TCHARGE® UDC 360 DCFC Charger

Commissioning & Maintenance Manual

TCHARGE

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Important

Before operating or maintaining this unit, please read this manual carefully and pay extra attention to the safety warnings and precautions.

For Service and Support:

Web: http://www.blueview-usa.com/

Email: support@blueviewelectricity.com

Safety Information

For your own safety and the safety of others as well as to prevent damage to the device and vehicles upon which the device is used, it is important that the safety instructions presented throughout this manual be read and understood by all persons operating or coming into contact with the device.

Safety Instructions

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

SAFETY WARNINGS

- Read all the instructions before you use this device.
- Do not install or use the device near materials, chemicals, or vapors that are flammable, explosive, harsh, or combustible.
- Turn off the power at the circuit breaker before installing or cleaning the device.
- Children around this device should be supervised when the device is in use.
- This device must be grounded through a permanent wiring system or an equipment-grounding conductor.
- Use the device only within the specified operating parameters.
- Do not use the device if it is defective, appears cracked, frayed, broken or otherwise damaged, or fails to operate.
- Do not use the device if the flexible power cord or EV cable is frayed, broken, or otherwise damaged, or if it fails to operate.
- Do not attempt to disassemble, repair, tamper with or modify the device.
- Handle the device with care during transportation. In order to prevent damage to it and to any of its components, do not subject it to strong force or impacts, pulls, twists, tangles, or drags. Do not step on the device.
- Do not insert fingers or foreign objects into any part of the device.

CAUTION

- Do not use private power generators as a power source for charging electric vehicles (EVs) with this device.
- Do not operate the device in temperatures outside its working temperature range.
- Incorrect installation, operation, or testing of the device could potentially damage the battery or other components of an EV as well as the charger device itself.

Contents

1. Using This Manual

1.1 Purpose

The purpose of this manual is to offer guidance regarding commissioning after installation and routine maintenance during daily operation of TCHARGE® UDC 360 DCFC charger.

1.2 Applicable Products

This document applies to TCHARGE® UDC 360 DCFC charger.

Caution: Death, injury, and/or property damage may occur if you use this equipment in a manner other than as described in this manual or other related documents.

1.3 Definition of Warning Symbols

Symbol	Meaning
	**WARNING signs indicate significant dangers.** This sign indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or to bystanders. Operations after the WARNING sign **can only be performed** once the indicated conditions are fully understood and met.
	**CAUTION signs indicate potential risks.** This sign indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or to bystanders. Operations following the CAUTION sign should only be performed once the indicated conditions are fully understood and met.
	**HINT signs indicate tips or useful information.** This sign marks tips and useful information worthy of notice. Contents following HINT signs will not contain information that warns of hazardous or harmful functions.

Table 1.1 Definition of Related Warning Symbols

2. General Introduction

TCHARGE® DCFC charger is designed to charge an electric vehicle (EV). Our chargers provide you with safe, reliable, fast, and smart EV charging solutions.

This manual will instruct users and technicians on how to commission and maintain this charger after installation is completed.

Important Note

This Commissioning & Maintenance Manual is to be used together with the Installation Manual for TCHARGE® UDC 360 DCFC series charger only. Please finish installation of the charger first following instructions in the Installation Manual before referring to commissioning and maintenance instructions in this manual.

2.1 Intended Uses

TCHARGE® UDC 360 DCFC charger is suitable for charging EVs with 3-phase AC power input and DC power output in both indoor and outdoor settings such as:

- Commercial fleets
- Highway roadside charging (especially long-distance driving oriented)
- Public agencies
- Shopping centers

Please note that our EV charger product does not serve purposes other than charging EVs!

Caution: Dangers

- If you use the equipment in any way other than described in this manual or other related documents, possible deaths, injuries, and damage to property can occur.
- Use this EV charging equipment only as intended.

3. Commissioning the Charger after Installation

3.1 Powering for the First Time

After completion of installation of your TCHARGE® UDC 360 DCFC charger (please see **UDC 360 DCFC charger installation manual** for more information on the charger's installation), **close the main circuit breaker** (the big molded-case breaker) at the bottom left of the charger to power on the charger. **Check if the charger enters on-power standby status smoothly.**

If you find any of the LED strips, LCD screen, any circuit board, or any power module on the charger not working properly after the charger gets powered on (for instance, lights on any of these parts are not on, number display on a power module is not on, or there are no normal electrical device sounds coming from any of these parts), please contact TCHARGE® immediately.

3.2 Ethernet Connection Verification

After the LCD screen UI system launches, if you are **using ethernet** for the charger's internet connection and **the ethernet cable has already been installed** (refer to Section 4.4 of **installation manual** for more information), you can wait and check if the ethernet connection icon shows up on the screen. (see red box in **Figure 3.1**)

Figure 3.1 Ethernet Connection Icon as Shown on UI Home Screen

3.3 Wi-Fi Configuration

If you intend to **use Wi-Fi** for the charger's internet connection, please follow the steps as described below to complete the configuration.

1) From the home page (connector list page), click **More** (the **three dots icon** in the **top right corner**), then click on **Settings** to open the settings login page (**Figure 3.2**).

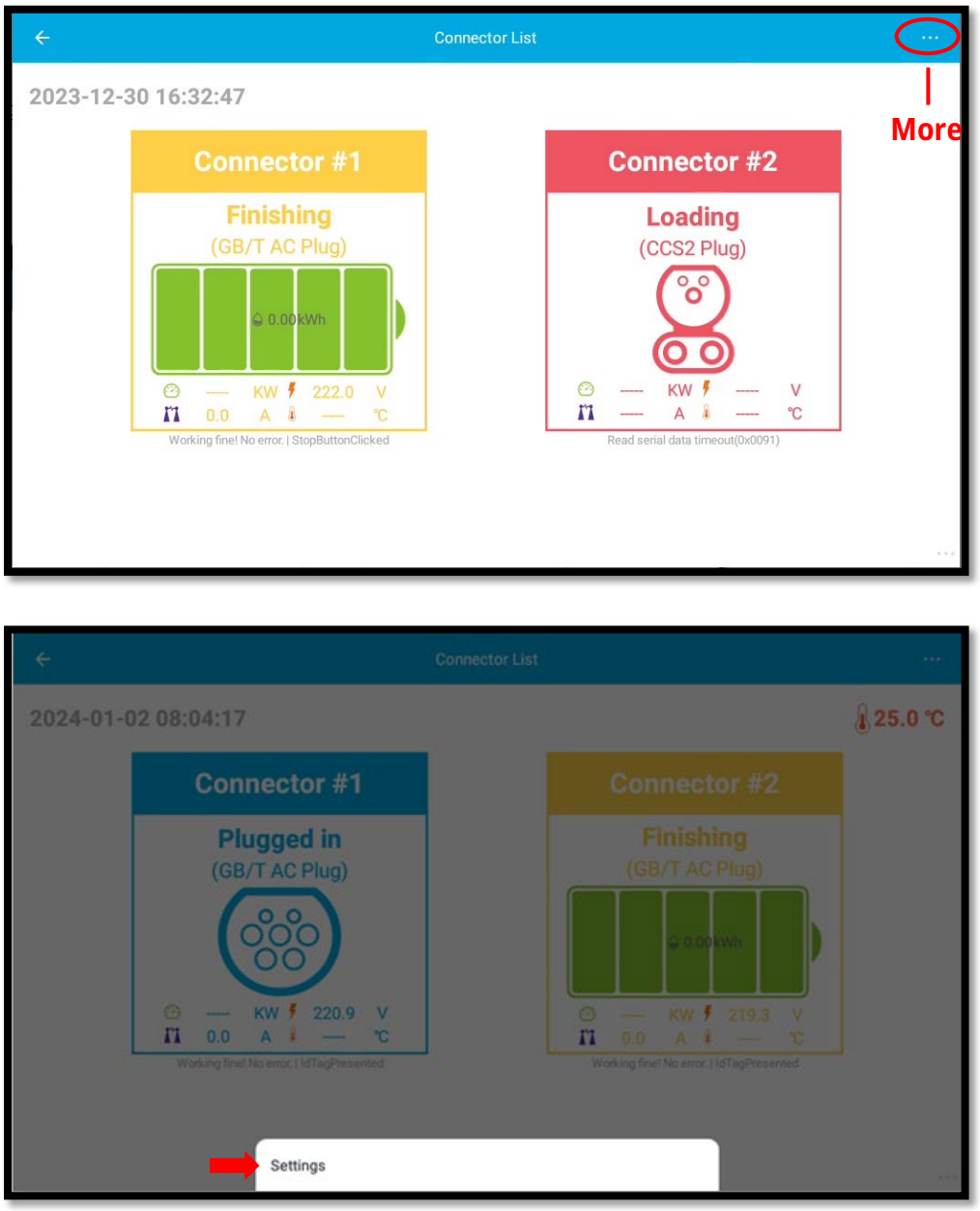

Figure 3.2 Accessing Settings Menu
(Please note that the connector list here is only for showing concept)

2) Select user as **Administrator**, then enter administrator password (default is 39935069) to enter administrator settings menu (**Figure 3.3**).

