ENGLISH



Manual - EV Charging Station NS

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Table of Contents

1. Safety Instructions 1

2. Description and features 2

2.1. Description 2
2.2. Features 2
2.3. What's in the box? 5

3. Installation 6

4. System example 9

5. Setup, configuration & operation 11

5.1. First use setup via VictronConnect 11
5.2. First use setup via WiFi access point 17
5.3. MQTT activation 21
5.3.1. Activate pairing mode 21
5.3.2. Pairing via EVCS web interface 22
5.3.3. Pairing via VictronConnect 23
5.4. GX device setup, configuration and operation 27
5.4.1. Setup menu and options 27
5.5. VictronConnect setup, configuration and operation 28
5.5.1. Setup 28
5.5.2. Overview page 29
5.5.3. Settings page 29
5.5.4. Product info page 30
5.5.5. Network Settings 31
5.5.6. General Settings 33
5.5.7. Scheduler 38
5.5.8. Light Ring 40
5.5.9. Access 40
5.5.10. Reset to defaults 41
5.6. NFC tags 41
5.6.1. Adding NFC tags 41
5.7. Firmware updates 43
5.8. Reset procedure 47
5.9. Maintenance 48

6. Troubleshooting 49

6.1. CP Line Calibration 49
6.2. MQTT pairing 50
6.3. Frequently asked questions 50
6.3.1. Q1: How do I prevent the charging station from being used by unauthorised persons? 50
6.3.2. Q2: Does the EV Charging Station have RFID? 50
6.3.3. Q3: The light ring is annoying my neighbours during night, how can I disable the light ring? 50
6.3.4. Q4: Why isn't my car recognized when I connect the charging cable? 50
6.3.5. Q5: Why does my EV Charging Station show up on multiple GX devices? 50
6.3.6. Q6: How much PV power do I need at least to charge the EV in automatic mode? 51
6.3.7. Q7: Is it possible to operate multiple EV Charging Stations in one system? 51
6.3.8. Q8: The EV is fully charged, but the EVCS still alternates between start charging and stop charging, why? 51
6.3.9. Q9: I keep getting a W-104 GX communication warning! What is the reason for this? 51
6.3.10. Q10: Is a GX device in the system absolutely necessary? 51
6.3.11. Q11: I would like to control the EVCS via Modbus TCP. Is this possible and if so, how? 51
6.4. EVCS Notification, Warning, Alarm and Error Codes 52

7. Technical specifications 56

7.1. Dimensions 57
7.2. Drilling template 58

8. Appendix 59

8.1. External control of grid-relevant power (§14a EnWG - Germany) 59

1. Safety Instructions

Please read the safety instructions below before using the EV Charging Station NS to avoid risks of fire, electric shocks, personal injuries or equipment damage.

Installation and adjustments must be made by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that specified in the operating instructions unless you are qualified to do so.

For electrical work, follow the local national wiring standard, regulation and these installation instructions. Connection to the mains supply must be in accordance with the national regulations for electrical installations.

This product is designed and tested in accordance with international standards. The equipment should be used for its designated application only and in accordance with the specified operating parameters.

Warnings and cautions:



- Never install near fire sources, explosive materials, combustibles or other flammable sources. Never use it at places where gas or other chemical explosions could occur.
- It must be connected all the times to the ground, otherwise it will not allow charging.
- Turn off the EV Charging Station NS power before installing or performing operations to it.
- Make sure children are supervised if using the equipment.
- Do not put fingers or insert objects or sharp metallic objects into the terminals. Do not insert objects into any other parts of the EV Charging Station NS.
- Do not use the device if the power cord or EV cable is broken, shows any signs of damage or does not function properly.
- Do not use the EV Charging Station NS if it is broken, defective, cracked, damaged or does not function properly.
- Do not apply strong force on the equipment, to prevent crashes and deterioration.
- Do not use any sharp objects to damage the product.
- Do not service the equipment by yourself, do not open, disassemble or make any modifications to it. Contact your Victron Energy Distributor.
- Do not touch any live electrical parts.
- Do not place the EV cables connected to the charging station in water.
- Make sure ground connection is properly done to prevent equipment damage.
- Transport the device with care in its original package to avoid damage to it and its components.
- Store in a dry environment, at temperatures between –20 °C to 60 °C.
- Do not operate at temperatures outside the operating range of -25 ˚C to 50 ˚C.
- As the EV Charging Station NS can affect the functioning of certain medical electronic implants, check any potential side effects with your electronic device manufacturer before using the device.

2. Description and features

2.1. Description

The EV Charging Station NS is an AC charging station for electric vehicles. It delivers up to 22 kW in three-phase mode or 7.3 kW in single-phase mode, with a configurable charging current of up to 32 A per phase.

The charging station connects to the local network over WiFi or Ethernet. It is operated and monitored with the VictronConnect app over Bluetooth, in its own web interface, from a GX device, and from anywhere through the VRM portal and VictronConnect-Remote.

In a system with solar, the charging station can charge the vehicle from surplus solar energy once the house batteries are full and feed-in is active, instead of exporting that energy to the grid at a lower price.

An internal RCD monitors residual current and stops charging on a fault, integrated energy metering records the energy delivered to the vehicle, and proximity pilot detection limits the charging current to the rating of the connected cable. A motorised lock secures the cable in the socket. In selected regions, an intrusion detection sensor stops charging and displays an error if the case is opened.

A programmable RGB light ring around the charging port shows the state of the charging station, with 55 configurable light effects.

2.2. Features

Three operation modes:

1. **Automatic mode to ensure maximum PV system efficiency**

   Thanks to the seamless integration of the EV Charging Station NS with the rest of the Victron installation, it detects when there is a surplus of solar power and uses this exclusively to charge the vehicle or, if desired, adds energy from the grid to cover the minimum power requirement, for example, if there is not enough surplus solar power. Note that this mode requires a GX device in your system and communication between GX device and EVCS enabled. For details, see chapter VictronConnect setup, configuration and operation [28] and GX device setup, configuration and operation [27].

   Instead of losing surplus energy when the batteries are full and, for example, feeding it back into the grid at a lower price, the energy is stored in the EV battery.

   - Seamless integration into the Victron installation
   - Detects when excess power is available and uses only that to charge the vehicle before exporting it to the grid
   - Ensures maximum PV efficiency
   - Battery-powered algorithm (used by default) for automatic mode ensures that automatic mode works even when off-grid

   How does it work?

   The EVCS will automatically start charging when the vehicle is connected and the following conditions are met:

   1. The current state of charge is above the 'Start charging at backup battery SoC (%) value.
   2. There is enough excess solar power available, with excess solar power calculated as follows:
      - Excess solar power = Total PV production - AC loads (without car consumption) = 1380W (230V x 6A)

        In the example above, the Min. charge current (from 6A) value has been set to 6A. The required excess solar power increases accordingly if a higher value is set for the Min. charge current (from 6A). Please see the chapter VictronConnect setup, configuration and operation [28] for details on both parameters.
   3. Or, if there is not enough excess solar power available to meet the minimum charge current requirement as per 2., it is possible to enable the 'Allow low excess solar power for auto mode' option. This option supplements the required power with additional power from the grid to meet the minimum current requirement. See chapter VictronConnect setup, configuration and operation [28] for details.

2. **Manual mode to configure output current**

   Manual mode allows configurable output current between 6-32A.

   The charging power is controlled in several ways:

   - By using the web interface via a web browser
   - From a GX device touch screen like the GX Touch 50 & GX Touch 70.

- From the Remote Console
- By using the Controls on the Dashboard of the VRM Portal (requires a GX device)
- Via Bluetooth and the VictronConnect App

It allows charging to be started or stopped manually when an EV is connected to the charging station, regardless of PV production.

3. **Scheduled mode to allow automatic charging at custom time intervals**

   The Scheduler allows charging at different time intervals, for example at certain times during the night when grid energy is cheaper.

   In addition to the start and end time, various parameters such as charging current and interval can be defined.

   The EVCS will then start charging according to the scheduler settings.

WiFi Communication WiFi 802.11 b/g/n for configuration, control and monitoring

The internal WiFi module can be configured in Access Point mode or Station mode, for first setup, control and monitoring.

A wired Ethernet port is included as an alternative to a WiFi connection.

Bluetooth communication via VictronConnect

Integrated Bluetooth capability enables easy monitoring and control of the EV Charging Station NS via VictronConnect from any mobile device such as an iPhone, iPad or Android phone.

For more details see the VictronConnect setup, configuration and operation [28] chapter.

Integration with GX devices

Control and monitor the EV Charging Station NS from a GX device such as the Cerbo GX and the Remote Console.

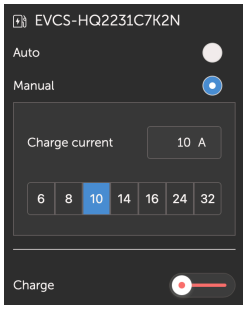
For more details see the GX device setup, configuration and operation [27] chapter.

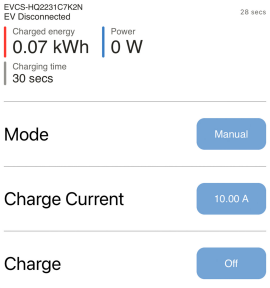
Integration with VRM

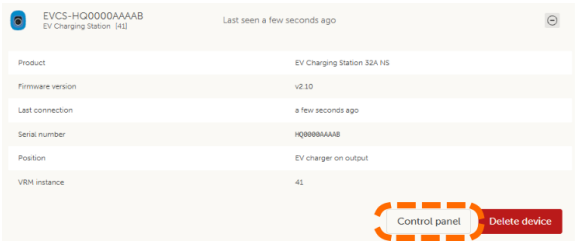
Several options are available in the VRM Portal:

- Real-time reports
- Custom reports for configurable time periods
- Advanced functions such as remote firmware updates
- Change mode and charge current via Dashboard Controls on the VRM Portal and start/stop charging
- Access the EVCS web interface from VRM via a proxy link by clicking 'Control Panel' in the Device list

Control and monitoring are also possible via VRM App (download from the App Store or Google Play) and VRM App Widgets directly from the home screen of a mobile device.







For detailed information, see the VRM Portal documentation.

Light Ring for fast viewing the device state

It also has a fully programmable RGB light ring around the charging port, which can be used to quickly determine the status of the device even from a distance. It can be programmed via the web interface to display different light effects depending on the current state (disconnected, charged, loaded, etc.).

Motorised cable lock

The charging socket is fitted with a motorised lock. While a charging session is running, the lock holds the plug in the socket so the charging cable cannot be disconnected.

2.3. What's in the box?

- EV Charging Station NS
- Mounting plate
- 28mm nylon cable gland for power cables up to 19mm in diameter
- Type 2 cable plug holder dummy socket
- Rubber plug

3. Installation

This product may only be installed by qualified personnel (licensed electrician).

It is suitable for wall mounting or pole mounting (vertical surface). In all cases, the surface should be solid and flat.

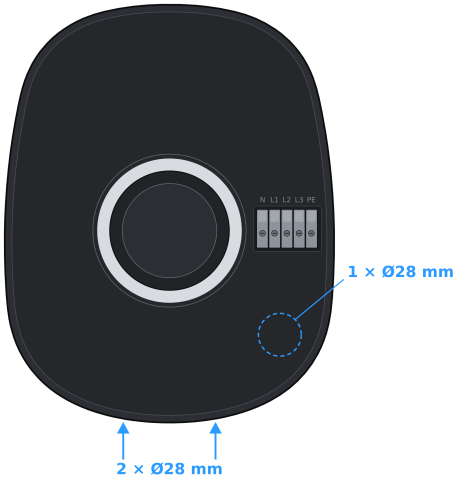
Precautionary measures

- Ensure that the AC input is protected by a fuse or magnetic circuit breaker rated at 40A or less. The cable cross-section must be sized accordingly. If the AC input supply is rated at a lower value, the fuse or magnetic circuit breaker should be sized accordingly.
- An external RCD is required.
- We recommend using an RCD type B protected supply (check local legislation) . Make sure that the RCD corresponds to the maximum power used, i.e. use a 40A RCD type B if you charge mostly with 22kW or correspondingly smaller if you charge with less power
- Recommended cable cross-section is 6mm² / AWG 10.
- Inside the device is a sticker with the model, serial number, WiFi password and, depending on the date of manufacture, the unique Bluetooth pairing code. Note the password and pairing code on the internal label for future reference. This initial password can be used for both logging in on the web page but also for WiFi connection.
- The tightening force of the screws on the backing plate should be 1-1.2 Nm.
- The mounting surface should be solid and flat.
- Make sure you always have the latest version of this manual, which is updated regularly and available on the EV Charging Station website.

