circontrol

Installation Manual

Genion One

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Genion One
Installation Manual

Here is the guide to install and configure Genion One

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This manual provides information about how to install, configure and use the **Genion One**.

It contains all the necessary information for safe usage and help to get the best performance from the product with step-by-step setup instructions.

THE FOLLOWING SYMBOLS ARE USED IN THIS DOCUMENT TO INDICATE IMPORTANT SAFETY INFORMATION

DANGER!
Indicates that property damage may occur if appropriate measures are not taken.

ATTENTION
Indicates that special attention should be paid to the point indicated.

INFORMATION
Useful information to take into account.

IMPORTANT SAFETY INSTRUCTIONS

- Read all instructions before using and setting up the equipment.
- Do not modify the equipment. If you make changes, **CIRCONTROL** will reject any liability and the warranty will be void.
- You must fully comply with the electrical safety regulations applicable in your country.
- Do not repair or tamper with the equipment while it is connected to a power supply

Introduction

Genion One is a product that allows you to manage the energy of an electrical system with a photovoltaic self-consumption system and an electric vehicle charging point. It was created with the objective of optimising energy usage in a system, specifically the contracted power and the surpluses produced by the self-consumption system, regulating the electric vehicle charging.

This manual explains the use of the web application that controls the operation of this equipment, as well as the previous steps to establish the connection.

Information is also included on the contents of the manual and how to use it effectively to ensure correct installation and proper operation of the device.

It is important to read the instructions carefully before starting the installation and ensure that all system requirements and applicable legal and safety requirements are met.

A Checks upon delivery

Upon delivery of the equipment, check the following points:

- The equipment corresponds to the specifications of your order.
- The equipment has not been damaged during transport.
- Perform an external visual inspection of the equipment before connecting it.
- Check that it is equipped with a quick installation guide.

If you notice any delivery issues, immediately contact the carrier and/or CIRCONTROL's post-sales service.

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A Serial Numbers

This manual only applies to Genion One devices with the following serial numbers (From ***92336473450001*** to ***92336473450096***).

In case your device does not match any code, please contact Circontrol's post-sales service.

92336473450001	92336473450025	92336473450049	92336473450073
92336473450002	92336473450026	92336473450050	92336473450074
92336473450003	92336473450027	92336473450051	92336473450075
92336473450004	92336473450028	92336473450052	92336473450076
92336473450005	92336473450029	92336473450053	92336473450077
92336473450006	92336473450030	92336473450054	92336473450078
92336473450007	92336473450031	92336473450055	92336473450079
92336473450008	92336473450032	92336473450056	92336473450080
92336473450009	92336473450033	92336473450057	92336473450081
92336473450010	92336473450034	92336473450058	92336473450082
92336473450011	92336473450035	92336473450059	92336473450083
92336473450012	92336473450036	92336473450060	92336473450084
92336473450013	92336473450037	92336473450061	92336473450085
92336473450014	92336473450038	92336473450062	92336473450086
92336473450015	92336473450039	92336473450063	92336473450087
92336473450016	92336473450040	92336473450064	92336473450088
92336473450017	92336473450041	92336473450065	92336473450089
92336473450018	92336473450042	92336473450066	92336473450090
92336473450019	92336473450043	92336473450067	92336473450091
92336473450020	92336473450044	92336473450068	92336473450092
92336473450021	92336473450045	92336473450069	92336473450093
92336473450022	92336473450046	92336473450070	92336473450094
92336473450023	92336473450047	92336473450071	92336473450095
92336473450024	92336473450048	92336473450072	92336473450096

Before installation

B Previous recommendations

The Genion One must be installed by authorised and qualified professional.

Before handling, modifying the wiring or replacing the equipment, the power supply must be disconnected. Handling it while it is connected is hazardous.

It is essential to keep the cables in perfect condition to avoid accidents or damage to people and/or property.

The equipment manufacturer shall not be liable for any damages whatsoever in the event that the user or installer does not heed the warnings and/or recommendations indicated in this manual, nor for damages resulting from the use of non-original products or accessories.

If an anomaly or malfunction is detected in the equipment, do not perform any operation on it.

Check the environment you are in before initiating connection: Do not make connections in hazardous or explosive environments.

For the equipment to be used safely, it is essential that the people who handle it follow the safety measures stipulated in the regulations of the country where it is being used, wearing the necessary personal protective equipment and heeding the various warnings indicated in this instruction manual.

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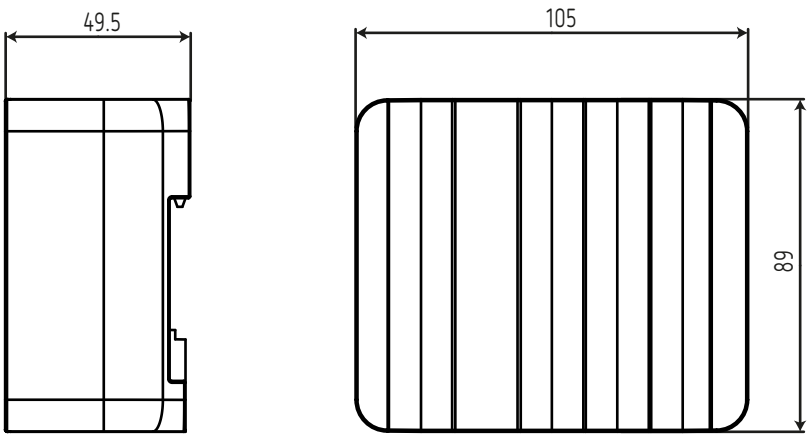
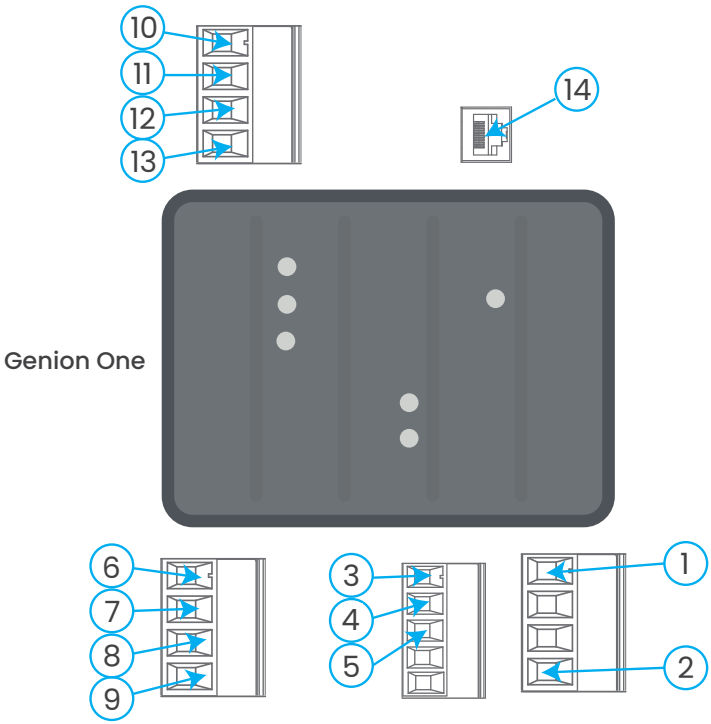
Device characteristics:

