US Type Charger-80A

User Manual

Revision 2.0

IMPORTANT SAFETY INSTRUCTIONS

This document contains instructions and warnings that must be followed when installing and using the Electric Vehicle Supply Equipment (EVSE). Before installing or using the EVSE, read this entire document as well as WARNING and CAUTION markings in this document.

Safety Instructions

The symbols used have the following meaning:

WARNING: RISK OF PERSONAL INJURY

WARNING: RISK OF ELECTRIC SHOCK

WARNING: RISK OF FIRE OR EXPLOSION

CAUTION: RISK OF DAMAGE TO THE EQUIPMENT

- The information provided in this manual in no way exempts the user of responsibility to follow all applicable codes or safety standards.
- This document provides instructions for the Electric Vehicle Supply Equipment (EVSE) and should not be used for any other product.

Repair and Maintenance Clause

- Only licensed electricians can repair or maintain this equipment. It is forbidden for general users to repair or maintain it.
- Turn off input power before repair or maintenance this equipment.

Federal Communication Commission Interference Statement

This equipment complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This equipment may not cause harmful interference, and (2) this equipment must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not covered in this Guide must be approved in writing by the manufacturer's Regulatory Engineering Department. Changes or modifications made without written approval may void the user's authority to operate this equipment.

Industry Canada statement:

This equipment complies with ISED's license-exempt RSSs. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this equipment must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d' ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Radiation Exposure Statement:

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with greater than 20cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à plus de 20 cm entre le radiateur et votre corps.

WARNING: RISK OF PERSONAL INJURY

This equipment is intended only for charging vehicles that do not require ventilation during charging. Please refer to your vehicle's owner's manual to determine ventilation requirements.

WARNING: RISK OF PERSONAL INJURY

Do not use extender cables to increase the length of the charging cable. Maximum length is limited to 25 feet by the National Fire Protection Agency.

WARNING: RISK OF PERSONAL INJURY

Do not drag this equipment by input power cord.

WARNING: RF Exposure Information (MPE)

This device has been tested and meets applicable limits for Radio Frequency (RF) exposure. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

WARNING: RISK OF ELECTRIC SHOCK

Basic precautions should always be followed when using electrical products, including the following:

- Read all the instructions before using this equipment.
- This equipment should be supervised when used around children.
- Do not put fingers into the EV connector.
- Do not uses this equipment if the flexible power cord or EV cable is frayed, has broken insulation, or any other signs of damage.
- Do not use this equipment if the enclosure or the EV connector is broken, cracked, open, or shows any other indication of damage.

WARNING: RISK OF ELECTRIC SHOCK

Improper connection of the equipment grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the product is properly ground-ed.

WARNING: RISK OF ELECTRIC SHOCK

Do not touch live electrical parts. Incorrect connections may cause electric shock.

WARNING: RISK OF ELECTRIC SHOCK

Do not remove cover or attempt to open the enclosure. No user serviceable parts inside. Refer servicing to qualified service personnel.

WARNING: RISK OF FIRE OR EXPLOSION

To reduce the risk of fire, replace only with same type and rating of fuse.

WARNING: RISK OF FIRE OR EXPLOSION

This equipment has internal arcing or sparking parts which should not be exposed to flammable vapors. It should not locate in a recessed area or below floor level. Automatic reset feature provided.

WARNING: RISK OF FIRE OR EXPLOSION

Do not use this device with an extension cord.

CAUTION: RISK OF DAMAGE TO THE EQUIPMENT

Do not operate this equipment in temperatures outside its operating range of -35°C to +55°C (-31°F to +131°F).

CAUTION: RISK OF DAMAGE TO THE EQUIPMENT

Store this equipment in a clean dry place in temperatures between -40°C and +80°C (-40°F to +176°F).

CAUTION: RISK OF DAMAGE TO THE EQUIPMENT

Not exceed maximum 150V to ground.

SAVE THESE INSTRUCTIONS

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1 Introduction

This user manual applies to “80A Level 2 AC Charger for Plug-in Electric Vehicles (PEVs) and Battery Electric Vehicles (BEVs)”.

The Level 2 Electric Vehicle Supply Equipment (EVSE) with 80A capabilities will be used in North America. It can provide a shorter charging time than the 16A and 32A EVSE.

!!! Any unauthorized modifications will void the manufacturer’s warranty!!!

1.1 Product view

Figure 1-1 Front view

Box Contents

Inside the box, you will find the following accessories.

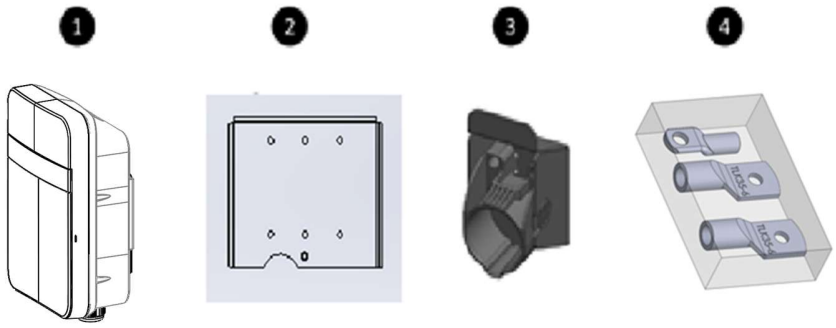


Figure 1-2 Box contents

Table 1-1 Accessories in the box

Item	Description	QTY	Remark
1	Basic Charger-80A Intelligent Charger-80A	1	
2	Mounting Bracket	1	Attached to the back of the charge point
3	Holster ASSY	1	With Hook x1, Holster x1 & M4xL15 tapping screw x2
4	Accessories Bag	1	#2 AWG Ring terminal lug x 2, #8 AWG Ring terminal lug and M6 machine screw x1

Carton Opening Process

1. Open the carton and remove the EPE Foam

Figure 1-2 Opening the carton

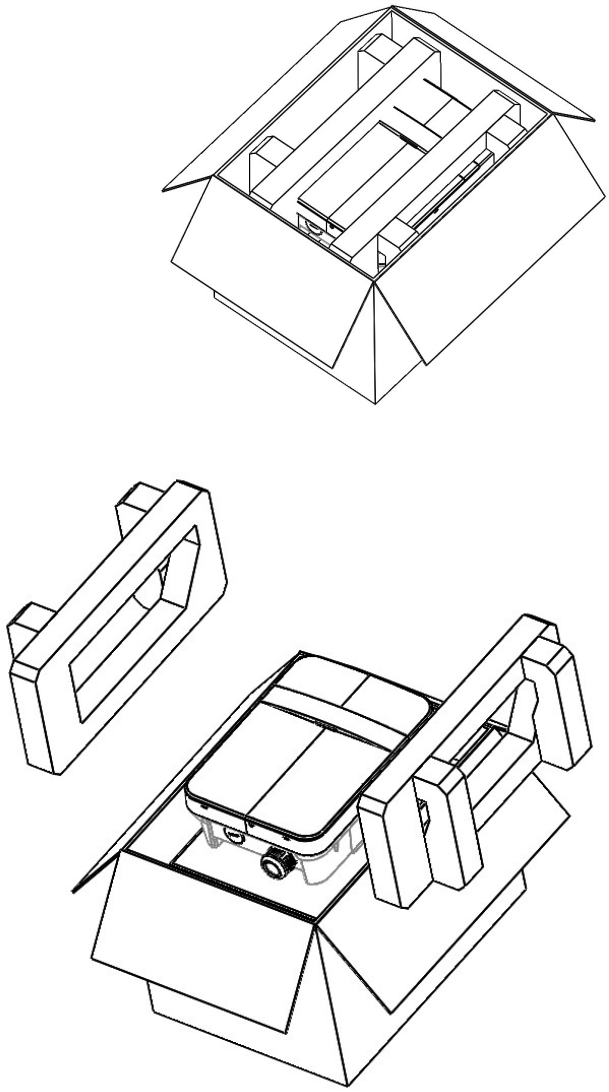


Figure 1-3 Charge point device

2. Take out the charge point and then remove the mounting bracket before installing it.

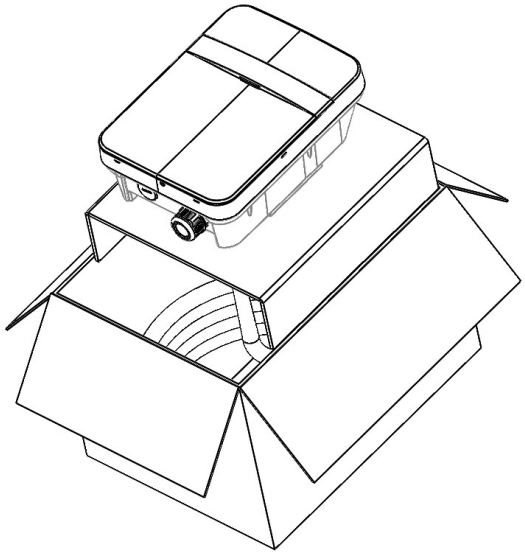


Figure 1-4 Take out the charge point

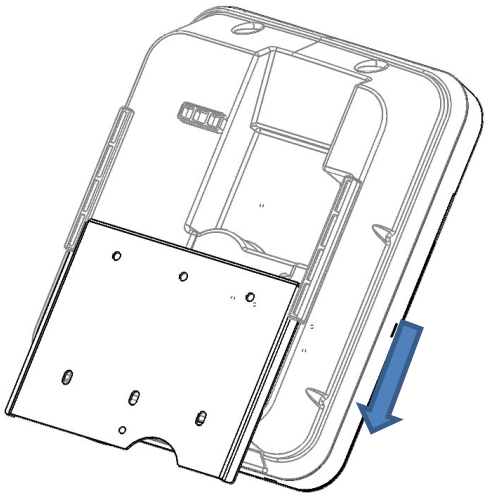


Figure 1-5 Remove the mounting bracket

2 Specifications

2.1 Product specifications

Table 2-1 Product specifications

Item	BC80A	SC80A	IC80A
Application	Residential	Residential	Commercial
Voltage (Vac)	208/240VAC (-20% ~ + 15%), Single Phase		
Frequency (Hz)	60Hz		
Current (Rms)	Max. 80 A		
Charging Connector	SAE J1772 Type 1		
Indications	• Green Steady: Ready • Green Flashing (Fast): Authorized, wait for EV Connect • Green Flashing (Slow): Suspend (Occupying) • Blue Flashing (Slow): Charging • Red Steady: Unrecoverable Fault • Red Flashing (Slow): Recoverable Fault • Yellow Flashing (Slow): Booting / Firmware Upgrading / Out of Service Remark • Fast Flash: On Time 300ms, Off Time 200ms, 2Hz • Slow Flash: On Time 1200ms, Off Time 800ms, 0.5Hz		
Wi-Fi	N/A	802.11 b/g/n	
Ethernet	N/A	YES	
BLE	YES	N/A	
Cellular	N/A		M2M connection (LTE CAT.M1 / CAT.NBIoT)
RFID	N/A		ISO 14443 A/B, ISO 15693, NEMA interoperability protocol
Display	N/A	116(L)*8.5(W)*37(H)mm, 5.57mm CHARACTER HEIGHT, 5*8 DOT MATRIX, OLED 20x2	
Data Protocol	N/A		OCPP 1.6
Operation Temp.	-35 ~ 55 ℃ (-31 to 131℉)		
Storage Temp.	-40 ~ 80 ℃ (-40 to 176℉)		
Mounting Type	Wall mount / Pole mount (optional)		
Wiring Type	Hard-wired		
Enclosure Level	NEMA 3R		
Impact Resistance	IK10		
Dimension (H x W x D)	14.1”x10.6”x5.5”		
Web Portal Management	N/A	Yes	
Console Management	Yes		
Certification	UL 1998/2231/2594 FCC Part 15B		

Item	BC80A	SC80A	IC80A
	FCC Part 15.247 (Bluetooth 2.4GHz)	FCC Part 15.225 (RFID 13.56MHz) FCC Part 15.247 (WLAN 2.4GHz) Energy Star	
	N/A		FCC Part 22/24/27

3 Installation

3.1 Before installation

3.1.1 Safety check

- Check for transport damages.
- Before connecting the product to the power supply, check that the power supply voltage and current rating corresponds with the power supply details shown on the product rating label.

CAUTION: Disconnect the power supply before installing or repairing the charge point. Failure to do so may result in physical injury or damage to the power supply system and the charge point.

CAUTION: Avoid touching or pressing the OLED screen all times, as this may result in damage to the OLED screen.

DANGER: RISK OF SUFFOCATION
Keep any packing materials away from children – these materials are a potential source of danger, e.g. suffocation.

CAUTION: Cord extension sets are not allowed to be used.

The charge point must be installed only by a licensed electrician in accordance with the provisions of the local electrical industry construction and should comply with national electrical codes and standards.

Before installing the charge point, make sure you have read all of these instructions in this manual and fully understand its contents.

Appropriate protection is required when connecting to a main switchboard. The tools and parts used as outlined in the section “Tools & parts required for installation”.

3.1.2 Grounding instructions

The charge point must be implemented equipment grounding through a permanent wiring system or an equipment grounding conductor. Use a wire with a dedicated grounding wire and a ring terminal and connected to the equipment ground terminal block for grounding.

3.2 Tools & parts required for installation

Table 3-1 Tools & parts required for installation

Tool	QTY	Model	Size	Supplier	Remark
Mounting Bracket	1	All	222x173x9 mm	All Product Model	Fasten charge point to the wall
Holster ASSY	1	All	58x58x70 mm	Model Accessories	Hold EV charging plug
Screw	4	All	Tapping: #12	Commercially Available	Fasten Mounting Bracket & Hook
			Mechanical: M6	Commercially Available	
	1	All	Mechanical: M6	Model Accessories	Fasten charge point &Mount bracket
Wire, Copper	3	All	2 AWG	Commercially Available	
Heat Shrink Tube	3	All	For 2 AWG wire Color: Red, Black, Green.	Model Accessories	Protect wires & terminals
Terminal	3	All	For 2 AWG wire	Model Accessories	Connect input wires to the terminal block
Conduit	1	All	1 inch	Commercially Available	Protect power cable
Philips Screwdriver	1	All	PH3	Commercially Available	
Torx Screwdriver	1	All	T20	Commercially Available	
Hexagon Socket	1	All	5/16	Commercially Available	Tighten #12 Tapping screws
Torque Wrench	1	All	40 kgf-cm min	Commercially Available	

3.3 Charge Point Installation

1. Disassemble top cover

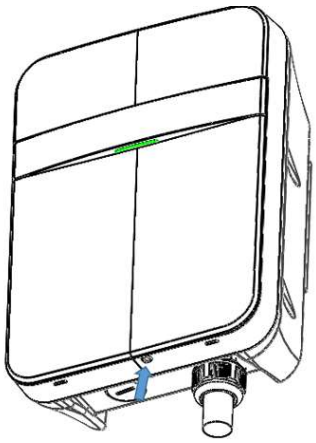


Figure 3-1 Loosen 1 pc M4 screw.

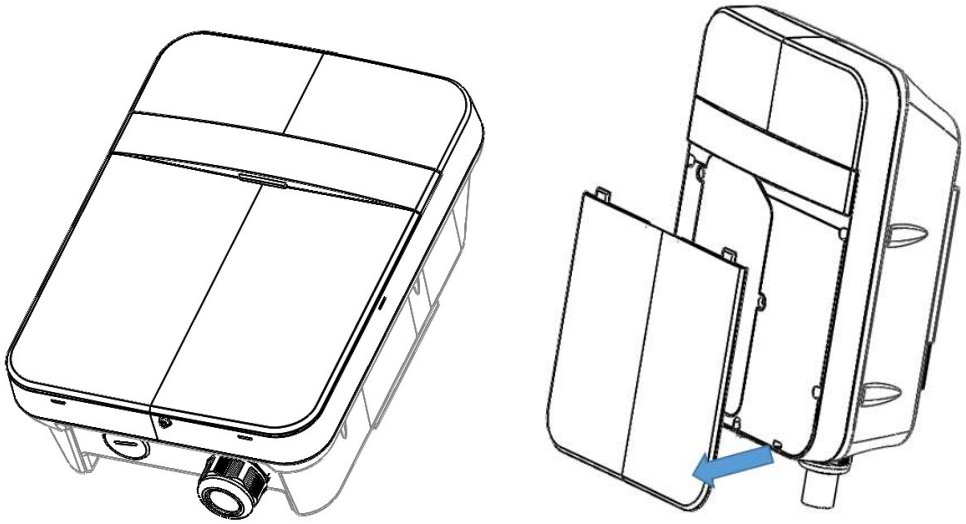


Figure 3-2 Use flat tip screw driver to push snap then open front cover.

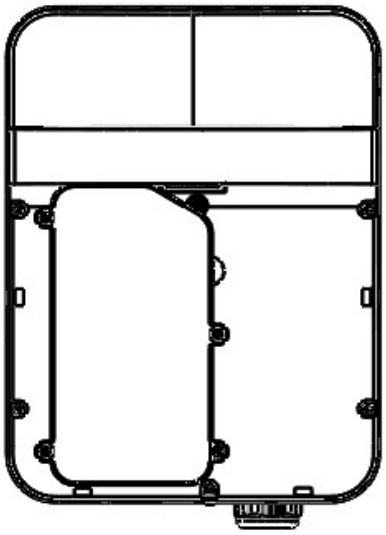


Figure 3-3 Loosen 5 pcs M4 screw then open Install cover.

2. Find SIM card socket. (only for Intelligent Charger)

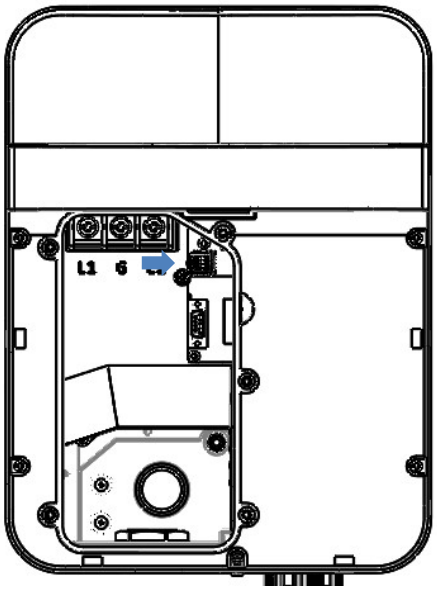


Figure 3-4 Position of SIM card socket

3. Insert SIM card.

3-1 Unlock the SIM Card socket

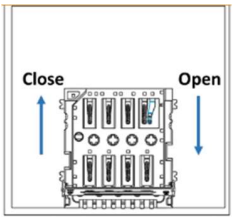


Figure 3-5 SIM card socket and cover Open/Close direction

3-2 Open the socket then install Sim card

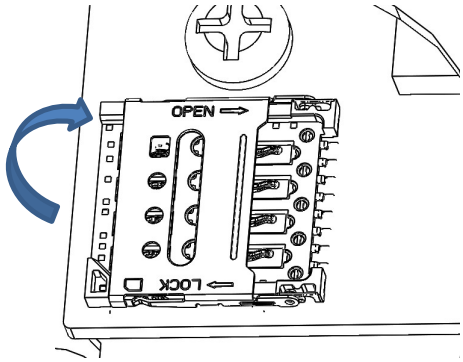


Figure 3-6 open the socket cover

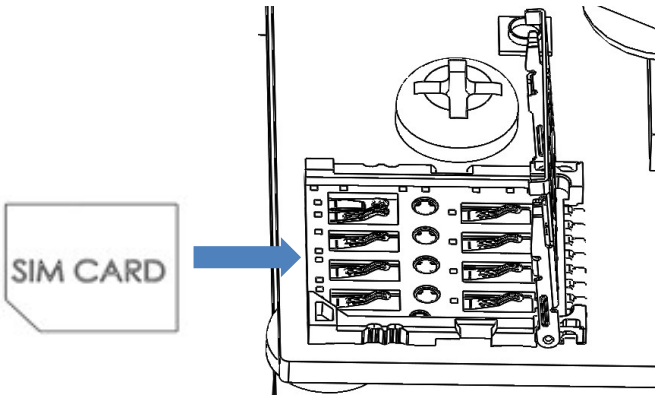


Figure 3-7 input the SIM Card

4. Secure the main body mounting bracket to the wall with appropriate screw.

Follow applicable accessibility requirements for the mounting position. The unit shall be stored or located at a sufficient height. For indoor site, it should not be lower than 18 inches (450 mm) and not higher than 4 feet (1.2m). For outdoor site, it should not be lower than 24 inches (600 mm) and not higher than 4 feet (1.2m). Refer to Article 625, NEC.

