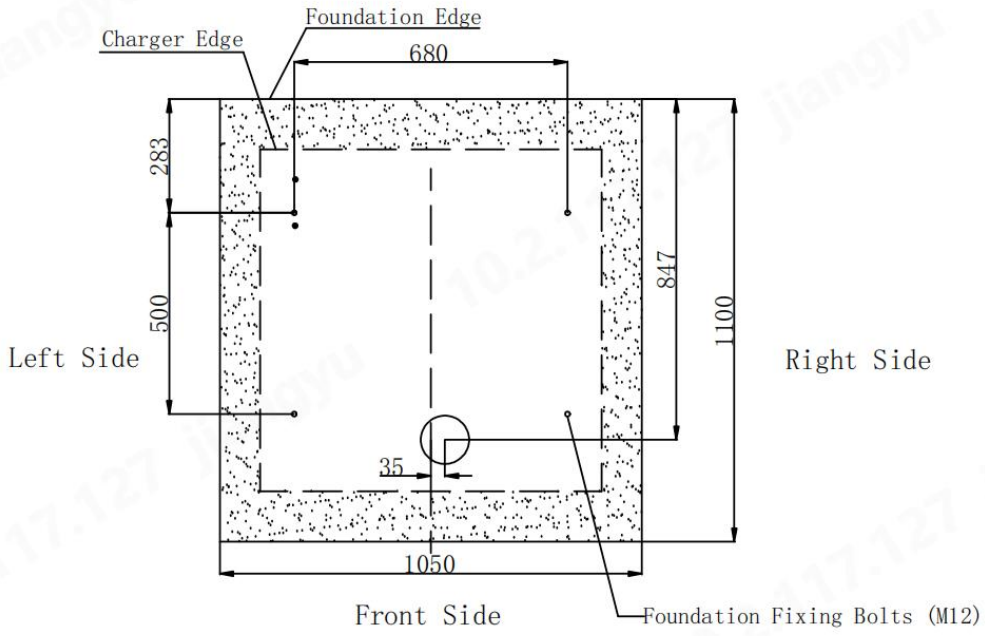


Figure 5-4 Diagram of Standard Foundation Dimension (unit: mm)--480kW

Pour the concrete into the hole. Make sure that the cable tube is in the correct position. Ensure that the conduit come out of the surface within the marked area.

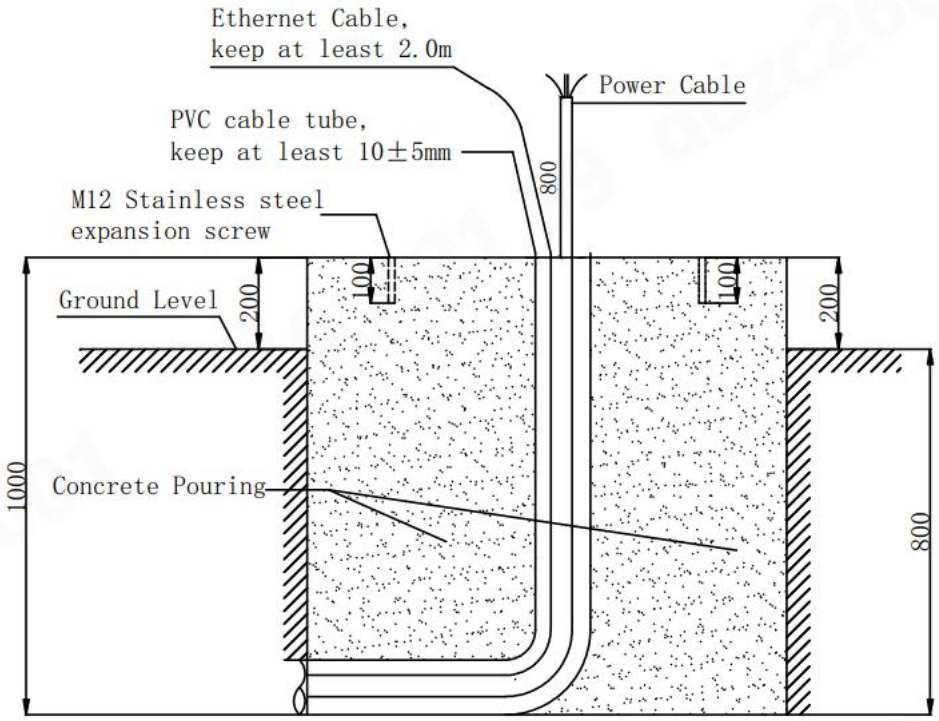


Figure 5-5 Diagram of Concrete Pouring Requirements (unit: mm)

5.2.3 Power Supply

Before installing the equipment, the user should first equip the installation site with a suitable power supply. The power supply must meet the following basic requirements so that the equipment can be used within the normal range.

Requirements are as follows:

1. The All-in-One DC Fast Charger requires the use of a three-phase five-wire power supply;
2. The power supply must comply with the standards of the country/region of use;
3. The equipment must be reliably grounded;
4. Meet the maximum power requirements of the equipment.

5.2.4 Forklifting the cabinet

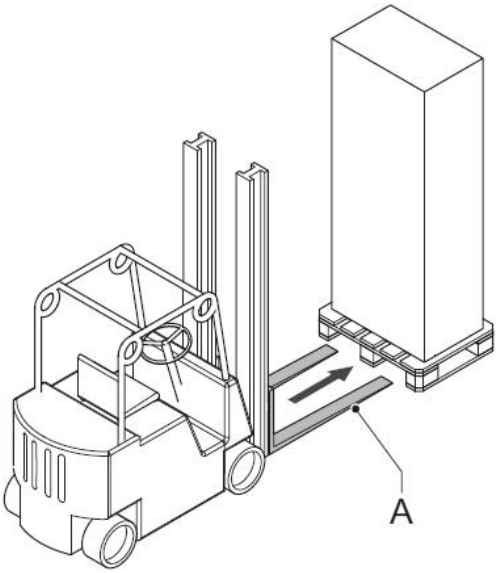


Figure 5-6 Diagram of Cabinet Forklifting

1. Make sure the forks (A) of the forklift truck in the gaps go through the gaps into the side of the pallet.
2. Move the cabinet to the construction site.

5.2.5 Packing List

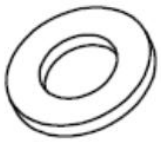
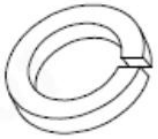
Expansion Bolt (M12 x120) 4PCS		Hexagonal Nut(M16) 6PCS	
Bolt (M16 x 40) 6PCS		Bolt (M10 x 25) 2PCS	
Washer (16) 12PCS		Bolt (M8 x 25) 4PCS	
Spring Washer(16) 6PCS		Cabinet Door Key 6PCS	

Table 5-1 Packing List

5.2.6 Installation Tools

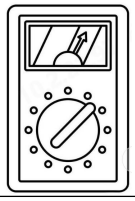
Insulation torque wrench		Diagonal cutting pliers	
Double-ended wrench		Multi-meter	
hydraulic pliers		Insulated adjustable wrench	
Phillips screwdriver （PH2*150mm，PH3*250mm）			

Table 5-2 Installation Tool List

Please note that the installation tools are not provided by Kstar. Installation party need to be sure to have all the tools prepared prior to the installation. In addition to the above handling equipment, This tool list does not necessarily include all the tools you may need and installation party also needs to prepare the Protective gloves, Insulating tape and so on for self-protection.

5.3 Cabinet Installation

5.3.1 Area Requirements

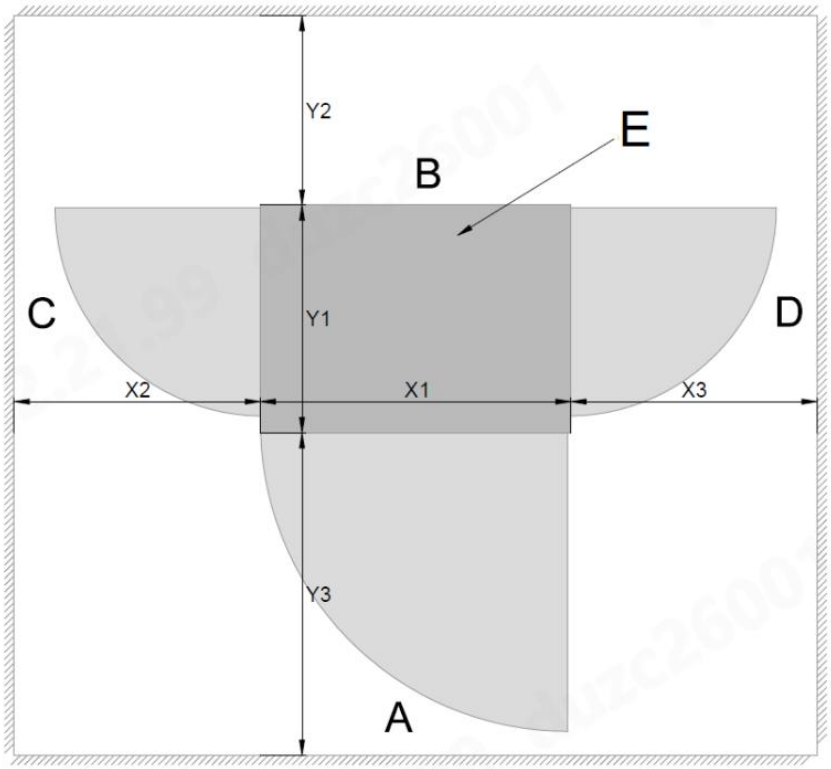


Figure 5-7 Diagram of Cabinet Installation Area

A. Front side of the charger

B. Rear side of the charger

C. Left side of the charger

D. Right side of the charger

E. Cabinet

Kstar 240kW DC Charger

Parameters	Specification	
	mm	inch
X1	850	31.50
X2	700	27.56
X3	700	27.56
Y1	650	25.59
Y2	500	19.69
Y3	900	33.46

Table 5-3 Dimensional Reference for Kstar 240kW DC Charger Cabinet

Kstar 480kW DC Charger

Parameters	Specification	
	mm	inch
X1	850	33.46
X2	900	35.43
X3	900	35.43
Y1	850	33.46
Y2	500	19.69
Y3	900	35.43

Table 5-4 Dimensional Reference for Kstar 480kW DC Charger Cabinet

5.3.2 Base Dimensions

The product is recommended to be installed on a base which is provided by Kstar. The standard base dimension diagram for installation is as follows.

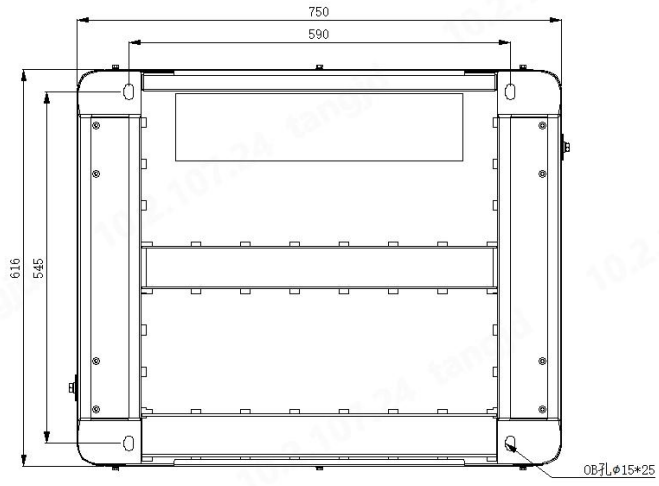


Figure 5-8 Dimensions of Base (unit: mm)

Installation Tips:

1. When pouring and installing the foundation, reserve wiring ducts to facilitate wire access to the base;
2. The installation surface of the foundation needs to be leveled to ensure that the vertical slope of the installation surface does not exceed 5%;
3. After the foundation is poured, use an electric drill to drill holes (or reserve installation holes) on the foundation according to the expansion bolt hole size on the installation diagram. The diameter of hole is 16mm while the depth is

70mm. Please use a drill bit with the diameter of 16mm. To prevent eccentricity when drilling the hole, it must be kept perpendicular to the cement base, and then put the M12*80mm stainless steel expansion bolt into the installation hole;

4. After the foundation is prepared, remove the pallet and front and back panels of the rack cabinet during equipment transportation. Then, use a forklift to move the equipment onto the cement foundation and align it with the installation holes. Thread the input wires through the cable holes at the bottom of the rack cabinet, tighten the expansion bolts, and complete the installation of the rack cabinet.

5.3.3 Installation mounting

1. Remove the left and right base covers using a screwdriver.

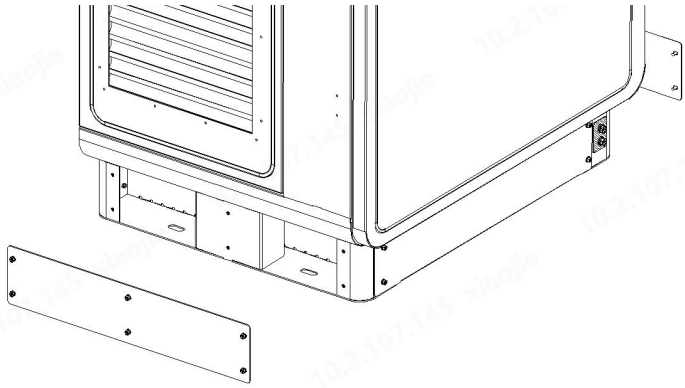


Figure 5-9 Base Cover Removal Procedure

2. Tighten the bolts

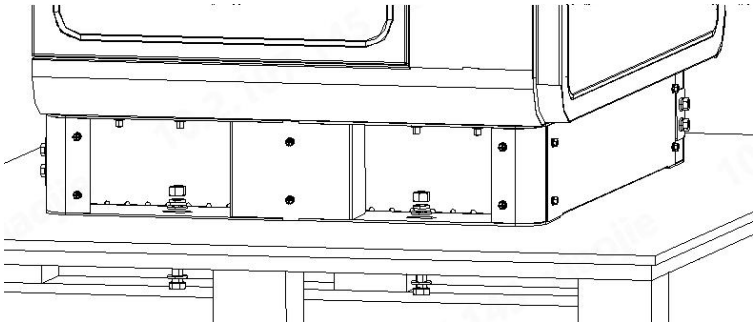


Figure 5-10 Bolt Fastening Procedure

3. Put and mount left and right cover back.

4. Open the front door of the cabinet. Remove the screws and the insulating barrier from the cabinet. (Reinstall the insulating barrier when the commissioning procedure is complete.)

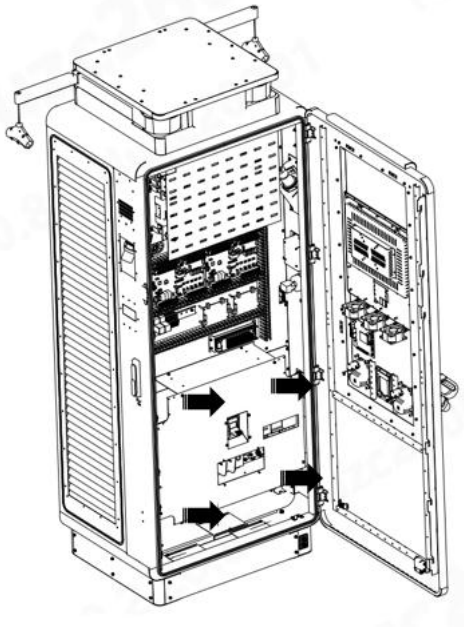


Figure 5-11 Insulating Barrier Removal Procedure

5. Collect the AC input cable from ground.

5.3.4 Precautions

1. Forklifts must be operated by professionals with appropriate qualification;
2. During installation, if the screws need to be tightened, tools must be used;
3. After installing the equipment, please remove empty packaging materials from the equipment area;
4. Corresponding protective measures should be taken during on-site installation and construction, such as wearing gloves when moving heavy objects and wearing goggles when drilling.