- **RS-485**, **Ethernet** and **WiFi** connections.
- **6 LED** indicators.
- A Web application that allows you to configure and visualise all the parameters of the home system in real time via **WiFi** or **Ethernet**.

Device dimensions:



Overview



Genion One terminals	
1. **V**, Auxiliary power supply	8. **V3**, Voltage input
2. **N**, Auxiliary power supply	9. **N**, Neutral voltage input
3. **B-**, RS-485 connection	10. **N1**, Neutral current input
4. **A+**, RS-485 connection	11. **I3**, EV Charge Point current input
5. **GND**, RS-485 connection	12. **I2**, Photovoltaic generation current input
6. **V1**, Voltage input	13. **I1**, Mains current input
7. **V2**, Voltage input	14. **Ethernet**, Ethernet connection

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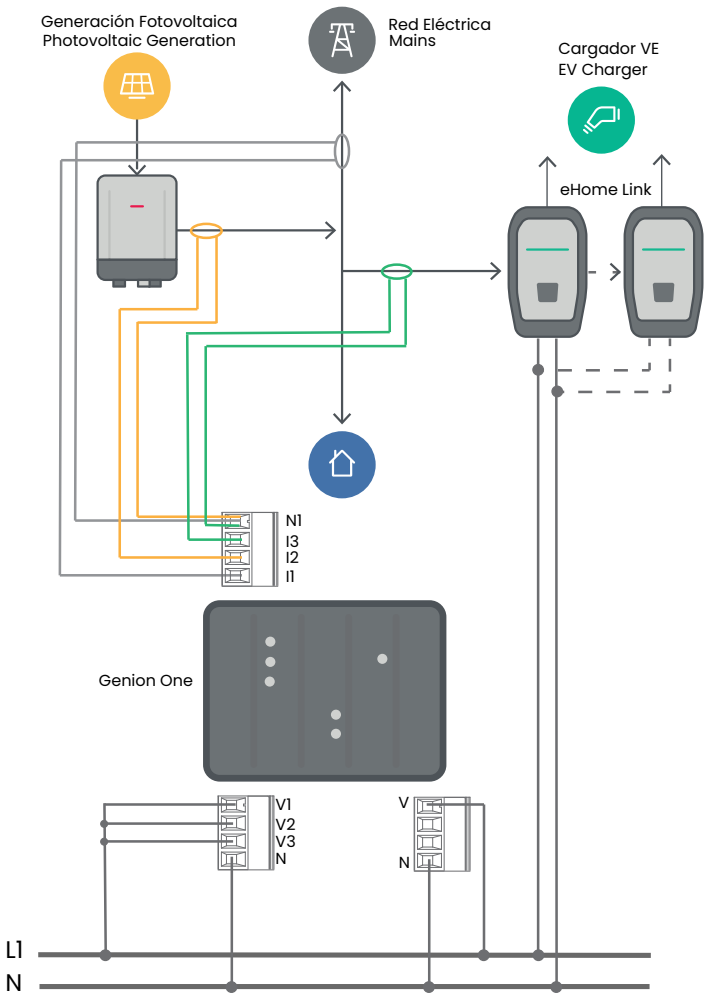
The equipment is installed on DIN rail.

With the equipment connected, you may have access to parts that are dangerous to the touch via the terminals or by opening of covers or removing certain elements. The equipment should not be used until it has been completely installed.

The equipment must be connected to a power supply circuit protected with gL (IEC 60269) or class M fuses, between 0.5 and 2 A. A circuit breaker or equivalent device must be provided to disconnect the equipment from the power supply.

Equipment installation

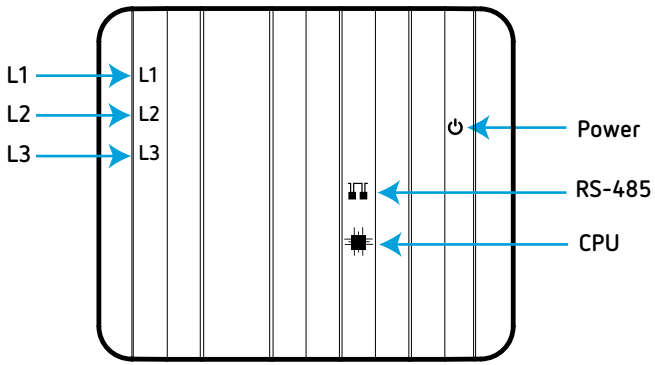
A Wiring diagram



5

A LED indicators

Genion One has 6 LED indicators that allow you to monitor the status of the equipment at all times.