The mounting bracket has ten screw holes. If only two screws be used to fasten the mounting bracket, the screws should pass through the middle two screw holes of the mounting bracket. The other screw holes are reserved for the user.

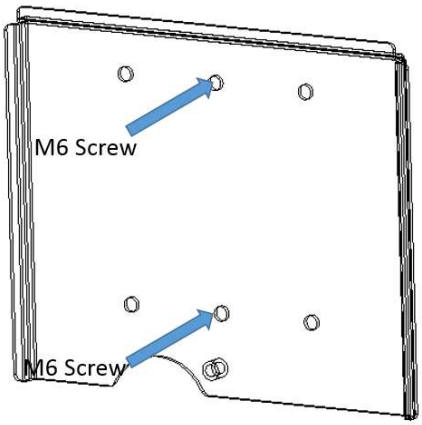


Figure 3-8 Fasten mounting bracket

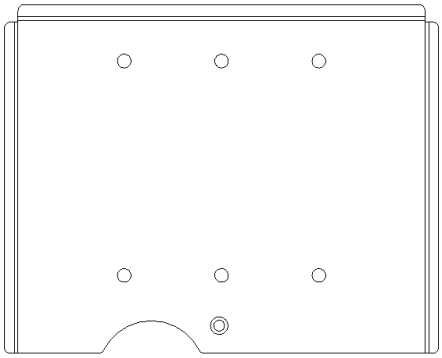


Figure 3-9 Screw holes of mounting bracket

Screw sizing suggestion:

A. For masonry walls, use M6 mechanical screws. (Commercially Available)
B. For finished walls supported by wood studs, use #12 tapping screws. (Model Accessories)
C. Please refer to the following torque. The actual torque is according to the wall material.

Screw	Torque	
M6	25 kgf.cm min	21.7 lb-in min
#12	25 kgf.cm min	21.7 lb-in min

5. Fasten charge point onto mounting bracket.

5-1. Put the charge point on the mounting bracket.

5-2. Fasten charge point on mounting bracket by tightening M6 screw.

5-3. Please refer to the following torque.

Screw	Torque	
M6	31 kgf.cm	26.9 lb/in

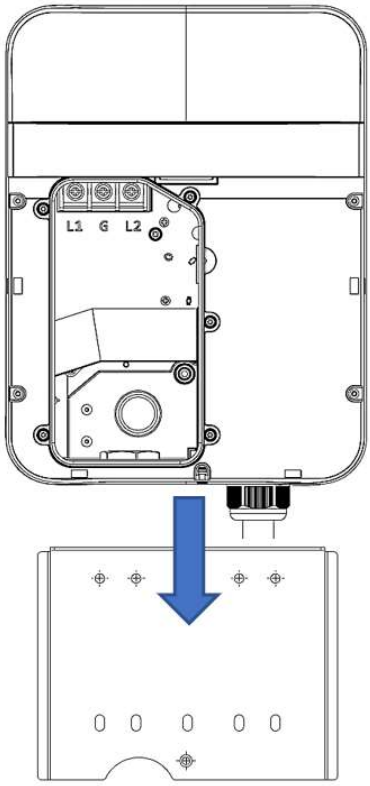


Figure 3-10 Charge point and mounting bracket

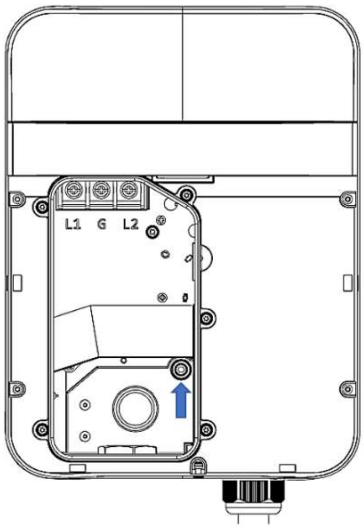


Figure 3-11 Tighten M6 screw

3.4 Input Power Cord Installation

1. Choose the appropriate conduit in accordance with all applicable state, local and national electrical codes and standards.

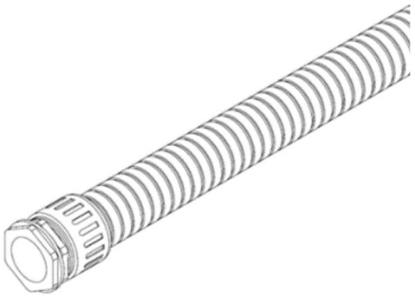


Figure 3-12 Conduit.

2. Clamp copper terminal to connect copper wire. The clamp point is covered by heat shrink tube for protecting.

2-1 Refer to the following wire specification. Use conductor type other than RHH, RHW and RHW-2 with outer covering.

Model	Terminal	Conductor	Rating
Charger-80A	L1, L2	2 AWG	90C copper wire
	G	8 AWG	

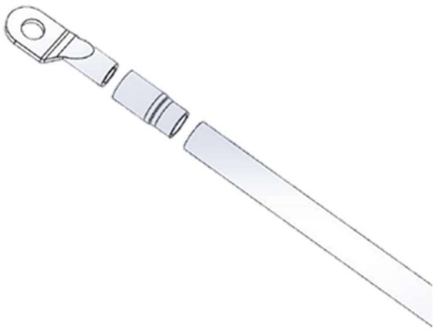


Figure 3-13 Copper terminal, heat shrink tube and copper wire.

3. Electrical wiring to the charge point.

3-1. Fold the wire end to pass through the conduit and insert them into the input hole (choose input direction 1 or 2 and open cap)

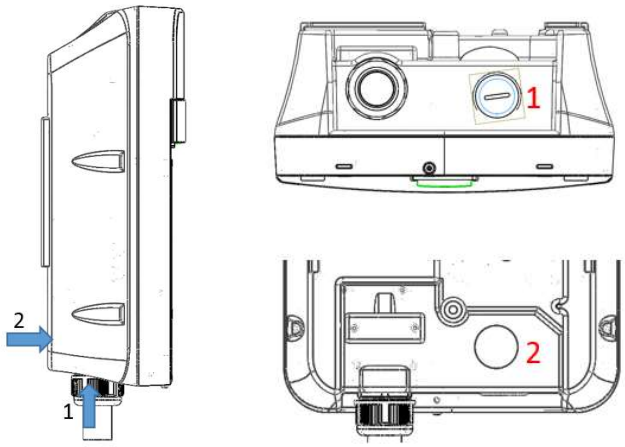


Figure 3-14 Cable input position

3-2. Fasten the copper wire on the corresponding terminal block. The wiring instruction is printed in front of the terminal block (L1/L2/G).

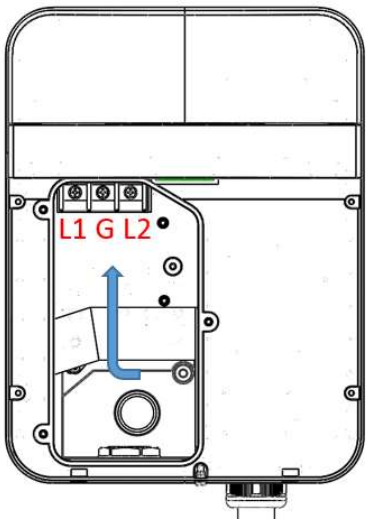


Figure 3-15 Input wiring position.

3-3. Use the following torque to connect the wire terminal to the terminal block.

Screw	Torque	
M6	31 kgf.cm	26.9 lb-in

⚠ CAUTION: To reduce the risk of fire, connect only to a circuit provided with 100 amperes maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA 70, and the Canadian Electrical Code, Part I, C22.2.

⚠ CAUTION: If this unit is installed outdoors, the outlet must be rated for outdoor installation. The outlet must be installed properly to maintain the proper NEMA rating of the enclosure.

3-4. Lock the conduit on the enclosure. Please refer to the following torque.

Conduit	Torque	
1 “	35 kgf.cm	30.36 lb-in

3-5. Reassemble Instant cover and Front cover then Fasten M4 screw.

Screw	Torque	
M4	15 kgf.cm	13 lb-in

3.5 Adjust Max. Output Current

1. **Refer to Chapter 4 for how to log into web portal.**
2. **Adjust Max. Output Current from web portal.**

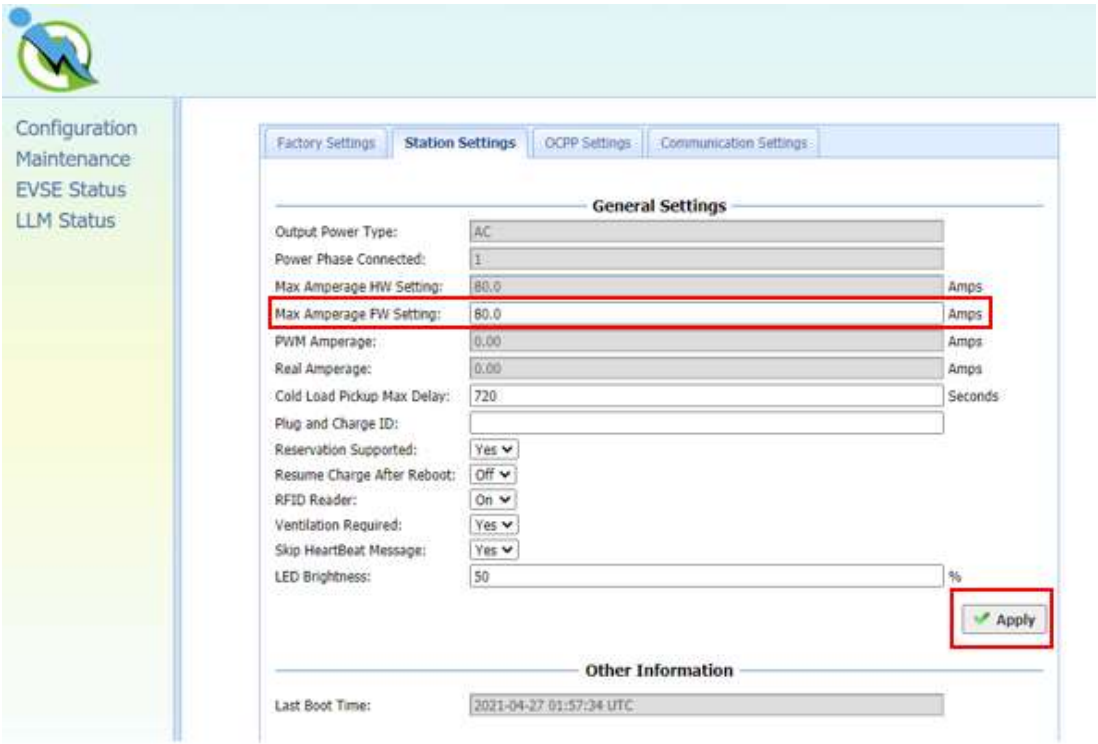


Figure 3-16 Modify Current in Max. Amperage FW Setting field and press “Apply” button.

3.6 Holster Installation

1. Separate the holster from the hook.

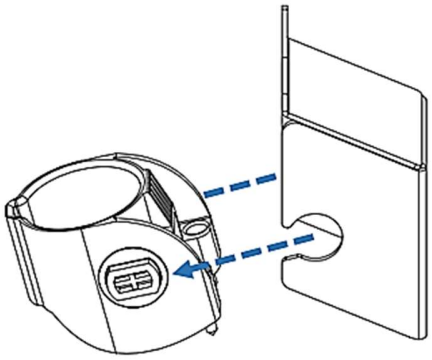


Figure 3-16 Separate the holster

2. Fasten the hook on the wall with appropriate screws.

2-1. For finished walls supported by wood studs, use 2PCS screws (#12 tapping or M6) .

2-2. The recommend torque is 25 kgf.cm (21.7 lb-in).

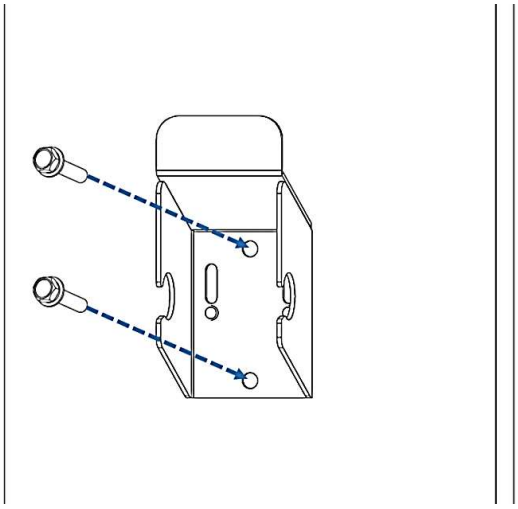


Figure 3-17 Secure the hook

3. Make the holster face up and combine with the hook.

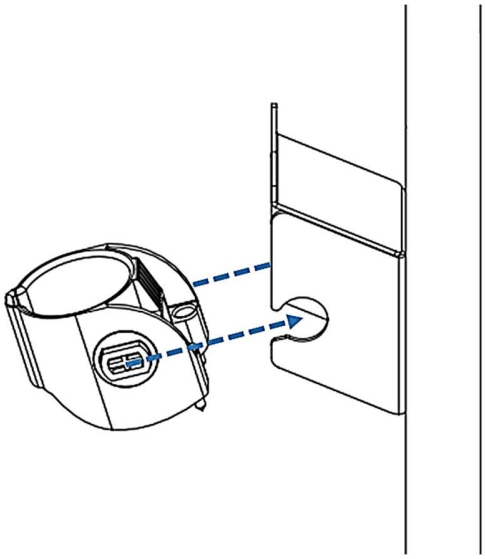


Figure 3-18 Secure the holster

4. Rotate the holster down totally.

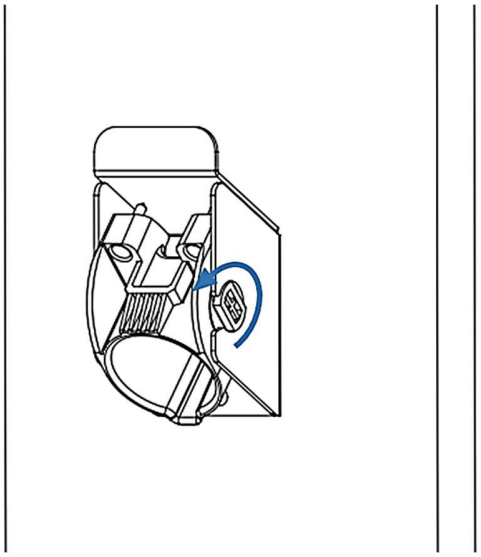


Figure 3-19 Rotate the holster

5. Keep the holster in this state and tighten screws completely.

5-1. The recommend torque is 6 kgf.cm (5.2 lb-in). The screws make the combination firm.

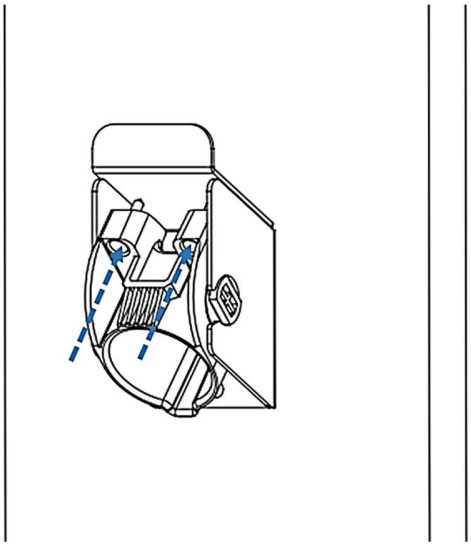


Figure 3-20 Tighten screws

6. Place EV charging plug on the holster.

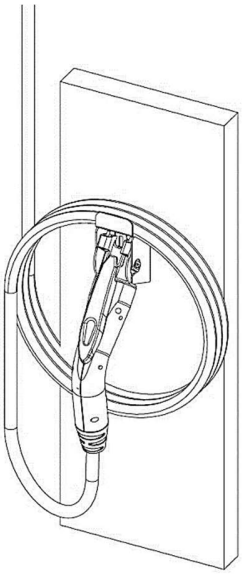


Figure 3-21 Place EV charging plug

4 Getting started

4.1 Access charger via browser [for SC/IC Only]

4.1.1 Setting up the local network

The default factory setting of networks is Wi-Fi AP mode. You can get the SSID number from the label on the side of the charge point. Please refer to the Figure 4-1. The SSID name is IC80A+SN. Then you can connect a computer/smart phone/iPad to the charge point using Wi-Fi. The default password is "SN+@IC80A"

Ex. SN : Ex-1193-1A13-1-1234-2444,

The SSID name is IC80AEx-1193-1A13-1-1234-2444.

The password is Ex-1193-1A13-1-1234-2444@IC80A.

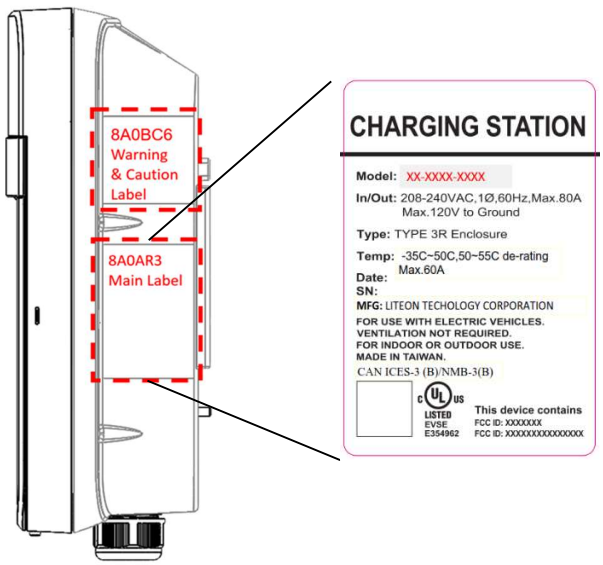


Figure 4-1 SN on the main label

4.1.2 Setting up the local network (using Ethernet cable)

Install communication cable between PC and charge point. Please refer to the Figure 4-2.

