ORBIS

energía inteligente

VIARIS CITY+

ELECTRIC VEHICLE SMART CHARGING POINT

INDEX

DESCRIPTION

The VIARIS CITY+ is a smart charging point for electric vehicles that has two independent Type 2 socket outlets of 22 kW, in Mode 3 (EN 61851-1), protected by shutter and allowing fast charging of two vehicles.

Built with high-thickness aluminum sheet with high heat and moisture resistance paint, it is especially suitable for outdoor use in public environments thanks to its high mechanical protection IK10.

In addition, the VIARIS CITY+ includes:

▪ High visibility LED signaling for recharging point location and availability indicator for each connection socket using light indicators: station occupied or reserved, vehicle connected, charging, recharging status, finished charge and error.

▪ Energy disconnection device in case of faulty currents with a continuous component exceeding 6 mA.

▪ Optionally you can include the necessary electrical protections, and meters certified according to the MID directive (2004/22/CE). According to EN 50470-3.

▪ Free download of the e-VIARIS app available on Google Play and App Store.

▪ VIARIS SPL charging modulation system for up to 256 VIARIS CITY+.

▪ Advanced load management functions with power limitation per group, charger, socket, and phase.

▪ Exclusive functionality: single-phase recharging for three-phase vehicles depending on the instantaneous consumption of the other electrical equipment in the installation.

- Standardized interfaces for integration in management platforms (OCPP 1.6 Json with Smart charging, Modbus TCP and RTU. MQTTS).

- Backend/OCPP connection via LAN, WLAN or LTE.

- Communication with the manager via WiFi, ethernet or 4G.

- OTA updateable firmware.

- Integrated RFID card reader for user management.

- Input for external activation/deactivation by home control system, manual or prepaid system.

- Integrated in VIARIS SOLAR for installations with photovoltaic generation.

- Collection of information on recharging for statistical purposes or preventive maintenance of fleets.
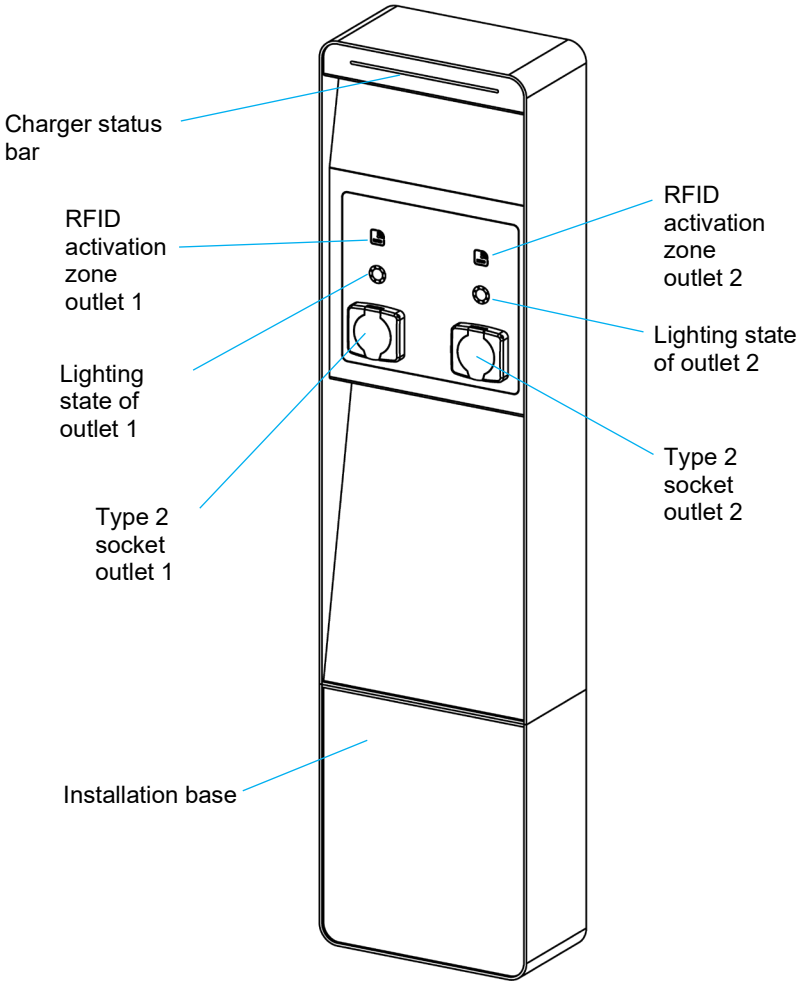
Warning symbols used in this instruction manual:

ELECTRICAL RISK. There is a risk of electrocution that can cause bodily injury or death if instructions are not followed.

GENERAL ATTENTION

Description of elements

Charger status bar

RFID activation zone outlet 1

RFID activation zone outlet 2

Lighting state of outlet 1

Lighting state of outlet 2

Type 2 socket outlet 1

Type 2 socket outlet 2

Installation base

INSTALLATION

Safety warnings

During the installation and operation of the equipment it is necessary to observe the following instructions:

⚡	▪ *The equipment must be installed by authorized and qualified personnel who scrupulously comply with the instructions in this manual.* ▪ *The equipment must be installed and activated in compliance with the current low voltage regulation.* ▪ *Do not use the equipment for purposes other than that specified.* ▪ *Before installing the charger, check that it is not damaged.* ▪ *Before accessing the connection terminals, verify that the cables are not under electrical voltage. The opening of the envelope does not imply the absence of tension inside. Only authorized and qualified personnel may be opened.* ▪ *According to the applicable regulations, the installer should check whether surge protection measures are necessary.* ▪ *Use only the charging cable specified for each electric vehicle. In no case should any other type of extension cord be used.* ▪ *In case of malfunction do not perform repairs and contact our Technical Service immediately.* ▪ *After installation, inaccessibility to connection terminals without appropriate tools should be ensured.* ▪ *To protect the charger from possible vehicle impacts, it is recommended to install a protective barrier.*