- **Power**. Equipment status:

LED	Description
Power	On (green)
	Powered equipment

- **RS-485**. RS-485 communication status:

LED	Description
RS-485	Power on (blue)
	Data transmission
	On (green)
	Data being received

Operation

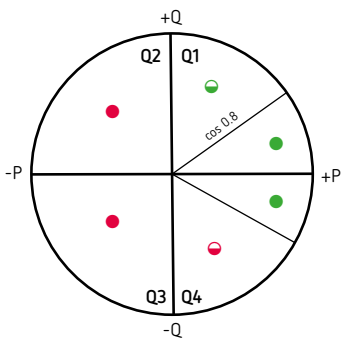
- **CPU**. CPU status:

LED	Description
CPU	Power on (blue)
	CPU activated

- **L1, L2, L3**. Line status: cos φ: 1 ... 0.8
  - » **L1.** Status of the Mains Power line.
  - » **L2**. Status of the Photovoltaic Generation line.
  - » **L3**. Electric Vehicle (EV) charging point line status.

Standard	Q1		Q2	Q3	Q4	
CIRCONTROL	● cos φ: 1 ... 0.8	◒ cos φ: 0.8 ... 0	● cos φ: 0 ... -1	● cos φ: 1 ... 0	● cos φ: -1 ... -0.8	◒ cos φ: -0.8 ... 0
IEC 62053-23	● cos φ: 1 ... 0.8	◒ cos φ: 0.8 ... 0	● cos φ: 0 ... -1	● cos φ: 0 ... -1	● cos φ: 1 ... 0.8	◒ cos φ: 0.8 ... 0
IEEE	● cos φ: -1 ... -0.8	◒ cos φ: -0.8 ... 0	● cos φ: 1 ... 0	● cos φ: 0 ... -1	● cos φ: 1 ... 0.8	◒ cos φ: 0.8 ... 0

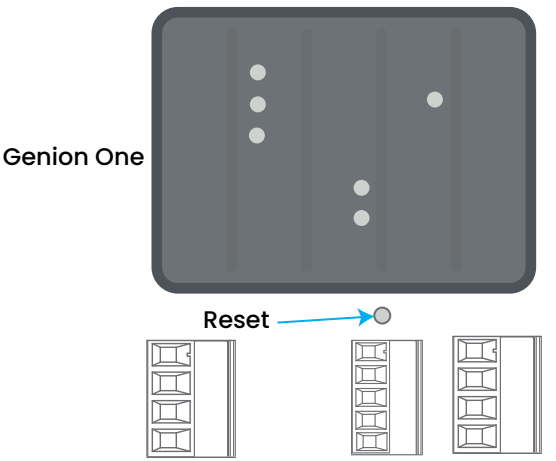
○ LED off, ● LED on, ◒ LED blinking.



B Reset

The unit has a Reset button to restore the factory settings. There are two modes available:

- Soft Reset: If the button is pressed for 3 seconds, the unit will restore the factory settings for the communication parameters.
- Hard Reset: If the button is pressed for 10 seconds, the unit will restore the factory settings for all configuration parameters.



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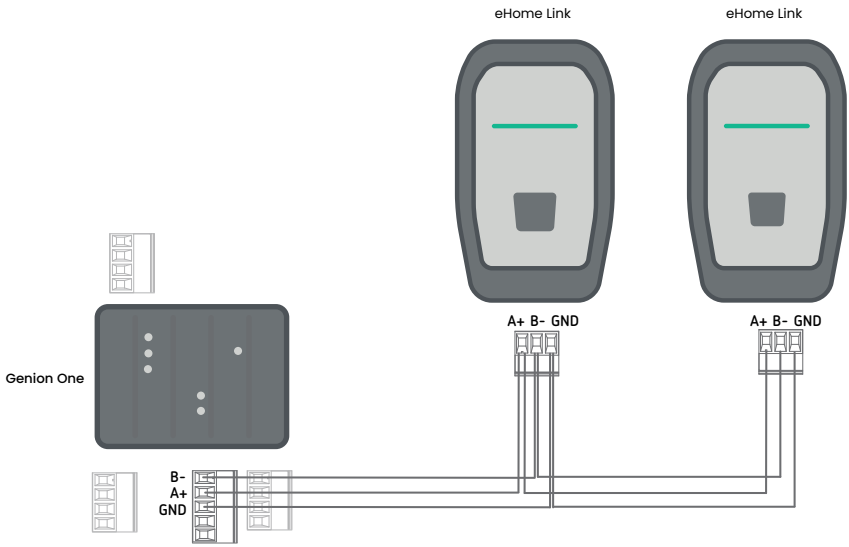
A RS-485 communications

Genion One has an RS-485 communications port for communicating with EV charging points.

The RS-485 cable should be composed of a twisted pair cable with a shielding sheath (minimum 3 wires), with a maximum distance between the **Genion One** and the satellite equipment of **1200 metres**.



Communications

USAGE ENVIRONMENT AND HEALTH

Wireless communications emit radio frequency electromagnetic energy, just like other radio devices.

Because they operate within the guidelines found in radio frequency safety standards and recommendations, they are safe for users to operate.

In certain environments or situations, the use of wireless communications may be restricted by the building owner or organisation representatives. These situations can include the following:

- Use of wireless connections on board airplanes, in hospitals or near gas stations, explosive areas, medical implants or electronic medical devices implanted in the body (pacemakers, etc.).

- In any other environment where the risk of interference with other devices or services is identified as hazardous.

If you are unsure about the policy that applies to the use of wireless devices in a specific organisation (airport, hospital, etc.), it is advisable to request authorisation for the use of wireless communications.

B Wi-Fi communications

The Genion One operates with WiFi communications in the 2.4 GHz band, according to IEEE 802.11 b / g / n standards.

C Ethernet communications

The Genion One operates with 10/100 Mbps Ethernet communications from an RJ45 connector.

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A Connection

The configuration website can be accessed in 2 ways:

Procedure 1

1. Power the equipment through terminals 1, 2 and 3.
2. The equipment will create its own WiFi connection with the name **Genion-xxxxxx**, where "**xxxxxx**" is the last 6 digits of the MAC.
3. The WiFi access password will be **12345678**.