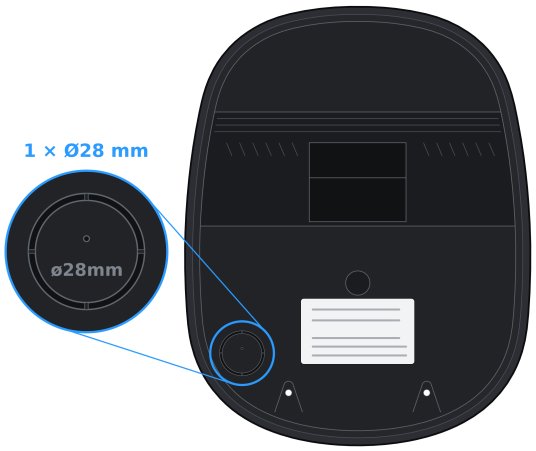
Installation steps:

The power cable can be installed to enter the EV Charging Station NS either from the rear or the bottom.

With the front cover removed, this image highlights the location of the cable entry points.



There is one 28mm cable entry knockout at the rear.



Alternatively, there are two 28mm cable entry knockouts at the bottom.



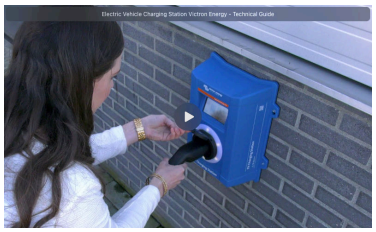
1. Decide whether the power cable should be routed into the charging station from the bottom or from the rear.
2. Remove the blue cover (2 screws at the bottom) from the charging station.
3. Mark the wall where it should be mounted using the supplied wall plate or the drilling template [58] in the appendix.
4. Drill 3 holes with wall plugs ready for installation, see the drilling template in the appendix.
5. Measure a suitable location and drill through the wall for the cable (when main supply cable comes from inside the building). Note that if the cable is fed into the charging station from the rear instead of the bottom, the hole will match the drilling template.
6. Depending on whether the cable is routed from below or from behind, knock out the appropriate hole for the nylon gland with a screwdriver or use a 28mm drill and insert the nylon gland. If the cable is routed from the rear, attach the supplied rubber plug instead and pierce a hole slightly smaller than the power cable into it to make a watertight connection.
7. Label each individual cable and pass it through the wall, the nylon gland (or the rubber plug), the grommet and into the charging station.
8. Terminate the cable ends with ferrules and connect to the relevant points.
9. If this is a single-phase installation, use L1, neutral and earth connections.

10. Tighten the nylon gland if installed from the bottom.

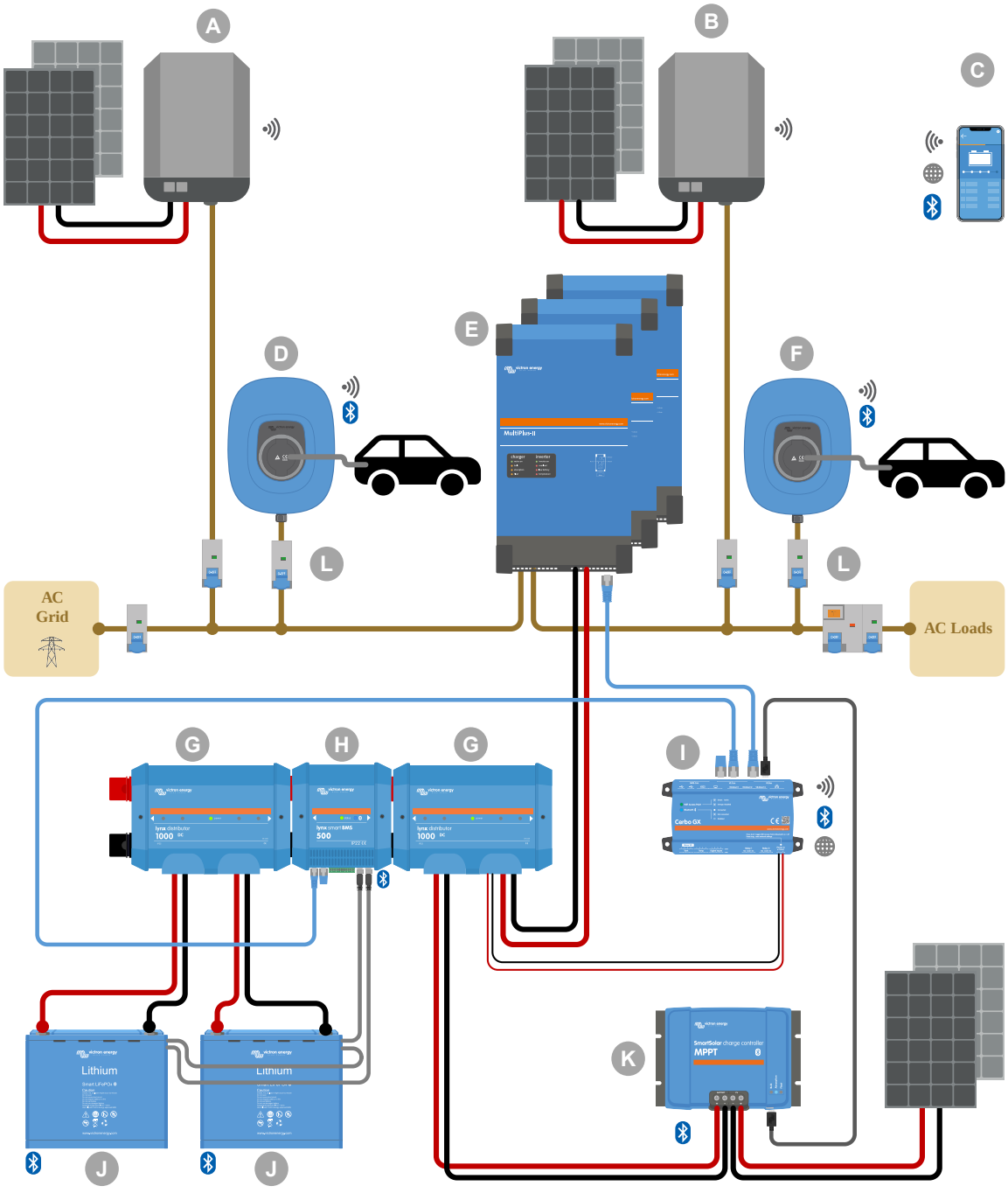
11. Hang the device over the wall plate and fix it with the two screws from inside the device.

12. Attach the blue cover and fix it with the 2 screws from the bottom side. Make sure it is firmly seated.

Watch this video for an installation example:



4. System example



This system displays all available options, specifically:

- All solar types: AC PV on AC input, AC PV on AC output and DC PV
- EV Charging Station NS on AC input or AC output of the inverter/charger
- Single-phase or three-phase

Key	Description
A	Grid-feed PV Inverter connected to the AC input of the inverter/charger
B	Grid-feed PV Inverter connected to the AC output of the inverter/charger
C	Setup, control and monitoring via WiFi or Bluetooth and VictronConnect, web interface or VRM portal (setup only via WiFi or Bluetooth)
D	EV Charging Station NS: Connected to the AC input of the inverter/charger
E	For single-phase systems: a single inverter/charger or inverters/chargers connected in parallel For three-phase systems: three inverter/chargers connected in 3-phase or multiple strings of paralleled units connected in 3-phase
F	EV Charging Station NS: Connected to the AC output of the inverter/charger
G	Lynx Distributor: On the battery side and on the system side, containing a positive and negative bus bar and all DC fuses
H	Lynx Smart BMS: Monitors and controls (with built-in battery monitor and contactor) the Victron Smart Lithium batteries and Lynx Distributor fuses
I	Cerbo GX: Serves as a control and communication center and enables remote control and monitoring via the VRM portal and/or the VRM App Widgets, accessible directly from a mobile device
J	Victron Lithium Battery Smart: Available in 12.8V & 25.6V and different capacities. A maximum energy storage capacity of 102kWh can be achieved by combining batteries in both series and parallel configurations
K	Solar Charge Controller: A variety of MPPT solar charge controllers are available with voltage ranges from 75V to 450V, allowing for topping up of energy storage and storage of surplus energy in the vehicle's battery
L	Circuit breaker on the EV charger input

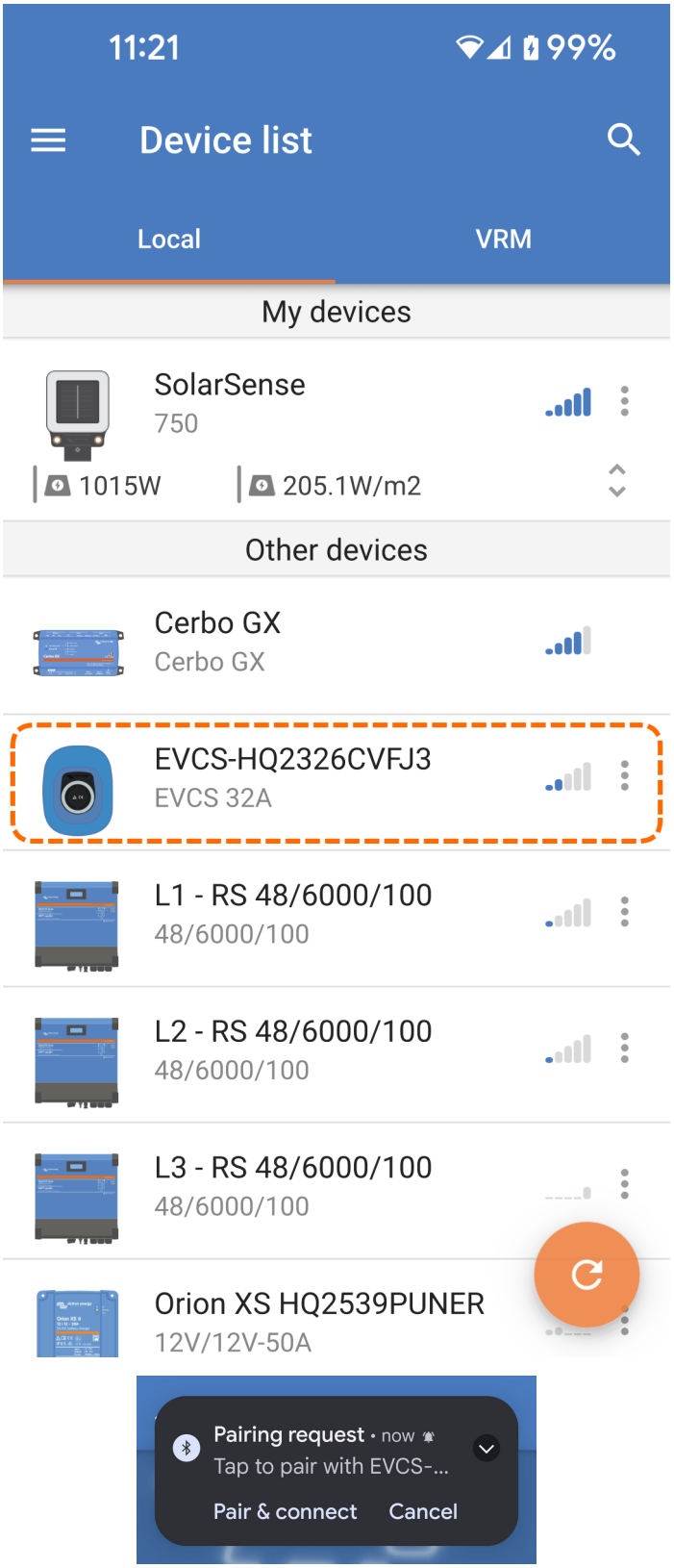
5. Setup, configuration & operation

5.1. First use setup via VictronConnect

The initial setup is required when the EVCS is new and has yet to be configured or after it has been reset to factory defaults.