Instructions on the assembly

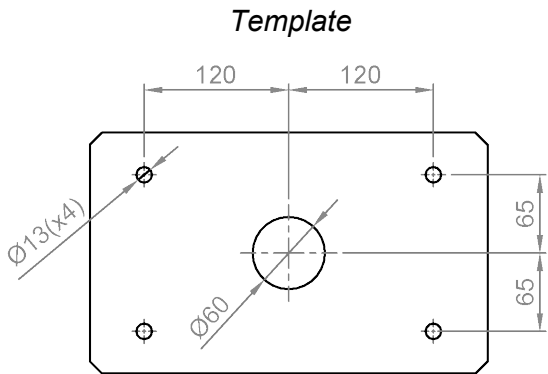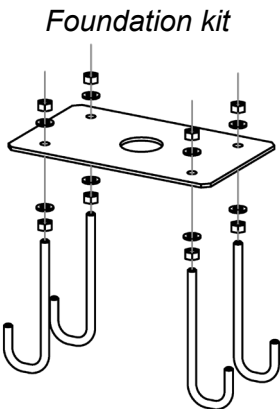|	
⚠	▪ *The charger should be installed upright and without obstacles a space of 0.5 meters around to allow its maintenance.* ▪ *Use joints or presses to ensure the degree of IP protection of the charger.* ▪ *It is recommended that the charger be installed by two people.*

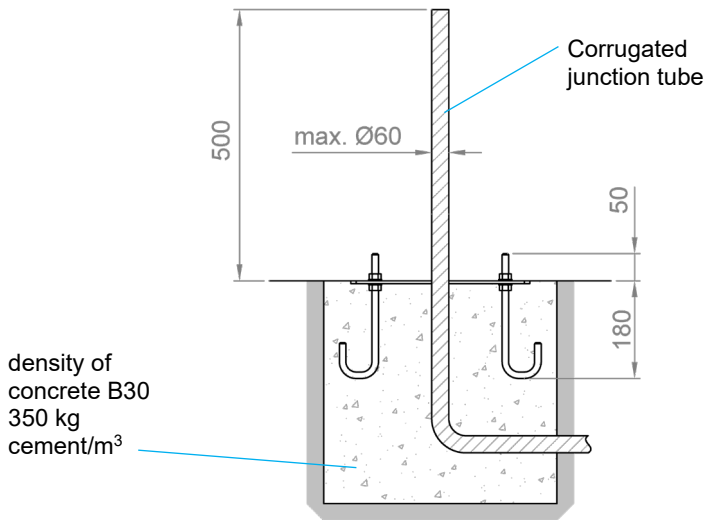## Installation distances

It is necessary to maintain about 0.5 meters from the walls or other obstacles for their accessibility and for maintenance tasks.
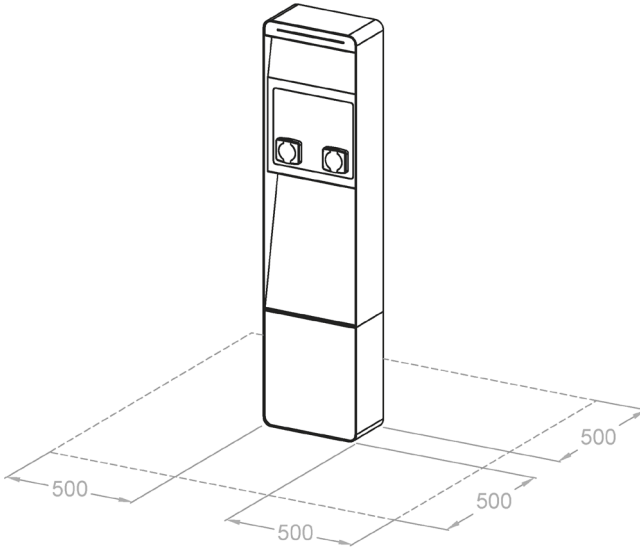

Fixing to the ground

The VIARIS CITY+ smart charging station is designed to be installed on a concrete bench using the supplied foundation kit.

Foundation kit

Template

Corrugated junction tube

500

max. Ø60

50

180

density of concrete B30 350 kg cement/m³

Once the kit has been installed and the concrete has been set, we proceed to fix the installation base in the threaded stems that are exposed, previously removing the four washers and four M12 nuts.
Next, we fix the charging station using the eight supplied M8 washers and nuts.
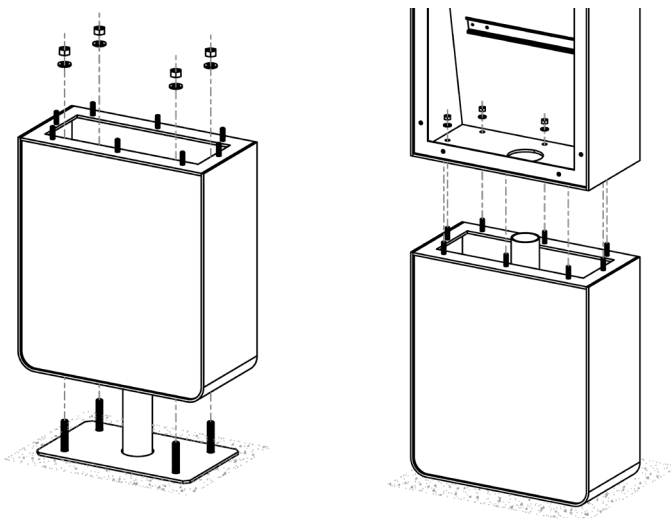
EQUIPMENT POWER CONNECTION

Before accessing the connection terminals, verify that the cables are not under electrical voltage. The opening of the envelope does not imply the absence of tension inside. Only authorized and qualified personnel may be opened.

Make electrical connections according to the connection scheme.

The VIARIS CITY+ is a recharging station with two Type 2 socket outlets of three-phase 22 kW, each with a separate charging unit.

Depending on whether your VIARIS CITY+ has the option of electrical protections included or not, the connection will be made as follows:

VIARIS CITY+ without protections included
Each charging unit has its connection terminals to make connections independently to each charger.

