VESTEL
MOBILITY

ELECTRIC VEHICLE CHARGER

EVC10 Series

Installation Guideline

CONTENTS

1 - SAFETY INFORMATION

CAUTION: ELECTRIC VEHICLE CHARGER DEVICE SHALL BE MOUNTED BY A LICENSED OR AN EXPERIENCED ELECTRICIAN AS PER ANY REGIONAL OR NATIONAL ELECTRIC REGULATIONS AND STANDARDS IN EFFECT.

IMPORTANT - Please read these instructions fully before installing or operating

1.1- SAFETY WARNINGS

- Keep this manual in a safe place. These safety and operating instructions must be kept in a safe place for future reference.
- Check that the voltage marked on the rating label and do not use charging station without appropriate mains voltage.
- Do not continue to operate the unit if you are in any doubt about it working normally, or if it is damaged in any way - switch off the mains supply circuit breakers (MCB and RCCB). Consult your local dealer.
- The ambient temperature range should be between –25 ˚C and +50 ˚C without direct sunlight and at a relative humidity of between 5 % and 95 %. Use the charging station only within these specified operating conditions.
- The device location should be selected to avoid excessive heating of the charging station. High operating temperature caused by direct sunlight or heating sources, may cause reduction of charging current or temporary interruption of charging process.
- The charging station is intended for outdoor and indoor use. It can also be used in public places.
- To reduce the risk of fire, electric shock or product damage, do not expose this unit to severe rain, snow, electrical storm or other severe weathers. Moreover, the charging station shall not be exposed to spilled or splashed liquids.
- Do not touch end terminals, electric vehicle connector and other hazardous live parts of the charging station with sharp metallic objects.
- Avoid exposure to heat sources and place the unit away from flammable, explosive, harsh, or combustible materials, chemicals, or vapors.
- Risk of Explosion. This equipment has internal arcing or sparking parts which should not be exposed to flammable vapors. It should not be located in a recessed area or below floor level.
- This device is intended only for charging vehicles not requiring ventilation during charging. This device is not support ventilation.
- To prevent risk of explosion and electric shock, ensure that the specified Circuit Breaker and RCD are connected to building grid.
- The lowest part of the socket-outlet shall be located at a height between 0,5 m and 1,5 m above ground level.
- Adaptors or conversion adapters are not allowed to be used. Cable extension sets are not allowed to be used.
- Use this product at an altitude of less than 4000 meters above sea level.
- This charging station is either pole-mounted or wall-mounted.
- Do not place items filled with liquid, such as cups, bottles, etc., on the product.
- Keep the plastic packing materials out of the reach of babies, small children, and pets to avoid the danger of suffocation.
- Do not wash the device with water.
- Do not use abrasive clothes, wet clothes, alcohol, or detergents. A microfiber cloth is recommended.
- It should be kept in its original box in order not to damage the components of the device during transportation.

- Defects and damage that occur during transportation after the delivery of the product to the customer are not covered by the warranty.
- The product should be used under the porch.

"MANUFACTURER DOES NOT WARRANT THAT THE OPERATION OF THE PRODUCT WILL BE UNINTERRUPTED OR ERROR-FREE."

WARNING: Never let people (including children) with reduced physical, sensory or mental capabilities or lack of experience and or knowledge use electrical devices unsupervised.

CAUTION: This vehicle charger unit is intended only for charging electric vehicles not requiring ventilation during charging.

1.2- GROUND CONNECTION WARNINGS

- This product must be connected to a grounded, metal, permanent wiring system. or an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment grounding terminal or lead on the product.
- Charging station must be connected to a centrally grounded system. The ground conductor entering the charging station must be connected to the equipment grounding lug inside the charger. This should be run with circuit conductors and connected to the equipment grounding bar or lead on the charging station. Connections to the charging station are the responsibility of the installer and purchaser.
- To reduce the risk of electrical shock, connect only to properly grounded outlets.
- **WARNING :** Make sure that during installing and using, the charging station is constantly and properly grounded.

1.3- POWER CABLES, PLUGS and CHARGING CABLE WARNINGS

- Be sure that charging cable is Type 2 socket compatible on charging station side.
- A damaged charging cable can cause fire or give you an electric shock. Do not use this product if the flexible Charging cable or vehicle cable is frayed, has broken insulation, or shows any other signs of damage.
- Ensure that the charging cable is well positioned thus; it will not be stepped on, tripped over, or subjected to damage or stress.
- Do not forcefully pull the charging cable or damage it with sharp objects.
- Never touch the power cable/plug or vehicle cable with wet hands as this could cause a short circuit or electric shock.
- To avoid a risk of fire or electric shock, do not use this device with an extension cable. If the mains cable or vehicle cable is damaged it must be replaced by the manufacturer, its service agent, or similarly qualified persons in order to avoid a hazard.

1.4- WALL MOUNTING WARNINGS

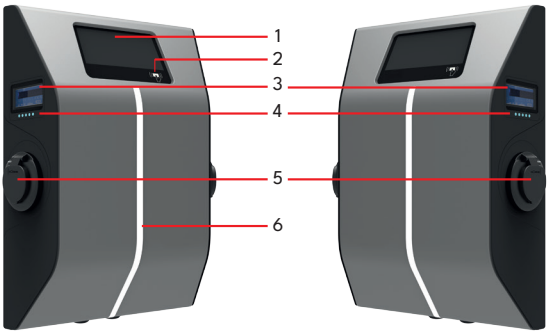
- Read the instructions before mounting your charging station on the wall.
- Do not install the charging station on a ceiling or inclined wall.
- Use the specified wall mounting screws and other accessories.
- This unit is rated for indoor or outdoor installation. If this unit is mounted outdoors, the hardware for connecting the conduits to the unit must be rated for outdoor installation and be installed properly to maintain the proper IP rating on the unit.

2 - DESCRIPTION

Model Name	**MODEL DESCRIPTION: EVC10-AC****-* EVC10 : Electric Vehicle AC Charger (Mechanical Cabinet 10) 1st Asterisk (*) : Rated Power 14 : 2x7.4 kW (1Phase Supply Equipment) 22 : 2x11 kW (3Phase Supply Equipment) 44 : 2x22 kW (3Phase Supply Equipment) 2nd Asterisk (*) can include combinations of the following communication module options. RFID reader is standard equipment for all of the model variants. “S” option must be included for selecting combinations of W,L and P: Blank : No connectivity module except RFID reader S : Smart Board with Ethernet Port W : Wi-Fi module L : LTE / 3G / 2G module P : ISO 15118 PLC module 3rd Asterisk (*) can be one of the following: Blank : No Display D : 7” TFT color display 4th Asterisk (*) can include combinations of the following: Blank : No RCCB or MID meter A : Charging unit with Type-A RCCB MID : Charging unit with MID Meter PEN : Broken PEN Detection Feature -EICH : Charging Unit with Eichrecht Conformity 5th Asterisk (*) can be one of the following: Blank : Case-B Connection with normal socket T2S : Case-B Connection with shuttered socket T2P : Case-C Connection with Type-2 plug T1P : Case-C Connection with Type-1 plug *There will be Load Management in between the outlets which totally have mentioned total output power for 22kW
Cabinet	EVC10

3 - GENERAL INFORMATION

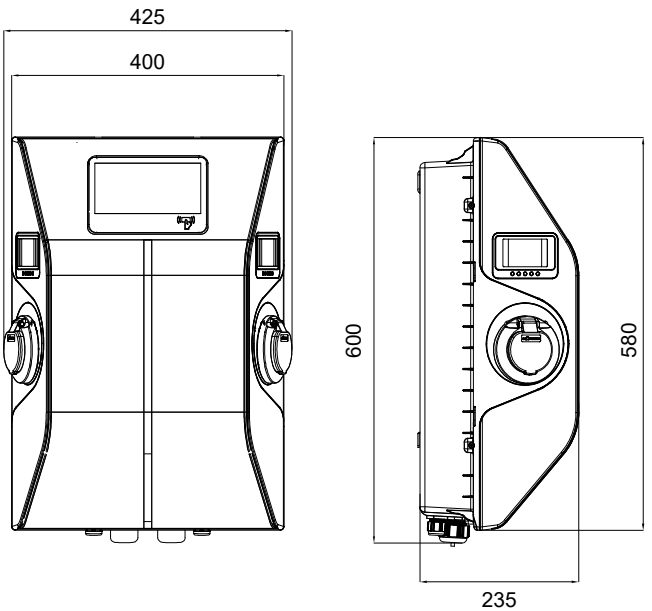
3.1- INTRODUCTION OF THE PRODUCT COMPONENTS



EVC10 Models

1. Information Display
2. RFID Card Reader
3. MID Meter
4. Indicator LED
5. Socket Outlets
6. Illumination LED

3.2- DIMENSIONAL DRAWINGS



4 - TECHNICAL SPECIFICATIONS

This product is compliant to IEC61851-1 (Ed3.0) standard for Mode 3 use.

Model	EVC10-AC22 Series	EVC10-AC14 Series & EVC10-AC14 Pen Series	EVC10-AC44 Series
IEC Protection class	Class - I		
Socket Model	2 x Socket TYPE 2 (IEC/EN 62196-1 - IEC/EN 62196-2) 2 x Shutter Socket IEC/EN 62196-1 - IEC/EN 62196-2 Type-2 (Optional)		
Cable Model	2 x Cable with TYPE 2 (IEC 62196) Female Plug		
Voltage and Current Rated	230/400VAC 50/60Hz- 3-phase 16A for 2 outlets, 32A for single outlet	230 VAC 50/60Hz- 1-phase 32A for 2 outlets	230/400VAC 50/60Hz- 3-phase 32A for 2 outlets
AC Maximum Charge Output	22kW	14.8kW	44kW
Built-in Residual Current Sensing module	6mA DC		
Required Circuit Breaker on AC Mains **(Distribution Box)**	4P-40A MCB Type-C	2P-40A MCB Type-C (EVC has MCB inside)	4P-40A - 30mA RCBO Type- A (EVC has RCBO inside)
RCCB on AC Mains	4P - 40A - 30mA RCCB Type-A (EVC has RCCB inside)	2P - 40A - 30mA RCCB Type-A (EVC has RCCB inside)	4P-40A - 30mA RCBO Type- A (EVC has RCBO inside)
Required AC Mains Cable	Min 5x6 mm^2 (< 50 m)	Min 3x6 mm^2 (< 50 m)	Min 5x16 mm^2 (< 50 m)

CONNECTIVITY

Ethernet	10/100 Mbps Ethernet
Wi-Fi	Wi-Fi 802.11 a/b/g/n/ac
Cellular (Optional)	LTE: B1 (2100 MHz), B3 (1800 MHz), B7 (2600 MHz), B8 (900 MHz), B20 (800 MHz) WCDMA: B1 (2100 MHz), B8 (900 MHz) GSM: B3 (1800 MHz), B8 (900 MHz)
Bluetooth	BT 5.1 ; BT 4.2 low energy (Optional)

WIRELESS LAN TRANSMITTER SPECIFICATIONS

Frequency Ranges	Max Output Power
2412 - 2472 MHz (CH1 - CH13)	< 100 mW
5180 - 5240 MHz (CH36 - CH48)	< 200 mW **(*)**
5260 - 5320 MHz (CH52 - CH64)	< 200 mW **(*)**
5500 - 5700 MHz (CH100 - CH140)	< 200 mW **(*)**

(*) '< 100 mW' for the Ukraine

Country Restrictions

This Wireless LAN equipment is intended for home and office use in all EU countries, the UK and Northern Ireland (and other countries following the relevant EU and/or UK directive). The 5.15 – 5.35 GHz band is restrictions indoor operations only in in all EU countries, the UK and Northern Ireland (and other countries following the relevant EU and/or UK directive). Public use is subject to general authorisation by the respective service provider.

Country	Restriction
Russian Federation	Indoor use only
Israel	5 GHz band only for 5180 MHz-5320 MHz range

The requirements for any country may change at any time. It's recommended that user checks with local authorities for the current status of their national regulations for both 2.4 GHz and 5 GHz wireless LANs.

Hereby, Vestel Mobility SAN. VE TİC. A.Ş., declares that the radio equipment type EVC is in compliance with Directive 2014/53/EU and Radio Equipment Regulations 2017. The full text of the EU declaration of conformity is available at the following address: doc.vosshub.com.