Preparation

1. Open VictronConnect and find the entry for your EVCS (EVCS-HQXXXXXXXXX).
2. Tap on EVCS. This will start the pairing dialogue. Enter the pairing code, which is a unique number on a sticker inside the housing.

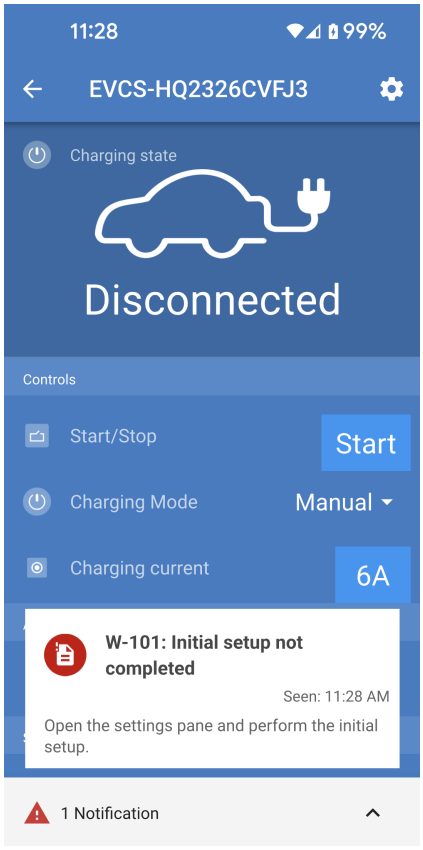


Start initial setup

After successful pairing, the Status page appears.

A warning notification will pop up stating "Initial setup not completed".

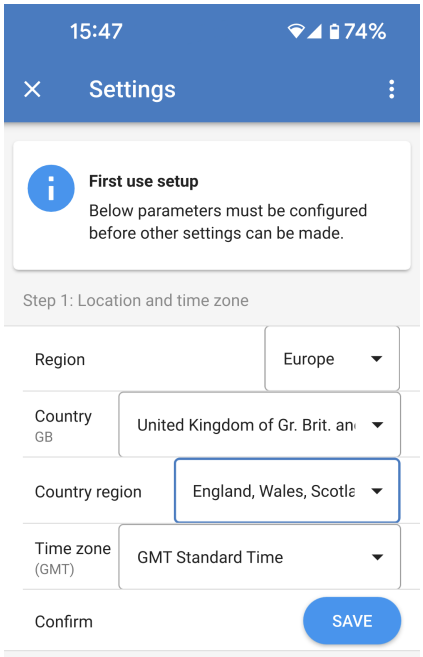
Tap the cog wheel icon in the upper right to open the Settings page so that the initial setup can be performed.



Step 1 of 5: Location and time zone

Complete the fields for your Region, Country, Country region, and time zone.

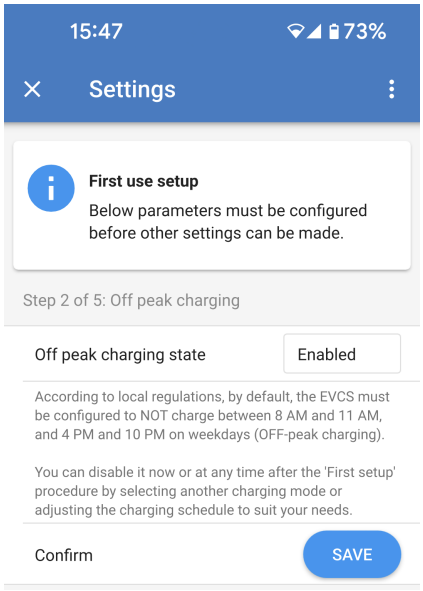
> The time zone is important for charging schedules to work properly.

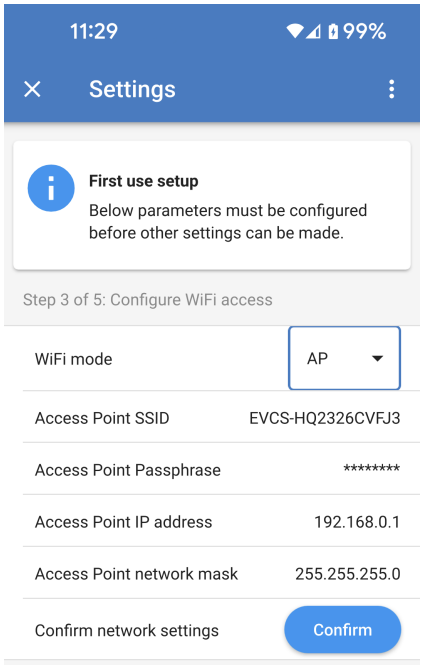


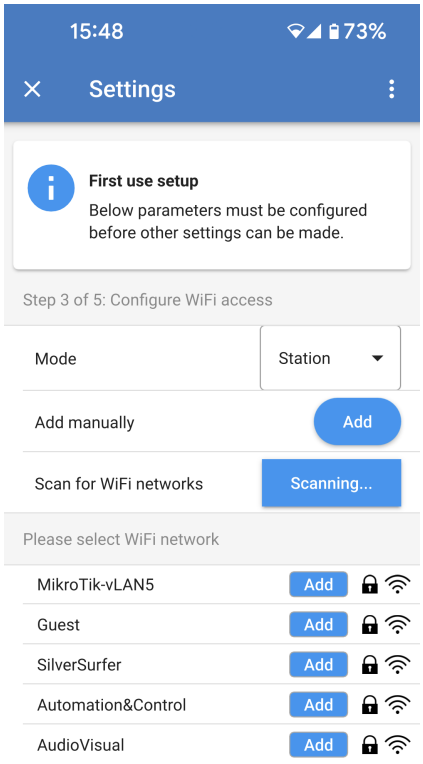
Step 2 of 5: Off peak charging

Some regions prohibit EV charging during certain hours of the day.

You should leave this setting enabled if this applies to your region.







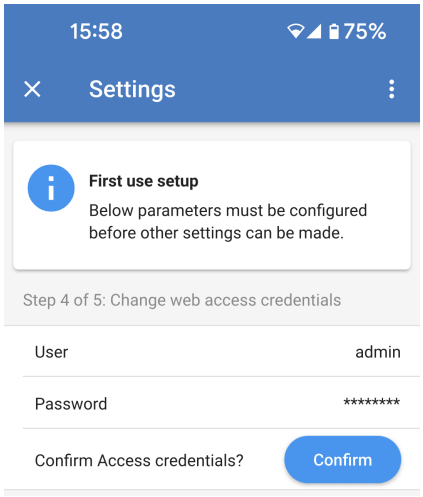
Step 3 of 5: Configure WiFi access

One of the following parameters **must** be changed to complete the first setup and start using the EV:

- Either confirm the WiFi mode AP (the EVCS provides its own access point) - some of the parameters are already pre-filled. You need to provide an Access Point Passphrase.
- Or choose Station mode to connect the EVCS to your local network/router. If you already know the network name (SSID), you can enter it manually. Alternatively, hit SCAN to find nearby networks, select your desired network, and enter the access password.

Step 4 of 5: Change web access credentials

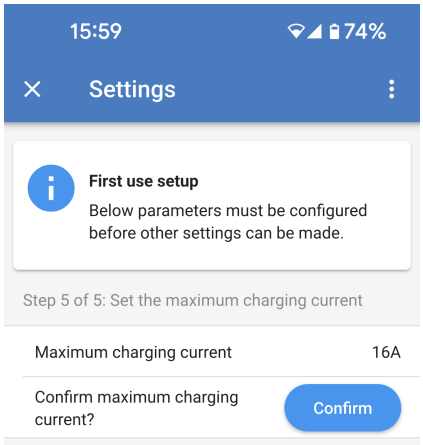
This step is necessary to ensure secure access to the web interface. The default username is "admin". The default password corresponds to the one on the sticker inside the EVCS. We recommend setting up your own password and username.



Step 5 of 5: Set the maximum charging current

Set the maximum charging current with which the EVCS is allowed to charge (range: 6A - 32A).

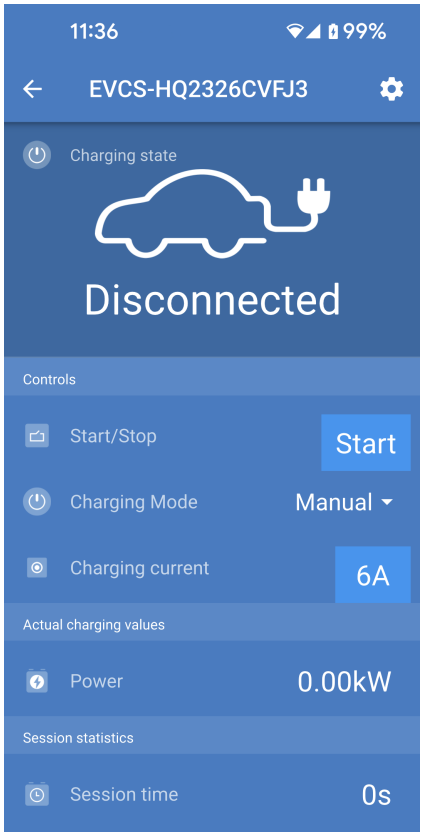
This setting is the hard limit of the EVCS. You'll still be able to set the actual charge current between the minimum up to the maximum limit set here.



Initial setup complete

You'll be returned to the Status page and the warning notification will have cleared.

You can now start using the EV Charging Station NS.



5.2. First use setup via WiFi access point

The charging station broadcasts its own WiFi access point as soon as the charging station is powered for the first time. The following steps describe the first setup to prepare the charging station for operation.

Connect to the WiFi access point:

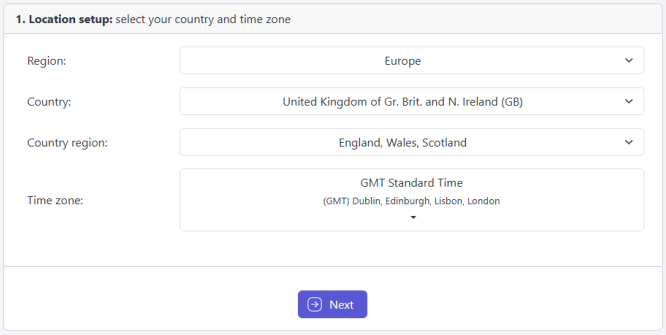
I. Scan the QR Code on the internal label.

II. Or go to the WiFi menu of your mobile device or laptop and manually add the access point that automatically broadcasts its SSID. SSID and Password are noted on a sticker inside the case.

1. **Location setup:**

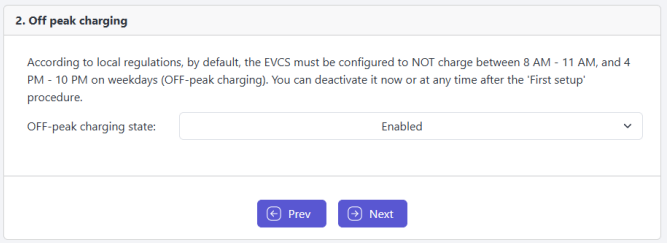
   Once connected to the access point, enter the default IP address 192.168.0.1 into a web browser. The default username is "admin". The default password is printed on the sticker inside the unit. The First setup process will then start:

   Select the location and time zone where the EV Charging Station NS is being installed. Daylight savings time will automatically be applied accordingly.



2. **Off peak charging**

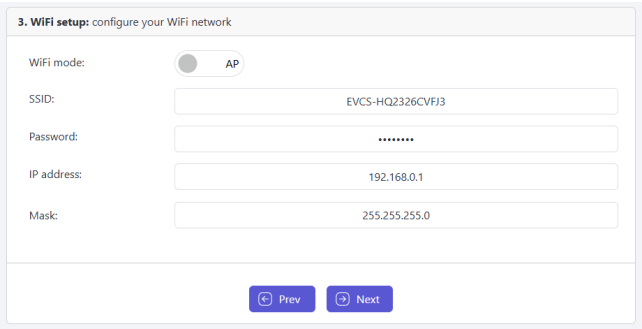
Depending upon what location was chosen in the previous step, you may need to enable Off-peak charging.