### 22 kW + 22 kW
3PH+N 3x230/400 V~
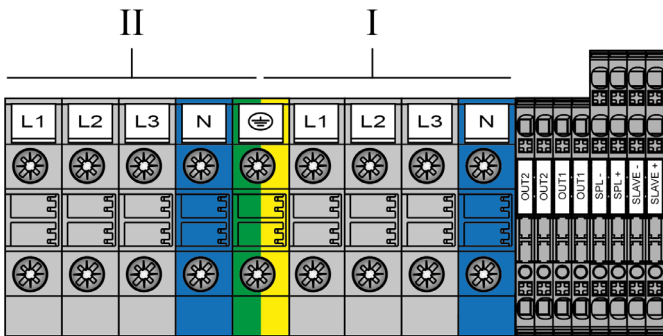
In recharging stations without protections are included some terminals marked as **OUT1** (for outlet 1) and **OUT2** (for outlet 2), where a remote firing device of the external electrical protections can be connected (see section *Additional SECURITY PROTECTIONS*).

VIARIS CITY+ with protections included

In charging stations with protections included, the connection will be unique because the separation between the lines of the two charging units is done internally.

The phases of outlet 2 are internally rotated (L3, L1, L2).

**44 kW
3PH+N 3x230/400 V~**

I + II
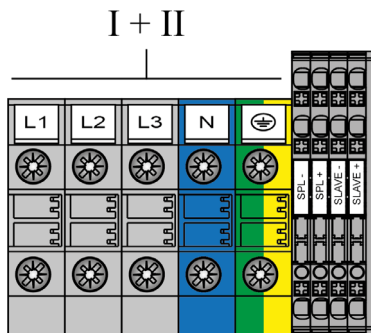
NOTE: To make the electrical connection to the charger should be used on the toe terminal cables.

max. Ø12 mm /
16 mm^2

DIN 46228-4
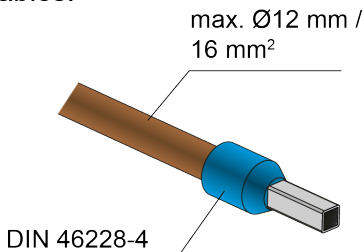
Grounding

For the correct operation of the VIARIS CITY+ it must be taken into account that the grounding installation must comply that:

- The land system type of our facility is TT, TN(S), or TN(C).
- Voltage between neutral and ground (N-PE) less than 5 Vac
- Resistance of land installation with less than 50.

ADDITIONAL SECURITY PROTECTIONS

To ensure the electrical safety of the installation, each of the two charging units is equipped with a fail monitoring system of the switching device.

In case of failure of the switching device of one line does not interfere with the other.

This system has two independent outputs OUT1 **and** OUT2**,** free of potential of 230 Vca and 5 A of maximum consumption.

### VIARIS CITY+ without protections included

At recharging stations without protections included, mechanical manoeuvring devices (*remote firing coil) can be connected to these **OUT** outlets that operate over external protections, by turning the power upstream according to *scheme 1*.

In the VIARIS CITY+ without protections are included two passive elements that, in case of not having the possibility of using remote firing coils, can be connected to the external protections as indicated in *scheme 2,* and that in case of failure will operate on such protections, sectioning the power upstream.
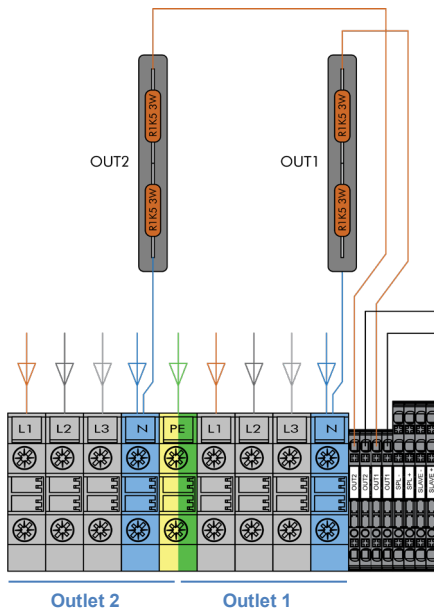

VIARIS CITY+ with protections included

In the VIARIS CITY+ with protections included, these **OUT** outlets are connected internally and in case of failure of the switching device, they provide a signal that puts into operation a device that operates on these protections, turning the power supply upstream.

Scheme 1
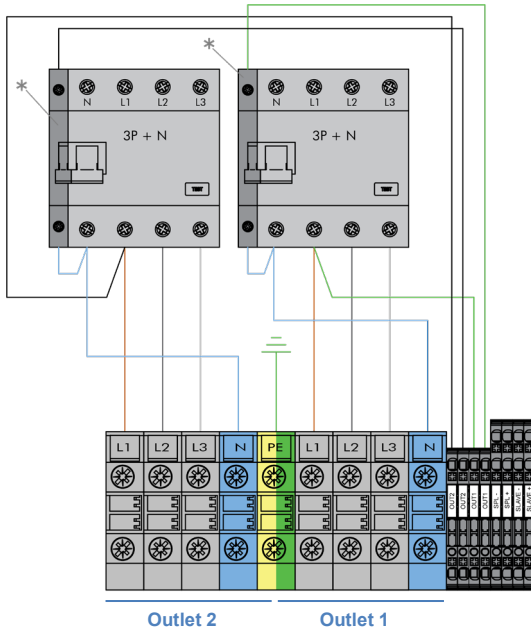
Outlet 2   **Outlet 1**
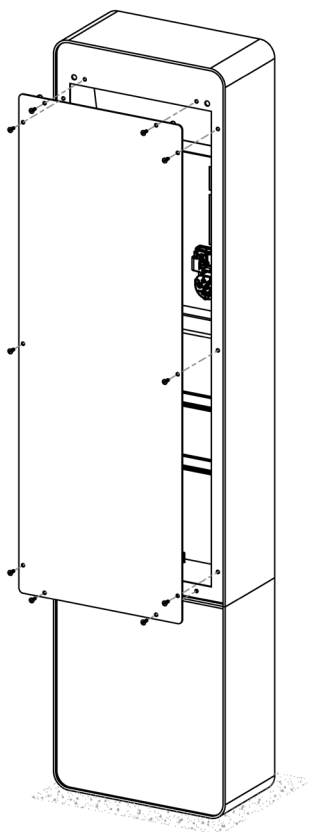
Scheme 2

OUT2   OUT1

At the entrance of the external protection phase firing the differential for outlet 2.