AUTHORIZATION

RFID	ISO-14443A/B and ISO-15693
ISO-15118/2 PLC	Optional

MECHANIC SPECIFICATIONS

Material	PC 5VA f1 Flame Retardant		
Product Dimension	425 mm (Width) x 600 mm (Height) x 235 mm (Depth)		
Product Dimension (Packed)	540 mm (Width) x 640 mm (Height) x 315 mm (Depth)		
	Socket Model	**Cable Model**	
		(5m)	**(7m)**
Product Weight	14 kg	19 kg	20 kg
Weight with package	17 kg	23 kg	24 kg
Cable Inlets	AC Mains / Ethernet / Modbus		

ENVIRONMENTAL TECHNICAL SPECIFICATIONS

Protection Class	Ingress Protection	IP54
	Impact Protection	IK10
Operational Conditions	Temperature	-25 ˚C to +50 ˚C (without direct sunlight)
	Humidity	5% - 95% (relative humidity, without condensation)
	Altitude	0 - 4,000m

OTHER FEATURES

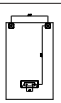
Remote Control / Monitoring	Android / IOS Remote Monitoring & Control
Remote Diagnostics	Remote Diagnostics over OCPP
Load Management	Ethernet / Wi-Fi / RS485 / OCPP 1.6 Smart Charging
Software Update	Via OCPP, Direct Flashing

5 - REQUIRED EQUIPMENT, TOOLS and ACCESSORIES

		
Drill Bit 8mm	Impact Drill	PC
		
Volt Indicator	Torx T20-T25 Security Screwdriver	Water Level
		
Flathead Screwdriver (Tip width 2.00-2.5 mm)	Pointed Spudger	Right Angle Screwdriver Adapter / Torx T20 Security Bit
		
RJ45 Crimping Tool	Cat5e or cat6 ethernet cable	

6 - INSTALLING CHARGING STATION

6.1- SUPPLIED INSTALLATION EQUIPMENT and ACCESSORIES

Accessory/Material Name	Use For	Quantity	Picture
Dowels (M8x50 Plastic Dowels)	Mounting charging station to the wall	4	
Torx T25 Security Screw (M6x75)	Mounting charging station to the wall	4	
Torx T20 Security L-Allen	IP for screws which are used for mounting charging station to the Wall.	1	
Wrench	Disassembling and fastening the cable glands	1	
RJ45 Male Connector – Optional	LAN Cable connection	1	
O-Ring	Mounting the charging station to the pole	2	
Screw M6X20	Mounting the charging station to the pole	4	
Screw M6X30	Installation of the charger mounted on a metal surface and ensuring earth continuity. This screw must be installed in the right hole of the charging station on the wall. There should be rubber under this screw to fix the ground wire.	1	
Fixing Bracket	Mounting charging station to wall and the pole.	1	
Mounting Template	Mounting the charging station to the wall	1	
Gasket for screw 6X75	IP for screws which are used for		
IP Rubber	Mounting charging station to the wall.		
SIM Card (Optional)	Product control with internet connection	1	
User RFID Card (Optional)	Start&Stop Charging	2	
Installation Guide (Optional)	Installation Manual	1 Set	
Instruction Book (Optional)	User Manual	1 Set	
QSG	Quick Start Guide	1 Set	

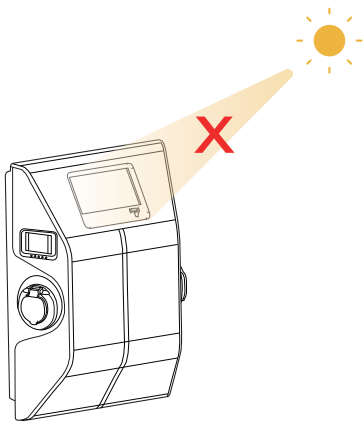
6.2- PRODUCT INSTALLATION STEPS

CAUTION!

- Ensure that ground resistance of the installation less than 60ohms.
- *Read and follow the section "OPENING AND CLOSING THE FRONT COVER OF THE CHARGING STATION" carefully before opening the product cover.
- Prior to mounting your charging station on the wall, read these instructions.
- Do not mount your charging station to the ceiling or an inclined wall.
- Use the wall mounting screws and other accessories specified.
- This charging station is classified as indoor and outdoor installation compatible. If the device is installed outside the building, the hardware that will be used to connect the cables to the charger shall be compatible with outdoor use and the charging station shall be mounted preserving the IP rate of the charger.

WARNING

The charging station shouldn't be installed under the direct sun coming to the display of the unit. If outdoor installation is necessary, install the unit under a porch or such kind of prevention of direct sunlight.



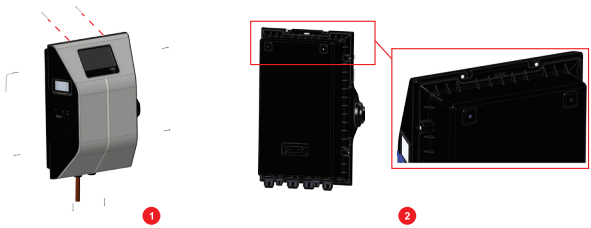
6.2.1- OPENING AND CLOSING THE FRONT COVER OF THE CHARGING STATION

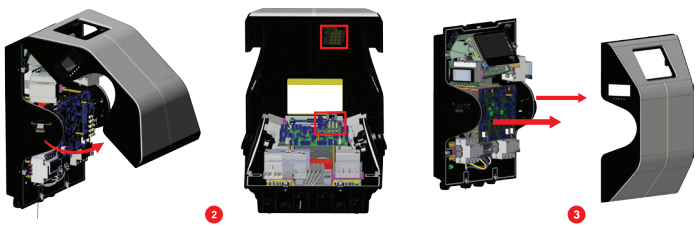
CAUTION

RISK OF ELECTRIC SHOCK

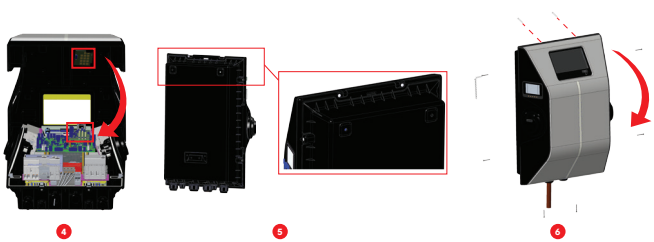
Please power off the charging station mains supply

1. Remove the cover screws with Torx T20 security L-Allen or Right Angle Screwdriver Adapter using Torx T20 Security Bit.
2. After removing the screws on the cover, unscrew the screws by the top hooks to remove the front cover.
3. After removing the screws, you can open the cover.





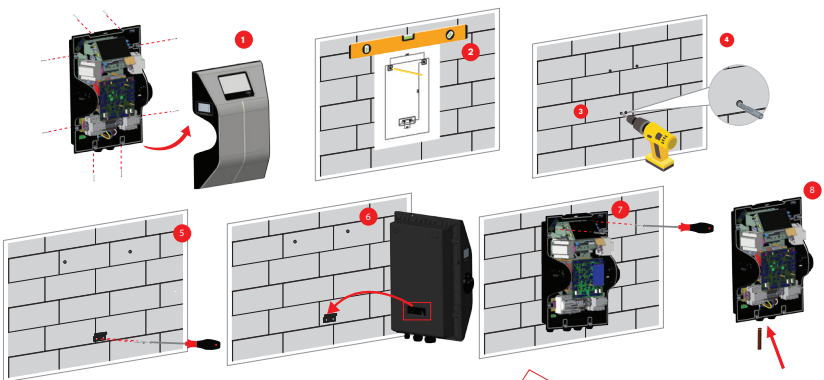
4. Please ensure that the front and back covers are mated properly.
5. Tighten the screws where the hooks of the front cover pass through.
6. Assemble all the screws back in 1.2Nm± 0,1 torque value to finished the assemble of front/back cover.



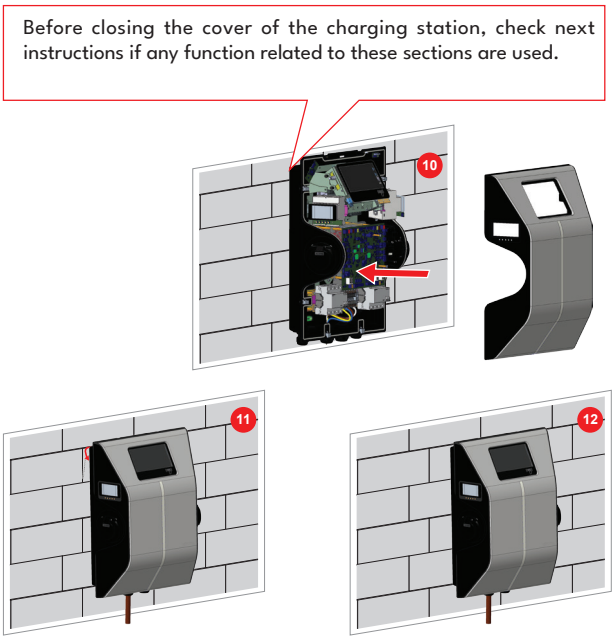
6.2.2- WALL MOUNT INSTALLATION

Wall mount installation is common for all charging station models.

1. Open the product front cover by following the instruction as mentioned in section "**OPENING AND CLOSING THE FRONT COVER OF THE CHARGING STATION".**
2. Place the template which is given in accessory bag and mark the drill bit holes with a pencil.
3. Drill the wall on the marked points using the impact drill (8mm drill bit).
4. Place the dowels into the holes.
5. Mount the fixing bracket to the wall which is given in accessory bag.
6. Hang the bottom back side of the unit on the fixing bracket.
7. Screw the charging unit to the wall from inner side of the unit upper right and left corners.
8. Insert the AC mains cable into the charging station from the bottom left cable gland. Follow the AC Mains Connection instructions on the next pages, depending on the model of the charger. (Single/Three Phase)
9. If the Ethernet cable is needed to be used, follow the section "**DATA CABLE CONNECTION**"
10. Before closing the front cover, make sure that the front cover is attached properly. To do this, hang the front cover hooks on the top side of the back cover of the unit. Also carefully check the seal of the unit that rotates around the back cover of the unit.
11. Tighten the cable glands. Before closing the cover of the charging station, follow the instructions as mentioned in section "**OPENING AND CLOSING THE FRONT COVER OF THE CHARGING STATION".**
12. To close the cover of the charging station, tighten the cover screws which you removed with Torx T20 Security L-Allen or Right Angle Screwdriver Adapter using Torx T20 Security Bit with 1.2Nm torque value.



Please refer to the next tab to make single phase and three phase wiring connections.

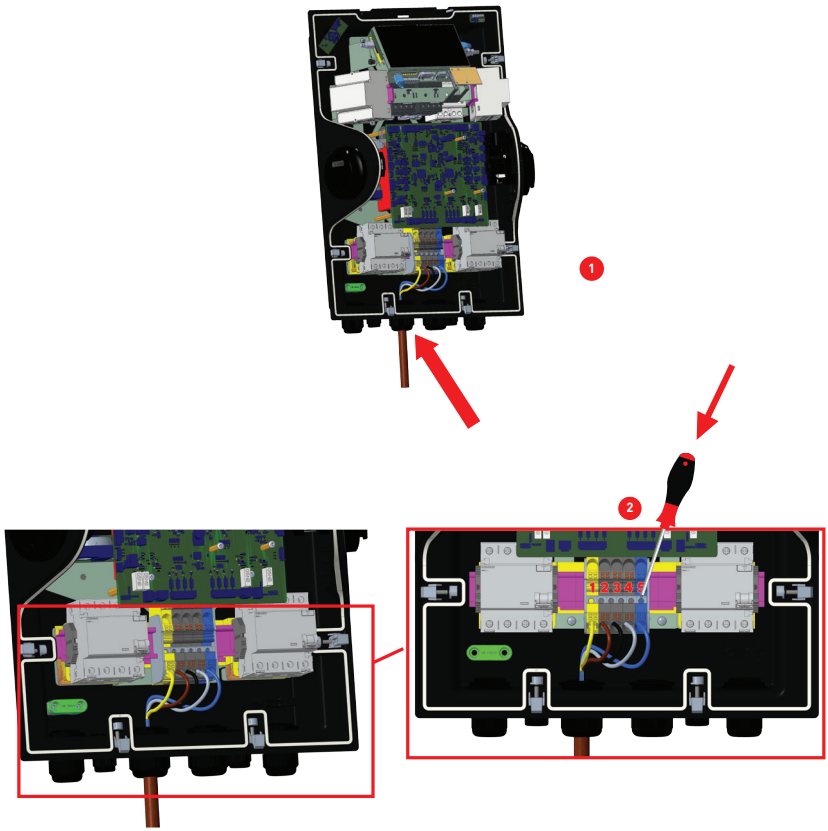


6.2.3- BROKEN PEN DETECTION FEATURE (Optional)

PEN protection is managed by the master microcontroller. Units supporting this feature are equipped with an additional contactor, through which the phase, neutral, protective earth, and control pilot connections are routed.
This contactor is energized automatically when the device is powered on and remains active as long as the supply voltage is within acceptable limits.
This feature is valid for single-phase units and should only be used on single-phase TN-C-S supplies. To ensure protection against electric shock in single-phase TN-C-S installations, the contactor disconnects the vehicle from live conductors, protective earth, and the control pilot within 5 seconds if the voltage between line and neutral exceeds 258 V RMS or drops below 207 V RMS.
The unit continuously monitors both the supply voltage and the PEN conductor status in all operational states except "State A".
If the voltage is outside the range of 208–254 V RMS, the unit will enter error mode (Error Code: 28). In smart versions, the HMI may communicate with the ACPW and adjust the overvoltage threshold (e.g., from 254 V to 252 V).
In the event of a broken PEN conductor detection, the unit will automatically enter error mode. If the supply voltage remains continuously within the acceptable range (207–258 V RMS) for 2 minutes, the error will be automatically cleared, and the unit will resume normal operation without requiring a power cycle.