3. WiFi setup: Configure the WiFi network by choosing the WiFi mode

I. **Access point**: The unit creates its own WiFi access point. This is either for setting up the unit or in the absence of a separate WiFi network including a GX device.

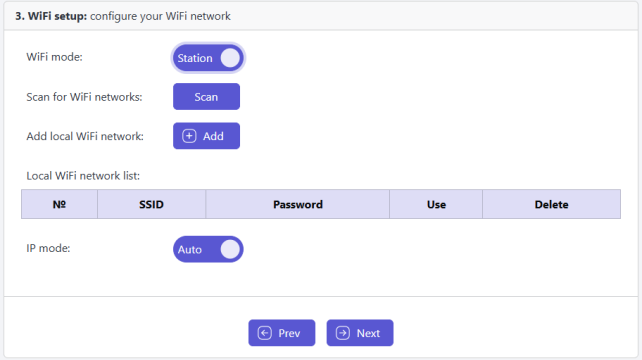
Set SSID, Wi-Fi Password, IP address and Mask (subnetmask) according to your needs.



II. **Station:** Connects the device to a local WiFi network that includes other Victron devices like a GX device or VRM.

Change the WiFi mode from AP to Station.

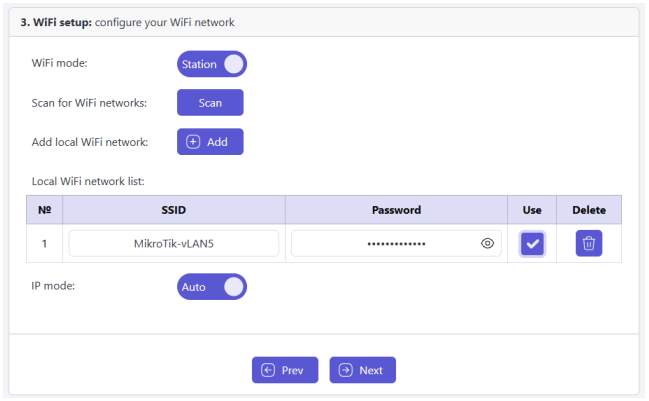
Click the Scan button to search for other WiFi networks or add manually a known AP by clicking the Add button. Note the WiFi standards: 802.11 b/g/n (2.4Ghz only).



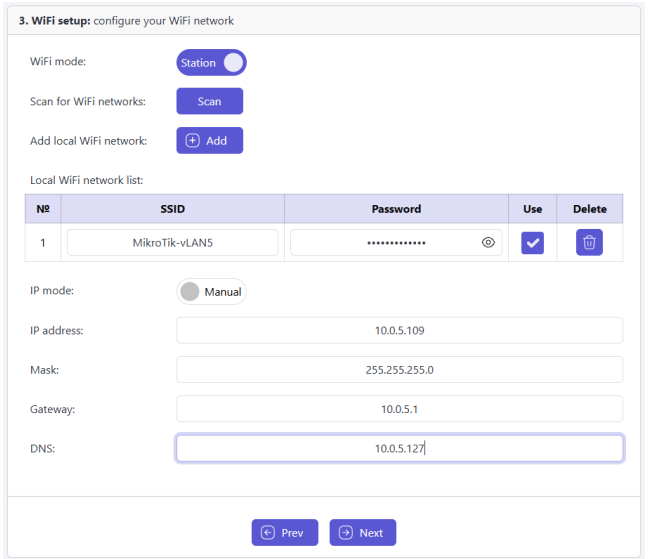
Tick the network you wish to connect to and then click Apply.



In the Password box, enter the external WiFi password and click Next.



In case you need a static IP rather then DHCP, change the IP mode button to Manual and fill in the static IP address, Mask, Gateway and DNS.



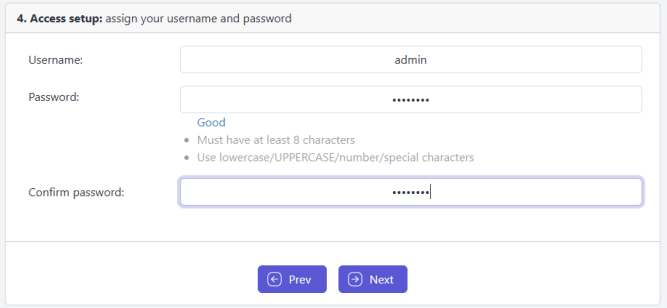
4. **Access setup:**

   I. Click into the Username field and type in your own username. The default username is 'admin'.

   II. Click into the Password field and change the password to a new one with at least 8 characters, containing lower, upper and special characters. The default password is printed on the sticker inside the unit.

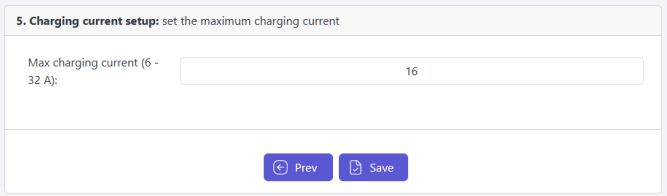
   III. Confirm your new password.

   IV. Click Next.



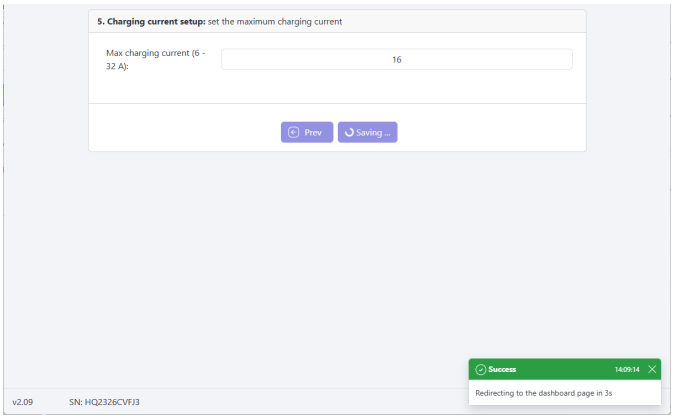
5. **Charging current setup:**

   Set the maximum allowable charging current (6 - 32A).

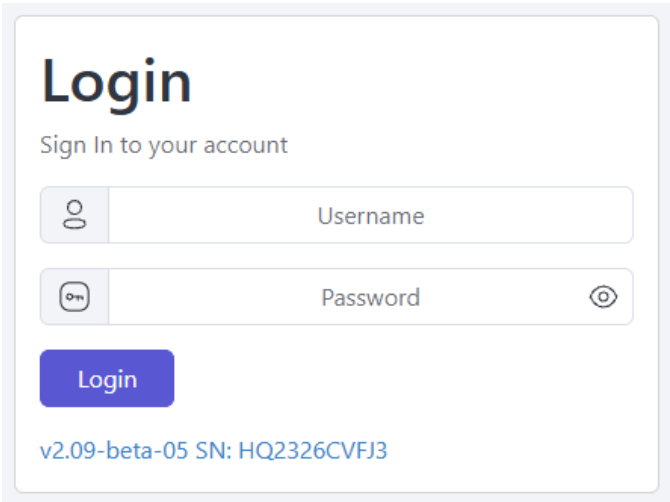


6. **First setup completion:**

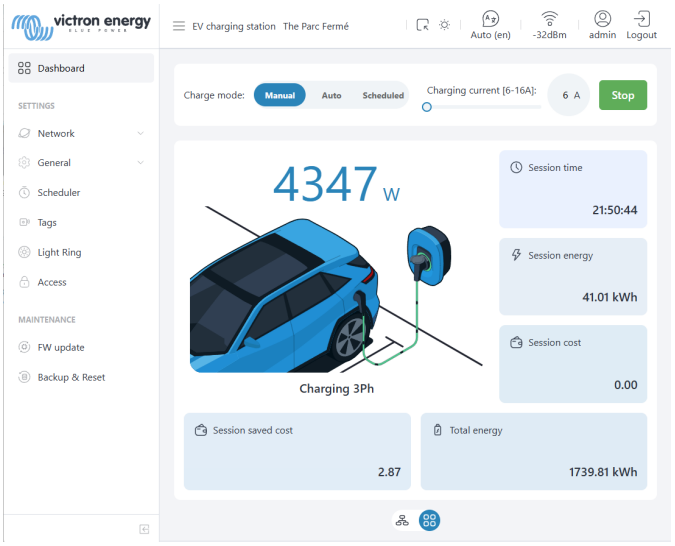
   After clicking Save, the EV Charging Station NS will restart.



   Log in with the credentials that you entered in step 3.



The main Dashboard page will be displayed and the EV Charging Station NS is ready to use.



5.3. MQTT activation

This is the recommended method of connecting the EV Charging Station NS to a GX device.

Communication with a GX device was previously based on Modbus TCP. MQTT is more flexible and gives the EV Charging Station NS access to a larger GX dataset, so the two devices exchange more information and work together better.

- The EV Charging Station NS can be reached from anywhere with VictronConnect-Remote.
- Warnings and errors are shown on the GX device.
- The GX device can control charging for GX Opportunity Loads and Dynamic ESS.
- It is the foundation for future features.

Modbus TCP remains available as an alternative.

The GX device must be running version 3.80 or later.

VictronConnect must be version 6.41 or later.

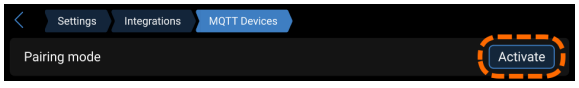
The EV Charging Station NS and the GX device must be paired before they will communicate with each other.

The GX device must first be set to pairing mode where it will listen for a pairing request from the EV Charging Station NS.

5.3.1. Activate pairing mode

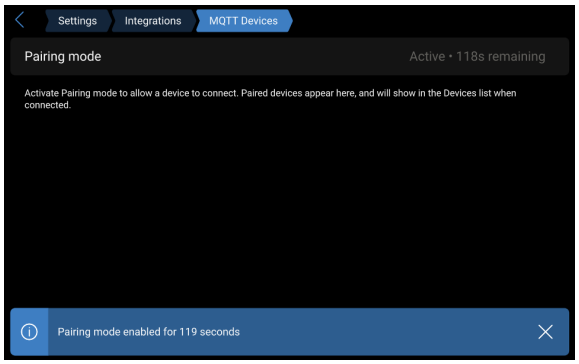
Either from the GX device touchscreen or its web interface, navigate to Settings → Integrations → MQTT Devices.

Tap the Activate button to enable pairing mode on the GX device.



A popup will show briefly at the bottom of the page informing you that pairing mode has been enabled. Additionally, the Activate button will be replaced by a countdown timer showing the remaining time that pairing is active.

If you run out of time, you can simply tap the activate button again.



As an alternative to the above two steps, pairing mode can also be activated using the physical button on certain GX devices that are equipped with one.

Double press the button with a pointed object, like a pen.

The blue LED on the front of the GX device will flash steadily when pairing mode is active, and will time out after two minutes.



5.3.2. Pairing via EVCS web interface

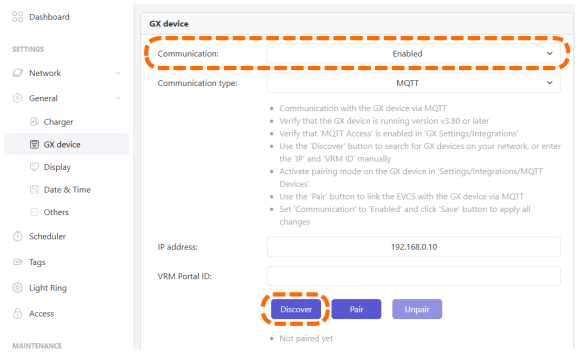
From the EV Charging Station NS web interface, navigate to General → GX device.

Ensure that Communication is set to Enabled.

Set the communication type to MQTT.

