ev charging network

User Manual

v.20.9.4

Loop EV-Flex™ EVSE

EVS-32A-L2-001 (R-Model)

Contents

Contents

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 ELECTRIC: RISK OF SHOCK

WARNING: RISK OF FIRE

CAUTION: RISK OF DAMAGE TO THE EQUIPMENT

+ The Loop EV-Flex EVSE must be installed only by licensed electricians.

+ Make sure that the materials and installation procedures follow local building codes and safety standards.

+ 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 Loop EV-Flex EVSE and should not be used for any other product. Before installation or use of this product, review this manual carefully and consult with a licensed contractor, licensed electrician, or trained installation expert to ensure compliance with local building codes and safety standards.

Repair and Maintenance Clause

+ Only licensed electricians can repair or maintain the Loop EV-Flex EVSE. It is forbidden for general users to repair or maintain it.

+ Turn off input power before repair or maintenance the Loop EV-Flex EVSE.

Federal Communication Commission Interference Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device 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 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.

FCC Caution:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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

Save These Instructions

WARNING ELECTRIC: RISK OF SHOCK

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

+ Read all the instructions before using this product.

+ This device should be supervised when used around children.

+ Do not put fingers into the EV connector.

+ Do not uses this product if the flexible power cord or EV cable is frayed, has broken insulation, or any other signs of damage.

+ Do not use this product 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 grounded.

WARNING: RISK OF ELECTRIC SHOCK

+ Do not touch live electrical parts.

+ Incorrect connections may cause electric shock.

WARNING:

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:

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: Do not drag the Loop EV-Flex EVSE by input power cord.

1. Introduction

This user manual applies to “32A Level 2 AC Charger for Plug-in Electric Vehicles (PEVs) and Battery Electric Vehicles (BEVs)”.

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

1.1. Product Overview

	Description	Quantity	Remark
1	Loop EV-Flex EVSE		+ SAE J1772 Connector + OLED Display + RFID Icon
2	Mounting Bracket	1	Attached to the back of the Loop EV-Flex EVSE
3	Holster	1	With Hook x1, Holster x1 & M4xL15 tapping screw x2
4	Screw Bag	1	With #12xL50 tapping screw x4

Figure 1-1 - Box Contents

Table 1-1 - Accessories in the box

2. Product Specifications

Item	Loop EV-Flex EVSE
Application	Commercial
Voltage (Vac)	208/240VAC, Single Phase
Frequency (Hz)	60 Hz
Current (Rms)	32 A
Charging Connector	SAE J1772 Type 1
Charging Cable Length	25 ft.
Metering Accuracy	Embedded ± 1%
Real Time Clock	Yes (7 days)
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 Steady: Out of Service + Yellow Flashing (Slow): Booting / Firmware Upgrading **Remark** + Fast Flash: On Time 300ms, Off Time 200ms, 2Hz + Slow Flash: On Time 1200ms, Off Time 800ms, 0.5Hz
Wi-Fi	802.11 b/g/n
Cellular	LTE Cat. 1 (AT&T or Verizon)
RFID	ISO 14443 A/B, ISO 15693, NFC, NEMA interoperability protocol
Display	116(L)*8.5(W)*37(H)mm, 5.57mm CHARACTER HEIGHT, 5*8 DOT MATRIX, OLED 20x2
Data Protocol	OCPP 1.6
Operation Temperature	-30 ~ 50 ℃ / -22 ~ 122 ℉
Storage Temperature	-40 ~ 70 ℃ / -40 ~ 158 ℉
Mounting Type	Wall mount / Pole mount (optional)
Wiring Type	Hard-wired
IP Performance	NEMA 4
Impact Resistance	IK10
Dimension (H x W x D, inch)	11.14” x 7.56” x 3.11”
Weight (Net)	5.28 kg / 11.64 lbs
Web Portal Management	Yes
Console Management	Yes
Certification	Energy Star / UL 50/991/1449/1998/2231/2594 FCC Part 15B
	FCC Part 15.225 (RFID 13.56MHz) FCC Part 15.247 (WLAN 2.4GHz)
	FCC Part 27 (AT&T) or FCC Part 27 (Verizon)

3. Installation & Configuration

3.1. Before Installation

3.1.A. Safety Check

CAUTION: Disconnect the power supply before installing or repairing the Loop EV-Flex EVSE. Failure to do so may result in physical injury or damage to the power supply system and the Loop EV-Flex EVSE.

The Loop EV-Flex EVSE 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 Loop EV-Flex EVSE, make sure you have read all instructions in this manual and fully understand its contents.

Proper protective equipment 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.B. Grounding Instructions

The Loop EV-Flex EVSE must be equipment grounded through 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 and Parts Required for Installation

Tool	Quantity	Size	Supplier	Remark
Mounting Bracket	1	194x109x9 mm	Model Accessories	Fasten Loop EV-Flex EVSE to the wall
Holster Assembly	1	58x58x70 mm	Model Accessories	Hold EV charging connector & cord
Screw	4	Tapping: #12	Model Accessories	Fasten Mounting Bracket & Hook
		Mechanical: M6	Commercially Available	
Wire, Copper	3	8 AWG	Commercially Available	UL1015 (recommended)
Heat Shrink Tube	3	For 8 AWG wire	Commercially Available	Protect wires & terminals
Terminal	3	For 8 AWG wire	Commercially Available	Connect input wires to the terminal block
Conduit	1	1 inch	Commercially Available	Protect power cable
Torx Screwdriver	1	T20	Commercially Available	
Philips Screwdriver	1	PH3	Commercially Available	
Hexagon Socket	1	5/16	Commercially Available	Tighten #12 Tapping screws
Torque Wrench	1	35 kgf-cm min	Commercially Available	

Table 3-1 Tools & parts required for installation

3.3. Assembly and Installation of the Charging Station

1. Open the carton and remove the upper partition.

Figure 3-1 Opening the carton

2. Take out the Loop EV-Flex EVSE and upturn middle partition. The charging plug is in the bottom of the package.

Figure 3-2 Take out the Loop EV-Flex EVSE

3. Remove the holster assembly placed inside the right of the middle partition.

Figure 3-2 Accessories inside the middle partion

4. Release the bottom T20 screw, then the wall mounting bracket can be removed.

Figure 3-4 Release the T20 screw

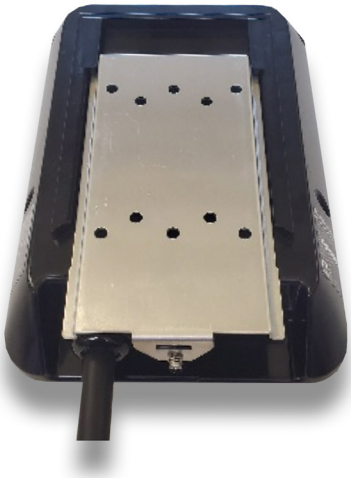


Figure 3-5 Remove the Mounting Bracket

5. Place the Charging Station on a flat surface, front cover down with protection under the cover to avoid scratching damage to the cover. Remove the Charging Station front cover by loosening the (5) Torx screws at the rear of the charging station.

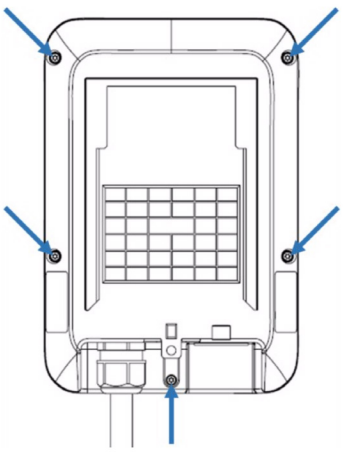


Figure 3-6 Five Torx screw locations to remove the charging station front cover

CAUTION: The LED board is attached to the charging station front cover and the charging station circuit board. Use care to not place force or strain on the wiring harness when the cover screws are removed. Failure to do so may result in damage to the charging station, which is not covered under warranty.

With the (5) Torx screws loosened, hold the front cover in place to avoid strain being placed on the LED board wiring harness and flip the charging station over on the flat surface so that the front cover is on top. Once this is completed, gently lift the charging station front cover and place to the right side of the charging station unit. Again, use care to not place force or strain on the wiring harness when the front cover screws are removed. Failure to do so may result in damage to the charging station.

6. Prepare an 11-inch-long 1in diameter flex or rigid conduit in accordance with all applicable state, local and national electrical codes and standards. Prepare the conduit as shown in figure below

Figure 3-7 Loop EV-Flex EVSE with flex conduit attached

7. Assemble the Flex conduit and attach it to the EV, with the lock rings secured.

Figure 3-8 Flex conduit

8. Prepare approximately 25 in. long 10 AWG ground wire, and 8 AWG for the black and red wire.

Use vinyl insulated locking fork terminals, 12-10 AWG, stud size 10. Using the appropriate tool, clamp the wire terminal to the copper wire. For non-insulated terminals, use heat shrink tube to cover the non-insulated portion of the terminal.

,

Figure 3-9 25 in. conductors

9. Insert the wire end passing through the conduit and insert them into the input wiring hole. (Use Red wire for L1, Black wire for L2, Green-yellow wire for G). Attach the copper wire on the corresponding terminal block.

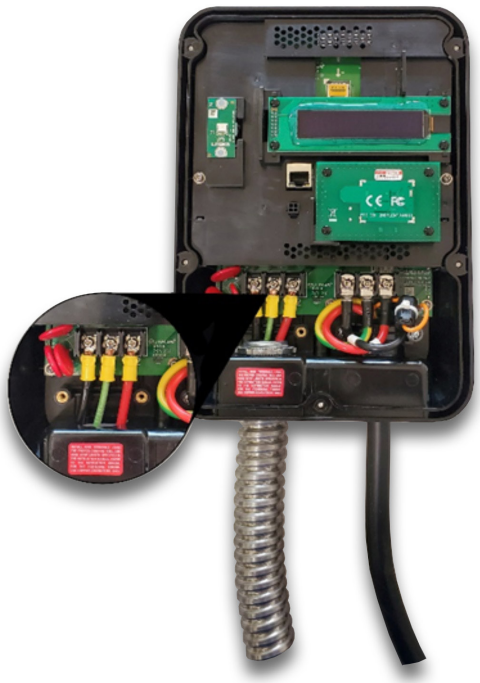


Figure 3-10 conductor termination

10. 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 is not lower than 18" (450 mm) and not higher than 4" (1.2m). For outdoor site, it is not lower than 24" (600 mm) and not higher than 4" (1.2m). Refer to Article 625, NEC.

Figure 3-11 Fixing mounting bracket

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.

Screw suggestion:

a. For masonry walls, use M6 mechanical screws. (Commercially available)

b. For finished walls supported by wood studs, use 1/4"or M6 tapping screws. (Commercially available)

c. Please use following torque force.

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

11. Mount Loop EV-Flex EVSE onto mounting bracket and lock the screw.

11.A. Put the Loop EV-Flex EVSE on the mounting bracket.

11.B. Fasten Loop EV-Flex EVSE on mounting bracket by M4 screw and screw washer.

11.C. Please refer to the following torque.

