VESTEL
MOBILITY

ELECTRIC VEHICLE CHARGER

EVC01 Series

Installation Guideline

CONTENTS

1 - SAFETY INFORMATION

CAUTION

RISK OF ELECTRIC SHOCK

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

CAUTION

AC grid connection and load planning of the electric vehicle charging device shall be reviewed and approved by authorities as specified by the regional or national electric regulations and standards in effect.

For multiple electric vehicle charger installations the load plan shall be established accordingly. The manufacturer shall not be held liable directly or indirectly for any reason whatsoever in the event of damages and risks that are borne of errors due to AC grid supply connection or load planning.

IMPORTANT - Please read these instructions completely before installing or commissioning the device

1.1 - SAFETY WARNINGS

- These safety and operating instructions should be kept in a safe place for future reference.
- Check the voltage reported on the label; do not use the charging station without the appropriate supply voltage.
- If there is any doubt about normal operation or if the unit is damaged in any way, DO NOT continue using the unit; switch off the main power switches (MCB and RCCB). Contact your installer.
- The room temperature range should be approximately between -25°C and +50°C without direct sunlight and at a relative humidity between 5% and 95%. Use the charging station only within operating conditions.
- The position of the device must be chosen in such a way that excessive heating of the charging station is avoided. High operating temperatures, caused by direct sunlight or heating sources, may cause the charging current to be reduced or the charging process to be temporarily interrupted.
- The charging station is intended both for outdoor and indoor use. Cannot be used in public areas.
- To reduce the risk of fire, electric shock or material damage, do not expose the unit to rain, snow, electrical storms or other severe weather events. Moreover, the charging station must not be exposed to splashes or spray of liquids.
- Do not touch the terminals, the electric vehicle connector and other hazardous live parts of the charging station with sharp metal objects.
- Avoid exposure to heat sources, and place the unit away from flammable, explosive, hard or combustible materials, chemicals or vapours.

- Risk of explosion. The equipment has internal flammable or spark-sensitive components that should not be exposed to flammable vapours. The unit should not be located in recessed spaces or below floor level.
- The device is designed solely for charging vehicles that do not require ventilation during loading.
- To avoid the risk of explosion and electric shock, make sure that the specified circuit breaker and earth leakage circuit breaker are connected to the network of the building.
- The lowest part of the socket should be between 0.9 m and 1.5 m above the ground.
- The use of adapters is not allowed. The use of extension cables is not allowed.
- Use this product at an altitude of less than 3000 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.

“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- GROUNDING WARNINGS

- The charger must be connected to a grounded system. The earth conductor entering the charger must be connected to the instrument ground lug which is located inside the charger. This operation must be done with the circuit conductors and by connecting the equipment grounding bar or cable to the charging station. Connections to the loader are the sole responsibility of the installer.
- In order to reduce the risk of electric shock, connect only to earthed sockets.
- **WARNING:** Ensure that during installation and use the charging station is permanently and correctly grounded.
- **WARNING:** If Earthing Type is selected as IT, the protective earth error check is disabled.

1.3- POWER CABLES, SOCKETS AND CHARGING CABLES WARNINGS

- A damaged power cable can cause a fire or lead to electric shocks. Do not use the product if the flexible power cable or vehicle cable is frayed, if its insulation is damaged or if the unit shows other signs of damage.
- Therefore, please ensure that the charging cable is well positioned; do not step on it, do not trip over it or do not subject it to damage or stress.
- Do not forcibly pull on the cable and do not damage it with sharp objects.
- Never touch the vehicle plug/socket or cable with wet hands: this could cause a short circuit or an electric shock.
- In order to avoid the risk of fire or electric shock, do not use the device with extension cords. To avoid danger, if the mains cable or vehicle cable is damaged, it must be replaced by the manufacturer, its service agent or by similarly qualified persons.

1.4 - WALL MOUNTING WARNINGS

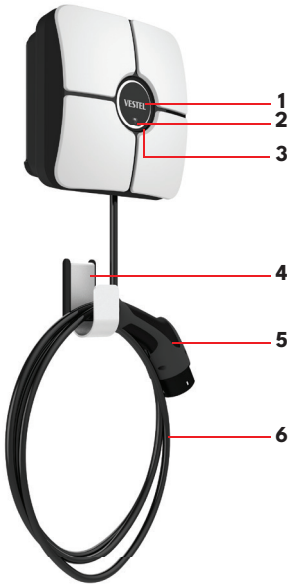
- Please carefully read the instructions before mounting the wall charging station.
- Do not install the charging station on the ceiling or on sloping walls.
- Use the indicated wall mounting screws and other accessories.
- The unit is certified to be used both indoors and outdoors. If the unit is mounted outdoors, the equipment for connecting the hoses to the unit must be certified for outdoor use and must also be installed in such a way that the IP certification on the unit is maintained.

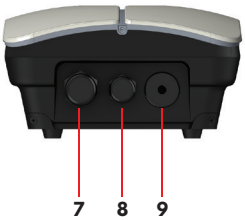
2 - DESCRIPTION

Model Name	**MODEL DESCRIPTION : EVC01-AC***** EVC01 : Electric Vehicle AC Charger (Mechanical Cabinet EVC01) 1st Asterisk (*): Rated Power 7 : 7.4 kW (1Phase Supply Equipment) 11 : 11 kW (3Phase Supply Equipment) 22 : 22 kW (3Phase Supply Equipment) 2nd Asterisk (*) can include combinations of the following communication module options.RFID reader is standart equipment for all of the model variant."S" option must be included for selecting combinations of W,L and P; S : Smart Board with Ethernet Port W : WiFi & Bluetooth module L : LTE / 3G / 2G module P : ISO 15118 PLC module 3rd Asterisk (*): Broken PEN Detection Option Blank : No broken PEN detection and disconnection functionality PEN : Broken PEN detection and disconnection function 4th Asterisk (*) can be one of the following for tethered cable length T2P : Type2 Charging Cable with 5m T2P7 : Type2 Charging Cable with 7m 5th Asterisk (*) can be one of the following: WHT : w/White Cosmetic Cover
Cabinet	EVC01

3 - GENERAL INFORMATION

3.1 - INTRODUCTION OF THE PRODUCT COMPONENTS

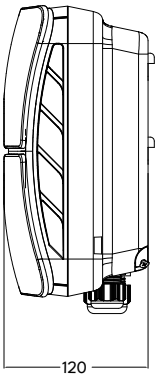


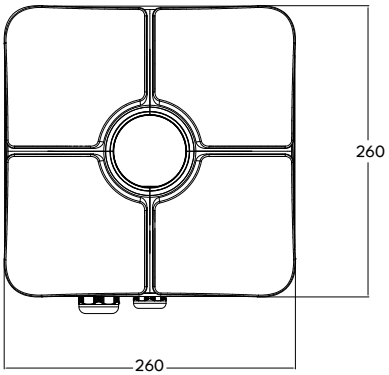


EVC01 Product Components

1- Branding Area
2- RFID Card Reader
3- LED Status Indicator
4- Cable Hook
5- Charging Plug
6- Charging Cable
7- Supply inlet cable gland
8- Communication cable gland
9- Charging cable gland

3.2 - DIMENSIONAL DRAWINGS





4 - REQUIRED EQUIPMENT, TOOLS and ACCESSORIES

		
Drill Bit 8mm	Impact Drill	PC
		
Volt Indicator	Torx T20 Security Screwdriver	Torx T10 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

5 - TECHNICAL SPECIFICATION

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

Model	EVC01-AC22 Series	EVC01-AC11 Series	EVC01-AC7 Series
IEC Protection class	Class - I		
Vehicle Interface	Attached Cable with IEC 62196 Type-2 Plug (5 or 7 meters)		
Voltage and Current Rates	230/400V 50 Hz 3-Phase 32A	230/400V 50 Hz 3-Phase 16A	230V 50 Hz 1-Phase 32A
AC Maximum Charge Output	22kW	11kW	7.4kW
Earthing System Options	TN-TT by default, IT optional		
Serial Interface	Modbus over RS485		
Built-in DC residual current sense	6mA		
Required RCCB on AC Mains	4P-40A - 30mA RCCB Type- A	4P-20A - 30mA RCCB Type- A	2P-40A - 30mA RCCB Type- A
Required Circuit Breaker on AC Mains (Max Current)	4P-40A MCB Type-C	4P-20A MCB Type-C	2P-40A MCB Type-C
Broken PEN detection and disconnection function for the UK	Optional for 1-phase only		
Built-in Electrical Protection	Over Current, Over Voltage, Under Voltage, DC Residual Current, Over Temperature, Short Circuit, Surge/Lightning, Earth Fault, Phase- Neutral Reverse Detection		
Required AC Mains Cable (Recommended minimum cable size)	5x 6 mm^2 (< 50 m) External Dimensions: Ø 15-21 mm	5x4 mm^2 (< 50 m) External Dimensions: Ø 15–21 mm	3x 6 mm^2 (< 50 m) External Dimensions: Ø 11-15 mm

CONNECTIVITY

Ethernet	100 Mbps Ethernet
Wi-Fi	Wi-Fi 802.11 a/b/g/n/ac 2.4 GHz and 5 GHz
Bluetooth (Optional)	Bluetooth 5.1 ; Bluetooth 4.2 low energy
Cellular (Optional)	LTE / 3G / 2G GSM : B3 (1800 MHz), B8 (900 MHz) WCDMA : B1 (2100 MHz), B8 (900 MHz) LTE : B1 (2100 MHz), B3 (1800 MHz), B7 (2600 MHz), B8 (900 MHz), B20 (800 MHz), B28A (700 MHz)
RFID Reader	ISO 14443A/B and ISO 15693

OTHER FEATURES

Potential Free Enable Input	Signal input for enabling and disabling the charging station externally
Potential Free Load Shedding Input	Signal input for reducing the charging current down to 8A in case of overload on the upstream transformer

OTHER FEATURES

Remote Control / Monitoring	OCPP 1.6j
Remote Diagnostics	Remote Diagnostics over OCPP
Load Management	Ethernet / Wi-Fi / OCPP
Software Update	OCPP / Configuration WEB User Interface

MECHANICAL SPECIFICATIONS

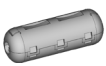
Material	PC 5VA f1, flame retardant
Product size	256.0 mm (Height) x 256.0 mm (Width) x 127.0 mm (Depth)
Dimensions (with package)	375.0 mm (Height) x 375.0 mm (Width) x 275.0 mm (Depth)
Product weight	6,6 KG (22 kW variant) 5,6 KG (7.4/11 kW variant)
Weight with package	8,5 KG (22 kW variant) 7,5 KG (7.4/11 kW variant)
AC Mains Cable Dimensions	For three-phase models Ø 15-21 mm For one-phase models Ø 11-15 mm
Cable Inlets	AC Mains / Ethernet / RS485