NOTE: *The equipment does not have an Internet connection, since the WiFi network is only for communicating with the equipment. The Internet connection must be made via the Ethernet port.*

4. Once connected, open **Google Chrome** and enter

http://genion-xxxxxx.local/

Procedure 2

1. Power the equipment through terminals 1, 2 and 3.
2. The equipment will create its own WiFi connection with the name **Genion-xxxxxx**, where "**xxxxxx**" is the last 6 digits of the MAC.
3. The WiFi access password will be **12345678**.

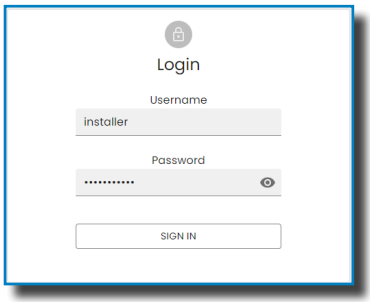
NOTE: The equipment does not have an Internet connection, since the WiFi network is only for communicating with the equipment. The Internet connection must be made via the Ethernet port.

4. Scan the QR code on the label on the side of the equipment. This code will take you to the website:

http://genion-xxxxxx.local/

Configuration website

Once the connection to Genion One has been established, the login page will be displayed, where the Username and Password must be entered.



The Web application has 3 access profiles:

- **Installer**. Allows you to manage and configure all installation parameters from the installation wizard.

Access via Installer profile	
Username	installer
Password	ins+password *(Located on label on the side of the equipment)*

For more information on installation, please refer to the section "***7G - Installation***".

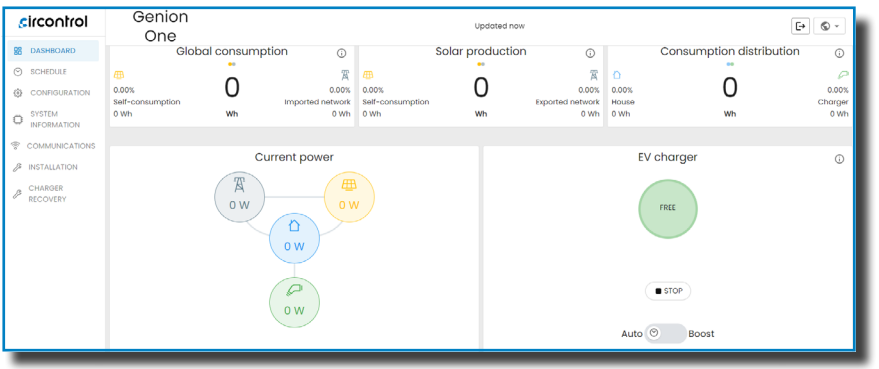
- **Administrator**. Allows access to all the options on the website, except for the installation wizard.

Access through the Administrator profile	
Username	admin
Password	*(Located on the label on the side of the equipment)*

- **Guest**. Allows access only to the main screen (Dashboard) of the Web application.

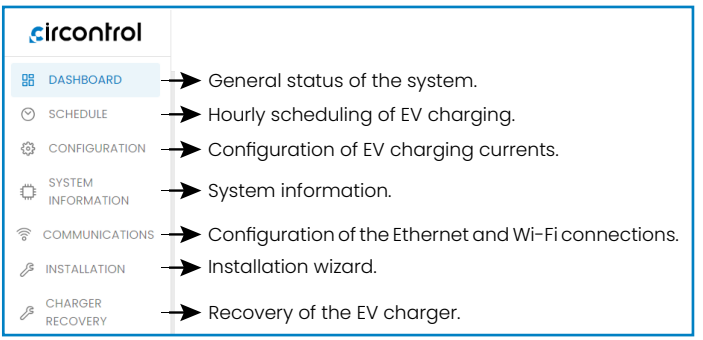
Access through the Guest profile	
Username	guest
Password	guest

Once validated, you can access the main screen.



Use the log out button to log in with a different profile.

From this screen you can access the configuration website menu.

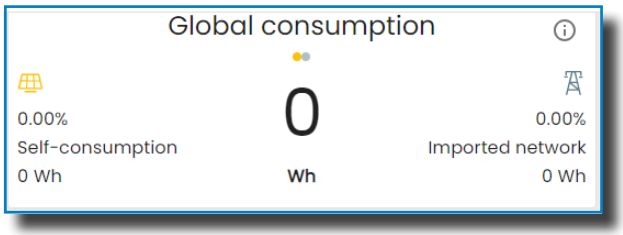


B Dashboard

The Dashboard section displays the graphical interface that shows the general status of the system.

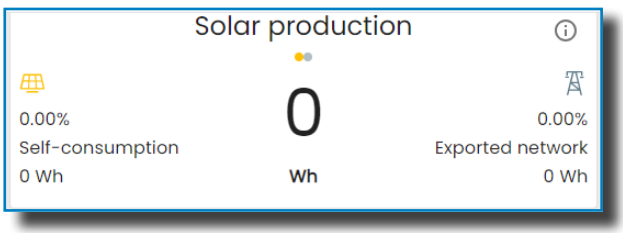
GLOBAL CONSUMPTION

The **Global Consumption** interface displays the global energy consumption data, as well as the distribution of energy according to its origin, in relative and absolute terms.



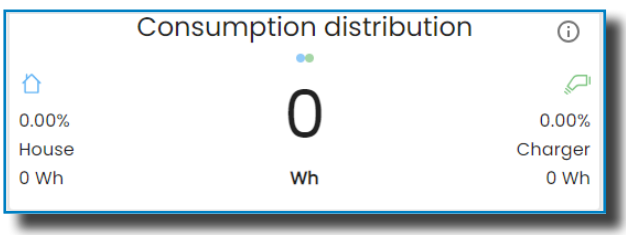
SOLAR PRODUCTION

The **Solar Production** interface displays the photovoltaic production data. Specifically, the total production and the relative and absolute data on the distribution of this production, self-consumed energy and energy exported to the grid.