Screw	Torque	
M6	16 kgf.cm	13.88 lb-in

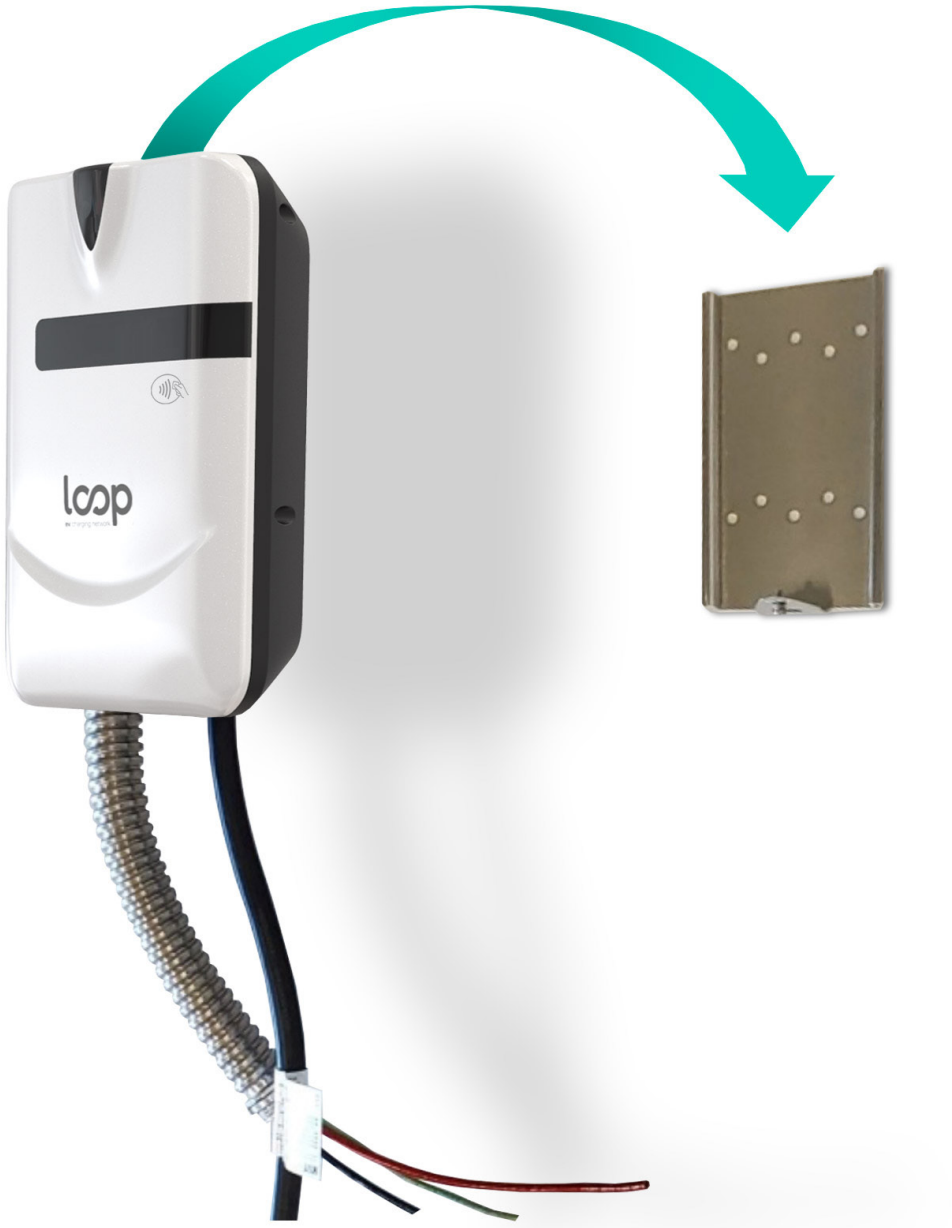


Figure 3-12 Loop EV-Flex EVSE and mounting bracket

3.4. Install the Connector and Cable Holster

1. Separate the holster from hook.

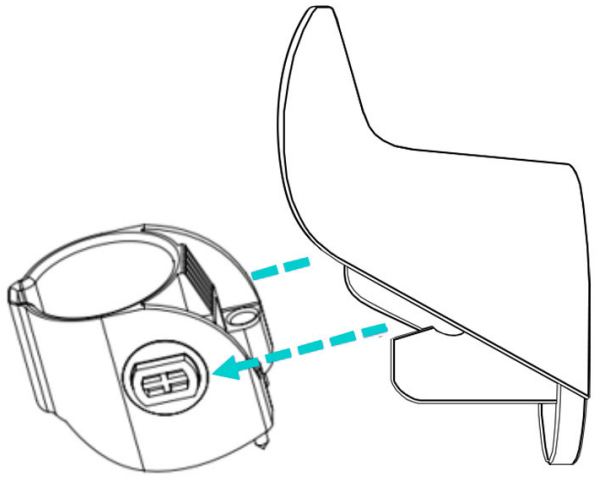


Figure 3-13 Loop EV-Flex EVSE and mounting bracket

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

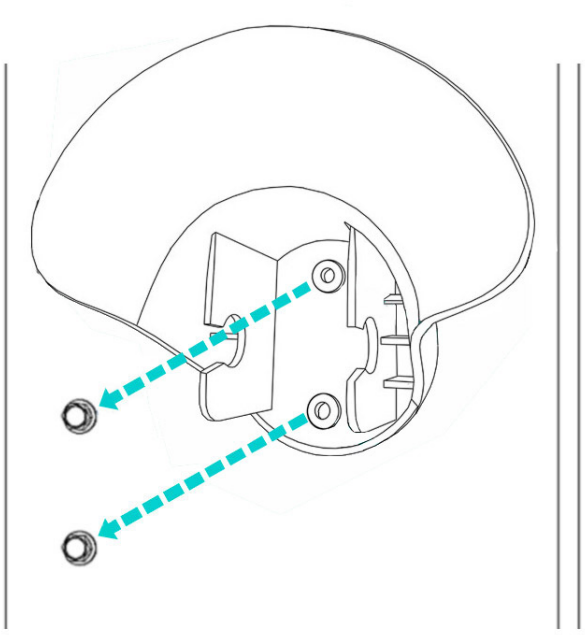


Figure 3-14 Secure the saddle

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

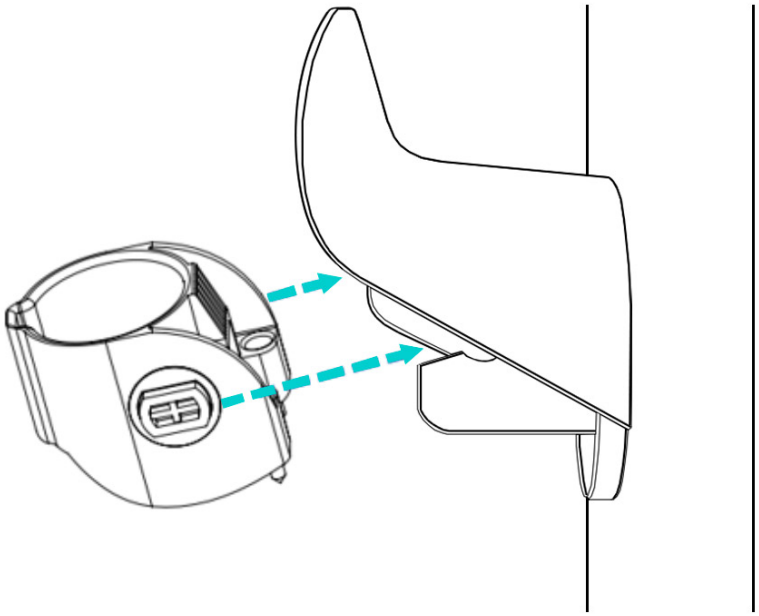


Figure 3-15 Secure the holster

4. Rotate the holster down.

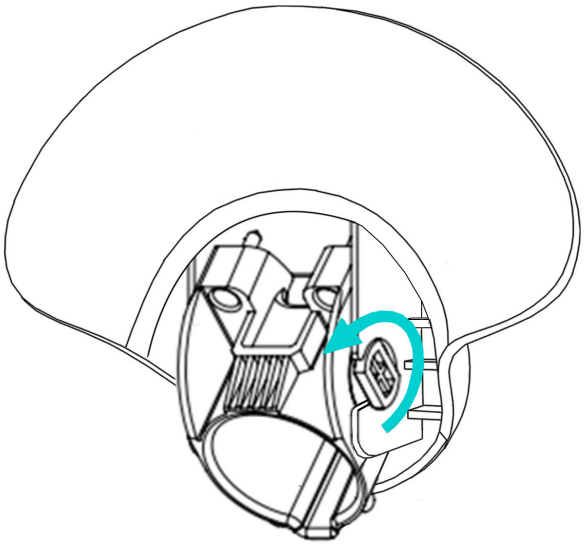


Figure 3-16 Rotate the holster

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

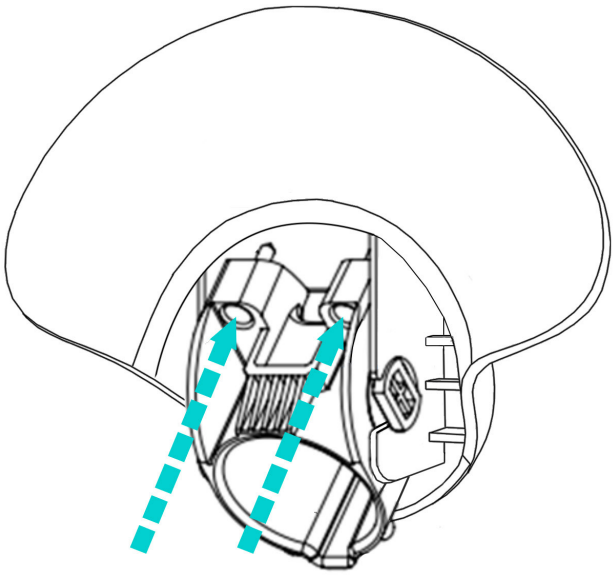


Figure 3-17 Lock screws

6. Place EV charging connector into the holster and wrap charging cable around the saddle.

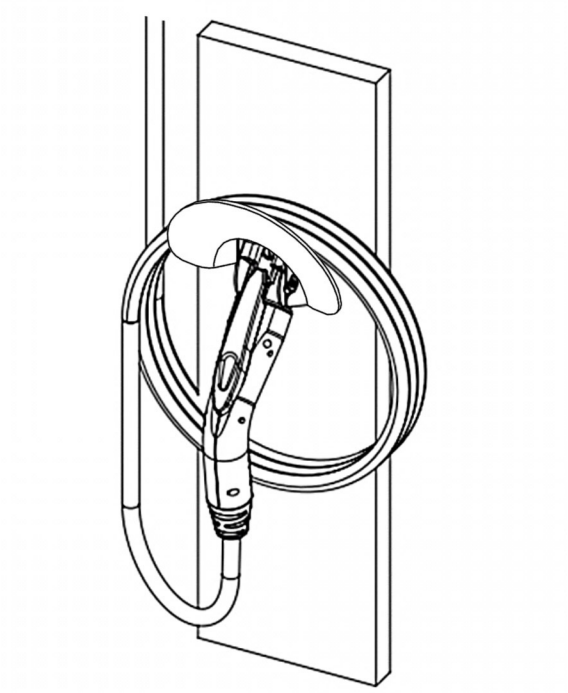


Figure 3-18 Place EV charging connector and cable.

3.5. Install the SIM card (Optional)

1. Disassemble top cover & Loosen the star screws (x5)

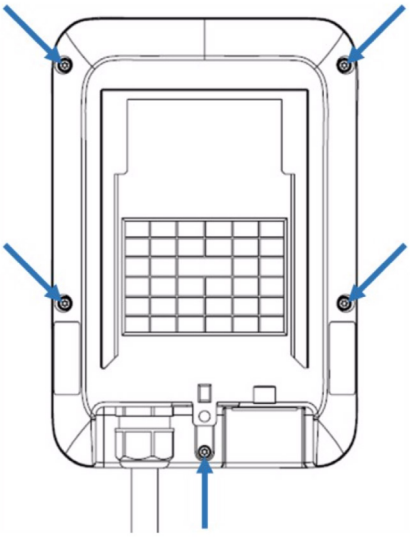


Figure 3-19 Five screws in the Base Cover position

2. Find SIM card socket

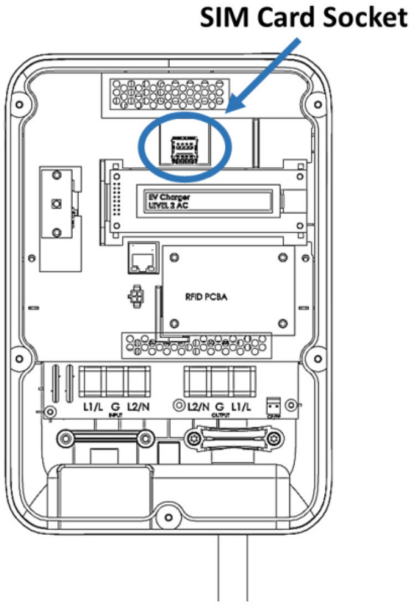


Figure 3-20 Position of SIM card socket

3. Insert SIM card

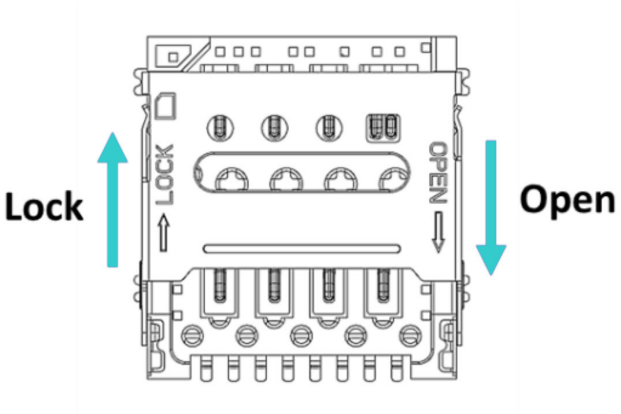


Figure 3-21 SIM card socket and cover Open/Close direction

4. Push down the cover to open SIM card socket.

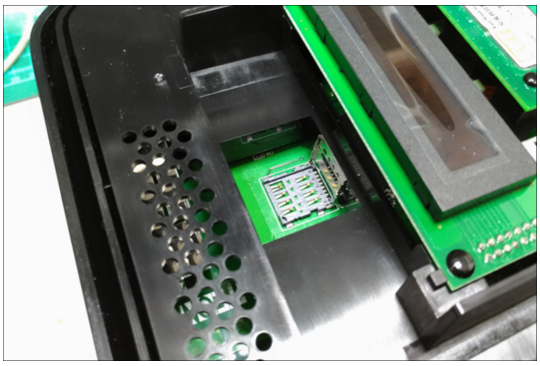


Figure 3-22 Open SIM card socket

5. Push down the cover to open SIM card socket.

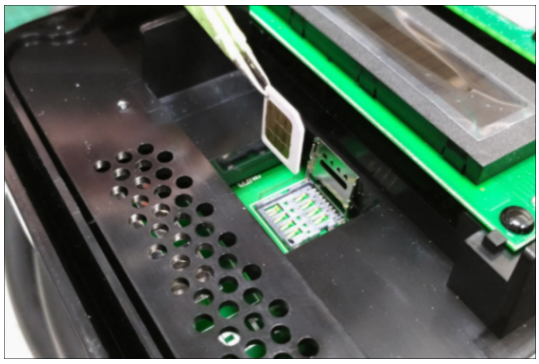


Figure 3-23 Prepare the SIM card

6. Insert the SIM card.

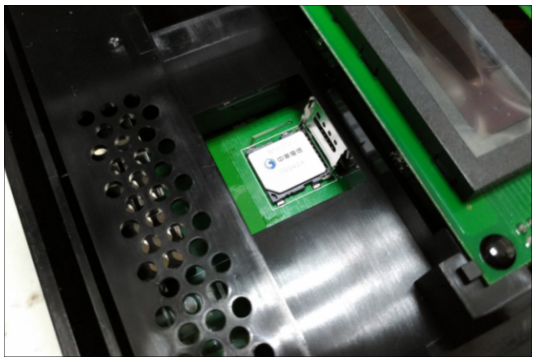


Figure 3-24 Insert the SIM card

7. Close the SIM card socket and push the cover toward lock direction to lock the cover.

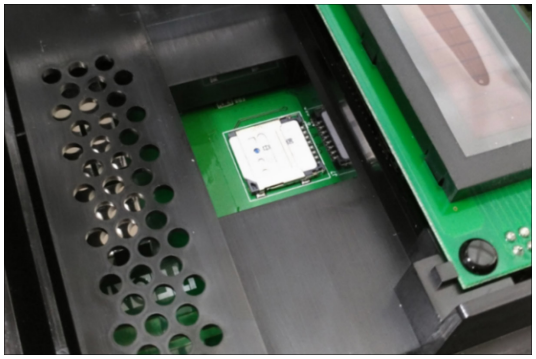


Figure 3-25 Lock SIM card socket cover

8. Reassemble the top cover. Please refer to the following torque. SIM card installation is completed.

Screw	Torque	
M6	16 kgf.cm	13.88 lb-in

3.6. Commissioning

3.6.A. Access the built in Webportal (Two Options)

1. Connect to the Loop EV-Flex EVSE using its projected SSID (like a typical Wi-Fi connection)

2. Connect a computer to the Loop EV-Flex EVSE using an Ethernet cable.

Figure 3-26 Location of Ethernet RJ-45 port

3.6.B. Login

Open a web browser (Chrome for example) and enter one of the follow two IP addresses. Please enter the text below in the address field of the browser and press enter.

http://192.168.199.1 If “Network Mode” is Gateway and “Group Use External Gateway” is No.

or

http://192.168.100.1 Any other “Network Mode”.

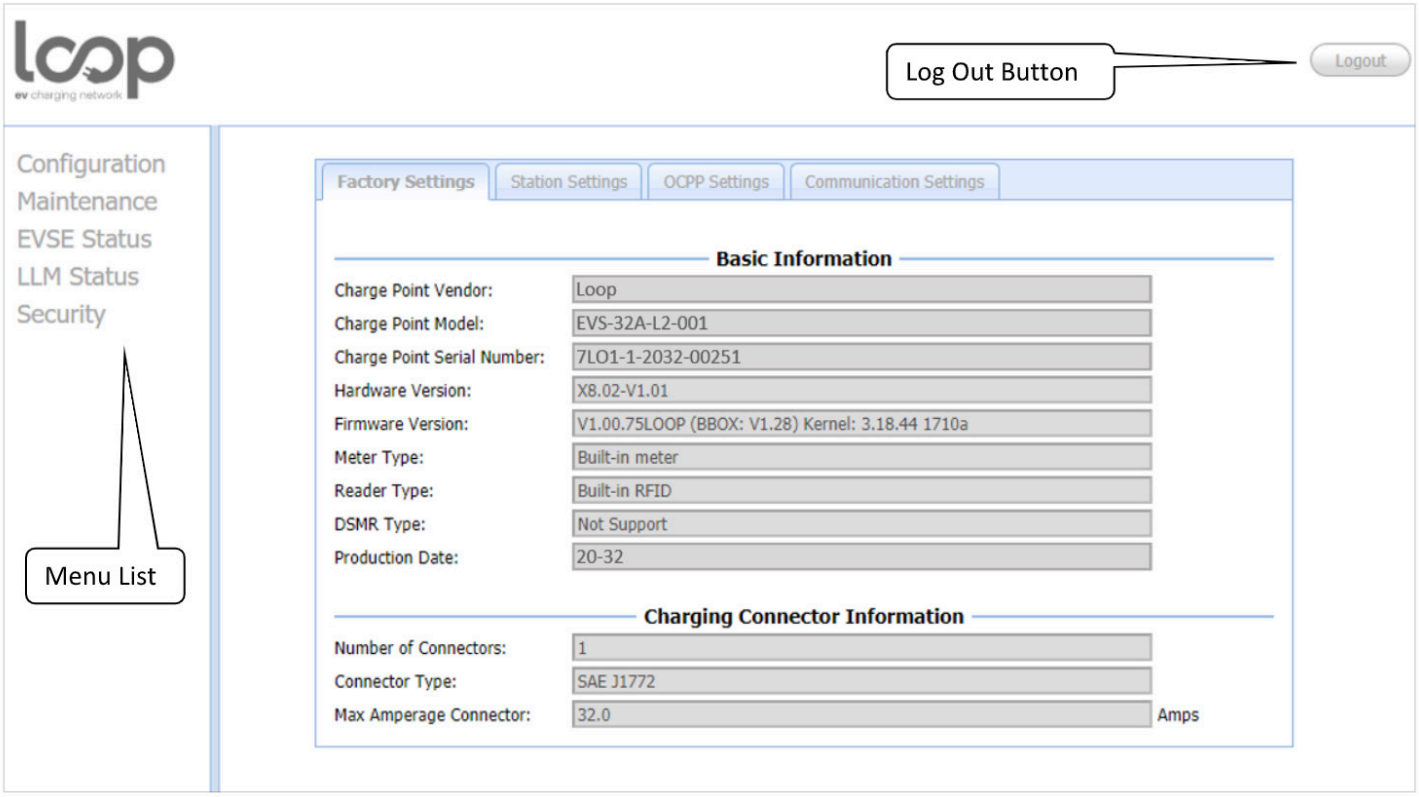
Now you should see the login screen:

To be able to configure the Loop EV-Flex EVSE you should enter admin in the username box.