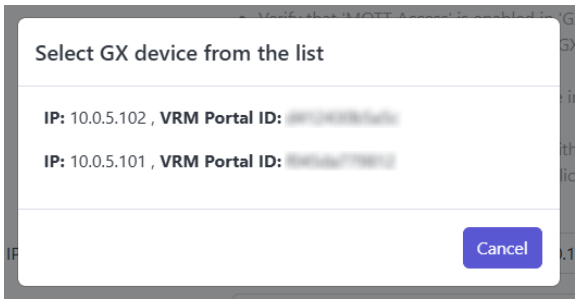
Tap the "Discover" button to find GX devices on the network.

> The EV Charging Station NS and the GX device need to be on the same network subnet.



A popup box will show all GX devices which have been discovered on the network.

Tap or click on the GX device you want to pair with.



The IP address and VRM Portal ID of the selected GX device will be populated in the respective fields.

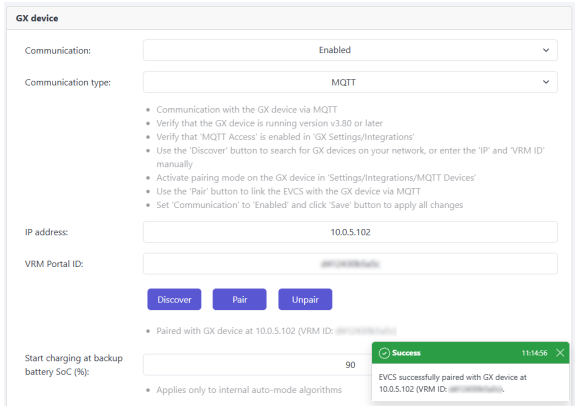
> Ensure that Pairing mode [21] is still active of the GX device. If it has timed out, activate it again.

Tap the Pair button to begin the pairing process.

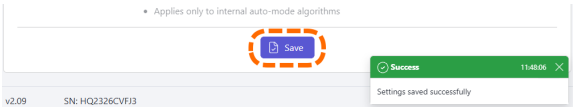


Once successfully paired, a message will pop up at the bottom of the page.

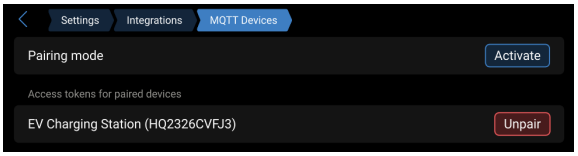
The details of the paired GX device will be written below the buttons.



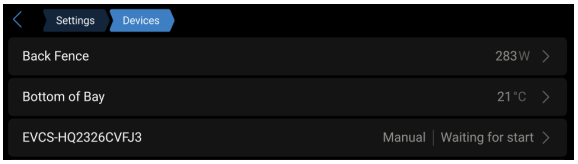
Finally, click the Save button at the bottom of the page



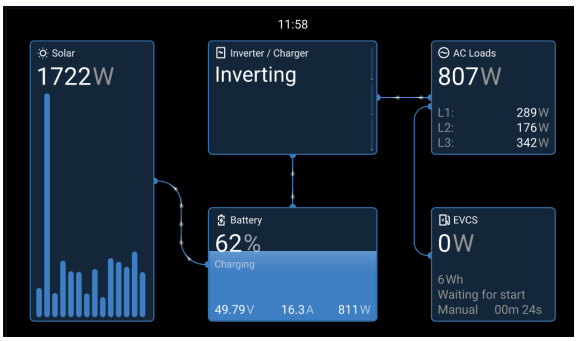
Additionally, on the GX device, the EV Charging Station NS will be listed as a paired device.



The EV Charging Station NS appears in the device list, with a brief description of its status.



The EV Charging Station NS shows on the main Overview page of the GX device.



5.3.3. Pairing via VictronConnect

This method is an alternative to the web interface [22] method described previously. The pairing process here uses VictronConnect instead.

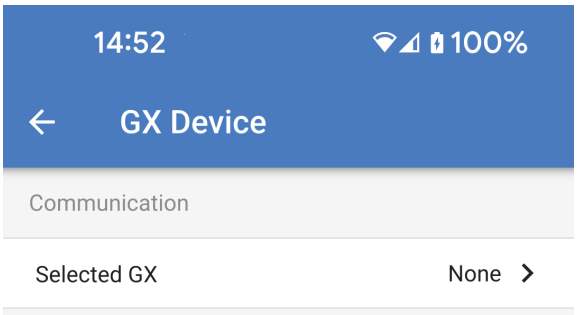
If you have already completed the pairing process using the web interface, and communication is established, then you can skip this section.

VictronConnect version 6.41 or later is required.

Connect to the EV Charging Station NS using the VictronConnect app.

Navigate to Settings → General → GX Device.

Tap Selected GX (None).

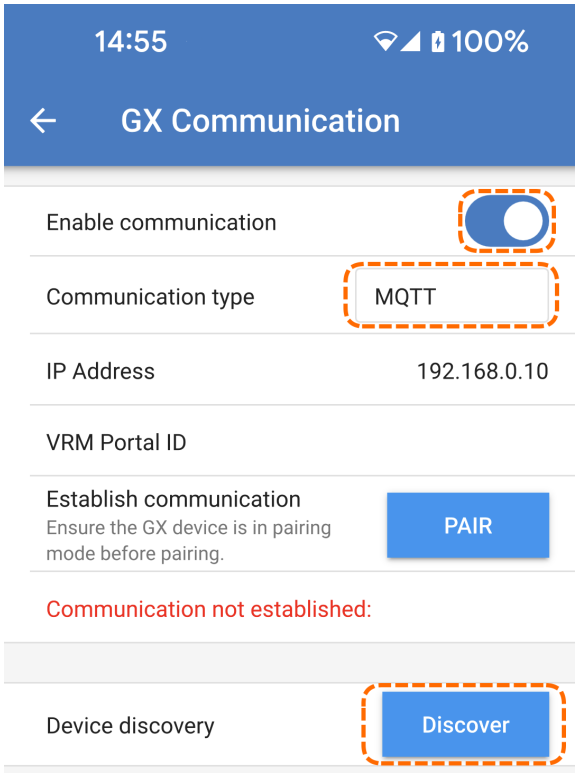


Turn "Enable communication" on.

Set the "Communication type" to MQTT.

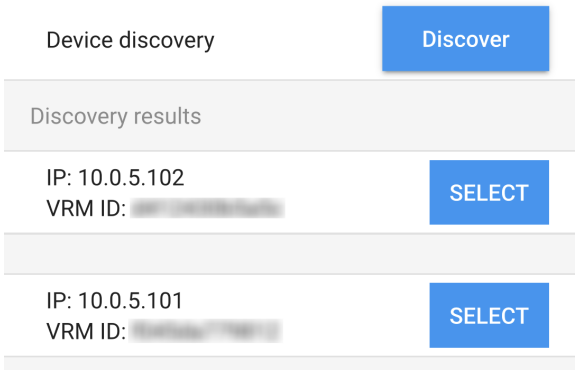
Tap the "Discover" button to find GX devices on the network.

> The EV Charging Station NS and the GX device need to be on the same network subnet.



Any discovered GX devices will appear in a list.

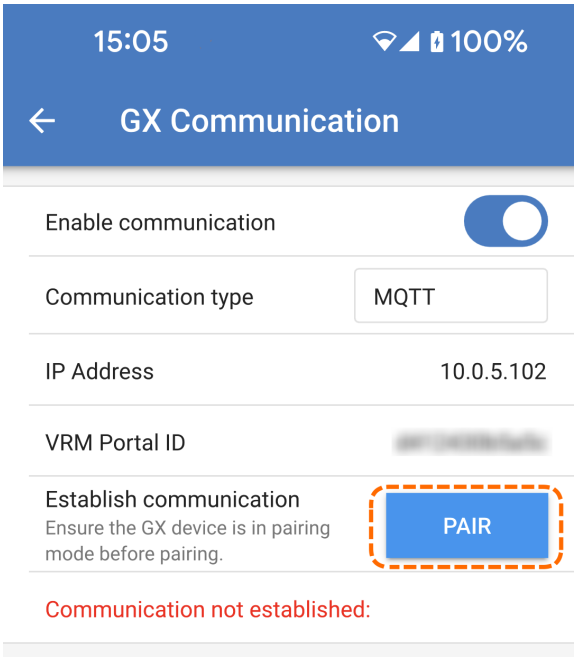
Tap "Select" to choose the GX device you want to pair with.



The IP address and VRM Portal ID of the selected GX device will be populated in the respective fields.

> Ensure that Pairing mode [21] is still active of the GX device. If it has timed out, activate it again.

Tap the "Pair" button to begin the pairing process.

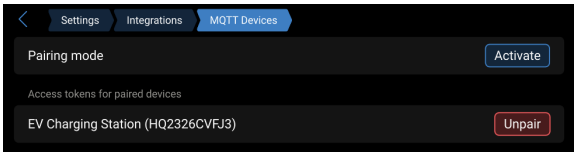


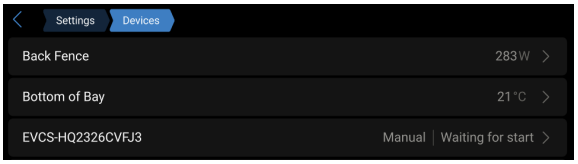
Once successfully paired, the status should change to "Communication established" in green, along with the IP address and VRM ID of the GX device.



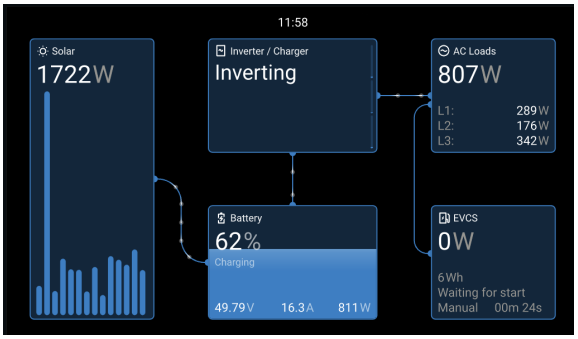
Additionally, on the GX device, the EV Charging Station NS will be listed as a paired device.

The EV Charging Station NS appears in the device list, with a brief description of its status.





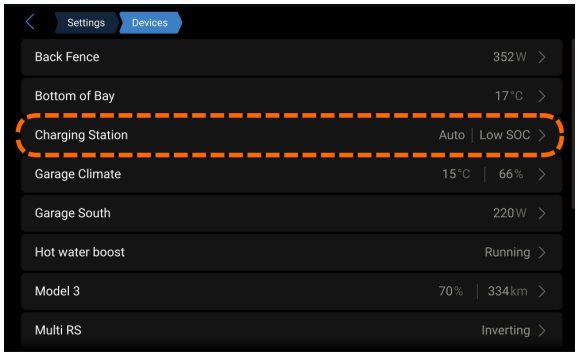
The EV Charging Station NS shows on the main Overview page of the GX device.



5.4. GX device setup, configuration and operation

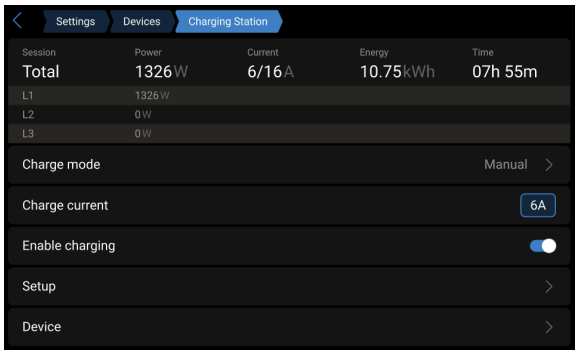
5.4.1. Setup menu and options

As soon as MQTT communication has been activated, the named EVCS appears in the device list and displays the current mode and charging status.



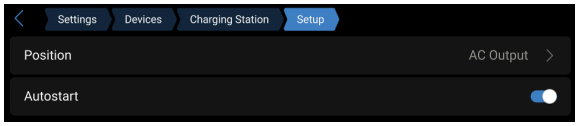
This sub menu displays the current charging session with charging power per phase.

The charging mode can be changed along with any other parameters related to a particular charging mode.



The Setup menu allows some settings to be configured, including the position that the EV Charging Station NS is installed at.