   ➢ You can also log in as an **Operator**. The default sign-in password for Operator is **123456**. However, you will **only be able to view charging records** when log in as an Operator.

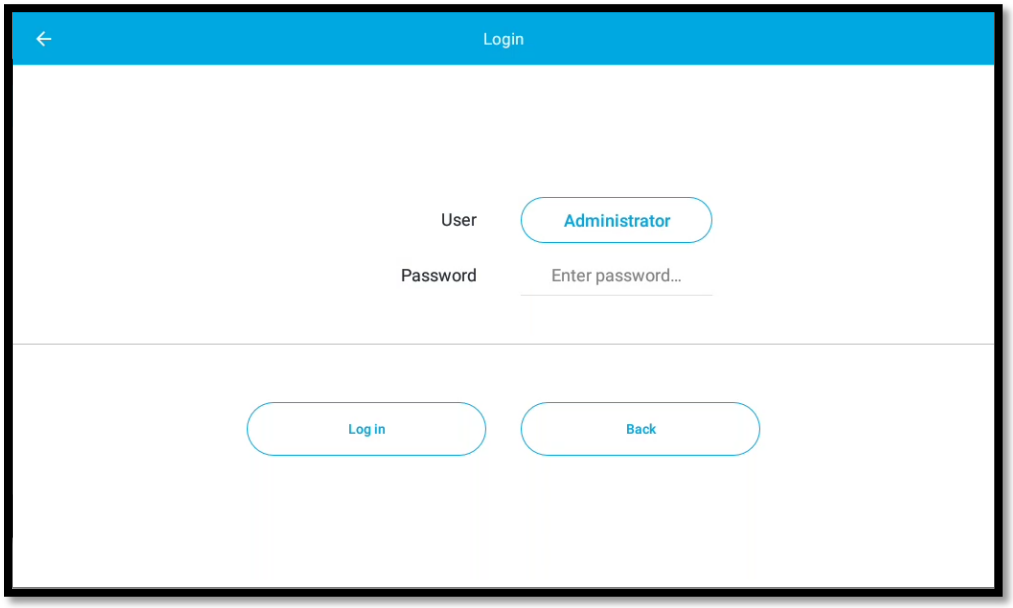

Figure 3.3 Administrator Log-in Page

3) On **Settings** page (administrator settings menu), select **General Information** (**Figure 3.4**), then turn on the option **Android Virtual Keys** (**Figure 3.5**).

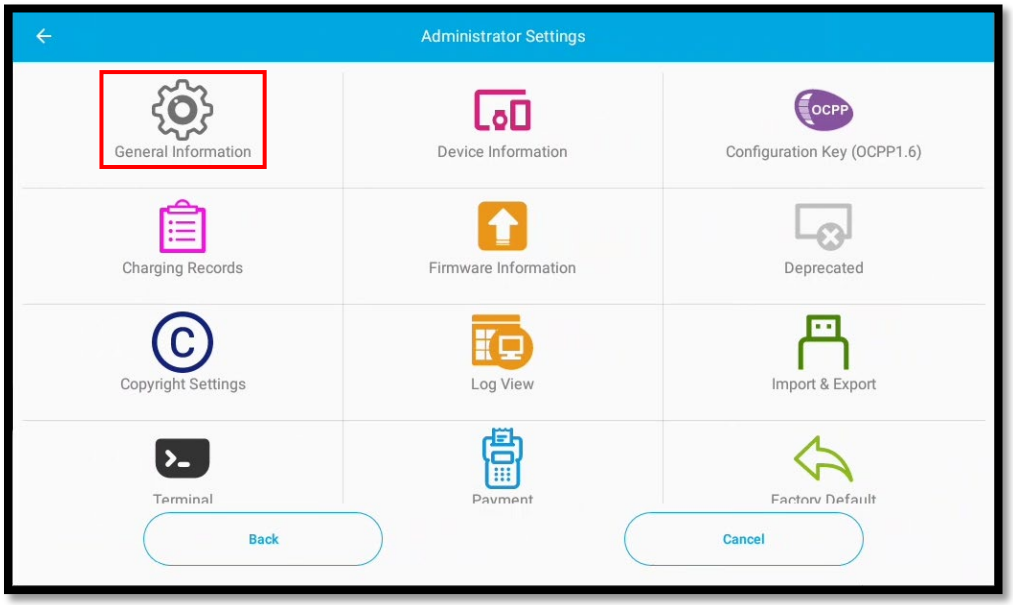

Figure 3.4 Administrator Settings Page

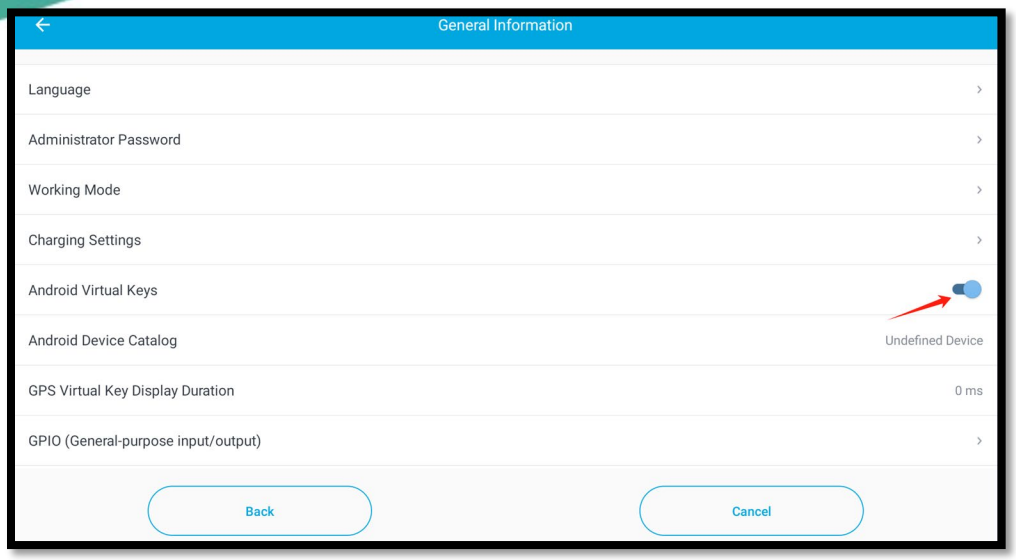

Figure 3.5 Android Virtual Keys Option Turned On

4) After Android Virtual Keys option is enabled, **slide downward in the upper right corner of the screen** to reveal the device's fast setting panel (**Figure 3.6**).

5) Choose the Wi-Fi set up item, then find and connect to the Wi-Fi hotspot you want to use.