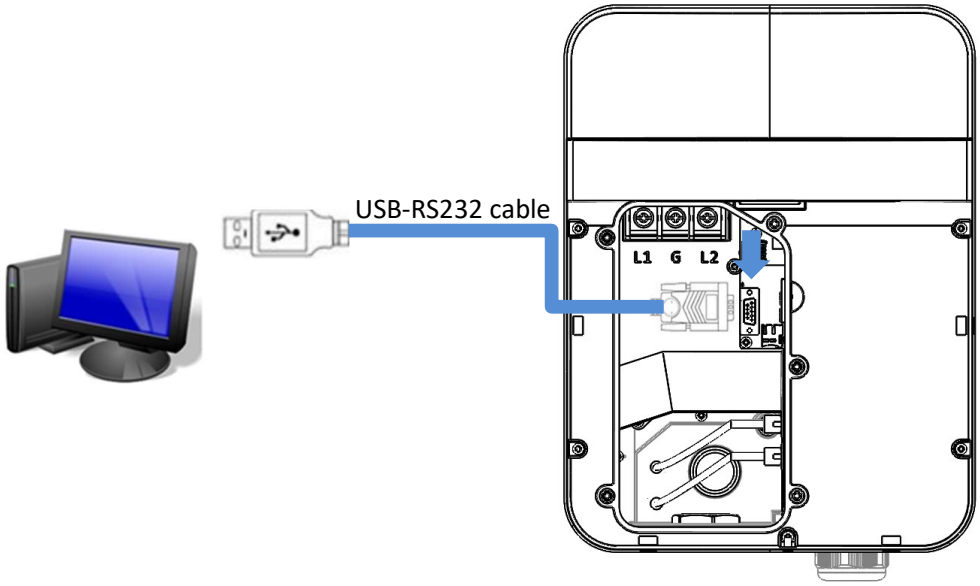
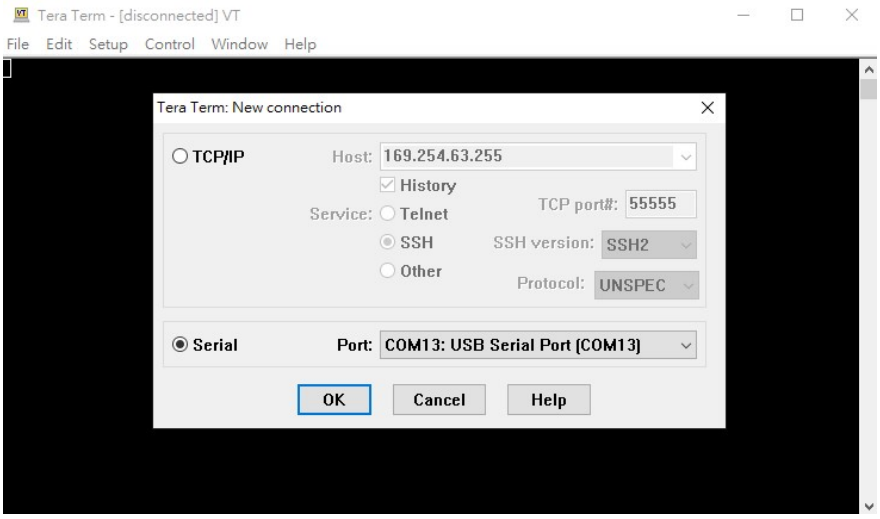
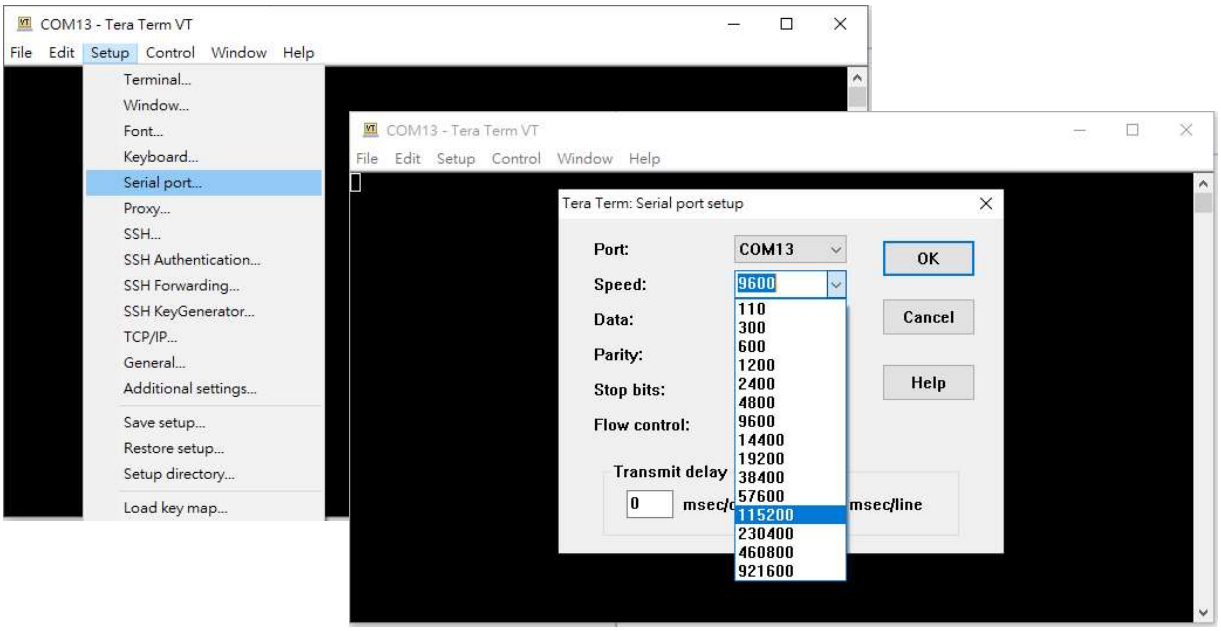


Figure 4-2 Communication cables install diagram

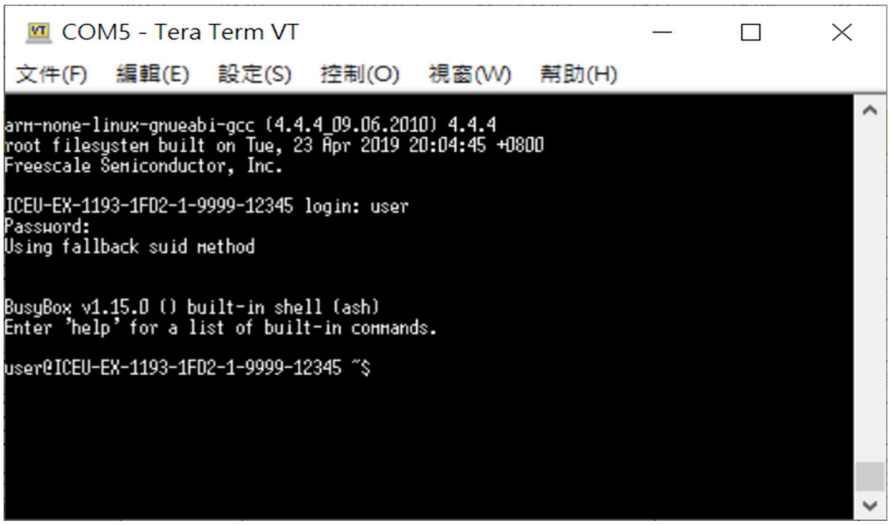
After wiring connection turn power on, Launch TeraTerm or PuTTY (SSH Client for Windows system) on PC to access to IC-80A Charger through Serial Port. You should see the login screen(TeraTerm for example):



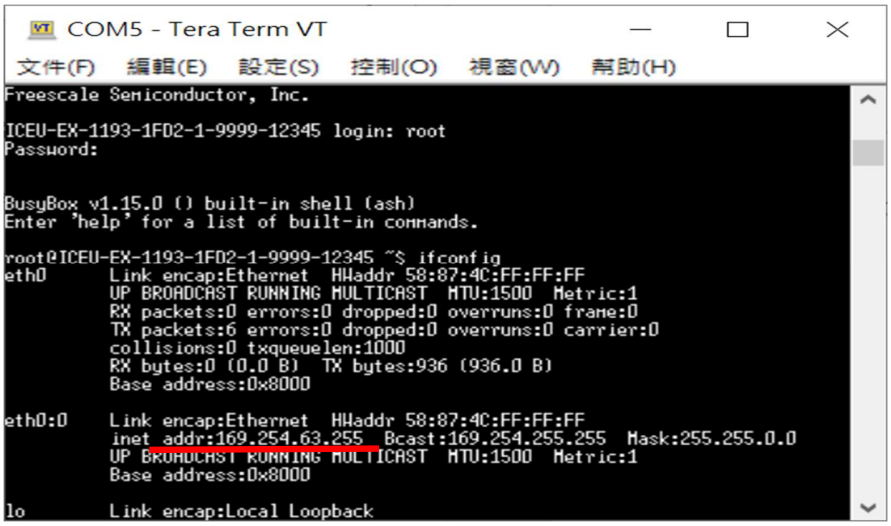
Go to Setup > Serial Port… to modify Speed to <115200> and press <OK>.



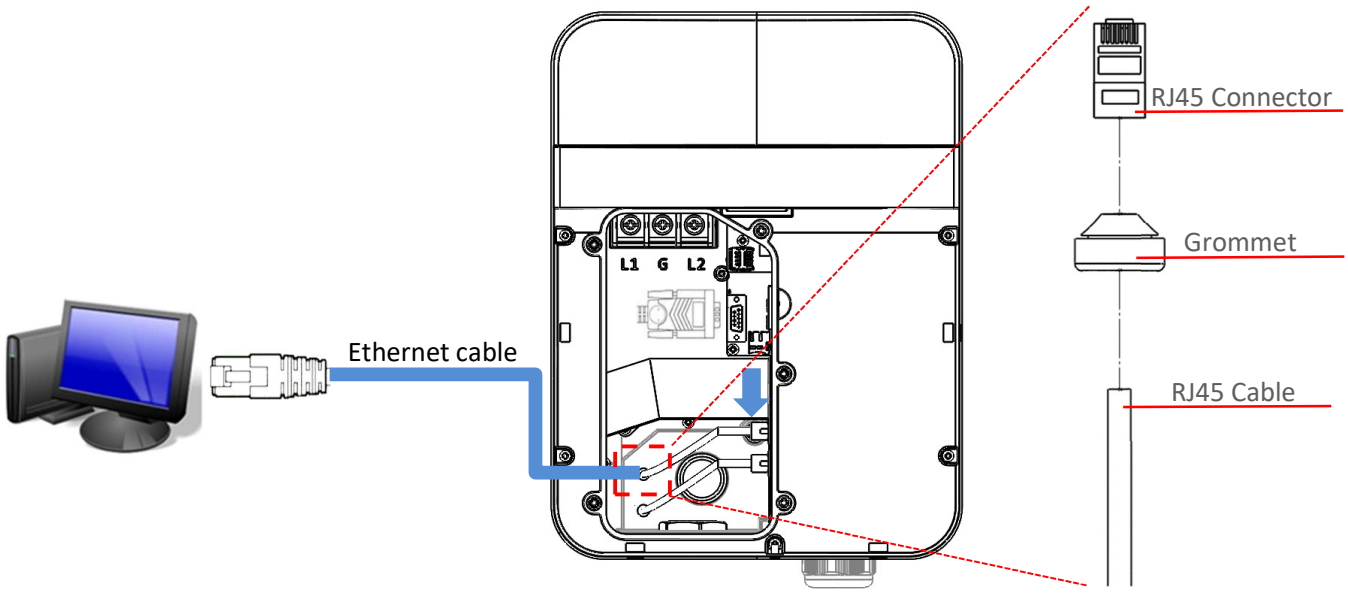
To be able to Log-in through Serial Port, you should enter "**user**" in the user name box. The default password is "**user123USER123**".



Send "ifconfig" command to get charge point's IP address from Ethernet interface.
This IP address will be used in section 4.1.3 to a web browser address field:



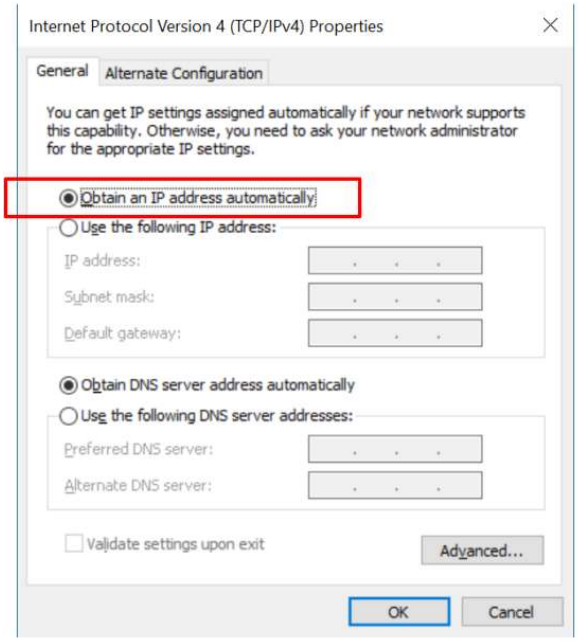
Connect a computer to the charge point using an Ethernet cable.



NOTE

Please **do not** remove the grommets. Instead, let Ethernet cable pass through them.
Use tools to combine the RJ45 connector with RJ45 cable.
By this way, the IP level could be >= IP55. The Ethernet cable diameter should be 3.5mm – 5mm.

Set up a dynamic IP Address on your computer. For windows system, choose “Obtain an IP address automatically” in Internet Protocol Version 4 (TCP/IPv4) Properties dialog like below figure.



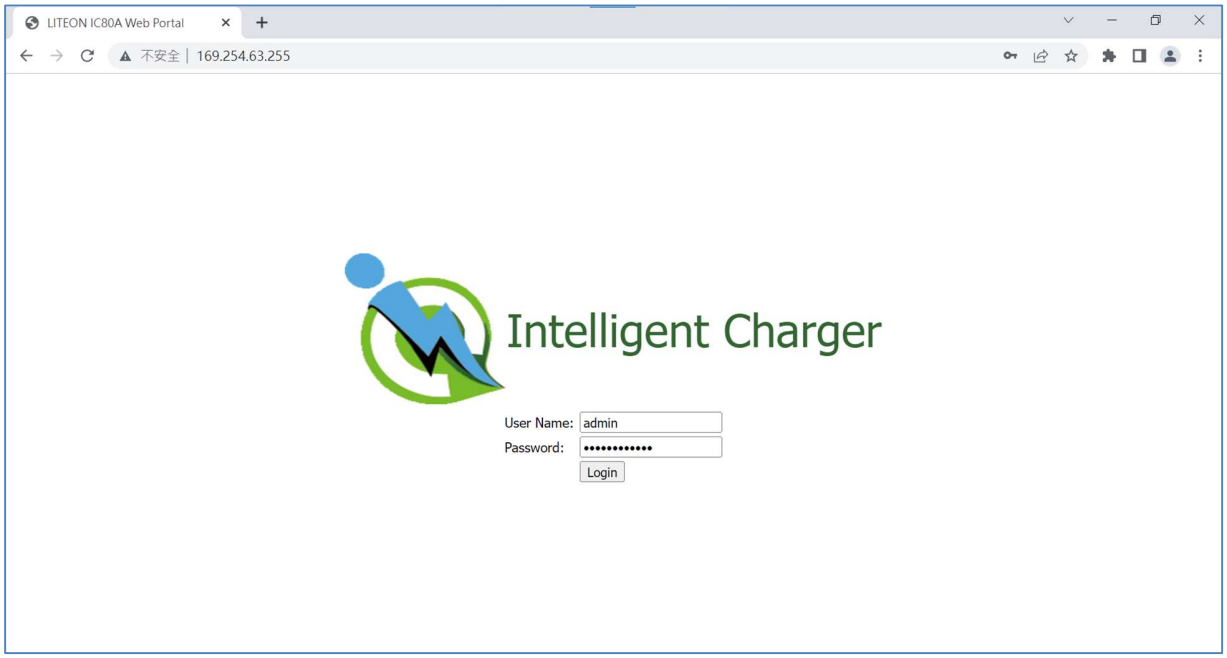
4.1.3 Log in

Open a web browser and enter the IP address in the address field of the browser and press enter.

Connection Method	IP address	characteristic
Wi-Fi	10.10.0.1	Static IP address
Ethernet cable	169.254.**XXX.XXX**	Different with each charge point

Now you should see the login screen:

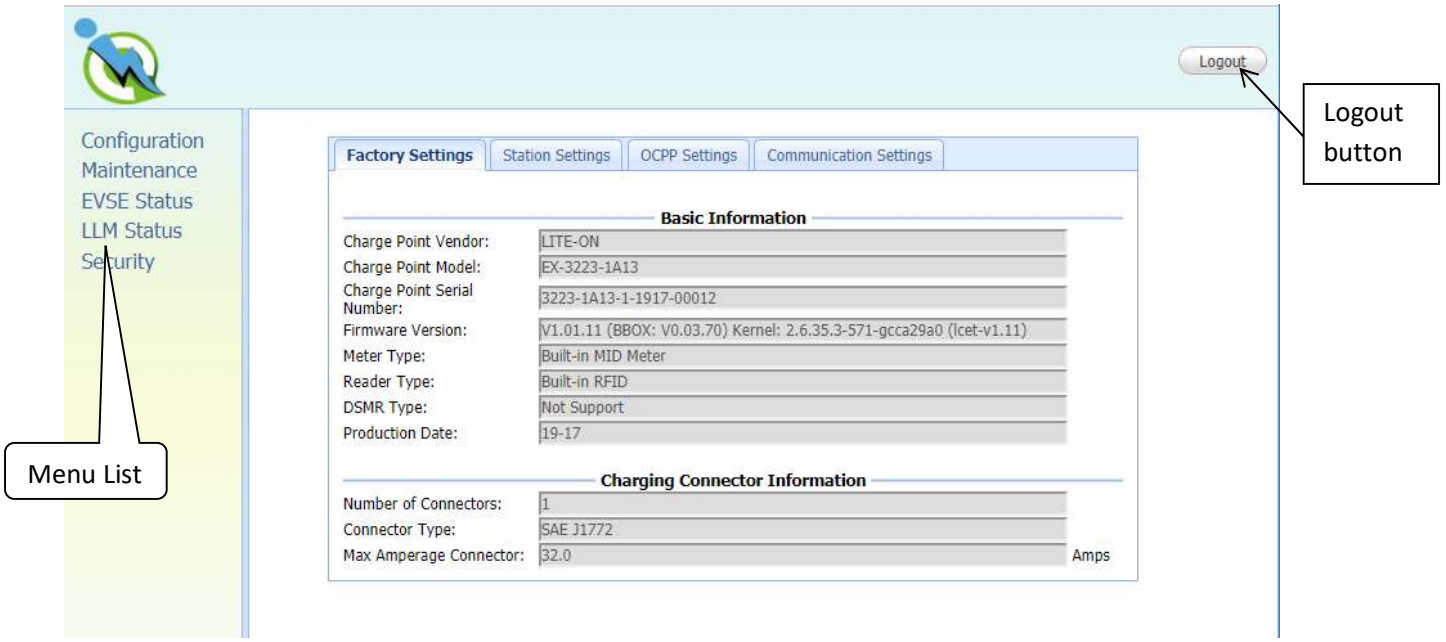
To be able to configure the charge point you should enter "**admin**" in the user name box. The default password is "**howru2RU2IC3**".



4.2 Web-page overview [for SC/IC only]

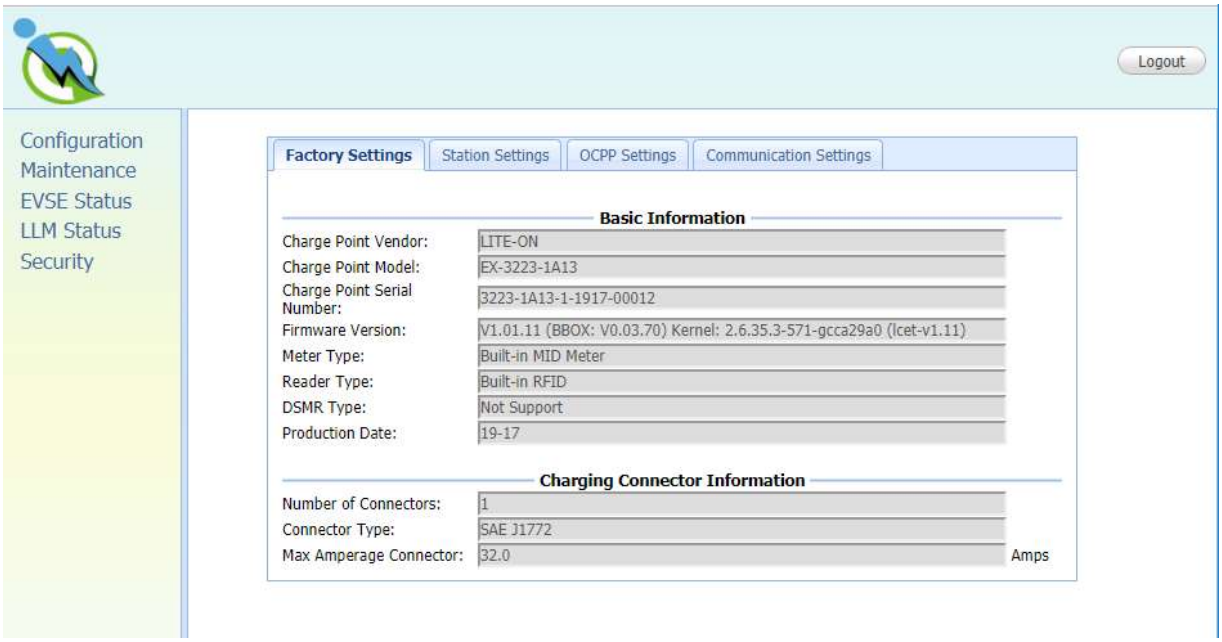
4.2.1 Menu overview

To navigate via the web browser, use the menu items available: Configuration, Maintenance, EVSE Status, LLM Status, and Security.