5.4 Electrical Installation

5.4.1 Electrical Installation of All-in-One DC Fast Charger

5.4.1.1 AC Input Wiring

1. The system adopts a bottom entry method, with all incoming lines introduced through the entry holes at the base of the cabinet.

2. The system input is a Three-phase Five-wire System (A, B, C, N, PE) where the phase wire is connected to the circuit breaker and the ground wire is connected to the corresponding terminal as is shown in the figure below;

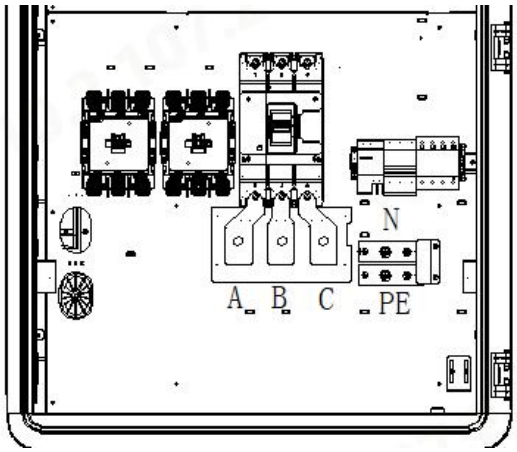


Figure 5-12 Diagram of the AC Input before Wiring

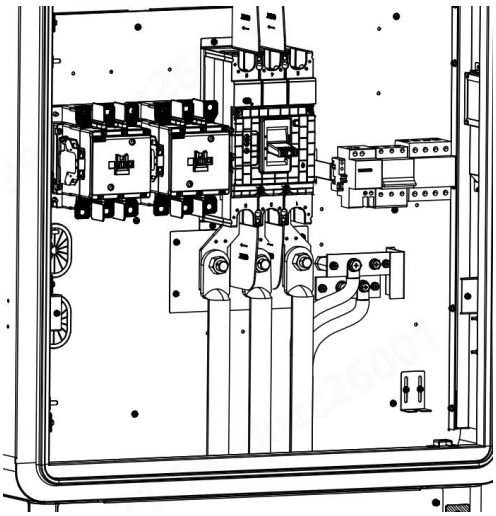
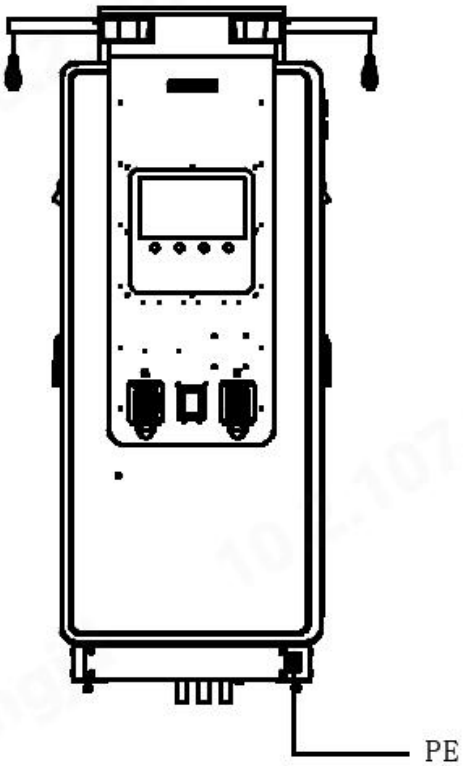


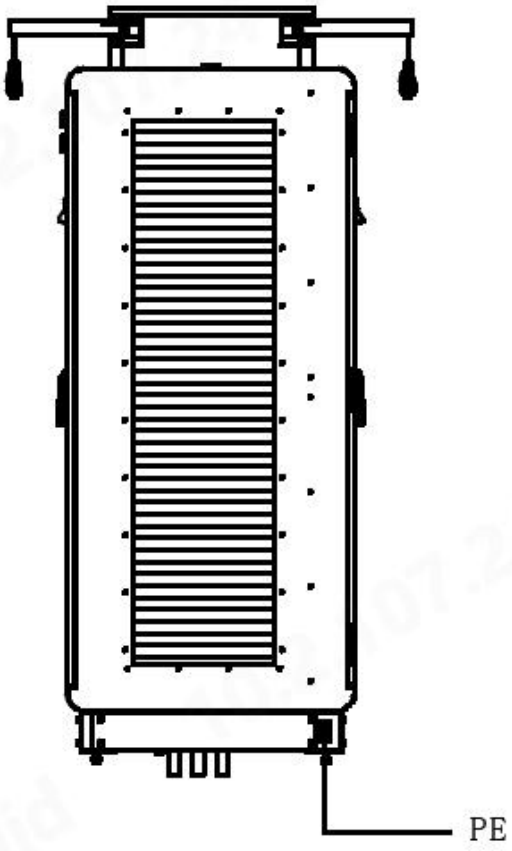
Figure 5-13 Diagram of the AC Input after Wiring

5.4.1.2 Cabinet Grounding

Cabinet grounding can be connected to either the grounding point on the front of the cabinet or the grounding point on the rear of the cabinet, depending on the actual installation conditions on site, as shown in the figure below.



5-14 Grounding Point on the Front of Cabinet



5-15 Grounding Point on the Rear of Cabinet

3. After all AC input wiring is completed, please use fireclay to seal the input holes.

Warning

Both the internal grounding point and the cabinet grounding point of the product need to be reliably grounded.

5.4.1.3 Module Installation

Note: If the module has been installed in the charger, then skip this step.

1. Unpack the module and check whether there is any damage to the appearance of the module (such as deformation, etc.);
2. Insert the modules into the charger in order from the side of the cabinet as is shown in the figure below. (Note: please align the module fixing screws and the frame fixing screw holes in the same side before inserting them);

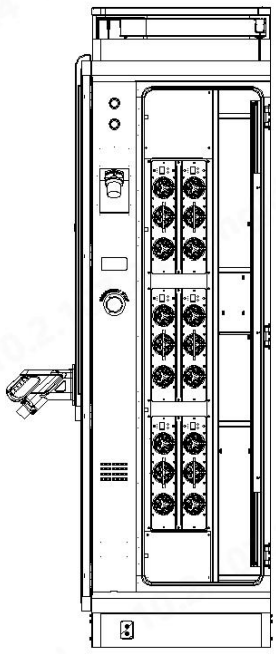


Figure 5-16 Diagram of Module Installation

3. After the module is inserted into the charger, please fix and tighten the screws on the cabinet as is shown in the figure below.

Figure 5-17 Charging Module

5.4.2 Precautions

1. The electrical installation must be performed by professional electricians or professionals with corresponding qualifications, and the operation process must be strictly complied with electrical safety operating regulations;
2. Before wiring, make sure that the electrical switches at the front and rear of the charger are disconnected. Operation with power on is strictly prohibited;
3. This charger is a device with large leakage currents, and the equipment must be reliably grounded before connecting to the power supply. Failure to do so may pose risks to personal safety and equipment safety;
4. The input connection cable must meet the maximum power of the charger. It is strictly prohibited to use inferior or unqualified cables for connection;
5. The cord extension sets are not allowed to be used;
6. The adaptors or conversion adapters are not allowed to be used.

5.4.3 Module Address Setting

Note: If the module has been installed in the charger before shipment, then skip this step.

Set the module address through the buttons ▲ (up) and ▼ (down) on the panel. The module address is expressed in hexadecimal. When setting the address, you

need to power on the module first and wait until the seven-segment display displays normally before proceeding. The setup steps are as follows:

1. Press the ▼ key on the left lightly until the "A**" or "**H" interface appears on the seven-segment display;
2. Press and hold the ▼ key on the left for about 2 seconds until the seven-segment display flashes;
3. Press the ▲ or ▼ key to select the address. The number range for the All-in-One DC Charger is 80-94. For specific DIP switch details, please consult our after-sales or R&D team;
4. Press and hold the ▼ key on the left for about 2 seconds until the seven-segment display stops flashing;
5. At this point, the module address has been changed successfully. You can confirm it by using the ▲ or ▼ key to return to the "A**" or "**H" interface.

5.4.4 Installing the External Residual-current Device

The Kstar EV Charger includes a Type A RCD integrated in the main breaker, and a RCCB for the auxiliary path.

The use of external RCD may cause a nuisance tripping during transient conditions such as when the AC contactor turns on at the start of charging. If an external residual-current device cannot be avoided due to local regulations, the in-rush current should be considered when selecting the device.

5.4.5 Preparation for Commission

1. Ensure the site complies with the following requirements:
   - The Kstar EV Charger is installed according to the instructions in this manual.
   - AC input power is available.
   - Internet access is available through a wired Ethernet connection, cellular service, or Wi-Fi.
   - An EV of each type of connector must be available for a compatible test during commissioning.

- The site operator or owner is available to receive instructions from the manufacturer certified service engineer when the Kstar EV Charger is installed.

2. Ensure the site complies with the following requirements:
   - Name and address of the site.
   - Contact information of the on-site contact person.
   - Specification of the external fuse or breaker at the power distribution panel.
   - Date when the installation is done.
   - Photo of the Kstar EV Charger and the site surroundings.
   - Special remarks (if any).
3. Someone should be present for assistance to energize the power to the Kstar EV Charger on the distribution panel.
4. Please complete Annex B: Installation checklist to ensure the installation succeeds.

Chapter 6 Networking Instructions

6.1 Wi-Fi Networking

Note: Suitable for sites that use Wi-Fi for network access.

6.1.1 Connect the Router to Laptop

Power on the router, take a prepared Ethernet cable, insert one end into the network port of the laptop, and the other end into any LAN port of the router.

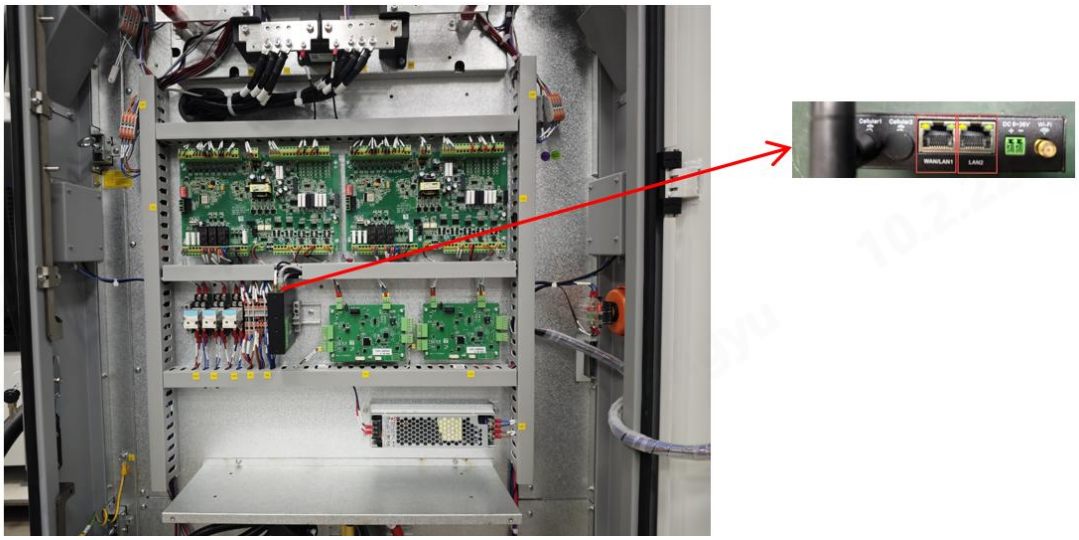


Figure 6-1 Installation location of router and network cable

6.1.2 Access the Router

1. Go to Control Panel → Network and Sharing Center → Change adapter settings.
2. Right- click the active network adapter (e.g., Ethernet) and select Properties.
3. Double- click Internet Protocol Version 4 (TCP/IPv4).
4. Select Obtain an IP address automatically and Obtain a DNS server address automatically.
5. Click OK to save the settings. The device will assign an IP address to the management PC automatically.

Please take the following picture as reference.

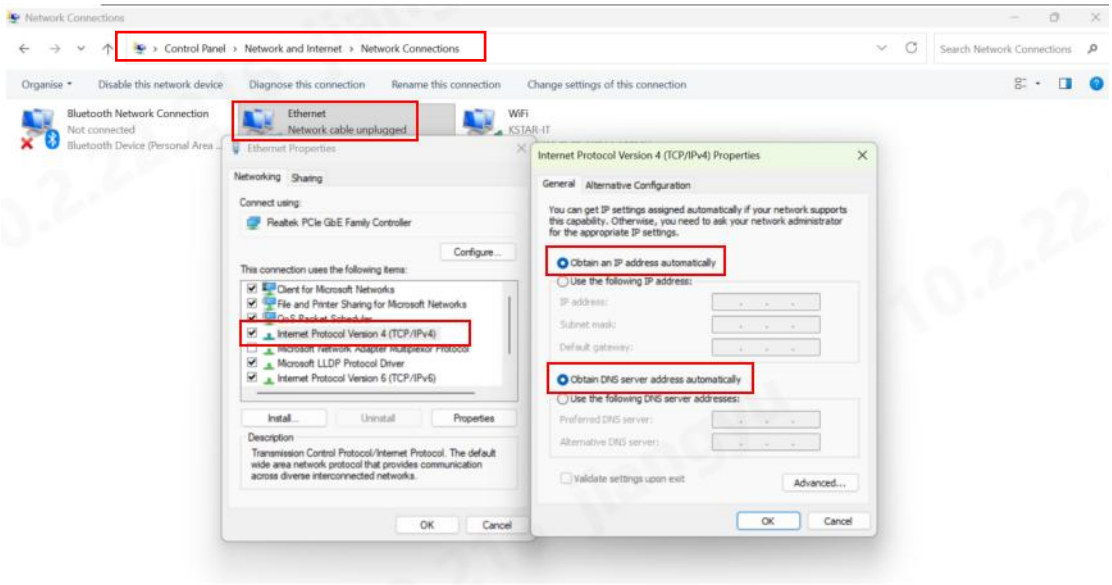


Figure 6-2 Guide to Access the Router

6.1.3 Log in the Web Configuration Page

Open IE or another web browser. In the address bar, enter the IP address of the IR300 device, e.g., http://192.168.2.1 (factory default setting for IR302). Once the connection is established, a login dialog will appear. Log in as the system administrator by entering the username and password shown on the back of the device (labeled "User & Password").