ENVIRONMENTAL TECHNICAL SPECIFICATIONS

Protection Class	Ingress Protection	IP54
	Impact Protection	IK08, IK10
Usage Conditions	Temperature	-25 ˚C to +50 ˚C (without direct sunlight)
	Humidity	5% - 95% (relative humidity, without condensation)
	Altitude	0 - 3,000m

6- INSTALLING CHARGING STATION

6.1- SUPPLIED INSTALLATION EQUIPMENT and ACCESSORIES

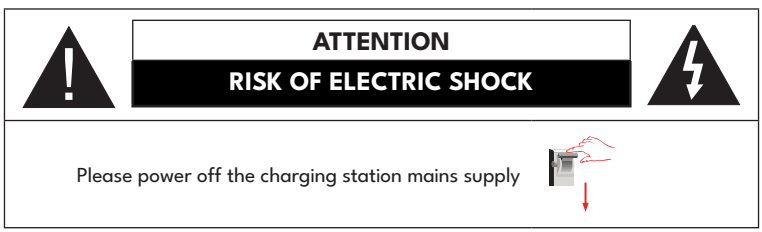
Accessory/Material Name	Use for	Quantity	Image
Mounting Plate	Mounting the unit to the wall or metal pole	1	
Plastic Dowels (M8x50)	Mounting the charging station to the wall	7	
Screw (M6x50)	Mounting the charging station to the wall	7	
Torx T20 Security L-Wrench	Tightening the screws that secure the front and rear housings together to ensure sealing	1	
Torx M4x9 security screw	Mounting the mounting plate to the product.	2	
Screw M4x8	Mounting the cosmetic cover to the front cover.	1	
Hook Mounting Plate	Mounting the unit to the wall or metal pole	1	
Ferrite	Inserted into the ethernet cable	2	
Metal Hook	This part is mounted on the hook mounting plate so that the cable is wound over it.	1	
AC Plug Holder (Optional)	This part is mounted on the wall or stand pole so that the cable is wound over it.	1	
SIM Card (Optional)	Product control with internet connection	1	
User RFID Card	Start&Stop Charging	2	
Master RFID Card	Adding&Removing the User RFID Cards to Local RFID List	1	
QSG	QuickStart Guide	1 Set	

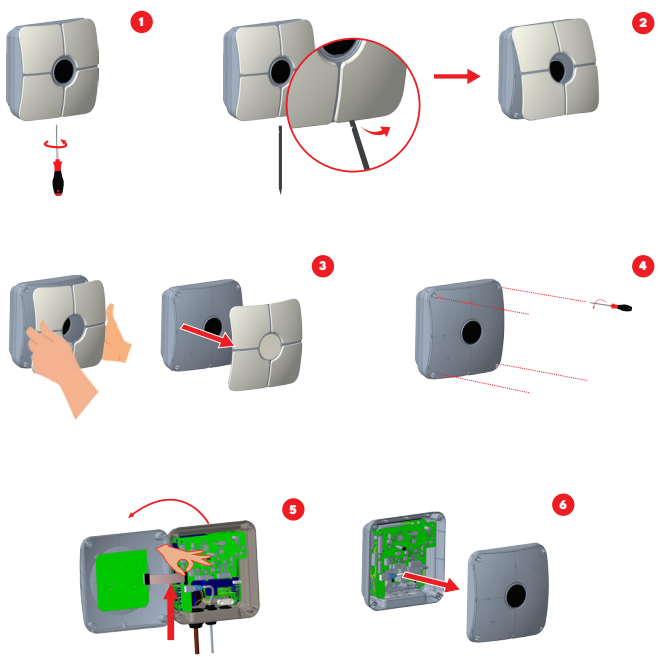
6.2- PRODUCT INSTALLATION STEPS

CAUTION!

- Ensure that the ground resistance of the installation is less than 60 ohms.
- Read the instruction fully before mounting the charger
- 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 deviceis installed outside the building, the hardware that will be used to connect the cables to thecharger shall be compatible with outdoor use and the charging station shall be formatting the IP rating of the charger.

6.2.1 - OPENING THE COVER OF THE CHARGING STATION





1- Remove the screw at the bottom of the cosmetic cover.

2- Use a pointed metal tool to release the cosmetic cover clips and pull it towards yourself.

3- Remove the protective cosmetic strips at the corners of the front cover. First pull the bottom left corner towards yourself, then the bottom right corner. As shown in the image, hold the corners and pull towards yourself to remove the cosmetic cover.

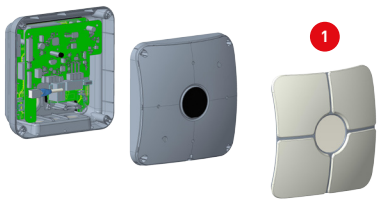
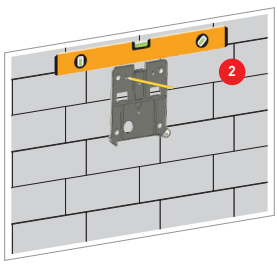
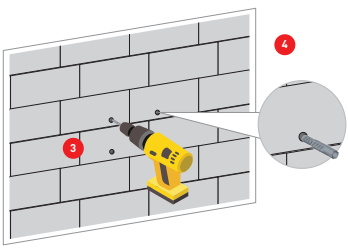
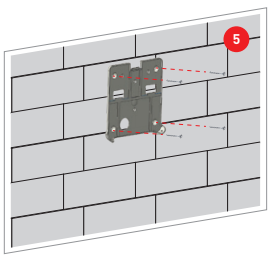
4- Then unscrew the screws of the front cover, which is connected to the main body.

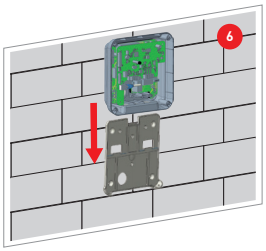
5- Disconnect the flat cable in between the boards which are on the back side and front side of the unit.

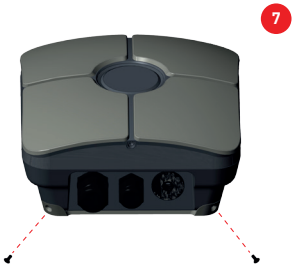
6- Remove the front cover.

6.2.2 - WALL MOUNT INSTALLATION

Wall mount installation is common for all charging station models. Metal pole installation is explained seperately in metal pole intallation guide.

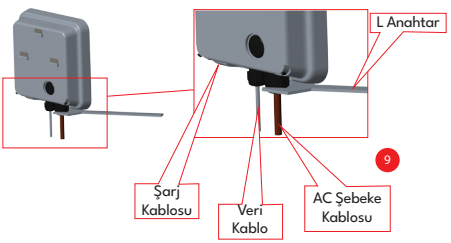
1- Open the product front cover by following the instruction.	**2-** Place the mounting plate of the charging station to the wall which is given in accessory bag and mark the drill bit holes with a pencil.
	
3- Drill the wall on the marked points using the impact drill (8mm drill bit). **4-** Place the dowels into the holes.	**5-** Screw the mounting plate to the wall with (M6x50) screws, which are inside the accessory bag, as shown in figure below.
	
6- Hang back side of the unit to the mounting plate as shown in figure below.	**7-** Tighten the torx (M4x9) security screws of the product, which are inside the accessory bag, as shown in figure below.





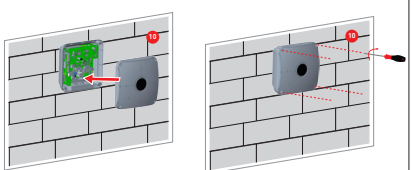
8- Insert the AC mains cable into the charging station from the left cable gland. Follow the AC Mains Connection instructions on the next pages, depending on the model of the charger. (Single/Three Phase)

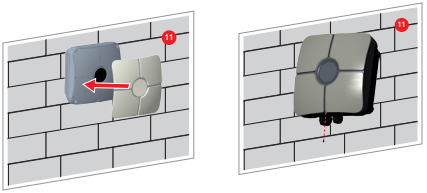
9- Tighten the cable glands as shown in the figure. Before closing the cover of the charging station, follow the instructions in next sections if any function related to these sections are used.



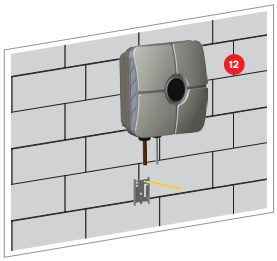
10- To close the front cover of the charging station, tighten the screws which were removed. (Min:0,9 Nm ; Max:1,1 Nm torque value). Before closing the front cover, don't forget to connect the flat cable to the board which was removed.

11- To attach the cosmetic cover to the charging station, mount the cosmetic cover to front cover with its tabs.Tighten the screw (M4x8) of the front cover and cosmetic cover, which is inside the accessory bag, as shown in figure below.



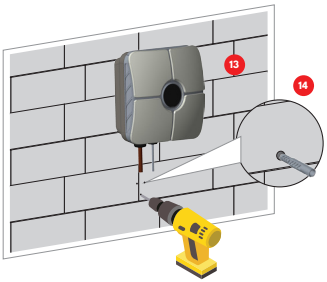


12- To be able to twist the charging cable, place the mounting bracket of the cable hook to the wall which is given in accessory bag and mark the drill bit holes with a pencil.

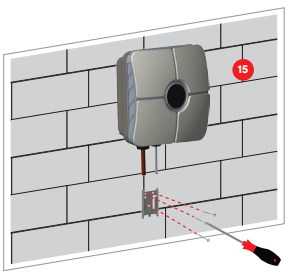


13- Drill the wall on the marked points using the impact drill (8mm drill bit).

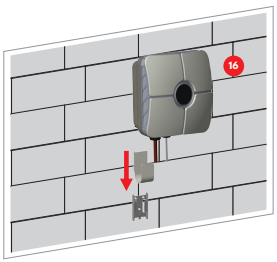
14- Place the dowels into the holes.



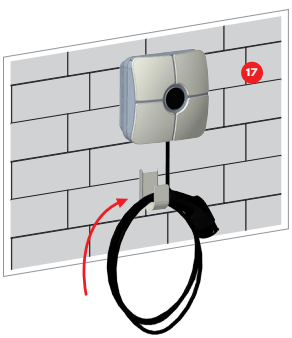
15- Tighten the security screws (M6x50) of the product using proper screwdriver.