4.2.2 Configuration menu

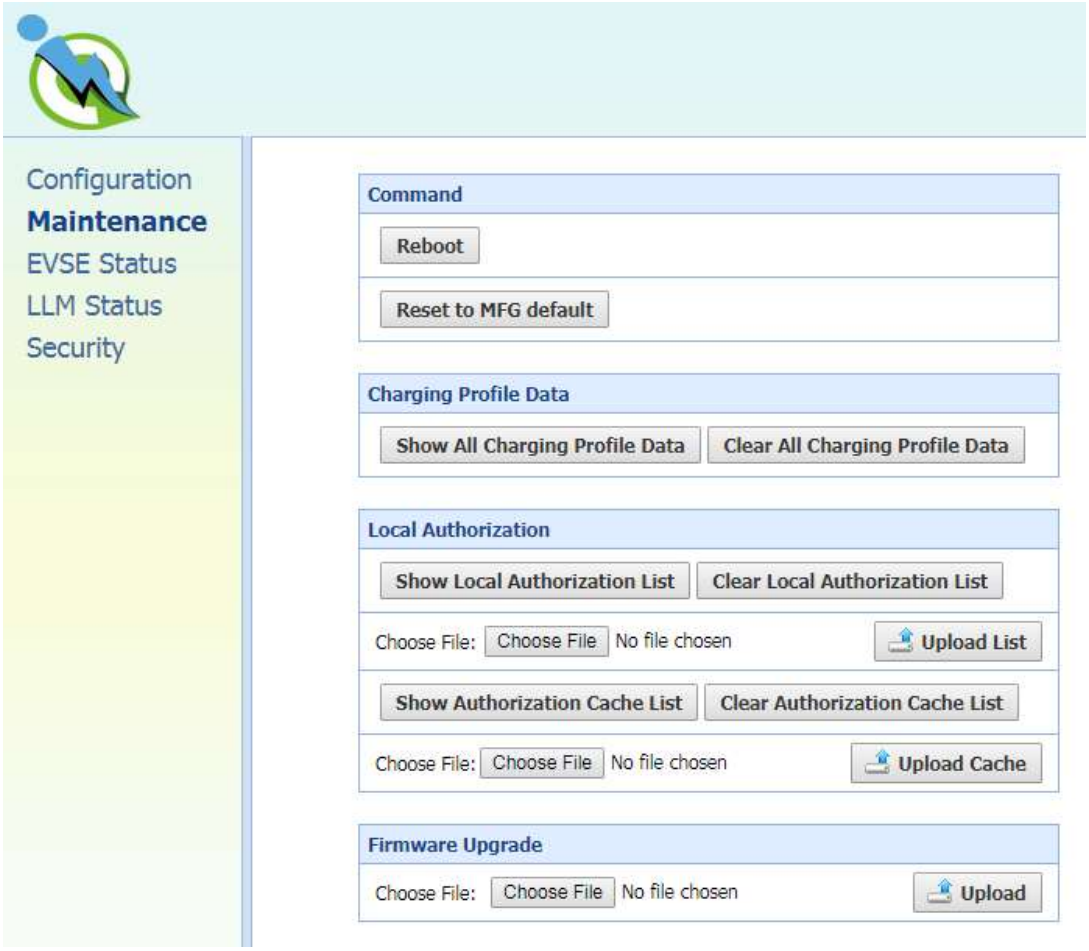
When you choose the **Configuration** menu, a sub menu will appear:



- The "**Factory Settings**" tab is used to display the information of the charge point.
- The "**Station Settings**" tab is used to set up the configuration regarding to the charge point itself.
- The "**OCPP Settings**" tab is used to set up the custom properties for uses in OCPP 1.6 services.
- The "**Communication Settings**" tab is used to set up the network connection and load management.

4.2.3 Maintenance menu

When you choose the **Maintenance** menu, a sub menu will appear:



- The "**Command**" screen can be used to restart the charge point and reset settings to Manufacturing default.
- The "**Charging Profile Data**" screen can be used to show and clear charging profiles including "Charge Point Max Profile", "Tx Default Profile" and "Tx Profile". Charging Profile is defined in OCPP 1.6 specification.
- The "**Local Authorization**" screen can be used to display and clear the Local Authorization List and Authorization Cache List. Both lists are defined in OCPP 1.6 specification.
- The "**Firmware Upgrade**" screen can be used to upgrade the firmware of the charge point.

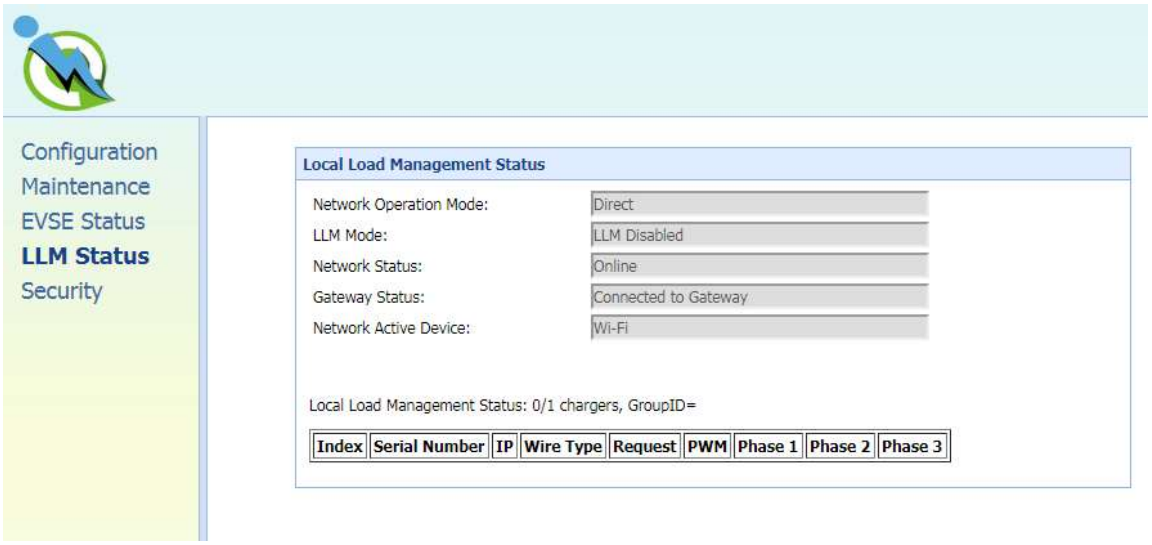
4.2.4 EVSE Status

When you choose the **EVSE Status** menu, a sub menu will appear:

- The "**Electric Vehicle Supply Equipment Status**" can be used to show the information of EVSE. Usually the information is only for diagnostic use.

4.2.5 LLM Status menu [for IC only]

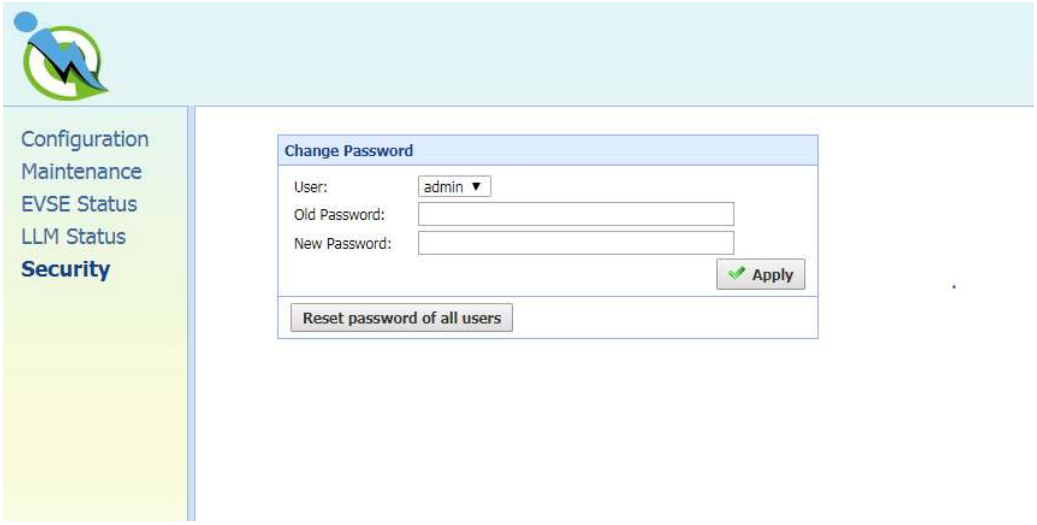
When you choose the **LLM Status** menu, a sub menu will appear:



- The "**Local Load Management Status**" screen shows the Local Load Management (LLM) settings and current Master/Slave group member list.

4.2.6 Security menu

When you choose the **Security** menu, a sub menu will appear:

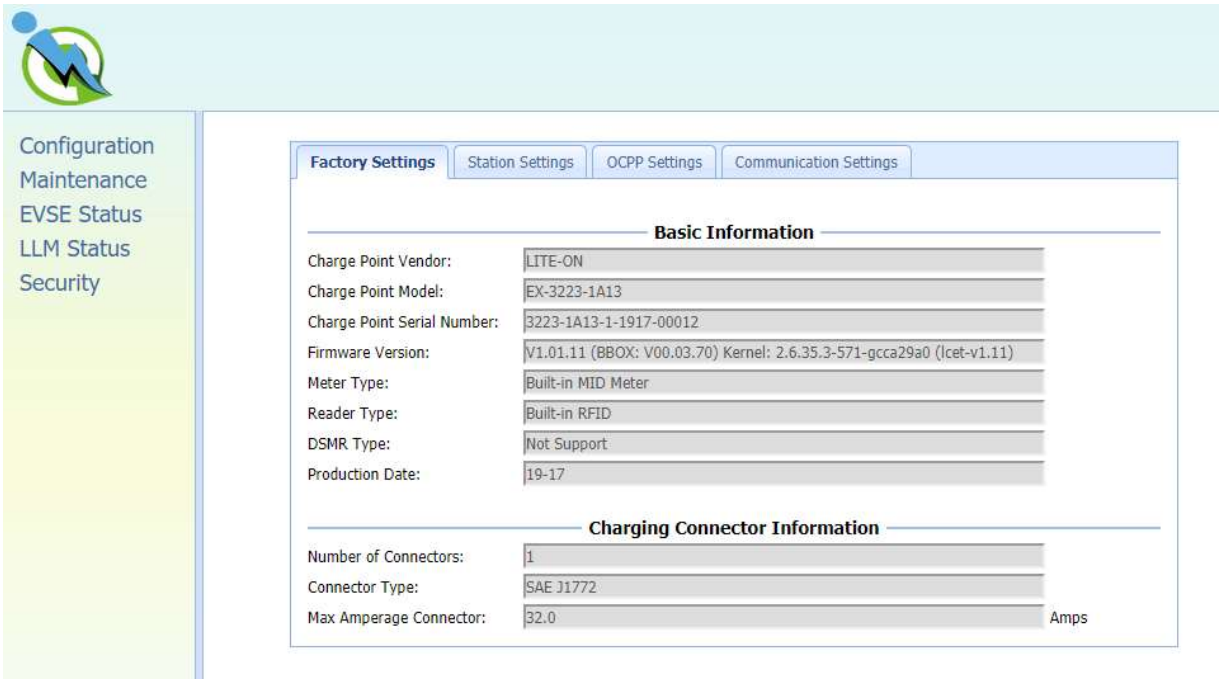


- The "**Change Password**" screen can be used to change the password of users for this web portal.

4.3 Configuration

4.3.1 Factory settings

Clicking on the "**Configuration**" and then "**Factory Settings**" link will bring up the following screen:



Basic Information

Charge Point Vendor – The vendor's name of the charge point.

Charge Point Model – The model's name of the charge point.

Charge Point Serial Number – The unique serial number of the charge point.

Firmware Version – The software version of the charge point.

Meter Type – The meter type of the charge point.

Reader Type – The reader type of the charge point. [Support only on IC]

DSMR Type – The DSMR type of the charge point.

Production Date – The production date of the charge point.

Charging Connector Information

Number of Connectors – Number of connectors of the charge point.

Connector Type* – Indicates type 1 or type 2 cable installed in the charge point.

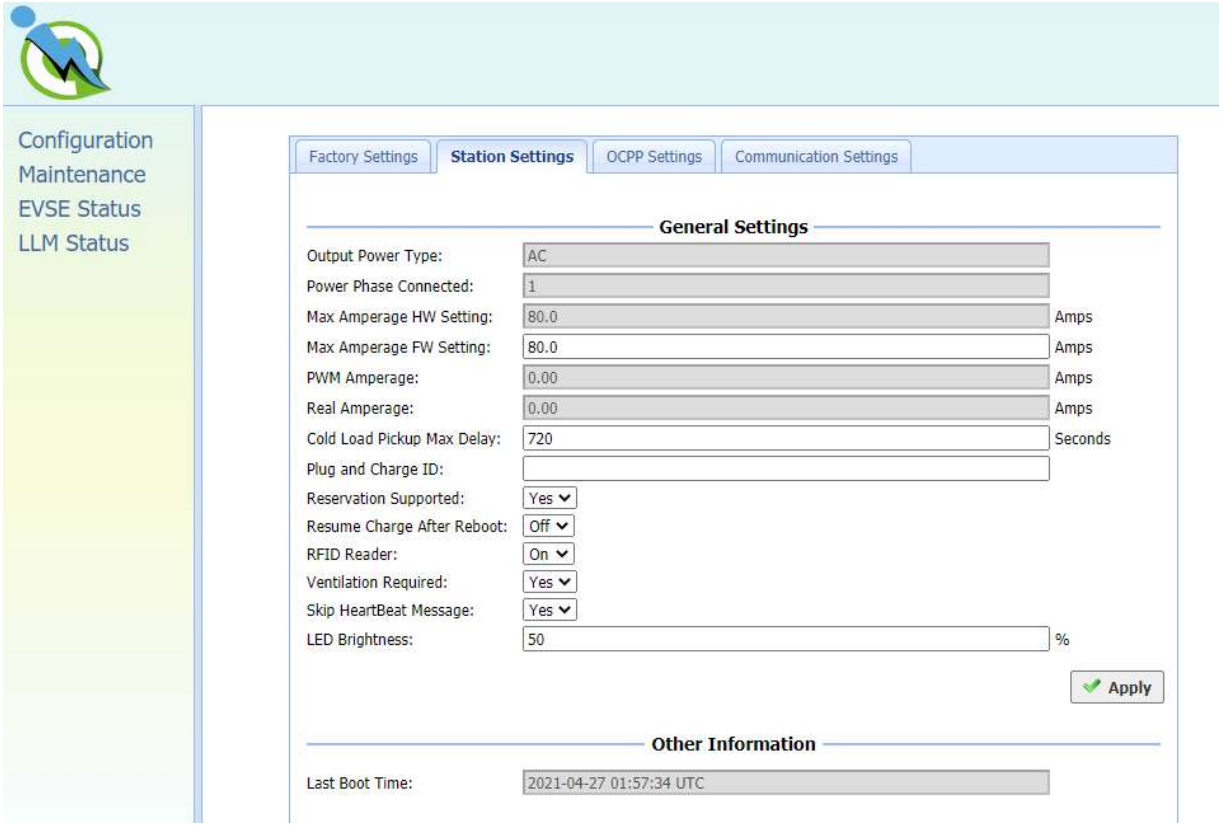
Max Amperage Connector – The maximum charging current of the connector capability.

* A charge point may have multiple connectors installed. For SC/IC series, there is only one connector on them.

4.3.2 Station settings

Clicking on the "**Configuration**" and then "**Station Settings**" link will bring up the following screen. Since the page is too long to display, we separate it to 2 screens.

On this page you can change the properties of the charge point. Click the "**Apply**" button at the right side of the property when the value is changed.



General Settings

Output Power Type – AC or DC output power. For SC/IC series, this value is always “AC”.

Power Phase Connected – Input power phase connected to the charge point to indicate single phase or three phases. For SC/IC series, this value is always “1”.

Max Amperage HW Setting – The DIP switches (Hardware) settings to indicate the maximum charging current.

Max Amperage FW Setting – The software settings to indicate the maximum charging current.

PWM Amperage – The PWM setting for charging current when the charge point is online. This signal is to tell EV how much current is allowed to use.

Real Amperage – The real-time charging current detected by the charge point.

Cold Load Pickup Max Delay – Default cold load pickup delay is 120s ~ 720s. The max value could be changeable by this property.

Plug and Charge ID – If the value is present, the charge point needs to support plug and charge scenario by using the specific identifier. If absent, authorization for each session is required. This ID must be 8 or more characters.

Reservation Supported – If true, the charge point will support reservation related messages from Central System.

Resume Charge After Reboot – Indicate if the charge point resumes charging after power recycle. If true, the charge point will resume charging according to UL regulations. If false, the charge point will not resume charging.

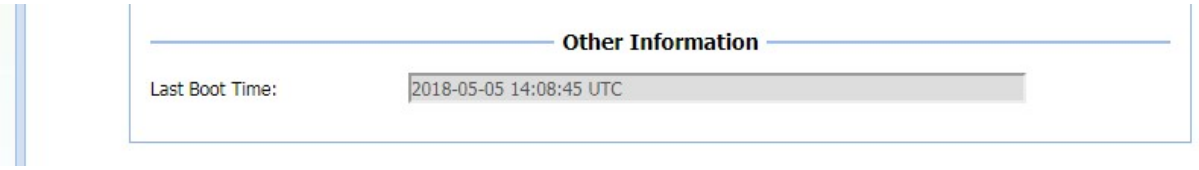
RFID Reader –Indicate if RFID reader is available. [for IC only]

Ventilation Required – Indicate if ventilation equipment is required. If set this option to yes, a ventilation fault will occur when the EV report for need ventilation equipment. Recommend setup value are shown below according to the place and ventilation equipment available or not.

Place	Ventilation Equipment Available	Ventilation Equipment Not Available
Indoor	No	Yes
Outdoor	No	No

Skip HeartBeat Message –When set to true, the Charge Point should skip sending a Heartbeat.req PDU when another PDU has been sent to the Central System within the configured heartbeat interval. Default value is Yes.

LED brightness – The user can modify the LED brightness according to the user's environment and preferences. The default setting is 50% brightness.

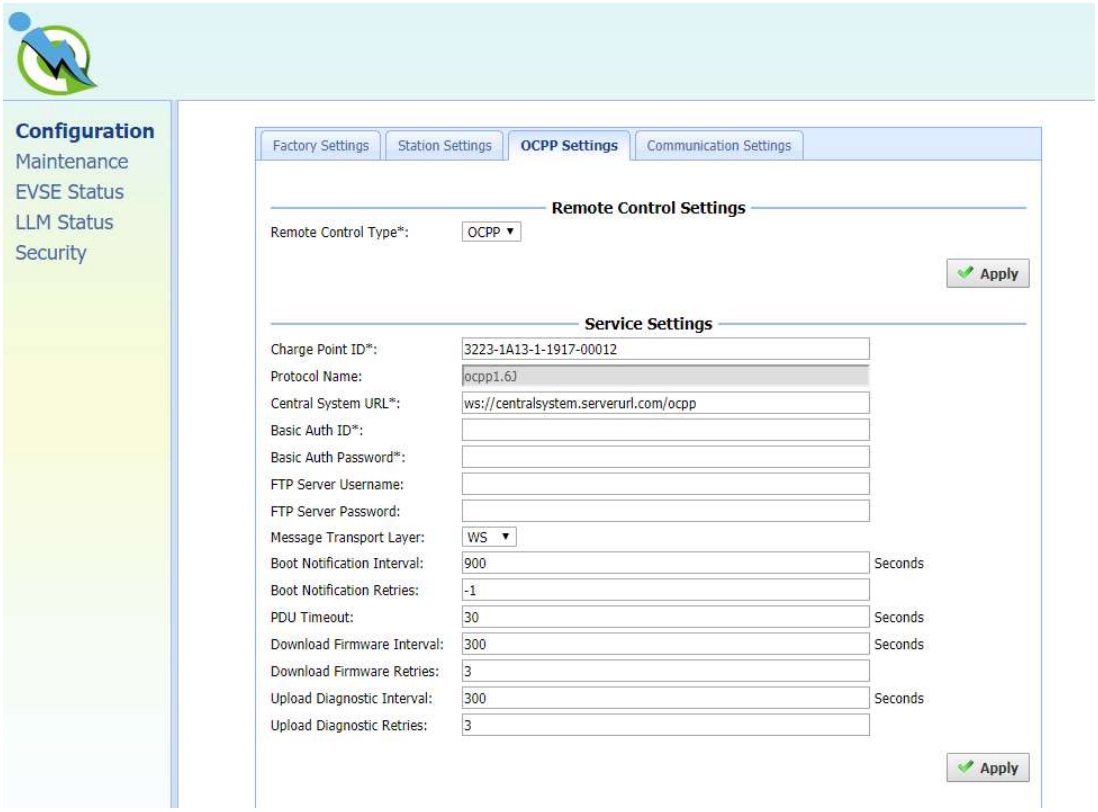


Other Information

Last Boot Time – Show last boot time.