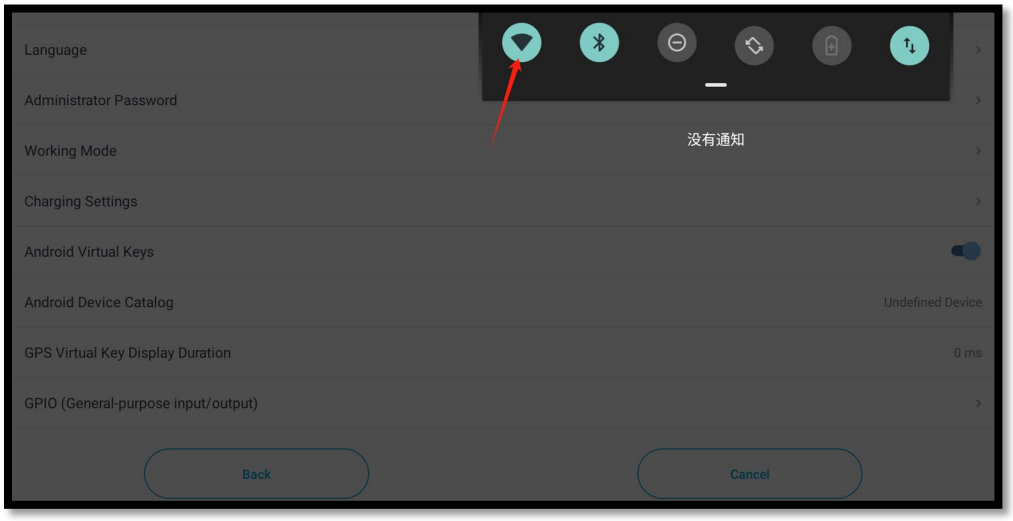

Figure 3.6 Finishing Wi-Fi Setup

Note
After finishing Wi-Fi network setting, please turn of the Android virtual keys. Also refer to notes at the end of Section 3.4 below.

3.4 4G APN Setting

For 4G internet connection, an APN is sometimes required. Follow the instructions in this section to set it up on your TCharge® UDC 360 DCFC charger.

1) Ensure that a 4G SIM card is installed on your charger (see Section 4.4 of **installation manual** for more information) and Android Virtual Keys option is enabled (see Section 3.3). Click on **the square in the bottom center** of LCD screen display to access the device's home screen, then click on the **setting** icon (**Figure 3.7**).

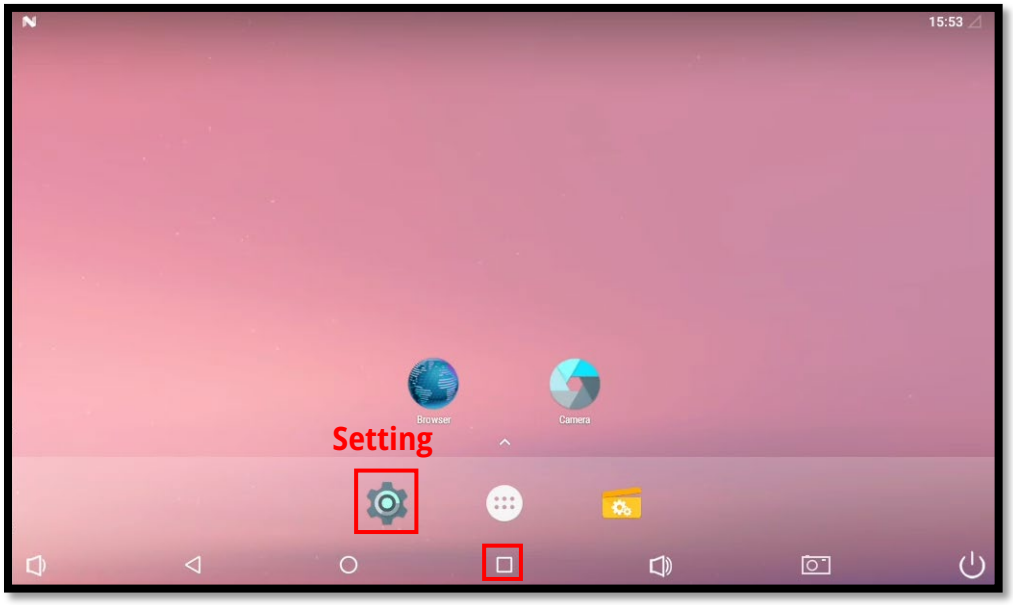

Figure 3.7 Accessing Device Setting Menu after Enabling Android Virtual Keys

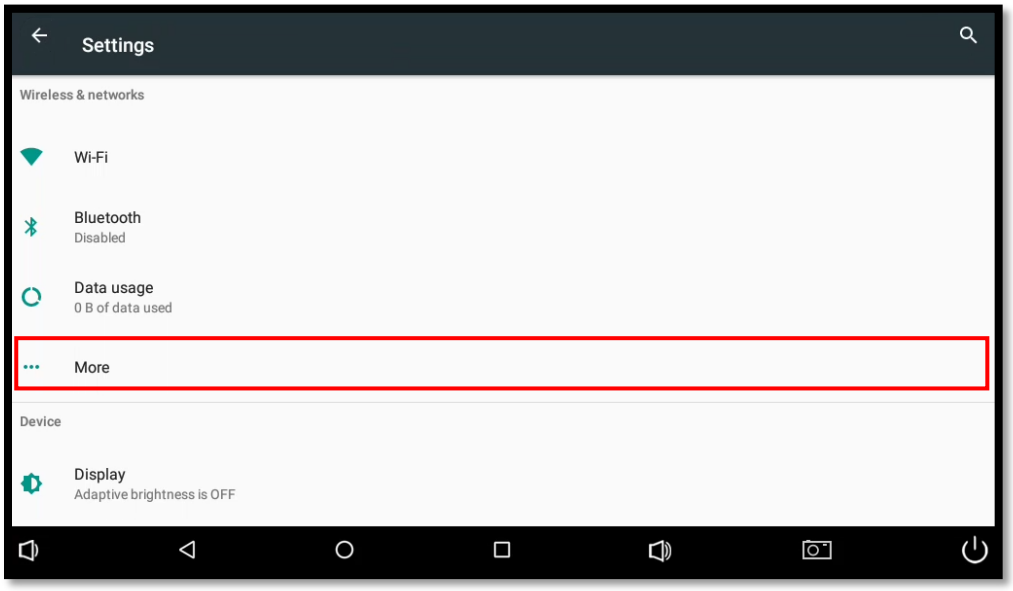

Figure 3.8 Wireless & networks >> More

2) In the Android device's setting menu, click on "**More**" in **Wireless & networks** section (**Figure 3.8**), then click on **Cellular networks** (**Figure 3.9**).

3) Click on "**Access Point Names**" (full form of APN) to finish APN setting (**Figure 3.10**).