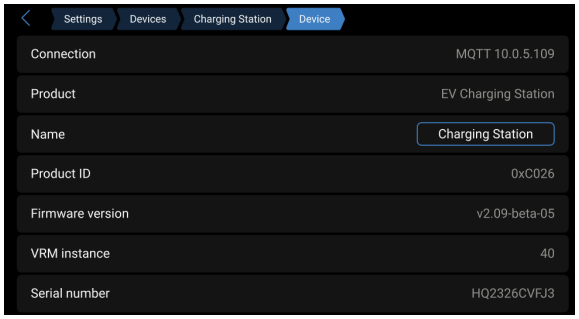
Autostart will enable charging as soon as the vehicle is plugged in.



> When charging is enabled, it does not necessarily mean that the vehicle will start charging right away. It means that the EV Charging Station NS will be ready to start once a schedule becomes active, for example.

The Device sub menu displays the EV Charging Station NS parameters.

The name of the EV Charging Station NS can be changed.



5.5. VictronConnect setup, configuration and operation

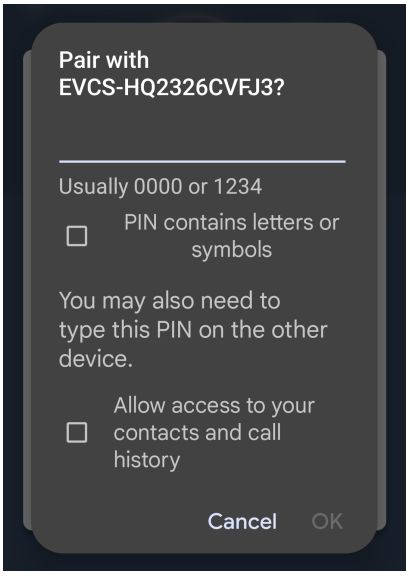
5.5.1. Setup

The following steps are necessary to successfully connect to the EV Charging Station NS via Bluetooth and VictronConnect:

1. Make sure Bluetooth is enabled in your EVCS.

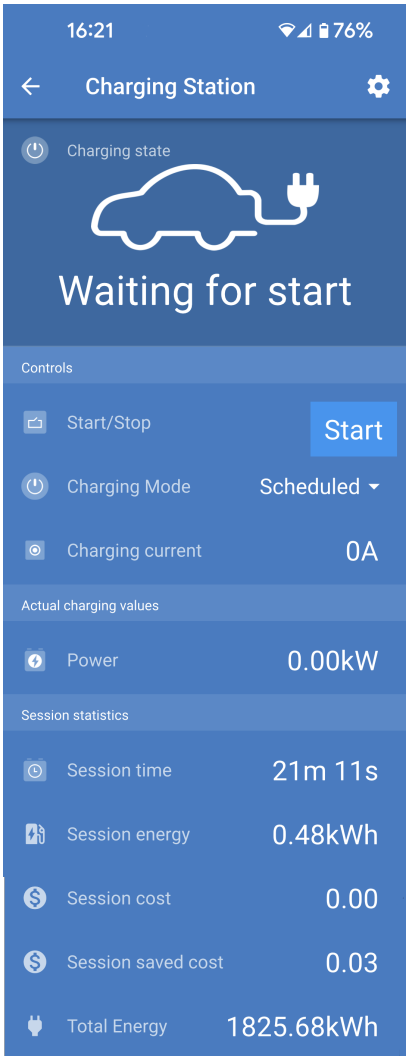
   In case Bluetooth is disabled, see the Networks menu chapter for details on enabling Bluetooth.

2. Download and install the VictronConnect app from the App Store or Google Play.
3. Open VictronConnect and scroll through the list of devices for the EVCS.
4. Tap on it to launch the pairing dialog. Enter the pairing code which is the unique number on the sticker inside the housing.
5. After successful pairing, the EVCS overview page is displayed.



5.5.2. Overview page

The overview page provides information about the charging state, controls to start/stop charging or changing the charging mode and charging current. Furthermore, the actual charging values and session statistics can be monitored.



Controls:

- **Start/Stop:** Start or stop charging.

  Note that after pressing the stop button, first the charging current is reduced to a minimum and only then the contactor opens (with a delay of 2 seconds).

- **Charging mode:** Change the charging mode to manual, auto or scheduled.

- **Charging current:** Adjust the charging current in Manual mode (range: 6-32 A, depending on the minimum and maximum charging current set on the General Settings page or in the web interface).

  In Scheduled mode, the charging current is not adjustable here because it is defined in the schedule.

  In Auto mode, the charging current is calculated dynamically based on surplus solar energy.

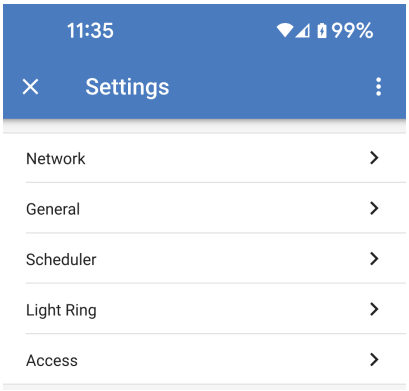
Actual charging values:

- **Power:** Charging power. With a multi-phase supply, all phases are combined.

Session statistics:

- **Session time:** The time of the current charging session.
- **Session energy:** Total energy charged in this session.
- **Session cost:** The session cost (when charged from grid) depending on the energy price per kWh set in the EVCS settings, see the General Settings [33] chapter.
- **Session saved cost:** Saved cost based on energy charged from PV and depending on the energy price per kWh set in the EVCS settings.
- **Total Energy:** The total energy charged since initial installation.

5.5.3. Settings page

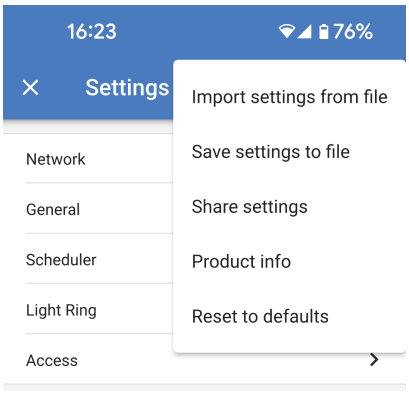


The Settings menu is accessible by pressing the cog wheel from the top right of the Overview page.

The following menu options are available:

- **Network:** Change the network settings.
- **General:** Adjust the charger settings.
- **Scheduler:** Set up charging schedules.
- **Light Ring:** Configure the behaviour of the light ring.
- **Access:** Specify web access credentials.

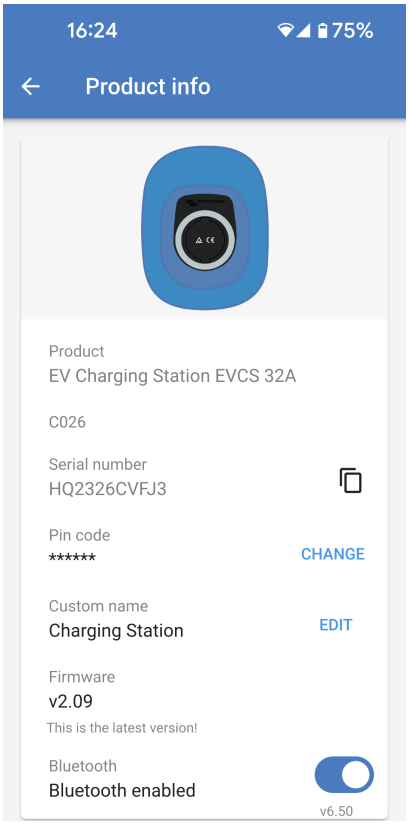
Tap the three vertical dots in the top right corner of the settings page to perform the following actions:



- **Import settings from file:** Import previously saved settings from a file in the settings library.
- **Save settings to file:** Save the current settings to a file which will be stored in the settings library. This file can be used as a backup to restore settings on this EV Charging Station NS or to easily apply the same settings to another one.
- **Share settings:** Share the settings file via email or other social apps which may be in use on the Android or iOS device for example.
- **Product info:** Displays the EV Charging Station NS model number and serial number. There is also a switch to enable or disable Bluetooth. See the Product info [30] section for more information.
- **Reset to defaults:** Reset all settings to the factory defaults. This will mean that any customised settings will be lost and setup will need to be performed again or imported from a previously saved settings file.

5.5.4. Product info page

To get to the Product info page, tap the 3 vertical dots icon from the Settings page.

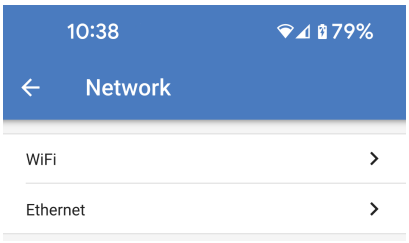


- **Product:** Shows the product name and the model number.
- **Serial number:** Shows the serial number of the EV Charging Station NS.
- **Pin code:** Pin code is hidden but it can be changed using the change button to the right.
- **Custom name:** Change the friendly name of the EV Charging Station NS.
- **Firmware:** Displays the current firmware version running on the EV Charging Station NS.
- **Bluetooth:** Enable or disable the Bluetooth functionality of the EV Charging Station NS.

More about how to assign your own name to your EV Charging Station NS and how to deactivate and reactivate Bluetooth, please refer to the VictronConnect App manual.

> ⚠ Note that if you disable Bluetooth via VictronConnect, it will have to be re-enabled via the web interface Networks menu or by using the Reset to factory defaults feature, either via the web interface or the DEF button procedure. For older devices that have Bluetooth disabled from the factory, use the web interface's network menu to enable Bluetooth.

5.5.5. Network Settings



The Network setting page shows options for configuring either type of network connection.

The WiFi section allows configuration of the WiFi settings for the EV Charging Station NS.

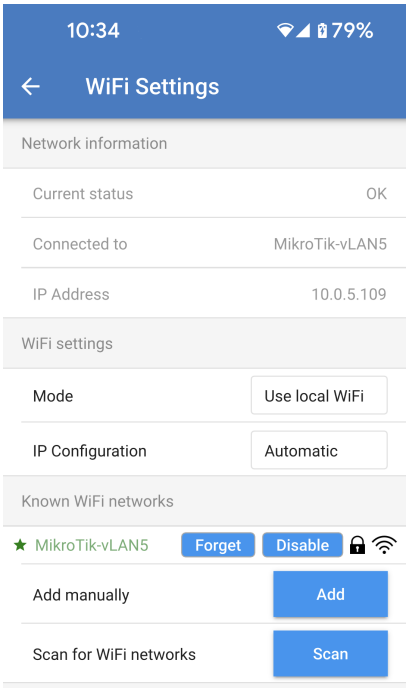
Ethernet section will take you to the Ethernet settings page for configuration of the wired Ethernet connection..

The WiFi Settings section shows:

- **Current status:** Shows the current status of the network.
- **Connected to:** Displays the name of the WiFi network that the EV Charging Station NS is connected to.
- **IP address:** Displays the LAN IP address of the EV Charging Station NS.

The WiFi section allows configuration of the WiFi settings for the EV Charging Station NS.

- **Mode:** Allows the choice of local WiFi connection or if the EV Charging Station NS should create a WiFi Access Point. The EV Charging Station NS should usually only be set up to act as an Access Point if there are no other WiFi networks available.



> The EVCS local WiFi connection (STA) mode is designed to operate within a network environment that uses certified, standards-compliant networking equipment. Ensure that the WiFi access point or router used in your installation meets applicable regulatory requirements and is RED-compliant, so the EVCS remains protected and performs reliably within a properly managed network.

- **IP Configuration:** Option to allow automatic (DHCP) IP address allocation or manual fixed IP address configuration. Automatic IP configuration is the recommended option. The manual option is only intended for advanced network configurations or by instruction from the network's administrator.

The Access point list section shows discovered local WiFi networks or allows for a WiFi network to be added manually.

The currently connected Access Point name is shown here in green along with "FORGET" and "DISABLE" buttons.

- **Add AP manually:** Provides the option to add a WiFi network manually. This may be used in circumstances where the required network's SSID is hidden and doesn't show in the list of discovered networks.
- **Scan for WiFi networks:** Tap the "SCAN" button to immediately scan for available WiFi networks nearby.