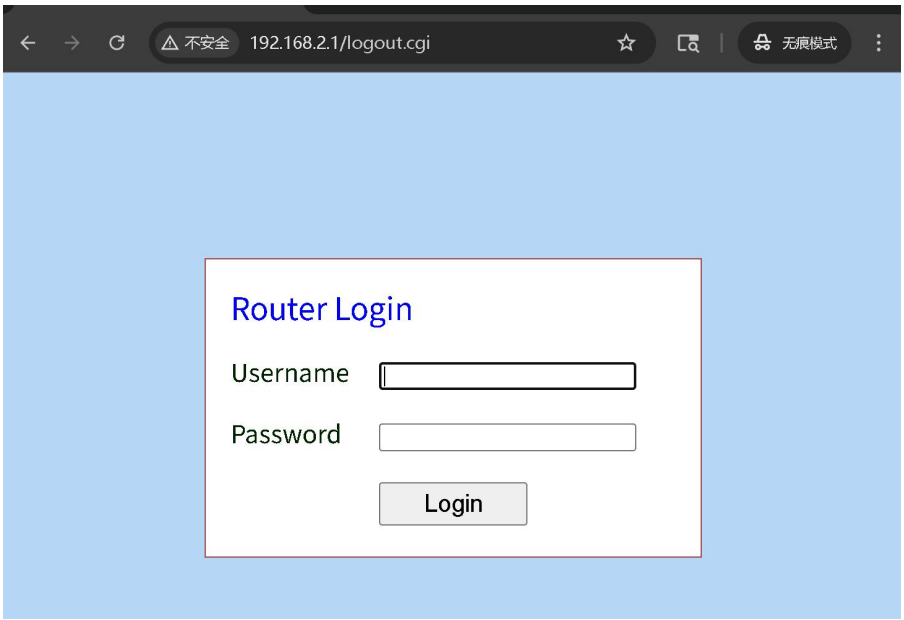


Figure 6-3 Login Interface

Figure 6-4 Label of Router User Account and Password

6.1.4 WLAN Client Setting (STA Mode)

When the device's WLAN works in STA mode, it can connect to a network access point (AP) for normal network communication.

1.Network > Switch WLAN Mode > Enable STA Mode > Apply, then wait for the device to apply the settings.

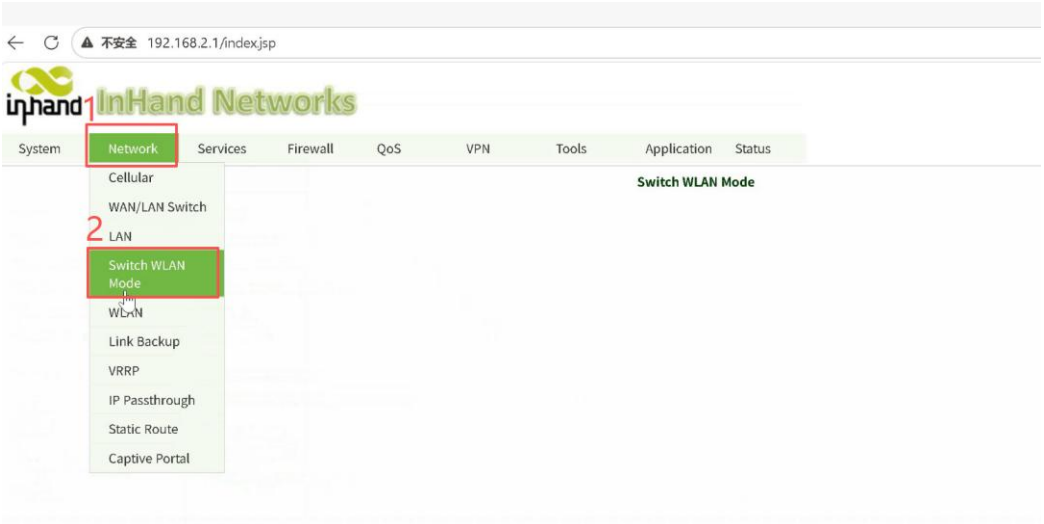


Figure 6-5 Path to Switch WLAN Mode

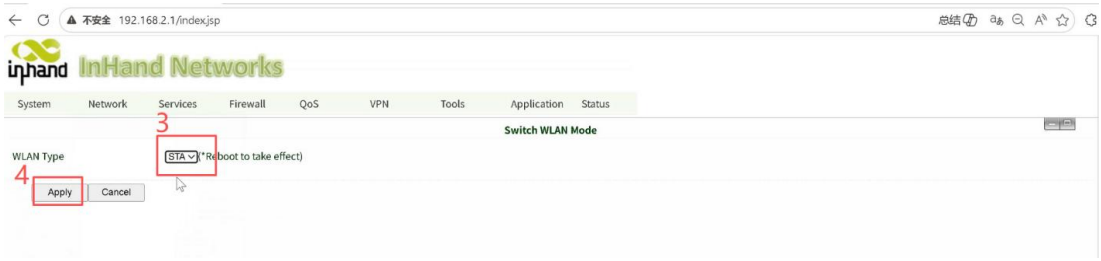


Figure 6-6 Apply STA Mode

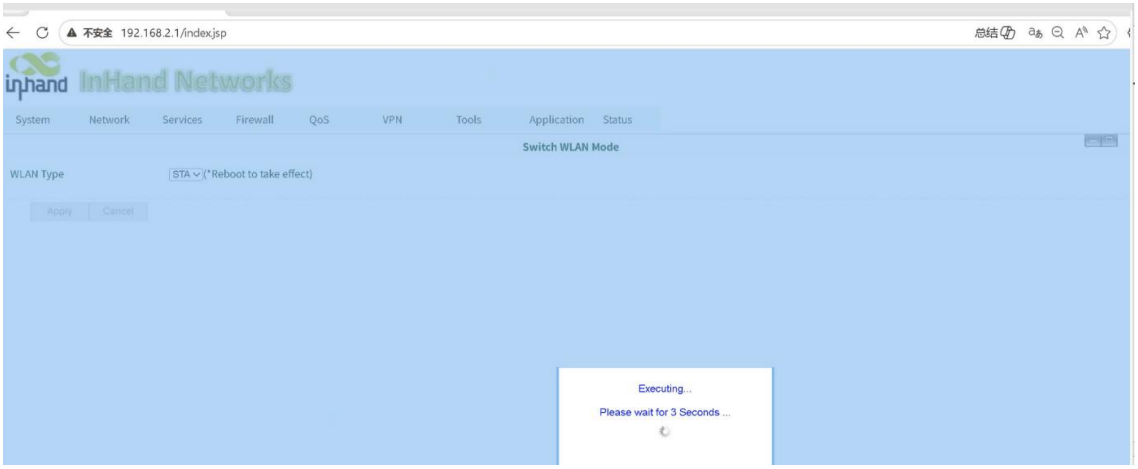


Figure 6-7 Wait for the Application

2. After enabling STA mode, you need to manually restart the device via the web management page for the settings to take effect.

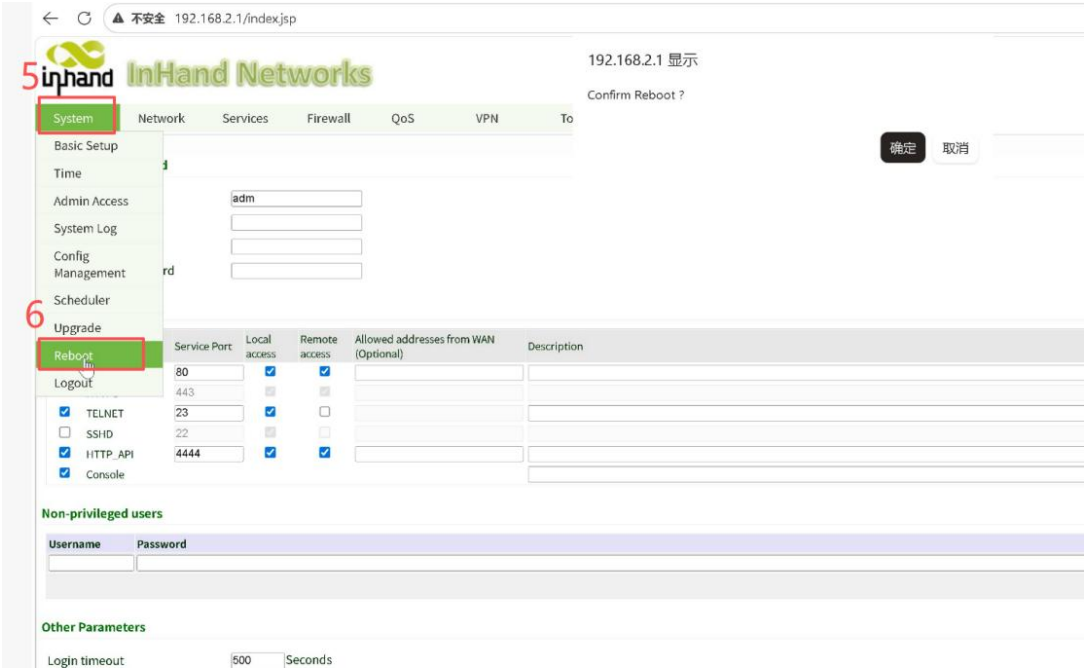


Figure 6-8 Rebot the Router

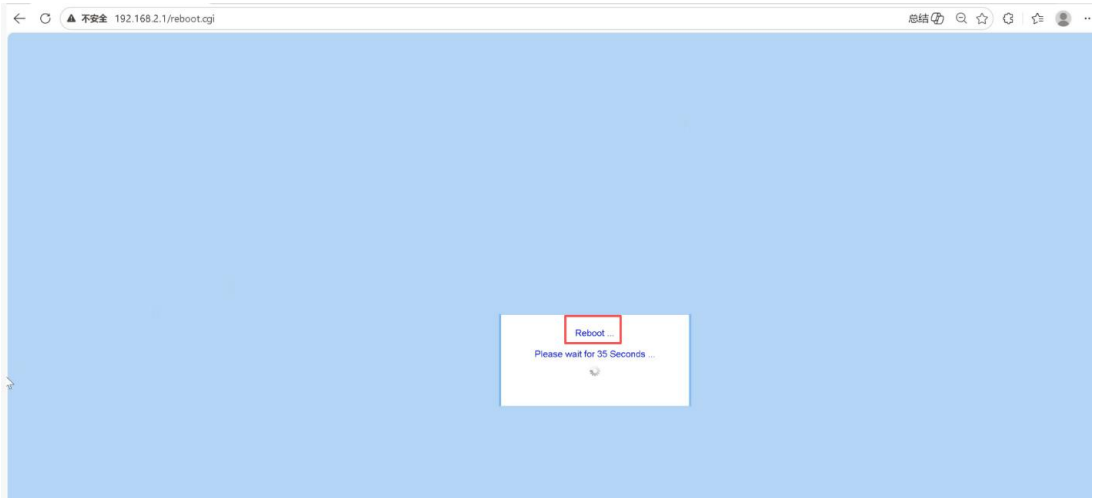


Figure 6-9 Wait for Rebooting

6.1.5 Configure the WLAN Port to Client Mode

After logging back in, click "Network >> WLAN Client" in the navigation to enter the "WLAN Port" interface, and select "Client" as the interface type.

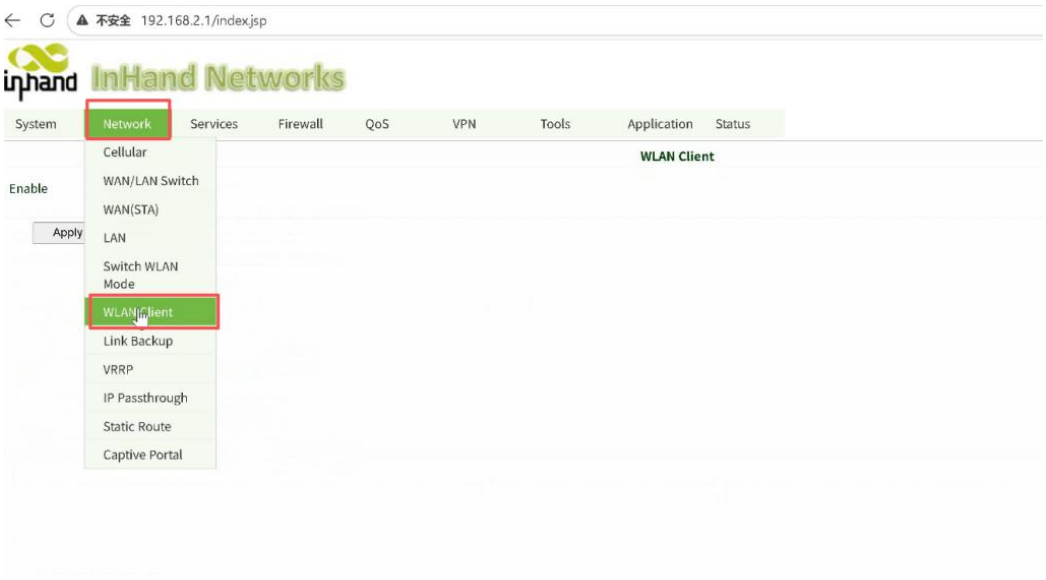


Figure 6-10 Enter WLAN Client

When Client is selected as the WLAN interface type, the SSID scan function becomes available. On the "SSID Scan" interface, all available SSID names will be displayed, along with the connection status of the device operating as a client.

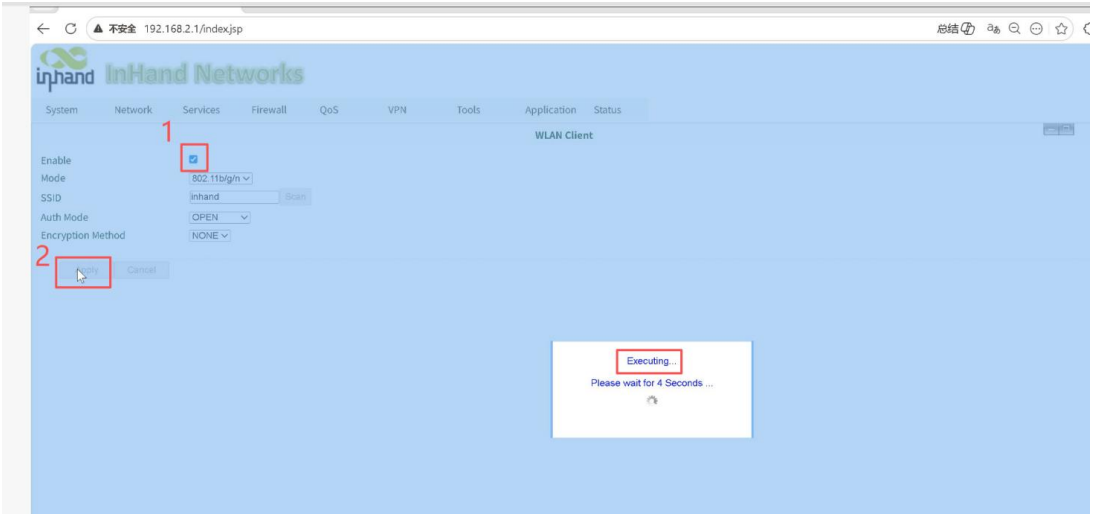


Figure 6-11 Apply WLAN Client

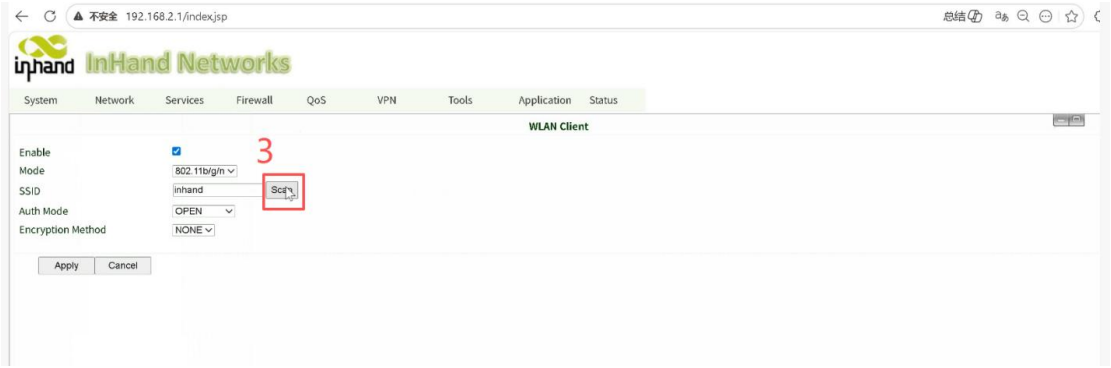


Figure 6-12 Scan the Available SSID

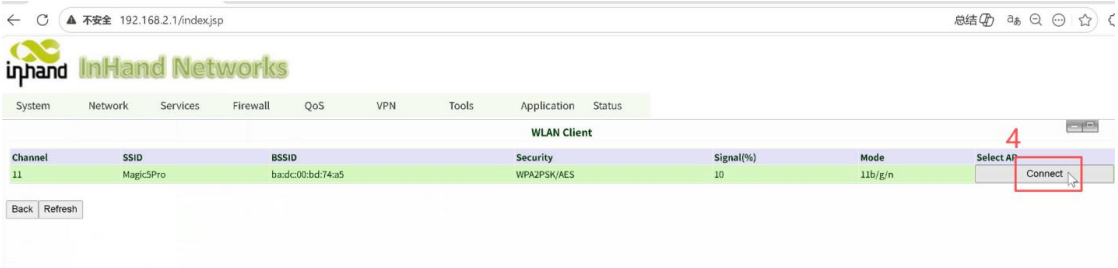


Figure 6-13 Connect to the SSID

Note: Enter the password of the target router (WiFi password) here, then click Apply.