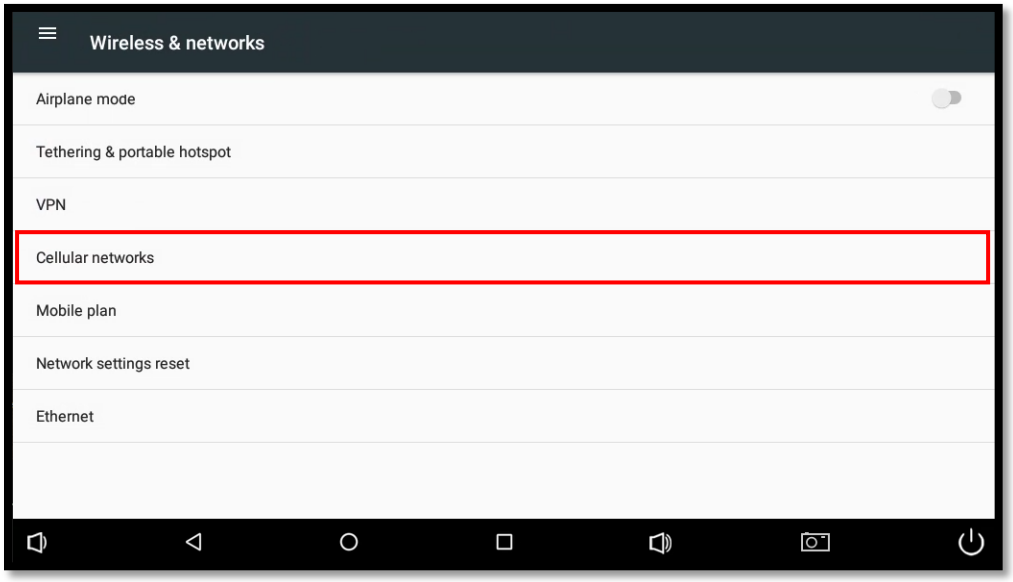

Figure 3.9 Wireless & networks >> More >> Cellular networks

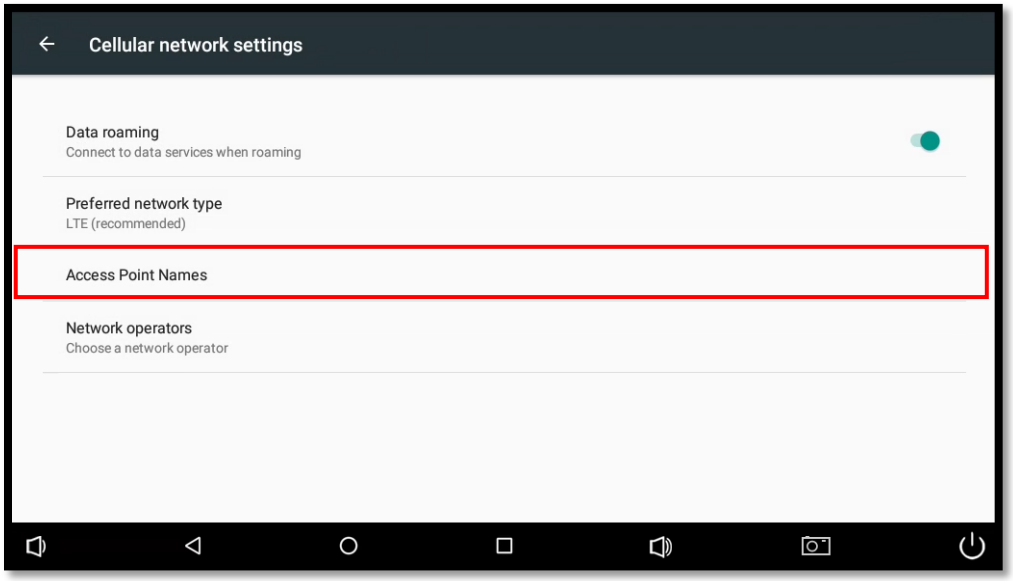

Figure 3.10 Select "Access Point Names"

Note

Apart from configuring internet connections, the Android virtual keys do not have other functions for the charger's normal operation. To avoid the virtual keys causing confusions during the charger's daily use, please turn off the Android Virtual Keys option after Wi-Fi connection / 4G APN setting is completed.

3.5 OCPP Platform Configuration

OCPP (Open Charge Point Protocol) is the most common communication protocol supporting online charging management systems that can control and supervise EV chargers' operation. Establishing OCPP connection on your charger is a must for managing your charging station online.

TCHARGE® UDC 360 charger uses TCHARGE®'s own OCPP platform (online charging management system) by default. If you want to use a third-party OCPP platform, you can finish the charger side configuration with the following features.

1) In **General Information** section of **Administrator Settings** menu (see **steps 1 to 3** in Section 3.3 above), select "**Charging Settings**" (**Figure 3.11**).

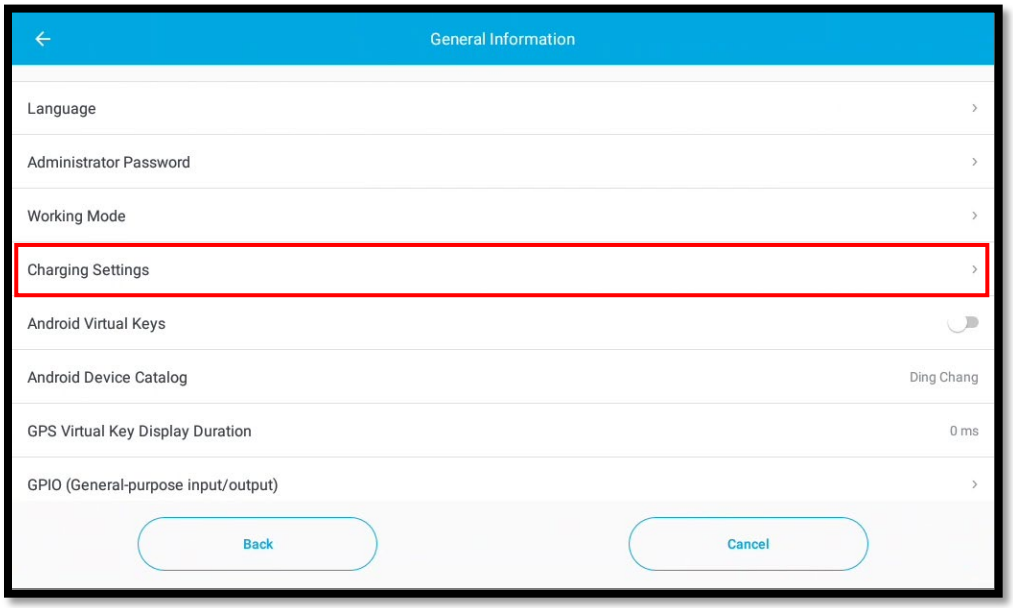

Figure 3.11 Select "Charging Settings"

2) Select **Charging Station Management System** in **Charging Settings** menu (**Figure 3.12**).

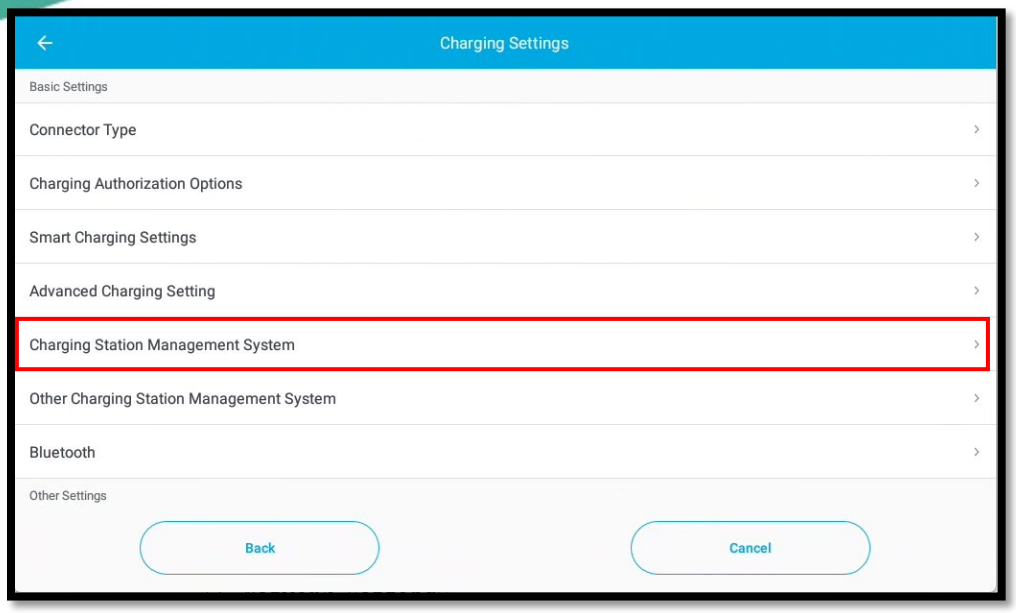

Figure 3.12 Select "Charging Station Management System"

3) In **Charging Station Management System** menu, finish the following configurations (**Figure 3.13**):

- **Protocol Version** (in Section 1)
  Make sure the value for this item is set to **OCPP 1.6**.

- **Enable Charging Station Management System** (in Section 2)
  Allowing turning on and off OCPP function. **Please turn this option on if you want to use OCPP related features** on the charger.
  Please note that **when OCPP function is turned off, only certain methods that do not need OCPP support can be used for charging authorization.** Even off-line charging method set through OCPP system will be disabled.