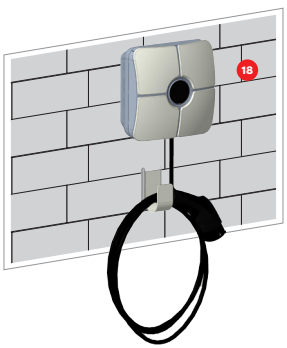
16- Position the metal cable hook, which is inside the accessory bag, over the mounting bracket as shown in figure.



17- Twist the charging cable over the cable hook.



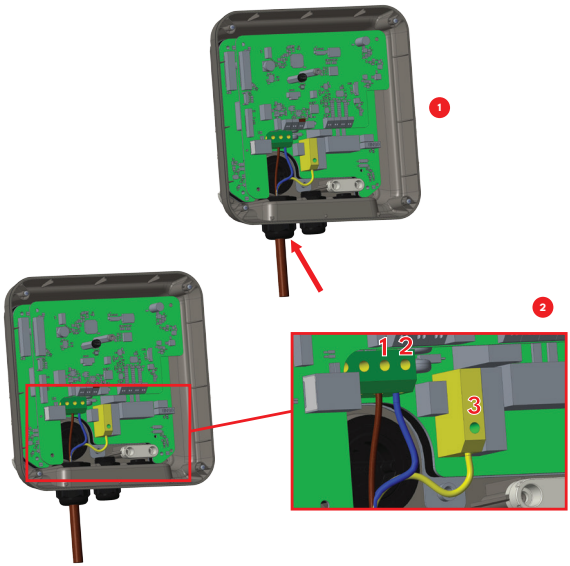
18- The unit is ready to use.



6.2.3 - POLE MOUNT INSTALLATION

The details of pole mounting is explained in pole installation manual with figures.

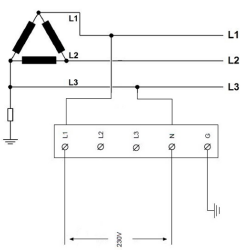
6.2.4- SINGLE PHASE CHARGING STATION AC MAINS CONNECTION



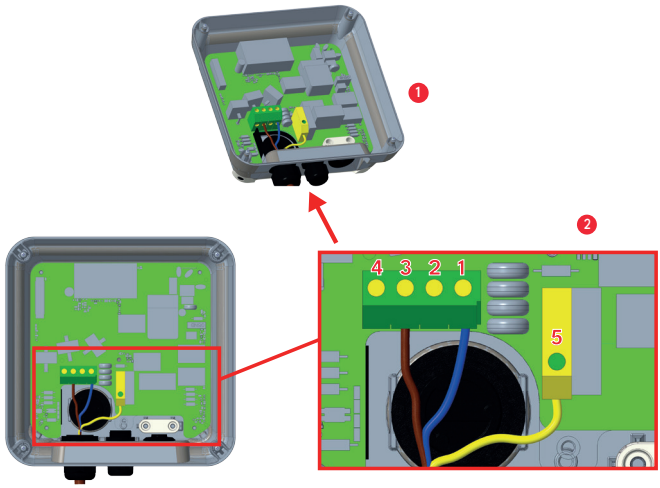
Insert the cable to the terminal block as shown in the image. Check the table below to match Electric Terminal number with AC Cable Color.

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

For single phase **IT Grid** installation, wiring diagram which is shown below should be used. Also grounding type should be set to “IT Grid” from the ”Installation settings” menu in web user interface.



6.2.5 - SINGLE PHASE CHARGING STATION AC MAINS CONNECTION (with PEN optional)



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

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

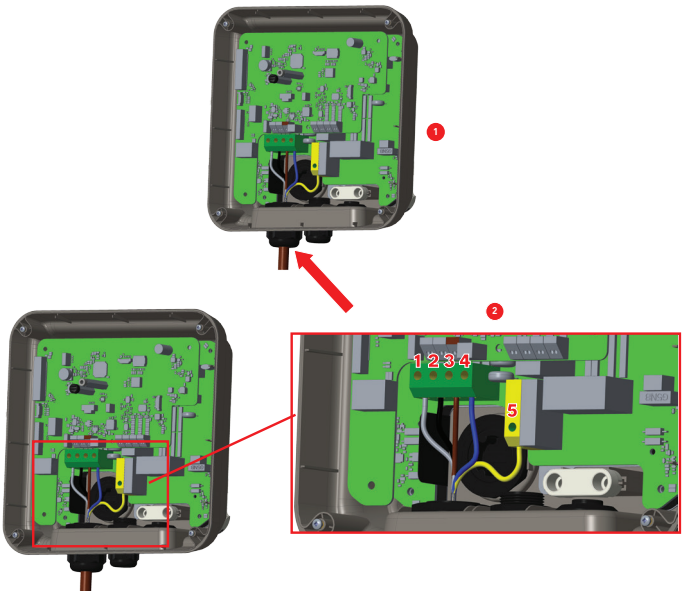
6.2.6 - BROKEN PEN DETECTION FEATURE (Optional)

This feature is valid for single phase units and should only be used on single phase TN-C-S supplies.

Protection against electric shock is provided by a contactor. If the supply voltage at the charging point (line to neutral) exceeds 254 V rms or falls below 208 V rms, the contactor disconnects the vehicle from live conductors, protective earth, and the control pilot within 5 seconds.

If the unit detects broken PEN, it automatically goes into error mode and can only be cleared by power cycling the charge point i.e. powering off and back on again. The unit should be reset to get over the error.

6.2.7- THREE PHASE CHARGING STATION AC MAINS CONNECTION

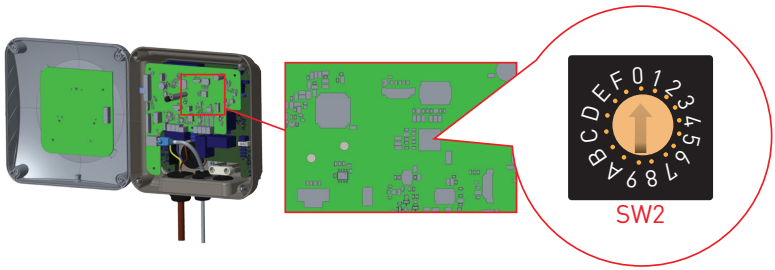


Insert the cable to the terminal block as shown in the image. Check the table below to match Electric Terminal number with AC Cable Color.

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

6.2.8 - ADJUSTING CURRENT LIMITER

The charging station has current limiter (rotary switch) on the mainboard which is shown in figure below. This switch is used for adjusting the current and power of charging station. The arrow in the middle of the rotary switch must be adjusted gently by rotating with a flathead screwdriver to the position of the required current rate. The details of the current rates are desicribed in table below.



Other Location

Current Limiter Position	Current Limit Value			
	Phase	22 kW	11kW	7.4kW
0	1-Phase	10 A	10 A	10 A
1		13 A	13 A	13 A
2		16 A	16 A	16 A
3		20 A		20 A
4		25 A		25 A
5		30 A		30 A
6		32 A		32 A
7				
8	3-Phase	10 A	10 A	
9		13 A	13 A	
A		16 A	16 A	
B		20 A		
C		25 A		
D		30 A		
E		32 A		
F				

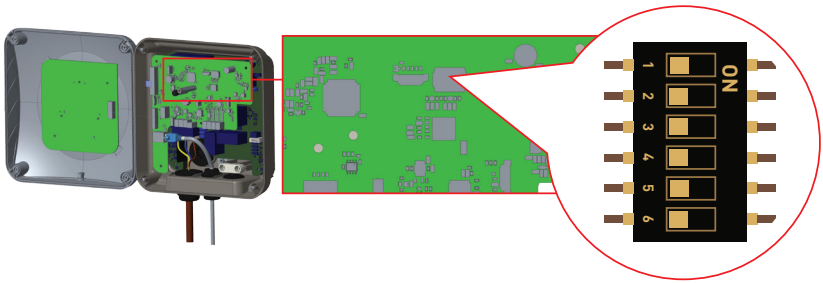
Required Circuit Braker on AC Mains	
EV Charging Station Current Limiter Setting	C-Curve MCB
10 A	13 A
13 A	16 A
16 A	20 A
20 A	25 A
25 A	32 A
30 A	40 A
32 A	40 A

GERMANY:

Current Limiter Position	Current Limit Value			
	Phase	22 kW	11kW	7.4kW
0	1-Phase	10 A	10 A	10 A
1		13 A	13 A	13 A
2		16 A	16 A	16 A
3		20 A		20 A
4		25 A		25 A
5		26 A		26 A
6		32 A		32 A
7				
8	3-Phase	10 A	10 A	
9		13 A	13 A	
A		16 A	16 A	
B		20 A		
C		25 A		
D		26 A		
E		32 A		
F				

Required Circuit Breaker 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
26 A	40 A
32 A	40 A

6.2.9 - DIP SWITCH SETTINGS

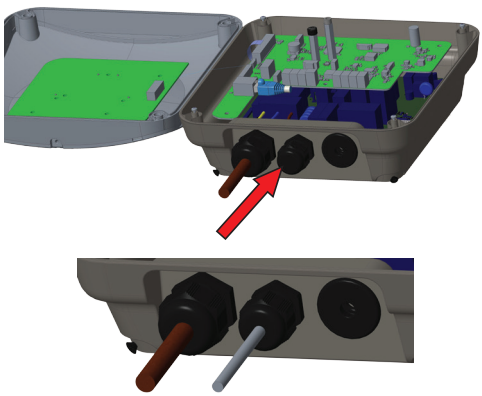


Brief descriptions of the DIP switch pin settings can be found in below table.

Pin Number	Description
Pin-1	Reserved
Pin-2	External Enable Input Functionality
Pin-3	No Function
Pin-4-5-6	Power Optimizer (Requires Optional Accessories)

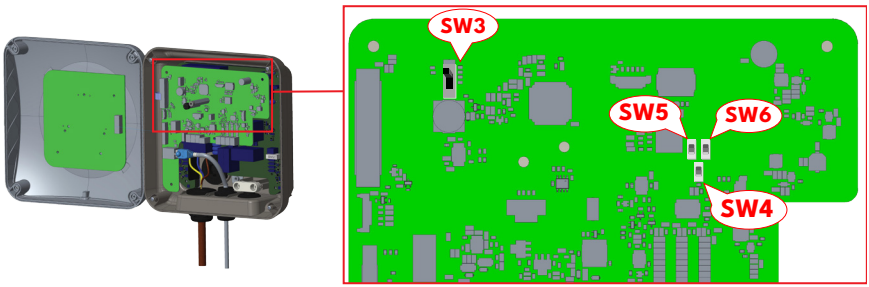
6.2.9.1 - DATA CABLE CONNECTION

Insert the cable through the gland as shown in the figure below.