Note: Voltage measurements have a ±1% tolerance.

6.2.4- THREE PHASE CHARGING STATION AC MAINS CONNECTION

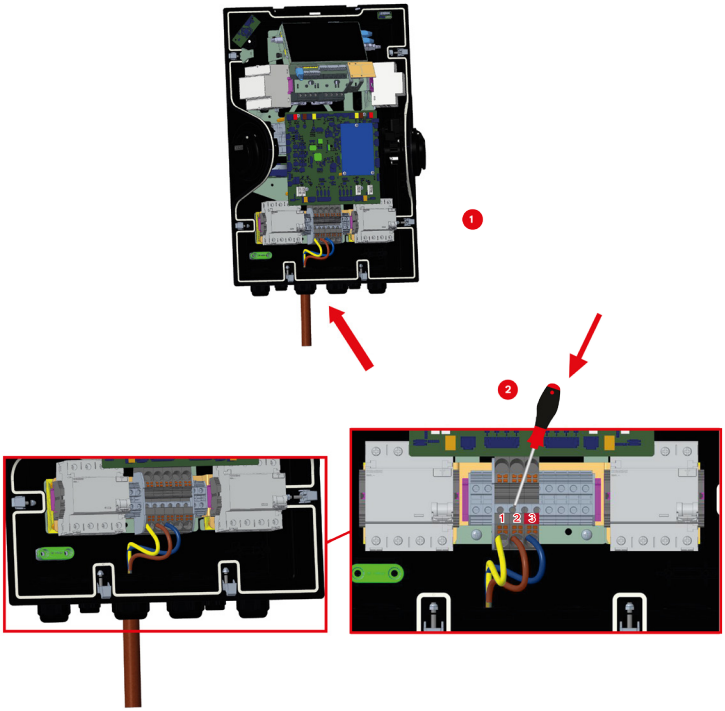


1- Insert the cables to the terminal block as shown in the image. Check the table below to match Electric Terminal number with AC Cable Color.

2- Press the button on the terminals via a screw driver or a similar tool to be able to insert and remove the cables.

Electric Terminal	AC Cable Color
1	Earth (Green-Yellow)
2	AC L1 (Brown)
3	AC L2 (Black)
4	AC L3 (Grey)
5	AC Neutral (Blue)

6.2.5- SINGLE PHASE CHARGING STATION AC MAINS CONNECTION



1- Insert the cables to the terminal block as shown in the image. Check the table below to match Electric Terminal number with AC Cable Color.

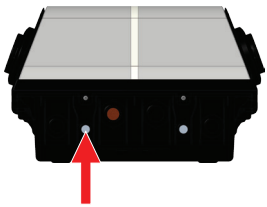
2- Press the button on the terminals via a screw driver or a similar tool to be able to insert and remove the cables.

Electric Terminal	AC Cable Color
1	Earth (Green-Yellow)
2	AC L1 (Brown)
3	AC Neutral (Blue)

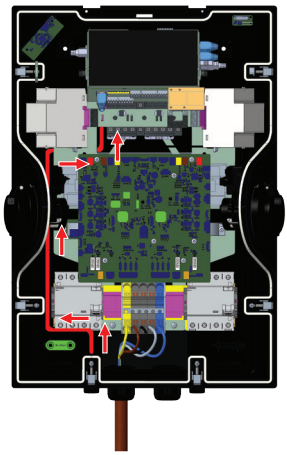
6.2.6- DATA CABLE CONNECTION

1. Remove rubber cork from cable gland.
2. Follow the instructions below.

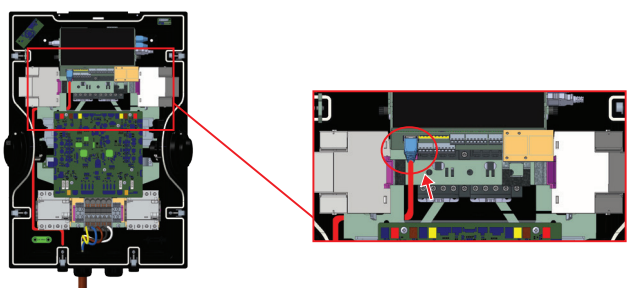
1- Insert cable through the cable gland.



2- Pull the cable through the cable clamps as indicated by arrows in below figure.



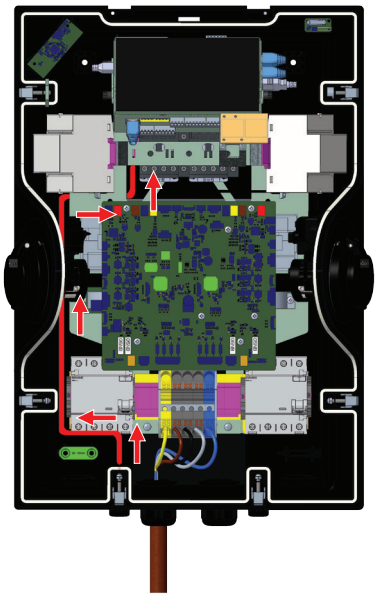
3- Insert the RJ45 connector to the socket as shown in figure below.



3. Finally, to connect the wires on mainboard, check next sections depending on the function(s) to be used.

NOTE: Below data connection cables can be inserted through the cable holes;

- **a.** External enable input cable
- **b.** Power optimizer measurement cable
- **c.** Load shedding triggering signal cable
- **d.** Shunt trip module control signal cable for welded relay contact failure



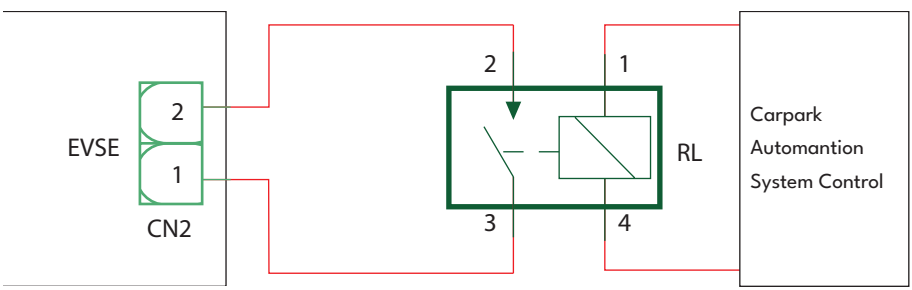
6.2.7- ADJUSTING CURRENT LIMITER

The charging station has ability of adjusting the power of the unit by current limiter setting in the WEB Configuration Interface, please refer **16 - INSTALLATION SETTINGS**. This menu is used for adjusting the current and power of charging station.

Required Circuit Braker on AC Mains	
EV Charging Station Current Limiter Setting	C-Curve MCB
10 A	13 A
13 A	16 A
16 A	20 A
20 A	25 A
25 A	32 A
30 A	40 A
32 A	40 A
64 A	Available RCBO

6.2.8- EXTERNAL ENABLE INPUT FUNCTIONALITY

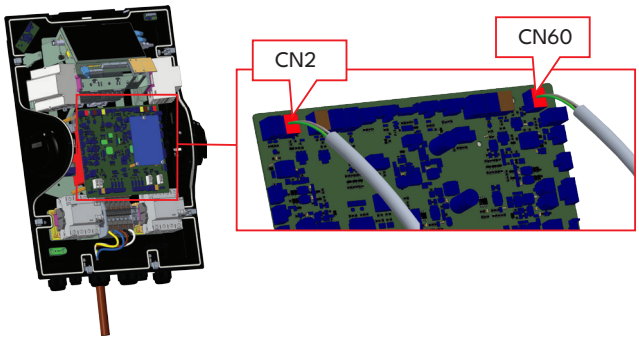
Your charging station has external potential free enable / disable functionality which can be used for integration of your charging station to an carpark automation systems, energy supplier ripple control devices, time switches, photovoltaic inverters, auxiliary load control switches, external key lock switches etc. To enable and disable this functionality, select External Enabled Inputs under Installation Settings from the WEB UI.



NOTE: CN2 is used for master user, CN60 is used for slave user.

If the external relay (RL) is in non-conducting (open), the charging station will not be not be able to charge the electric vehicle.

You can connect potential free input signals as shown in above circuitry.

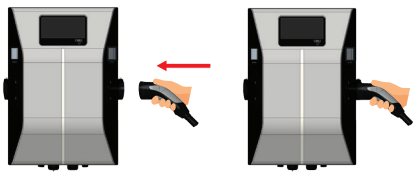


Cable Terminal	Cable Color
1 (CN2-1)	Green
2 (CN2-2)	Green + White Green

Cable Terminal	Cable Color
1 (CN60-1)	Green
2 (CN60-2)	Green + White Green

6.2.9- LOCKED CABLE FUNCTION

The cable becomes locked and your socket model charging station starts behaving as an attached cable model.

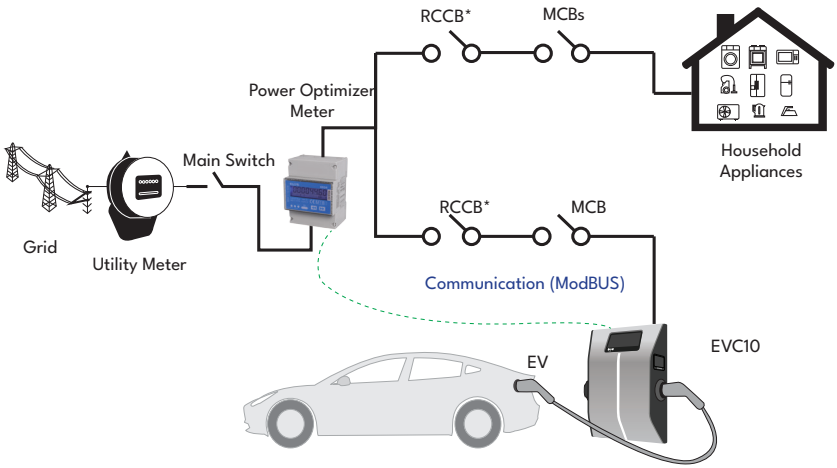
1- To enable locked cable function you need to access to WEB Configuration Interface and Enable the part "Lockable Cable" under "Installation Settings" menu.	**2-** Insert the charging cable to the socket of the unit. 

6.2.10- POWER OPTIMIZER

6.2.10.1- CHARGING MODE SELECTION AND POWER OPTIMIZER CONFIGURATION

The Charging Mode Selection and Power Optimizer Configuration settings are described in detail under the section **16 - INSTALLATION SETTINGS** in the WEB USER INTERFACE.

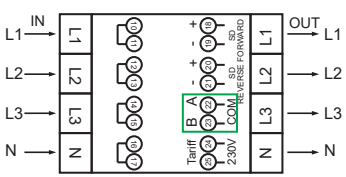
6.2.10.2- POWER OPTIMIZER WITH EXTERNAL MID METER



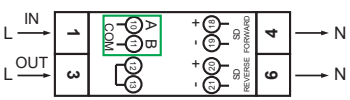
*This figures valid for variants which do not have integrated RCCB. If the charging station has integrated RCCB, there is no need to add additional RCCB in power line.