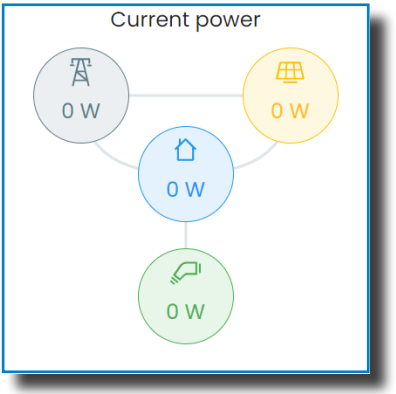
CONSUMPTION DISTRIBUTION

The **Consumption Distribution** interface shows the total energy consumed and divides it between the total for the house and that of the electric vehicle charging point. It also shows relative and absolute data.



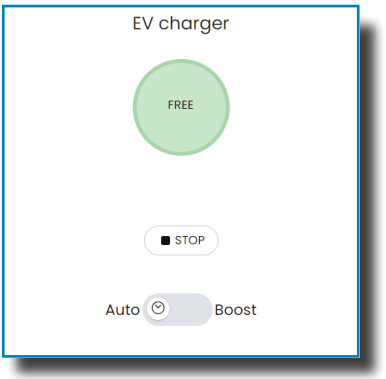
CURRENT POWER

The **Current Power** flow diagram shows information on both the origin of the power consumed (mains or self-consumption) and the part of the energy consumed that reaches the recharge point instantaneously.



EV CHARGER

The recharging point interface, or the **EV charger**, displays the following:



- The status of the recharging point.

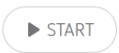
Charger **Free**: you do not have any vehicle connected.

Vehicle **Charging**.

Vehicle **Connected** to the recharging point, but not charging.

Error at the recharging point: the recharging point and the car are not properly connected.

- The recharging point switch.



Switch in **ON** mode: when a vehicle is connected, the charging will start.

Switch in **OFF** mode: the vehicle cannot be charged.

- The charging mode.

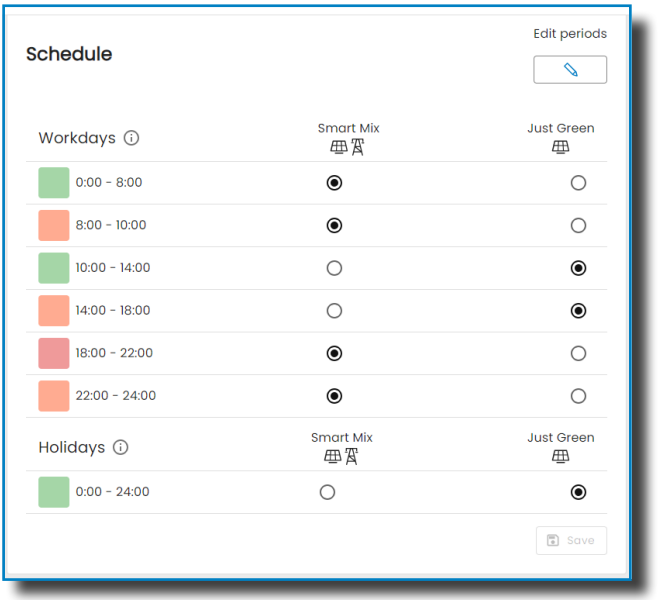
Auto: the vehicle will be charged as per the programmed periods.

For more information on the periods, please refer to the section "***7C - Calendar***".

Boost: the vehicle will always be charged, regardless of the programmed periods.

Calendar

The **Calendar** section is where you can configure the hourly schedule for charging the electric vehicle.



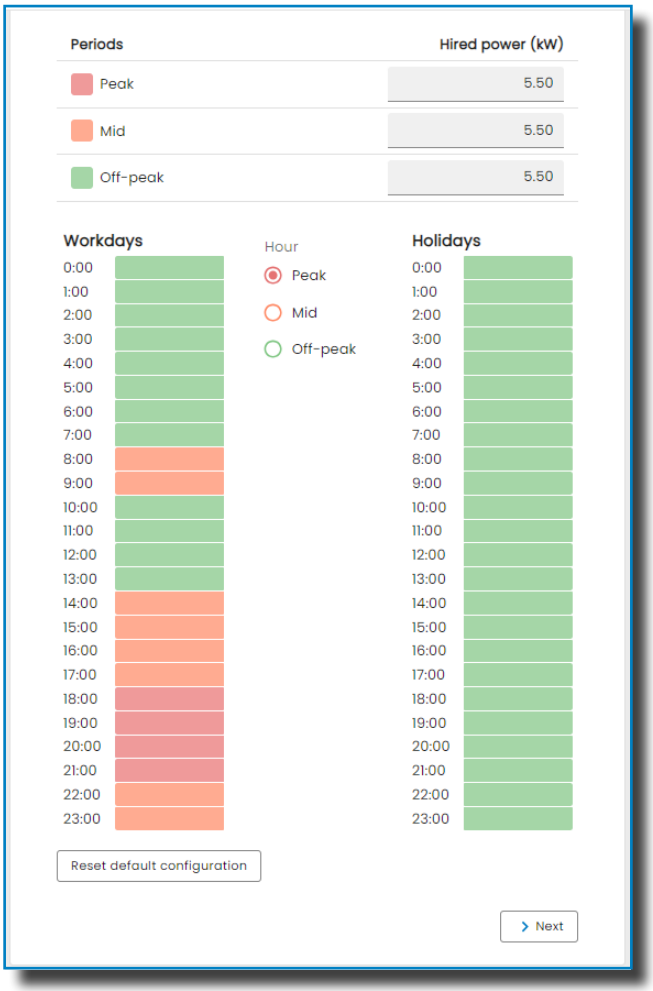
NOTE: *This programming will be activated when the Dashboard charging mode is set to Auto.*

For more information on the ***Auto*** mode, please refer to section "***7B - Dashboard - EV CHARGER***".