4.3.3 OCPP settings

Clicking on the "**Configuration**" and then "**OCPP Settings**" link will bring up the following screen, since the page is too long to display, please using scrollbar to check remaining pages.



On this page you can change the properties just for the charge point. Click the "**Apply**" button at the right side of the property when the value is changed.

Remote Control Settings

Remote Control Type: The remote-control mode accepted by charger. Options are

APP: Charger is controlled by mobile APP.

OCPP: Charger is controlled by OCPP 1.6 protocol.

Service Settings

Charge Point ID – The identity of the charge point as known in the OCPP Central System.

Protocol Name – The name and version of OCPP is running in the charge point.

Central System URL – The URL of the OCPP v1.6 Central System service.

Basic Auth ID – The ID for BASIC authentication in HTTPS (SSL/TLS) connections.

Basic Auth Password – The password for BASIC authentication in HTTPS (SSL/TLS) connections.

FTP Server Username – The username of the FTP Server for OCPP to download firmware files and upload diagnostic file.

FTP Server Password – The password of the FTP Server for OCPP to download firmware files and upload diagnostic file.

Message Transport Layer – Select the transport layer of the OCPP service that will be used. The available option is **WS and WSS**.

WS: Connection from charge point to OCPP Server uses WebSocket protocol.

WSS: Connection from charge point to OCPP Server uses Secure WebSocket protocol.

Boot Notification Interval – Interval of re-sending BootNotification.req if not accepted by Central System.

Boot Notification Retries – Number of times to retry sending BootNotification.req.

"-1" means unlimited

"0" means don't retry.

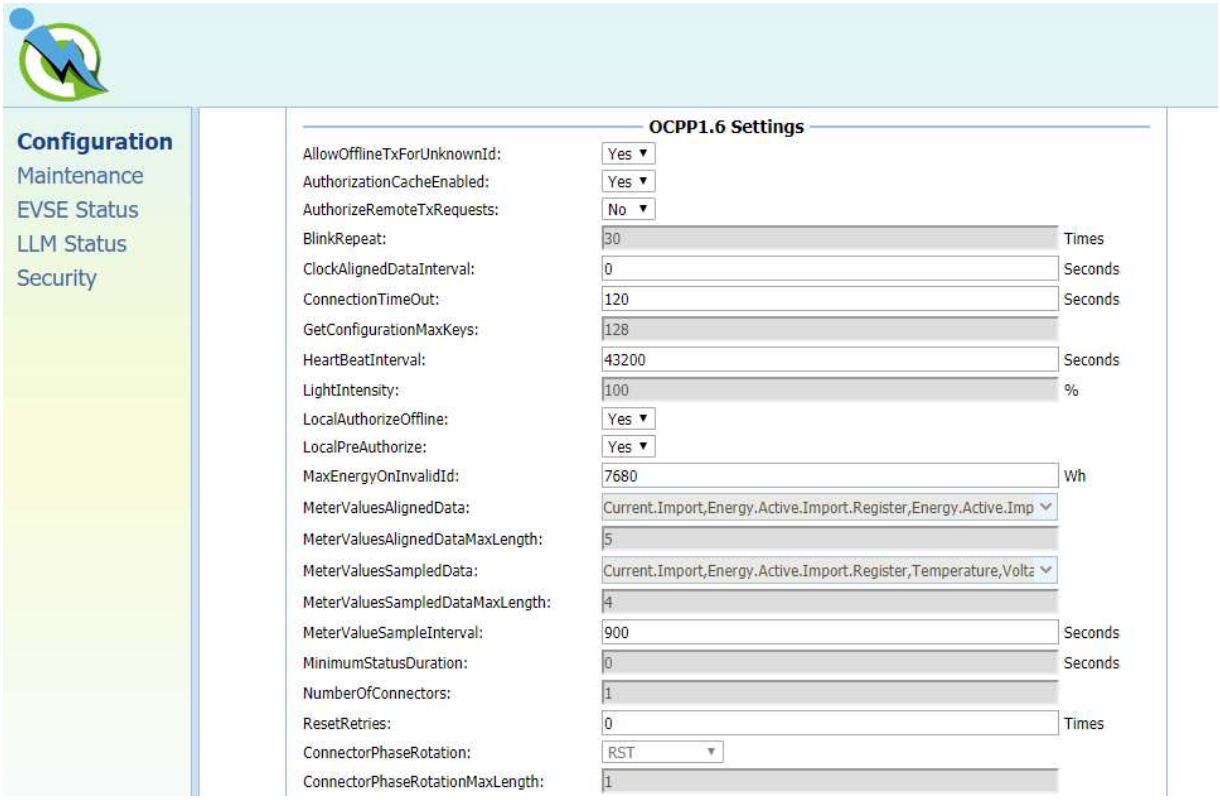
PDU Timeout – Interval until the charge point stop waiting for a PDU response.

Download Firmware Interval – Interval of downloading firmware from Central System.

Download Firmware Retries – Number of times to retry downloading firmware.

Upload Diagnostics Interval – Interval of uploading diagnostic file to Central System.

Upload Diagnostics Retries – Number of times to retry uploading diagnostic file.



OCPP1.6 Settings

These settings are defined and requested for support in OCPP 1.6 specification.

AllowOfflineTxForUnknownId – If set to yes, an unknown ID (not in Authorization and Cache List) will be accepted and start the charging session when charge point is not connected to central system.

AuthorizationCacheEnabled – If set to yes, the Authorization Cache is enabled.

AuthorizeRemoteTxRequests – Whether a remote request to start a transaction in the form of a RemoteStartTransaction.req message should be authorized beforehand like a local action to start a transaction.

BlinkRepeat – Number of times to blink the charge point lighting when signaling. This value is not changeable for IC/SC.

ClockAlignedDataInterval – Size (in seconds) of the clock-aligned data interval. This is the size (in seconds) of the set of evenly spaced aggregation intervals per day, starting at 00:00:00 (midnight).

ConnectionTimeOut – Interval (from successful authorization) until incipient Transaction is automatically canceled, due to failure of EV driver to (correctly) insert the charging cable connector(s) into the appropriate socket(s).

GetConfigurationMaxKeys – Maximum number of requested configuration keys in a GetConfiguration.req PDU.

HeartBeatInterval – Defines the heartbeat interval.

LightIntensity – Percentage of maximum intensity at which to illuminate the charge point lighting. This value is not changeable for IC/SC.

LocalAuthorizeOffline – Whether the charge point, when offline, will start a transaction for locally-authorizedidentifiers.

LocalPreAuthorize – Whether the charge point, when online, will start a transaction for locally authorized identifiers without waiting for or requesting an Authorize.conf from Central System.

MaxEnergyOnInvalidId – Maximum energy in Watt-hour (Wh) delivered when an identifier is invalidated by Central System after start of a transaction.

MeterValuesAlignedData – Clock-aligned measurand(s) to be included in a MeterValues.req PDU, every ClockAlignedDataInterval seconds. Supported value are Current.Import, Energy.Active.Import.Register, and Temperature, Voltage or any combination of these 4 value.

MeterValuesAlignedDataMaxLength – Maximum number of items in a MeterValuesAlignedData configuration key.

MeterValuesSampledData – Sampled measurands to be included in a MeterValues.req PDU, every MeterValueSampleInterval seconds. Supported value are Current.Import, Energy.Active.Import.Register, and Temperature, Voltage or any combination of these 4 value.

MeterValuesSampledDataMaxLength – Maximum number of items in a MeterValuesSampledData configuration key.

MeterValueSampleInterval – Interval between sampling of metering (or other) data, intended to be transmitted by "MeterValues" PDUs

MinimumStatusDuration – The minimum duration that a charge point or connector status is stable before a StatusNotification.req PDU is sent to Central System.

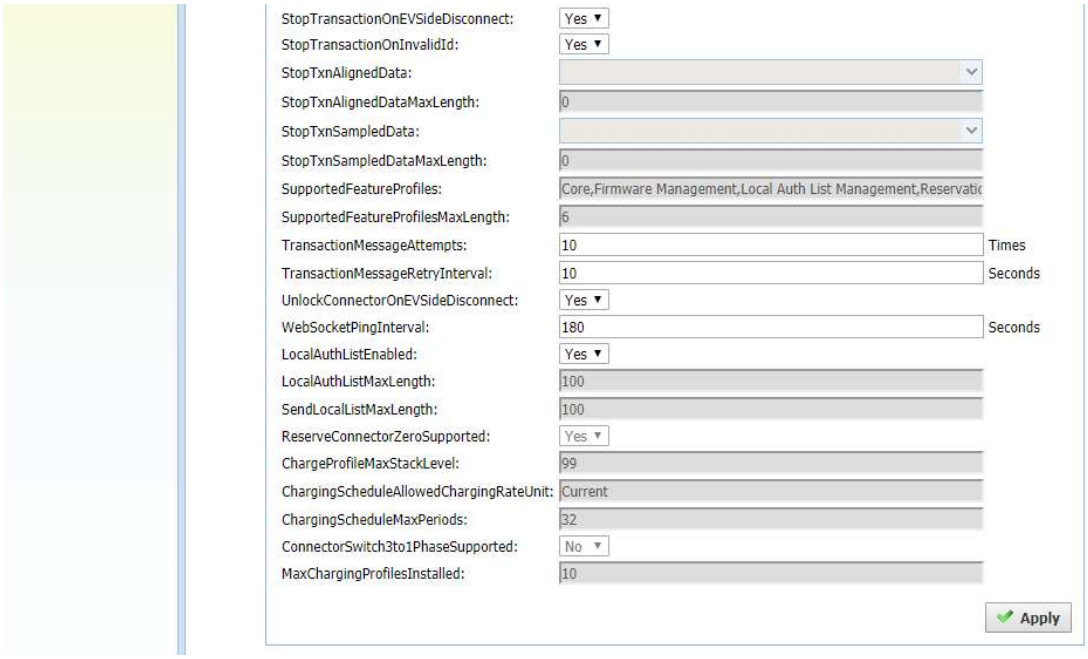
NumberOfConnectors – The number of physical charging connectors of this charge point.

ResetRetries – Number of times to retry an unsuccessful reset of the charge point.

ConnectorPhaseRotation – The phase rotation per connector in respect to the connector's energy meter. Possible values per connector are:

NotApplicable (for single phase)
Unknown (not (yet) known)
RST (Standard Reference Phasing)
RTS (Reversed Reference Phasing)
SRT (Reversed 240 degree rotation)
STR (Standard 120 degree rotation)
TRS (Standard 240 degree rotation)
TSR (Reversed 120 degree rotation)

ConnectorPhaseRotationMaxLength – Maximum number of items in a ConnectorPhaseRotation configuration key.



StopTransactionOnEVSideDisconnect – When set to true, the charge point SHALL administratively stop the transaction when the cable is unplugged from the EV.

StopTransactionOnInvalidId – Whether the charge point will stop an ongoing transaction when it receives a non-accepted authorization status in a StartTransaction.conf for this transaction.

StopTxnAlignedData – Clock-aligned periodic measurand(s) to be included in the TransactionData element of StopTransaction.req MeterValues.req PDU for every ClockAlignedDataInterval of the charging session. Supported value are Current.Import, Energy.Active.Import.Register, and Temperature, Voltage or any combination of these 4 value.

StopTxnAlignedDataMaxLength – Maximum number of items in a StopTxnAlignedData configuration key.

StopTxnSampledData – Sampled measurands to be included in the TransactionData element of StopTransaction.req PDU, every MeterValueSampleInterval seconds from the start of the charging session. Supported value are Current.Import, Energy.Active.Import.Register, and Temperature, Voltage or any combination of these 4 value.

StopTxnSampledDataMaxLength – Maximum number of items in a StopTxnSampledData configuration key.

SupportedFeatureProfiles – A list of supported Feature Profiles. Possible profile identifiers: Core, FirmwareManagement, LocalAuthListManagement, Reservation, SmartCharging and RemoteTrigger.

SupportedFeatureProfilesMaxLength – Maximum number of items in a SupportedFeatureProfiles configuration key.

TransactionMessageAttempts – How often the charge point should try to submit a transaction-related message when Central System fails to process it.

TransactionMessageRetryInterval – How long the charge point should wait before resubmitting a transaction-related message that Central System failed to process.

UnlockConnectorOnEVSideDisconnect – When set to true, the charge point SHALL unlock the cable on charge point side when the cable is unplugged at the EV. This is not supported by IC/SC since it is plug type and no connector locker.

WebSocket Ping Interval – Define the ping pong interval for WebSocket protocol.

LocalAuthListEnabled – Whether the Local Authorization List is enabled.

LocalAuthListMaxLength – Maximum number of identifications that can be stored in the Local Authorization List.

SendLocalListMaxLength – Maximum number of identifications that can be send in a single SendLocalList.req.

ReserveConnectorZeroSupported – If this configuration key is present and set to true: The charge point support reservations on connector 0.

ChargeProfileMaxStackLevel – Max Stack Level of a Charging Profile. The number defined also indicates the max allowed number of installed charging schedules per Charging Profile purposes.

ChargingScheduleAllowedChargingRateUnit – A list of supported quantities for use in a Charging Schedule. This value will always be 'Current' for IC/SC.

ChargingScheduleMaxPeriods – Maximum number of periods that may be defined per Charging Schedule.

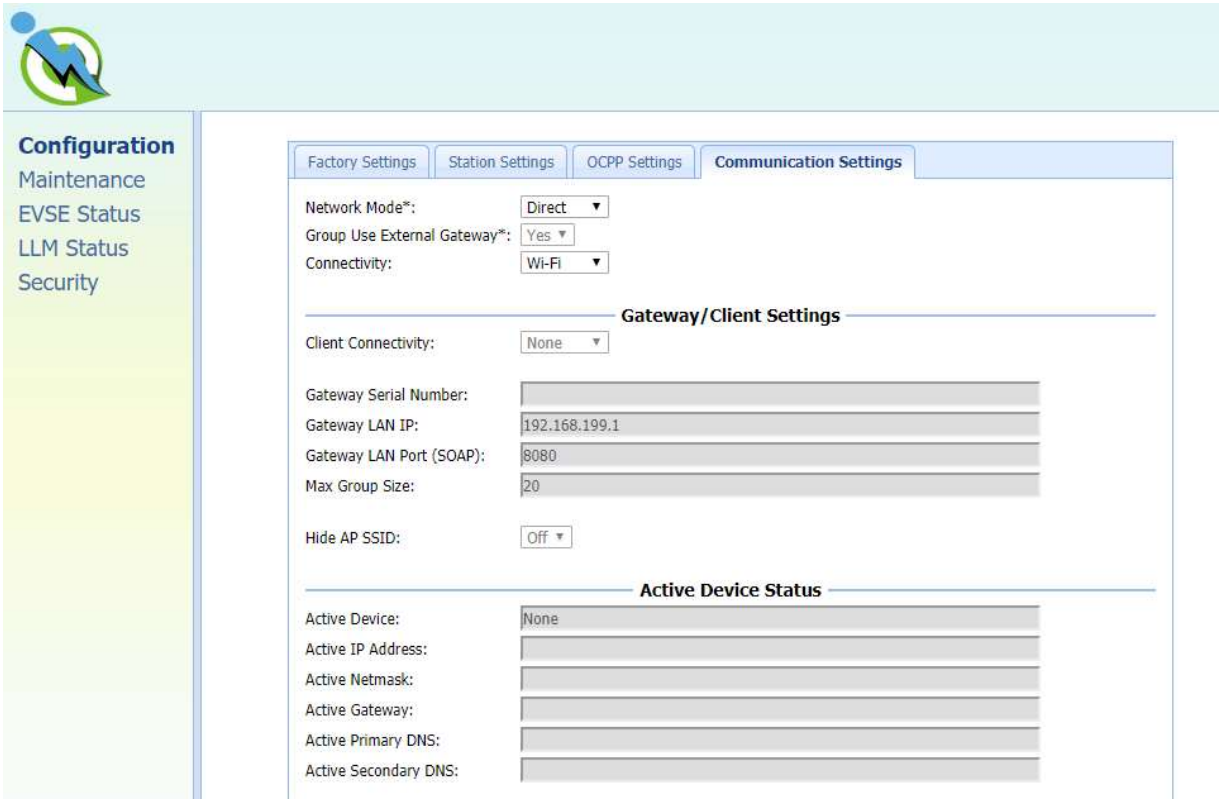
ConnectorSwitch3to1PhaseSupported – If defined and true, this charge point supports switching from 3 to 1 phase during a charging session. This field is ready only.

MaxChargingProfilesInstalled – Maximum number of charging profiles installed at a time.

4.3.4 Communication settings

Clicking on the "**Configuration**" and then "**Communication Settings**" link will bring up the following screen. Since the page is too long to display, we separate it to couple screens.

On this page you can set up the network connection. To finish, click the "**Apply**" button.



Network Mode – Specifies if enable the Local Proxy function. Available options are **Gateway, Client** and **Direct.**

Direct: Use charge point as a single standalone device.

Gateway: Use charge point as a gateway charge point. Gateway connected to OCPP 1.6 Server via cellular, Ethernet or Wi-Fi and connected to other charge points (called Client) via Wi-Fi or Ethernet and forms a local charge points group. This group is also a LAN (Local Area Network).

Client: Use charge point as a client charge point. Client connected to Gateway via Wi-Fi/Ethernet. Client connected to OCPP1.6 Server through gateway charge point (via cellular/Ethernet/Wi-Fi) and Gateway will dispatch incoming remote command to proper client charge points (or Gateway itself).

Group Use External Gateway –Gateway/Client mode use external gateway as a local network group or not (use Gateway IC).

NOTE

A Gateway charge point can choose using Wi-Fi/Cellular/Ethernet to connect to the internet by change 'Group Use External Gateway' setting. If set to Yes, a **Gateway** will use Cellular/Wi-Fi/Ethernet. When changed this setting, the 'Connectivity' option will automatically change as well.

All charge point in this Gateway/Client group must have the same 'Group Use External Gateway' setting, i.e. all charge points must set this option to Yes (including **Gateway** and **Client**) when we want to use an external Wi-Fi AP to connect to internet. In this case, all charge points must also use the same Wi-Fi settings (SSID, password) for the external Wi-Fi AP.

If you want to change web portal setting of Direct, Gateway and Client mode, please refer to the separate address of web portal.

Direct / Gateway charge point : 10.10.0.1

Client charge point : 10.10.0.2

Connectivity – Specifies whether the charge point should always be connected to Internet using **None, Auto**, **Wi-Fi**, or **Cellular**. Default value is Auto. [Cellular: for IC only] The rules for the options are defined as below:

1. None/Auto/Ethernet/Wi-Fi/Cellular for IC-Direct
2. Ethernet/Wi-Fi for IC-Gateway (Group Use External Gateway = Yes)
3. Wi-Fi/Cellular for IC-Gateway (Group Use External Gateway = No)
4. Wi-Fi for SC-Direct/SC Plus-Direct
5. Ethernet/Wi-Fi for IC-Client/SC Plus-Client

Client Connectivity – Specifies whether the Gateway Device should always be connected to Client Device using Ethernet or Wi-Fi.

Gateway Serial Number – The serial number of the charge point which acts as a Gateway.

Gateway LAN IP – The IP of master in LAN. This value cannot be modified by users.

Gateway LAN Port (SOAP) – The listen port for OCPP SOAP client server. This value cannot be modified by users.

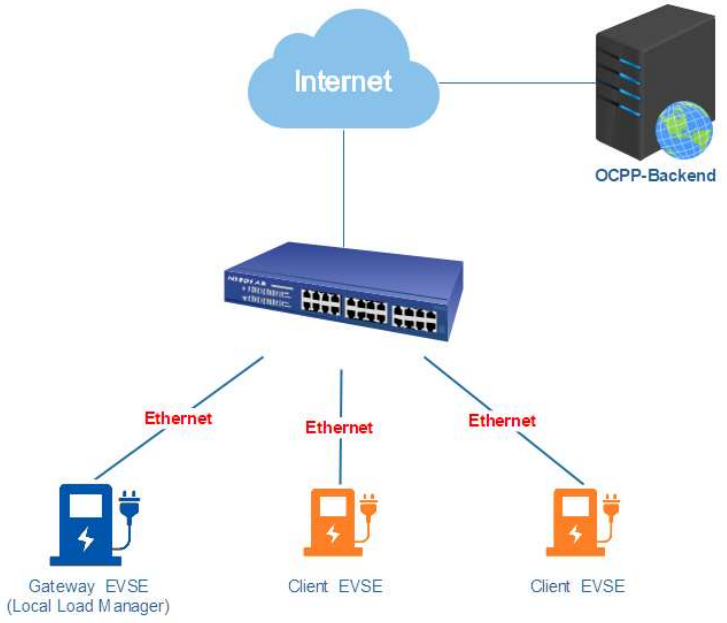
Max Group Size – The maximum number of charge points allowed in a group/LAN is 20. This value cannot be modified by users.