  A list of all available WiFi networks will begin to appear as they are discovered. The list includes the Access Point name, its security status shown with a padlock symbol. The signal strength received by the EV Charging Station is displayed with the WiFi symbol to the right.

  Tap the "ADD" button beside the network that you wish to connect to. You'll be asked to enter the password for the selected network if applicable.

The Ethernet settings page shows the Network information for the wired Ethernet connection.

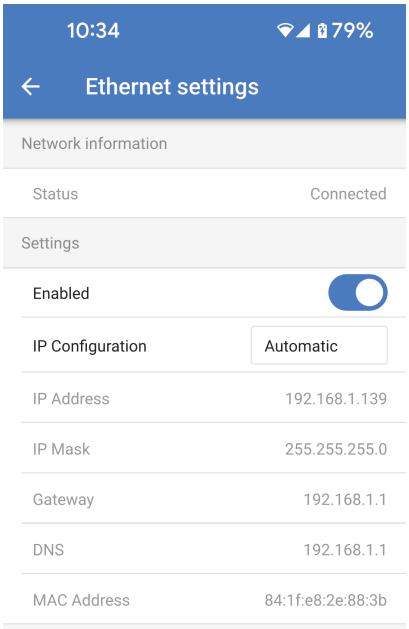
- **Status:** Shows the if the wired network is connected or not.

The Settings section allows:

- **Enabled:** Toggle the switch to enable or disable the wired Ethernet connection.
- **IP Configuration:** Option to allow automatic (DHCP) IP address allocation or manual fixed IP address configuration. Automatic IP configuration is the recommended option. The manual option is only intended for advanced network configurations or by instruction from the network's administrator.

  If this option is enabled, then the below items will be greyed out.

- **IP Address:** Configure the IP address.
- **IP Mask:** Set the subnet mask for the network.
- **Gateway:** Define the default gateway for this network.
- **DNS:** Specify a DNS server accessible by this network.
- **MAC Address:** This is not configurable here, but is displayed for information.



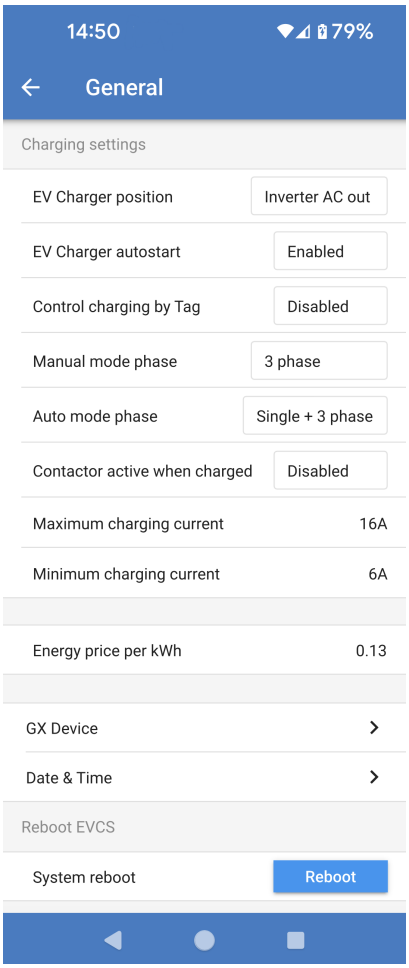
5.5.6. General Settings

The General settings page lists the options for the general configuration of the EV Charging Station NS.

Charging settings section has the following options:

- **EV Charger position:** This option selects where in the system the EV Charging Station NS is wired. For example, the EV Charging Station NS could be wired on the AC Input side or the AC Output side of a MultiPlus.
- **EV Charger autostart:** This option defines whether or not the EV charger will begin charging automatically when the EV charging cable is connected to the vehicle.
- **Control charging by Tag:** Enforce the use of NFC Tag to start or stop charging sessions.
- **Manual mode phase:** Choose how many phases to use when charging in manual mode.
- **Auto mode phase:** Choose how many phases to use when charging in Auto mode.
- **Contactor active when charged:** When the EV is charged the contactor can be set to remain closed or to open which will fully disconnect the EV from the supply.
- **Maximum charging current:** The maximum charging current that the EV Charging Station NS will supply to the EV in any event. The configurable range is 6A to 32A.

  The maximum charging current will also be determined by the current rating of the connected charging cable.
- **Minimum charging current:** The minimum charging current that should be supplied to the EV unless it is charged to the desired level. The configurable range is 6A to 32A.
- **Power calibration:** Adjust this setting to calibrate the Actual power reading.
- **Actual power:** Displays the actual combined power of all phases that the EV Charging Station NS is supplying to the EV.



Other settings section provides:

- **Energy price per kWh:** Set the price of energy imported from the grid.
- **GX Device:** Select this option for communicating with a GX Device such as a Cerbo GX or Ekrano GX.
- **Display settings:** Adjust the settings for the built in LCD.
- **Date & Time:** Set the time zone, date and time.

Reboot EVCS:

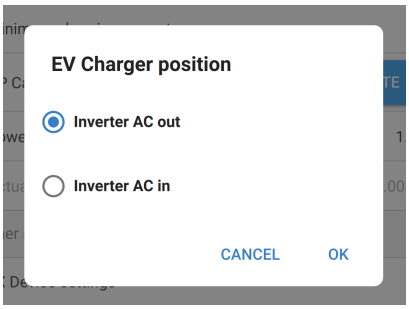
- **System reboot:** tap the "REBOOT" button to reboot the EV Charging Station NS.

EV Charger position

Select the position that the EV Charging Station NS is wired in the system.

If the EV Charging Station NS is wired anywhere before the Inverter / Charger then select the "Inverter AC in" option.

Alternatively, if the EV Charging Station NS is wired after the Inverter / Charger or is wired after an Inverter then choose the "Inverter AC out" option.

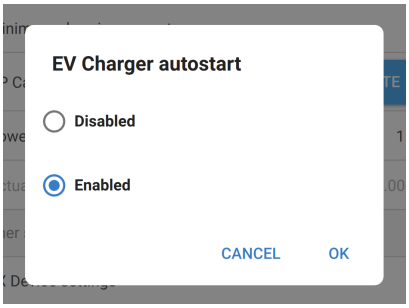


EV Charger autostart

Choose whether or not the EV Charging Station NS starts automatically when the charging cable is connected to the EV.

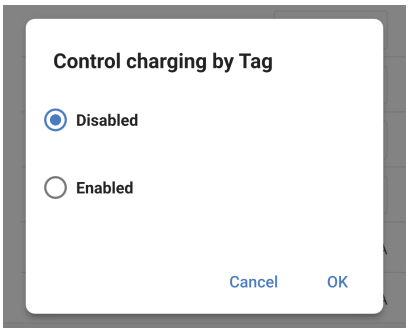
Select "Enabled" to have charging start automatically when the charging cable is connected to the EV.

Select "Disabled" if you don't want charging to start automatically. In this case charging needs to be started manually by pressing the "Start" button from the Overview page. This can help to prevent unauthorised use of the EV Charging Station NS.



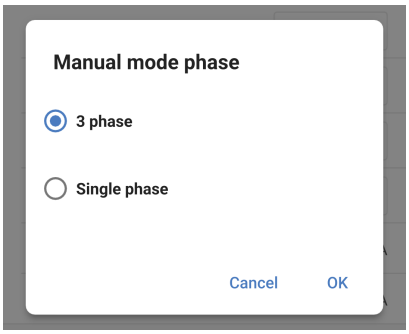
Control charging by tag

If enabled, users must present an NFC tag to start or stop charging sessions.



Manual mode phase

Choose how many phases to use for charging in Manual mode.



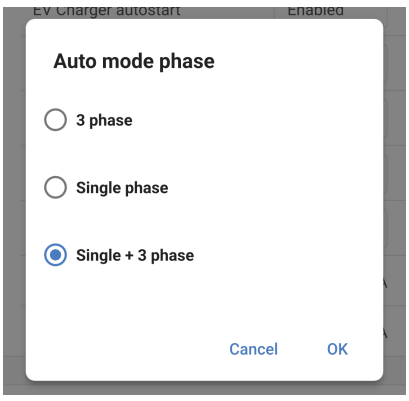
Auto mode phase

Choose how many phases to use for charging in Auto mode.

Single + 3 phase will allow w wider range of charging power. Auto mode will switch between Single phase and 3 phase to allow higher charging power than a single phase can supply and a lower charging power than three phase can supply.



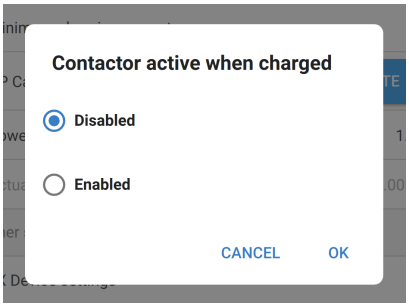
The charging session may stop and restart again when auto mode changes the between single phase and three phase.



Contactor active when charged

Choose whether or not the contactor within the EV Charging Station NS remains closed or opens when the EV is charged but the cable is still connected.

Select "Enabled" for the internal contactor to remain closed when the EV is charged. For example, this can be useful if you would like to pre-condition the cabin air using electricity from the charging source rather then the EV battery.

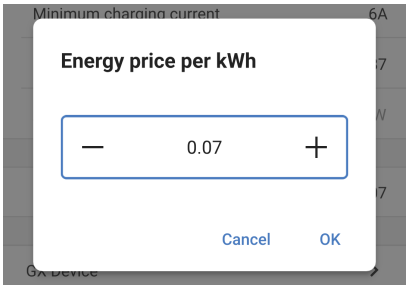


Some vehicles may present an error if the EV Charging Station NS contactor remains closed after charging has stopped.

Select "Disabled" if you want the internal contactor to open when the EV is charged. This has the effect of disconnecting the EV from the supply as if the charging cable is removed.

Energy price per kWh

Enter the price of imported electricity per kWh. This will be used to calculate the session savings.



GX device communication:

The GX device settings page is accessible from the General settings page.

- **Selected GX:** Shows the IP address of the connected GX device and the VRM Portal ID.

  Tap this field to make changes.

- **Start charging at backup battery SOC:** The minimum backup battery SOC before the EV Charging Station NS starts charging in Auto mode.
- **Stop charging at backup battery SOC if off grid:** When off-grid or the grid is not available, then the EV Charging Station NS will stop charging when the backup battery SOC falls below this level.
- **Allow Battery/Grid power for Auto mode:** Enable this setting to allow Auto mode to continue charging the EV at minimum current even if there is insufficient excess solar power. This helps to minimise automatic charging enable/disable cycles when in Auto mode. Note: The EV Charging Station NS cannot decide if the energy comes from the battery or grid, this is up to the inverter/charger in the system.
- **Allow low excess solar power for auto mode:** If there is not enough PV power to satisfy the required car charging power, this option allows the EV Charging Station NS to make up the deficit using grid power.

  This only operates in Auto mode.

- **Battery/Grid power timeout:** If the above setting is enabled then this is the maximum continuous amount of time that the EV Charging Station NS will draw power from the battery or grid.
- **Overload protection:** When enabled, this setting will read the overload status of the system inverter. In the event of an overload then the EV Charging Station NS will reduce its charging current to minimum and wait about 5 seconds. If the inverter overload condition is still active then the EV Charging Station NS will stop charging. EV charging will resume a short period of time after the inverter overload condition has cleared.

  If multiple overload events are detected within a certain time period the the EV Charging Station NS will reduce the charging current by 10%.

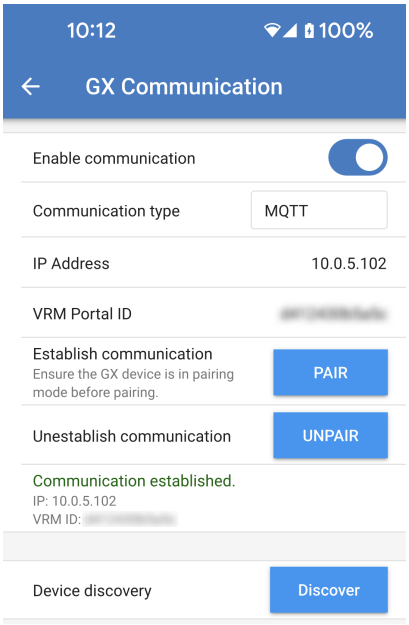
  The same applies to grid-tied system where an enforced grid current limit is exceeded.