The Calendar can set different vehicle charging periods for working days and non-working days. For each period, you can select the Smart Mix Charging Mode.

- It prioritises charging with the surplus produced, but, if there is no surplus, the car will still be charged, with the power being drawn from the mains supply. This mode is usually used during Flat or Off-Peak periods.
- Just Green. Charging ONLY with the surplus from the photovoltaic system. If there is no surplus, it will not charge. This mode is normally used during Peak periods.

By clicking on the "**Edit periods**" button, you can access the configuration screen.



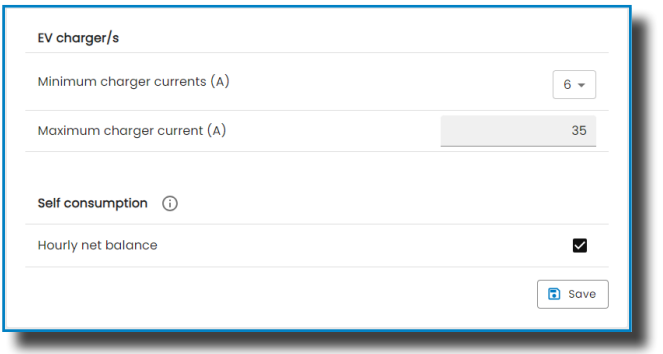
Here you will select the contracted power in Kw for each of the Periods: **Point**, **Plain** and **Valley**.

It also establishes the hourly limits of the billing period for the contracted electricity tariff, as well as the type of tariff. To do this, first select the time by clicking on it and then select the desired time period: **Peak**, **Flat** or **Off-Peak**.

NOTE: *The vehicle will be charged at the **2.0TD** tariff schedule by default.*

D Settings

In the **Settings** section you can configure the charging currents for the EV charging points.



In the **Settings** section you can configure the charging currents for the EV charging points.

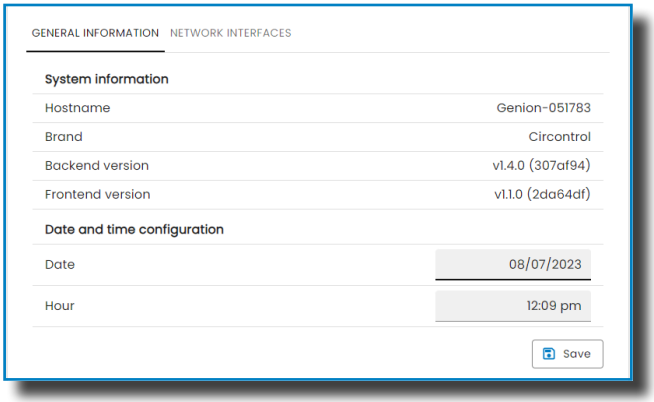
- **Minimum charging currents**: Select the minimum charging current for each of the recharging points, in order to take maximum advantage of the surplus produced by the self-consumption system. The possible values are **6 A**, **10 A** or **13 A**.

- **Maximum charging current**: Set the maximum charging current in A. This is a vehicle specification.

Press the **SAVE** button to save the changes made.

E System information

In the **System Information** section, you can view and configure the system information in 2 tabs. Below is the **General Information** tab.

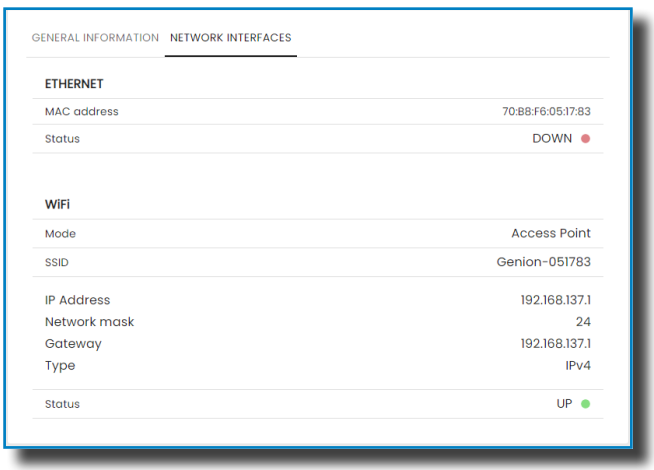


The **Server Name** shows the name of the equipment, which allows you to establish the connection and enter the Web application.

In the **Date and Time Settings**, you can change the system date and time.

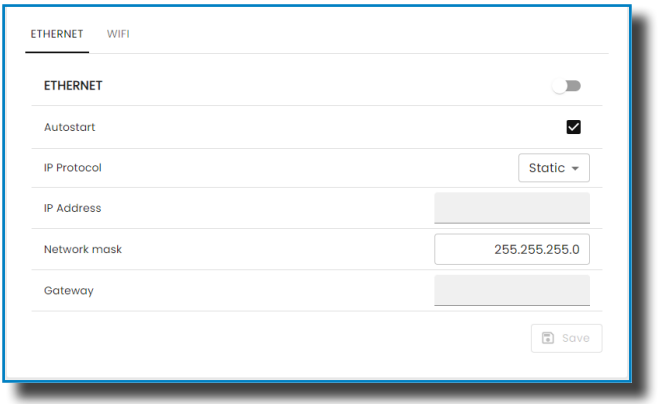
Press the **SAVE** button to save the changes made.

In the **Network Interfaces** tab, you can view all information related to Ethernet and WiFi connections. The status of each of the connections will be shown visually with a green or red indicator.