Hide AP SSID – Options for hiding SSID of this charge point or not. For IC/SC this option is always off.

There are four kinds of **Gateway/Client Network Topologies** as below:

Topology#1 Ethernet

All Gateway/Client EVSE in a group that can connect to the Internet via **Ethernet.**



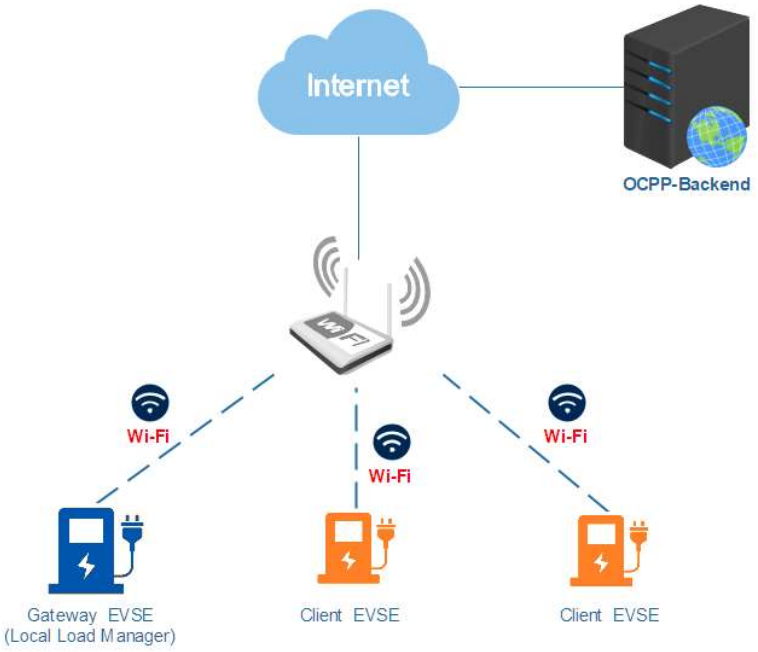
Setting up each EVSE according to the following settings

Setting	Gateway	Client
Network Mode	Gateway	Client
Group Use External Gateway	**Yes**	**Yes**

Connectivity	**Ethernet**	**Ethernet**
Client Connectivity	None	None
Gateway Serial Number	Gateway Serial Number	Gateway Serial Number

Topology#2 Wi-Fi

All Gateway/Client EVSE in a group that can connect to the Internet via **Wi-Fi.**

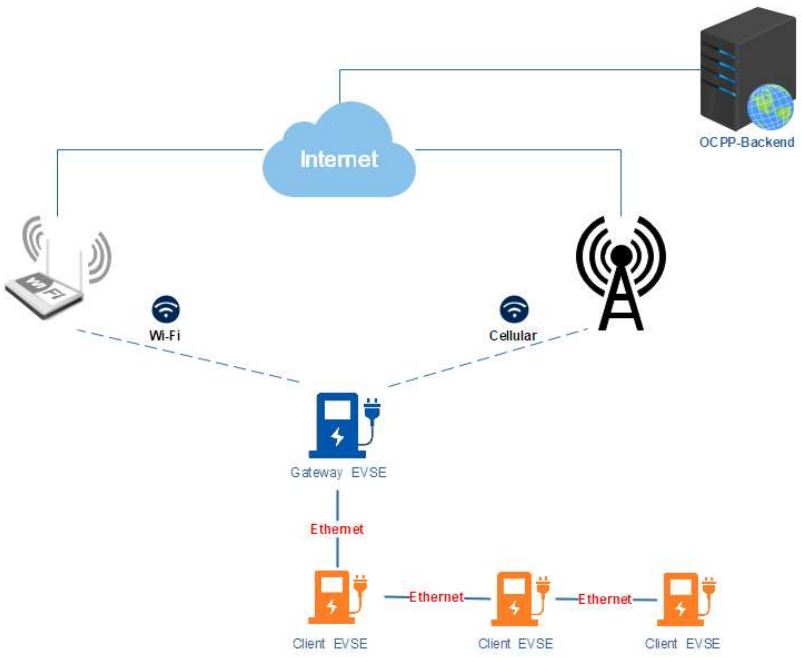


Setting up each EVSE according to the following settings

Setting	Gateway	Client
Network Mode	Gateway	Client
Group Use External Gateway	**Yes**	**Yes**
Connectivity	**Wi-Fi**	**Wi-Fi**
Client Connectivity	None	None
Gateway Serial Number	Gateway Serial Number	Gateway Serial Number

Topology#3 Wi-Fi/Cellular + Ethernet

The Gateway EVSE in a group that can connect to the Internet via **Wi-Fi or Cellular.** The Client EVSE in a group that can connect to the Gateway EVSE via **Ethernet.**

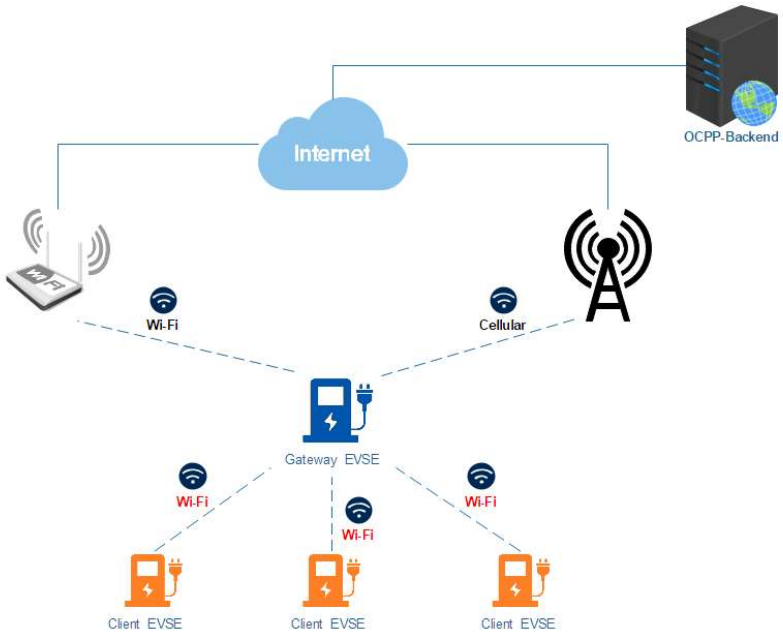


Setting up each EVSE according to the following settings

Setting	Gateway	Client
Network Mode	Gateway	Client
Group Use External Gateway	**No**	**No**
Connectivity	Wi-Fi / Cellular	**Ethernet**
Client Connectivity	**Ethernet**	None
Gateway Serial Number	Gateway Serial Number	Gateway Serial Number

Topology#4 Wi-Fi/Cellular + Wi-Fi

The Gateway EVSE in a group that can connect to the Internet via **Wi-Fi or Cellular.** The Client EVSE in a group that can connect to the Gateway EVSE via **Wi-Fi.**



Setting up each EVSE according to the following settings

Setting	Gateway	Client
Network Mode	Gateway	Client
Group Use External Gateway	**No**	**No**
Connectivity	Wi-Fi / Cellular	**Wi-Fi**
Client Connectivity	**Wi-Fi**	None
Gateway Serial Number	Gateway Serial Number	Gateway Serial Number

Active Device Status

Active Device – Current active network device. Possible values are None, Ethernet, Wi-Fi or Cellular

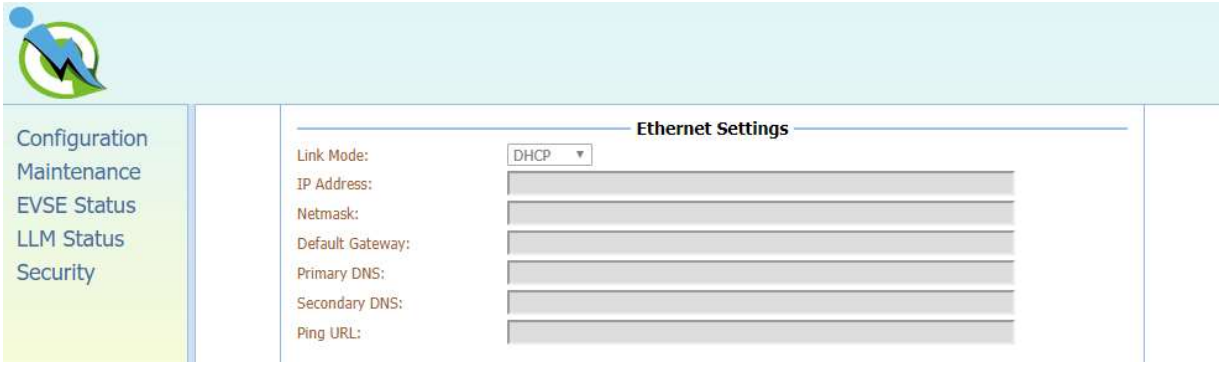
Active IP Address – Current active IP address. There will be value here only if connected to a network.

Active Netmask – Current active netmask address. There will be value here only if connected to a network.

Active Gateway – Current active gateway IP address. There will be value here only if connected to a network and network provide this data.

Active Primary DNS – Current active primary DNS IP address. There will be value here only if connected to a network and network provide this data.

Active Secondary DNS – Current active secondary DNS IP address. There will be value here only if connected to a network and network provide this data.



Ethernet Settings

Link Mode – Configure the Ethernet port to use DHCP or Static IP. If you select Static IP from the drop-down menu, you need to enter values for IP Address, Netmask, and Default Gateway fields.

IP Address – The IP address of the charge point. It's modifiable if **Link Mode** is Static IP.

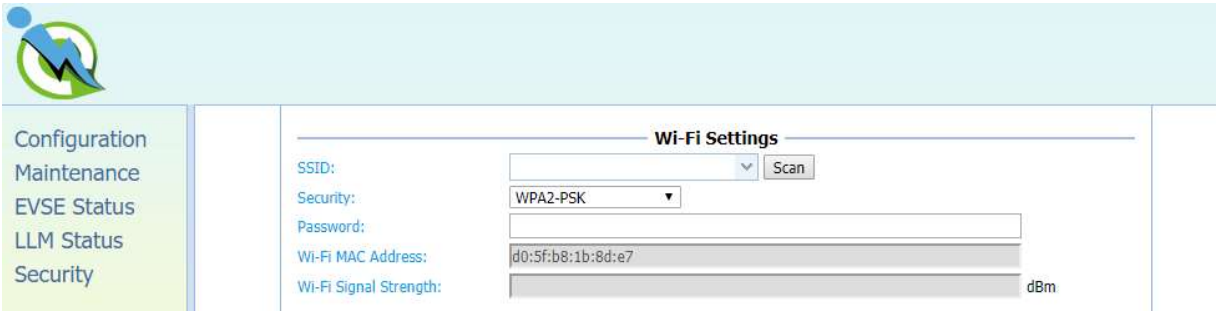
Netmask – The subnet mask. It's modifiable if **Link Mode** is Static IP.

Default Gateway – The default gateway. It's modifiable if **Link Mode** is Static IP.

Primary DNS – The primary Domain Name Server (optional).

Secondary DNS – The secondary Domain Name Server (optional).

Ping URL – Address of the host that the charge point will ping for the Ethernet connection (optional).



Wi-Fi Settings

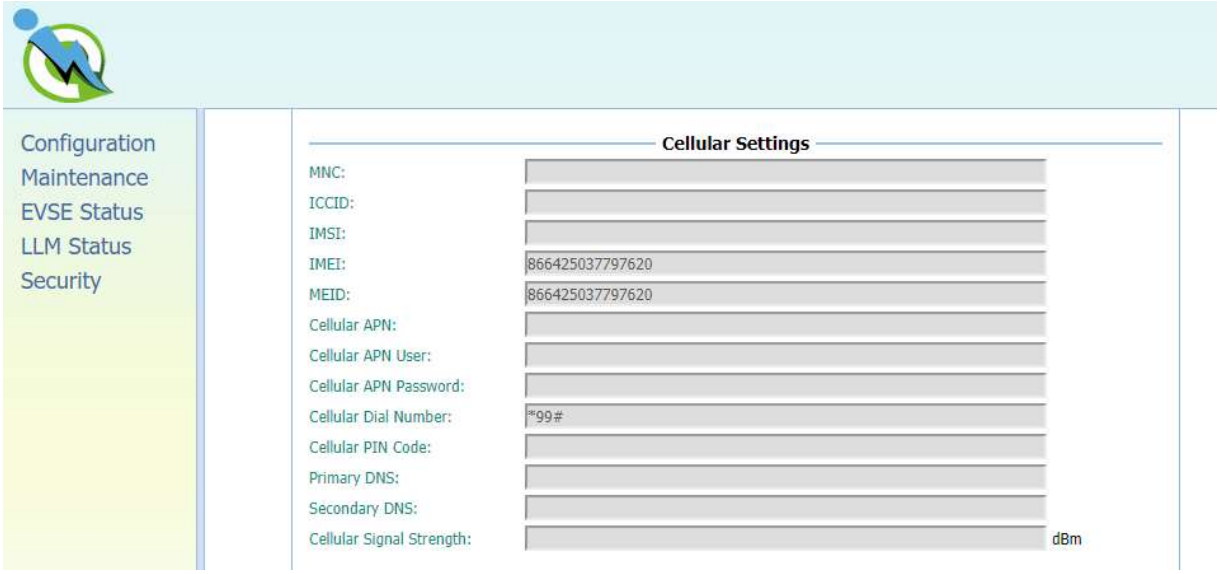
SSID – The SSID name of Wi-Fi Access Point. Press Scan button to scan and receive current detectable Wi-Fi signal.

Security – The encryption of Wi-Fi Access Point. Options are None, WEP, WPA-PSK, WPA2-PSK, WPA-PSK+WPA2-PSK and Auto.

Password – The password of Wi-Fi Access Point.

Wi-Fi MAC Address – Display Wi-Fi device hardware MAC address.

Wi-Fi Signal Strength – Display the wireless signal strength of Wi-Fi in dBm.



Cellular Settings [for IC only]

MNC – The Mobile Network Code of cellular service provider. There will be no data here if no cellular signal.

ICCID – The ICCID of the modem's SIM card. There will be no data here if no SIM card inserted.

IMSI – The IMSI of the modem's SIM card. There will be no data here if no SIM card inserted.

IMEI – The IMEI (International Mobile Equipment Identity) of the modem.

MEID – The MEID (Mobile Equipment Identifier) of the modem.

Cellular APN – This is the gateway for all cellular traffic. Contact your cellular operator for information about this. For AT&T and Verizon LTE service, just leave it blank since the apn name is built-in in the modem.

APN Username – This is the user name your ISP has assigned to you (**optional**).

APN Password – Password to log into the ISP network (**optional**).

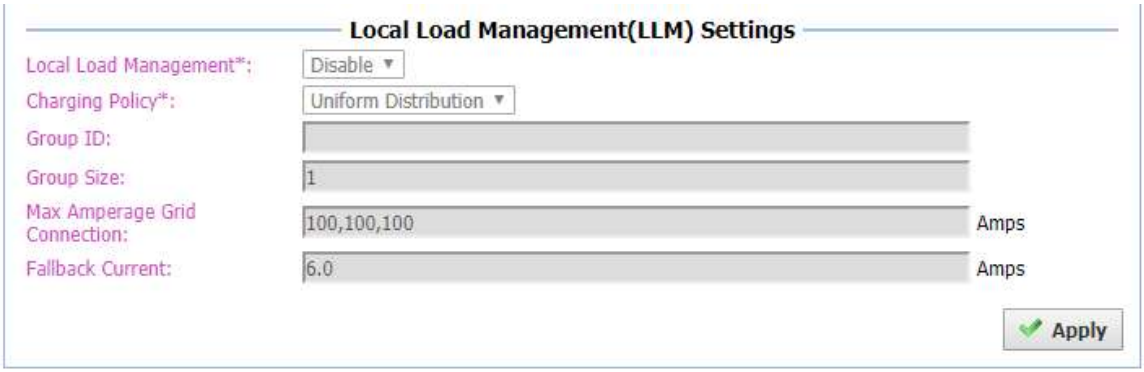
Dial Number – Phone number to dial for cellular network.

PIN Code – PIN code for the modem's SIM card (**optional**). 4 digit number.

Primary DNS – The primary Domain Name Server (**optional**).

Secondary DNS – The secondary Domain Name Server (**optional**).

Cellular Signal Strength – The strength of cellular signal in dBm.



Local Load Management (LLM) Settings [for IC only]

Local load management is the process of balancing the supply of electricity on the network with the electrical load by adjusting or controlling the load of each charge point in a local group which is based on Gateway/Client architecture. The Gateway IC must be manually set the maximum current limitations so that it will dynamically adjust output current in each Client IC by charging policy.

When LLM function is on, all charge points will request for charging to Gateway, and Gateway will calculate the proper current limit and reply to each Client. Each charge point will only allow charging when received a current limit from Gateway. If disconnection occurred between a Client and Gateway, then the Client will use fallback value as the limitation.

Local Load Management – Enable or disable Local Load Management function. This function can only be enabled in a **Gateway** or **Client** charge point.

HINT: If user changes “Network Mode” setting, then related settings will also change automatically such as “Connectivity”, “Local Load Management”. The default value is as follow:

	Direct	Gateway	Client
Gateway LAN IP	Not used	Default value, not changeable	Not used
Gateway LAN Port	Not used	Default value, not changeable	Not used
Max Group Number	Not used	Default value, not changeable	Not used
Group Use External Gateway	Not used	Yes or No	Yes or No
Gateway Serial Number	Not used	Not used	Used
Connectivity	Auto	Wi-Fi or Cellular	Wi-Fi, not changeable
Local Load Management	Disable, not changeable	Enable	Enable

Charging Policy – The charging policy for LLM Gateway to decide the charging current for each charge point. Valid options are:

1) UD (default): Uniform Distribution. The maximum amperage is divided by total numbers of charging EV, i.e. each EV will use the same charging current.
2) FIFS: First In First Serve.

Group ID – An identity of the LLM group. A slave with different group identity will be rejected when attempting to connect to Gateway.

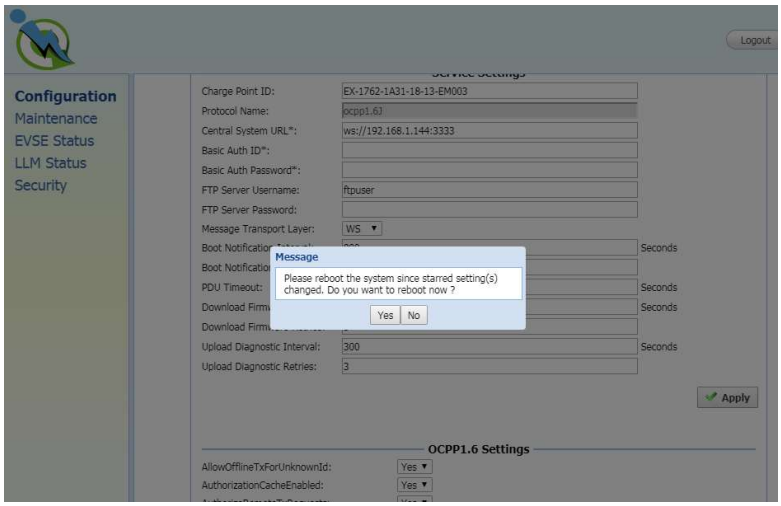
Group Size – The total number of charge points in the LLM group. This value is only used in Gateway.

Max Amperage Grid Connection – Total ampere of each phase allowed loading for the group of charge points at the same time. This value is only used in Gateway.

Fallback Current – The fallback current when Client is not able to communicate with Gateway. Gateway will overwrite fallback current in Client with its own value when Client connected to Gateway.