- **User-defined Server URL** (in Section 3)
  Enter the **OCPP server URL** here to connect the charger to the backend server of OCPP platform that you want to use.

- **Server URL Suffix** (in Section 3)
  Enter the **charger ID** generated by the OCPP platform in this row to let the platform identify the charger.
  For most of times, you need to contact **the operator of the third-party OCPP platform** for this charger ID. (This rule also applies to **TCHARGE®**'s own OCPP platform)

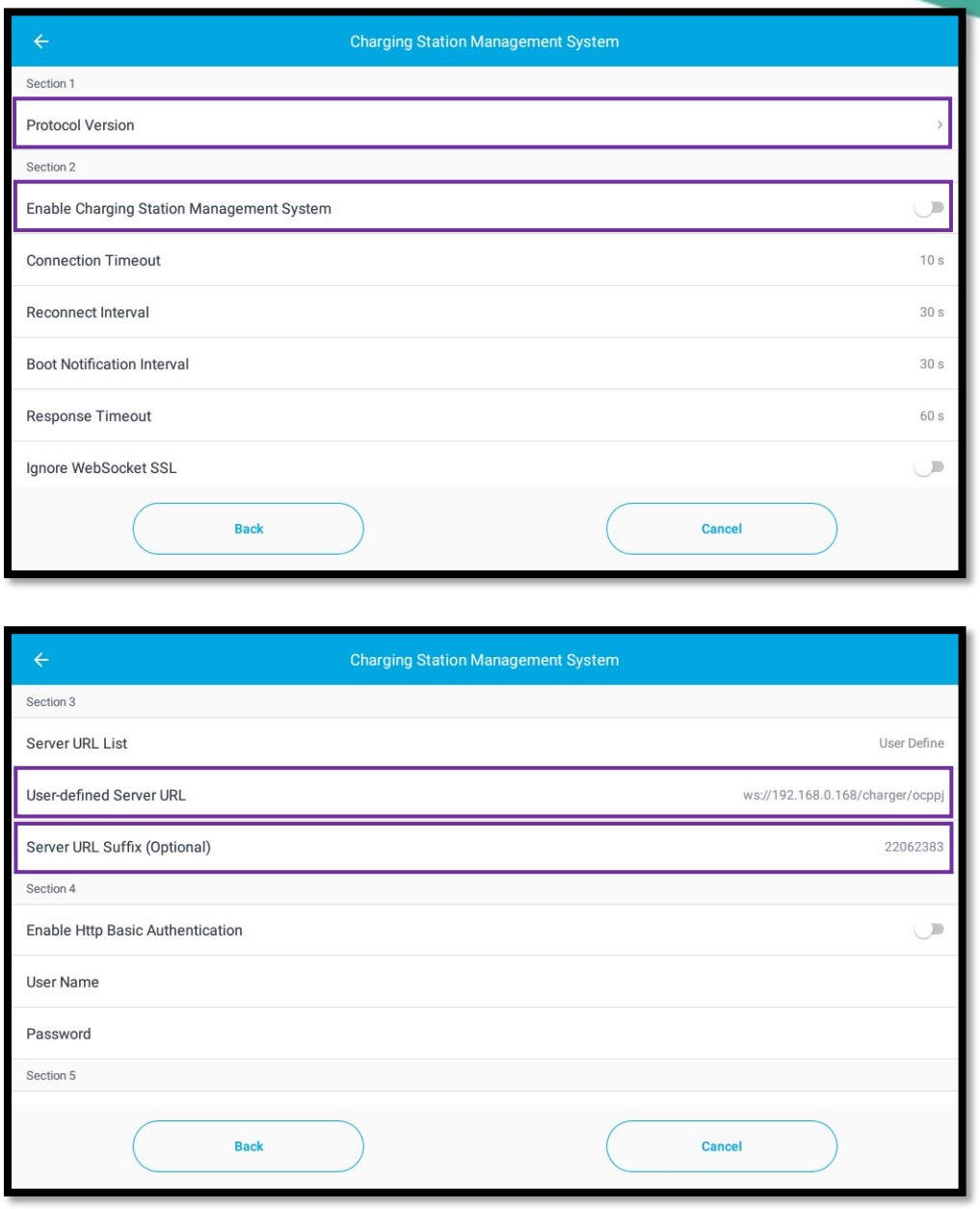

Figure 3.13 Frequently Used OCPP Platform Configuration Items

4. Charging Operation Flow

This section describes the **standard charging operation flow** for using a TCHARGE® UDC 360 series DCFC charger.

Note
Images from this section are taken from testing processes and may not exactly reflect the image you see on the LCD screen display of your UDC 360 charger.

1) After **connecting a connector on your charger to a vehicle**, **select (click on) the corresponding connector icon** on the home screen. (See **Figure 4.1** for examples of connector icons can be selected)

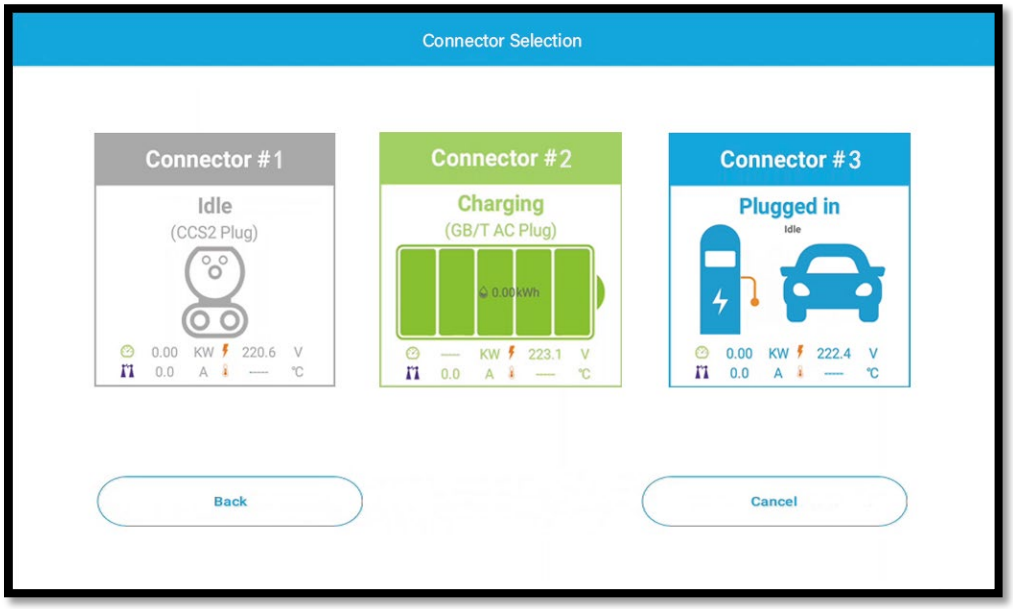

Figure 4.1 TCHARGE® UDC Charger Home Screen Connector List Example
Example statuses: connector 1: **idle**; connector 2: **charging**; connector 3: **plugged in, not charging**

2) **Waiting for charging authorization** screen appears after selecting the connector. This is the step where you authorize charging with an authorization method available to the charger (RFID card as example shown in **Figure 4.2**).