6.1.6 Configure Access Mode of WAN (STA) Interface

1. After configuring the WLAN client, go to "Network >> WAN (STA)" to configure the access mode of the WLAN interface.

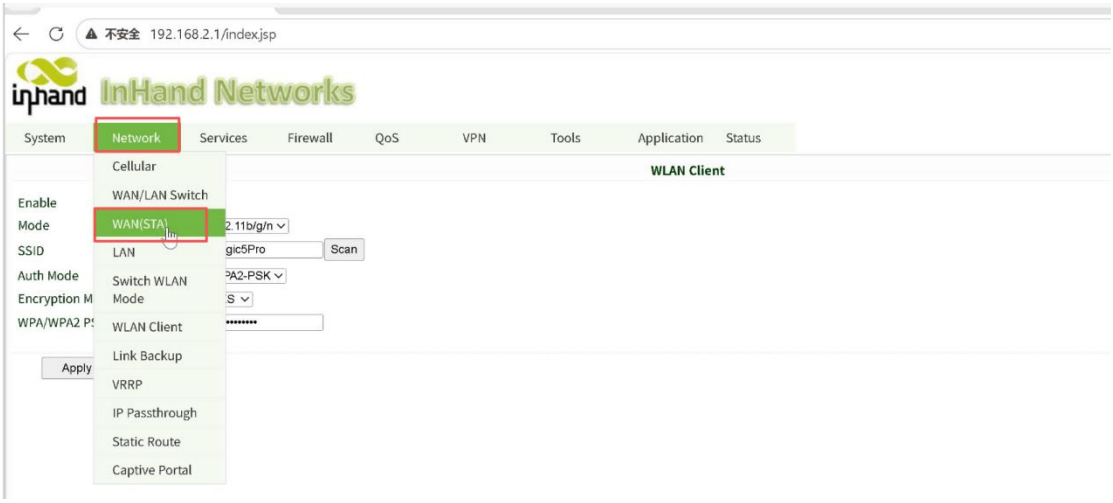


Figure 6-14 Enter WAN(STA)

2. Configure "Type" to DHCP mode, then click Apply.

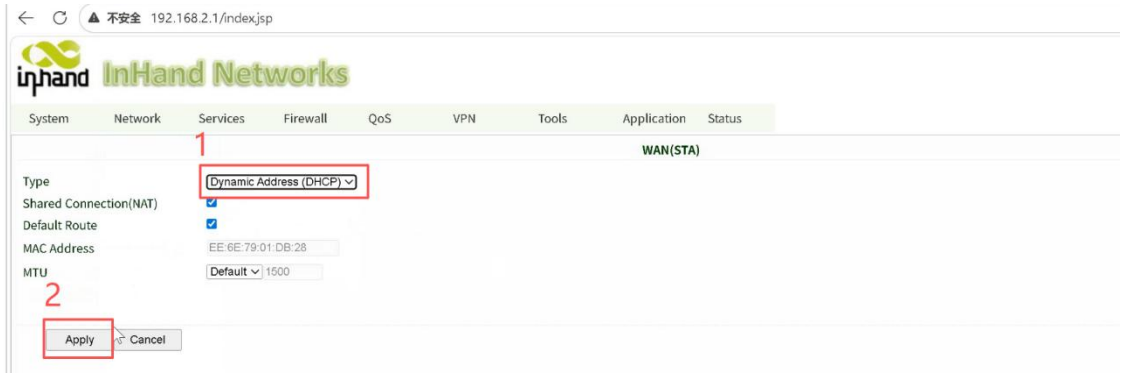


Figure 6-15 Configure Mode to DHCP

6.1.7 Connect Remote Network Management Platform

Operation steps: Services >> Device Manager >> Enable mode >> Enter Registered Account >> Apply, then wait for the device to apply the settings.

Note: Registered Account: lisj2@kstar.com.cn

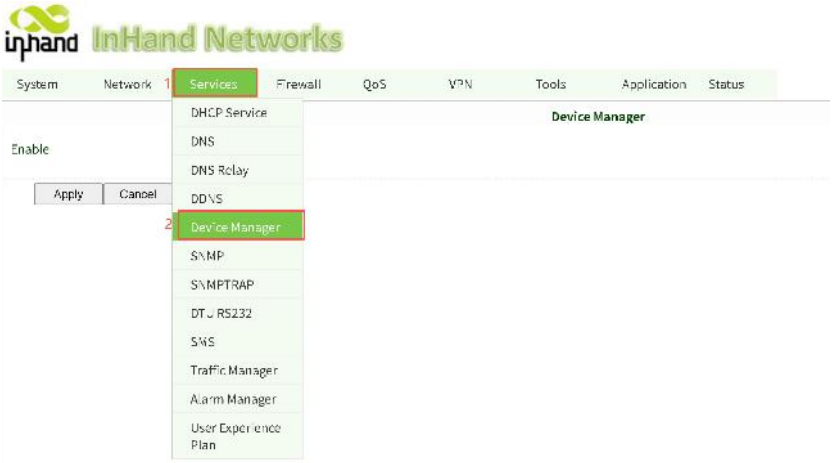


Figure 6-16 Enter Device Manager

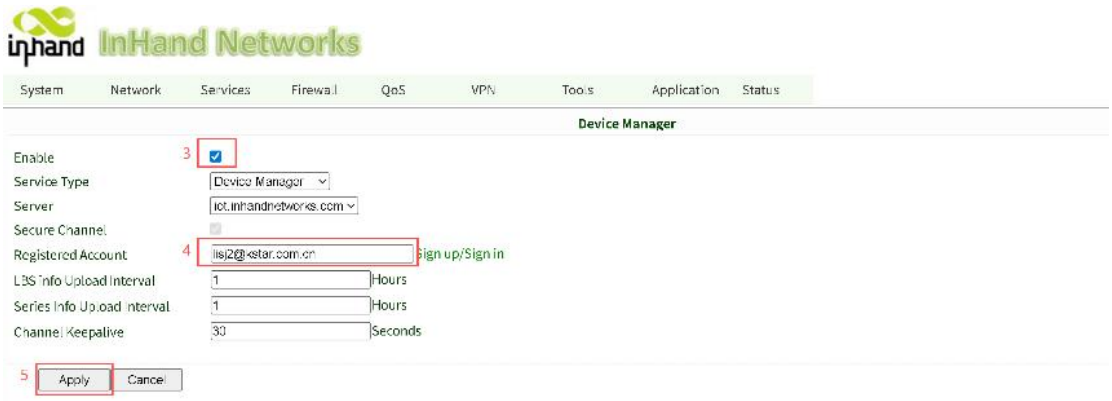


Figure 6-17 Apply the Connection to Remote Network Management Platform

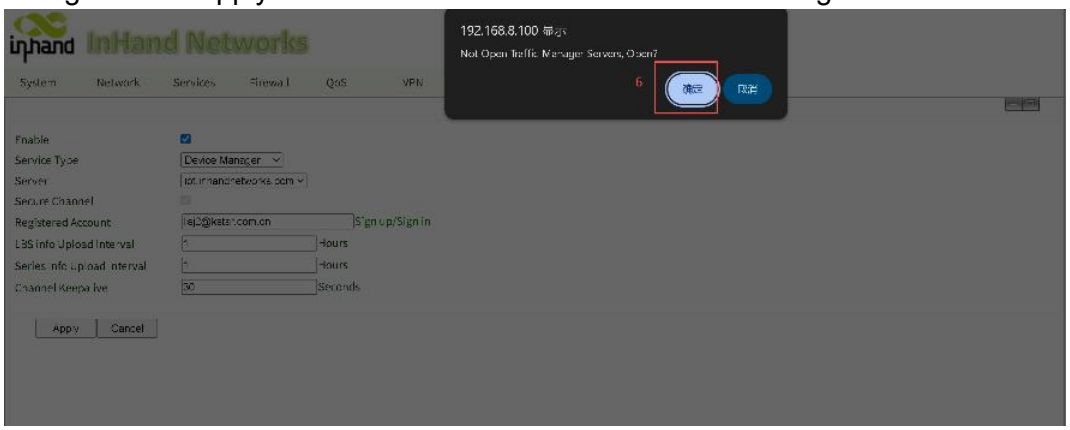


Figure 6-18 Confirm the Connection

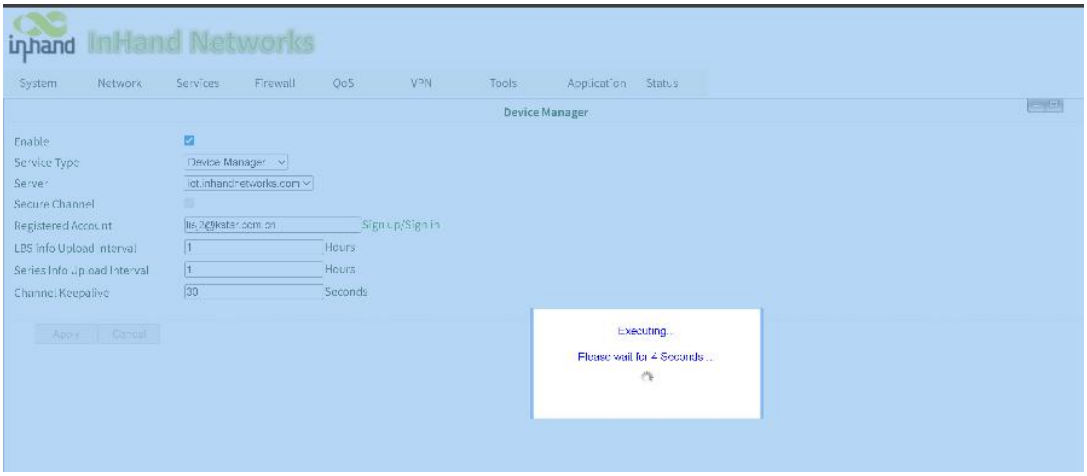


Figure 6-19 Wait for Executing

6.1.8 Check the Wi-Fi Status of the 4G router

Check the Wi-Fi status of the 4G router to check the 4G router's Wi-Fi connection.

1.View path: Status >> WLAN;

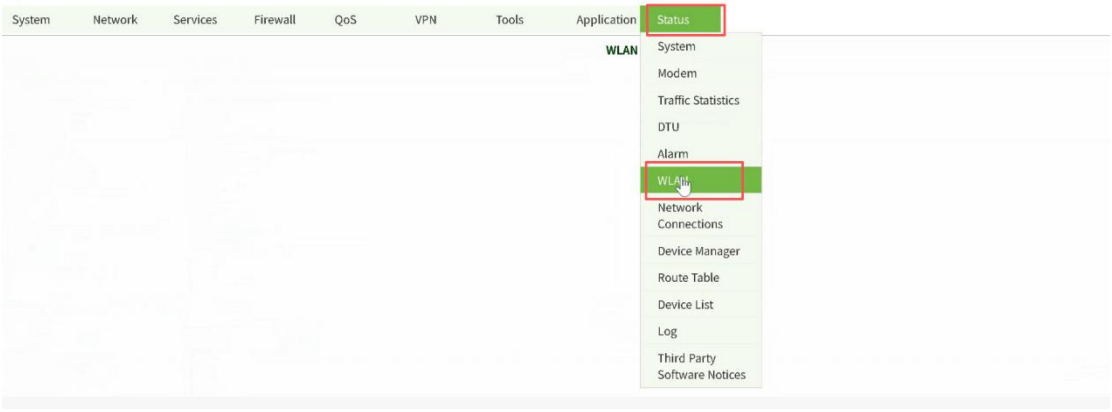


Figure 6-20 Path to WLAN Status

2. Check the Wi-Fi status. The bridged Wi-Fi name is the on-site Wi-Fi name. It displays signal strength, "Connected", and other information.

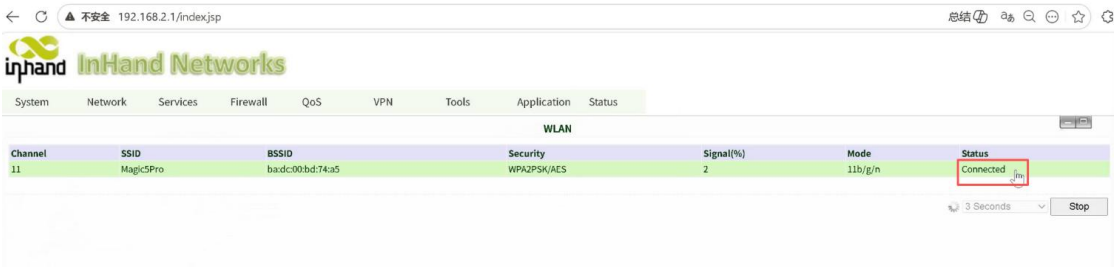


Figure 6-21 WLAN Information

6.1.9 Check the Network Connection of 4G Router

Check the network connection status of the 4G router to confirm that the InHand 4G router's network connection is normal.