6.2.9.2 - MODE SELECTION

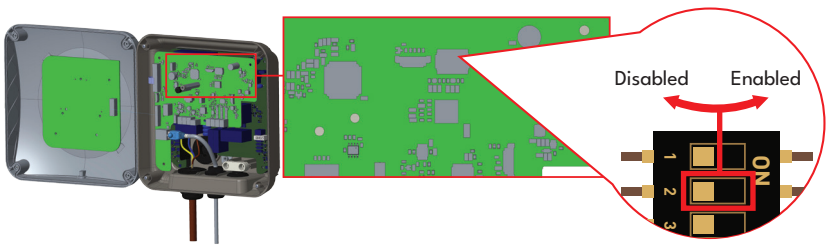
Mode Selection is supported in control board. There are slide switches on the as shown in below figure. Follow the positions for each function to activate or deactivate as shown in below table.

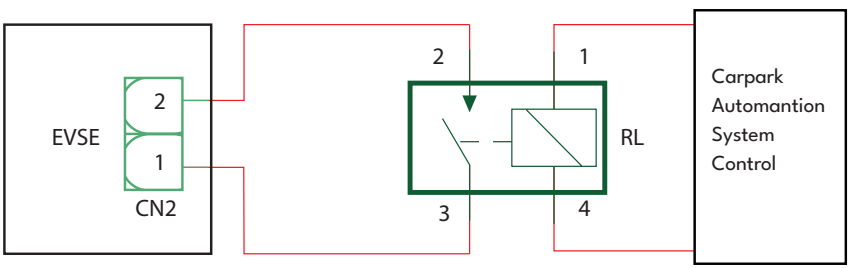


Switches	Main mode selection switch	Figure
SW3 (Position Switch 3)	1: Standart charging mode (Top Position)	
	2: Standart charging - Peak / Offpeak mode (Middle Position)	
	3: TIC mode (Bottom Position)	
SW4 (Position Switch 4)	1: TIC mode (Top Position)	
	2: Power Optimizer mode with extra accessory connection (Bottom Position)	
SW5 (Position Switch 5) SW6 (Position Switch 6) (Top Position)	Power Optimizer mode with CT	
SW5 (Position Switch 5) SW6 (Position Switch 6) (Bottom Position)	Power Optimizer mode with MID Meter	

6.2.9.3 - EXTERNAL ENABLE INPUT FUNCTIONALITY

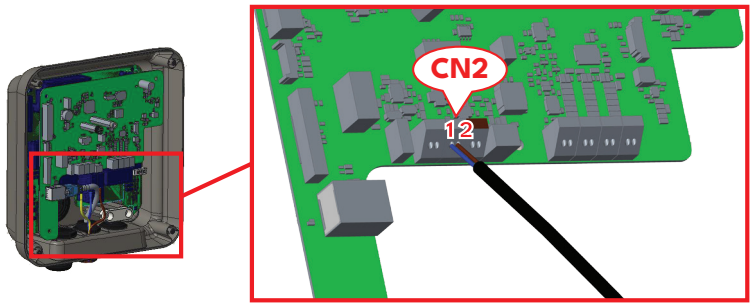
Your charging station has external potential free enable / disable functionality which can be used for integration of your charging station to carpark automation systems, energy supplier ripple control devices, time switches, photovoltaic inverters, auxiliary load control switches, external key lock switches etc. DIP switch position 2 is used for enabling and disabling this functionality.





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 (see figure).



Cable Terminal	Cable Color
CN2-1	Blue
CN2-2	Brown

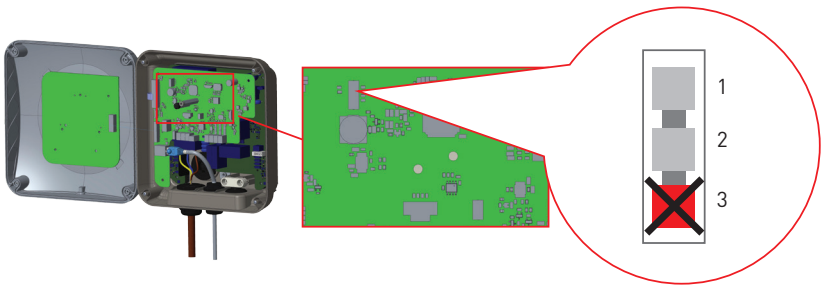
6.2.9.4 - POWER OPTIMIZER (REQUIRES OPTIONAL ACCESSORIES)

The EV charger has option to make single load balancing with different accessories.

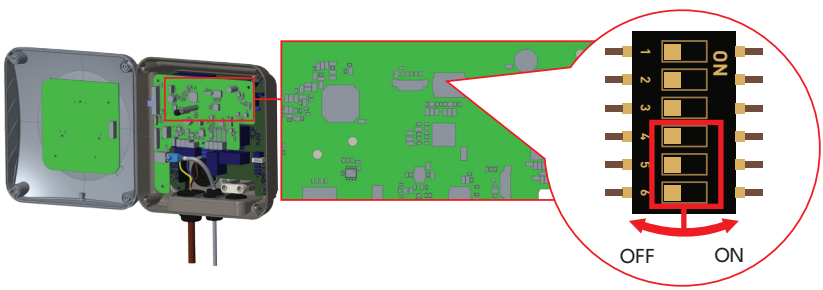
a. Power Optimizer with External MID meter

b. Power Optimizer with External Current Transformer (CT)

To adjust the power optimizer, the slide switch (mode selection switch - SW3) on the control board should be in position to 1 or 2 as shown in figure below. If the switch is set to position 3, power optimizer does not work.



This feature is provided with an optional metering accessories which are sold separately. In power optimizer mode, the total current drawn from the main switch of the house by charging station and other household appliances is measured with current sensor integrated to the main power line. Current limit of the main power line of the system is set through the DIP switches inside the charging station. According to the limit set by the user, charging station adjusts its output charging current dynamically according to the measurement of main power line.



Last 3 DIP switch pins (4,5,6) shown in figure below corresponds to binary digits of the maximum current value as shown in the table. When 4, 5, 6 pins are in OFF position, power optimizer functionality is disabled.

DIP Switch Positions			Current Limit Value
4	5	6	
OFF	OFF	OFF	Power Optimizer Disabled
OFF	OFF	ON	16 A
OFF	ON	OFF	20 A
OFF	ON	ON	25 A
ON	OFF	OFF	32 A
ON	OFF	ON	40 A
ON	ON	OFF	63 A
ON	ON	ON	80 A

Table-1

FRANCE:

DIP Switch Positions			Current Limit Value
4	5	6	
OFF	OFF	OFF	Power Optimizer Disabled
OFF	OFF	ON	25 A
OFF	ON	OFF	30 A
OFF	ON	ON	40 A
ON	OFF	OFF	45 A
ON	OFF	ON	50 A
ON	ON	OFF	60 A
ON	ON	ON	90 A

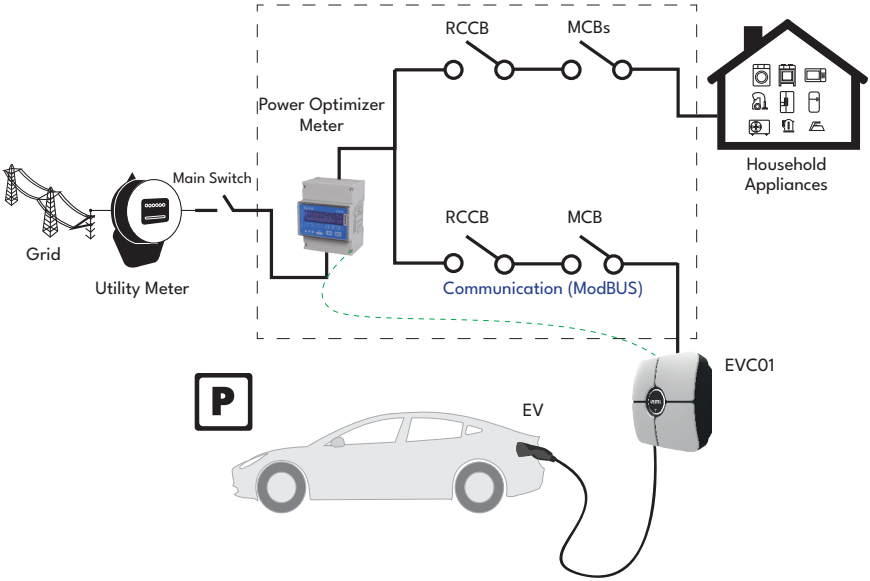
Table-2

ITALY:

DIP Switch Positions			Current Limit Value
4	5	6	
OFF	OFF	OFF	Power Optimizer Disabled
OFF	OFF	ON	14 A
OFF	ON	OFF	21 A
OFF	ON	ON	28 A
ON	OFF	OFF	32 A
ON	OFF	ON	40 A
ON	ON	OFF	63 A
ON	ON	ON	80 A

Table-3

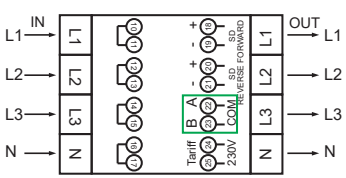
6.2.9.5 - POWER OPTIMIZER WITH EXTERNAL MID METER



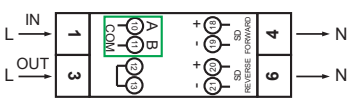
Power Optimizer Meter should be placed just after the main switch of the house as shown in the figure.

Power Optimizer Meter wiring connections can be made according to the information below.