Power Optimizer Meter should be placed just after the main switch of the house as shown in the figure.
Power Optimizer Meter wiring connections can be made according to the information below.

Three Phase

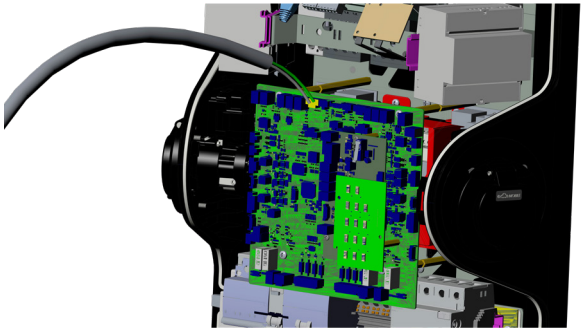


Single Phase



- 22-23: A-B (COM) Modbus connection over RS485 for three phase charging station models.
- 10-11: A-B (COM) Modbus connection over RS485 for single phase charging station models.

Related board wiring of Power Optimizer connections can be made as shown below:



Cable Terminal	Description
(CN69-2)	A (COM)
(CN69-1)	B (COM)

6.2.10.3- POWER OPTIMIZER WITH EXTERNAL CURRENT TRANSFORMER (CT)

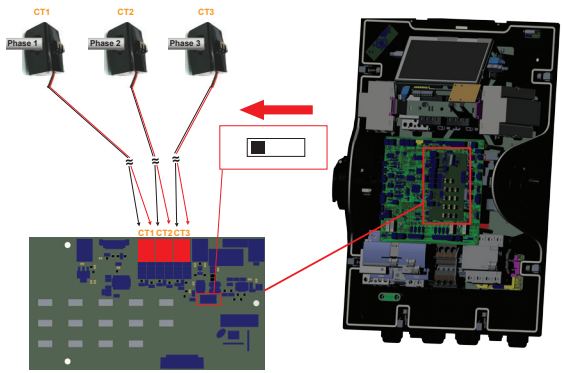
This function is provided with an optional external current measurement accessory, which is sold separately. In power optimizer mode, the total current drawn from the main house switch by the charging station and other home appliances is measured by a current sensor built into the main power line. The system main power line current limit is set by the DIP switches inside the charging station. Based on the limit set by the user, the charging station dynamically adjusts its output charging current based on the measurement of the main power line.

To perform the corresponding installation, follow the steps below.

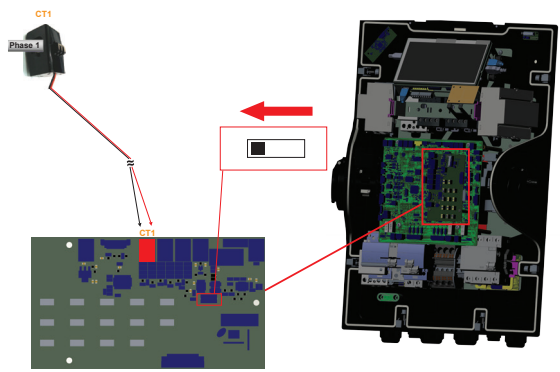
- The slide switch (SW3) on the control board shown in Figure"Running Power Optimizer" should be set to 1 or 2.
- The wiring of the external electrical circuits and the "The Embedded Power Optimization Module" inside the EV charger should be done as shown in Figure below.
- The slide switch on " The Embedded Power Optimization Module" should be set as shown in Figure below. (Left side.)

NOTE : CAT5 cable length to use should be below 100 meters.

Three Phase:

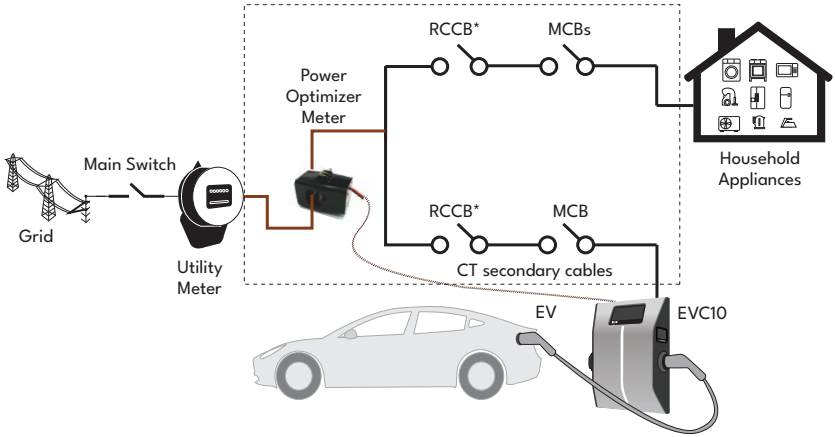


Single Phase:



*This figure is valid for variants that do not have an integrated RCCB. If the charging station has an integrated RCCB, there is no need to add an additional RCCB in the power line.

The power optimizer with external CT should be placed as shown in the figure below.

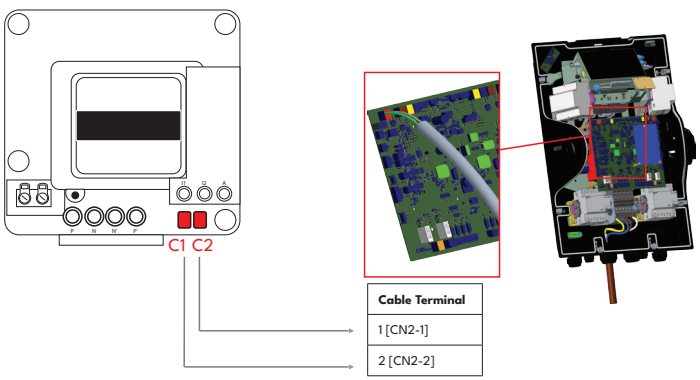


6.2.10.4- MODE SELECTION SWITCH SETTINGS

You can select the operating mode from the Web Configuration Interface. See section **14.2 – INSTALLATION SETTINGS.** This charging station has 3 operating modes.

- **Operating Mode 1 (Standard Load):** This mode is the factory default configuration. When this mode is selected, the charging station can charge continuously and at full power (no dynamic charge management). In this mode, "Conditional Input 1" can be used as the potential free on/off functionality.

- **Operating Mode 2 (Delayed):** When this mode is selected, the charging station supports signaling input "C1-C2 Peak/Off-Peak" and reacts accordingly for the Peak/Off-Peak load. The "Dry Contact Input 1" is used as the Linky meter's C1-C2 dry contact signal. The wiring of the Linky meter and the control board inside the EV charger are shown below.

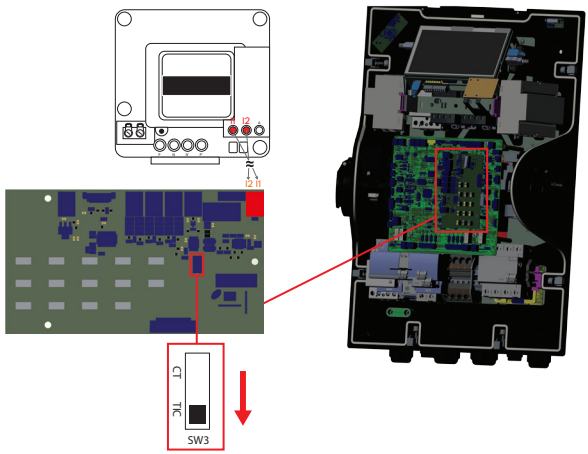


• Operating mode 3 (dynamic load of TIC) (Optional)

In this operating mode, the charging station is connected to the TIC (Customer Remote Information) output of the Linky meter. This allows dynamic charging of your vehicle by adapting the power delivered by the terminal according to the electricity consumption in your home.

Depending on your subscription, the HP/HC information is transmitted via the TIC.

You must also connect the I1 and I2 terminals of your Linky meter to the I1 and I2 terminals of the charging station's communication card.



6.2.10.5-BUILT-IN TIC RECEIVER / POWER OPTIMIZATION MODULE (OPTIONAL)

For product variants with a TIC signal receiver (SR) / power optimizer (PO) module, the charging station is able to receive the TIC signal from Linky meters. It can also be used with optional clamp-type current transformers, sold separately as an accessory.

To use the charging station in TIC and PO mode, the DIP switch on the TIC SR /PO module must be set as shown in the table below.

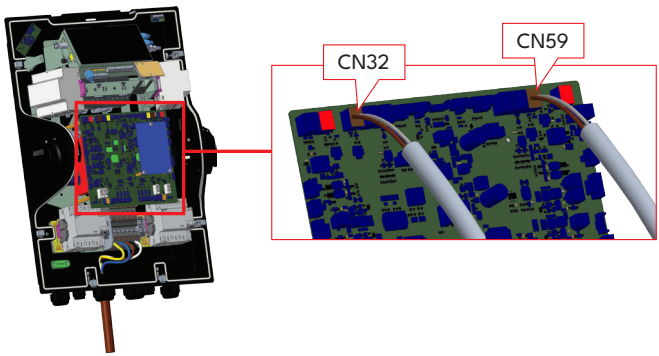
Mode	Description	Figure
TIC	Slide Switch Right Position	
Power optimization by external CT	Slide Switch Left Position	

7- LOAD SHEDDING

This charging station supports load shedding functionality which provides immediate charging current reduction in case of limited supply. Load shedding functionality can be used in any mode including Standalone and OCPP conntected modes. Load shedding triggering signal is a dry contact signal which must be provided externally and connected to the terminals CN32 (or CN59) on the power board as shown in figure below.

When load shedding is activated by closing the contacts with an external device (Eg. ripple control receivers etc.) charging current reduces down to 8A. When load shedding is deactivated by opening the contacts charging continues with maximum available current. In normal use case when there is no signal connected to the load shedding input (contacts open between terminal CN32-1 and CN32-2 or contacts open between terminal CN59-1 and CN59-2) charging station supplies maximum available current.

You can connect dry contact (potential free) load shedding signal as shown in below. See figure below ,table below.



Cable Terminal	Input
CN32-1	Load Shedding Input +
CN32-2	Load shedding Input –

Cable Terminal	Input
CN59-1	Load Shedding Input +
CN59-2	Load shedding Input –

Load Shedding Input State	Behaviour
Opened Contact	Charge with max. available current
Closed Contact	Charge with 8A

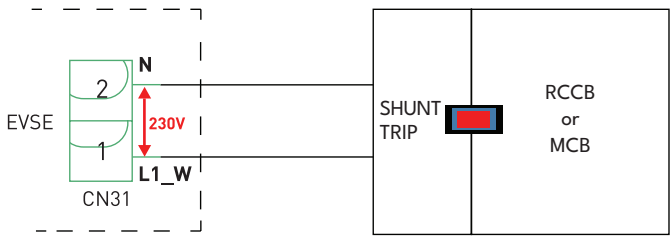
8- MONITORING OF WELDED RELAY CONTACTS FAILURE

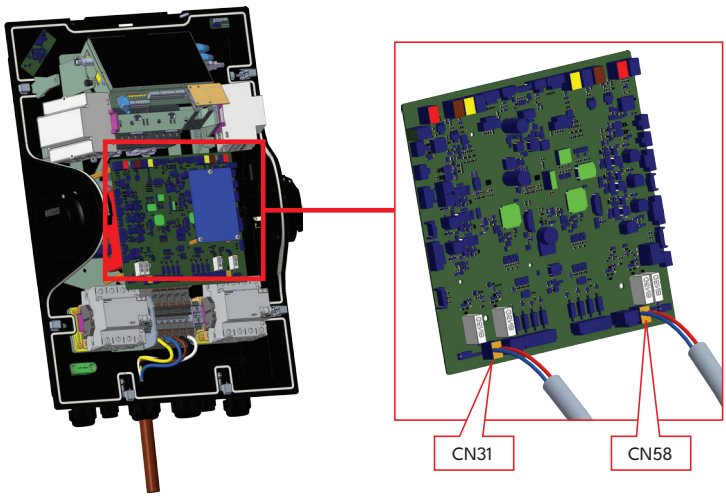
According to IEC 61851-1, EVC10 EV Charging Station has welded contactor sensing function and in case of welded contact occurs, shunt trip 230V signal is provided from the main board. To detect welded contact failure for the relays, CN31 connector output terminals must be used.

In case of a welded contact for the relays CN31 connector output will be 230V AC. The output which has 230V AC should be connected to a shunt trip for RCCB triggering as shown in first figure below. The cabling should be done as shown in second figure below.