1.View path: Status --->> Network Connecticl；

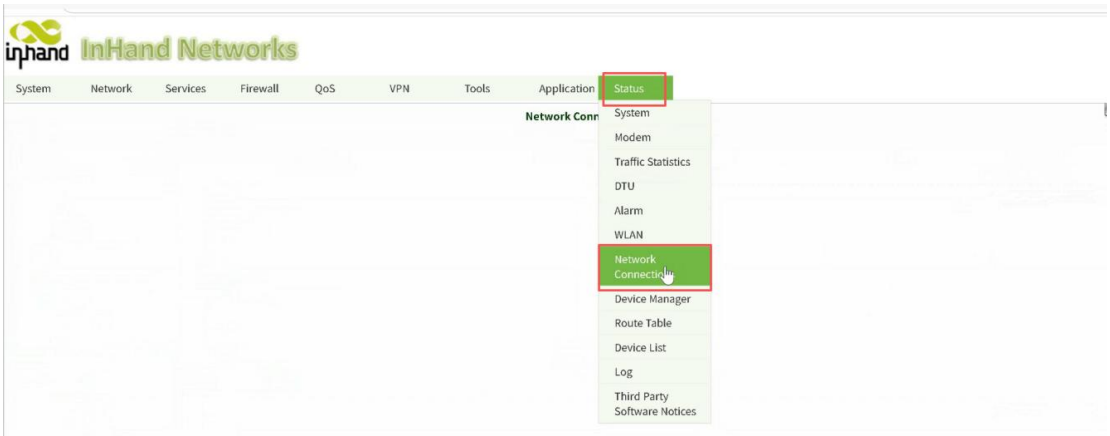


Figure 6-22 Path to Network

2.Check the network connection status of the 4G router to confirm that the InHand 4G router's network connection is normal. The status bar displays "Connected", indicating success.

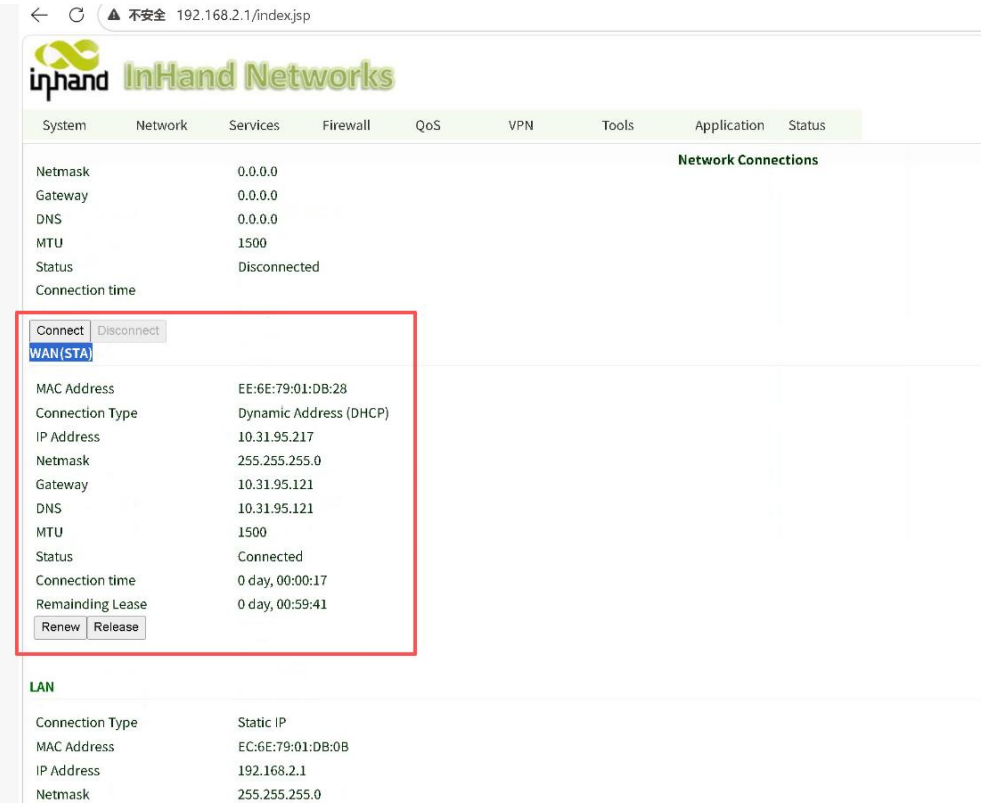


Figure 6-22 Wi-Fi Connection Status

6.2 4G Networking

Note:Suitable for sites that use 4G for network access.

1. The IR300 series is equipped with SIM card slot. Please take out the card slot with the right tool and insert the SIM card.

Figure 6-23 Card Slot Location and Tool

2. The device default is automatic dialing. After the SIM card is installed, it can be networked after several minutes.

3. Status indicator and description

Power (red)	Status (green)	Cellular (yellow)	Description
OFF	OFF	OFF	Power off
ON	OFF	OFF	System failure

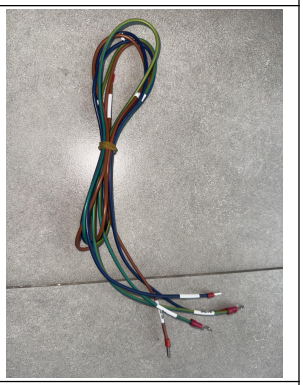
ON	ON	OFF	Module or SIM not recognized
ON	ON	Flash	Dialing
ON	ON	ON	Dialing succeeded
ON	Flash	ON	System upgrading

Table 6-1 Status indicator and description

6.3 Ethernet Networking

Note: Suitable for sites that use a wired (Ethernet) connection for network access.

1. Tool List

Tool	Unit	Qty	Remark	Picture
Switch (model:PLANET IGS-500T)	PCS	1	Track-mounted installation (International Standard DIN track)	
Cable	KIT	1	Brown line: V+ Blue line: V- Yellow-green line: Grounding (accessories)	
Phillips screwdriver	PCS	1	Specification: pH 2 (user-supplied)	
Bolt	PCS	1	Specifications: M4*15 (accessory)	
Flathead screwdriver	PCS	1	Specification:SL6(user-supplied)	

2. Switch Installation

1) The installation location of switch is as following figure.

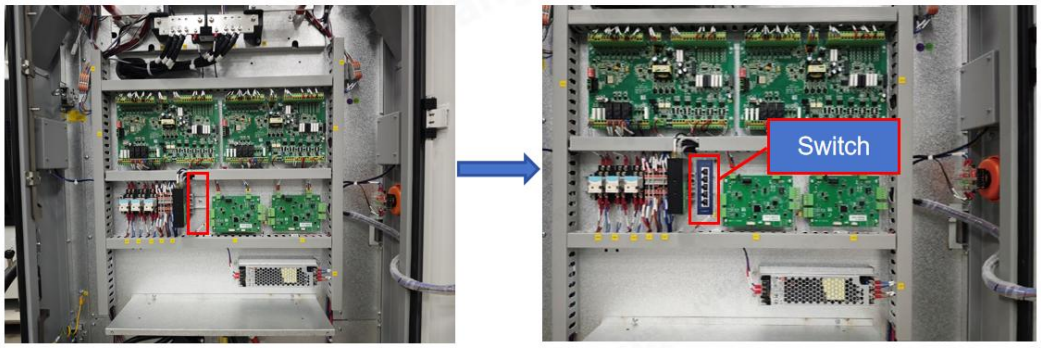


Figure 6-24 Location of Switch

2) Gently use a screwdriver to release the slots on both sides of the switch, align the device with the DIN rail, and push it horizontally until the clips lock securely.

Figure 6-25 DIN Rail Installation

3. Switch Cabling

1) Remove the upper cable duct cover of the rail horizontally outward.

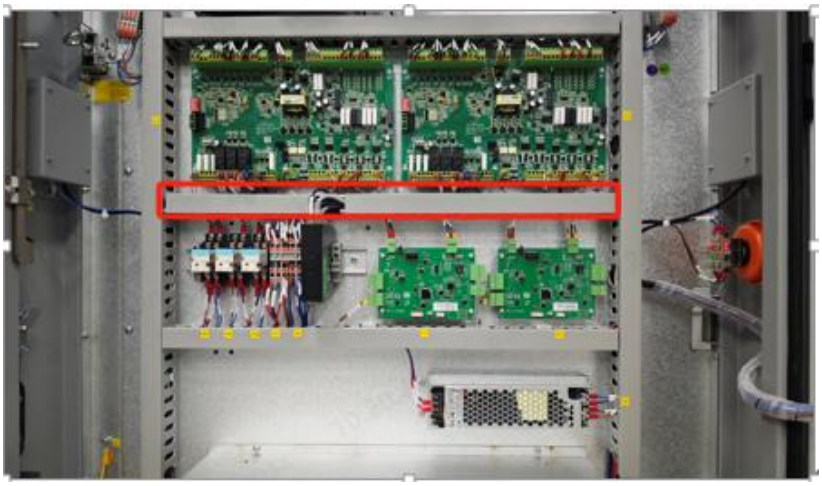


Figure 6-26 Location of Cable Dust Cover

2) Use the yellow-green cable from the included power cord. Connect the end marked "JHJ-PE" to the grounding screw of the switch, and connect the other end marked "PE" to the chassis ground.

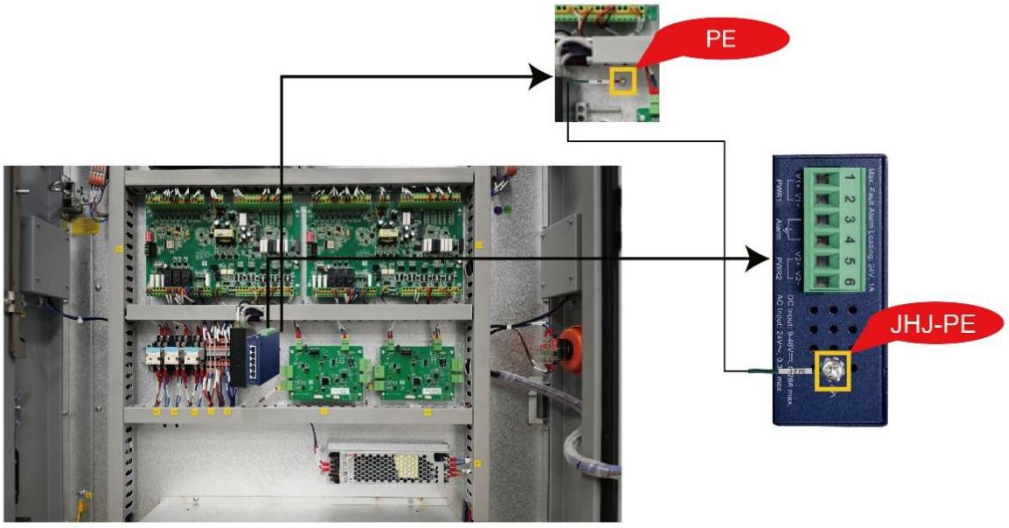


Figure 6-27 Grounding Wiring Diagram

3) Use the brown cable from the included power cord. Connect the end marked "JHJ-12V+" to switch interface 1 (V1+), and connect the "X2-3a" end to terminal position X2-3a. Use the blue cable from the included power cord. Connect the end marked "JHJ-12V-" to switch interface 2 (V1-), and connect the "X2-6a" end to terminal position X2-6a.

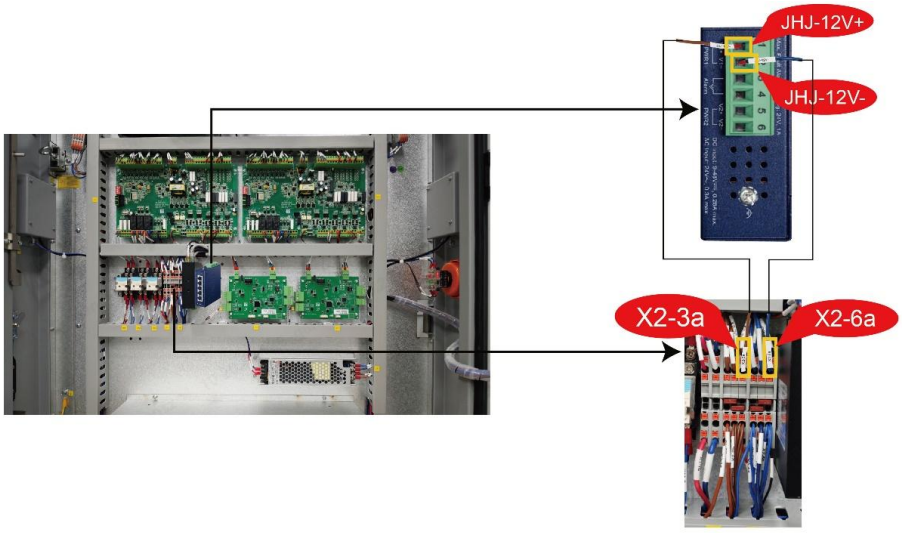


Figure 6-28 Power Wiring Diagram

4. Cable Arrangement and Duct Cover Restoration

After completing the switch wiring, arrange the cables along the routing direction into the cable duct, then close the duct cover to restore it.

Chapter 7 ROAD Platform Registration and Activation Guide

7.1 Registration on ROAD Platform

7.2 Build a Charging Station on ROAD Platform

7.2.1 Contact Kstar for Presetting OCPP Parameters

The OCPP parameters are preconfigured by KSTAR. Please contact KSTAR technical support for more information about configuring the E-Flux by Road parameters on the GreenFlow DC Charger.

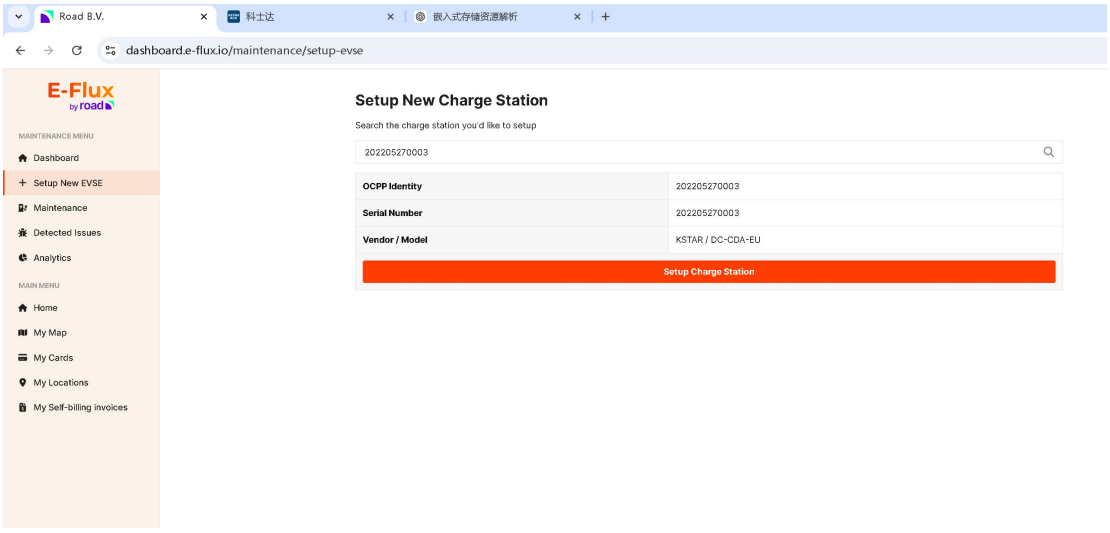
7.2.2 Guide to Build A Charging Station

Note: Before establishing a charging station, please configure the network according to Chapter 6 and ensure that the network is connected properly。

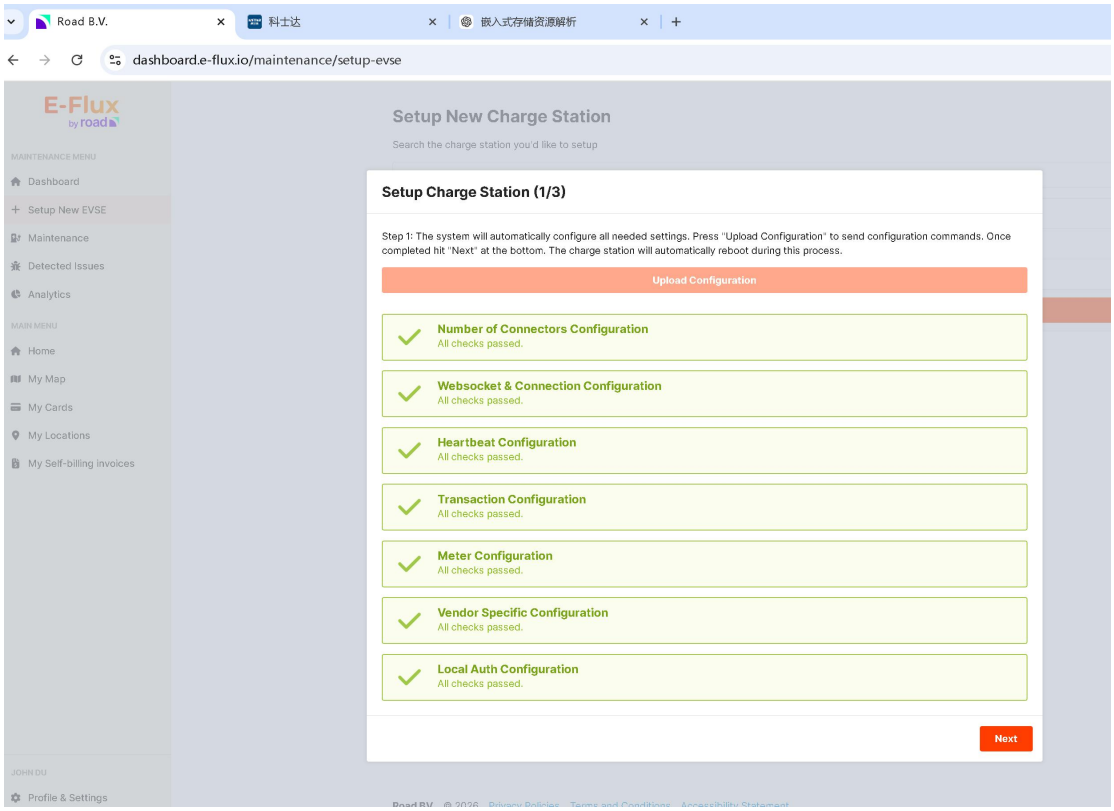
If you are the installer of the charging station, go to step 1. If you are the owner of the charging station, go to step 2.