Three Phase



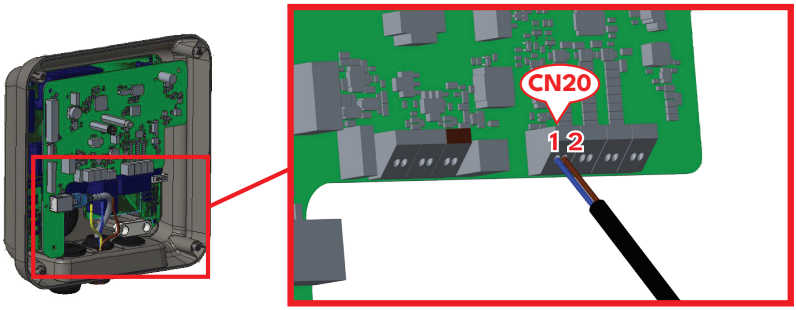
Single Phase



■ 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	Cable Color	Description
(CN20-2)	Brown	A (COM)
(CN20-1)	Blue	B (COM)

6.2.9.5.1 - POWER OPTIMIZER WITH EXTERNAL CURRENT TRANSFORMER (CT) (Optional)

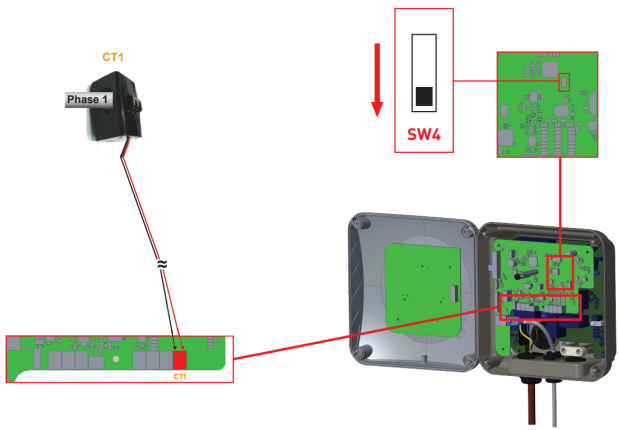
An external CT clamp is required for dynamic load management. One External CT Clamp (FATS16L-100) is required for a single phase installation. Three CT Clamps are required for a three phase installation. When connected the charger will use the energy consumption information provided by the CT clamp to adjust the charger output power. This is to ensure the load on the property does not exceed the rated load of the mains supply fuse. The current limit is set by the DIP switches inside the charger. Please see section 6.2.9.2 - MODE SELECTION.

To perform the corresponding installation, follow the steps below.

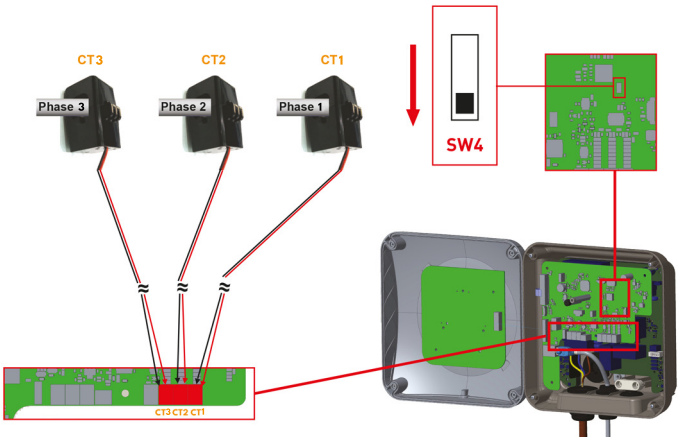
- The slide switch (SW3) on the control board shown in Figure should be set to 1 or 2.
- The wiring of the external electrical circuits and the control board inside the EV charger should be done as shown in Figure below.
- The slide switch (SW4) on " The Embedded Power Optimization Module" should be set as shown in Figure below. (Bottom side.)

NOTE : CAT5 cable can be used to extend the cables of the CT Clamp (FATS16L-100).

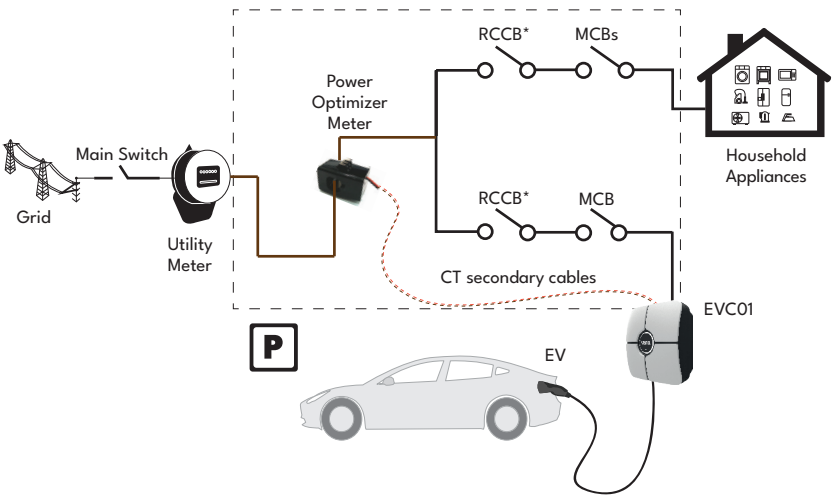
Single Phase:



Three Phase:



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



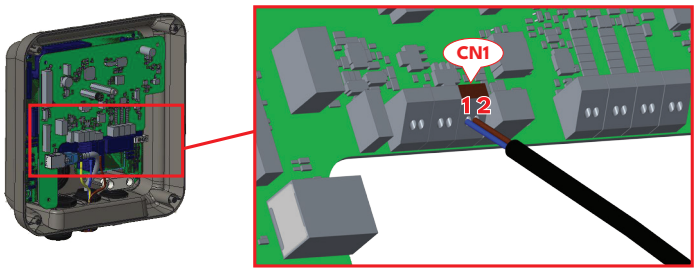
Note: The CT Clamp (FATS16L-100) is provided with 1meter cable. This can be extend using a twisted pair cable, e.g CAT5 Cable. Do not exceed the maximum length of 100m.

6.2.10 - 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 1 and 2 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 1 and 2) charging station supplies maximum available current.

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

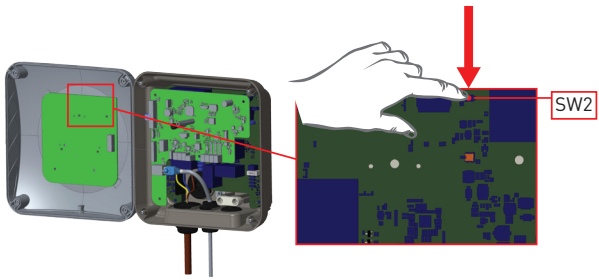


Cable Terminal	Input
CN1-1	Load Shedding Input +
CN1-2	Load shedding Input –

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

6.2.11 - FACTORY RESET

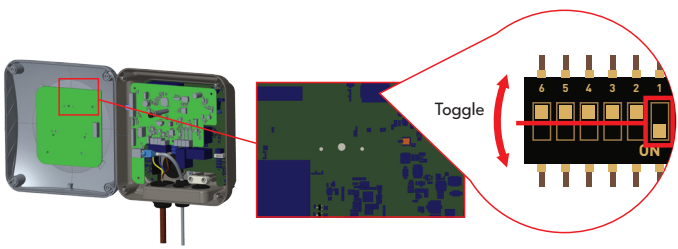
You must push the button on Smart board shown in figure below for factory reset. When you hold the button for 5 seconds user configuration will be reset to factory configuration. (e.g OCPP config, Network Config will be back to factory configuration.)



6.2.12 - RESETTING LOCAL RFID CARD LIST AND REGISTERING NEW MASTER RFID CARD IN STANDALONE USAGE MODE

If you loose your master RFID card and need to define a new master RFID card, below steps should be followed by your authorised service technician.

- Make sure the charging station is powered-off and open the front cover of your charger which is mentioned in installation guideline.
- Toggle the position of DIP switch No 1 which is located on the smart board of the charger shown in figure below. After that please turn on the charger again.



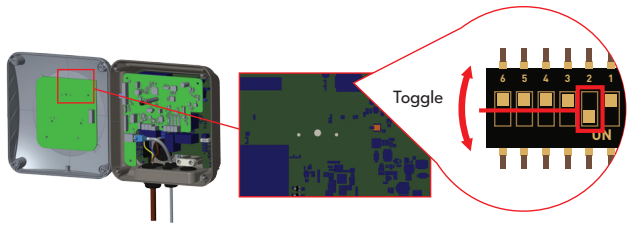
When the charger is powered on again please note that;

- Previously stored master card and user card list, if any exists, are deleted from charging station while entering the configuration mode. In configuration mode, the charger indication LED blinks red.
- If master RFID card had not been registered during 60 seconds then configuration mode expires and charging station behaves as autostart product.
- The first RFID card which is registered within this 60 seconds of duration will be the new master RFID card. Please follow instructions to register RFID user card which is used during charging process.

6.2.13 - 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 the charging station is powered-off and open the front cover of your charger which is mentioned in installation guideline.
- Toggle the the position of DIP switch no 2, which is located 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



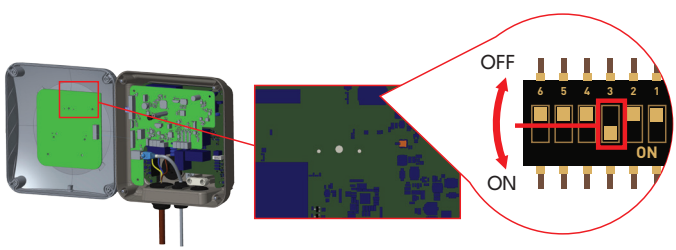
If the charger's LAN interface is needed to be set back to DHCP mode again this can be done from the web configuration interface.

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.

6.2.14 - WEB CONFIGURATION INTERFACE ENABLE / DISABLE

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.
- If you want to enable the web configuration interface, the position of DIP switch no 3 should be in "OFF" position as shown in figure below.
- If you want to disable the web configuration interface, the position of DIP switch no 3 should be in "ON" position as shown in figure below.



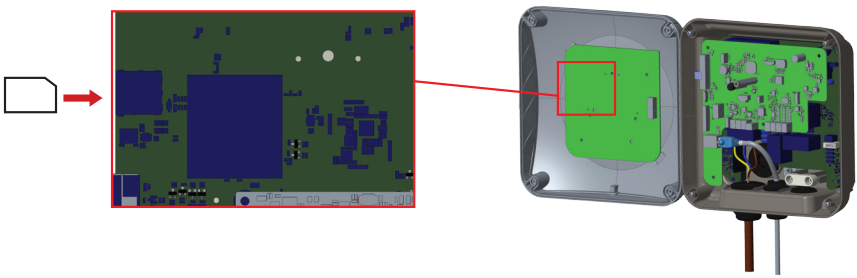
6.3 - OCPP CONNECTION

Make sure the charging station is powered-off.

6.3.1 - CONNECT OCPP OVER CELLULAR NETWORK (Optional)

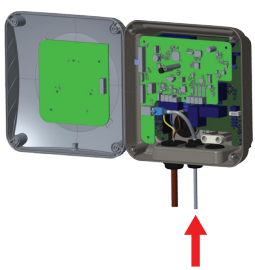
Insert the micro SIM card in the SIM card slot on cellular module as shown in the below figure.

NOTE: The device must be switched off during the process of inserting a micro SIM card into the product.