Connector (CN31) terminals must be connected to a shunt trip module. Shunt Trip module is mechanically coupled to RCCB (or MCB) at the fuse box of the charging station.

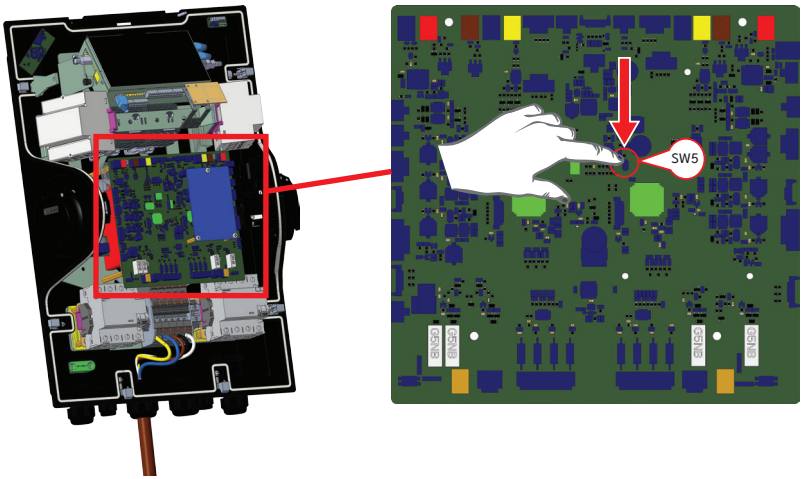
The circuitry block diagram that must be used at the fuse box of the charging station is shown below.





9- FACTORY RESET

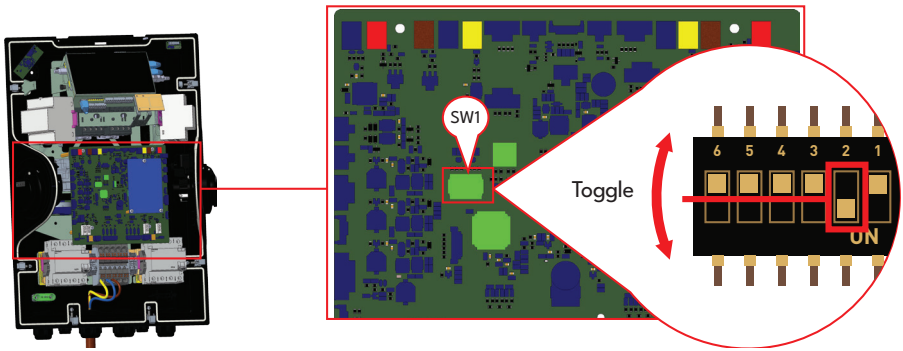
You must push the button on ACPW board shown in figure below for factory reset. When you hold the button for 5 seconds user configuration will be reset to factory configuration. (e.g OCPP config, Network Config will be back to factory configuration.)



10- SETTING ETHERNET PORT OF CHARGER TO STATIC IP IN STANDALONE USAGE MODE

The charging station is preconfigured to DHCP mode in factory. If you need to connect to the charging station's WEB configuration interface directly using a computer, rather than using a router having DHCP server, steps below should be followed:

- Make sure that the charging station is turned off and open the front cover of your charger as indicated in the installation manual "**OPENING AND CLOSING THE FRONT COVER ON THE CHARGING STATION**".
- Toggle the second position of DIP switch which is on the smart board of the charger shown in figure below. After that please turn on the charger again.
- Charging station sets the Ethernet port to 192.168.0.10 adress statically and subnet mask will be set to 255.255.255.0



If the charger's LAN interface is needed to be set back to DHCP mode again this can be done from the WEB configuration interface.

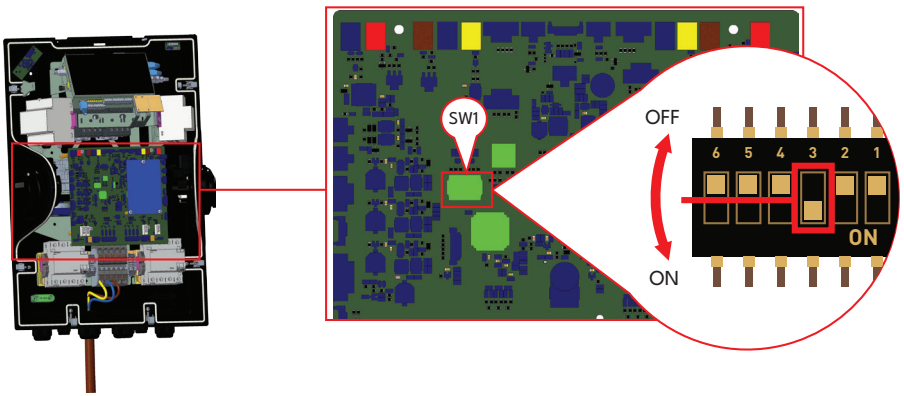
Note: You can also use factory reset function to set the LAN interface back to DHCP mode again but please well note that all other parameters will be set to factory default parameters.

11- WEB CONFIGURATION INTERFACE ENABLE / DISABLE

The WEB Configuration interface is "Enable" by default.

If you need to enable/disable the WEB Configuration interface below steps should be followed:

- Make sure the charging station is powered-off and open the front cover of your charger which is mentioned in installation guideline "**OPENING AND CLOSING THE FRONT COVER ON THE CHARGING STATION**".
- If you want to enable the WEB configuration interface, third position of DIP switch should be in “OFF“ position as shown in figure below.
- If you want to disable the WEB configuration interface, third position of DIP switch should be in “ON“ position as shown in figure below.

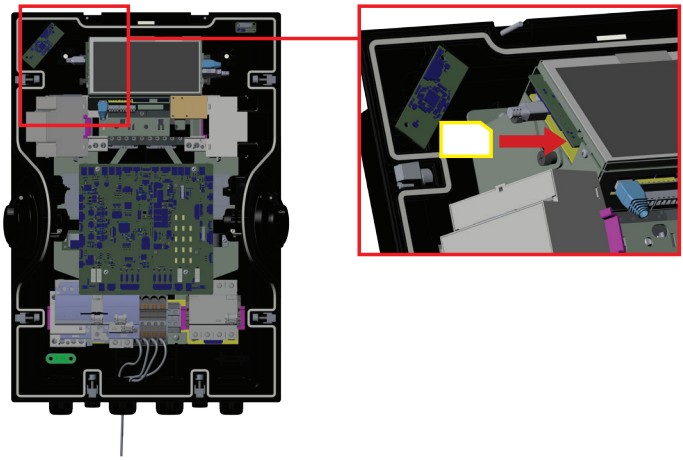


12- OCPP CONNECTION

Make sure the charging station is powered-off.

12.1- CONNECT OCPP OVER CELLULAR NETWORK (Optional)

Insert the micro SIM card in the SIM card slot on cellular module as shown in the below figure.



13- COMMISSIONING

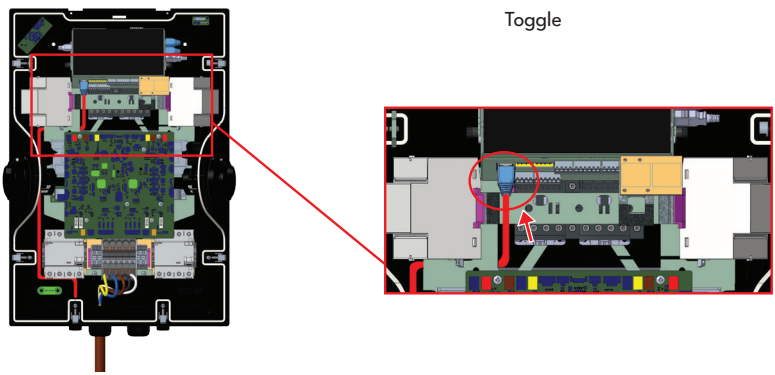
If you want to connect the charging station's web configuration interface, you have two options;

a. You can directly connect your PC to the charging station using a patch Ethernet cable. If you follow this option, please make sure that you have properly configured your charging station's LAN interface to static IP by following steps in section "SETTING ETHERNET PORT OF CHARGER TO STATIC IP IN STANDALONE USAGE MODE" and your charging station's web configuration interface is enabled via DIP switch which is mentioned in section "WEB CONFIGURATION INTERFACE ENABLE / DISABLE". By default, web configuration interface is enabled.

b. You can use a router having DHCP server. In this option, both the charging station and the PC should be connected to the router. Please be sure that you need to check the IP adress from the router to be able to make the connection.

13.1- CONNECT PC TO THE SAME NETWORK WITH SMART BOARD

In order to access web configuration interface, first you need to connect your PC and EV charger to the same ethernet switch or connect EV charger to your PC directly.



Default IP address of HMI board is 192.168.0.10. For this reason, you need to give static IP to your PC in the same network with HMI board.

You should assign static IP address to your PC in 192.168.0.0 network which means that IP address should be in a range of between 192.168.0.1 and 192.168.0.254.

13.2- OPENING WEB CONFIGURATION INTERFACE VIA WI-FI HOTSPOT

For this unit, when accessing to Wi-Fi Hotspot settings in the WEB User Interface, under Network Settings tab, Wi-Fi Hotspot can be enabled or disabled. Also, optionally timeout activated can be changed as 5-30 minutes or continuous.
During the Wi-Fi Hotspot timeout duration, it is possible to connect a smart device (mobile phone, tablet or laptop) to the charging station.
Each product has a Wi-Fi Hotspot SSID and Wi-Fi Hotspot password set as factory configuration. Wi-Fi Hotspot SSID and Wi-Fi Hotspot password informations are located on the label pasted to the Quick Start Guide or Installation Guideline. You can log in to the Web configuration interface via Wi-Fi Hotspot by entering the network information written on the label.
After connecting to the "Wi-Fi Hotspot" network, the user can open the WEB browser from the computer or mobile device and type the IP address of the charging station, Wi-Fi Hotspot at IP-Address is written on the label.

For Android mobile devices, it is necessary to configure the browser to download and display the desktop site from the menu in the upper right corner of the Chrome browser. For iOS mobile devices, it is necessary to configure the browser to download and show the desktop site from the menu in the top right corner and also set the text size to 50%in the AA setting in the top left corner of the Safari browser.

Note: Maximum 3 users can connect to WEB Configuration Interface via Wi-Fi hotspot. It supports 2.4Ghz.

13.3- OPENING WEB CONFIGURATION INTERFACE WITH BROWSER

Open your web browser and type 192.168.0.10 which is IP address of HMI board.

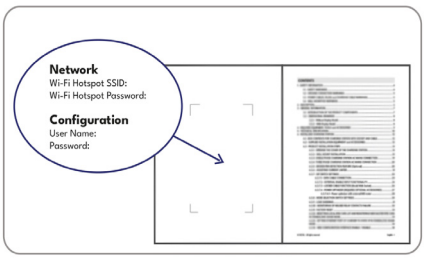
You will see login page on your browser;

Each product has a user name and password set as factory configuration.

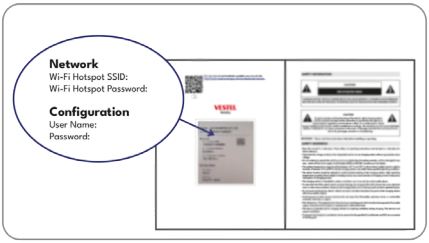
In this section you can log in to the Web configuration interface by entering the configuration information printed on the label. User Name and Password informations are located on the label pasted to the Quick Start Guide or first page of Installation Guideline as shown below.

Changing password is recommended.

You can change password with Change Password Button in WEB UI login page or Administration Password section in the System Maintenance tab.



Visual representation is provided



Visual representation is provided

Attention: For web configuration interface accessibility problems; Web browsers usually save some information from websites in its cache and cookies. Forcing Refresh or Clearing (depending on your operating system and browser) them fixes certain problems, like loading or formatting issues on web page.

When accessing the device's web interface, your browser may show a security warning because the connection uses a local device certificate. Please follow the browser instructions to proceed to the page.

After logging in for the first time using the default credentials, you will be prompted to review and confirm the Privacy Policy.

You must check the box "I read, I understand" and click "Confirm" to continue to the interface.