3.7. Webportal Overview

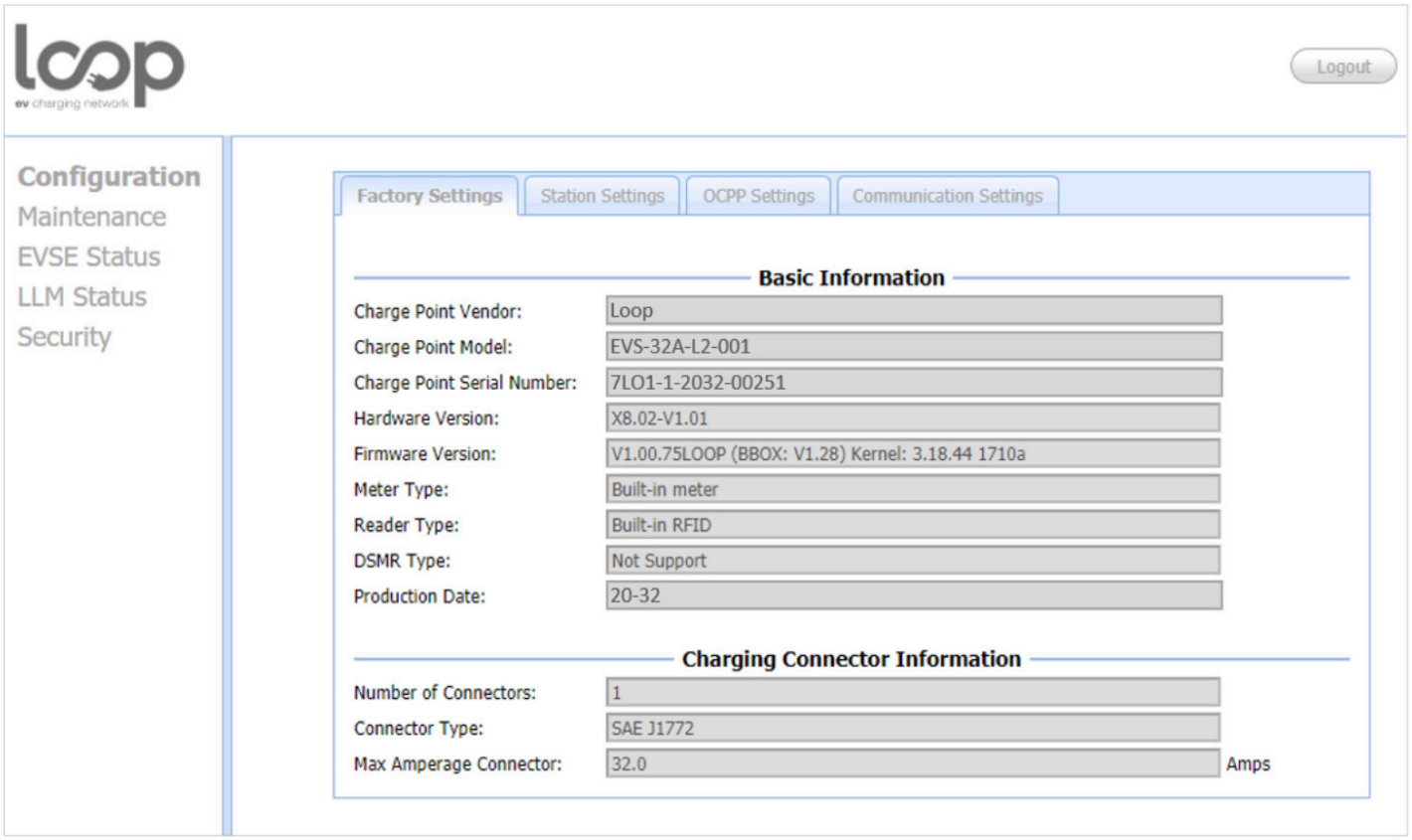
3.7.A. Menu Overview

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



3.7.B. 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 Loop EV-Flex EVSE.

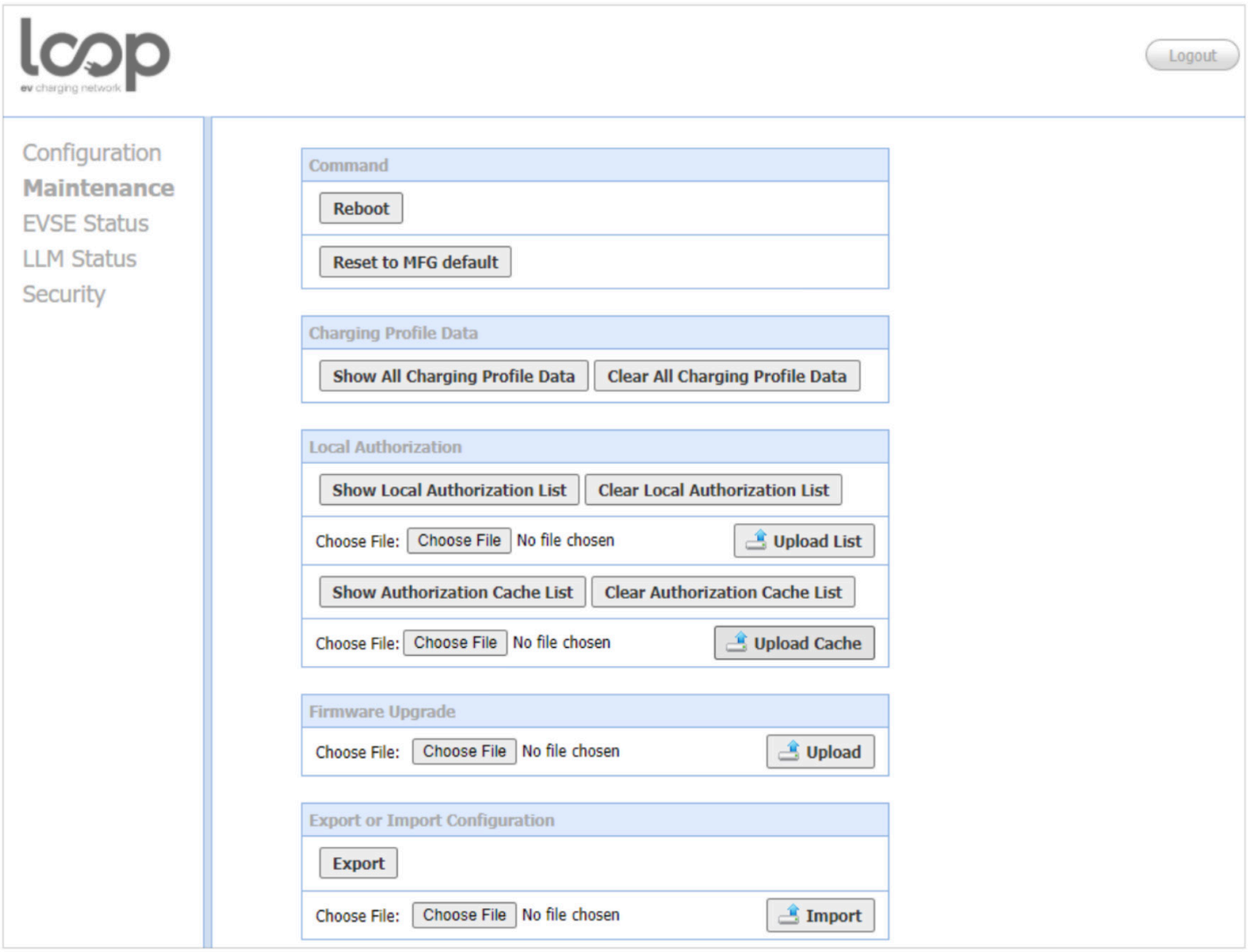
+ The "Station Settings" tab is used to set up the configuration regarding to the Loop EV-Flex EVSE itself.

+ 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.

3.7.C. Maintenance Menu

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



+ The "Command" screen can be used to restart the Loop EV-Flex EVSE 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 Loop EV-Flex EVSE.

+ The "Export or Import Configuration" screen can be used to export or import desired configuration

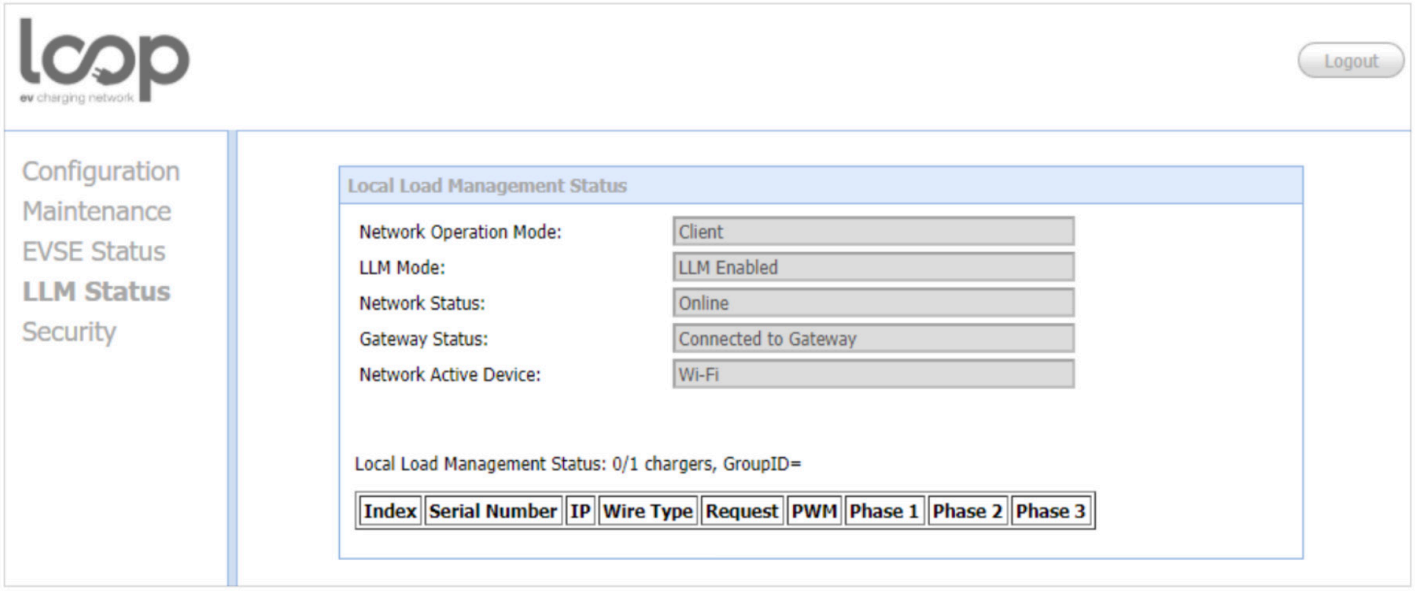
3.7.D. EVSE Status

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 these information are only for diagnostic use.

3.7.E. LLM Status Menu

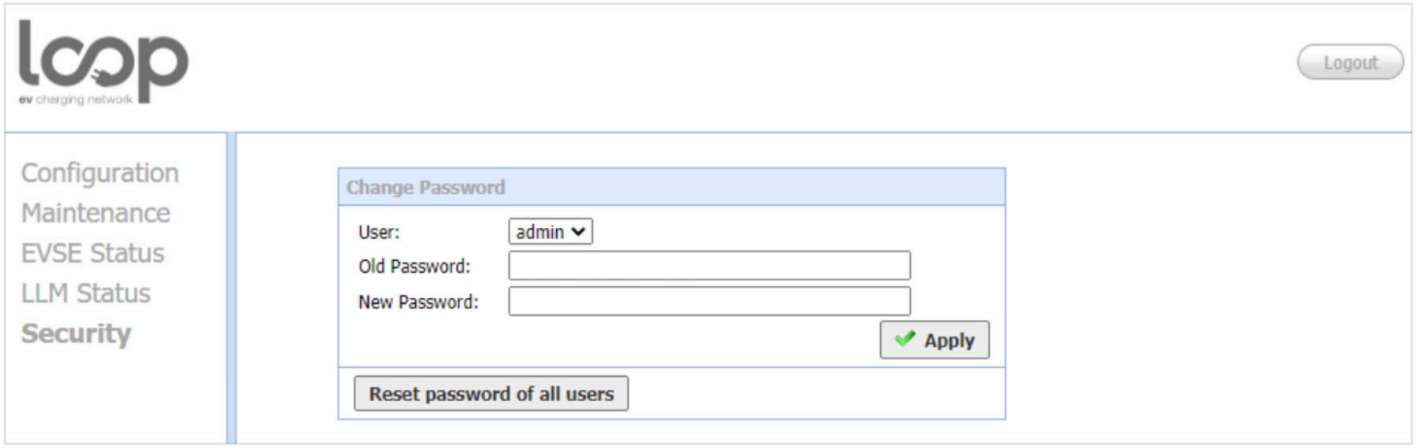
When you choose the LLM Status menu, a sub menu will appear:



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

3.7.F. Security Menu

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

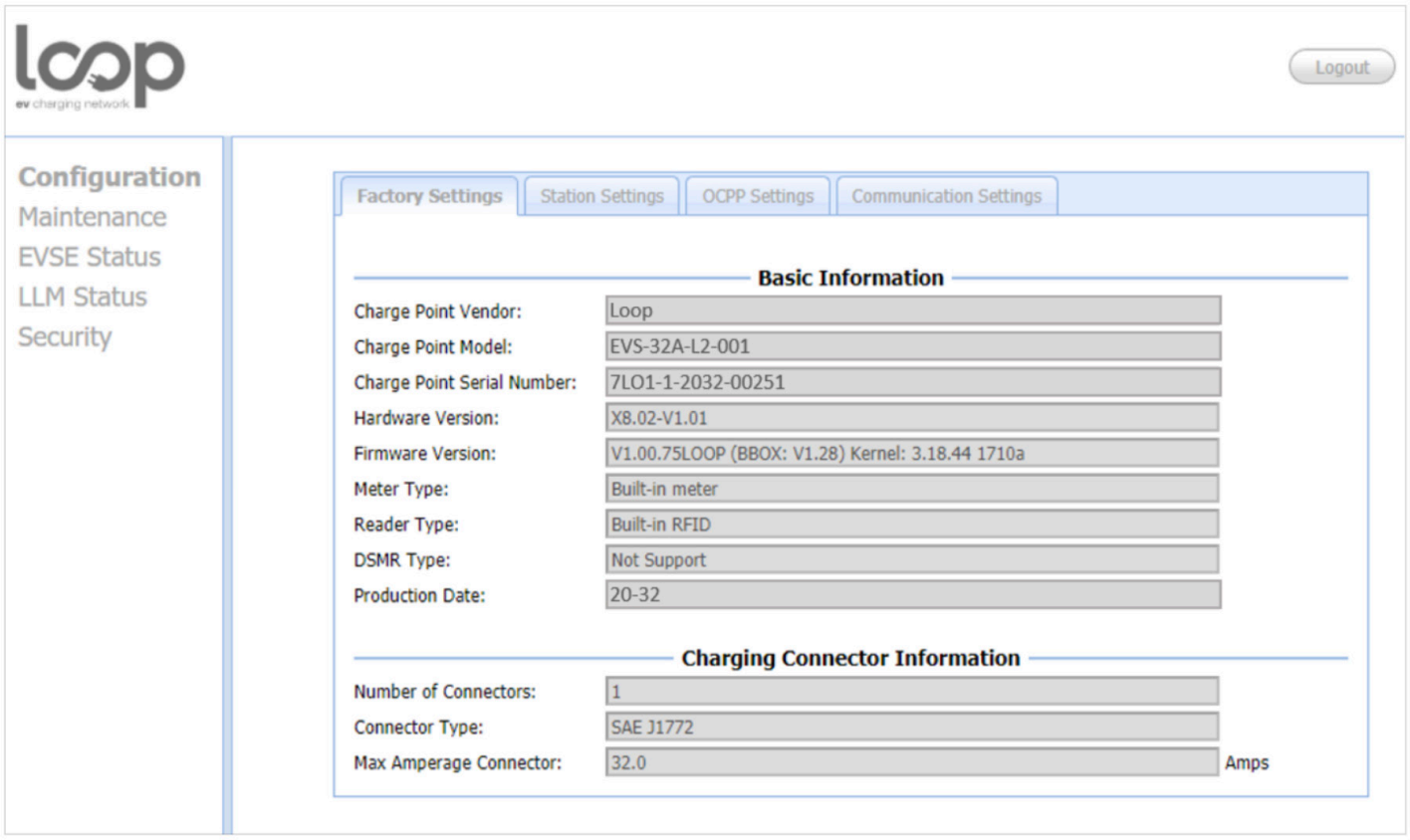


+ The “Change Password” screen can be used to change the password of users for this web portal.

3.8. Configuration

3.8.A. 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 Loop EV-Flex EVSE.

Charge Point Model: The model's name of the Loop EV-Flex EVSE.

Charge Point Serial Number: The unique serial number of the Loop EV-Flex EVSE.

Hardware Version: The hardware version of the Loop EV-Flex EVSE.

Firmware Version: The software version of the Loop EV-Flex EVSE.

Meter Type: The meter type of the Loop EV-Flex EVSE.

Reader Type: The reader type of the Loop EV-Flex EVSE.

DSMR Type: The DSMR type of the Loop EV-Flex EVSE.

Production Date: The production date of the Loop EV-Flex EVSE.

Charging Connector Information

Number Of Connectors: Number of connectors of the Loop EV-Flex EVSE.

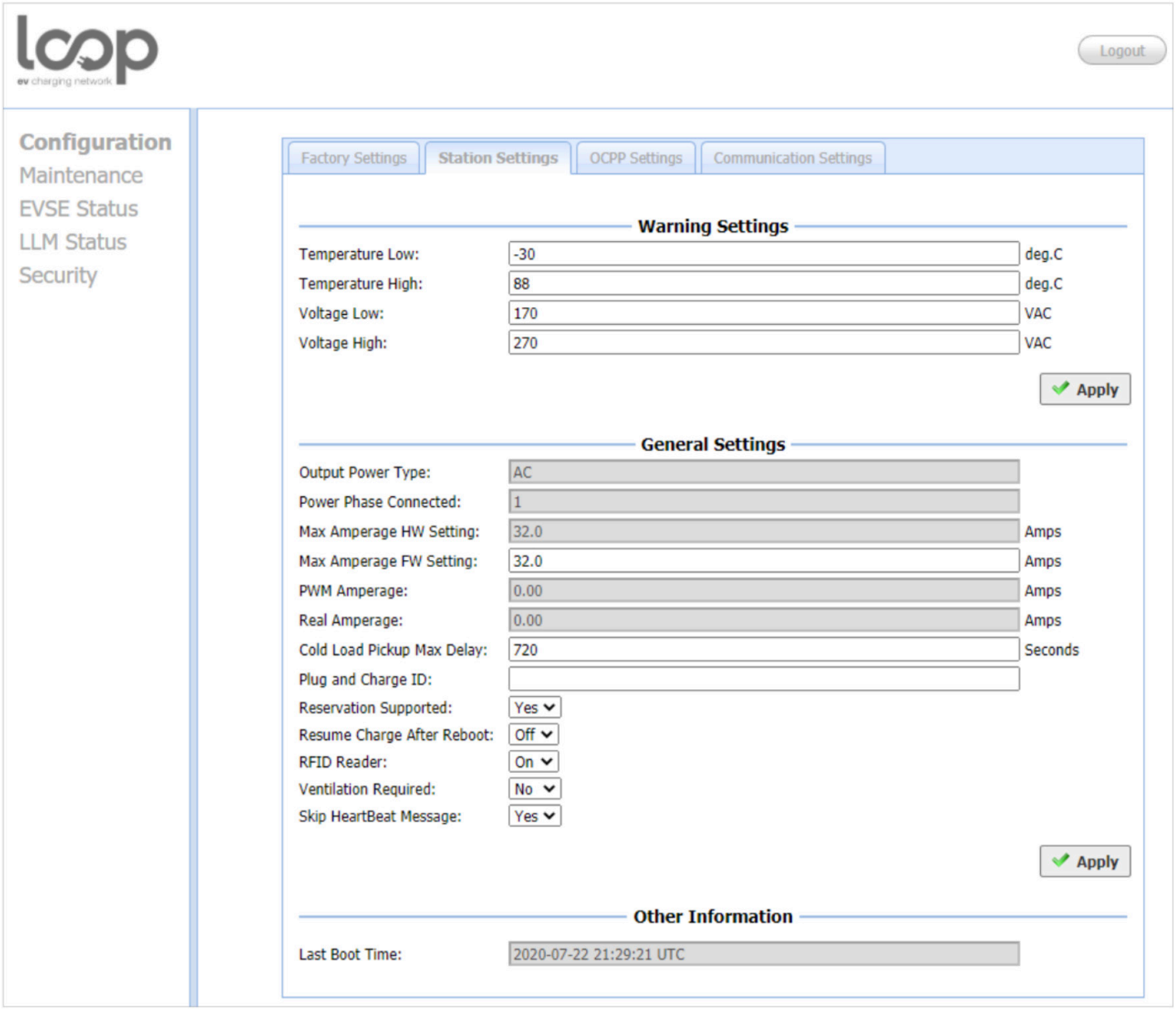
Connector Type*: Indicates connector installed with the Loop EV-Flex EVSE.

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

3.8.B. Station Settings

Clicking on the "Configuration" and then "Station Settings" link will bring up the following screen.

On this page you can change the properties of the Loop EV-Flex EVSE. Click the "Apply" button at the right side of the property when the value is changed.



Warning Settings

Temperature Low: Value in Celsius at which the Loop EV-Flex EVSE will send a temperature low warning message.

Temperature High: Value in Celsius at which the Loop EV-Flex EVSE will send a temperature high warning message.

Voltage Low: Value at which the Loop EV-Flex EVSE will send an under-voltage warning message.

Voltage High: Value at which the Loop EV-Flex EVSE will send an over voltage warning message.

General Settings

Output Power Type: AC or DC output power.

Power Phase Connected: Input power phase connected to the Loop EV-Flex EVSE to indicate single phase or three phases. 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 Loop EV-Flex EVSE 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 Loop EV-Flex EVSE.

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 Loop EV-Flex EVSE 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 Loop EV-Flex EVSE will support reservation related messages from Central System.

Resume Charge After Reboot: Indicate if the Loop EV-Flex EVSE resumes charging after power recycle. If true, the Loop EV-Flex EVSE will resume charging according to UL regulations. If false, the Loop EV-Flex EVSE will not resume charging.

RFID Reader: Indicate if RFID reader is available.

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

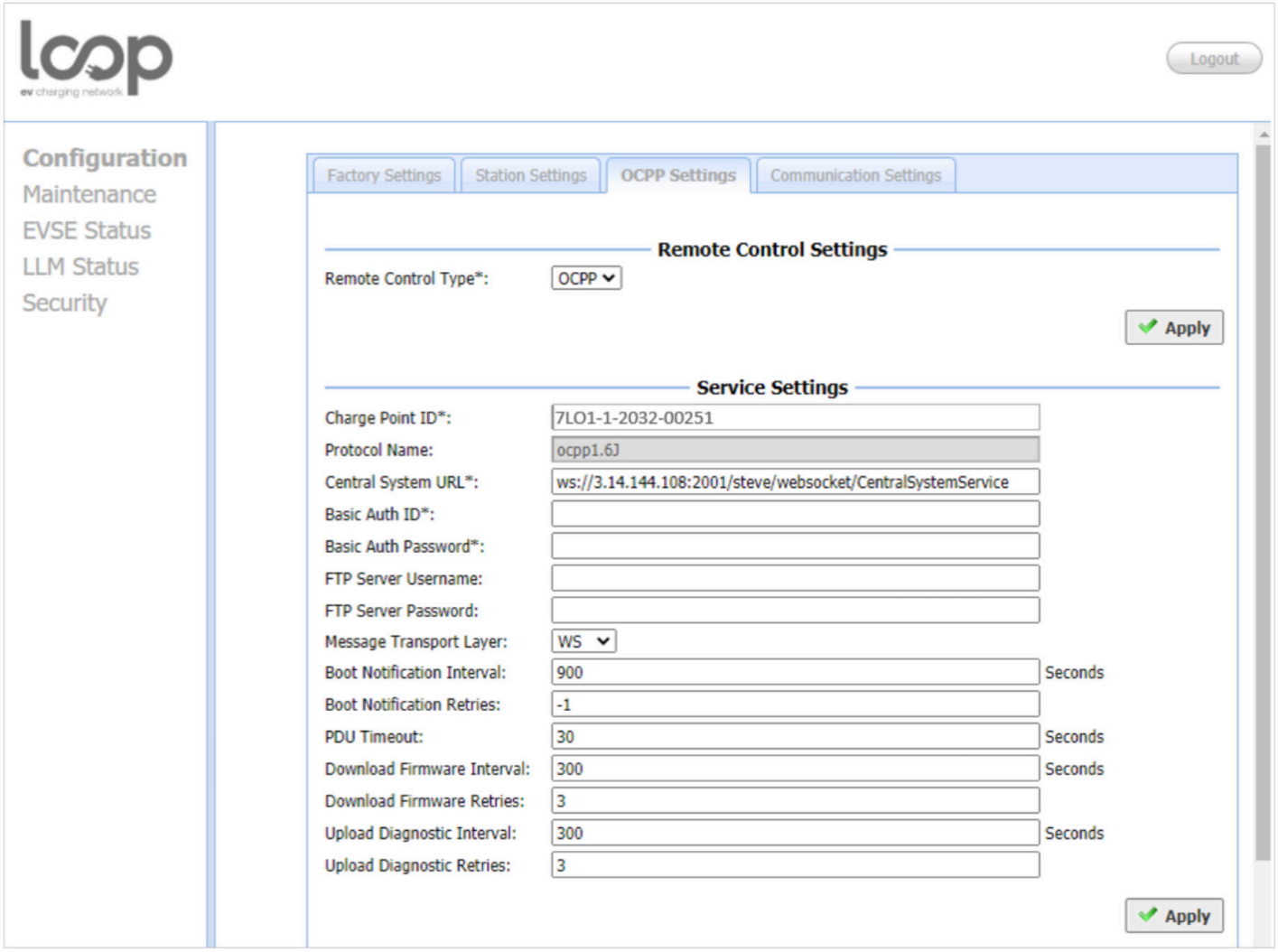
Skip HeartBeat Message: Indicate if HeartBeat message is skipped if any other message is sent successfully during a heartbeat interval.

Other Information

Last Boot Time: Show last boot time.

3.8.C. 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 use the scrollbar to view the entire page.



On this page you can change the properties just for the Loop EV-Flex EVSE. 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 accept by LOOP EV-Flex EVSE. Options are

APP: Can be remote controlled by mobile APP.
OCPP: Can be remote controlled by OCPP 1.6 protocol.
APP+OCPP: Both APP and OCPP are accepted.

Service Settings

Charge Point ID: The identity of the Loop EV-Flex EVSE as known in the OCPP Central System.

Protocol Name: The name and version of OCPP is running in the Loop EV-Flex EVSE.

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. For Intelligent Charger-32A, the available option is WS and WSS.

WS: Connection from Loop EV-Flex EVSE to OCPP Server uses WebSocket protocol.

WSS: Connection from Loop EV-Flex EVSE 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 Loop EV-Flex EVSE stop waiting for a PDU response.

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

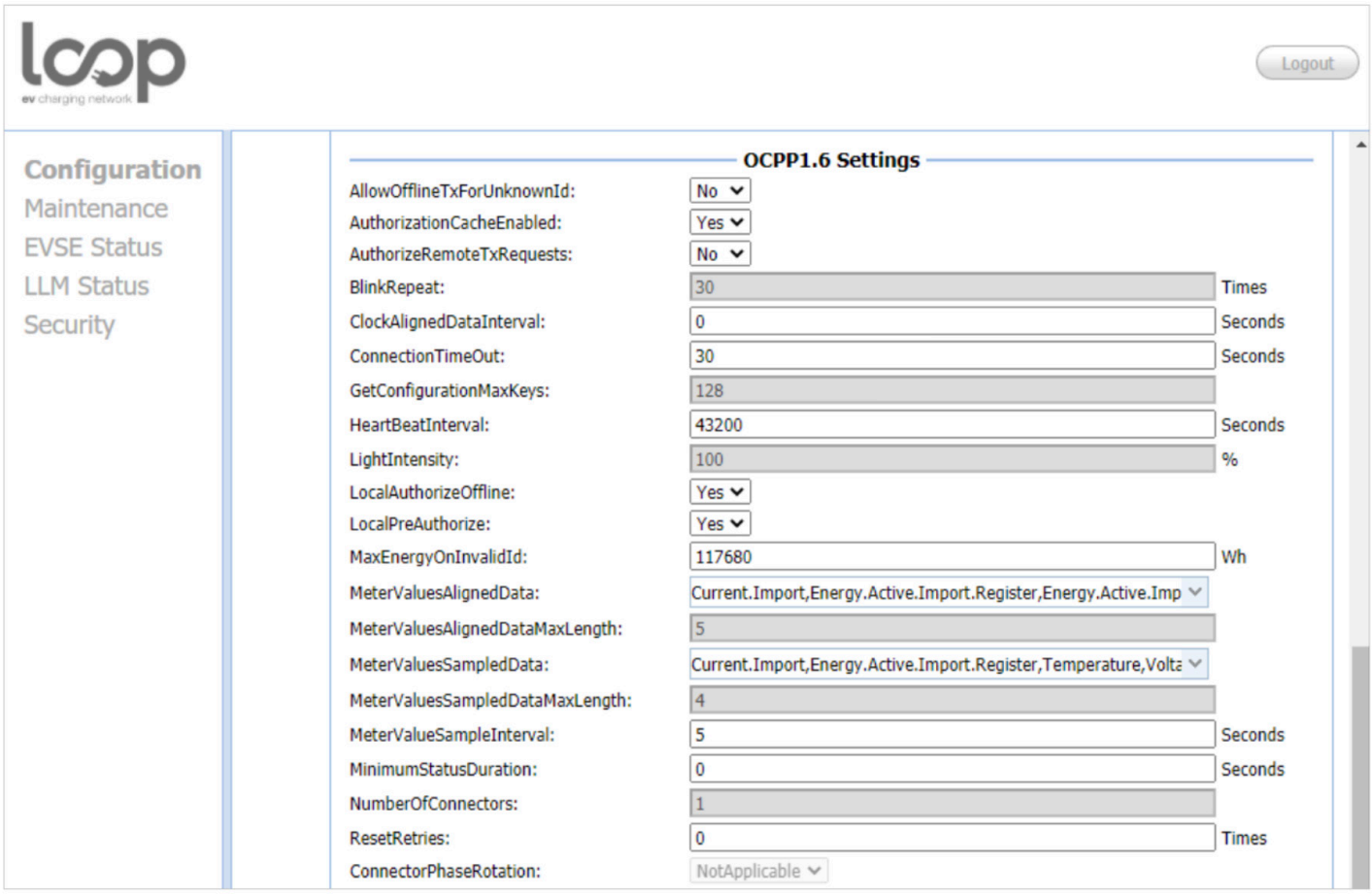
Download Firmware Retries: Number of times to retry downloading firmware.