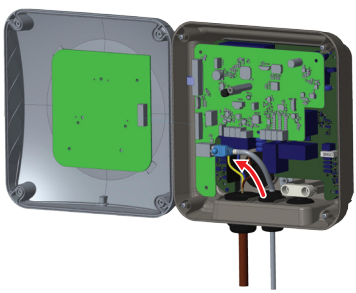


6.3.2 - CONNECT OCPP OVER ETHERNET

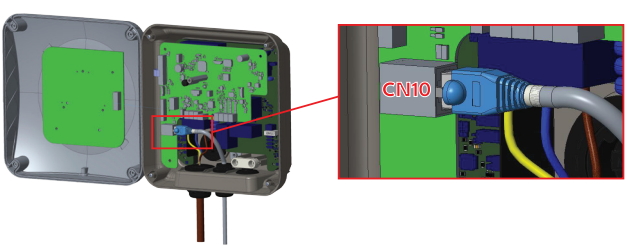
1- Insert cable through the cable gland.



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.



6.4 - COMMISSIONING

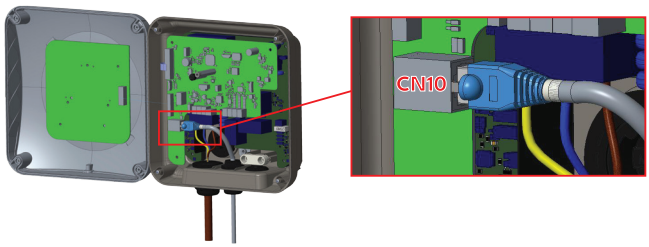
If you want to connect the charging station's web configuration interface, you have two options;

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.

6.4.1 - CONNECTING THE PC TO THE SAME NETWORK AS THE SMART BOARD

To access the web configuration interface of the EV charger, the PC and the Smart Board (HMI Board) must be connected to the same local network.



This connection can be established in one of the following ways:

Connect both the PC and the EV charger to the same Ethernet switch, or
Connect the EV charger directly to the PC using an Ethernet cable.

The Ethernet connection of the Smart Board is provided via the CN10 connector.

The default IP address of the HMI Board is: 192.168.0.10

Therefore, the PC must be configured with a static IP address within the same subnet.

Recommended PC network settings:

Network: 192.168.0.x
Subnet Mask: 255.255.255.0
Assignable IP Range for PC: 192.168.0.1 – 192.168.0.254
Avoid using 192.168.0.10, as it is reserved for the HMI Board.

After the network configuration is completed, the web configuration interface can be accessed by entering the HMI Board IP address into a web browser.

6.4.2 - OPENING WEB CONFIGURATION INTERFACE VIA WI-FI HOTSPOT

The EV charger supports access to the Web Configuration Interface through the built-in Wi-Fi Hotspot feature.

The Wi-Fi Hotspot settings can be configured from the Network Settings tab in the Web User Interface. The following settings are available:

Enable or disable the Wi-Fi Hotspot feature
Configure hotspot timeout duration:
5 minutes
10 minutes
30 minutes
Continuous operation

While the Wi-Fi Hotspot is active, users can connect a smart device such as a mobile phone, tablet, or laptop to the charging station.

Each product is factory-configured with a unique:

Wi-Fi Hotspot SSID
Wi-Fi Hotspot Password

This information is provided on the product label attached to the Quick Start Guide or Installation Guideline documentation.

To access the Web Configuration Interface via Wi-Fi Hotspot:

Enable the Wi-Fi Hotspot feature on the charging station.
Connect the smart device to the charger's Wi-Fi Hotspot network using the SSID and password written on the product label.
Open a web browser on the connected device.
Enter the charger hotspot IP address into the browser address bar.

The default Wi-Fi Hotspot IP address is: 192.168.35.1

After entering the IP address, the Web Configuration Interface will be displayed.

Mobile Browser Requirements
For proper display and operation of the Web Configuration Interface on mobile devices, the following browser settings are recommended:

For Android devices using the Chrome browser:

Open the browser menu from the upper-right corner
Enable the Desktop Site option
iOS Devices

For iOS devices using the Safari browser:

Enable the Request Desktop Website option from the browser menu
Set the browser text size to 50% using the AA setting located in the upper-left corner

Notes
Maximum 3 users can connect simultaneously to the Web Configuration Interface via Wi-Fi Hotspot.
The Wi-Fi Hotspot operates on the 2.4 GHz frequency band only.

6.4.3- OPENING THE WEB CONFIGURATION INTERFACE VIA BROWSER

To access the Web Configuration Interface, open a web browser and enter the corresponding IP address of the charging station into the browser address bar.

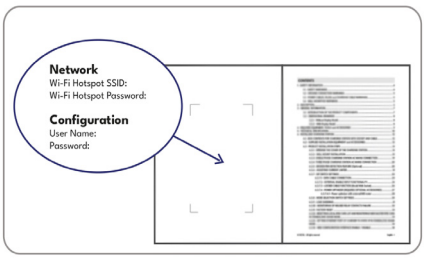
Ethernet / LAN Connection: 192.168.0.10
Wi-Fi Hotspot Connection: 192.168.35.1

After the connection is established, the WebUI login page will be displayed.

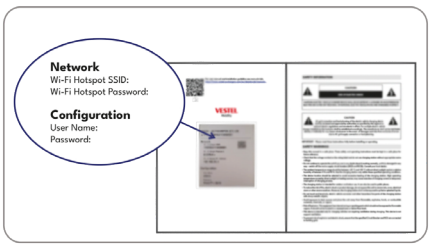
Each charging station is factory configured with a default:
User Name
Password

The default login credentials are printed on the product label attached to the Quick Start Guide or on the first page of the Installation Guideline.

Enter the User Name and Password information to log in to the Web Configuration Interface.



Visual representation is provided



Visual representation is provided

First Login Procedure

During the first login using the factory default credentials, the user is required to change the default password. The password can later be changed from:

The Change Password button on the WebUI login page, or

The Administration Password section under the System Maintenance menu.

Browser Accessibility Notes

If accessibility or display issues occur while opening the Web Configuration Interface, the issue may be related to the web browser cache or stored cookies.

In such cases, it is recommended to:

perform a force refresh of the webpage, or

clear the browser cache and cookies.

These actions can resolve common webpage loading or formatting issues.

SSL Certificate Warning

In some cases, the web browser may display a security warning due to an expired SSL certificate. If this warning appears, proceed to the webpage connection to continue accessing the Web Configuration Interface.

Privacy Policy Confirmation

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

To continue accessing the Web Configuration Interface:

Read the Privacy Policy

Check the box:

“I read, I understand”

Click the Confirm button

The interface becomes accessible only after the Privacy Policy confirmation is completed.

6.5 - 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. **OCPP Hash**: OCPP Hash is the cryptographic hash value of the OCPP software component running on the device. This value represents the current binary content of the OCPP software and is used to verify software integrity. The hash value changes whenever any modification is made to the OCPP software (such as a software update, recompilation, or any other change). Since the OCPP software implementation differs between single-socket and dual-socket devices, the OCPP Hash values may also differ between these device types. This is expected behavior and results from differences in the software implementation. **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.

	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.

6.5.1 - GENERAL SETTINGS

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.
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.

6.5.2 - 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. **Note:** The current limiter of the charging station can be set in hardware via the rotary switch or manually in the web configuration interface. There is no hardware or software configuration interface priority. The charging station uses the current value last set by the installer from either interface.
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.
Charging Mode Selection and Power Optimizer Configuration	In this part, you can select Follow The Sun, Follow The Sun Mode, Auto Phase Switching, Operation Mode, Power Optimizer Total Current Limit and Power Optimizer External Meter. **For a detailed explanation of Follow The Sun, please refer to section 6.5.2.1.** 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.

6.5.2.1 - FOLLOW THE SUN

6.5.2.1.1 - Inverter Type and Mode Configurations with Different Measurement Methods

6.5.2.1.1.1 - Export Mode with the usage of CTs

Export Mode with the usage of CTs at the inverter output and input of the electrical consumer devices of the house. Inverter may only be single phase for CT usage and also supports energy export to grid. For the Follow The Sun function, only CT (Current Transformer) configuration are supported for single-phase installations.

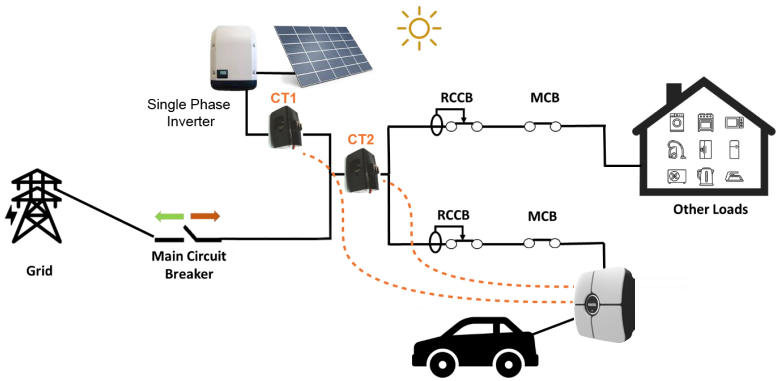


Figure 1

Connection of CT1 and CT2 in Figure-1 to the power optimizer board(21PO01-r5) in the EVC device is shown in Figure-2.

Power Optimizer with external current transformer (CT) should be placed to the main lines as shown in Figure-2:

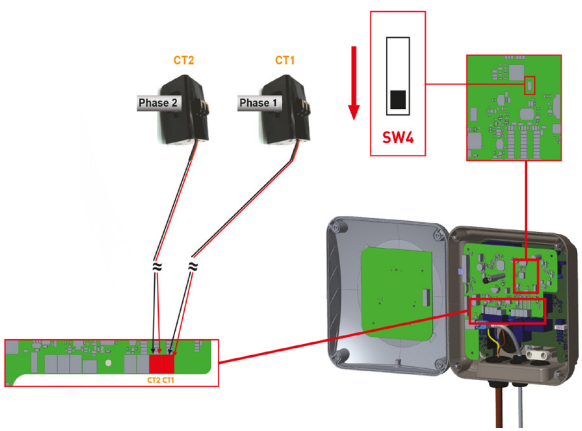


Figure 2

• Slide the switch (SW2) on " The Embedded Power Optimization Module" should be set as shown in Figure-2. (Downward)

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

6.5.2.1.1.2 - Export Mode with the Usage of Utility Meter

Export Mode with the usage of Energy Meter at the Grid output.

Energy meter may be single phase or three phase for supports energy export to grid.

For Follow The Sun installations in 3-phase system configurations, only 3-phase external MID energy meters are supported.

The external energy meter is installed at the grid output connection point and measures the total household energy consumption, including the EV charger and all other connected household loads.

The total energy drawn through the main switch of the house is continuously monitored by the external energy meter integrated into the main power line. Based on the measured household load and available export power, the charging station dynamically regulates the EV charging power.