F Communications

In the **Communications** section, you can view and configure the Ethernet and WiFi connections. The Ethernet tab is shown below:

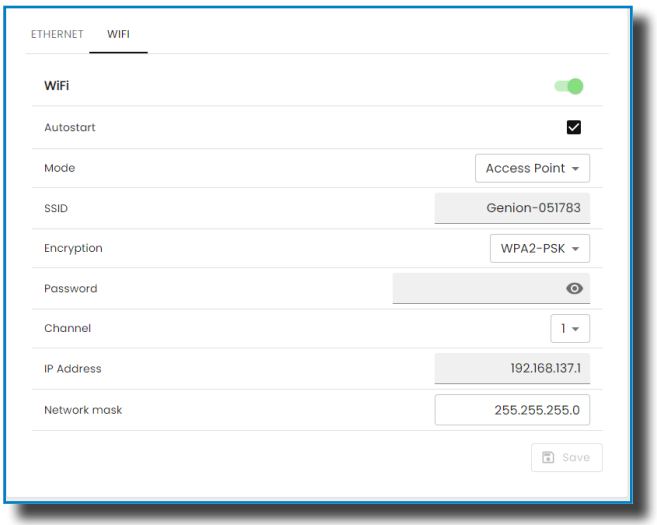


In this tab, you can enable or disable Ethernet connections. The configuration parameters are as below:

- **Autostart**: when the configuration parameters are saved, the unit will restart automatically.
- **IP Protocol**: selection of the IP protocol type, either **Static** or **DHCP**.
- **IP Address**: Ethernet IP address.
- **Netmask**: Ethernet network mask.
- **Gateway**: Ethernet gateway.

Press the **SAVE** button to save the changes made.

In the next tab, the WiFi connection can be enabled or disabled:



The configuration parameters are as below:

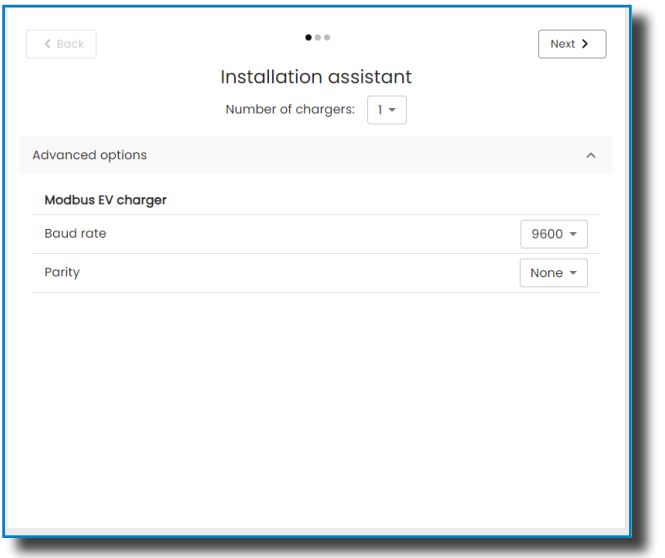
- **Autostart**: when the configuration parameters are saved, the unit will restart automatically.
- **Mode**: selection of the WiFi mode, either **Access Point** or **Station**.
- **SSID**: equipment name.
- **Encryption**: selection of the type of encryption used, which can be **OPEN, WEP, WPA1-PSK, WPA2-PSK, WPA3-PSK, WPA1-PSK + WPA2-PSK, WPA2-PSK + WPA3-PSK, WPA1-EAP, WPA2-EAP, WPA1-EAP or WPA1-EAP + WPA2-EAP**.
- **Password**: WiFi network access password.
- **Channel**: Network channel selection: 1 ... 11.
- **IP Address**: IP address of the equipment.
- **Netmask**: network mask.

Press the **SAVE** button to save the changes made.

Installation

If you access the website with the **Installer** profile, you will see the **Installation** section displayed, which allows you to configure all the installation parameters for the **Genion One** from an installation wizard.

STEP 1 of the Installation Wizard.



The configuration parameters are as below:

- **Number of chargers**: Selection of the number of recharging points installed. In the case of 2 recharging points, the power supply for the first recharging point must be disconnected in order to carry out the configuration.

NOTE: *The wizard will warn you when the first recharging point is to be reconnected*.

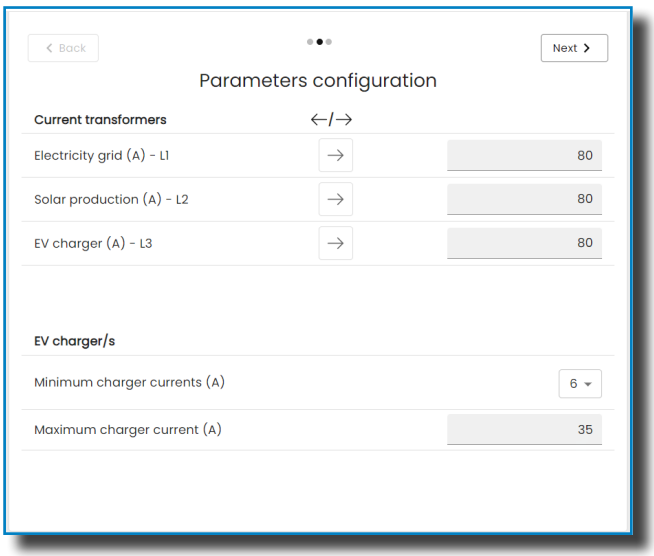
The recharging points must be configured at the factory with ID 1 by default.

In the **Advanced Options** drop-down menu, you can configure the Modbus communications for the recharging point.

- **Baud**: selection of the transmission speed: **9600, 19200, 38400, 57600** or **115200 bps**.
- **Parity**: selection of communication parity, either **None** or **Even**.

Click on the **Next >** button to proceed to the following installation step.

STEP 2 of the Installation Wizard.



The configuration parameters are as below:

In the **Current Transformers** section:

- **Mains Power (A) - L1**: L1 current transformer primary, Mains Power line in Amps.

- **Solar Production (A) - L2**: L2 current transformer primary, Photovoltaic Generation line in Amps.

- **EV Charger (A) - L3**: L3 current transformer primary, EV Charger line in Amps.

The button → allows the polarity of the readings to be reversed so as not to obtain negative powers where they are not expected.