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 request 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 Loop EV-Flex EVSE is not connected to central system.

AuthorizationCacheEnabled: Loop EV-Flex EVSE supports an Authorization Cache or not.

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 Loop EV-Flex EVSE lighting when signaling. This value is not changeable.

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 until incipient charging session is automatically canceled due to failure of EV user to insert the charging cable connector(s) into the appropriate connector(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 Loop EV-Flex EVSE lighting.

LocalAuthorizeOffline: Whether the Loop EV-Flex EVSE, when offline, will start a transaction for locally-authorizedidentifiers.

LocalPreAuthorize: Whether the Loop EV-Flex EVSE, 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

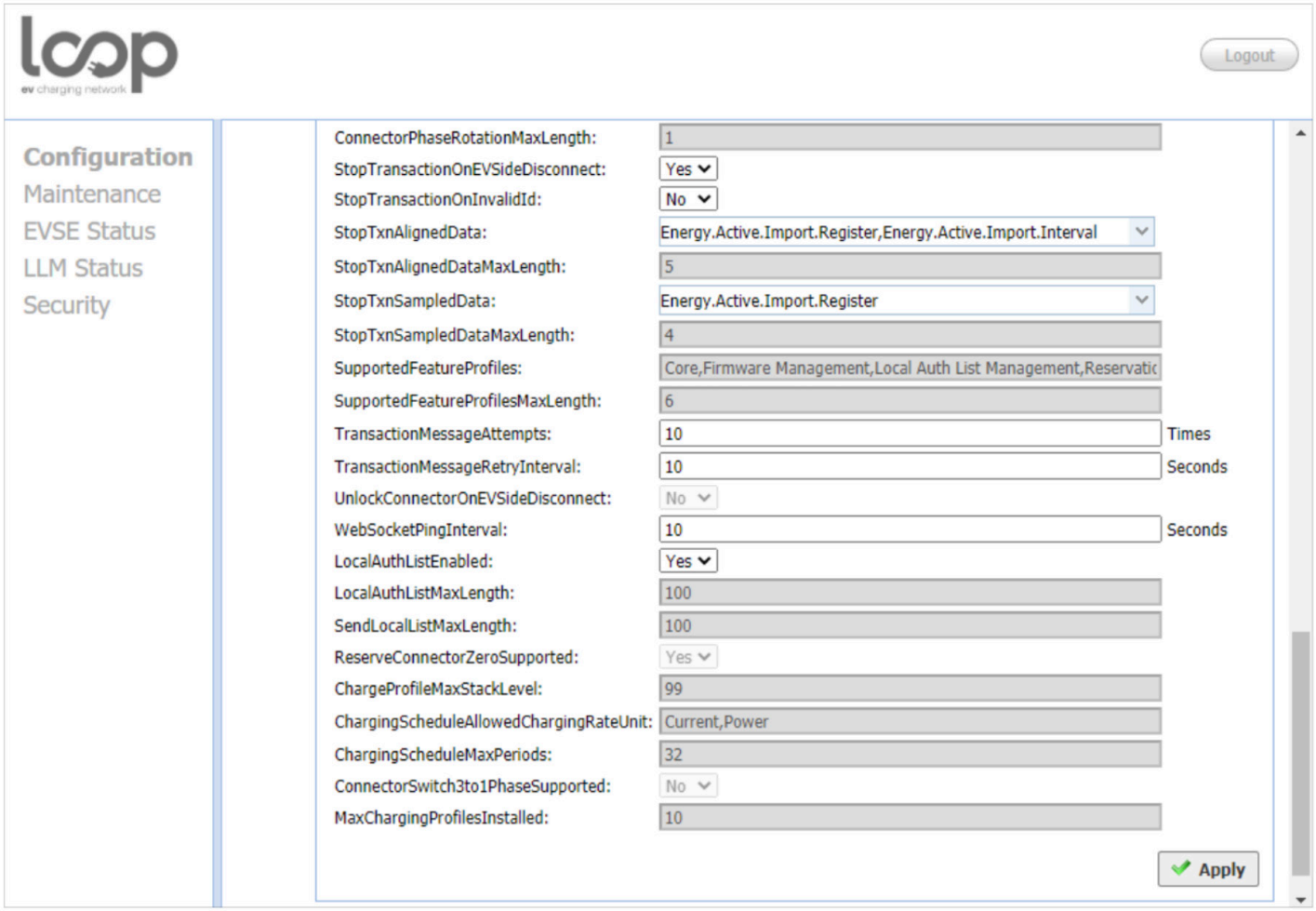
MinimumStatusDuration: The minimum duration that a Loop EV-Flex EVSE or connector status is stable before a StatusNotification.req PDU is sent to Central System.

NumberOfConnectors: The number of physical charging connectors of this Loop EV-Flex EVSE.

ResetRetries: Number of times to retry an unsuccessful reset of the Loop EV-Flex EVSE.

ConnectorPhaseRotation: The value will always be ‘NotApplicable’.

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



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

StopTransactionOnEVSideDisconnect: When set to true, the Loop EV-Flex EVSE SHALL administratively stop the transaction when the cable is unplugged from the EV.

StopTransactionOnInvalidId: Whether the Loop EV-Flex EVSE will stop an ongoing transaction whe 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 Loop EV-Flex EVSE should try to submit a transaction-related message when Central System fails to process it.

TransactionMessageRetryInterval: How long the Loop EV-Flex EVSE should wait before resubmitting a transaction-related message that Central System failed to process.

UnlockConnectorOnEVSideDisconnect: When set to true, the Loop EV-Flex EVSE SHALL unlock the cable on the EVSE side when the cable is unplugged at the EV. Fixed value.

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 Loop EV-Flex EVSE 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'.

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

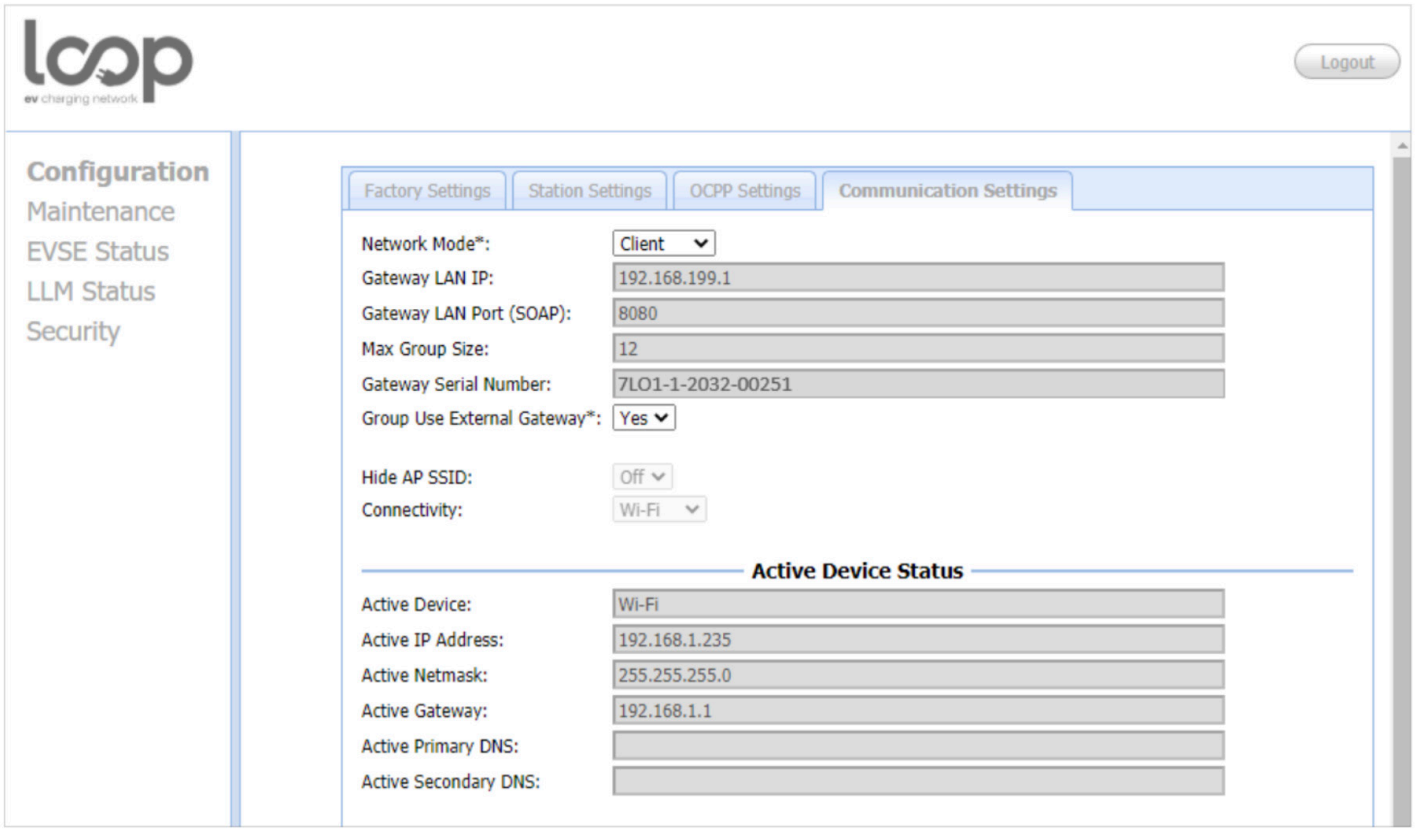
ConnectorSwitch3to1PhaseSupported: If defined and true, this Loop EV-Flex EVSE supports switching from 3 to 1 phase during a charging session. This is currently not supported by the Loop EV-Flex EVSE.

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

3.8.D. 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, please use the scrollbar to view the entire page.

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.

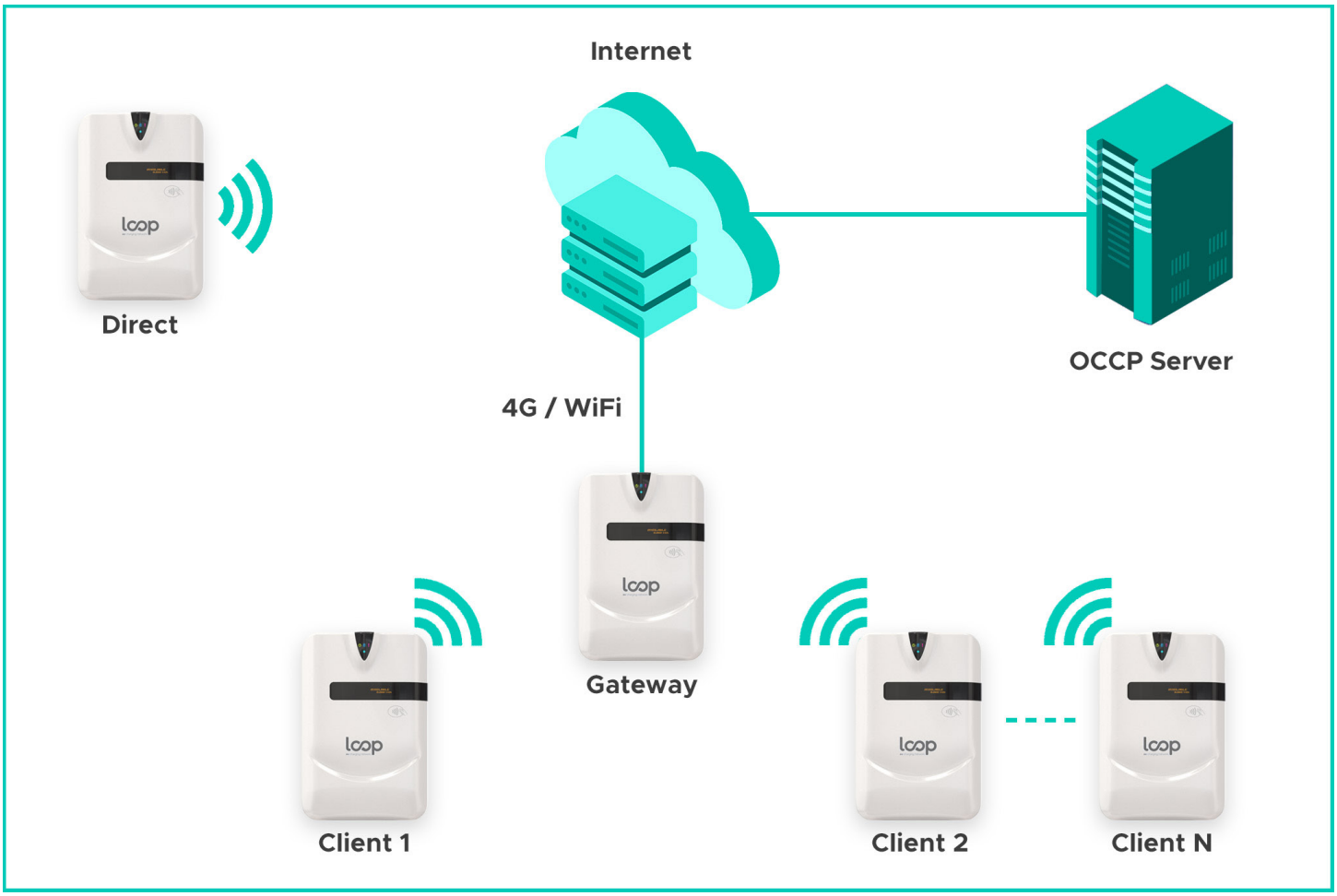
+ Direct: Use Loop EV-Flex EVSE as a single device.

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

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

Note:

Network mode are used to change how a group EVSE connecting to the internet. If a charge point's network mode is Client, then there must be a Gateway in this group and all client charge points are connected to the internet via Gateway. These chargers form a Gateway/Client group. In this group there is exact one Gateway and all other charge points are Client.



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 Loop EV-Flex EVSEs allowed in a group/LAN. This value cannot be modified by users.

Gateway Serial Number: The serial number of the Loop EV-Flex EVSE which acts as a Gateway.

Group Use External Gateway: Gateway/Client mode use external gateway as a local network group or not (use Gateway LOOP EV-Flex EVSE).

Hide AP SSID: Options for hiding SSID of the Loop EV-Flex EVSE or not. This option is always off.