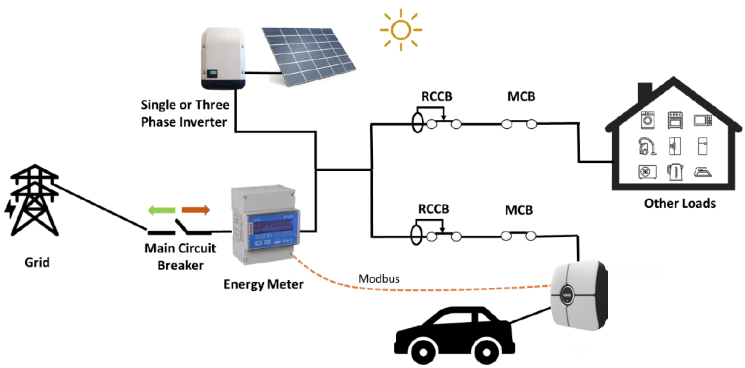


Figure 3

The Energy Meter is connected to the CN20 port of the Power Board (ACPW) inside the charging station, as shown in Figure-5.

The figures provided in this document are generic examples for Power Optimizer meter installation within a household distribution box and may differ from the actual installation layout of the site.

Energy Meter wiring connections can be performed according to the installation information provided below.

The following 3-phase external MID energy meters are supported:

Klefr Models: Klefr 6934, Klefr 6944 CT

Garo Models: GNM3D-LP RS485, GNM3T-LP RS485 N

P1 Slimme Meter Models:

Landis Gyr-E360 (used together with the Vestel 21PO02 RS485 converter)

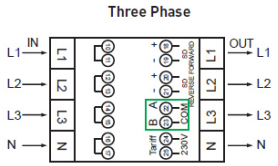


Figure 4

22-23: A-B (COM) Modbus connection over RS485 for three phase charging station models. (See the following section “DATA CABLE CONNECTION TO EVC01 CHARGING STATION“)
Related board wiring connections can be made as shown below:

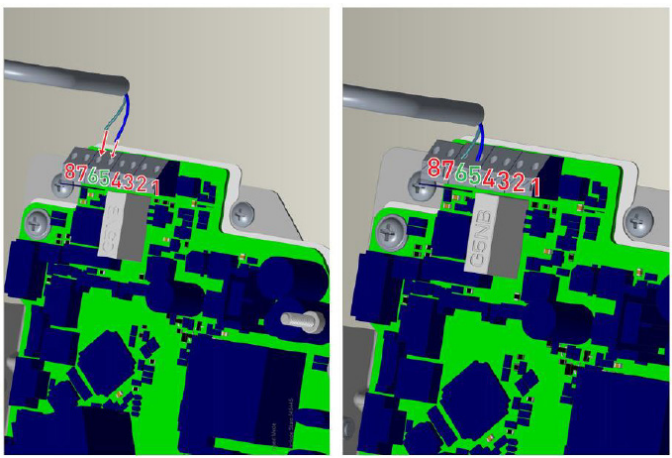


Figure 5

Cable Terminal	Cable Color	Description
6 (CN20-2)	White Blue	A (COM)
5 (CN20-1)	Blue	B (COM)

6.5.2.1.2 - Modes of Operation

Follow The Sun mode functionality can be enabled and disabled. If Follow The Sun mode is enabled; there are 3 options for the Follow The Sun;

6.5.2.1.2.1 - Sun Only

This mode is used for pure solar charging of the electric vehicle for least carbon footprint. When the user activates this mode, charging is only with energy from solar power generation. Vehicle can be charged with whatever solar generation is currently available, without using grid support at all. Charging is possible only with solar surplus. If solar generation is low, charging will not be possible.

6.5.2.1.2.2 - Sun Hybrid

This mode is used for solar charging with limited support from the grid when there is no solar generation. If solar generation is high enough, grid support won't be used. If solar generation is low, charging station will use grid support to be able to start charging. Eg. Solar generation is 3A and minimum charging current of the charging station is 6A, 5A will be used from the grid (minimum charging current is calculated as 8A because 6A + 2 A hysteresis). (CP min charging current is 6A for IEC 61851, 8A for ZE Ready 1 phase charging, 13A for ZE Ready 3 phase charging.)

Sun Only and Sun Hybrid modes can be overridden (forced charge) from Drive Green App and charging station will switch to max available charging current mode for that single charging session and will fallback to Sun Only mode after active charging session is finished.

6.5.2.1.2.3 - Max Hybrid

When the user activates this mode, the charging process should be a normal charging process that can charge at maximum power regardless of solar generation or grid support option.

6.5.2.1.3 - Auto Phase Switching

When the user activates the Follow the Sun, the charging station can automatically switch 1 phase/3 phase according to the amount of solar production and consumption.

6.5.3 - OCPP SETTINGS

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.

6.5.4 - NETWORK INTERFACES SETTINGS

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 Trafic** 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 incoming traffic. The “Allow” option accepts all incoming traffic, while the “Deny” option rejects all incoming 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.

6.5.5 - STANDALONE MODE SETTINGS

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 6.5.7.

6.5.6 - 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. 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.

6.5.7 - LOCAL LOAD MANAGEMENT

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

GENERAL SETTINGS

If the device supports Dynamic Local Load Management, the Local Management option can be configured as Disabled, Modbus TCP, or Master/Slave mode.

6.5.7.1 - Modbus TCP/IP Protocol Parameters

EVC01 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 EVC01 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.

6.5.7.2 - 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.

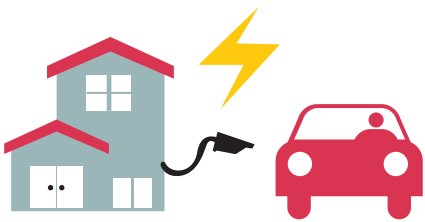
For the Load Management function to operate in Static mode, the Supply Type parameter in the menu of the device defined as Master must be set to "Static."

In a Static Load Management configuration, a predefined total current limit is assigned to a Load Management Group. This limit defines the maximum total current that all Electric Vehicle Chargers (EVCs) within the same group are allowed to draw simultaneously.

The Master device is responsible for distributing the charging current to each EVC within the cluster. While doing so, it ensures that the sum of the currents drawn by all devices does not exceed the configured group limit.

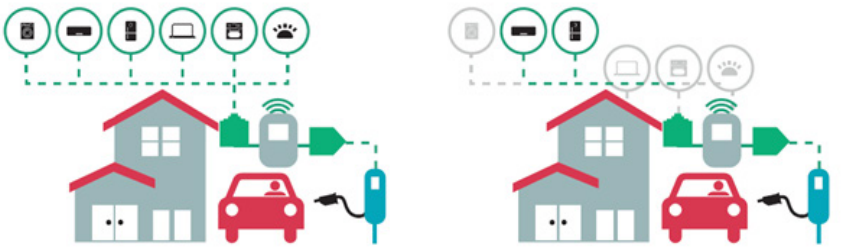
Unlike Dynamic Load Management (DLM) systems, the available current in static mode does not change dynamically based on grid load or building consumption. Instead, the system operates with a fixed and predefined current threshold, independent of real-time grid fluctuations.

This approach simplifies system configuration and provides predictable and stable load behavior. Therefore, Static Load Management is particularly suitable for installations with a fixed supply capacity or for infrastructures without real-time load feedback, such as systems where no energy meter is available.



6.5.7.3 - 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.



Local Load Management (Dynamic Load Management – DLM) is a load management function that operates in Master/Slave mode, enabling efficient and safe distribution of the available electrical capacity in systems with multiple EVSEs.

The DLM function monitors the total energy consumption of the grid or facility to which the EVSE system is connected in real time via an external energy meter. Based on the instantaneous load condition of the system, the charging power delivered to electric vehicles is dynamically adjusted. In this way, even when all charging stations are active, overloading of the main supply is prevented and the existing electrical infrastructure is utilized optimally.

With the use of DLM:

- Multiple electric vehicles can be charged safely at the same time.
- Available energy capacity is distributed efficiently.
- Energy usage costs are optimized.

System Requirements and Configuration

In order for the DLM function to operate in dynamic mode, the following conditions must be met:

- The system must be configured in Master/Slave mode.
- A compatible external energy meter must be used with the EVSE.
- Proper communication (e.g., RS485) must be established between the meter and the Master device.
- The Supply Type parameter on the Master device must be configured according to the type of meter used.

Important Note:

If the Supply Type parameter is set to Static, the system does not perform dynamic load management. In this case, only fixed-capacity-based load sharing between EVSEs is applied (Static Load Management).

Therefore, for installations where Dynamic Load Management is required:

- An appropriate meter must be selected other than the Supply Type = Static option.
- Meter connection and communication must be verified during commissioning.
- Configuration parameters of the external meter, such as Modbus ID, baud rate, and parity settings, must be compatible with the EVSE communication settings.

In case of incorrect meter selection:

- DLM will not operate.
- The system may calculate load incorrectly.
- In case of communication loss, the system switches to failsafe mode. In this condition, the devices indicate the fault state with a blinking purple LED on the status indicator.

The DLM function is supported only with the external meters that are compatible with the EVSE system. For the Supply Type parameter, one of the following options can be selected: KLEFR 6924/6934, GARO GNM3T/GNM3D, TIC, or P1.

There are 2 different types of network topologies available for connecting multiple EVC01 charging stations in master/slave clusters. According to the customer needs, one of these alternatives can be chosen.

6.5.7.4 - Star Topology

In Star Network Topology, all charging stations are connected directly to the Master charging station through a central network switch or router. This topology requires individual Ethernet cabling between each charging station and the central network device.

Since each charging station has an independent network connection, Star Topology provides higher communication reliability compared to Daisy Chain topology.

For Ethernet communication:

Cat5e or Cat6 Ethernet cables can be used.

Maximum cable length for each connection is 100 meters.

Network IP Configuration

The network can be configured using one of the following methods:

Router with DHCP Server

If the router includes an active DHCP server:

All charging stations, including the Master charging station, must be configured as DHCP Client from the Network Interfaces menu.

In this configuration, all charging stations receive their IP addresses automatically from the central DHCP server.

Router or L2 Switch without DHCP Server

If the network infrastructure does not contain a DHCP server:

The Master charging station must be configured as DHCP Server.

Slave charging stations must be configured as DHCP Client from the Network Interfaces menu.

In this configuration, Slave charging stations receive their IP addresses directly from the Master charging station.

Static IP Configuration for Local Networks

In closed local network installations using only an L2 switch, both Master and Slave charging stations can also be configured using Static IP addressing.

In Static IP configuration:

Each device must have a unique IP address.

All devices must be located within the same subnet.

The same Network Mask value must be used for all devices.