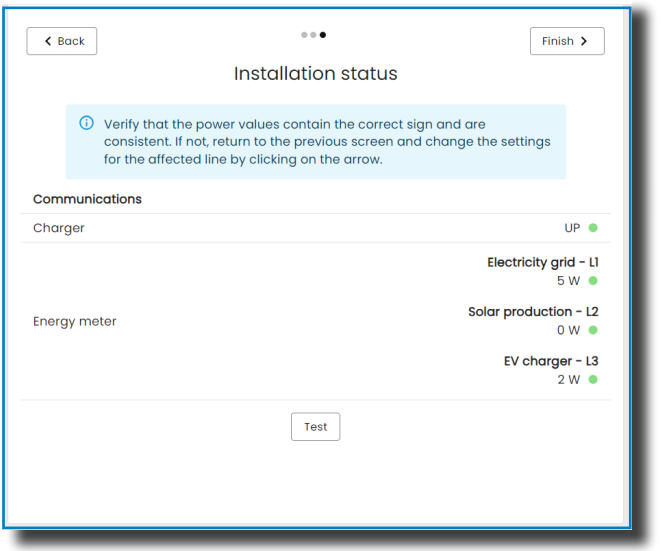
In the **EV Charger(s)** section:

- **Minimum charge currents (A)**: Select the minimum charging current for each of the chargers, in order to take maximum advantage of the surplus produced by the self-consumption system. The possible values are: **6 A, 10 A** or **13 A**.

- **Maximum charge current (A)**: Set the maximum charge current in Amps; this is a vehicle specification.

Press the **Next >** button to proceed to the next installation step.

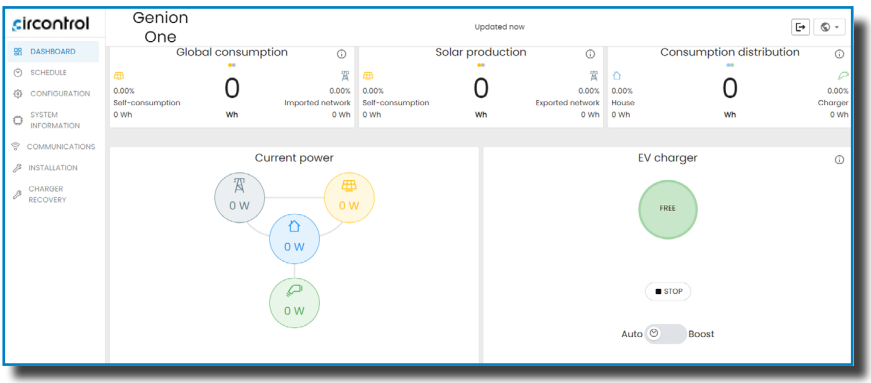
STEP 3. Installation status.



In the **Installation Status** screen you can view the Modbus communication values returned by the recharging points. These power parameters should be checked to verify that the values returned by the **Genion One** are correct.

If any of the 3 lines fail, you can carry out all the necessary checks again by pressing the **Test** button, until the installation is correct.

At the end of the installation, the main Dashboard screen will be displayed again:



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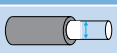
POWER SUPPLY IN CA	
Rated voltage	85 ... 264 V ~
Frequency	47 ... 63 Hz
Consumption	8.8 ... 10.5 VA
Installation category	CAT III 300 V
VOLTAGE MEASUREMENT CIRCUIT	
Rated voltage (Un)	230 V_{F-N} ~, 480 V_{F-F} ~
Voltage measurement range	5 ... 120% Un
Frequency measurement range	45 ... 65 Hz
Input impedance	1 MΩ
Minimum measurement voltage (Vstart)	10 V
Installation category	CAT III 300 V
CURRENT MEASUREMENT CIRCUIT	
Rated current (Un)	... / 250 mA
Current measurement range	2 ... 120% In
Input impedance	0.5 mΩ
Minimum measurement current (Istart)	1% In
Installation category	CAT III 300 V
ACCURACY	
Measurement of active energy	Class 1
Measurement of reactive energy	Class 2
RS-485 COMMUNICATIONS	
Fieldbus	RS-485
Communications protocol	Modbus - RTU
Speed	9600 - 19200 - 34800 - 57600 - 115200 bps
Stop bits	1 - 2
Parity	none - even
Ethernet communications	
Type	Ethernet 10/100 Mbps
Connector	RJ45
Protocol	TCP/IP
Secondary service IP address	DHCP

Technical Characteristics

WIFI COMMUNICATIONS			
Band	2.4 GHz		
Standards	IEEE 802.11 b / g / n		
Mode	Access Point		
SSID	Genion-xxxxxx		
IP	192.168.137.1		
USER INTERFACE			
LED	6 LED		
ENVIRONMENTAL CHARACTERISTICS			
Working temperature	-20°C ... +50°C		
Storage temperature	-25°C ... +75°C		
Relative humidity (non-condensing)	5% ... 95%		
Maximum altitude	2000 m		
IP degree of protection	IP20		
IK degree of protection	IK08		
Pollution degree	2		
Application	Interior		
MECHANICAL CHARACTERISTICS			
Terminals			
1 ... 13	1.5 mm^2	0.2 Nm	M2
Dimensions	105 x 89 x 49.5 mm		
Weight	150 g		
Envelope	Polycarbonate UL94 V0 self-extinguishing		
Fixing	DIN rail		
ELECTRICAL SAFETY			
Protection against electric shock	Class II double insulation		
Insulation	3 kV~		
STANDARDS			
Electromagnetic Compatibility (EMC). Part 6-4: Generic standards. Emission standard in industrial environments.	UNE-EN 61000-6-4		
Electromagnetic Compatibility (EMC). Part 6-2: Generic standards. Immunity in industrial environments.	UNE-EN 61000-6-2		
Safety requirements for electrical measuring, control and laboratory equipment. Part 1: General requirements.	UNE-EN 61010-1		

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Need help?

If you have any queries about operating the equipment or if it develops a fault, please contact the **Post-Sales Department**.

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CIRCONTROL
GENION ONE
INSTALLATION MANUAL

A comprehensive guide on how to install, configure and use Genion One.

v1.1 - 14th September 2023