At the entrance of the external protection phase firing the differential for outlet 1.

Outlet 2   **Outlet 1**

COMPLETION OF INSTALLATION

Place the back cover and attach it with the supplied M5 screws.

SETTINGS

To perform the configuration of the VIARIS CITY+ charging station you must connect to your web platform.

The VIARIS CITY+ is a charging station with two socket outlets, each with a separate charging unit, so you must configure each unit separately, first the primary unit (outlet 1) and then the secondary one (outlet 2).

The primary unit corresponds to the outlet on the left and the secondary to the right.

To connect to each unit, we must know its serial number that is indicated under the cover of each socket outlet.
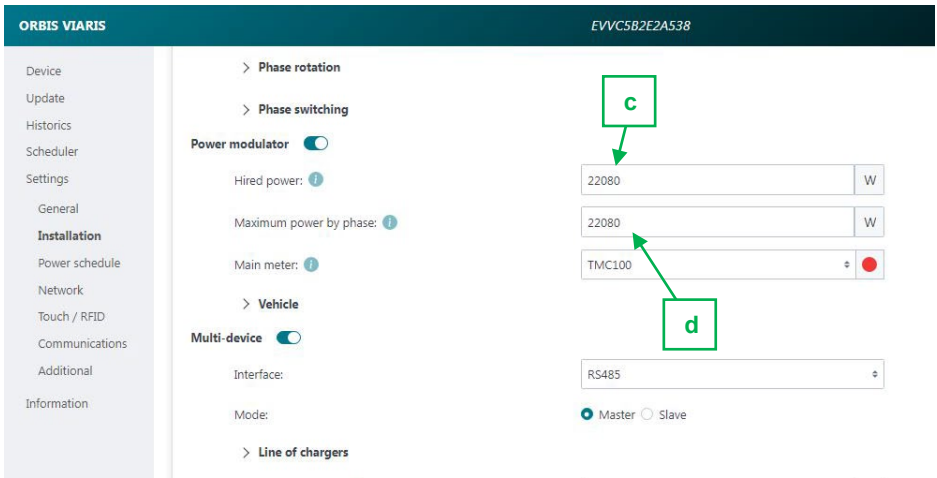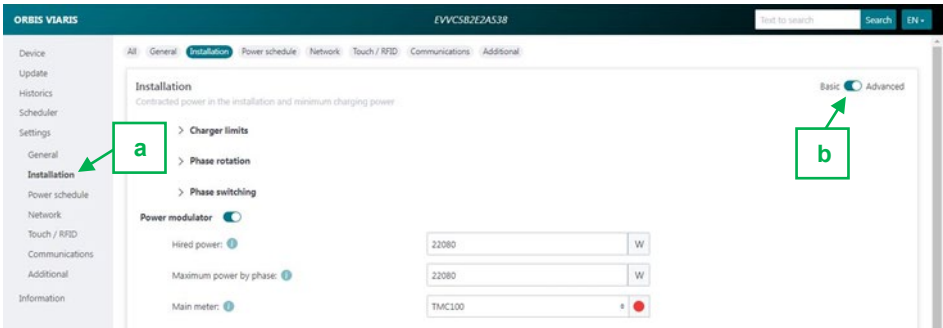
Platform WEB

We connect to the VIARIS CITY+ primary load unit via mobile device or PC using a web browser, following these steps:

1. Set up your device's network and Internet connection to Wi-Fi.

2. You must connect to the **ORB_EVVC5nnnnnnnnnnnnn** (where **nnnnnnnnnnnnn** is the serial number).
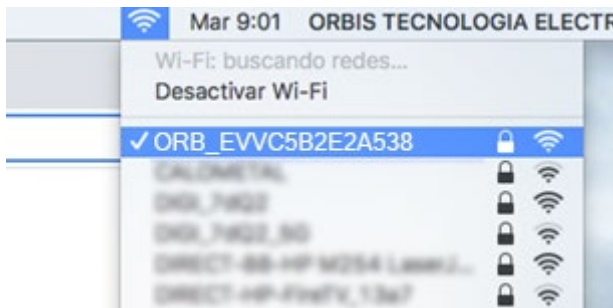
3. Factory Password: **12345678** (it is recommended that the password be changed to a strong password)

4. Open a web browser such as Internet Explorer or Google Chrome. Go to the address bar and enter IP address **192.168.4.1**

5. Once inside the web platform click on the *Settings > Installation* menu (**to**), activate *Advanced* mode (**b**)

6. Configure the power of the installation. You must select and enter the total installation power (**c**) and by phase (**d**).

7. To finish programming, click *Overwrite*. The computer will then restart.

Ethernet communication

From the web platform we can configure the Ethernet connection. This configuration must be performed on both load units. Access this setting using the *Settings menu > Networks* (e).

The VIARIS CITY+ is supplied by default with **DHCP** enabled (f) (dynamic IP allocation), so this configuration would not be necessary.
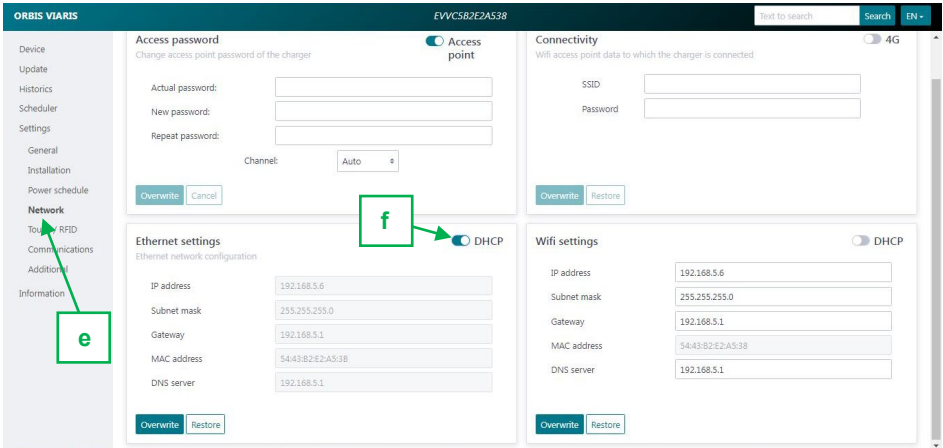
If you want to use IPStatic **static** mapping, you must connect to both the primary and secondary load drives and fill in the data from the ethernet network (IP, MAC, Gateway, Subnet Mask, DNS Server) provided by the system manager.