Connectivity: Specifies whether the Loop EV-Flex EVSE should always be connected to Internet using None, Auto, Wi-Fi, or Cellular. Default value is Auto. When Network Mode is Direct, all option are available. If it is not, then Connectivity will be set with the following rule:

Network Mode	Group Use External Gateway = Yes	Group Use External Gateway = No
Gateway	WiFi	Cellular
Client	WiFi WiFi setting will be disabled and Client will setup WiFi to connect to Gateway indicated by "Gateway Serial Number"	WiFi

Active Device Status

Active Device: Current active network device. Possible value are None, 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.

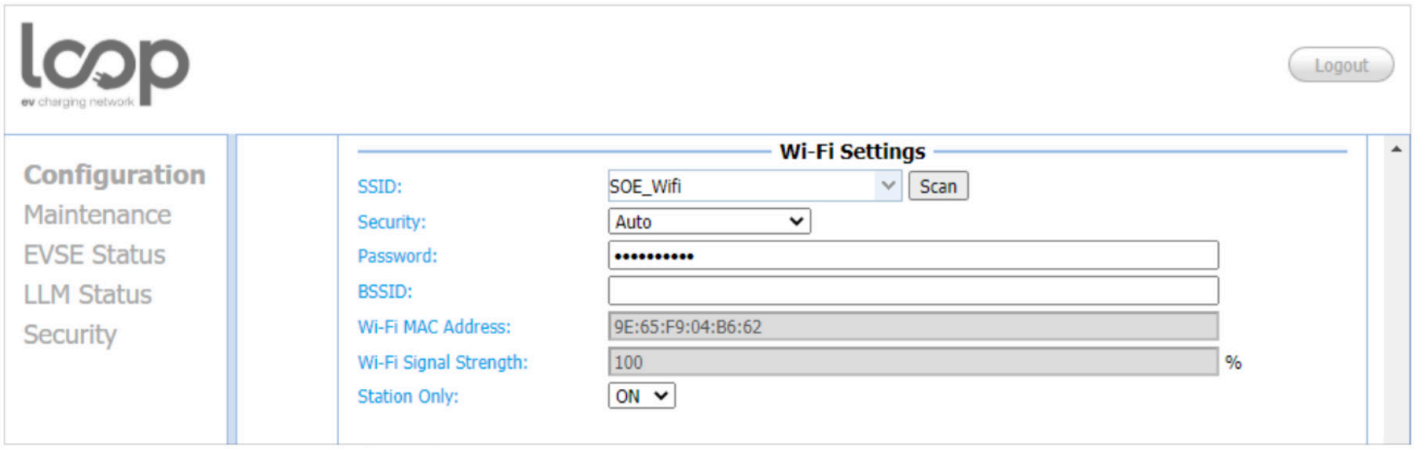
Active Primary DNS: Current active primary DNS IP address. There will be value here only if connected to a network and network provide this data.

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.

Note:

A Gateway charge point can choose using Wi-Fi or Cellular to connect to the internet by change "Group Use External Gateway" setting. If set to Yes, a Gateway will use Cellular, or it will use Wi-Fi. 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.

WiFi 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.

BSSID: The MAC Address of Wi-Fi Access Point. If your Access Point is hidden SSID, please enter this address.

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

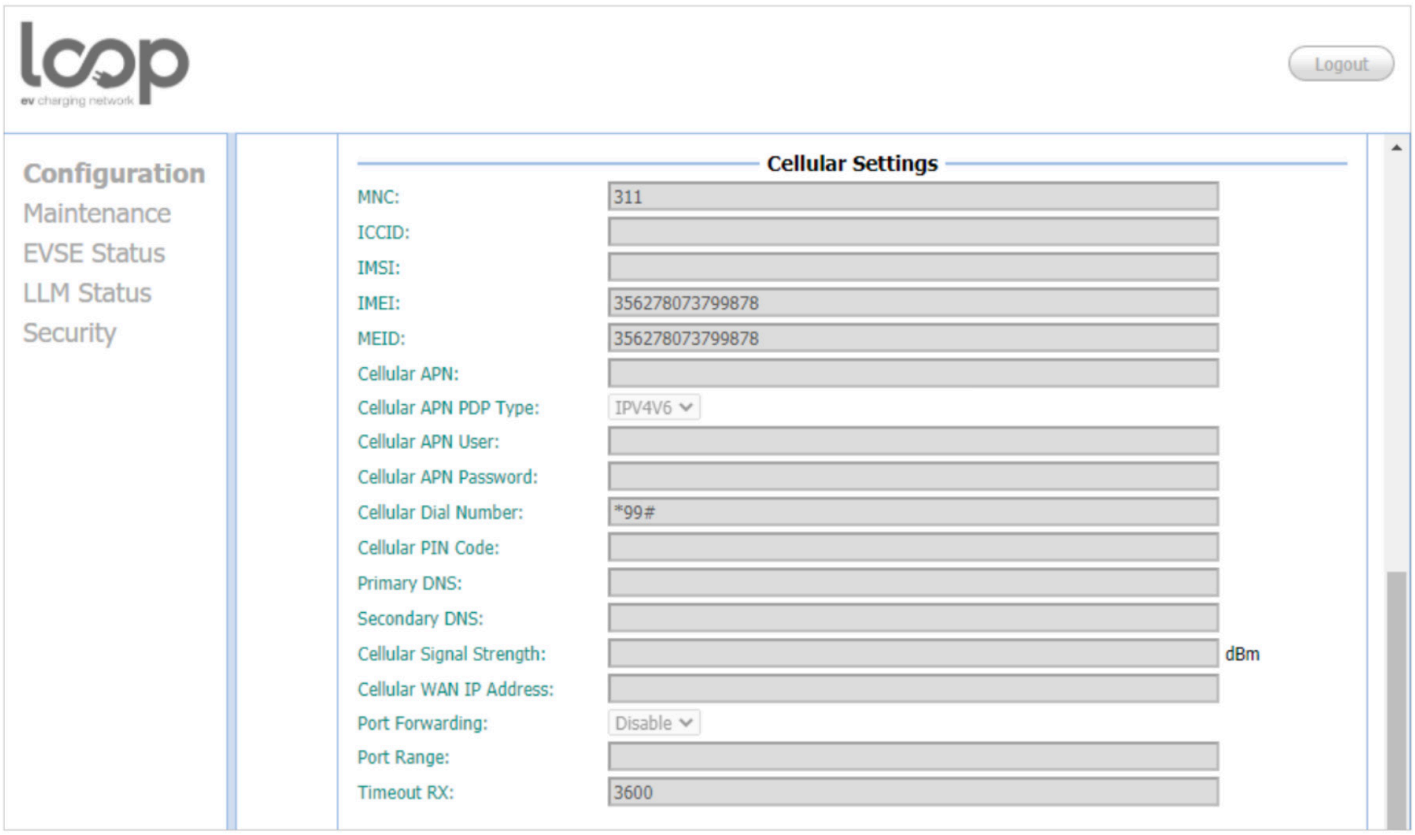
Wi-Fi Signal Strength: Display the wireless signal strength of Wi-Fi in percentage (%).

Station Only: If "Station Only" is ON, the charger will stay in station mode always. If "Station Only" is OFF, it will go into AP mode after 5 times retrying to connect the external Wi-Fi AP.

Note:

The Station Only option only work if remote control type is OCPP. If the remote control type is APP > it keeps original behavior (retry 5 times and go to AP mode) no matter what Station Only option selected.

Cellular Settings



Cellular Settings

MNC: The Mobile Network Code of cellular service provider. There will be no data here if no 3G/LTE 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.

Cellular APN PDP Type: An option to select the PDP type for APN configuration. The default of Cellular APN PDP Type is IPV4V6.

Cellular APN User: This is the username your ISP has assigned to you (optional).

Cellular APN Password: Password to log into the ISP network (optional).

Cellular Dial Number: Phone number to dial for cellular network.

Cellular 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.

Cellular WAN IP Address: IP address of Cellular network.

Port Forwarding: To redirect a communication request from one address and port number combination to another while the packets are traversing a network gateway.

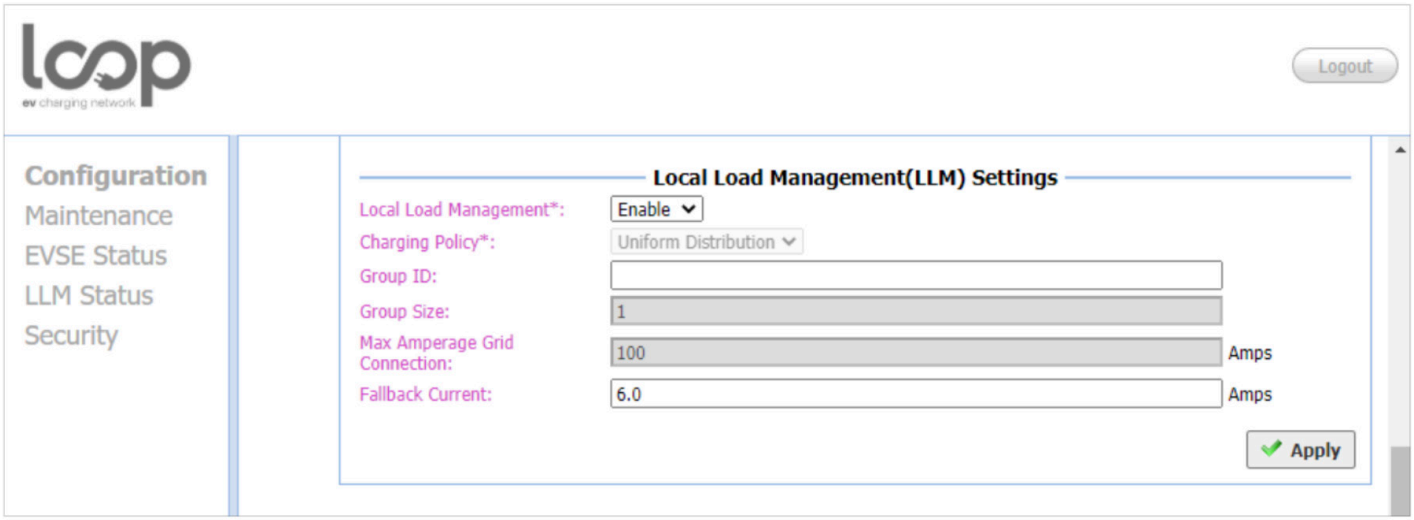
Port Range: A port number is a 16-bit unsigned integer ranging from 0 to 65535. Port range defines a range which can be used. The format for numeric port range is minimum-value:maximum-value.

Timeout RX: Timeout limitation of signal received by modem.

Local Load Management (LLM) Settings

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 Loop EV-Flex EVSE in a local group which is based on Gateway/Client architecture. The Gateway LOOP EV-Flex EVSE must be manually set to the maximum current limitations so that it will dynamically adjust output current in each Client LOOP EV-Flex EVSE by charging policy.

When LLM function is on, all Loop EV-Flex EVSEs will request for charging to Gateway, and Gateway will calculate the proper current limit and reply to each Client. Each Loop EV-Flex EVSE 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 Loop EV-Flex EVSE.

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	WiFi or Cellular	WiFi, 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 Loop EV-Flex EVSE.

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.

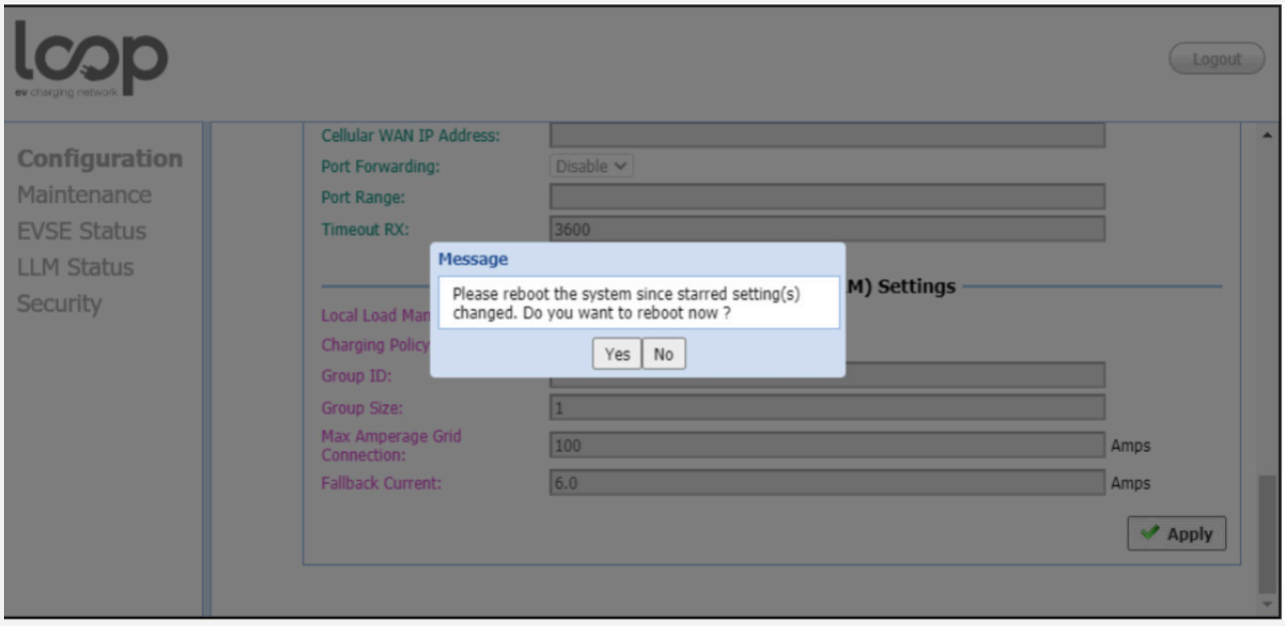
Group Size: The total number of Loop EV-Flex EVSEs in the LLM group. This value is only used in Gateway.

Max Amperage Grid Connection: Total ampere of each phase allowed loading for the group of Loop EV-Flex EVSEs 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.