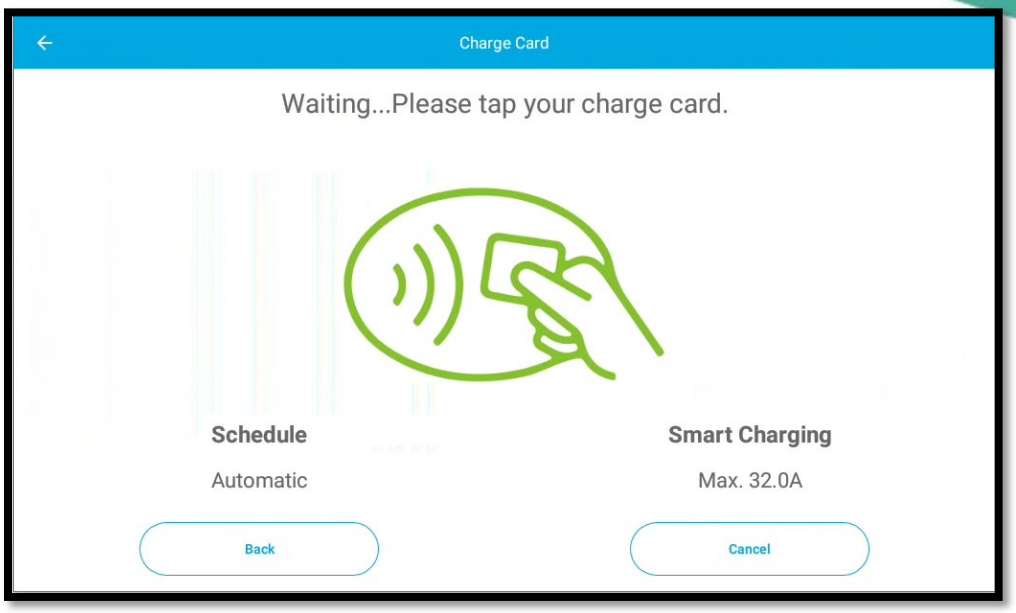

Figure 4.2 Wait for RFID Card Authorization Screen

3) After successful authorization, the system will proceed to **start charging and communication with the vehicle** screen (**Figure 4.3**). This screen indicates that the charging process is getting started.
You will typically hear sounds made by starting-up electrical components during this step coming out from inside of the charger.

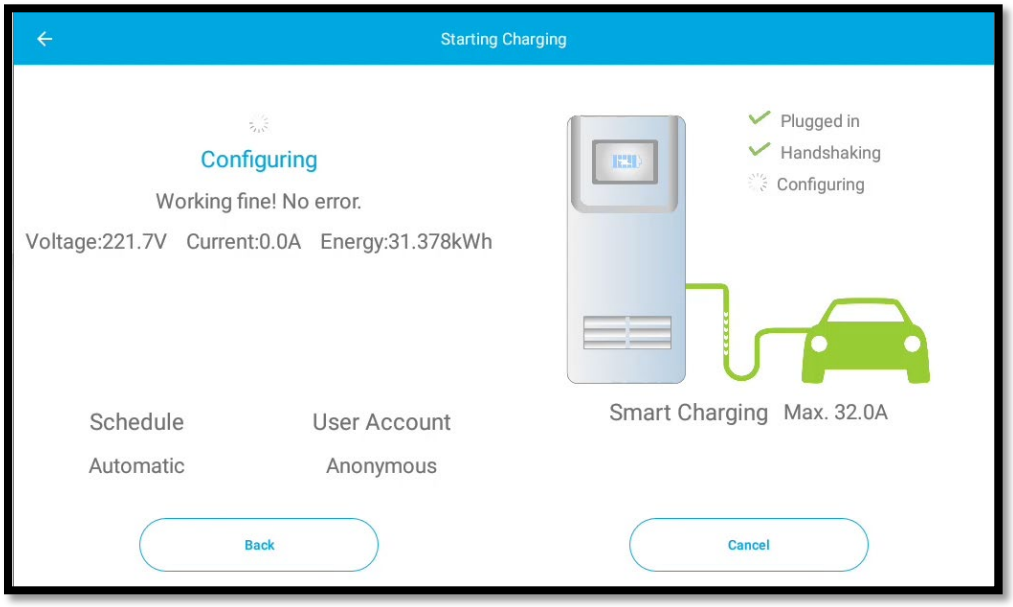

Figure 4.3 Start Charging Screen

4) After the charging process effectively begins, the UI system will display **charging in progress** screen as seen in **Figure 4.4**.

You can stop charging manually at any time by clicking "**Stop**" on this screen (**Figure 4.5**; authorization may be required for stop charging based on the authorization method used for starting the charging process).

Note that when the vehicle's battery is fully charged, the charging process will also stop automatically.

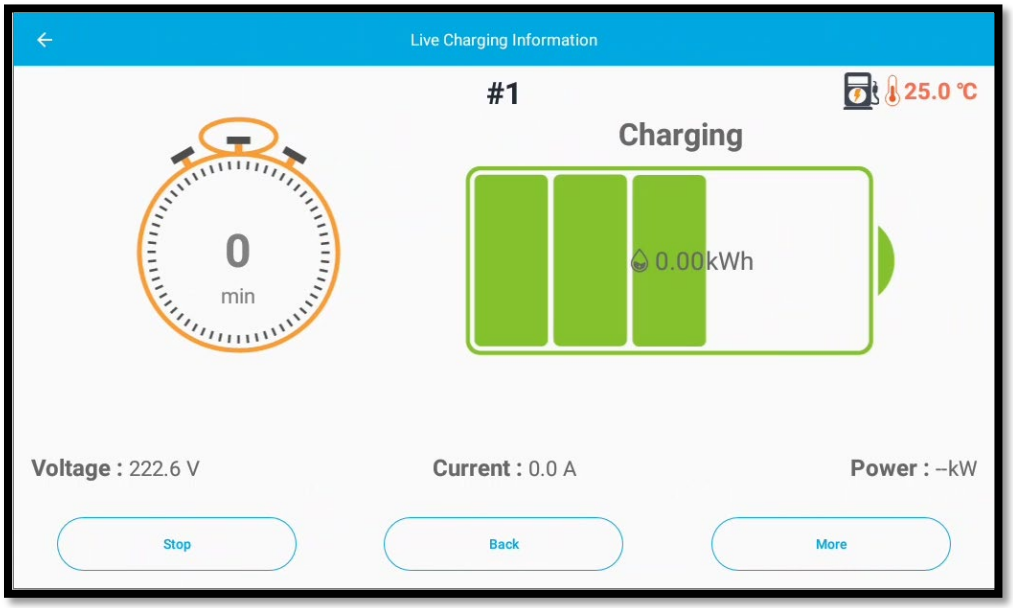

Figure 4.4 Charging in Progress Screen

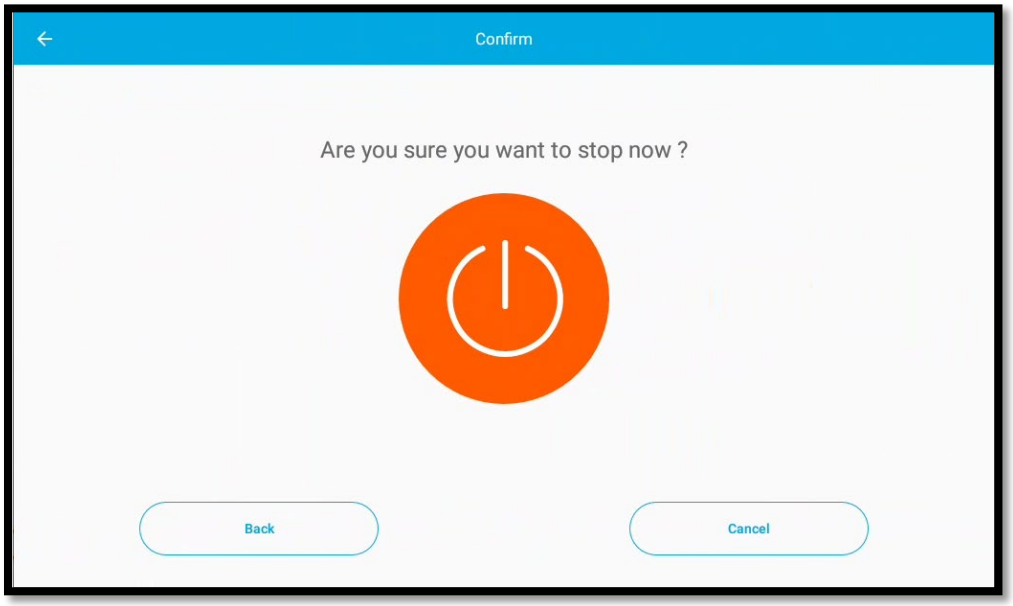

Figure 4.5 Stop Charging in Advance Screen

Statistics of the charging session and billing information (if applicable) will be displayed at the end of the charging process.