To save the settings click *Overwrite* (g). The computer will then restart.
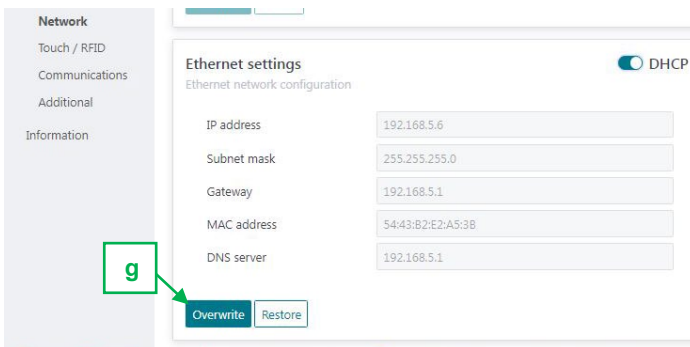
RFID, cards

In the menu **Settings > Touch/RFID** (**h**) we can perform the management of highs (**i**) and lows (**j**) of authorized RFID cards.

Note: All VIARIS CITY+ are supplied from the factory with a set of 5 RFID cards that are preloaded in each of the two socket sockets.
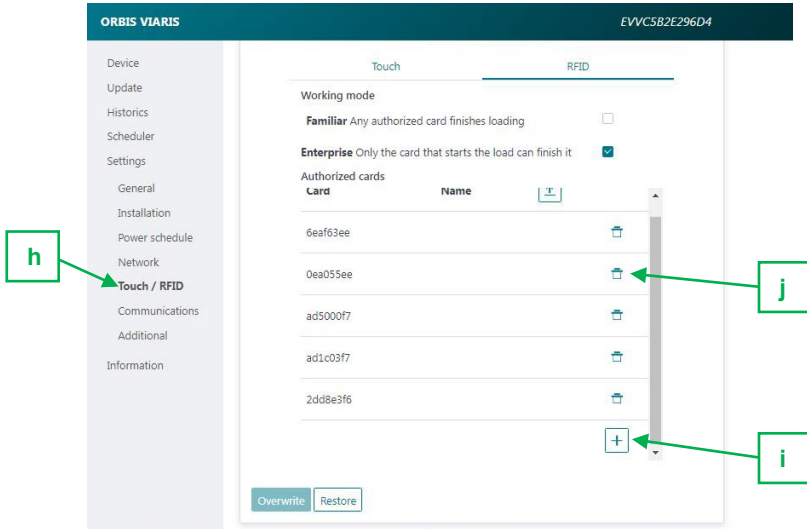
Clicking on the add cards icon (**i**) the sectors of the load unit that we are setting up will light up blinking white. When passing an RFID card through your reader it will be recorded.
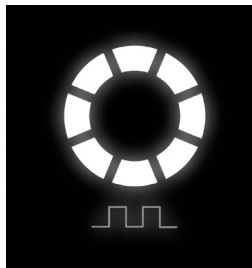
Once card management is complete, press the Finish button (**k**).

Communication OCPP

To connect a VIARIS CITY+ to an OCPP platform or *backend* it is necessary to configure each of the two socket bases with the URL of the platform and the corresponding *endpoint*, an *endpoint* for each of the outlets.

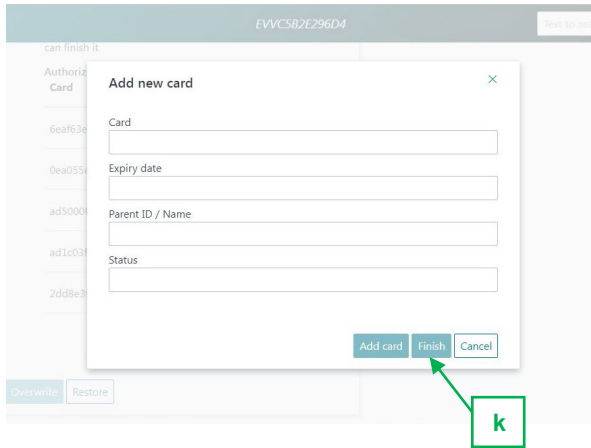As indicated in the following image, emphasize that both the URL and the *endpoint* will be entered in the URL section.
With respect to the port 80 will be entered when using WS or 443 when using WSS, or in its absence the port indicated by the responsible for the OCPP platform.
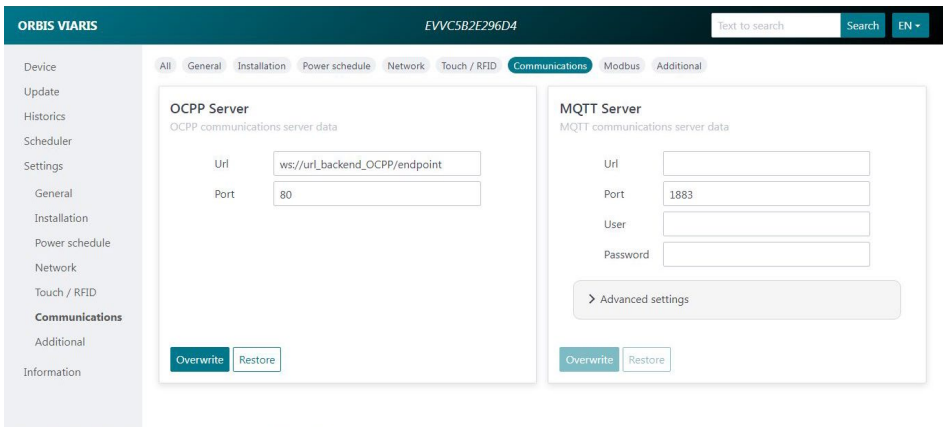
Configuration Wi-Fi access point

If the VIARIS CITY+ is installed on a public environments, once the configuration process is finished, for security issues, it is recommended to change the password of the Wi-Fi access point or disable it as indicated below.