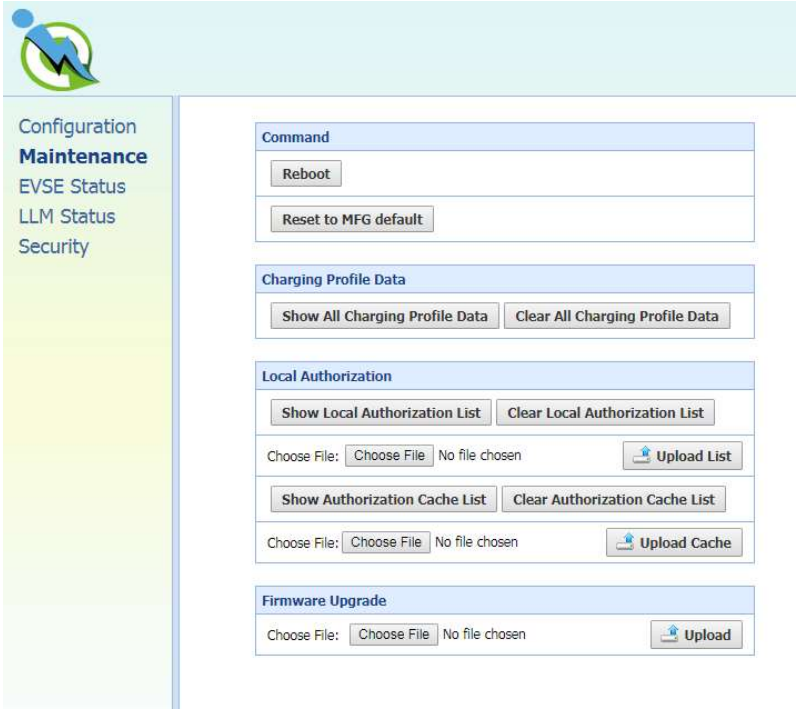
Note

Any option followed by a star mark (*) means the setting need to reboot to take effect. When these value changed and applied the web portal will display a reminder message box for rebooting the charge point.



4.4 Maintenance

This page includes some maintenance functions.



4.4.1 Reboot

Command

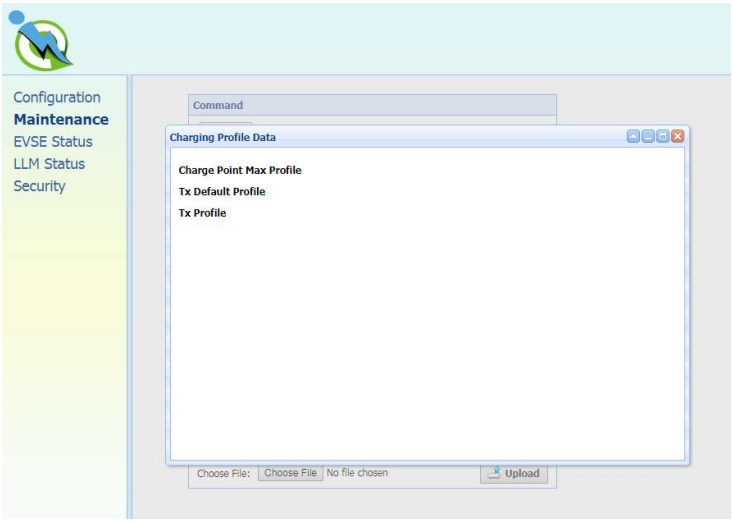
Reboot: To restart the charge point.

Reset to MFG default: To reset to the factory default settings.

Charging Profile Data

HINT: Charging Profile is defined in OCPP 1.6 specification for smart charging. A charging profile consists of a charging schedule, which is basically a list of time intervals with their maximum charge power or current, and some values to specify the time period and recurrence of the schedule.

Show All Charging Profile Data: To show the list of Charging Profiles. There will be a display window. The data display here is a RAW data, usually for diagnostic use.

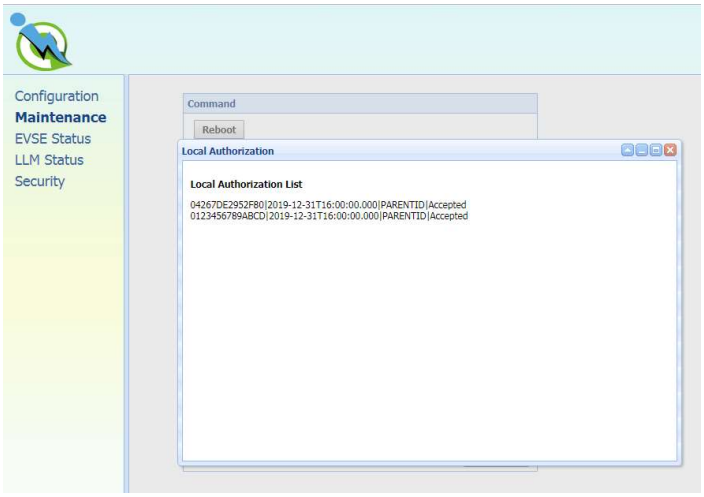


Clear All Charging Profile Data: To clear all Charging Profile data.

Local Authorization

HINT: Local authorization is defined in OCPP 1.6 specification. There are two local list: Local Authorization List and Authorization Cache List. The Local Authorization List is a list of identifiers that can be synchronized with the Central System. An Authorization Cache autonomously maintains a record of previously presented identifiers that have been successfully authorized by the Central System.

Show Local Authorization List: To show the list of Local Authorization. Each line of the list shown below indicates a RFID card info. The syntax is
CARD_IDTAG|EXPIRY_DATE|PARENT_CARD_IDTAG|CARD_STATUS



Clear Local Authorization List: To clear the list of Local Authorization.

Upload List: Upload a csv file which including card info to Local Authorization List.

A csv file is a plain text file which each line represent a RFID card info. The format of a card info is as follow:

CARD_IDTAG,EXPIRY_DATE,PARENT_CARD_IDTAG,CARD_STATUS

CARD_IDTAG: 8 ~ 20 character RFID card ID tag combined with alphabet or numbers.

EXPIRY_DATE: The date at which idTag should be removed from the Authorization Cache. Format is *YYYY-MM-DDThh:mm:ss.ttt* which indicates a date in AD.

Example: 2019-12-31T16:00:00.000

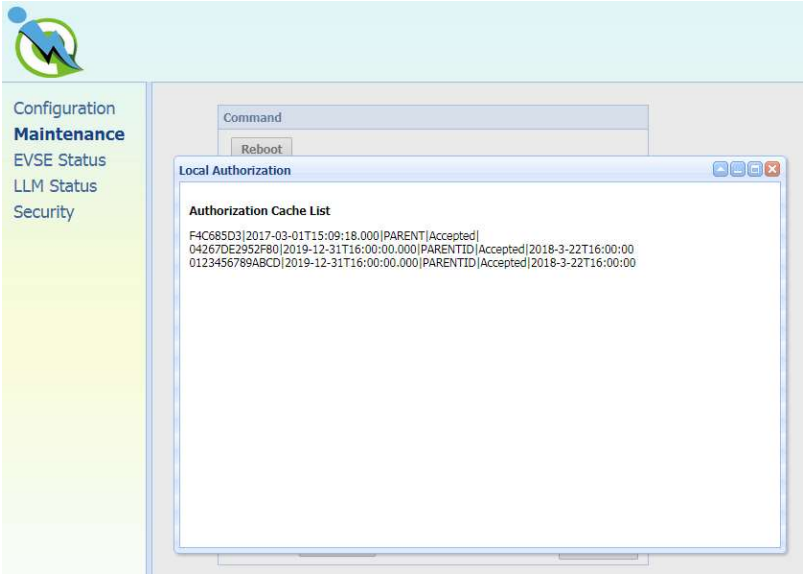
PARENT_CARD_IDTAG: the parent-identifier of the card. The format is same as CARD_IDTAG.

CARD_STATUS: This contains whether the idTag has been accepted or not by the Central System. Valid options are ***Accepted***, ***Blocked***, ***Expired*** or ***Invalid***. This string is case sensitive.

Sample data: **0123456789ABCD,2019-12-31T16:00:00.000,PARENTID,Accepted**

Show Authorization Cache List: To show the list of Authorization Cache. Each line of the list shown below indicates a cached RFID card info. The syntax is

CARD_IDTAG|EXPIRY_DATE|PARENT_CARD_IDTAG|CARD_STATUS|CACHED_DATE



Clear Authorization Cache List: To clear the list of Authorization Cache.

Upload Cache: Upload a csv file which including cached card info to Authorization Cache List.

A csv file is a plain text file which each line represent a cached RFID card info. The format of a cached card info is as follow:

CARD_IDTAG,EXPIRY_DATE,PARENT_CARD_IDTAG,CARD_STATUS,CACHED_DATE

CARD_IDTAG: 8 ~ 20 character RFID card ID tag combined with alphabet or numbers.

EXPIRY_DATE: The date at which idTag should be removed from the Authorization Cache. Format is *YYYY-MM-DDThh:mm:ss.ttt* which indicates a date in AD.

Example: 2019-12-31T16:00:00.000

PARENT_CARD_IDTAG: the parent-identifier of the card. The format is same as CARD_IDTAG.

CARD_STATUS: This contains whether the idTag has been accepted or not by the Central System. Valid options are ***Accepted***, ***Blocked***, ***Expired*** or ***Invalid***. This string is case sensitive.

CACHED_DATE: The date that the idTag be cached. Format is identical to EXPIRY_DATE.

Sample data: **0123456789ABCD,2019-12-31T16:00:00.000,PARENTID,Accepted,2018-3-22T16:00:00**

4.4.2 Firmware upgrade

To upgrade the firmware of the charge point, you need to download the upgrade image file to your local hard disk, and then click the "**Choose File**" button to locate the firmware file on your computer. Once you have selected the new firmware file, click the "**Upload**" button to start the upgrade process. After s successful upgrade, the web portal will be log out and charge point will reboot.

Although the web portal does not forbid upload firmware to previous version, but since the design of firmware upgrade file is including all backward modifications, downgrading firmware may cause unpredicted problem and is not recommended.

4.5 EVSE Status

To check the specific information of EVSE, you can click the corresponding buttons:

Show Control Unit State: To display the information of the control unit of charge point. Mostly the function regarding to charging and safety.

Show Network Unit State: To display the information of the network board of charge point. Mostly the function regarding to network connection and remote management.

Show Net Profile State: To display the information of the network connectivity and settings of charge point.

S**how Device State**: To display the information of the device service/connection between charge point and OCPP server/network connectivity.

4.6 LLM Status (IC support only)

4.6.1 LLM information

This page shows the Local Load Management information of the charge point. For more LLM description, please refer to section 4.6.3.

Network Operation Mode: Indicates the charge point is in Direct mode, a Gateway or a Client.

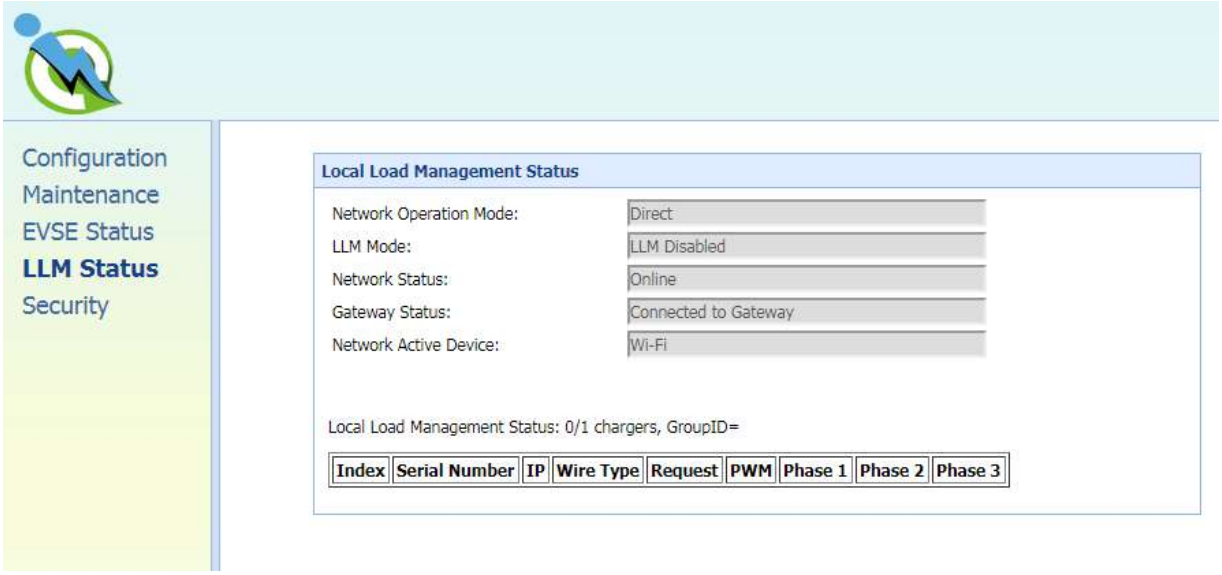
LLM Mode: Indicates Local Load Management function is enabled or disabled.

Network Status: Indicates if the charge point is online or not.

Gateway Status: Indicates if the charge point is connected to the Gateway if it's a Client. For Direct and Gateway, it always shows "Connected to Gateway".

Network Active Device: Indicates the Network connected via which device. It could be Offline, Wi-Fi or Cellular.

Local Load Management Status: Display connected charge points, total charge points, Group ID of the LLM group as well as a full table of detail information each charge point if this charge point is Gateway.



4.6.2 Gateway/Client group table

If the charge point is Gateway, the following LLM Group Table is present.

Index: The order of the charge point. The index is first connected to Gateway first showed.

Serial Number: The serial number (Charge Point Identity) of each charge point.

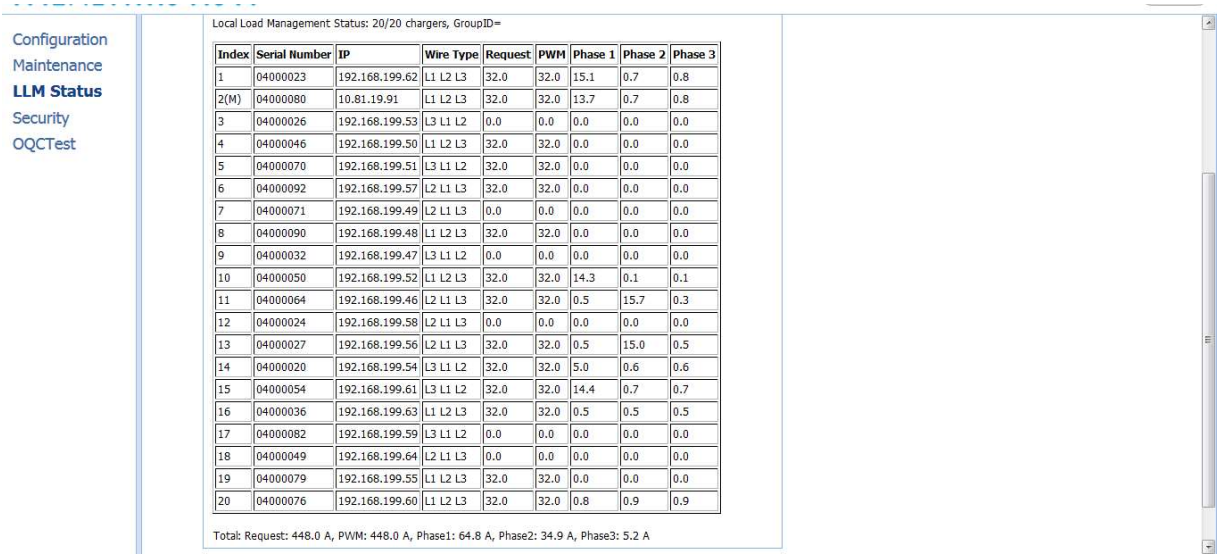
IP: The private local IP address in LLM group of each charge point.

Wire Type: The power source wire type of each charge point.

Request: The requested current of each charge point

PWM: The PWM (charger allowed) current of each charge point

Phase 1, Phase 2, Phase 3: The real current loaded by the vehicles of each charge point. For Intelligent Charger-32A only Phase 1 has current.



Index	Serial Number	IP	Wire Type	Request	PWM	Phase 1	Phase 2	Phase 3
1	04000023	192.168.199.62	L1 L2 L3	32.0	32.0	15.1	0.7	0.8
2(M)	04000080	10.81.19.91	L1 L2 L3	32.0	32.0	13.7	0.7	0.8
3	04000026	192.168.199.53	L3 L1 L2	0.0	0.0	0.0	0.0	0.0
4	04000046	192.168.199.50	L1 L2 L3	32.0	32.0	0.0	0.0	0.0
5	04000070	192.168.199.51	L3 L1 L2	32.0	32.0	0.0	0.0	0.0
6	04000092	192.168.199.57	L2 L1 L3	32.0	32.0	0.0	0.0	0.0
7	04000071	192.168.199.49	L2 L1 L3	0.0	0.0	0.0	0.0	0.0
8	04000090	192.168.199.48	L1 L2 L3	32.0	32.0	0.0	0.0	0.0
9	04000032	192.168.199.47	L3 L1 L2	0.0	0.0	0.0	0.0	0.0
10	04000050	192.168.199.52	L1 L2 L3	32.0	32.0	14.3	0.1	0.1
11	04000064	192.168.199.46	L2 L1 L3	32.0	32.0	0.5	15.7	0.3
12	04000024	192.168.199.58	L2 L1 L3	0.0	0.0	0.0	0.0	0.0
13	04000027	192.168.199.56	L2 L1 L3	32.0	32.0	0.5	15.0	0.5
14	04000020	192.168.199.54	L3 L1 L2	32.0	32.0	5.0	0.6	0.6
15	04000054	192.168.199.61	L3 L1 L2	32.0	32.0	14.4	0.7	0.7
16	04000036	192.168.199.63	L1 L2 L3	32.0	32.0	0.5	0.5	0.5
17	04000082	192.168.199.59	L3 L1 L2	0.0	0.0	0.0	0.0	0.0
18	04000049	192.168.199.64	L2 L1 L3	0.0	0.0	0.0	0.0	0.0
19	04000079	192.168.199.55	L1 L2 L3	32.0	32.0	0.0	0.0	0.0
20	04000076	192.168.199.60	L1 L2 L3	32.0	32.0	0.8	0.9	0.9

4.6.3 Operation mode

There are two different operation modes, **Distribution mode** and **Priority mode**. Each time when a new coming car is plugged-in and start charging. The LLM gateway will re-calculate the proper ampere for each charging station.

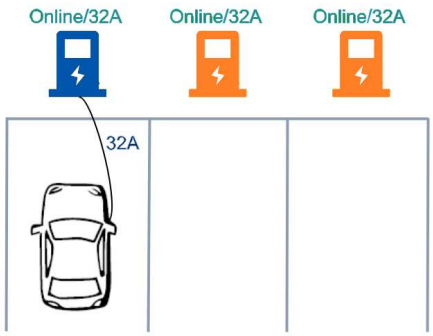
Base on the different mode, the algorithm is different.

- **Distribution mode (Uniform Distribution)**
  The available current is divided equally amongst all available charging stations.

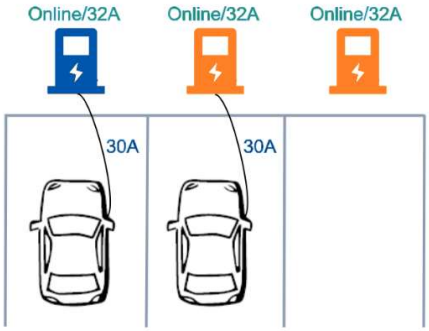
  - **Example 1**
    In this example, there are three (32A) charging stations in the LLM group. Setting up each charging stations according to the following settings:

Setting	Gateway	Client
Local Load Management	Enable	Enable
Charging Policy	Uniform Distribution	Not used
Group ID	**LLM-Group-1**	**LLM-Group-1** **(Same as Gateway)**
Group Size	3	Not used
Max Amperage Grid Connection	60	Not used
Fallback Current	**10**	**10** **(Same as Gateway)**

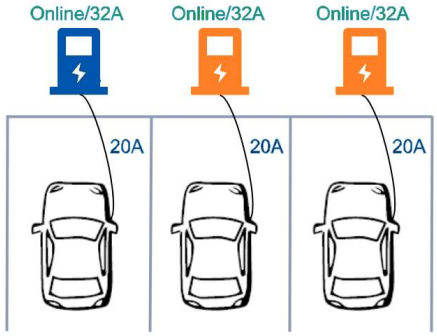
    With one connected vehicle, the charging current is 32A.