Step 1: Complete the following steps to activate the station on the E-Flux by Road platform:

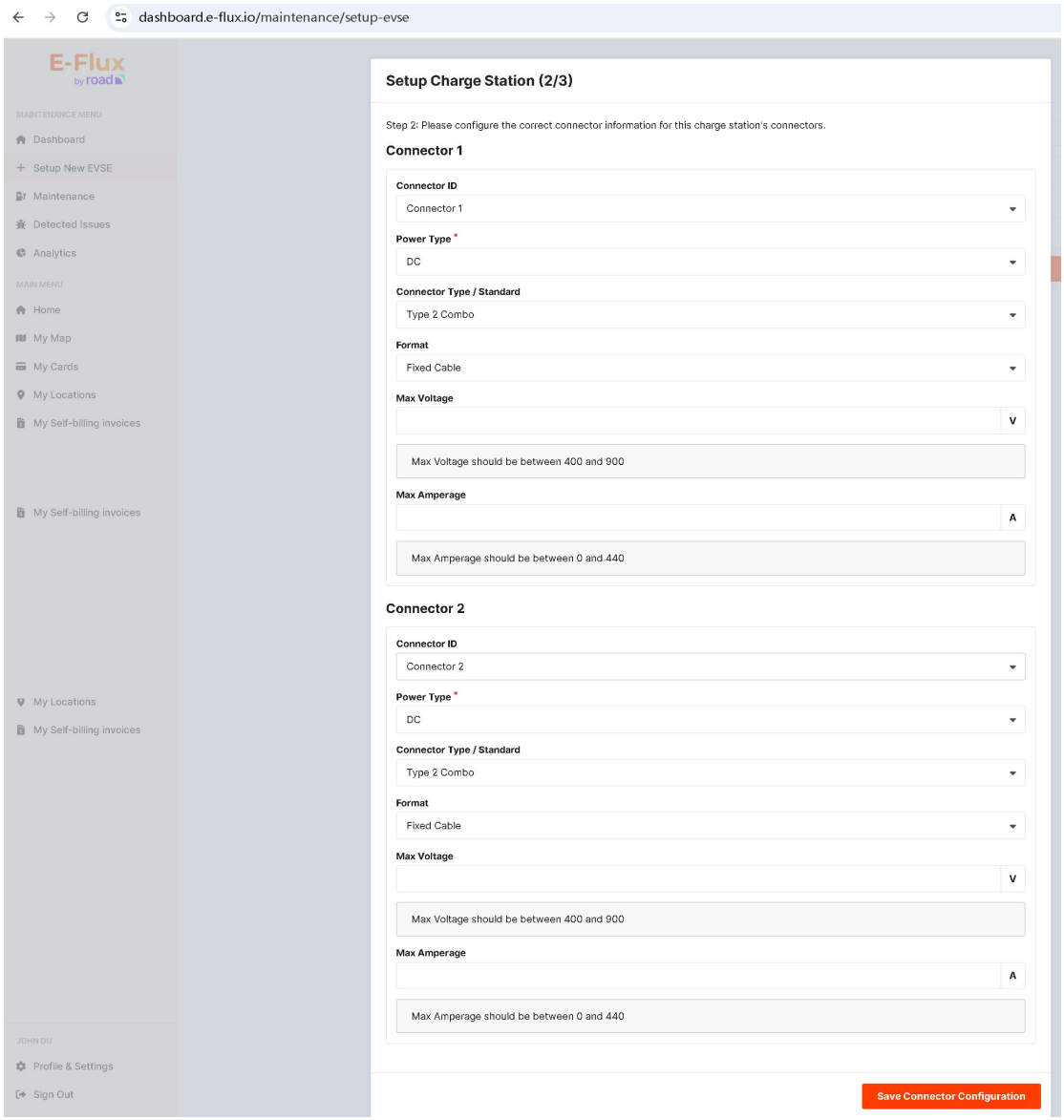
1) Login to your Field Service Account or create a Field Service Account via www.e-flux.io/installer-signup*.
2) Go to “Setup New EVSE” in the menu on the left and enter the serial number or OCPP ID of the station.
3) Click on “Setup charging station”.



4) Click on Upload Configuration, then click Next.



5) Choose and define the connector type, and choose “Save Connector Configuration”.



6) The charging station is now activated and ready to be registered by the owner!

Note: A Field Service Account is for installers only and will be used as a point of contact for technical tickets.

Step 2: Complete the following steps to register the station on the E-Flux by Road platform

1) Ask your installer to complete Step 1 to finish the configuration of your charger, or call E-Flux by Road to finish the configuration.
2) Create an E-Flux by Road account by going to www.e-flux.io/signup.
3) Follow the steps to add the location and register your charging station.
4) Put the sticker with the QR code on the charging station so it's easier to identify the station if you need support.

The charging station is now registered and ready to be used!

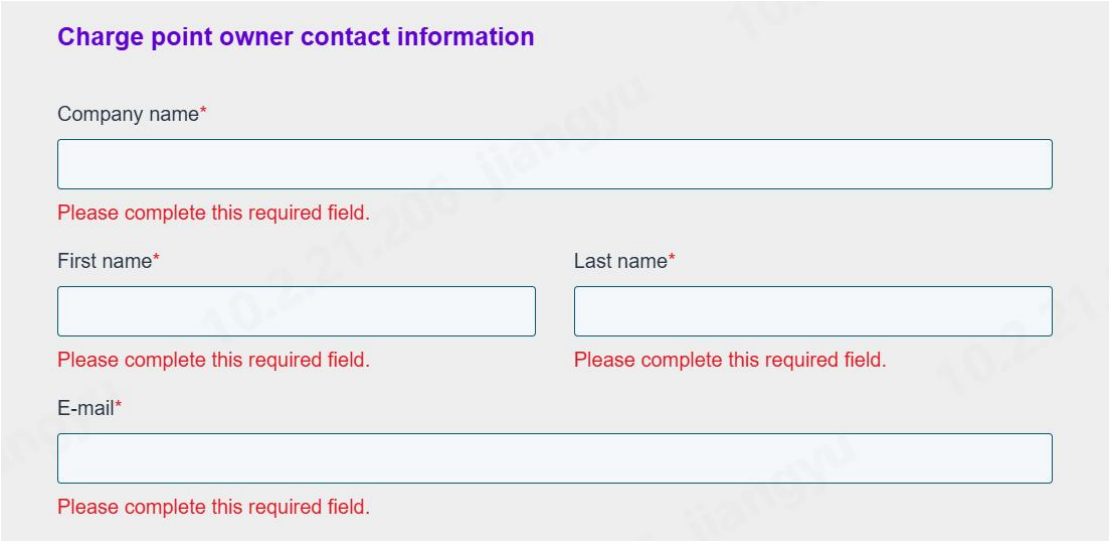
7.3 Activate POS Terminal and RFID Swapping

7.3.1 Registration website

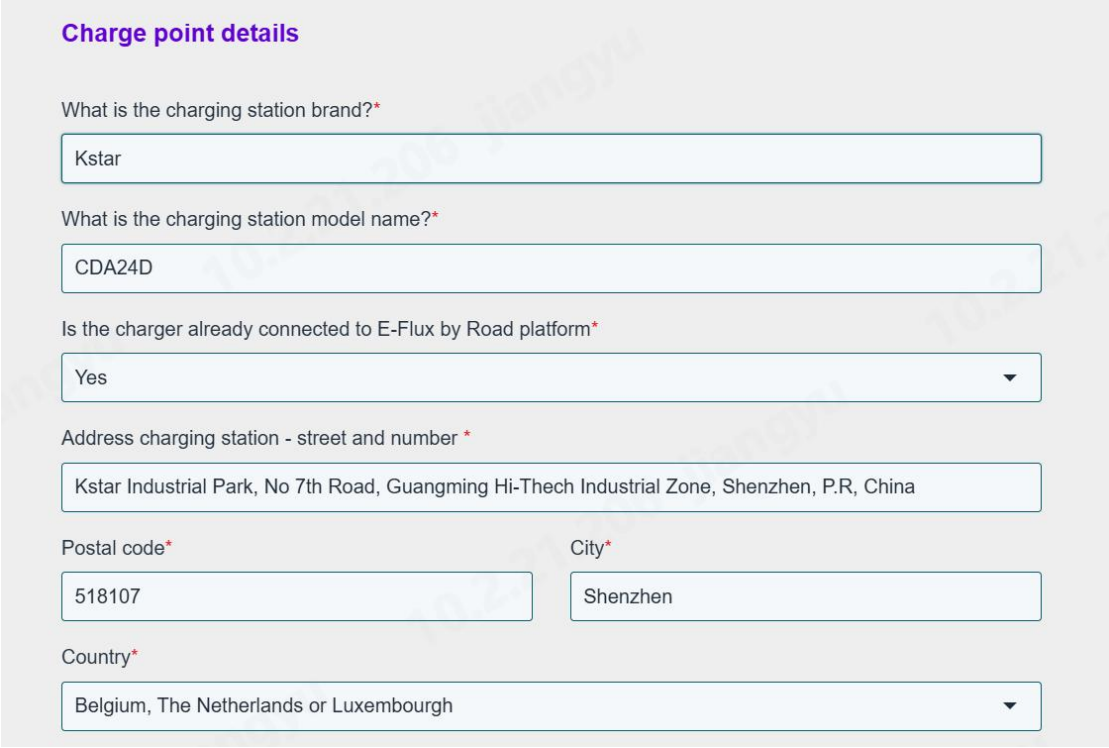
Please submit the request to register the charging station payment terminal in the following website:
https://www.e-flux.io/forms/onboarding-payment-terminal

7.3.2 Activation Guide

1.Charge point owner contact information



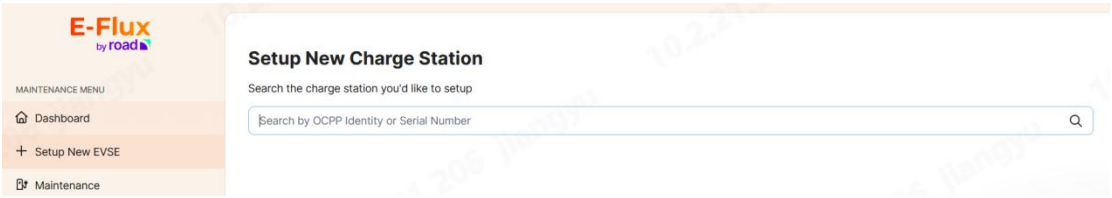
2.Charge point details.



1) The model names can be read from the labels of chargers. Here take the CDA24D as an example.

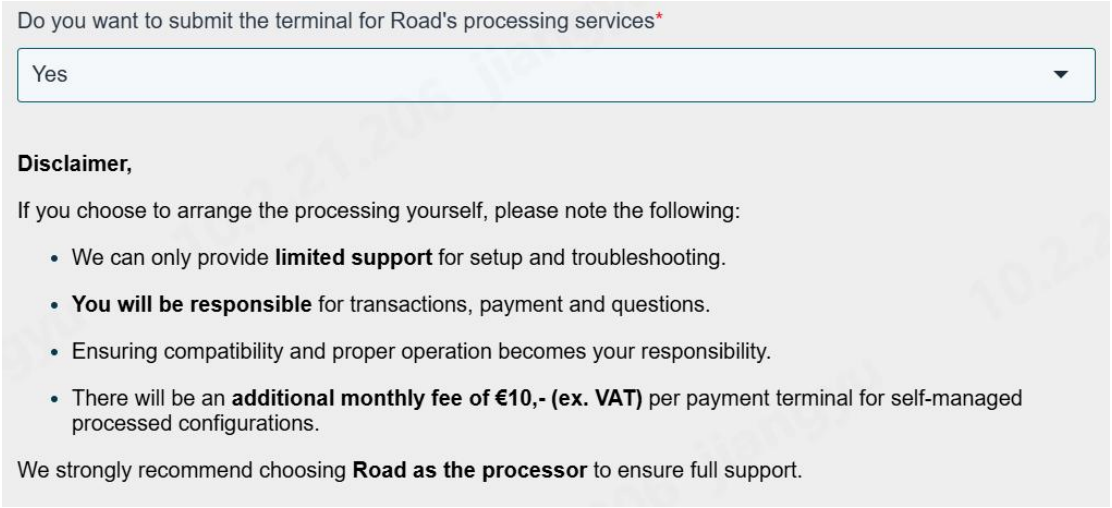
2) Select “Yes” in this column.

Please setup new charge station in ROAD website by entering the serial number of chargers. The serial number can be read on the charger’s screen, like following picture.

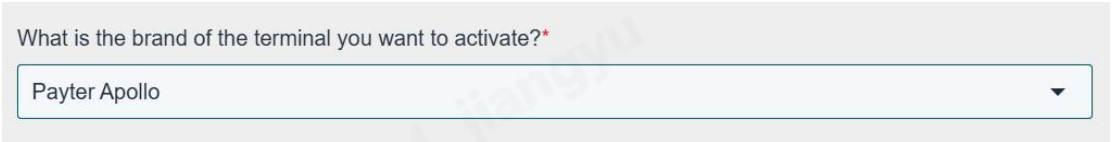


3.Payment terminal details

1) Please select “Yes” in this colume.