Change password
In **Networks > Login password** enter the current password and the new password making sure to memorize it before overwriting.

Disable Wi-Fi access point
Under **Networks > Access Password** disable the Access Point.

LOAD MODULATION SYSTEM SPL-ORBIS

The **SPL-ORBIS** performs modulation by measuring the total power of the installation to distribute it proportionally to all VIARIS chargers within the network.

It consists of a **Network Analyzer**, a VIARIS CITY+ charging station with its main charging unit acting as **Master** Charger, and one or more charging stations with its charging units operating as **slave** chargers, communicated to each other via an RS-485 network.

Installation

The connection must be made as indicated in the attached connection schemas.
It is advisable to perform a phase rotation to optimize single-phase recharges. Sequence of phases: L1-L2-L3, L3-L1-L2, L2-L3-L1, L1-L2-L3, ...

The basic configuration consists of:

- Network analyzer connected to the **Maestro** charger (SPL bath) using a BUS RS-485.

- **Master** charger (slave bath) connected to the rest of **slave** chargers (slave bath) through another BUS RS-485.

- At the beginning and at the end of each RS-485 line, resistors of value 120 should be installed.
- The SPL consists of two RS-485 BUS so in total there are 4 resistances.

- RS-485 repeater every 30 teams or if it exceeds 1000 meters the distance of the bus.

It is convenient that the details of the installation of the BUS RS-485 are reflected in a documentation that the installer contributes to the property.

Cable

A very important element is the type of cable used to make the bus. For RS-485 connections, a braided or shielded pair of 0.15 to 0.50 mm^2 section may be used.
Special care should be taken to avoid contact between the wires of the conductors.

Settings

Once selected the charging station whose primary charging unit will function as *Master* in the SPL system, we connect to its web platform (outlet 1) as described in the *CONFIGURATION* section and configure it as *Master* (l).

We configure the parameters of:

- Contracted power the maximum power that can pass through the connection where the *SPL Network Analyzer* has been connected. (m)

- Also set to maximum current per phase (A), the maximum intensity that all chargers can add simultaneously. (n)

- To finish programming, click *Overwrite* (o). The computer will then restart.

These values will depend on the available power of the installation and which supports the wiring of the charger line.
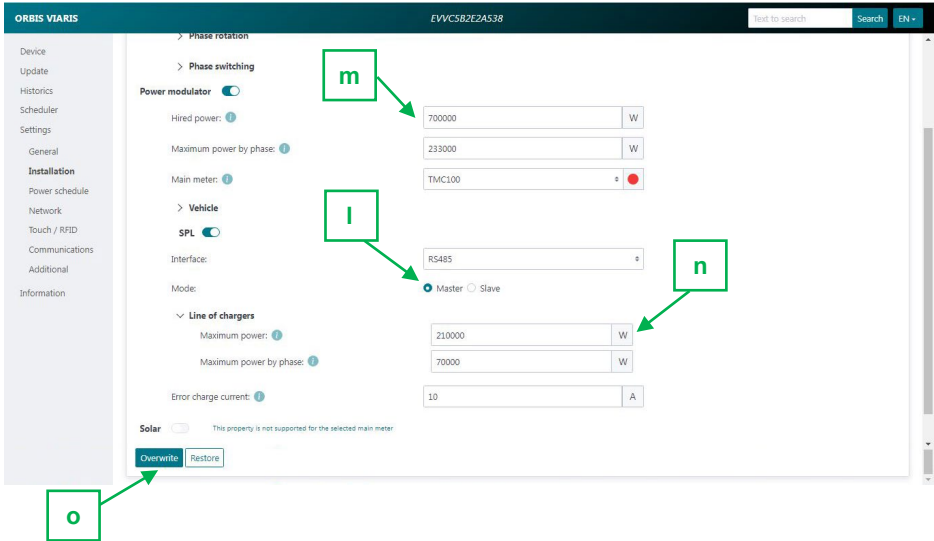
The rest of the chargers that integrate the SPL system must be configured, both sockets, in *slave* mode (p) assigning to each outlet the charge current in front of error (q).

Once done, click *Overwrite* (r). The computer will then restart.
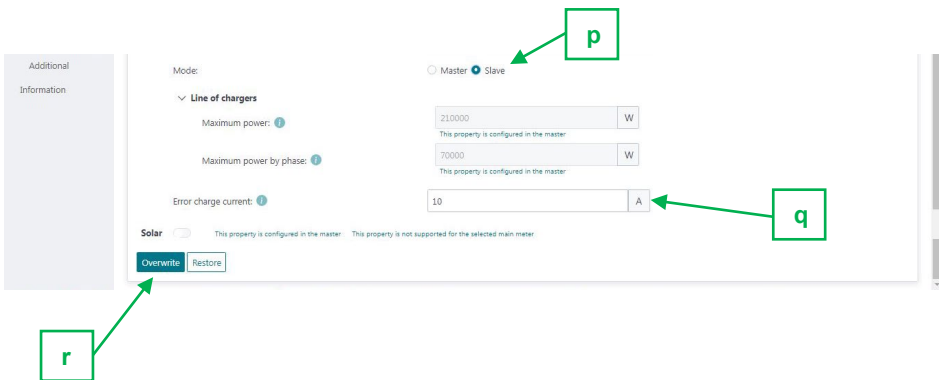
In order to optimize the load and management of the contracted power, especially if loads of vehicles with single or two-phase *in-board* charger are carried out, it is recommended to perform a phase rotation as indicated in the attached diagrams.

This rotation must be reflected in the configuration of each shot.