5. Maintenance of the Charger

5.1 Recommended Maintenance Schedule

In order to retain your TCHARGE® UDC 360 DCFC charger in its best working condition, TCHARGE® recommends the following maintenance schedule for the charger.

Task	Frequency
Clean the cabinet.	Every 4 months
Check for damages on the charging cables and the connectors (charging guns)	Every 3 months
Check for damages on the cabinet	Every 6 months
Clean or replace the air inlet filter mesh	Every 1 year
Clean or replace the air outlet filter mesh	After the first year, every 2 years

Table 5.1 UDC 360 Charger Recommended Maintenance Schedule

5.2 Air Filter Mesh Removal / Replacement

As TCHARGE® UDC 360 DCFC charger utilizes an air-cooling design, air inlet and air outlet filter mesh are vital for safe, stable operation of the charger, and cleaning and / or replacing these meshes is one of the most crucial tasks for UDC 360 charger's routine maintenance.

The **air inlet filter mesh** on a TCHARGE® UDC 360 charger is normally installed on the left-side door (when viewing from the front) of the charger and is normally **green** coloured.

To remove an air inlet filter mesh for cleaning or to replace it, simply **untighten the 8 screws surrounding the mesh to unfasten the 8 holding plates, then turn the holding palettes to the other side to unblock the filter mesh**. Please refer to **Figure 5.1** below.

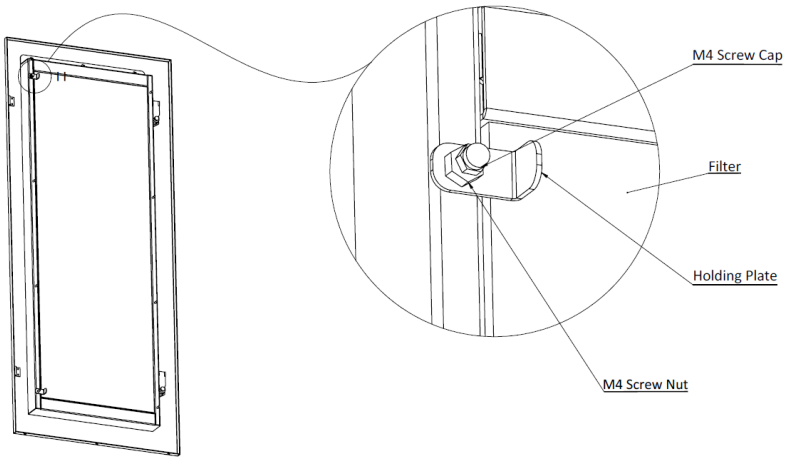

Figure 5.1 UDC 360 Charger Air Inlet Filter Mesh Holding Plates

The **air outlet filter mesh** on a TCHARGE® UDC 360 charger is normally installed on the right-side door (when viewing from the front) of the charger, **behind the metal plate where the cooling fans are installed** (on the same side with the input and output wires of the power modules). It is normally **grey** coloured.

To remove an air outlet filter mesh for cleaning or to replace it, **untighten the 8 screws that attach the cooling fans (installed on a metal plate) to the side door** of the charger first (See the red circles below in **Figure 5.2**). **Detach the metal plate holding the fans from the side door to reveal the filter mesh**, then **loose the 3 screws holding the metal beam on top of the mesh** to take off the beam. Once the beam is taken off, you can easily remove the filter mesh.

Note

Some wire connections on cooling fan control boards of TCHARGE® UDC 360 charger are detachable plastic socket connectors. They can be disconnected easily, which makes temporary removal of the cooling fans less difficult.

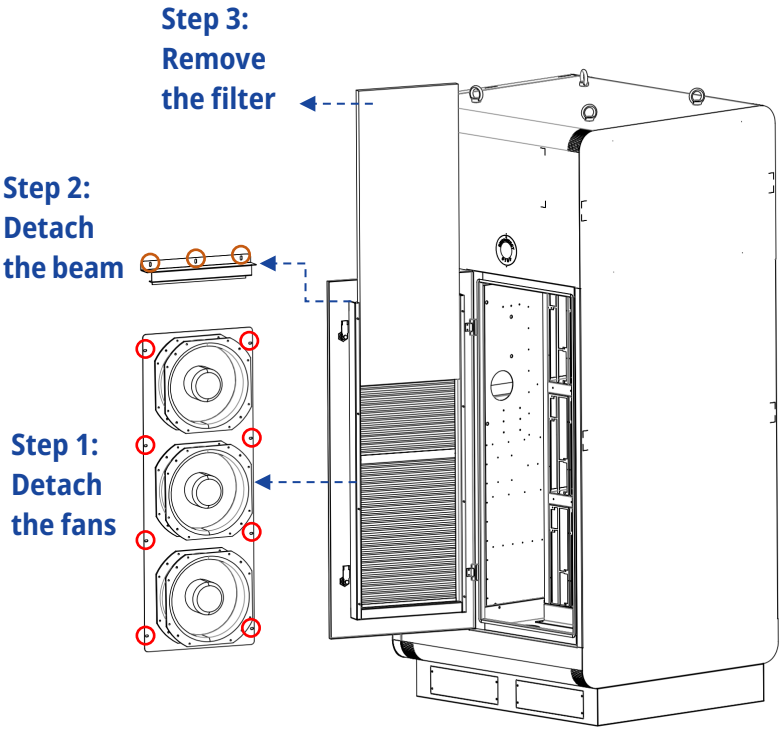

Figure 5.2 Accessing UDC 360 Charger Air Outlet Filter Mesh

5.3 Charging Module Replacements

Warning!
Power modules receive AC power supply even when the charger stays idle. All installation and removal of power modules onto or from the charger must be carried out when the charger is powered off.

In some cases, there may be issues with TCHARGE® UDC 360 DCFC charger's power modules. Removal of old modules and installation of new replacement modules may be occasionally required for maintenance purposes.

To uninstall power modules, simply follow the steps below.

1) Ensure the charger is powered off, then open the **left-side door** of the charger cabinet (when viewing from the front) to **access the berths holding the DC power modules**.

2) **Unfasten the 4 screws holding the power module from the front** (red circles in **Figure 5.3** left) to detach the power module you want to uninstall.

3) Slide the power module out of its berth (**Figure 5.3** right). Please note that **the power modules are heavy and measure about 33 pounds each.** Plan well in advance to handle the power modules appropriately and carefully.

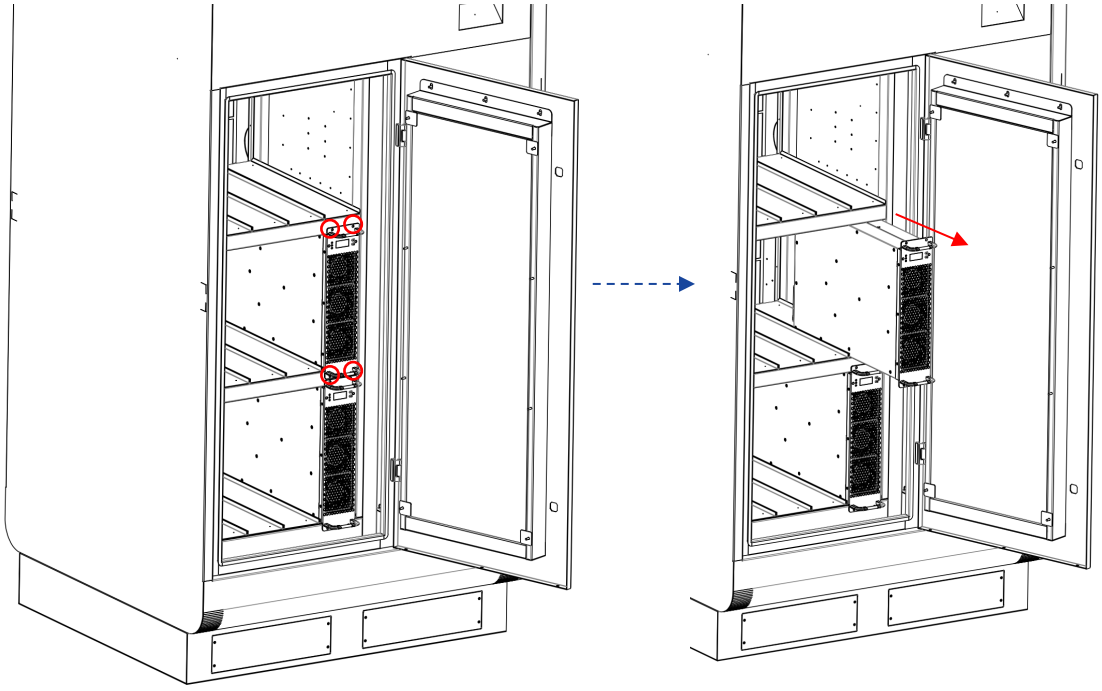

Figure 5.3 Uninstalling Charging Modules from TCHARGE® UDC 360 DCFC Charger

Installation of the power module generally follows **a reversed process**.