14- WEB CONFIGURATION INTERFACE

MAIN PAGE	The Main page provides an overview of the key system information and connection status of the EVC device. Below are the descriptions of each displayed parameter: **User Name:** Username of the logged-in user. **CP Serial Number:** Unique serial number of the device. It is used for device authentication and remote management. **HMI Software Version:** The software version of smart board (HMI) that runs the device's touchscreen interface. **OCPP Software Version:** The version of the Open Charge Point Protocol (OCPP) software, which enables communication with the charging network management system. **Power Board Software Version:** The version of the software that controls power management and charging operations of device. **Duration after Power On:** The total time (in hours, minutes, and seconds) that has passed since the device was last powered on. Useful for uptime tracking and performance monitoring. **Connection Interface:** The current communication method used by device. It can be Ethernet, WLAN (Wi-Fi), or Cellular. **Ethernet Interface IP:** The IP address assigned to device when connected via a wired Ethernet connection. **WLAN Interface IP:** The IP address assigned when device is connected via Wi-Fi. (If not connected, this field will be empty.) **Cellular Interface IP:** The IP address assigned when device is connected via a mobile network. (If not connected, this field will be empty.) **OCPP Device ID:** Unique identification number used by device when communicating with OCPP server. **Pre-Sets:** Once these presets are set in the vfactory partition, they will appear in the dropdown list under the Main Page.You can select the desired preset from the list and click the SAVE button to apply the configuration. **Connector State:** Indicates current status of device's charging connector. This information helps users better understand the details displayed on the main page of the web configuration interface. You can also change the web configuration interface language and log out of the web configuration interface with the buttons in the upper right corner of the page. The following languages are available: Turkish, English, German, French, Romanian, Spanish, Italian, Finnish, Norwegian, Swedish, Hebrew, Danish, Czech, Polish, Hungarian, Slovak, Dutch, Greek, Bulgarian, Montenegrin, Bosnian, Serbian, Croatian.

14.1 - CHANGE GENERAL SETTINGS OF THE DEVICE

Display Language	Available languages will be listed, if display is available. The EV charger display language can be adjusted as desired.
Display Backlight Settings	To optimize visibility of display according to daylight conditions, Sunrise Time and Sunset Time can be selected when Backlight Level is time based.
Display Service Contact Info	Customer care number to be shown on "Out of Order" screen. When the device gets an error, the Display Service Contact Info entered in this field will be displayed on the screen to assist with resolving the problem. If you want to show display service contact information on another screens like "Connect Charging Cable", "Preparing for Charging", "Initializing", "Waiting for Connection" screens you can enable the config from Show Extra Service Contact Info setting. (If charging station has a display.)
Display QR Code	QR code can shown on screen or disabled. QR Code Delimiter, between CPID and ConnectorID of the text inside QR code.
Display Screen Saver Settings	**Screen Saver on Available State** In the Screen Saver on Available State section, there are "Enabled" and "Disabled" options. In the "Enabled" state, the screen saver image is activated on the EVC10 screen when the device is not used for a certain period of time. If it is "Disabled," the screen is always on. **Automatic Screen Saver** In the Automatic Screen Saver section, a value between 1 and 30 can be selected to set the number of minutes. Sets how long the device waits before activating the screen saver when inactive. **Screen Saver Image** In the Screen Saver Image section, the screen saver can be uploaded or removed. The added image must be in ".png" format and the image size must be "1024x600". If not, the image will fail to upload. The processes in all sections become active when the Save button is pressed.
LED Dimming Settings	To optimize visibility of status indicator LED according to daylight conditions, Sunrise Time and Sunset Time can be selected when Led Dimming Level is time based.
Standby LED Behaviour	Standby status indicator LED behaviour can be set as On or Off.
Logo Settings	Logo on the top-right corner of the display. You can change the Display logo with the upload button, You can only upload in png format and the size of the logo you choose must be 80x80. You can also remove the logo with the remove button.

Scheduled Charging	If the device is in Standalone Mode, you can only set Randomised Delay Maximum Duration and Continue Charging After Power Loss settings. Randomised Delay Maximum Duration is the setting that allows device to apply a random delay time before charging starts and can take values between 0 and 1800. The device waits for a random time before starting the charging process. For example, if Randomized Delay Maximum Duration = 60 seconds, the device will apply a random delay between 0 and 60 seconds. **Off- peak Chargig:** If the device is in OCPP Mode, for this mode you should enabled OCPP Connection in OCPP Settings. In OCPP Mode you can make all Off-Peak Charging settings. Off-Peak Charging is a feature that allows an electric vehicle to be charged during off-peak hours, when the grid is less busy. **Off- peak Charging at the Weekends:** Time period of charging at weekends when the electricity demand is low (off-peak hours). **Off- peak Charging Second Time Period:** Refers to charging in the second of the low electricity demand time periods. Some electricity tariffs offer more than one low-price time slot during the day. For example: First Off-peak time: 00:00 - 06:00 at night 2nd Off-peak time: 13:00 - 16:00 in the afternoon This expression means that charging is done during the second off-peak hour. So you are charging during the second off-peak time slot instead of the first off-peak time slot. **Off- peak Charging Periods:** User can determine set off-peak hours. Randomised Delay At Off Peak End: When the low tariff hours end, charging is delayed for a random period of time. Off-Peak End → End of low tariff (off-peak) hours Randomized Delay → Random delay **Timezone:** Refers to the local time zone in a particular region. **Continue Charging End Peak Interval:** Continue charging at the end of the peak interval. **Continue Charging Without Reauth After Power Loss:** Charging process will continue without requiring reauthorization after a power loss.

14.2 - INSTALLATION SETTINGS

Earthing system	In web configuration interface, earthing type is “TN/TT” by default. If Earthing Type is selected as IT, the protective earth error check is disabled.
Current Limiter Settings	Current Limiter Phase information can be adjusted in this menu. Also Current Limiter Value can be written manually between 6-32A. If a value below 6A is written, a warning will be shown to write minimum 6A.
Unbalanced Load Detection	You can enable or disable the Unbalanced Load Detection. If enable option is selected, Unbalanced Load Detection Max Current can be selected. Unbalanced Load Detection Minimum value is 6, max value is Current Limiter Value. Current Limiter Value can be set on Current Limiter Settings.
External Enabled Input	You can enable or disable the External Enable Input.
Lockable Cable	You can enable or disable the Lockable Cable.
Charging Mode Selection and Power Optimizer Configuration	In this part, you can select Operation Mode, Power Optimizer Total Current Limit and Power Optimizer External Meter. Operation Mode can be Normal, Peak / Off-Peak, TIC without Peak / Off Peak. TIC Power Optimizer Total Current Limit can be Disabled or can take values between 10 and 100. When TIC selected in Operation Mode , Power Optimizer Total Current Limit and Power Optimizer External Meter can not be selected. When Power Optimizer Total Current Limit is Disabled, Power Optimizer External Meter can not be selected. Power Optimizer External Meter. can be selected Auto Selected, Klefr 6924 / 6934, Garo GNM3T / GNM3D, Embedded Power Optimizer with CT, P1 Slimmemeter. If Power Optimizer External Meter is Auto Selected, Power Optimizer value reads from main board.
Load Shedding Minimum Current	Load Sheddding Status is reading from main board, you can select Load Shedding Minimum Current from Web configuration. This parameter can take values between 0 and Current Limiter Value. Current Limiter Value can be set on Current Limiter Settings.

G100 Settings	G100 settings allows you to enable or disable **G100 Mode** and select the Installation Type as either Domestic or Commercial. When the **Installation Type** is set to Domestic, the **G100 OP State** automatically changes to State - 3 which means the device has entered safety mode beacuse the grid voltage or frequency has exceeded its limits. In this case, you can restart the device by pressing the **G100 STATE-3 RESET** button. However, this action can only be performed a limited number of times. If the G100 State-3 reset limit is reached to maximum, the admin can press the **G100 LOCKOUT RESET** button and confirm the action to exit the Excursion condition. In this part, to change the Installation Type to Domestic, ensure the following: 1. If using Local Load Management, the Maximum Grid Current must be 100 or less. 2. If using Power Optimizer, the Total Current Limit of the Power Optimizer must be 100 or less.

14.3 - CHANGE OCPP SETTINGS OF THE DEVICE

OCPP Connection	If you select mode as “Enabled”; you should type all fields in the connection settings and configuration parameters sections are enable. For now, the only available OCPP version is OCPP 1.6, so it will be selected as default. The Central System Address and Charge Point Id are mandatory fields for saving this page. You can set OCPP configuration parameters to their default values by clicking “Set to Defaults” button. **OCPP Ciphers Support:** A cipher suite is a set of algorithms that help secure a network connection. If “Ocpp Security Profile” is selected as 2 or 3, OCPP specification enforces one of two cipher suites to be used. If your backend uses a different cipher suite you can change this setting as “All Ciphers” but it will be incompatible to OCPP standard. You can select the OCPP settings type you want from the menu which is at the left side of the page. For example OCPP Connection, OCPP Version, OCPP Ciphers Support, Connection Settings and OCPP Configuration Parameters. Then, click “Save” button. **Note:** Be careful for your entered values because the system does not accept the unsuitable values and gives warning. In this case, values will not be saved. Then you will not be redirected to the main page so you should check your values.

14.4 - CHANGE NETWORK INTERFACES SETTINGS OF THE DEVICE

There are four types of network interfaces in this page; Cellular, Ethernet, Wi-Fi and Wi-Fi Hotspot.
Select interfaces' modes as "Enabled" if you want to activate it.
You should fill all spaces in suitable formats.

CELLULAR	If "Static" is selected; "IMEI", "IMSI" and "ICCID" fields are mandatory. When cellular getaway is enabled, the LAN interface IP setting mode will be set to static and DHCP Server will be enabled.
LAN	If you select Ethernet or Wi-Fi IP Settings as "Static"; "IP Address", "Network Mask", Default Gateway"and "Primary DNS" spaces are mandatory.
WLAN	If you set Wi-Fi as enabled, "SSID", "Password" and "Security" are mandatory. A list of available wireless networks is displayed in the WLAN section.
WIFI HOTSPOT	Details are described in section "OPENING WEB CONFIGURATION INTERFACE VIA WIFI HOTSPOT"
FIREWALL	Input and output policies determine how the network is operated. Default policies in this area should be adjusted as needed by authorized people. Access to the device may be completely blocked after incorrect settings. This is not a software issue but a configuration error. These policies should be adjusted according to the whitelist or blacklist logic and the necessary rule configuration should be made for the desired situations. **Status** This setting controls the firewall status: "Enable" activates it, while "Disable" deactivates it. The "Disable" option turns off the firewall, preserving the status of all settings. **Incoming Traffic** This policy determines the default behavior for incoming traffic. The "Allow" option accepts all incoming traffic, while the "Deny" option rejects all incoming traffic. **Outgoing Trafic** This policy determines the default behavior for outgoing traffic. The "Allow" option accepts all outgoing traffic, while the "Deny" option rejects all outgoing traffic. **Adding Custom Rules:** Users can add custom firewall rules and select and delete them. To delete a rule, check the box in the "Select" column and click the "Delete" button. Rules are prioritized from top to bottom. The "Add" button will open a pop-up and the rules will be added to the list by making the necessary settings and pressing "Add".

	Policy: This setting determines whether to accept or reject a certain type of traffic. The “Allow” option allows the traffic, while the “Deny” option blocks the traffic. **Direction:** This setting determines which direction of traffic the rule applies to. The “Input” option targets incoming traffic, while the “Output” option targets outgoing traffic. **Interface:** This setting determines which network interface the rule is applied to. Options include “LAN”, “wlan”, “Cellular”, and “lo”. **Protocol:** This setting determines which communication protocol the rule is applied to. Options include “tcp”, “udp”, and “None”. **Port:** This setting determines which port number the rule is applied to. Users can add as many rules as they want and can edit or delete them as needed. This enhances the flexibility and convenience of your firewall application.
WEBCONFIG ACCESS PROTOCOL	HTPP does not provide encrypted communication.Sensetive data such as passwords may be exposed to attackers. HTTPS is recommended for secure communication.

14.5 - CHANGE STANDALONE MODE SETTINGS OF THE DEVICE

If you have set OCPP as enabled in OCPP settings before, standalone mode cannot be selected. Otherwise, you can select standalone mode. There are three modes in the list;

Select “RFID Local List” mode to authenticate a RFID local list which will be entered by you. You can make an addition or deletion from the RFID local list later.

Select “Accept All RFID’s” mode to authenticate all RFID’s.

Select “Autostart” mode to allow charging without the need for authorization. It will be enough to plug to start charging.

If you are done with mode selection, click “Save” button and reboot the device.

For an in-depth overview of the LOCAL LOAD MANAGEMENT configuration settings, please refer to Section 14.7.