SPL monitor

From the *Master* charger, we will have access to the SPL Monitor, where we can see all the consumption data of the installation and independently, the display of all cars and chargers.
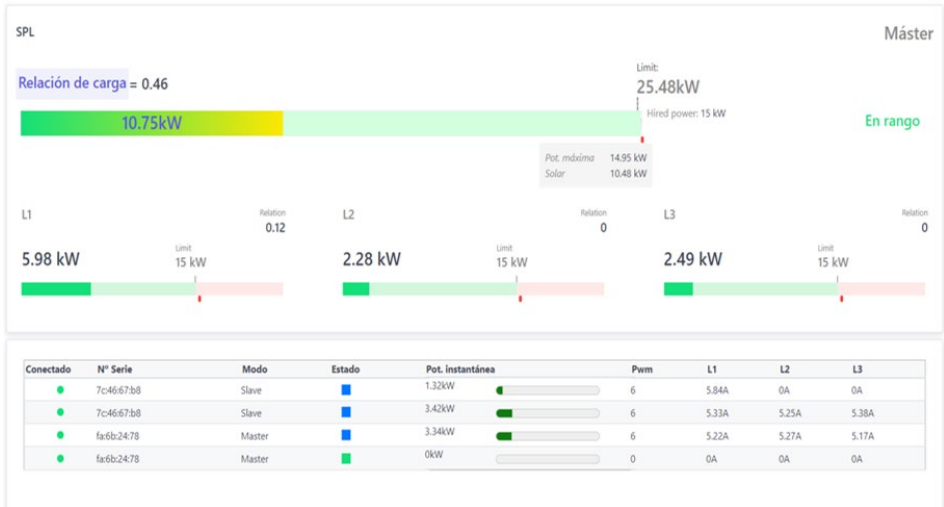
RECHARGING PROCESS

Start the loading of the vehicle

- Make sure the charger has a free outlet. The status bar will be lit in green.
- Connect the electric vehicle to the smart charger.
- Keep the RFID card near the activation zone until you hear a confirmation signal.
- Charging of the electric vehicle shall begin.

NOTE: You will not be able to remove the charging cable from the vehicle during the charging process, as it is blocked by a security system.

Stop the load of the vehicle

To stop charging, pass the RFID card until the confirmation signal is heard.

Fully loaded

Charging ends automatically when the vehicle is fully charged, unless manually stopped by RFID card.

SHIPPERSTATES

The VIARIS CITY+ charging station is composed of two Type 2 outlet bases that operate independently. The status bar will be lit in green as long as one of the two shots is available. When the two shots are occupied it will light up in red.

The indication of the state of the socket and its connection are shown by the different illuminations of the LED indicators.
The indicators on the left are for shot 1 and right-hand indicators for shot 2.

Lighting	Description	State outlets
	RFID: Fixed white Sectors: Fixed green	Available outlet
	RFID: Fixed green Sectors: Green blinking	With a charging permit, but without a connected vehicle

	RFID: Green blinking Sectors: Green blinking	Vehicle connected to charger socket, but without charging permit
	RFID: Shutdown Sectors: Fixed blue	Vehicle connected to charger socket and with charging permit
	RFID: Shutdown Sectors: Blue moving from top to bottom	Vehicle loading
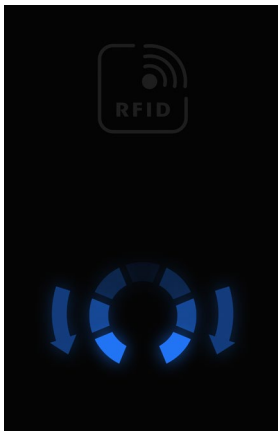
	RFID: Shutdown Sectors: Blue blinking	Loading of the complete vehicle
	RFID: Shutdown Sectors: Fixed white	Charger reserved via management platform
	RFID: Shutdown Sectors: White blinking	Update of Firmware/software in progress

	RFID: Shutdown Sectors: Red fluctuating	Error – attention re-dear (see table *PROBLEM RESOLUTION*)

EXTRAS

The VIARIS CITY+ can incorporate, depending on the model:

- *Magnetothermal electric protections + differential*
  Magnetothermal protection suitable to the current of the intelligent charger incorporating differential current protection. Made the electrical installation check the operation of the differential by pressing its test button.

- *Complete electrical protections according to ITC-BT-52*
  Against temporary and transient surges + magnetothermal switch (magnetothermal protection suitable for intelligent charger current) + differential current protection. Made the electrical installation check the operation of the differential by pressing its test button.

- *Three-phasecounters*
  Certified according to the MID Directive (2004/22/EC). According to EN 50470-3.

MAINTENANCE

In the design of the equipment, it is expected that the maintenance will be very reduced according to the long life of its components, being limited to cleaning tasks, checking the operation and verifying the input voltage values. It is recommended to perform an inspection of the equipment once a year.

To clean and check the connections of the equipment it is very important that it is disconnected from the power supply voltage. Any handling involving the opening of the equipment must be carried out by personnel with sufficient and duly authorized technical qualifications.

For external cleaning of the equipment, it is recommended to use a soft, dry cloth, for example, a microfiber cloth. Do not use material – abrasives or detergents.

TECHNICAL CHARACTERISTICS

Feeding	|
Nominal frequency	| according to feature label
Power	|
Own consumption	
In vacuum	4 W
Load function	14 W
Charging modes	
(depending on model)	Mode 3 according to EN 61851-1
Connection Base	Type 2. Charging mode 3: according to EN 62196-2
Wi-Fi communication	802.11 b/g/n
Closure of the envelope	By means of screws
Protection class	Case II. Insulating envelope
Degree of protection	IP54 according to EN 60529
Degree of mechanical protection	IK10 according to EN 62262
DPR-DD protection	6 mA.
Activation/stop modes	RFID according to ISO 14443 A
Type of terminals	Terminals with screw
Tightening pair	min. 1.2 Nm – max. 2.4 Nm
Peeling length	12 mm
Operating temperature	-30 °C to + 50 °C
Three-phase counter (optional)	Active energy Class B according to EN 50470-3. Complies with the MID Directive (2004/22/EC) Resolution in indicator: 0.1 kWh