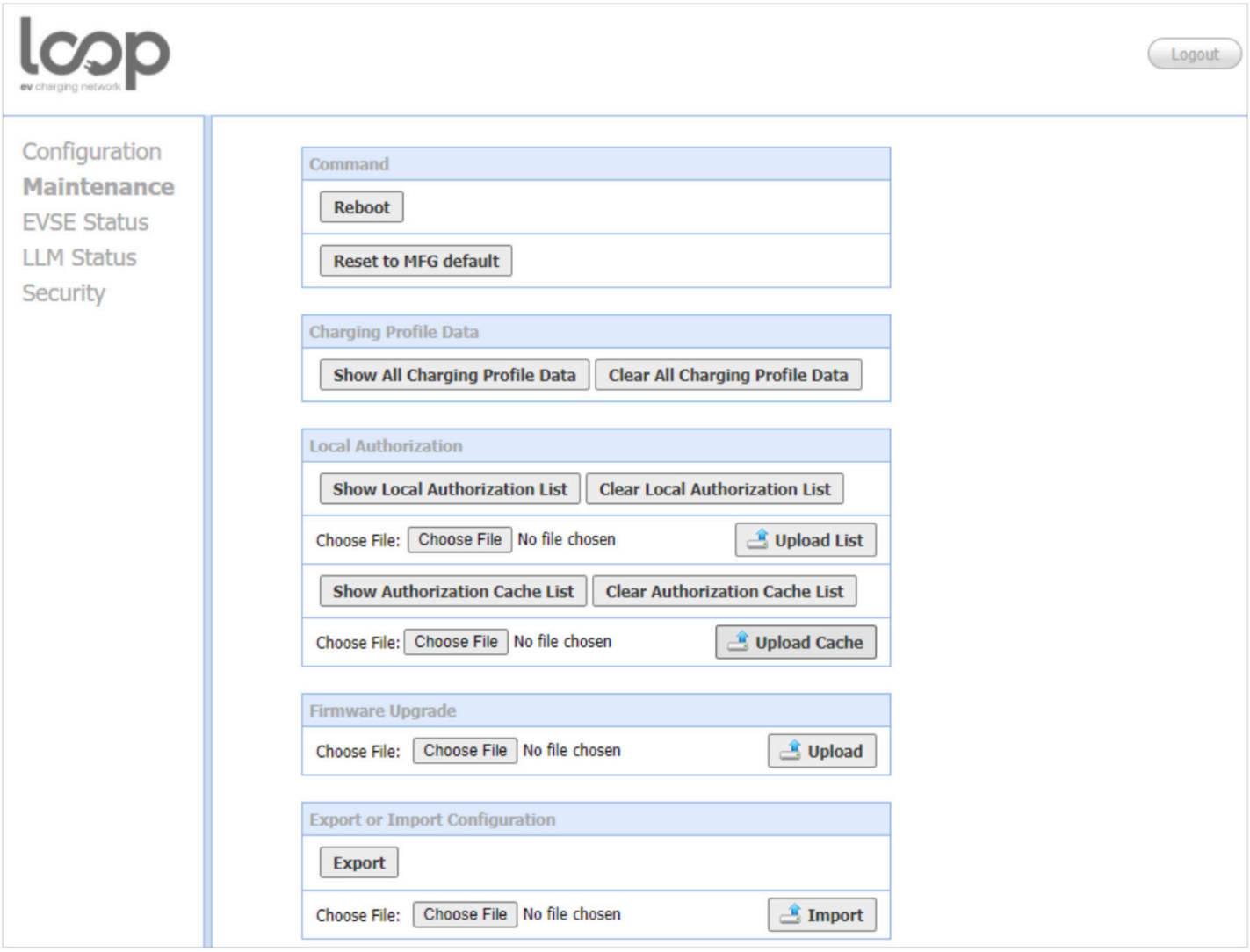
Note:

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.



3.9. Maintenance

This page includes some maintenance functions.



3.9.A. Reboot

Command

Reboot: To restart the Loop EV-Flex EVSE.

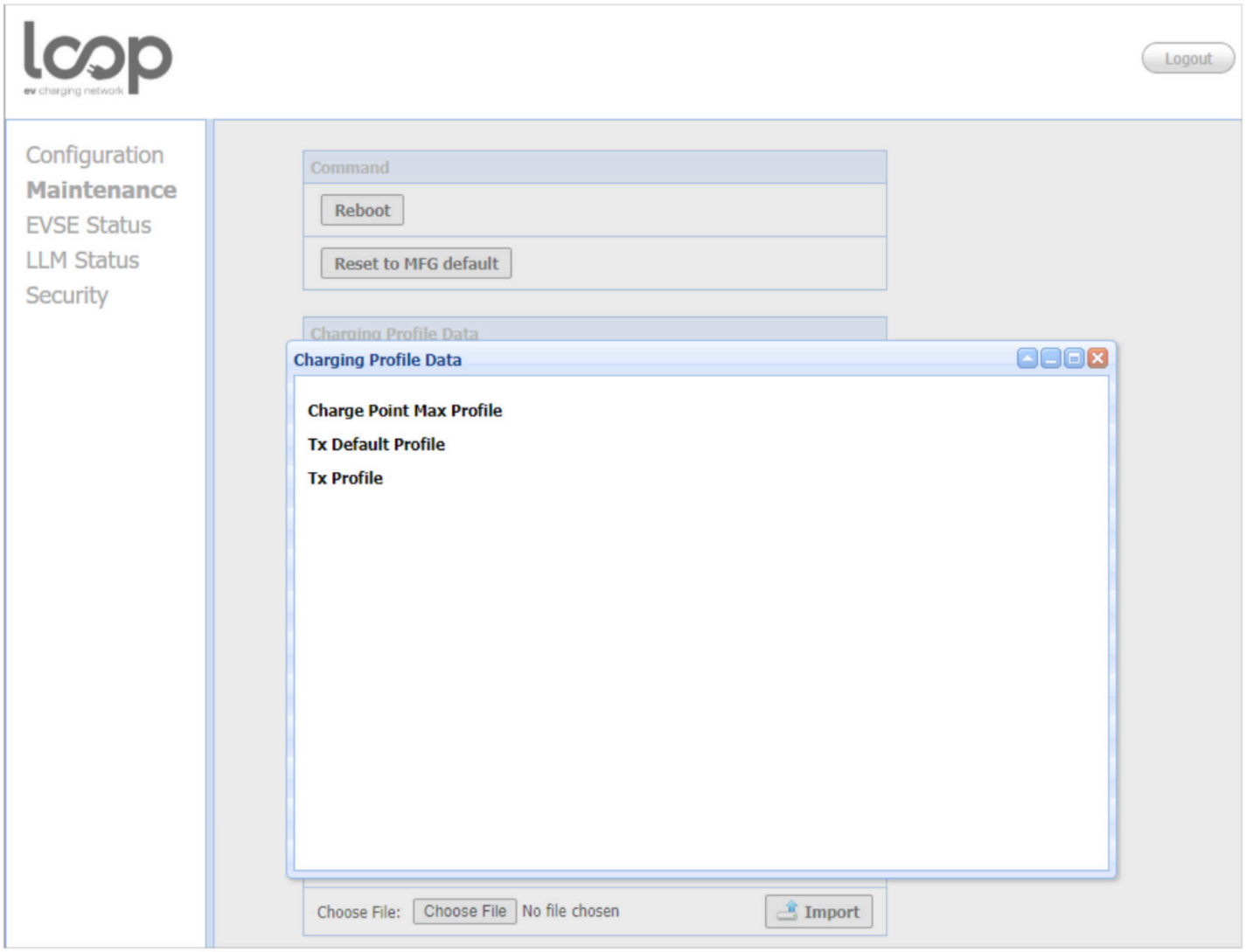
Reset to MFG default: To reset to the factory default settings.

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.

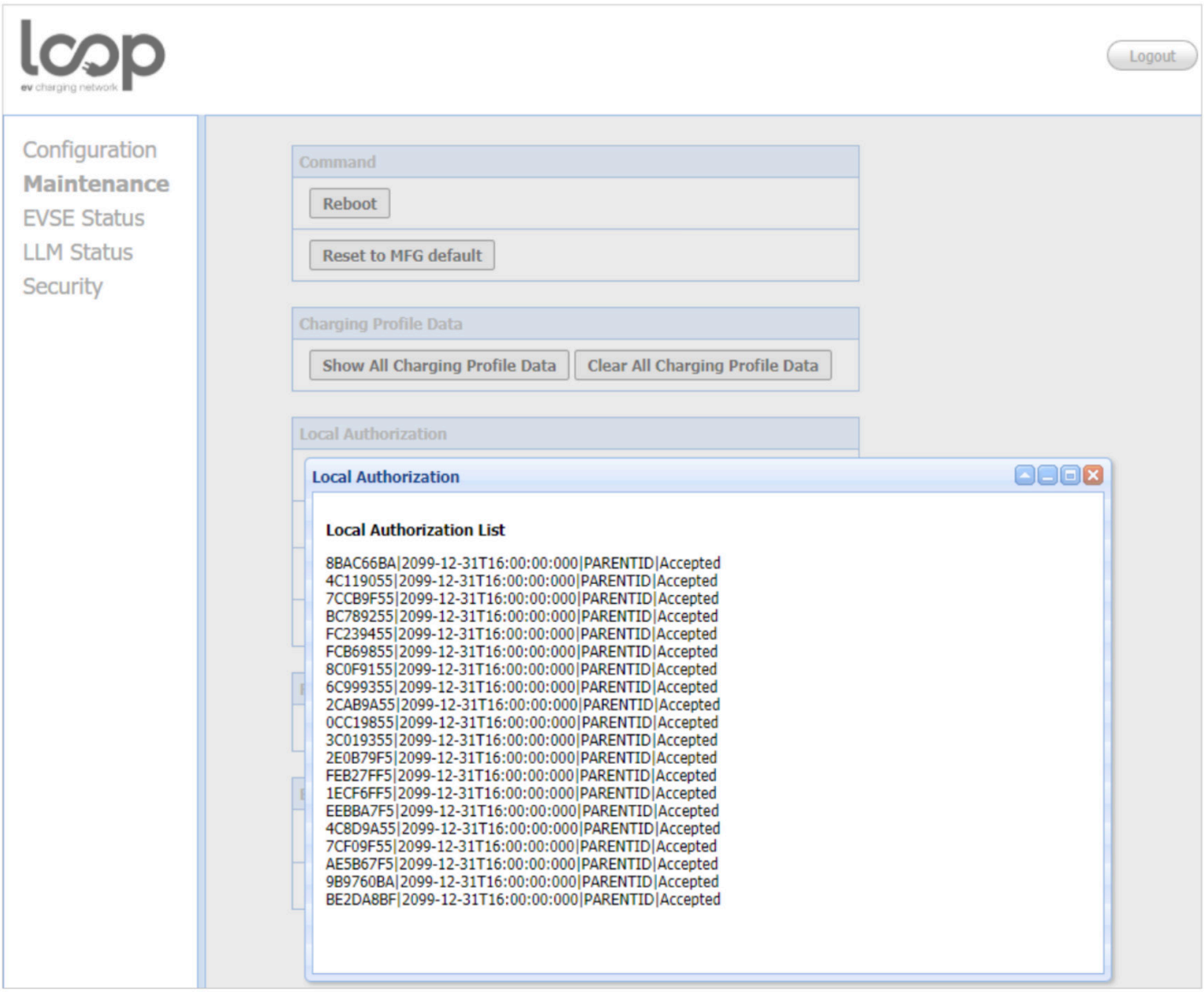
Clear All Charging Profile Data: To clear all Charging Profile data.



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

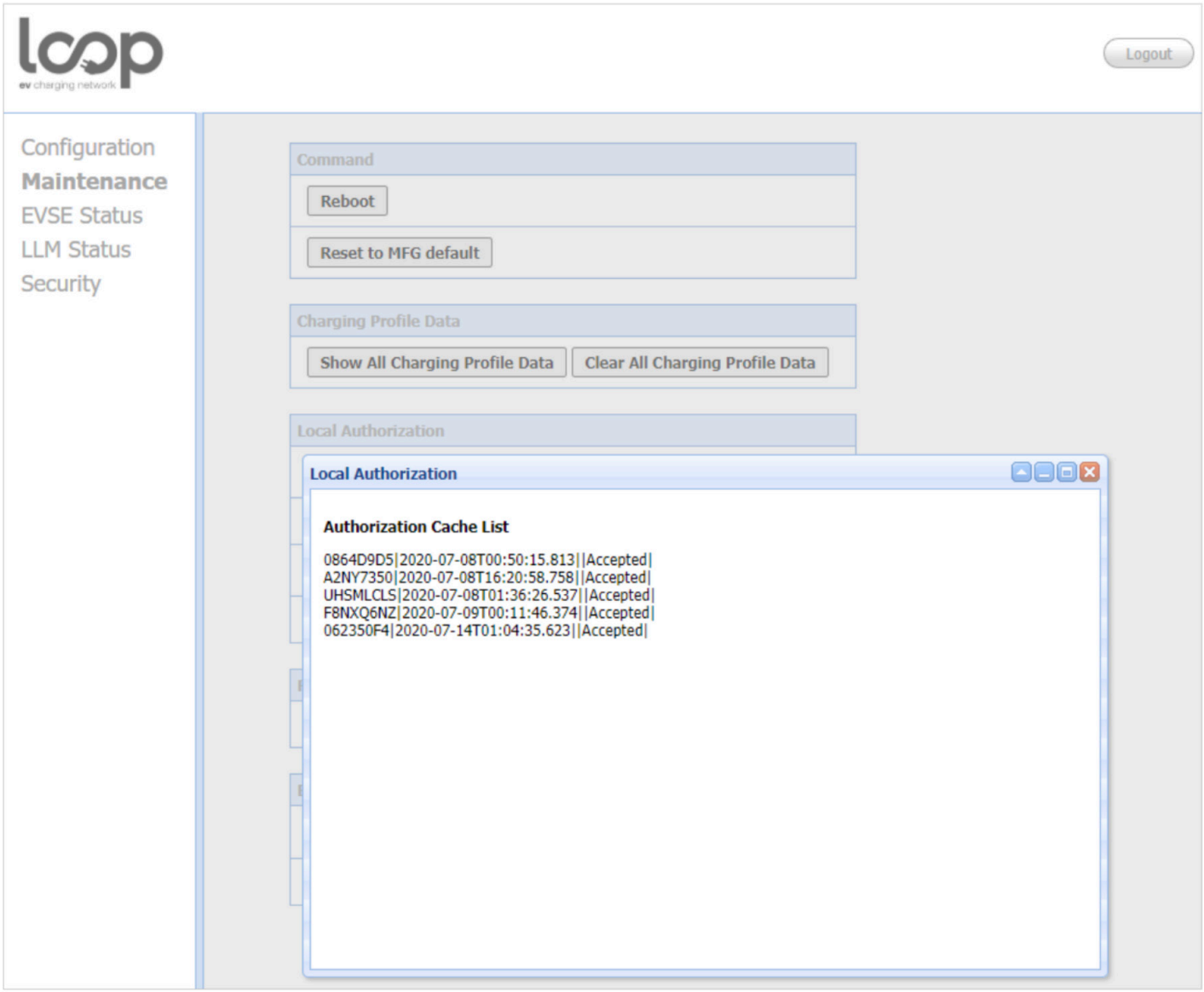
PARENT_CARD_IDTAG: the parent-identifier of the card. The format is same as CARD_IDTAG.
CARD_STATUS: This contains whether the idTag has been accepted or not by the Central System. Valid options are

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

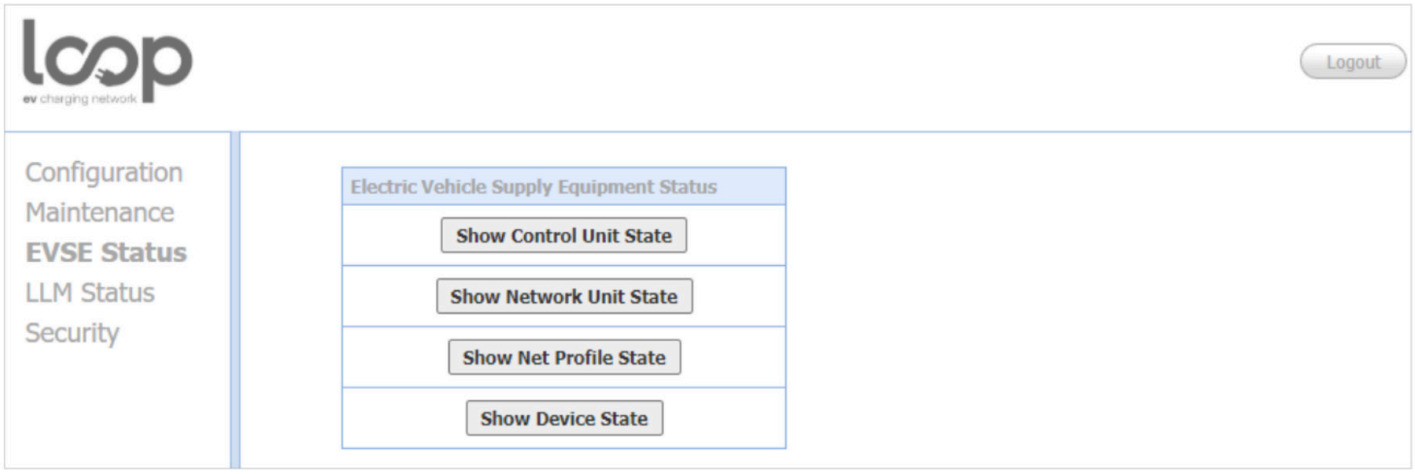
3.9.B. Firmware Upgrade

To upgrade the firmware of the Loop EV-Flex EVSE, 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 Loop EV-Flex EVSE 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.