2) Select “Payter Apollo” as the brand of terminal.



3) This part is related to the Internet connectivity. Fill in the SIM card nuber you will use, and select “Yes” for the LAN cable and SIM card for internet connectivity.

What is the SIM card number?*

xxxxxxxxxx

Wil you use a LAN cable to connect payment terminal*

Yes

Are you planning to provide your own SIM card for internet connectivity?*

Yes

4) The following columes are the core info for the registration of payment terminal. Take our test models as an example. Enter the SN numbers and numbers of payment terminals.

What is the serial number of the of the payment terminal?*

APO20252200342; APO20252200363

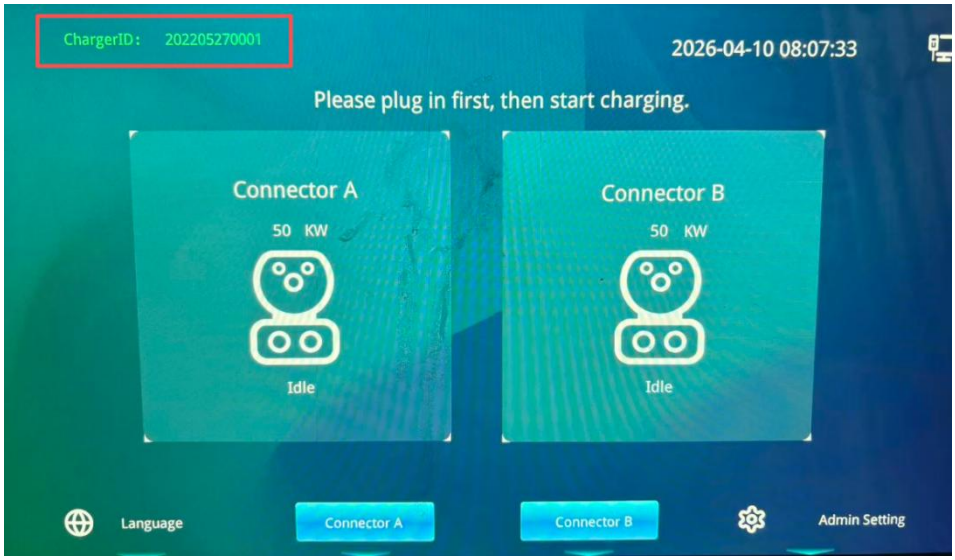
Number of payment terminals to be activated?*

2

Please share the Payment terminal serial numbers in combination with the serial numbers from your charging station. Add each combination (Payment terminal and charging station) on a new row or separated by a " ; ".*

202205270001--APO20252200342
202205270002--APO20252200363

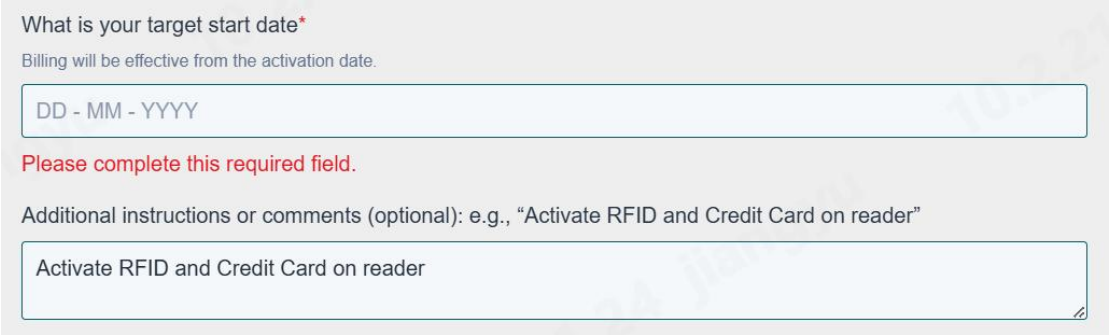
Kstar will provide the SN of POS terminals. The SN of charging stations can be read from the screen like below.



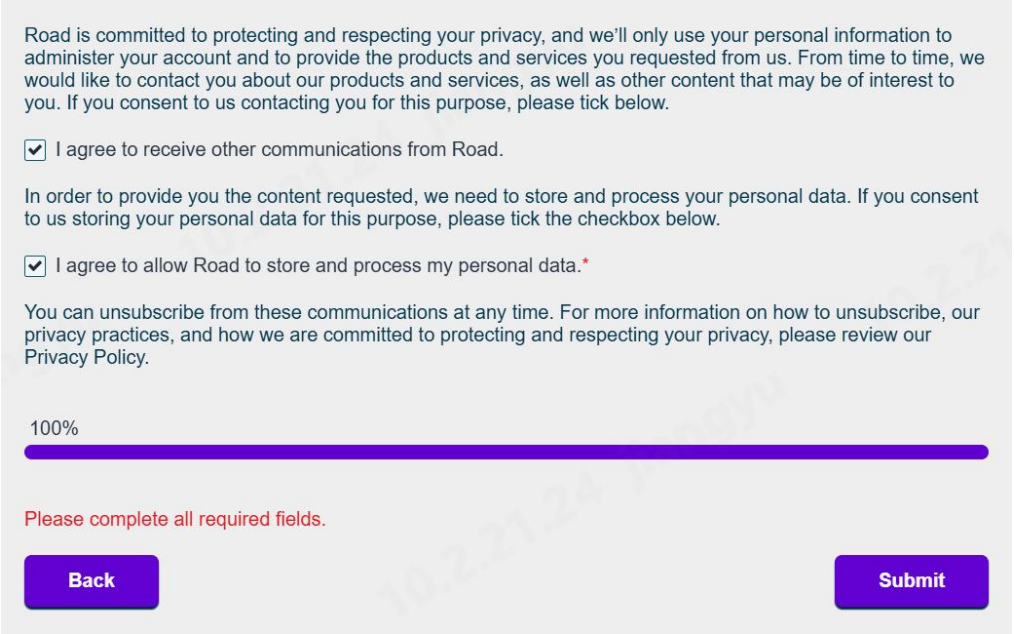
Note: Please ensure strict alignment between the SN of charging stations and the corresponding SN of payment terminals.

5) Select target start date for the payment access. And add the comments: “Activate RFID and Credit Card on reader”. Otherwise, the POS terminal can’t support the RFID card payment.

If you have any other comments and questions, please also input in this colume.



6) Finally, agree to all terms and submit.



Chapter 8 Operation Instructions

Synopsis

This chapter mainly describes the pre-start inspection, startup steps, and charging operation process.

8.1 Pre-start Inspection

Before powering on the charger, make sure that all installation steps have been completed.

1. Confirm that all grounding wires are reliably grounded;
2. Confirm that the AC input wiring is correct;
3. Confirm that the voltage value between the mains input terminals of the charger is in the working range of the charger.

8.2 Startup Steps

Make sure all installations are complete as below:

1. Make sure that the upstream breaker stays in the OFF position and locked during the procedure.
2. Tighten the screws and bolts of key parts and make sure the cabinet is clean inside. Prevent the electronic components from being damaged by dust or particles.
3. Use the multi-meter to check the circuit connections among L1, L2, L3, N, and PE. If short circuit occurs, contact Kstar technical support; otherwise, reinstall the insulating barrier.
4. Make sure that the RCCB stay in the OFF position.
5. Contact Customer Technical Support to turn on the upstream breaker, then measure the voltage of AC power input by following Measuring the AC Voltage. Make sure that all the measured voltages are in accordance with the input voltage range specified in Product Specifications.

6. Set the main breaker to the On position.
7. Set the RCCB to the On position and check the indicators on CCU, ECU and TCU and the screen display.
   - If any indicator of CCU, ECU, or TCU is off or the screen display is abnormal, please contact Kstar technical support;
   - If all indicators and the screen display normal, go to next step.
8. Set the RCCB to the On position and connect to the main circuit. Close the doors of the cabinet. Your MaxiCharger is ready for use.

8.3 Charging Procedure

8.3.1 Screen Layout

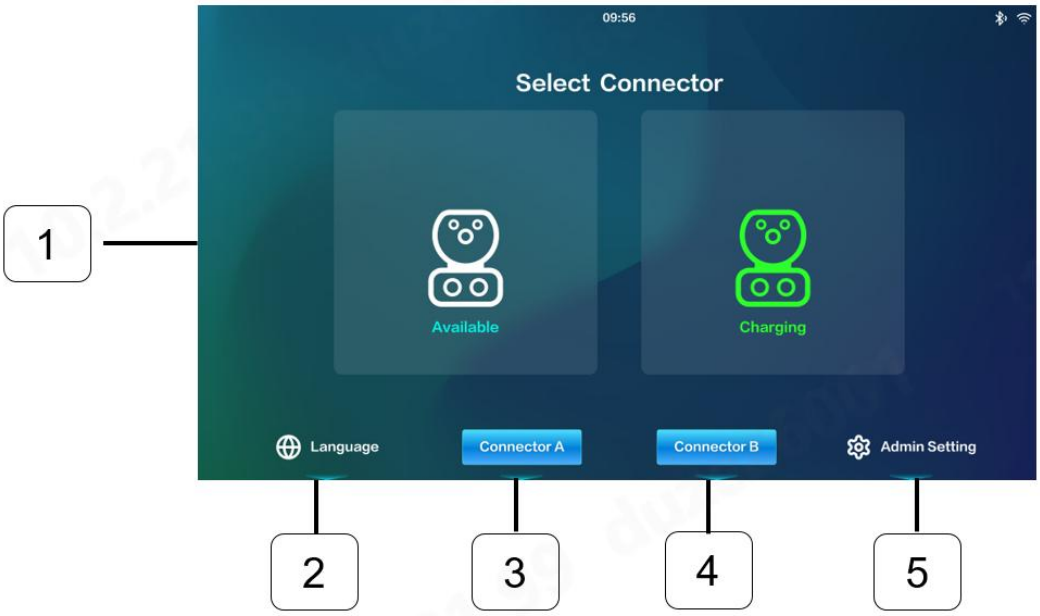


Figure 8-1 Platform Screen Interface

1. Connector icon with status：Tap to view connector's information.

2. Language icon：Select screen language (English, French, German, Italian, Spanish, Dutch, Polish)

3&4. Connector icon without status: Tap to view connector's information and link to physical button.

5. Admin setting: Check charger's electrical and network setting (For maintenance staff only)

After a connector is successfully connected to your EV, the charger can automatically recognize the connector, then the corresponding connector will show ‘connected’ message.

8.3.2 Authorization

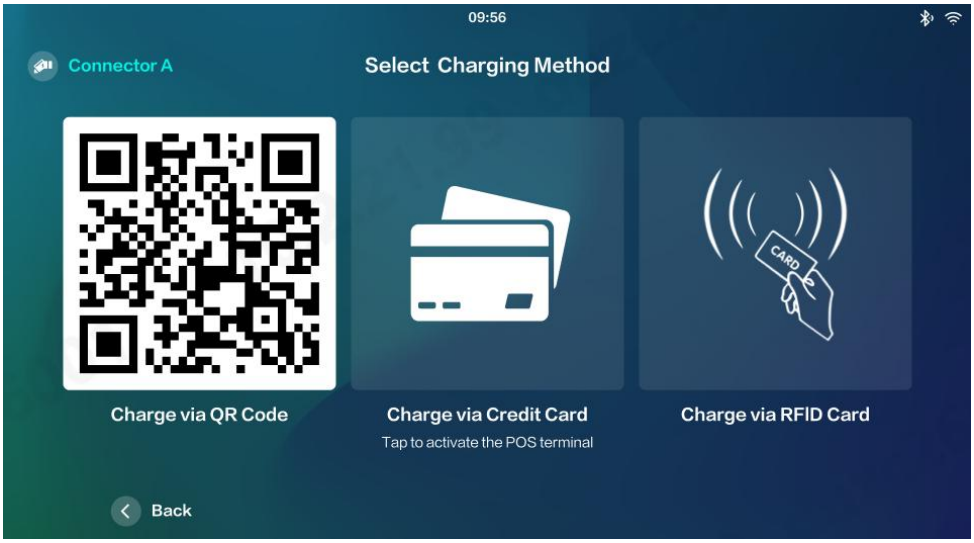


Figure 8-2 Authorization Interface

When the Authorization Screen appears, you can authorize the charging by following ways

- Scan the QR code on the screen
- RFID card
- Credit card (Tap first before using POS terminal).

8.3.3 Start Charging

After authorization, the charger will set up communication with your EV and check the vehicle protocol and safety status before initiating charging automatically.

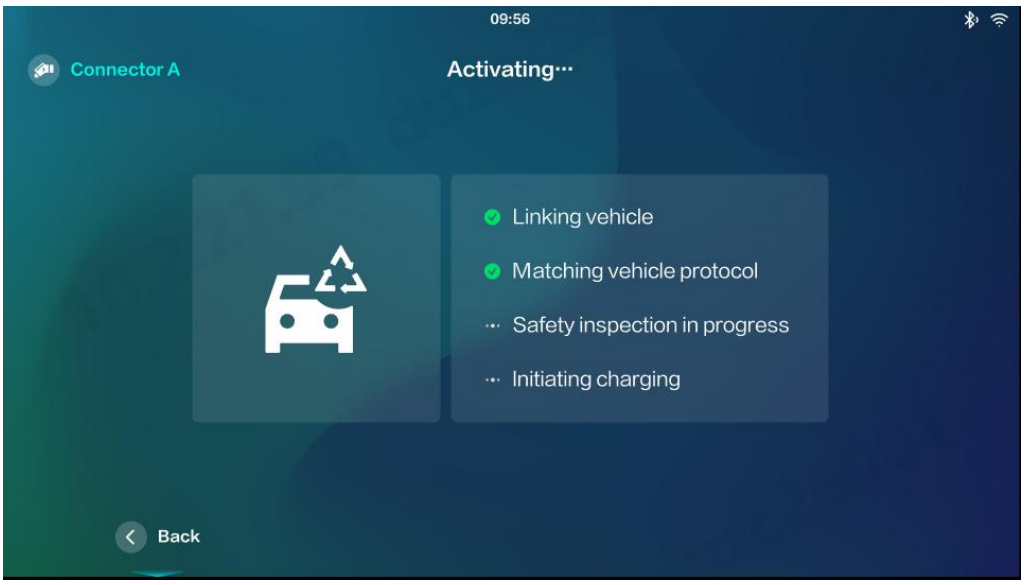


Figure 8-3 Activation Process

8.3.4 Charging

During charging, the following information will be indicated on screen:

- Energy Charged(kWh)
- Total Fare
- Output power(kW)
- Charging Time
- Output Voltage
- Output Current

During the charging, you could also stop the charging by clicking the red stop icon/button, or go back to main page by clicking the back icon/button.

Figure 8-4 Charging Interface

8.3.5 Stop Charging

1. Tap the Stop button on the screen.

2. There are 3 ways to stop the charging as shown below:

- QR code: Tap the Stop button on the Charging Screen of the Operator's app.
- RFID card: Put the RFID card on the card reader again to finish charging.
- Credit card: Stop the charging directly.