DIMENSIONS
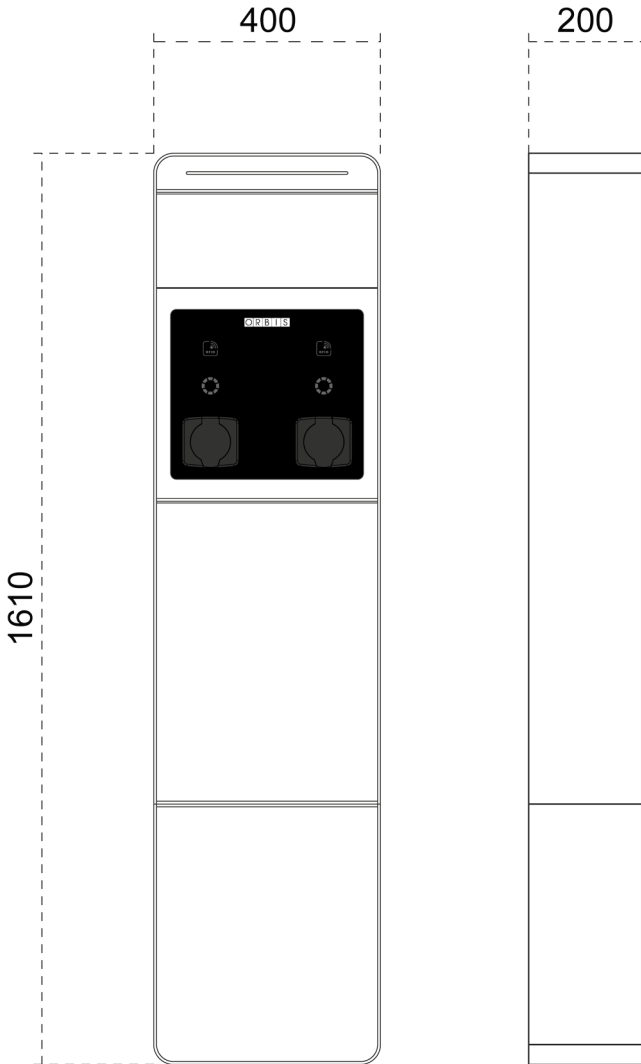
PROBLEMSOLVING

Problem	Resolution
The charger is powered and no outlet connected and with the status bar and LED indicators turned off.	Check the power according to the connection scheme and that the protections are on. Wait approximately 10 seconds for the charger to boot.
Vehicle connected to a charger outlet and its LED indicator is in fixed green and does not charge.	There is no communication between the vehicle and the charger: check the hose and it is correctly inserted into the vehicle and the charger.
Vehicle connected to a charger outlet and its LED indicator is in green blinking and does not charge.	The charger is not authorized to charge: pass the authorized RFID card.
Vehicle connected to a charger outlet and its LED indicator is in green blinking and as the RFID card passes the charger emits 5 "bips" and the LED indicator flashes red.	The RFID card is not authorized. Check the list of authorized cards.
Vehicle connected to a charger outlet and its LED indicator is in fixed blue and does not charge.	Check that there is no time schedule in the vehicle. The vehicle may be in standby mode. Open the vehicle door to exit standby mode.
Vehicle connected to a charger outlet and its LED indicator is in blue of variable intensity and does not charge.	The installation does not have enough power available to charge the vehicle.

Vehicle connected to a charger outlet and its LED indicator is in blinking blue and does not charge.	The vehicle has finished charging, check that the battery is full or that the vehicle does not have a time schedule.
Vehicle connected to a charger outlet and its LED indicator is in fixed red and does not charge.	Error; turn the charger off from the protections and turn it back on.
Vehicle connected to a charger outlet and its LED indicator is blank fixed and does not charge.	Status reserved, for example, in an updated situation; wait for the reserved status to end.
Installation protections skyrocket	Adjust the maximum power of the charger as indicated in the item *Maximum power settings of the equipment*.
After deactivation with RFID card the load does not stop and the socket is blocked	Release and disconnect the hose from the vehicle. Verify that the RFID card is the same as the one used in the activation or that it is authorized. If the problem persists, release and disconnect the vehicle hose.
The charger could not connect to a WiFi network	Set up the charger correctly. Enter the correct password. Connect to a WiFi network with an internet connection and that the security of the network is not blocking it.

After the charging process, the vehicle is still connected to the charger with the plug locked in the socket base, and its LED indicator is fixed green	Perform Reset: rearrange the protections and restart the charger to remove the plug.
Exceeding maximum power	Adjust the maximum power of the charger as indicated in the item ***Maximum power settings of the equipment***.
View the basic data of the charger, configure power and scheduled charging, or consult consumption history, if I do not have coverage in my garage plant	Read the section of the instruction manual ***Smart Charger Control via web***. (Once connected to the Wi-Fi network with password 12345678, we open a web browser and write 192.168.4.1)
It takes a long time to charge my vehicle with a three-phase charger	If you have purchased a single-phase charging vehicle, you will only be using approximately 1/3 of the contracted power.

REFERENCEDIRECTIVES AND STANDARDS

Meets the essential requirements of the following Directives:
- Directive 2014/30/EU on Electromagnetic Compatibility
- Low Voltage Directive 2014/35/EU
- Directive 2011/65/EC on restrictions on the use of certain hazardous substances in electrical and electronic equipment
- Directive 2014/53/EU on Radio Equipment

In accordance with the following rules:
En 61851-1 Conductive charging system for electric vehicles

♲	ATTENTION: This product incorporates a battery. Do not dispose of the product without taking the precaution to disassemble the battery and place it in a suitable container for recycling.

ORBIS TECNOLOGÍA ELÉCTRICA S.A. hereby declares that the type of radio equipment VIARIS CITY+ complies with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address:
http://www.orbis.es/descargas/declaraciones-de-conformidad

Subject to technical changes – additional information at
www.orbis.es

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ORBIS TECNOLOGÍA ELÉCTRICA, S.A.
Lérida, 61 E–28020 MADRID
Telephone:+ 34 91 5672277
E-mail: info@orbis.es
http://www.orbis.es