3.10. 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 Loop EV-Flex EVSE. Mostly the function regarding to charging and safety.

Show Network Unit State: To display the information of the network board of Loop EV-Flex EVSE. 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 Loop EV-Flex EVSE.

Show Device State: To display the information of the device service/connection between Loop EV-Flex EVSE and OCPP server/network connectivity.

3.11. LLM Status

3.11.A. LLM Information

This page shows the Local Load Management information of the Loop EV-Flex EVSE. For more LLM description, please refer to section 3.9.D.

Network Operation Mode: Indicates the Loop EV-Flex EVSE is in Direct mode, a Gateway or a Client.

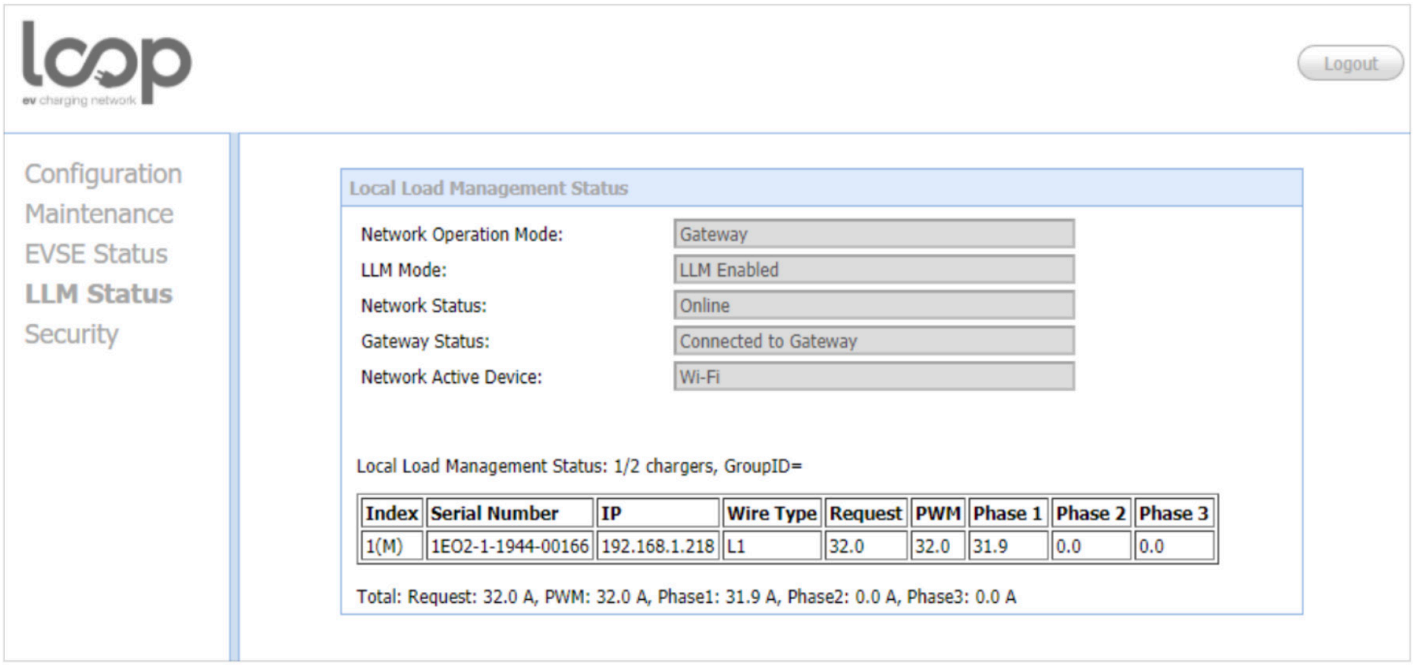
LLM Mode: Indicates Local Load Management function is enabled or disabled.

Network Status: Indicates if the Loop EV-Flex EVSE is online or not.

Gateway Status: Indicates if the Loop EV-Flex EVSE 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 Loop EV-Flex EVSEs, total Loop EV-Flex EVSEs, Group ID of the LLM group as well as a full table of detail information each Loop EV-Flex EVSE if this charge point is a Gateway.



3.11.B. Gateway/Client Group Table

If the Loop EV-Flex EVSE is Gateway, the following LLM Group Table is present.

Index: The order of the Loop EV-Flex EVSE. The index is first connected to Gateway first showed.

Serial Number: The serial number (Loop EV-Flex EVSE Identity) of each Loop EV-Flex EVSE.

IP: The private local IP address in LLM group of each Loop EV-Flex EVSE.

Wire Type: The power source wire type of each Loop EV-Flex EVSE.

Request: The requested current of each Loop EV-Flex EVSE

PWM: The PWM (charger allowed) current of each Loop EV-Flex EVSE

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

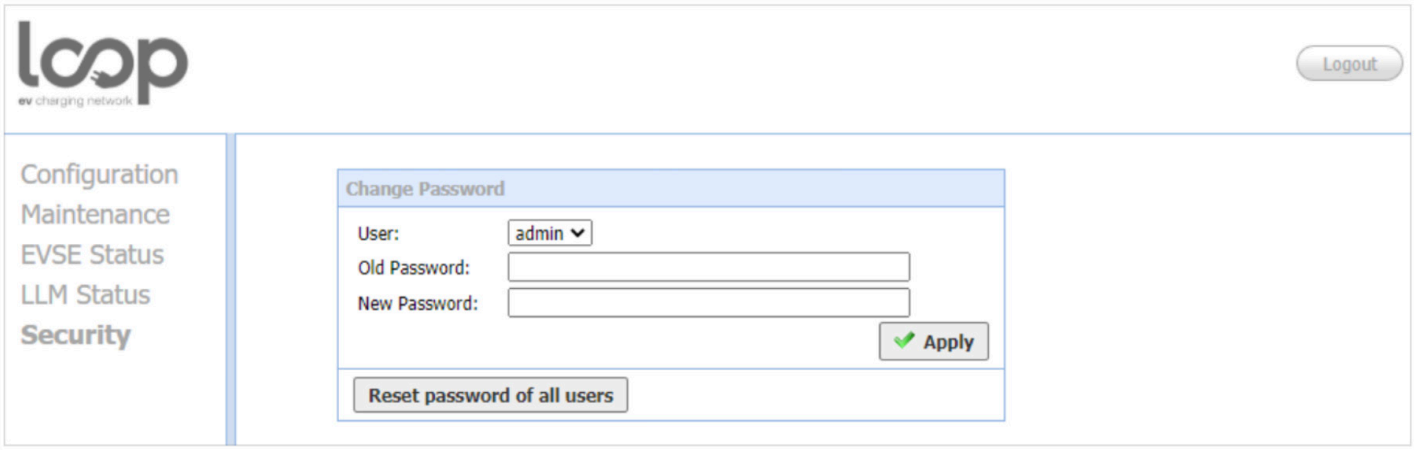
3.12. Security

3.12.A. 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.



4. Operations

4.1. 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 Steady	Out of Service
	Yellow Flashing	Booting / Firmware Upgrading

Table 21: Charging status indicators

4.2. Authorization

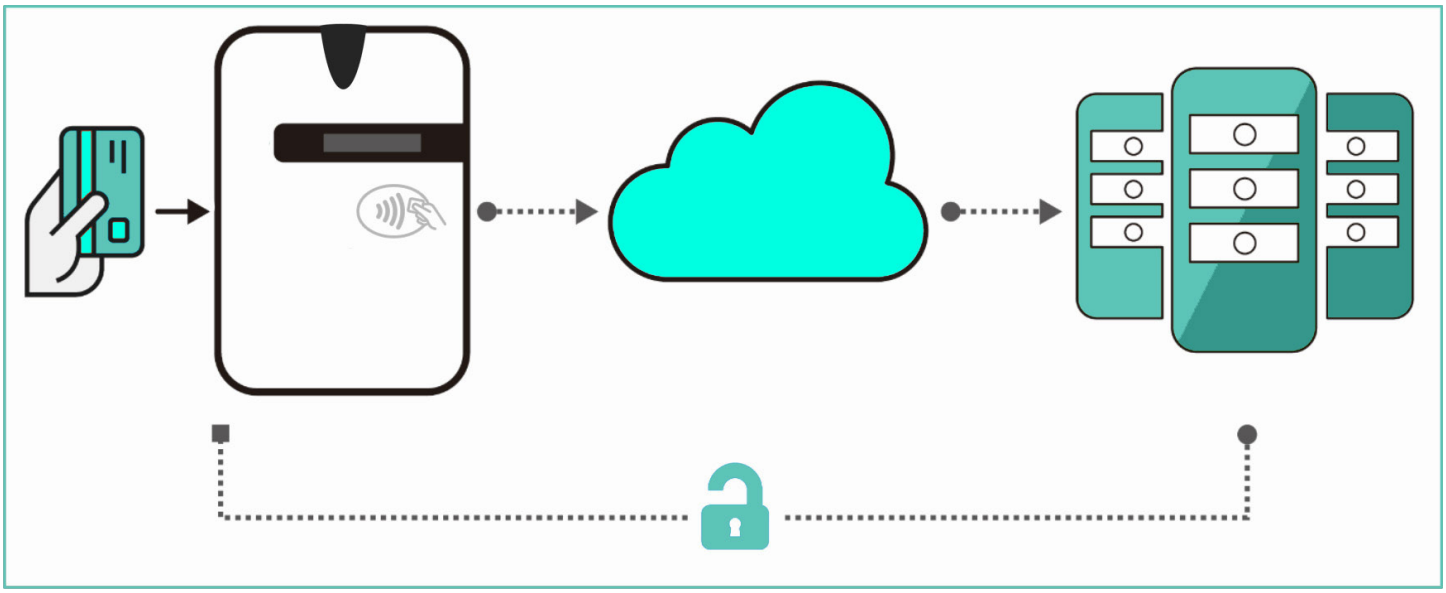
Before the owner of an electric vehicle can start or stop charging, the Loop EV-Flex EVSE has to authorize the operation.

4.2.A. 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.

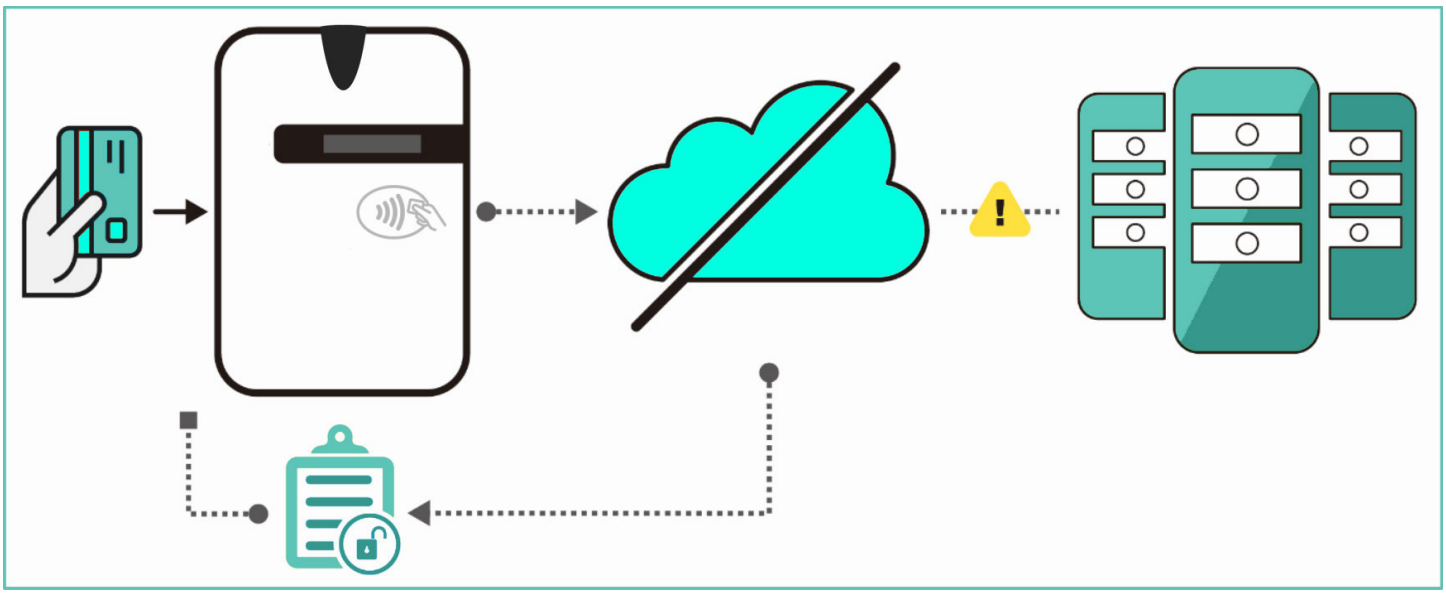


4.2.B. Local Authorization

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 Loop EV-Flex EVSE and Central System is slow.



4.3. Charging an Electric Vehicle (EV)

Choices of start charging are as below:

4.3.A. Plug and Charge

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

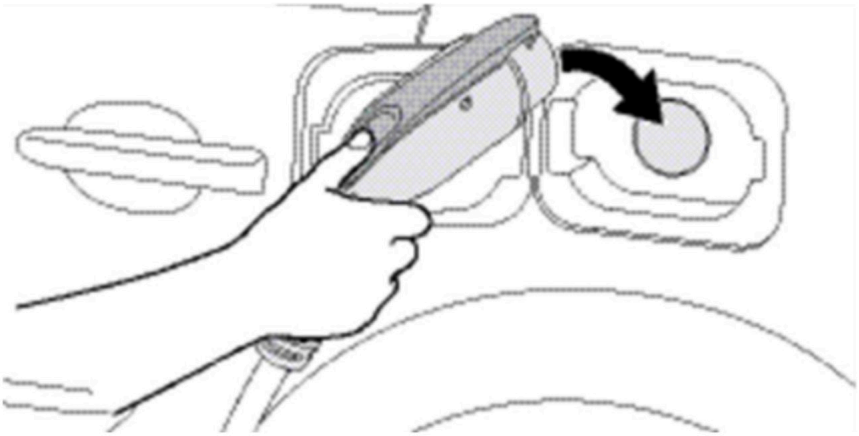


Figure 21 Connect the charging plug to the EV

4.3.B. RFID Card

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

4.4 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)

4.4.A. Interrupt Charging

Please refer to STOP CHARGING section for more information.

4.4.B. Auto Restart

When a charging session is interrupted due to a temporary error condition, the Loop EV-Flex EVSE 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 Loop EV-Flex EVSE will automatically restart charging for three times.

+ When charging session stopped due to CCID trip, the Loop EV-Flex EVSE will try to restart after 15 minutes for 3 times.

4.4.C. Power Outage Recovery

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

4.5. General Care

The exterior of the Loop EV-Flex EVSE is designed to be waterproof and dust proof. To ensure proper maintenance of the Loop EV-Flex EVSE, 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 Loop EV-Flex EVSE after use to avoid damage.

+ If the power cable or the charging plug is damaged, please contact Customer Support.

4.6. Customer Support

Please contact

+ support@evloop.io

+ 888-EVLOOP1 (888-385-6671)

Loop EV-Flex™ EVSE
EVS-32A-L2-001 (R-Model)

v.20.9.4
www.evLoop.io

141 Nevada St. El Segundo, CA
90245