- When installing the modules, please pay attention to positions of **AC inlet and DC outlet connectors at the back of the power module berths**.
- You would need to **ensure that the inlet and outlet wires are connected to the right positions** at the back of the module.

5.4 Common Troubleshooting

Please see **Table 5.2** on the following pages for some common troubleshooting tips on TCHARGE® UDC 360 DCFC charger.

No.	Fault content	Possible Cause of Failure	Suggested Solutions
1	Communication failure between TCU and charging controller	1. CAN bus connection between TCU and charger's controller is loose 2. CAN bus has poor anti-interference capability or bus matching resistance is faulty	1. Check whether the CAN communication line between TCU and charging controller is connected abnormally, whether the matching resistance is connected reliably, and whether the shielding layer of communication line is effectively grounded 2. Replace the TCU if it is damaged
2	Meter communication failure	1. Loose connection between TCU and ammeter 2. Meter failure	1. Check whether there is a "telephone" sign in the upper left corner of the meter's screen; if not, it indicates that the meter's communication with TCU fails; check the wiring condition in this case 2. If the meter fails, replace the meter
3	BMS communication abnormal	1. Electric vehicle BMS failure 2. The charging cable is not connected in place, or the communication cable is loose 3. Communication protocol mismatch between charger and electric vehicle.	1. Try start charging for a few more times 2. Check whether the communication wire is in place and well connected throughout the system; check whether the auxiliary power supply (if presented) is faulty and whether the auxiliary power supply wiring becomes loose 3. Whether the communication protocol is consistent; if not, the vehicle's BMS may require upgrades 4. If still unable to charge, please contact our tech supporting team
4	Emergency stop button action failure	The emergency stop button did not recover after it was pressed	1. Turn the emergency stop button clockwise to restore its normal status 2. Test whether the emergency stop button is damaged. **Warning:** Please note that wires for the emergency stop button carries a high voltage, therefore the **power supply to the charger must be cut off first** if any testing plan involves the button's wiring!

No.	Fault content	Possible Cause of Failure	Suggested Solutions
5	Abnormal insulation condition	1. The insulation between charging output circuit and the electrical ground is damaged, creating short circuit 2. Insulation detection module damaged or misreported	1. Restart the charger and vehicle; if possible, open the cabinet door for ventilation, reducing the dampness on site 2. Check the insulation condition of DC output circuit in charger's cabinet, and whether there is obvious point touching the electrical ground 3. Check the working status of the insulation detection module 4. Provide feedback to the manufacturer, let authorized personnel check the insulation on site
6	Arrester failure	The arrester to the front end of contactors gives an alarm	1. If the arrester is not inserted in place, press the arrester hard to install it to the right place 2. Check the installation contact of arrester; if arrester abnormal, replace the arrester
7	LCD screen blackout (green LED lights off)	1. AC incoming switch is shut off or emergency stop is deployed, causing no AC power supply input 2. Auxiliary power supply unit is closed or damaged 3. There is no incoming AC power supply	1. Rotate the emergency stop button clockwise (restore it to the pop-up state), then switch on the AC incoming switch again 2. Turn on the corresponding LRS-75-12 or LRS-35-12 power supply unit; if unit damaged, replace the power supply unit 3. Check whether the switch trips in the upstream low-voltage distribution box, cutting off the AC power supply
8	LCD screen blackout (green LED lights on)	1. TCU is damaged 2. TVI cable between TCU and display is loose 3. LCD screen is damaged	1. If TCU is damaged, replace TCU 2. Re-tighten the TVI cable connection between TCU and LCD screen 3. If the screen is damaged: replace the screen

No.	Fault content	Possible Cause of Failure	Suggested Solutions
9	Charger off-line	1. Abnormal SIM card 2. Poor contact between SIM card and TCU 3. App or background error 4. TCU is damaged 5. Incorrect charger coding and file on back end 6. Local 4G network signal is weak	1. If the SIM card is disabled or has not been activated, try activating or replacing the SIM card 2. Remove and re-install SIM card 3. Contact the management team of software platform to check the status of platform and APP 4. For a TCU damage, replace the TCU 5. Reconfigure the charger on the server 6. Change SIM card supplier or install signal amplifiers on site
10	Connector Locked	1. Signaling network unstable, causing the unlocking process to fail 2. Problems with the vehicle	1. If available, use professional device to unlock DC charging connectors 2. Press the emergency stop button, then release the button after about 5 seconds; try to pull out the connector
11	Vehicle S2 switch action delay or no action	1. The connector is not well connected 2. Problems with the vehicle	1. Insert the connector in place 2. Troubleshooting the vehicle
12	Controller booting failure	1. The connector is not in place 2. During charging process, the button on the connector is pressed 3. Insufficient balance in authorization account	1. Reconnect the connector firmly 2. Raise user awareness to prevent pressing the releasing button during charging process 3. Before charging, ensure the balance in user's authorization account sufficient
13	Access control failure	1. The cabinet door is not properly closed 2. The micro switch for detecting cabinet door movement is not well connected or damaged	1. Close the cabinet door again and firmly lock it 2. Check whether the micro switch is wired correctly and whether the state of the switch and its wiring connections are normal

No.	Fault content	Possible Cause of Failure	Suggested Solutions
14	No reaction from LCD screen (freezing)	1. System failure, system delay or crash	1. Press the emergency stop button for about 5 seconds, and then restore the button. If the touch screen display still doesn't respond, restart the charger
15	Module boost timeout	1. Molded case circuit breaker inside the charger is disconnected (tripped for reasons like overheat)	1. Close the switch, restart the device; if still not resolved, you may need to replace the module or main control board
16	Sudden charging stops with LCD displaying "battery insulation failure" or "battery temperature is too high"	Vehicle battery management system (BMS) communication failure	1. BMS malfunctioning (with the information transmitted to the charger); this is normally a problem on the vehicle end, contact the manufacturer of the vehicle 2. Disconnect the vehicle and pull it aside or restart the vehicle; wait for a period of time, then try charging again
Note: Risk of part failures will increase after the charger is used for a long time.			

Table 5.2 UDC 360 Charger Common Troubleshooting Tips

5.5 Charging Log Download

If you encounter tricky problem while using TCHARGE® UDC 360 DCFC charger, TCHARGE® tech team can investigate on potential issues and try to solve problems for our clients using the **charging log data** stored on the charger.

There are two ways downloading the charging log data from your charger: using OCPP service and using a USB flash drive.

You may contact TCHARGE® team for detailed instructions when you think charging log analysis would help.

6. Service and Support

If you encounter any problem while installing or using the charger, please contact our technical support.

For services in U.S. or Canada, please contact **BLUEVIEW** with the following information:

Web: http://www.blueview-usa.com/
Email: support@blueviewelectricity.com

7. Compliance Information

The product is in conformity and certified with the following technical standards:

- UL2202
- UL2231-2

UDC 360 DCFC Charger Commissioning & Maintenance Manual

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