14.6 - MAKING SYSTEM MAINTENANCE OF THE DEVICE

Log Files	**In the Log Files page**, you can download device event logs for a selected date range (maximum 5 days) using the Start Date and End Date fields. Device logs are automatically deleted every 30 days. You can also click CLEAR to permanently delete all event logs stored on the device. **Download Change Logs:** Within the scope of Personal Data Protection, all changes made to the device settings are kept. Saved logs of which users and which actions were taken can be downloaded with the “Download Change Logs” button.
Firmware Updates	You can upload the firmware update file from your PC, after the file is uploaded, click on “Update” button to start the firmware update. When update is started, your charger’s LED indication will be seen as constant red. With Display Models, the firmware update process is shown on the screen as follows: **1-**The firmware is sent, and the device begins uploading it. **2-** While updating, the following warning will appear on the screen: "Updating Firmware! Please do not start charging while updating." **3-** After 5 seconds, the display will automatically return to the home screen and the indicator "Connect charging cable" will appear on the screen. After the firmware update is finished, your charger will restart automatically. You can see the latest firmware version of your charger from webconfig UI in main page.
Configuration and Backup	You can backup of the sytem. If you want to restore you can click the Restore Config File button and upload the backup file. The system only accepts the .bak files.
System Reset	You can proceed to this section to make Hard Reset and Soft Reset.
Administration Password	A password is required for administrative access.
Factory Default Configuration	You can reset your device to its factory settings.
Local Charge Sessions	From this page, you can download and view the full session log and charging summary, including the duration of charging and the RFID card used, in Excel format.

14.7 - LOCAL LOAD MANAGEMENT OF THE DEVICE

The Local Load Management tab includes two parts: **General Settings** and **Load Management Group.**

GENERAL SETTINGS

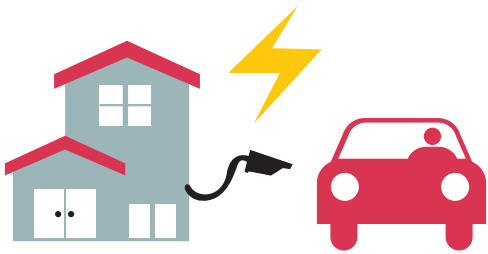
If the device with dynamic local load management; local management option can be disabled, Modbus TCP or Master/Slave.

14.7.1- Modbus TCP/IP Protocol Parameters

EVC10 charging station acts as a slave device in the Modbus TCP/IP communication. Charging station should be in the same network with the master device or a proper routing should be applied to provide communication between slave and the master devices in different sub networks. Each charging station should have different IP address. Modbus TCP communication port number is 502 and Modbus Unit ID is 255 for EVC10 charging stations. There can be only one active Modbus master connection at any time. When a new Modbus connection is established, the master is expected to set the Failsafe Current, Failsafe Timeout and Charging Current registers immediately. The master also periodically sets the alive register to indicate that the connection is still alive. If the master does not update the value of the alive register until the failsafe timeout, the device switches to the failsafe state; TCP socket is terminated and failsafe current becomes active. As the update period of the alive register, half of the failsafe timeout is recommended.

14.7.2- Static Management

For static management, a power limit can be set to the load management group and the charger won't go above the power limit.



14.7.3- Dynamic Management

With the help of dedicated power optimizer option, EV Charging station can manage the power limit based on the available power. When the household appliances consumes more, the charger consumes less and doesn't overload the main switch.

There are 2 different types of network topologies available for connecting multiple EVC10 charging stations in master/slave clusters. According to the customer needs, one of these alternatives can be chosen.

14.7.4- Star Topology

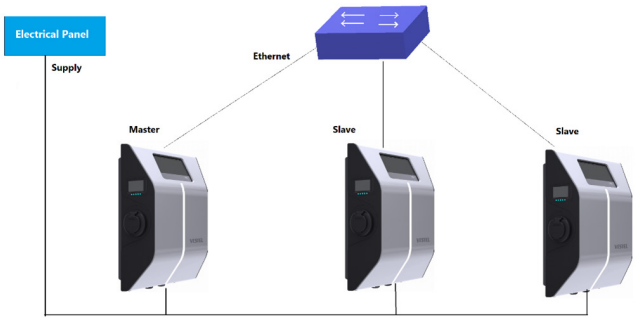
In star network topology, all chargers are connected to the master station via a network switch or router. This topology needs cabling between each charging station and the central switch. This topology is more reliable than daisy chain topology since each charging station has its own connectivity to the network switch. For connection of each station to the central switch, Cat5e or Cat6 Ethernet cables can be used up to 100 meters each.

For the IP configuration of the network, either the router may have DHCP server or the master charging station can be configure as DHCP server. If you use a router with a DHCP server, you need to configure all charging stations including the master station LAN IP address setting as “Dynamic” from “Network Interfaces” menu. In this scenario, all the charging stations get their IP addresses from central DHCP server.

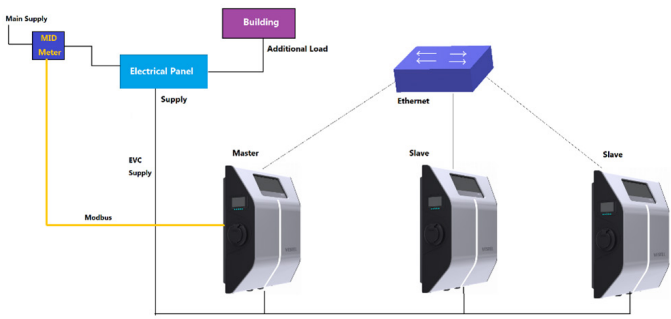
If you use a router or a L2-switch without DHCP server, you need to configure master charging station LAN IP settings to DHCP server and slave charging station LAN IP setting to “Dynamic” from “Network Interfaces” menu. In this scenario, slave charging stations get their IP addresses from master charging station.

Block diagrams for static and dynamic supply in star network topology are provided as below.

14.7.4.1- Static Supply Star Topology:



14.7.4.2- Dynamic Supply Star Topology:



14.7.5- Daisy Chain (Serial)

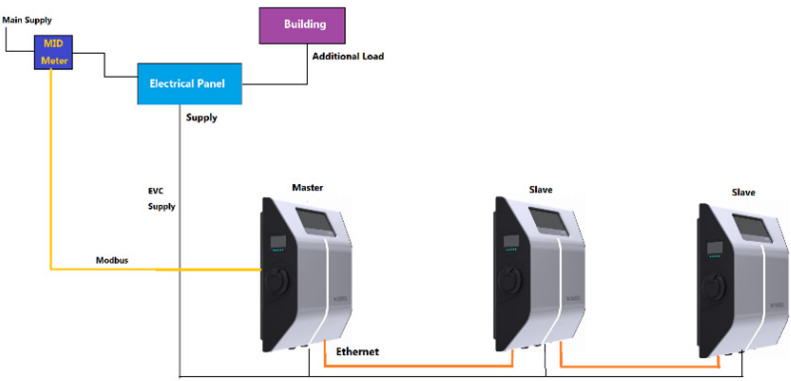
Daisy chain topology needs cabling between each charging station as in and out connection. To be able to use daisy chain topology, the charging station needs optional daisy chain two port switch board inside. For the connection of each charging station in series topology, Cat5e or Cat6 Ethernet cables can be used up to 100 meters each.

For the IP configuration of the network, master charging station should be configure as DHCP server. You need to configure slave charging station's LAN IP address setting as "Dynamic" from "Network Interfaces" menu. In this scenario, all the charging stations get their IP addresses from the DHCP server inside master charging station.

Block diagrams for static and dynamic supply in daisy chain network topology are provided as below.

14.7.5.1- Static Supply Daisy Chain Topology :

14.7.5.2- Dynamic Supply Daisy Chain Topology :



14.7.6 - Configuration of Charge Point Roles

If Load Management Option is selected as Master/Slave, there will be two part in this page; General Settings and Load Management Group.
Operation Selection on Web-UI
Users can select one of the following options:

a. Master
b. Slave
c. Backup Master

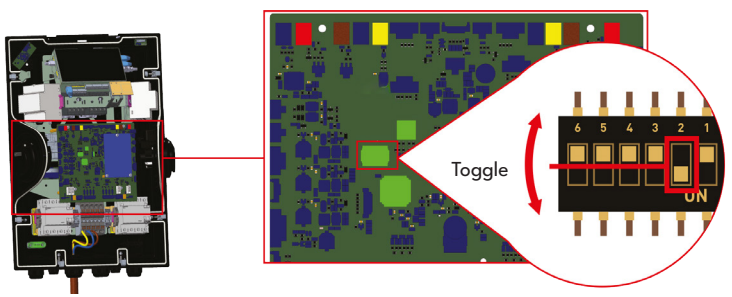
14.7.6.1- Configuration of Slave Charging Stations

The charging station is preconfigure to DHCP mode in factory. If you need to connect to the charging station's web configuration interface directly using a computer, rather than using a router having DHCP server, steps below should be followed:

•Make sure the charging station is powered-off and open the front cover of your charger which is mentioned in installation guideline.

•Toggle the second position of DIP switch which is on the ACPW board of the charger shown in - below. After that please turn on the charger again.

•Charging station sets the Ethernet port to 192.168.0.10 address statically and subnet mask will be set to 255.255.255.0



To log in to the WEB Configuration User Interface, please refer to Section 13.3.

Local Load Management option in General Settings is **"disabled"** by default. After accessing to configuration web interface, you need to tab **"Local Load Management"** menu and select **"Master/Slave"** in **"Load Management Option"**.

Master/Slave: In systems where multiple charging stations are connected to a single common power supply, Master/Slave architecture is used for charging without exceeding the grid power. It establishes the master-slave relationship in load management. One device becomes the **"master"** and manages the others, the others become **"slaves"** and only execute the given commands. This determines who is the administrator in the system.

Charge Point Role: Should be selected as **"Slave"**. This setting allows the device to operate as a **"slave"** (connected device).

DLM Network Selection: You can also select the DLM communication type from the DLM Network Selection dropdown. The available options are Ethernet and WLAN, depending on how the slave will communicate with the master. This must be same for both Slave and Master.

NOTE:

To apply WLAN/WiFi for networking, you need to enable WLAN option from Network Interfaces tab settings and provide the SSID, Password, Security, IP Setting as DHCP of router.

For Ethernet(LAN) opting the settings needs to be done in Network Interfaces tab.

The slave charging stations should be set as DHCP client. This setting causes disconnection from configuration web interface of the charging station, so this setting should be the latest setting in slave configuration of the charging station.

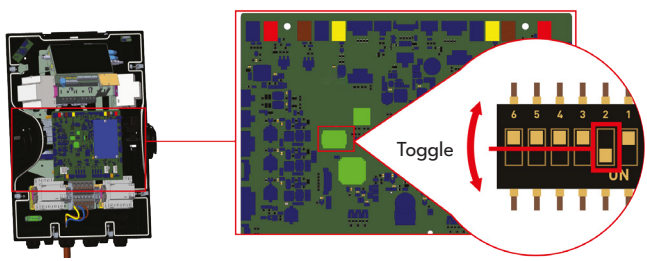
14.7.6.2- Configuration of Master Charging Station

The charging station is preconfigure to DHCP mode in factory. If you need to connect to the charging station's web configuration interface directly using a computer, rather than using a router having DHCP server, steps below should be followed:

• Make sure the charging station is powered-off and open the front cover of your charger which is mentioned in installation guideline.

• Toggle the second position of DIP switch which is on the ACPW board of the charger shown in figure below After that please turn on the charger again.

• Charging station sets the Ethernet port to 192.168.0.10 address statically and subnet mask will be set to 255.255.255.0



To log in to the WEB Configuration User Interface, please refer to Section 13.3.

The master charging station should be set as DHCP server with a valid static IP address E.g. 192.168.0.10 with DHCP start and end IP addresses 192.168.0.50 and 192.168.0.100, respectively.

Note that if there is an external DHCP server in the local network, you also need to set master charging station to DHCP client.

Load Management option is **"disabled"** by default. After accessing to configuration web interface, you need to tab "Local Load Management" menu and select **"Master/Slave"** in **"Load Management Option"**. **"Charge Point Role"** should be selected as **"Master"**.

You can also select the DLM communication type from the **DLM Network Selection** dropdown. The available options are Ethernet and WLAN, depending on how the slave will communicate with the master.

Master charging station has additional configuration settings for dynamic load Management group.