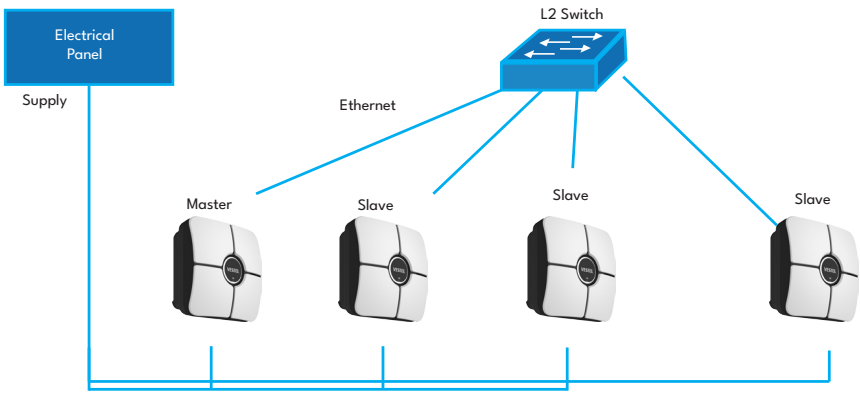
IP address conflicts must be avoided.

If the system does not require internet access or routing to external networks, the Default Gateway field may be left empty.

If a router or gateway device is available in the network, the appropriate gateway address should be configured manually.

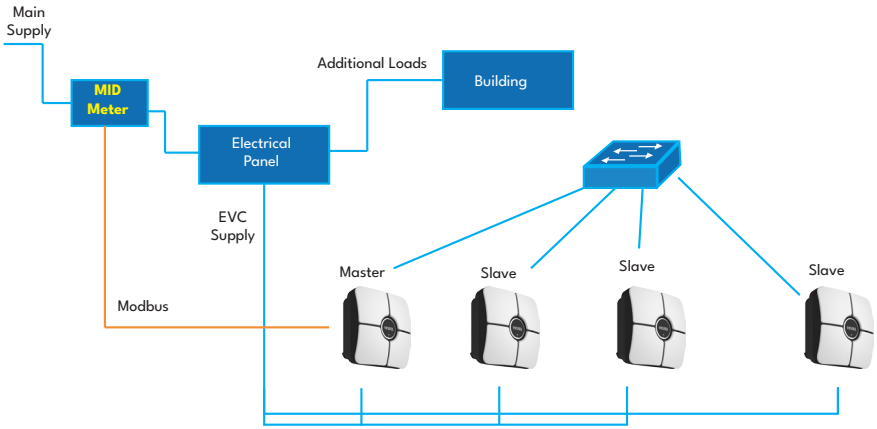
Block diagrams for static and dynamic supply in star network topology are provided as below.

6.5.7.4.1 - Static Supply Star Topology:



Local Load Management configuration of static supply.

6.5.7.4.2 - Dynamic Supply Star Topology:



6.5.7.5 - Configuration of Charge Point Roles

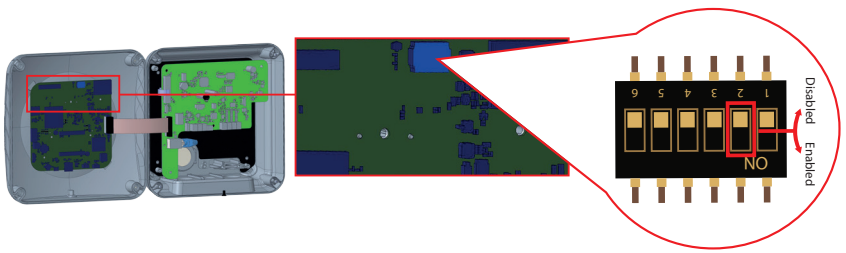
If Load Management Option is selected as Master/Slave, there will be two part in this page; General Settings and Load Management Group.
Operation Selection on Web-UI
Users can select one of the following options:

a. Slave
b. Master
c. Backup Master

6.5.7.5.1 - 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 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 address statically and subnet mask will be set to 255.255.255.0



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

You will see login page on your browser;

When you want to enter to the web configuration interface in the first time, you will see the warning as "We recommend you to change your default password from system maintenance menu".

You can enter the system with:

Default username = xxxxx

Default password = xxxxx

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

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.

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 **“Slave”** as shown in below menus.

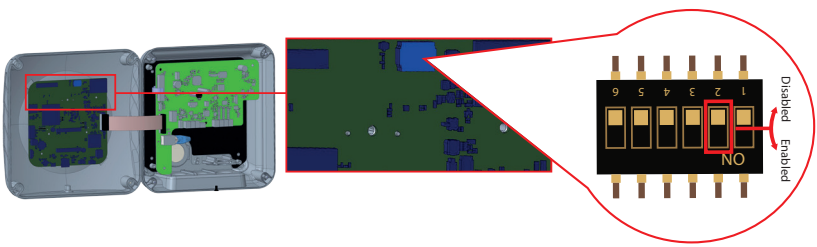
DLM Network Selection: You can select the DLM communication type from the DLM Network Selection dropdown. The available options are Ethernet and WLAN, depending on how the slave will communicate with the master. This must be same for both Slave and Master.

The slave charging stations should be set as DHCP client as shown in image below. Note that, 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.

6.5.7.5.2 - 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 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 address statically and subnet mask will be set to 255.255.255.0



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

You will see login page on your browser;

When you want to enter to the web configuration interface in the first time, you will see the warning as “We recommend you to change your default password from system maintenance menu”.

You can enter the system with:

Default username = xxxxx

Default password = xxxxx

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

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.

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, as shown in the image below.

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"** as shown in the image below.

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, sup-

porting 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.

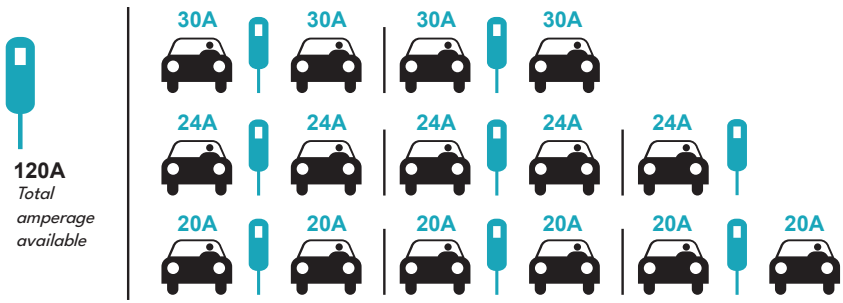
"Supply Type" should be set according to the load management type such as **"static"** current limit or **"dynamic"** current limit. For static current limit, "static" option should be selected. For dynamic current measurement, "MID" should be selected in "supply type". Note that dynamic current limit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

Appropriate **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 managament algorithm.

There are 3 different scenarios of load management usage:

6.5.7.5.2.1 - Equally Shared

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



6.5.7.5.2.2 - 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.

			Gm = 120A				Gm = 80A
EVSE/Tp	T1	T2	T3		T4	T5	T6
1	32A	32A	32A	32A	16A ↓	6A	6A
2	32A	32A	32A	32A	32A	32A	32A
3	32A	32A	32A	32A	32A	32A	32A
4	32A	24A	24A	18A	32A	32A	6A
5	32A	24A	6A	6A	8A	24A	6A

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

6.5.7.5.2.3 - 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.

F% =50			Gm = 120A				Gm = 80A		Gm=29A	Gm = 30A
EVSE/Tp	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
1	32A	32A	32A	32A	20A	6A	6A	8A		6A
2	32A	32A	32A	32A	32A	32A	32A	32A	32A	6A
3	32A	32A	32A	32A	32A	32A	26A	28A	32A	6A
4	32A	24A	24A	12A	24A	32A	8A	10A	32A	6A
5	32A	24A	24A	12A	12A	18A	8A	10A	32A	6A

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

6.5.7.5.3 – 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 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 connector one by one

If the selected connector is required to be prioritized over the other charging stations, you can set “VIP Charging” as enabled as shown in the image below.

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

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.

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

This section applies only to the United Kingdom.

7 - UK REGULATION CHANGES FOR SMART CHARGING (OPTIONAL)

CONFIGURATION WEB INTERFACE SETTINGS

Randomised Delay and Off-Peak Charging Behaviour

a.Randomised delay won't be repeated if applied in a charging period (except after power off and second transition to off peak hour, E.g: charging starts at 15:00 and paused at 16:00, when starting at 22:00 again randomized delay will be applied again.)

b.Randomised delay and waiting for off-peak charging will be cancelled if user tap RFID card for forced charging (first tap if charging station is in autostart mode, second tap if the charging station is in authorized mode). If the unit is in autostart mode any RFID card will force a charge, if the unit is in authorized mode the authorizing card of that charging session will force charge. Forced Charge will cancel both off-peak hour waiting period and randomized delay for that charging session.

c.While starting a charge session, if the time is in a peak period, the charging start will be delayed to the upcoming off-peak period start time.Randomized delay will be applied when the charging (actual energy transfer) starts.

d.If the time is in off-peak period, the randomized delay will be applied (if enabled) and then charging will start after delay. (It is only a numerical value and should be 600 by default). During the charging session if the time shifts from off-peak to peak, charging will continue or pause according to the setting "ContinueAfterOffPeakHour".

h.Waiting for off-peak hour will be shown on LED as Blue-Red blinking. (will be shut of after 5 mins)

i.Randomised delay will be shown on LED as Green blinking.

OCPP mode change config items:

i. RandomisedDelayMaxSeconds: [0, 1800] (default:600, can be set to "0" for disabling)

ii. CurrentSessionRandomDelay: random delay value calculated for active charging session.

The value will be decremented by 1 minute intervals with time passes. (subject to change)

iii. OffPeakCharging: TRUE / FALSE (Default: TRUE)

iv. OffPeakChargingWeekend: TRUE / FALSE (Default: FALSE)

v.OffPeakChargingTimeSlots: 11:00-16:00, 22:00-08:00 (default: 11:00-16:00, 22:00-08:00)

vi. ContinueAfterOffPeakHour: TRUE / FALSE (Default: FALSE)

vii. ContinueChargingAfterPowerLoss: TRUE / FALSE (Default: TRUE)

viii. ForcedCharging: TRUE / FALSE (Default: False, OCPP CS may set this to TRUE for overriding randomised delay and off-peak and after the charging session charging station will set this to FALSE again.)

Standalone / Local RFID List:

Webconfig General Settings menu "Smart Charging" tab:

Off-peak charging function will be active if and only if device is connected to the central system.

For Standalone modes, off peak charging will be hidden because of the time sync issue.

Randomised Delay Maximum Duration, can take values between 0 and 1800.

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