With two connected vehicles, the charging currents are evenly reduced to 30A.



With three connected vehicles, the charging currents are further reduced to 20A.

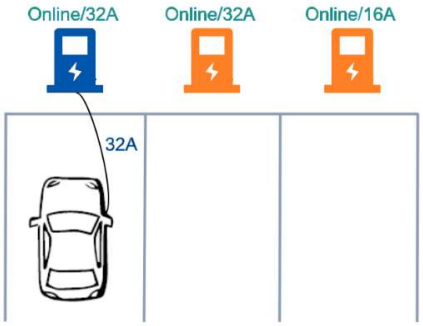


■ **Example 2**

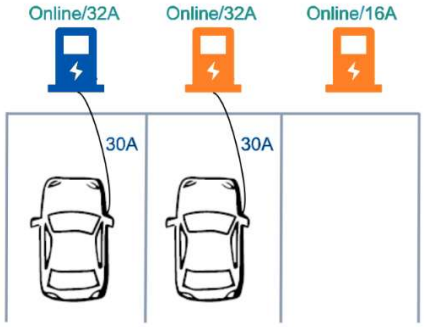
In this example, there are two (32A) charging stations and one (16A) charging station in the LLM group. Setting up each charging stations according to the following settings:

Setting	Gateway	Client
Local Load Management	Enable	Enable
Charging Policy	Uniform Distribution	Not used
Group ID	**LLM-Group-1**	**LLM-Group-1** **(Same as Gateway)**
Group Size	3	Not used
Max Amperage Grid Connection	60	Not used
Fallback Current	**10**	**10** **(Same as Gateway)**

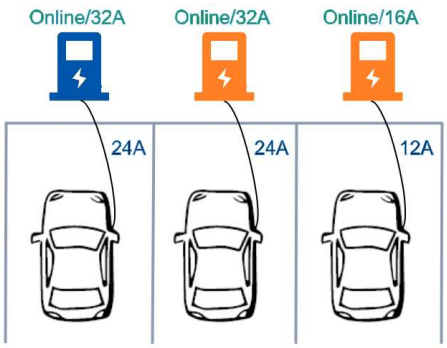
With one connected vehicle, the charging current is 32A.



With two connected vehicles, the charging currents are evenly reduced to 30A.



With three connected vehicles, the charging currents are further reduced to 24A for 32A charging stations and the charging current is 12A for 16A charging station.

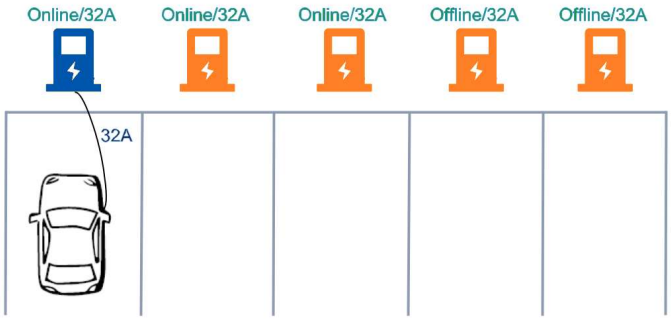


■ **Example 3**

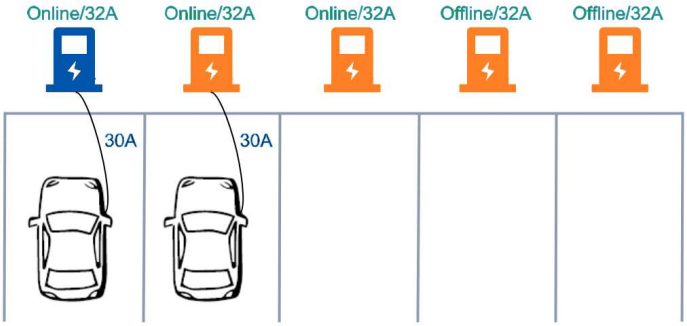
In this example, there are five (32A) charging stations in the LLM group and two of the charging stations are offline. Setting up each charging stations according to the following settings:

Setting	Gateway	Client
Local Load Management	Enable	Enable
Charging Policy	Uniform Distribution	Not used
Group ID	**LLM-Group-1**	**LLM-Group-1** **(Same as Gateway)**
Group Size	5	Not used
Max Amperage Grid Connection	80	Not used
Fallback Current	**10**	**10** **(Same as Gateway)**

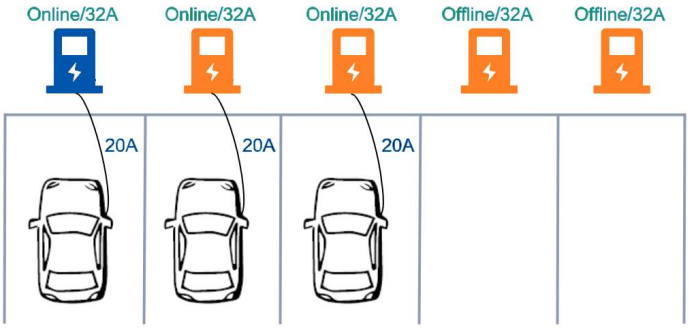
With one connected vehicle, the charging current is 32A. (Reserve 20A for offline charging stations)



With two connected vehicles, the charging currents are evenly reduced to 30A. (Reserve 20A for offline charging stations)



With three connected vehicles, the charging currents are further reduced to 20A. (Reserve 20A for offline charging stations)



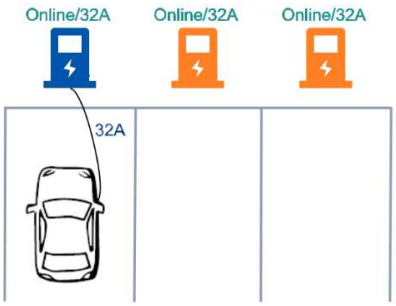
- **Priority mode (First Come Fist Serve)**
  The available current is NOT divided equally amongst all available charging stations. The first vehicle connected would be allocated as much as possible. If any current capacity is left, then the remainder would be given to the other charging stations.

■ **Example 1**

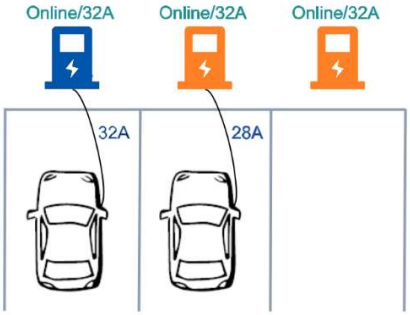
In this example, there are three (32A) charging stations in the LLM group. Setting up each charging stations according to the following settings:

Setting	Gateway	Client
Local Load Management	Enable	Enable
Charging Policy	First In First Serve	Not used
Group ID	**LLM-Group-1**	**LLM-Group-1** **(Same as Gateway)**
Group Size	3	Not used
Max Amperage Grid Connection	60	Not used
Fallback Current	**10**	**10** **(Same as Gateway)**

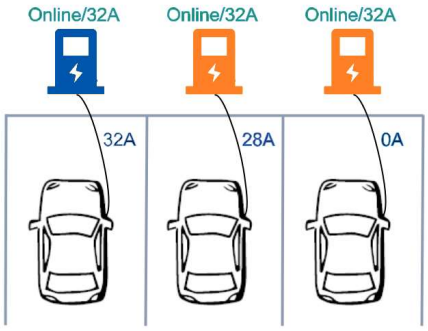
The first vehicle connected would receive 32A.



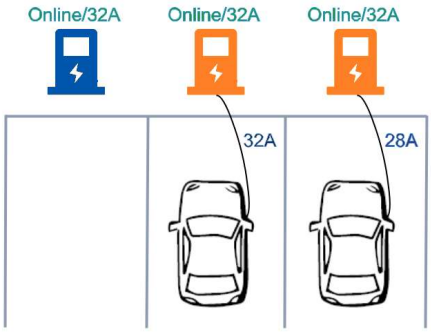
The second vehicle would receive 28A.



The third vehicle is NOT able to receive current.



When the first vehicle left, the second vehicle would receive 32A, and the third vehicle would receive 28A.



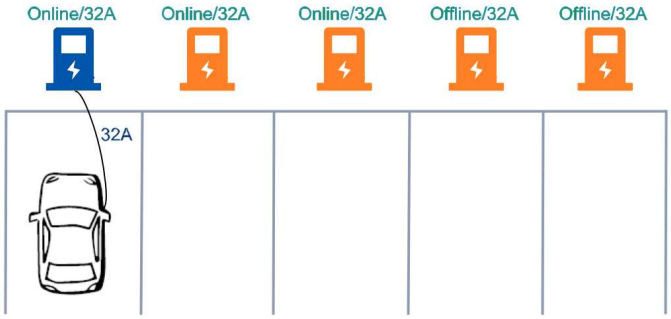
■ **Example 2**

In this example, there are five (32A) charging stations in the LLM group and two of the charging stations are offline. Setting up each charging stations according to the following settings:

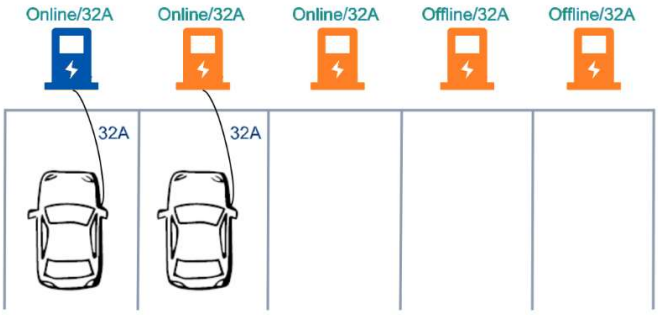
Setting	Gateway	Client
Local Load Management	Enable	Enable
Charging Policy	First In First Serve	Not used
Group ID	**LLM-Group-1**	**LLM-Group-1** **(Same as Gateway)**
Group Size	5	Not used
Max Amperage Grid Connection	100	Not used

Fallback Current	**10**	**10** **(Same as Gateway)**

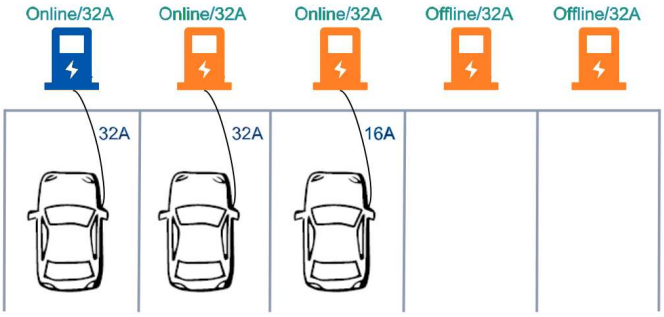
The first vehicle connected would receive 32A. (Reserve 20A for offline charging stations)



The second vehicle would receive 32A. (Reserve 20A for offline charging stations)



The second vehicle would receive 16A. (Reserve 20A for offline charging stations)

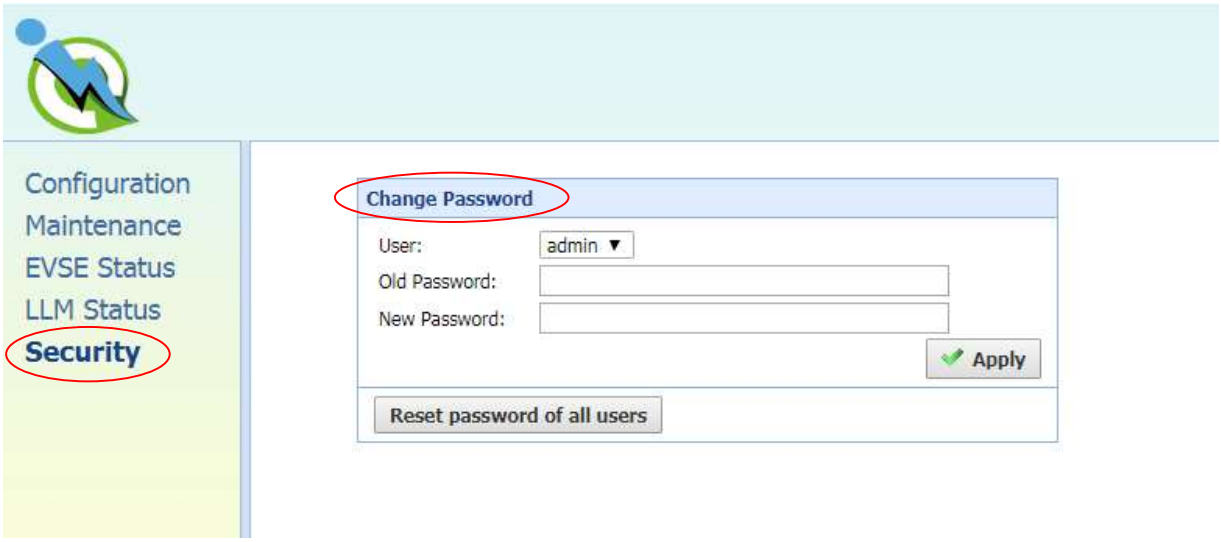


4.7 Security

4.7.1 Change password

To change password, first choose user you want to change password. There are two default users – **admin** and **maintain**. Only admin user can access Security Page. Enter old password and new password then press **"Apply"** button to change password of the user.

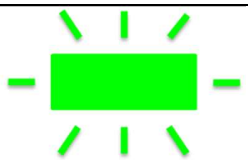
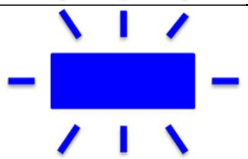
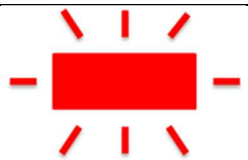
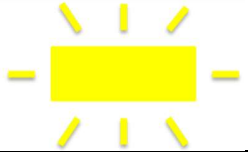
To reset password of all users, press **"Reset password of all users"** button.



5 Operations

5.1 Charging status indicators

Table 5-1 Charging status indicators

LED Indicator	Description	Definition
	Not illuminated	Power Off
	Green Steady	Ready
	Green Flashing	Flashing green (Fast): Authorized, wait for EV Connect Flashing green (Slow): Suspend (Occupying)
	Blue Flashing	Flashing blue (Slow): Charging
	Red Steady	Unrecoverable Fault
	Red Flashing	Recoverable Fault
	Purple Steady	Reserved (from OCPP Service)
	Yellow Flashing	Booting / Firmware Upgrading / Out of Service

5.2 Authorization (for IC only)

Before the owner of an electric vehicle can start or stop charging, the Charge Point has to authorize the operation.

5.2.1 Online Authorization

Description:

- Generally, before the owner of an electric vehicle can start or stop charging, the EVSE has to authorize the operation. The EVSE SHALL only supply energy after authorization.

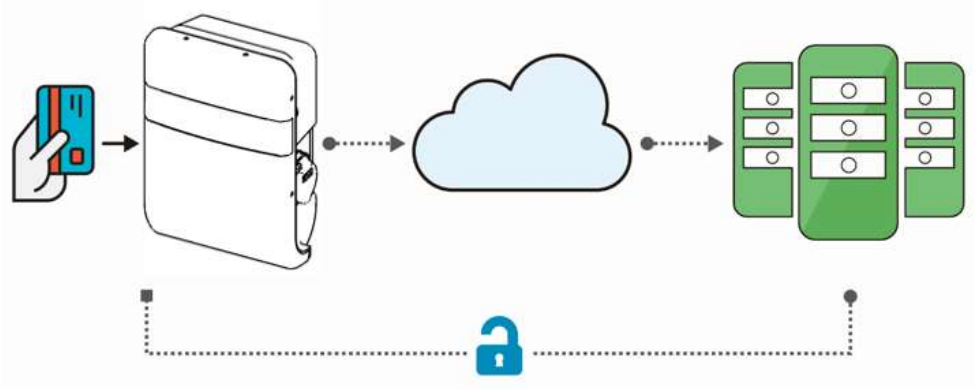


Figure 5-1 On-line Authorization

5.2.2 Local Authorization

Description:

- Synchronized with the Central System when EVSE is Online.
- To improve the experience for users, the EVSE MAY support local authorization when EVSE is *offline*, and faster authorization response time when communication between Charge Point and Central System is slow.

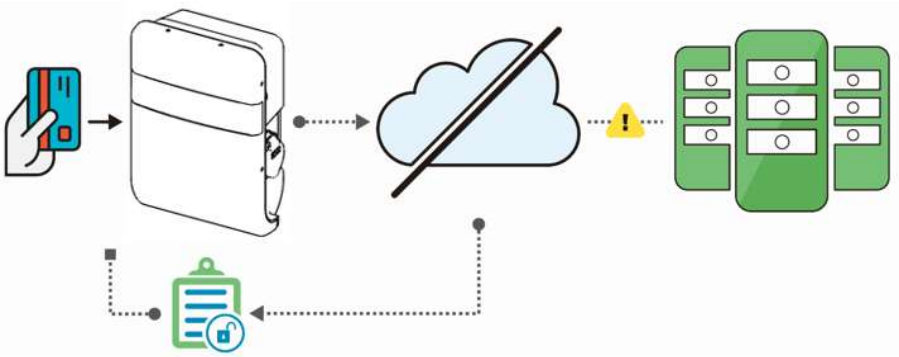


Figure 5-2 Local Authorization

5.3 Charging an Electric Vehicle (EV)

Choices of start charging are as below:

5.3.1 Plug and Charge

1. Insert the charging plug into the EV
2. Charging session started

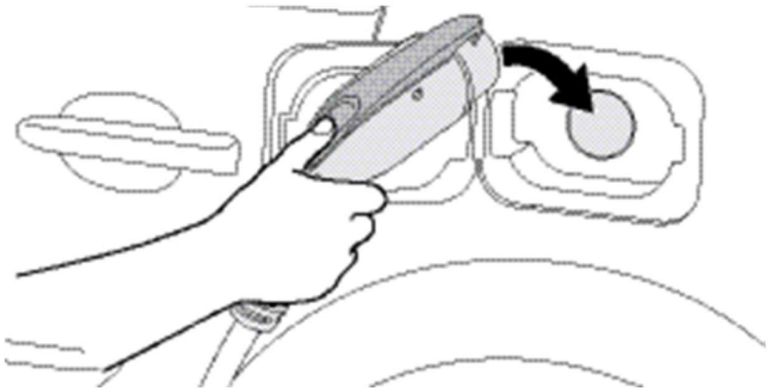


Figure 5-3 Connect the charging plug to the EV

5.3.2 RFID card (for IC only)

1. Insert the charging plug into the EV
2. Swipe card
3. Waiting for authorizing
4. Charging session start

5.4 Stop charging

1. Unplug any time (disconnect the charging plug from EV to stop charging session)
2. Session ended (please return the connector to the holster)

5.4.1 Interrupt charging

Please refer to STOP CHARGING section for more information.

5.4.2 Auto restart

When a charging session is interrupted due to a temporary error condition, the charge point will automatically restart charging when the cause of the temporary error condition returns to normal. Status indicator lights remain flashing RED until the error condition is resolved.

- Temporary error conditions include: Over Current, Over Voltage, Under Voltage, and Over Temperature.
- For Over Current conditions: The charging session will be stop while OC occurs. After recovery from OC for 30 seconds, the charge point will automatically restart charging for three times.
- When charging session stopped due to CCID trip, the charge point will try to restart after 15 minutes for 3 times.

5.4.3 Power outage recovery

When power resumes after an outage, the charge point restarts automatically with a delay ranging from 120 to 720 seconds. The delay is designed to avoid impacting the utility grid when multiple charge points are in the same area attempting to resume charging simultaneously.

5.5 General care

The exterior of the charge point is designed to be waterproof and dust proof. To ensure proper maintenance of the charge point, follow these guidelines:

- Despite the water resistance of the enclosure, when cleaning it is preferred to not direct streams of water at the unit. Clean with a soft, damp cloth.
- Make sure the charging plug is put back in the holster after charging to avoid damage.
- Ensure the power cable is stored on the charge point after use to avoid damage.
- If the power cable or the charging plug is damaged, please contact Customer Support.

5.6 Customer support

Please contact your reseller directly for technical support.