3. When charging is finished, your order details will appear as shown below

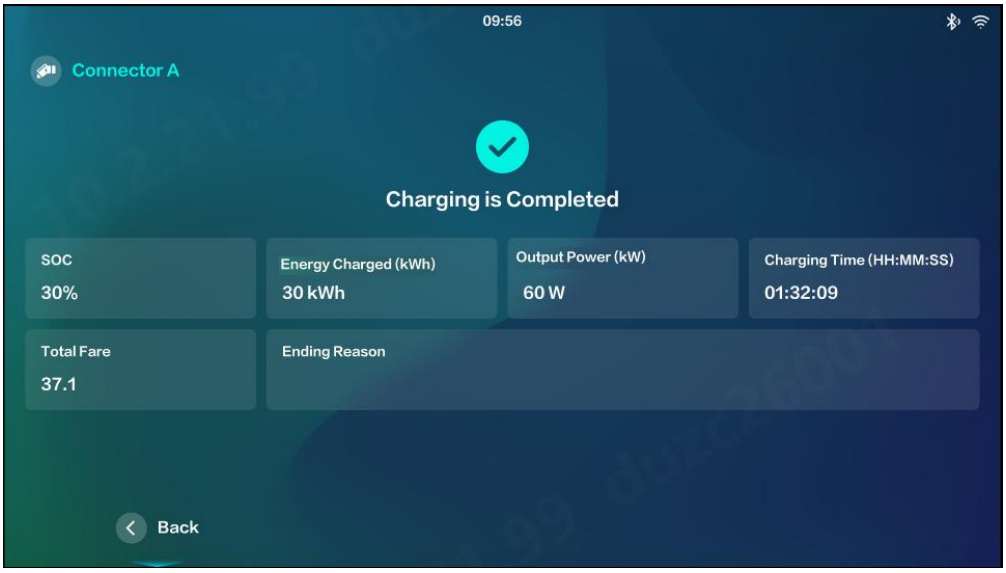


Figure 8-5 Charging Complete Interface

4. Disconnect the EV charging connector from the EV.

5. Put the EV charging cable in the connector holder back to the charger.

8.3.6 Setting the OCPP Parameters

Set OCPP parameters via the charger screen.

1) Click the "Admin Setting" button to navigate to the system administrator password entry page.

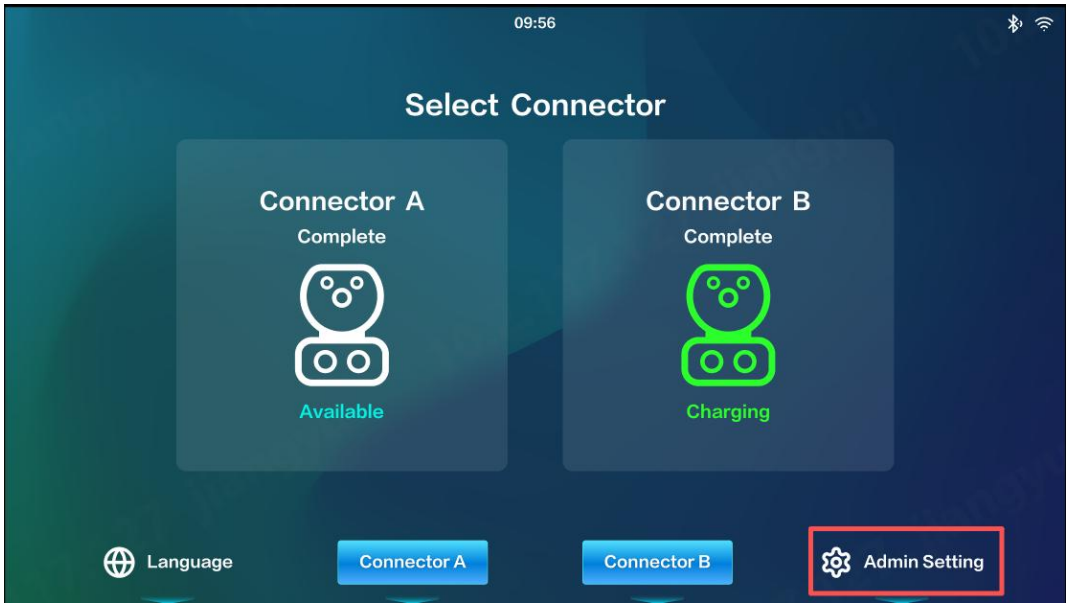


Figure 8-6 Admin Setting Location

2) Enter the administrator password; the initial password is 400700, will force the end users to modify.

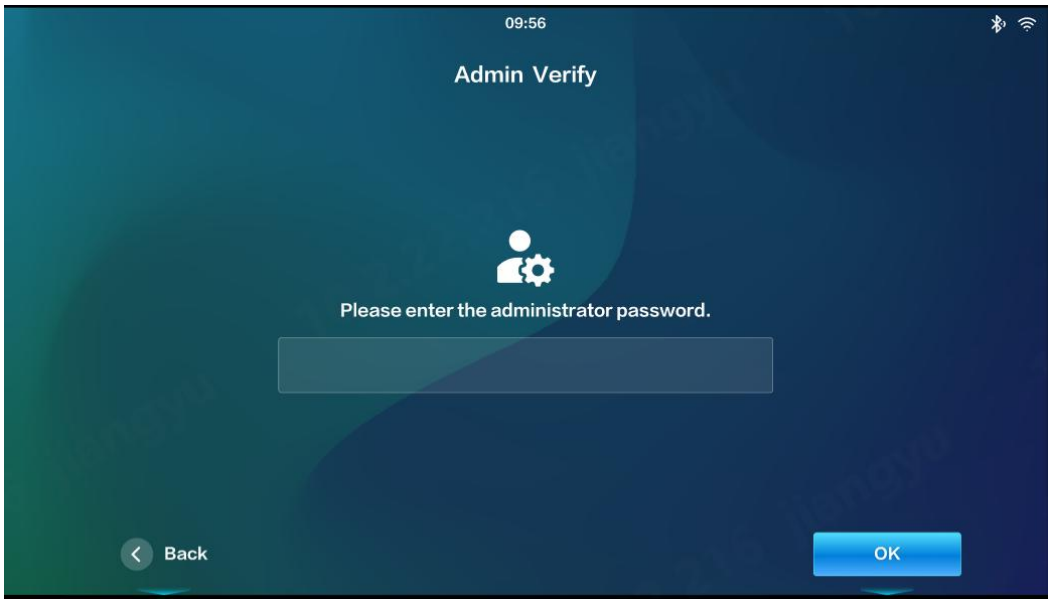


Figure 7-7 Admin Verify

3) Click on the screen: "Network Settings" -> "Server IP Settings"

Figure 8-8 Path to Set Charger IP

4) Button Function Description:

OCPP1.6 parameter configuration: The following is an example of a production URL for the Road/E-Flux platform:

Server Address: ocpp.e-flux.nl

Server port: 80

Server URL: /1.6/e-flux/

5) After completing the detailed configuration, click the "Save" button to save the configuration.

Figure 8-9 Save Settings

Note: keyboard guidance is as following.

1.Shift: Used to switch between uppercase and lowercase letters;

2.Sym: Show commonly used characters;

3.< > : Page-turning processing for characters;

Figure 7-10 Keyboard

8.3.7 MCU Board Open Ports and Security Policies

1) The MCU board currently exposes the following network ports:

Port	Protocol	Description
80	HTTP	Web management interface for device configuration, parameter settings, and firmware upgrade
22	SSH	Secure remote login for device debugging, log access, and maintenance
23	Telnet	Remote debugging interface (unencrypted), mainly used during development or testing

Table 8-1 Open network ports on MCU board

1. Security Policies:

1) SSH (Port 22)

- Uses encrypted communication to ensure secure remote access
- Equipped with brute-force protection mechanism:
  - After more than **5 consecutive failed password attempts**, login will be restricted
  - A **180-second delay** is enforced before the next login attempt is allowed

2) **Telnet (Port 23)**

- Uses plaintext communication and has inherent security risks
- Connection control policy is implemented:

        - If connection attempts exceed **10 times**, the system will automatically disconnect
    - Recommended for debugging purposes only; should be disabled or access-restricted in production environments

3) **HTTP (Port 80)**

    - Provides access to the web management interface
    - It is recommended to enhance security using access control mechanisms (e.g., IP whitelisting)

2. SSH Service Version and Security Description

The current SSH service version on the device is:

1) OpenSSH_7.2p1

Security Enhancements:

- Login failure restriction mechanism is enabled (anti brute-force protection)
- Supports password-based secure authentication

2) Security Recommendations (Optional Improvements)

- It is recommended to upgrade to a newer OpenSSH version to obtain the latest security patches
- Additional security hardening measures are suggested, such as:
    - Disable direct root login via SSH
    - Enable public key authentication
    - Restrict SSH access by IP address (firewall / whitelist)
    - Disable weak encryption algorithms (e.g., legacy ciphers)

Chapter 9 Troubleshooting & Maintenance

Synopsis

This chapter mainly introduces some troubleshooting measures for the product and the routine maintenance of the charger.

9.1 FAQ

If the charger stops charging during use, please record the reason and report timely feedback to the customer service center. Additionally, provide as detailed information about the fault as possible, including any information displayed on the screen.

Reading the user manual in detail is very helpful for you to use it correctly. Some common problems and solutions are listed below for reference.

No.	Problem	Possible Reason	Solution
1	There is no display on the touch screen after powering on	Power cord looses	Reconnect the power cord
		Abnormal input voltage	Use a multi-meter to check the input voltage
		Incorrect power cable connection	Check whether the screen power cable is connected reversely
2	The system cannot be turned on after powering on	Input voltage is too high or too low	Use a multi-meter to check the input voltage
		The module is not inserted in	Check whether the module is inserted properly

		place	
3	No output from system	System output relays K1 and K2 are not closed	Check whether the relay cable is connected correctly
			Check if the system output 12V is normal
			Check if K1 and K2 relay are damaged
4	The system cannot be turned on after an emergency stop	The emergency stop button is not reset after being pressed.	Reset the emergency stop button and restart the device
5	After powering on, module communication failure or module under voltage is displayed	The main power circuit breaker is not ON	Put the main power circuit breaker to ON and use a multi-meter to check whether the system input voltage is in the normal range.
6	The red indicator light of the module is on	Module in unusual status	Disconnect the main power circuit breaker and power on again to see if the fault is eliminated. If not, replace the module.

Table 9-1 Frequently Asked Questions

9.2 Product Maintenance

Due to the influence of ambient temperature, humidity, dust and vibration, the components inside the charger will age and wear, leading to potential failure of the product. Therefore, it is suggested to perform regular maintenance on chargers to ensure a normal operation and service life.

9.2.1 Cleaning the Cabinet

The cabinet is powder-coated. The coating must be kept in good condition. When the charger is in a corrosion sensitive environment, superficial rust may appear on welding points. Visible rust has no risk to the integrity of the cabinet.

Regarding rust removing:

- Stop any charging processes and power off the MaxiCharger.
- Remove rough dirt by spraying with low-pressure tap water.
- Apply a neutral or weak alkaline cleaning solution and let it soak.
- Remove dirt by hand with a damp and non-woven nylon cleaning pad.
- Rinse thoroughly with tap water.
- Apply wax or a rust-preventive primer for extra protection if needed

9.2.2 Cleaning and Replacing the Air Filters

Kstar EV charger is equipped with an air inlet filter and an air outlet filter with a large mesh area to prevent the electronic components from being damaged by dust. Clean the air filters every 3 months (not to exceed 6 months). Replace the air filters annually.

Regarding cleaning and replacing the air filters:

- Before cleaning and replacing, be sure to stop all charging processes, disconnect the external power supply, and perform the power-off protection.
- Open the right-side door of the charger. When the cabinet door is opened, the charger should not be directly exposed to wind and rain.
- Remove the screws using a screwdriver and take out the fixing board and air inlet filter.
- Clean the air inlet filter of debris or dust and reinstall the cleaned filter. Alternatively install a new air inlet filter.
- Reinstall the bezel and screws.
- Close the right-side door of the charger.

 **Danger**

- Only professional electricians or personnel with professional qualifications can operate the contents of this chapter.
- When performing maintenance work, do not leave screws, washers and other metal parts inside the charger, otherwise the equipment may be damaged. After the maintenance is completed, the cabinet needs to be inspected to ensure that the charger can work normally.
- During maintenance and inspection, be sure to cut off the upper-level input power of the charger, disconnect the input and control switch of the charger, and wait for at least 3 minutes after the device is shut down. Use a multi-meter to check the internal voltage, and the temperature of components such as the radiator. Make sure it is safe before proceeding. .
- During equipment maintenance, necessary measures need to be implemented to prevent chargers from accidentally powering on. Obvious maintenance signs should be set up. Live parts that operators may be accessible need to be isolated and protected to avoid contact.

9.2.3 Ordinary Inspection

Contents to be inspected ordinarily during use are shown in the table below:

Check Item	Content
Appearance Inspection	Regularly check the charger cabinet for any damage, rust, leaks, or other abnormalities.
Charging Cable	Check whether the charging cable is loose or damaged, and if the cable is exposed from the waterproof sheath.
Screen	Check whether the screen is responsive and if there's

	any other abnormality.
Function Check	Check with the actual users to know if charging process is abnormal.
Indicator Light	Whether it can indicate normal instructions.
Equipment Door Lock	Check if it's damaged and locked.
Equipment Operation	Check if there are no abnormal noises or other abnormalities when the equipment is running.

Table 9-2 Ordinary Inspection Checklist

9.3.4 Regular Maintenance

Regular maintenance contents and cycles are shown in the table below. The maintenance frequency may be different depending on the geographical location, seasonal climate, and frequency of use of each device. The information in the following table is for reference only.

Maintenance Contents	Maintenance Frequency
Dust Removal: Clean the interior of the cabinet, the dust filter at the air intake and exhaust, and any dust from the ventilation ducts.	Monthly
Internal Cables and Connections: Check the power cables and copper connections for any looseness. If there is any, it must be tightened. Check the terminal connections and insulation for discoloration or peeling. Replace damaged or corroded terminals as well as cables	Monthly
Label Identification: Check whether the affixed warning labels are firm or	Monthly

clear, and replace them accordingly if necessary.	
Regularly Check the Functionality of Each Fan: Check if there are any crack, faults or abnormal noises in the fan. Ensure that the fan operates without vibrations and rotates smoothly.	Monthly
Regularly Check the Functionality of Each Switch: Input circuit breakers, leakage protection switches, contactors and other switching devices in the line should be checked regularly to see if they are damaged or abnormal.	Monthly
The Emergency Stop Function: Check whether the emergency stop switch is normal	Monthly
The Charging Module Regularly: Check whether the charging module is normal.	Monthly

Table 9-3 Regular Maintenance Schedule

Annex

Annex A: Technical Specification

General Info	Model	All-in-One DC Charger
	Charging Connector	2
AC Input	Voltage Format	3P + N + PE
	Voltage Range	320Vac～530Vac
	Frequency	50Hz/60Hz
DC Output	Maximum Voltage Output	1000Vdc
	Output Current	0-250A/0-300A/0-350A/0-500
	Output Power (kW)	120 to 480
	Voltage Stabilization Accuracy	≤±0.5%
	Peak Efficiency	≥96%
	Power Factor	≥0.99
	THD	≤5% (rated input/output)
EMC	Conducted/Radiated	CISPR Class A
Usage Environment	Operating Temperature	-30℃～50℃
	Relative Humidity	5%～95%
	Altitude	≤2000m
Cooling Method	Intelligent Forced-air Cooling	
Protection Level	≥IP54	
Noise	Class II	

Safety Protection Function	Emergency stop, over voltage protection, over current protection, over temperature protection, under voltage protection, under current protection, phase loss protection , leakage protection, surge protection and other functions