Multi Master feature allows multiple DLMs to operate simultaneously on the same network, supporting up to 10 distinct clusters.Each cluster corresponds to a master node, and each master node manages its own dedicated grid to handle the current workload.

By default, the MultiMaster option is disabled.If the user wants to enable this option, they can do so via the web UI by enabling the MultiMaster feature and selecting the desired cluster value.

Note: It is important to remember that two multimaster configurations with the same cluster values cannot coexist on a single network.

The multimaster and cluster settings can be configured via the Master Configuration Settings page and the Slave Configuration Settings page in the web UI.

Grid Settings:

“Maximum Grid Current ” value should be set to the maximum allowed current which can be drawn from the upstream electrical circuit.

“Grid Protection Margin Percentage” A safety margin is set for grid (electrical network) protection. It is usually used to prevent overloads or imbalances. The device limits itself to a certain percentage (%) to avoid damaging the network.

You must increase the **Maximum Grid Current** or decrease the **Grid Protection Margin Percentage** before saving the settings. The Maximum Grid Current limit cannot be lower than 10A when using the Grid Protection Margin Percentage.

The Cluster Max Current defines the maximum current that can be distributed among the connected nodes within the DLM system except home load in dynamic supply.

Cluster FailSafe Current represents the total available current when the external meter is no longer connected or has lost connection.

“Supply Type” should be set according to the load Management type such as **“static”** current limit or **“dynamic”** current limit. For static current limit, “Static” option should be selected. For dynamic current measurement, **“MID”** should be selected in **“supply type”**. Note that dynamic current limit setting needs optional current measurement accessories.

In the Supply Type option;

Static, Klefer 6924/6934 (The energy meter KLEFR 6934 is used for a 3-phase installation or the model KLEFR 6924 for a 1-phase installation.), **TIC** (TIC is a communication interface used in the smart meter Linky systems provided by distribution companies in France.), **GARO GNM3T/GNM3D** (Digital energy meters for 3-phase system, supports the Modbus protocol.) and **P1** (Power optimizer) can be selected.

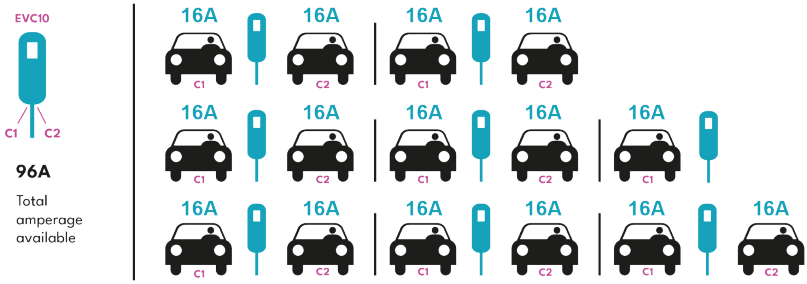
Load Management Mode, can be selected from three options as **“Equally shared”**, **“First in First out”** and **“Combined”** modes. Combined mode needs extra configuration as **“FIFO Charging Percentage”** which effects the share between equally shared and first-in first-out calculations of the load management algorithm.

There are 3 different scenarios of load Management usage:

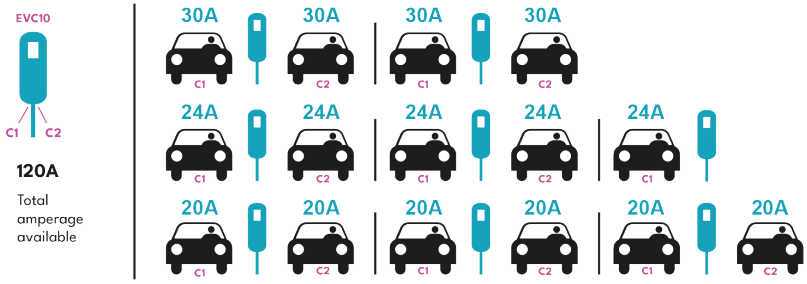
14.7.6.2.1- EQUALLY SHARED

All available power is distributed equally to all EVs connected. This is more suitable-for workplace or condominium charging's where the cars are parked for a considerable period of time.

EV10-2x11kwh:



EV10-2x22kwh:



14.7.6.2.2- FIFO (First In - First Out)

This type of load Management is more oriented for fleets in order to let them have more fully charged EVs when they need. The available power is redistributed and when a new EV arrives, it waits until an EV finishes its Charge or leaves the charging point. If only one connector connected to EV it can draw maximum 32A but if both connectors connected with EV, each connector will draw maximum 16A.

EV10-2x11kwh:

		Gm = 60A					Gm = 56A	
EVSE/Tp	conn	T1	T2	T3	T4	T5	T6	T7
1	C1	32A	16A	16A	16A	8A ↓	6A	6A
	C2	32A	16A	16A	16A	16A	8A ↓	6A
2	C1	32A	28A	16A	16A	16A	16A	8A ↓
	C2	32A	12A	12A	6A	14A	16A	16A
3	C1	32A	12A	6A	6A	6A	20A	32A

*Tp : Time Period, Gm = Maximum Grid allocated for the chargers. Available maximum current for each EVSE in a certain Tp is indicated in black color. Charging current which is drawn by EV is indicated in Blue color. An EV drawing less current is indicated by "↓" symbol.

EV10-2x22kwh:

		Gm = 120A					Gm = 80A	
EVSE/Tp	conn	T1	T2	T3		T4	T5	T6
1	C1	32A	32A	32A	32A	16A ↓	6A	6A
	C2	32A	32A	32A	32A	32A	32A	32A
2	C1	32A	32A	32A	32A	32A	32A	32A
	C2	32A	24A	24A	18A	32A	32A	6A
3	C1	32A	24A	6A	6A	8A	24A	6A

*Tp : Time Period, Gm = Maximum Grid allocated for the chargers. Available maximum current for each EVSE in a certain Tp is indicated in black color. Charging current which is drawn by EV is indicated in Blue color. An EV drawing less current is indicated by "↓" symbol.

14.7.6.2.3- COMBINED LOAD MANAGEMENT

Combined load Management is a combination of FIFO and Equally shared methods. A percentage of total power allocated for EV charging cluster can be set and this percentage of total power distributed to all EVs according to FIFO and the remaining power will be delivered as equally shared principal to all EVs.

EV10-2x11kwh:

F% =50		Gm = 60A						Gm = 80A		Gm=29A	Gm = 30A
EVSE/Tp	conn	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
1	C1	32A	16A	16A	16A	8A	6A	6A			6A
	C2	32A	16A	16A	16A	16A	8A	7A	6A	6A	6A
2	C1	32A	28A	28A	16A	16A	16A	11A	8A	6A	6A
	C2	32A	28A	6A	12A	14A	16A	16A	15A	15A	8A
3	C1	32A	28A	6A	6A	6A	14A	16A	32A	10A	6A

*Tp : Time Period, Gm = Maximum Grid allocated for the chargers. Available maximum current for each EVSE in a certain Tp is indicated in black color. Charging current which is drawn by EV is indicated in Blue color. An EV drawing less current is indicated by "↓" symbol.

You can see the "FIFO share" and "Equally Charging Share" distribution of each CP below:

F% =50		Gm = 120A						Gm = 80A		GM =29A	Gm = 30A
EVSE/Tp	conn	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
1	C1	32A	1+15A	6+ 10A	8.5+7.5A	2+6A↓	6A	6A			6A
	C2	32A	1+15A	6+ 10A	8.5+7.5A	10+6A	2+6A↓	7A	6A↓	6A	6A
2	C1	32A	28A	18+ 10A	8.5+7.5A	10+6A	10+6A	4+7A↓	1+7A	6A↓	6A
	C2	32A	28A	6A	4.5+7.5A	8+6A	10+6A	9+ 7A	8+7A	8+7A	2+6↓A
3	C1	32A	28A	6A	6A	6A	8+ 6A	9+ 7A	25+7A	3+7A	6A

*Tp : Time Period, Gm = Maximum Grid allocated for the chargers. Available maximum current for each EVSE in a certain Tp is indicated in black color. Charging current which is drawn by EV is indicated in Blue color. An EV drawing less current is indicated by "↓" symbol.

EV10-2x22kwh:

F% =50		Gm = 120A						Gm = 80A		GM =29A	Gm = 30A
EVSE/Tp	conn	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
1	C1	32A	32A	32A	32A	20A↓	6A	6A	8A		6A
	C2	32A	32A	32A	32A	32A	32A	32A	32A	11A	6A
2	C1	32A	32A	32A	32A	32A	32A	26A	32A	6A	6A
	C2	32A	24A	24A	12A	24A	32A	8A	10A	6A	6A
3	C1	32A	24A	12A	12A	12A	18A	8A	10A	6A	6A

*Tp : Time Period, Gm = Maximum Grid allocated for the chargers. Available maximum current for each EVSE in a certain Tp is indicated in black color. Charging current which is drawn by EV is indicated in Blue color. An EV drawing less current is indicated by "↓" symbol.

14.7.6.3- Configuration of Backup Master

The "Backup Master" role provides redundancy in a Dynamic Load Management (DLM) network. In the event of the primary "Master" CP becoming unavailable, the "Backup Master" will automatically take over the master functions, ensuring continued operation and load balancing for connected slave CPs.

To configure a CP as a "Backup Master":
Ensure "Load Management Option" is set to "Master/Slave". (This is the default and necessary for both Master and Backup Master roles). From the "Charge Point Role" dropdown menu, select "Backup Master".

Read-Only Settings (Important):
Once "Backup Master" is selected, all other configuration settings on the "Local Load Management" page will become read-only. This is a critical design feature to ensure consistent and predictable behavior for the Backup Master, as its primary function is to replicate the Master's configuration and assume its role if needed.

DLM Master and Backup Master Switching
If the Main Master becomes unavailable, the Backup Master automatically takes control to ensure continuous system operation.

- Once the Main Master is active again, it checks the status of the Backup Master to confirm its readiness.
- If the Backup Master is still active, the Main Master resumes communication directly with it to synchronize the network.
- The Backup Master then returns to standby mode, allowing the Main Master to fully take over again.
- All connected nodes automatically reconnect to the Main Master without requiring user intervention.

DLM Master and Backup Master Data Synchronization

The "Master" and "Backup Master" are designed to continuously synchronize DLM settings and slave data to ensure a seamless failover experience. This synchronization occurs:

- **During Power-Up:** The "Backup Master" requests and receives the latest settings and slave data from the "Master".
- **During Runtime:** The "Master" pushes updated DLM settings and slave data to the "Backup Master" whenever changes occur.

Backup Master Operational Behavior:
When in Standby Mode (Main Master active): When the Main Master is operational and recognized by the Backup Master, the Backup Master remains in a standby state, continuously synchronizing data from the Main Master. The WebUI will display 'Backup Master' as the CP Role, and all other Local Load Management settings will be read-only.

When Operating as the Active Master (after failover): If the primary Master becomes unavailable (e.g., due to power loss or network disconnection), the configured Backup Master will automatically detect this and assume the active Master role after a set timeout. While functioning as the active Master, it will control the DLM network and allow disconnected Slave CPs to reconnect. The WebUI configuration for this CP will still show 'Backup Master' as the selected role, and all other settings will remain read-only.

LOCAL LOAD MANAGEMENT - LOAD MANAGEMENT GROUP

After the basic load Management configurations are finished, be sure to connect all of the slave charging stations to the master charging station through daisy chain or star network topology.

When all the charging stations are ready to communicate with the master charging station, click “UPDATE DLM GROUP” button in “Load Management Group” menu. When “UPDATE DLM GROUP” button is clicked, master charging station starts slave discovery mode and automatically finds and lists slave charging stations in the list including master charging station itself as connector.

After master charging station discovers all the slave charging stations, then you can make other required settings of each slave one by one. After selecting the slave serial number the respective slave information will be visible.

If the selected slave is required to be prioritized over the other charging stations, you can set “VIP Charging” as enabled .

For setting the actual phase connection sequence of each charging station, you need to select correct sequence from the dropdown menu.

Note that if the charging station has only one phase supply, then you just need to select correct phase number from the drop down menu.

Until connection is alive operating with available current, when connection lost with network then operating with fallback current it is not compulsory until click in the block.

Other parameters of slave are just read only information from the connectors, which can be updated to the latest values by refreshing the configuration web interface.

Similar to slave list for each slave we have connector list and can select specific connector number from list of connectors and It will show updated information of respective connector as connector state, Instant Current and Available.

VESTEL

MOBILITY

CE