  A warning will be displayed in VictronConnect or in the EV Charging Station NS if charging power is reduced or if charging is interrupted.

- **Input current limit:** This displays the enforced grid current limit which is applied to grid-tied systems.
- **Backup battery emulation:** This should only be enabled in systems without a backup battery installed. Enabling this option allows the EV Charging Station NS to emulate a system battery. This allows Auto mode to work even if there is no physical battery in the system.



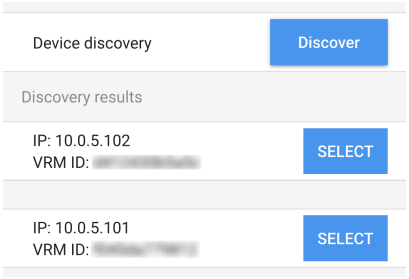
- **Enable communication:** Enable or disable communication between the EV Charging Station NS and the GX device.
- **Communication type:** Choose between MQTT or Modbus TCP. MQTT is the preferred method.
- **IP address:** Shows the IP address of the connected GX device.
- **VRM Portal ID:** Shows the VRM Portal ID used by the GX device.
- **Establish communication:** Use this to set up communication with a GX device or to change to a different GX device. This is generally not needed if communication is already established as shown in green below.
- **Unestablish communication:** Sever communication with an already connected GX device.
- **Device discovery:** If the communication check fails then verify that the GX IP address specified is correct or use the "DISCOVER" button to search for a local GX device as below.



- **Device discovery:** Tap the "DISCOVER" button to allow the EV Charging Station NS to automatically discover any GX devices on the local network.

  Any GX devices which have been found by Device discovery will be listed.

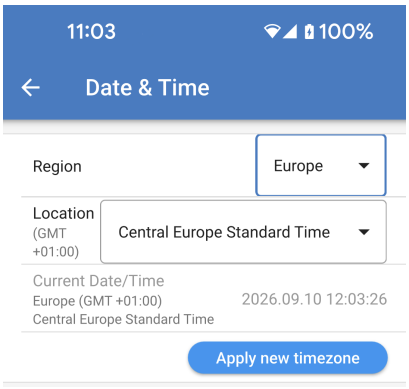
  Tap "SELECT" to pair the desired GX device to the EV Charging Station NS. This will then become the GX device that the EV Charging Station NS communicates with and its details will be populated in the IP Address and VRM Portal ID fields.



Date & Time

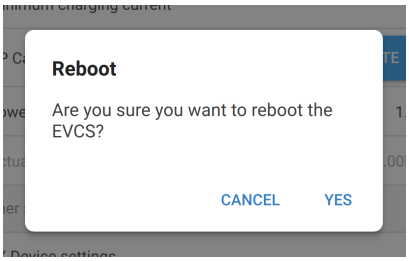
The correct date and time is essential for scheduled charging to work correctly.

- **Region:** Select your time zone region.
- **Location:** Choose your time zone.
- **Offset:** If UTC region is selected then it will be necessary to enter the correct offset for your time zone.



System reboot

- Tap the "REBOOT" button to reboot the EV Charging Station NS. Select "YES" on the popup window to confirm reboot.

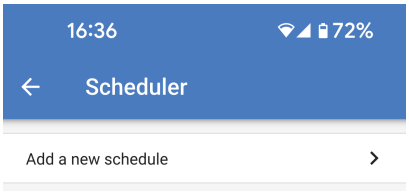


5.5.7. Scheduler

If the Charging Mode is set to "Scheduled" from the Overview page then the EV Charging Station NS will charge according to the schedules set in this section.

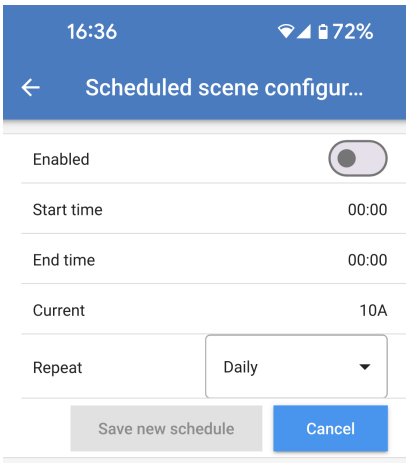
Multiple schedules can be created for different times of the day and / or days of the week.

- **Add a new schedule:** Tap here to configure a new schedule.

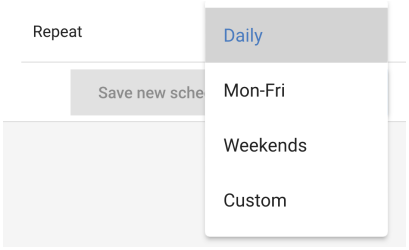


On the Scheduled scene configuration page you can adjust the following conditions. The time conditions are expresses in 24h format.

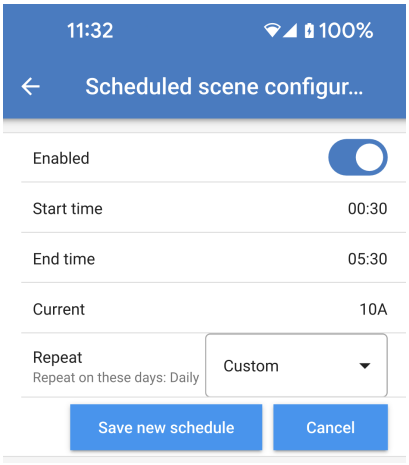
- **Enable:** Toggle the current scene to enable or disable it.
- **Start time:** The time that you want the EV Charging Station NS to begin charging.
- **End time:** The time that you want the EV Charging Station NS to stop charging.
- **Current:** The maximum amount of current to charge the EV during this schedule.

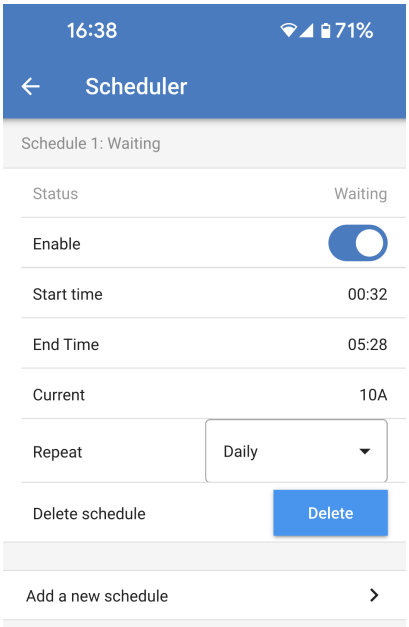


- **Repeat:** Select the drop down menu to choose the type of repeat pattern.
  - **Daily:** The schedule will repeat every day.
  - **Mon-Fri:** The schedule repeats on week days Monday to Friday only.
  - **Weekends:** The schedule repeats on weekends Saturday and Sunday only.
  - **Custom:** A list of each day of the week is shown. Tick the days of the week that you would like this schedule scene to apply to.



Once you have set your preferences then tap the "Save new schedule" button to add it to the scheduler or "Cancel" if you don't want to create the new schedule.





The newly created schedule will be added to the scheduler list. From here the individual schedules can be enabled or disabled, amended or deleted.

- **Status:** Shows the status of the scene. If the scene is disabled then it will not run.
- **Delete schedule:** Tap the "Delete" button to delete the schedule, a popup box will show to confirm schedule deletion.
- **Add a new schedule:** This will be shown below the existing schedules and can be used to create an additional schedule.

5.5.8. Light Ring

The light ring surrounding the charging cable socket on the front of the EV Charging Station NS shows what it is doing at a glance.

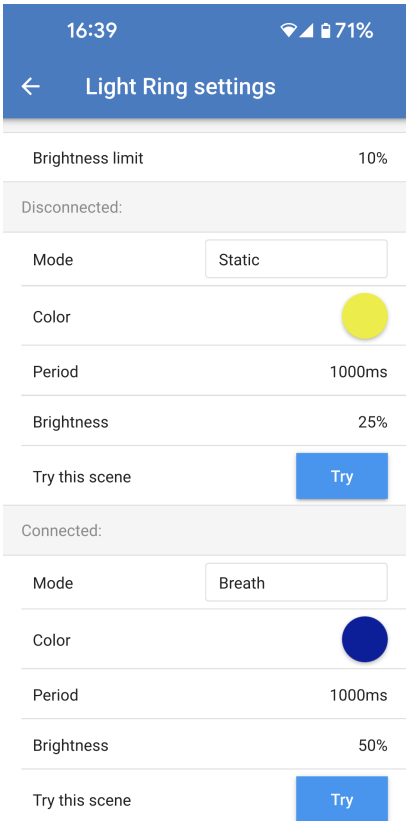
There are various lighting modes and brightness settings to choose from to represent the status of the EV Charging Station NS:

- Disconnected
- Connected
- Waiting for start
- Waiting for sun
- Low SOC
- Charging Manual
- Charging Auto
- Charged
- Waiting for Tag

Light ring settings

The light ring of the EV Charging Station NS can be customised for each of its status modes as listed above.

- **Mode:** Choose the behaviour or pattern that the light ring displays:
  - Static
  - Blink
  - Breath
  - Color wipe
  - Color wipe inverse
  - Color wipe reverse
  - Color wipe reverse inverse
  - Color wipe random
- **Color:** Choose a color from the color picker or enter specific RGB values.
- **Period:** Specify how long the mode will be displayed for.
- **Brightness:** Adjust the brightness of LED ring for this mode, 0 - 100%.
- **Try this scene:** Tap the "TRY" button to test if the scene's color and brightness are suitable.



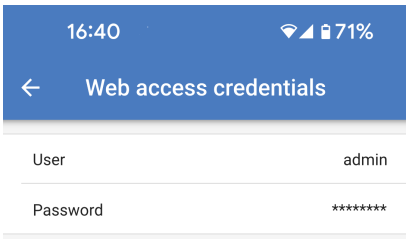
5.5.9. Access

Web access credentials

The Web access credentials page allows you to change the access credentials for the web page of the EV Charging Station NS.

For security reasons it is strongly advised to change these credentials from their defaults.

- **User:** User name
- **Password:** Set a suitably strong password to prevent unauthorised access to the EV Charging Station NS.

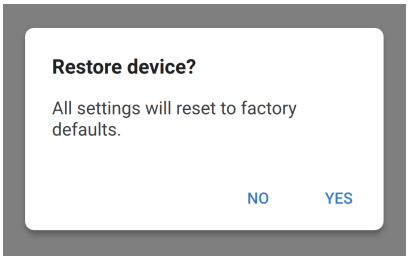


5.5.10. Reset to defaults

It is possible to factory reset the EV Charging Station NS via VictronConnect. Note that this process will reset **all** settings to their default values and require the first setup (see the First use setup via VictronConnect [11] chapter for details) to be performed again.

To get to the Reset to defaults option, tap the 3 vertical dots icon from the Settings page and tap on "Reset to defaults".

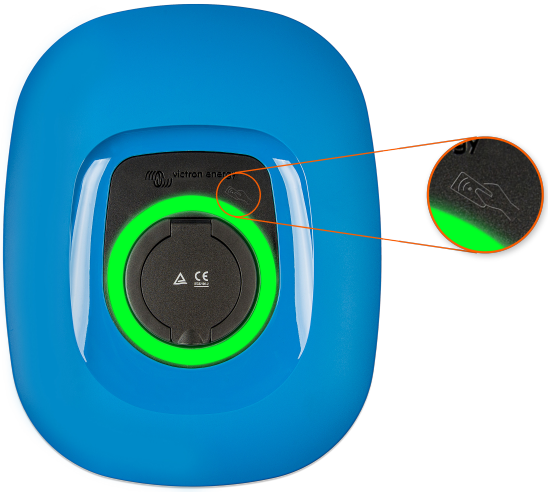
A "Restore device?" confirmation popup will appear. Tap "YES" to continue with restoring the device to factory defaults.



5.6. NFC tags

NFC tags can be used to allow only tag holders to start and stop charging sessions. Drivers can present their NFC tag near the NFC reader.

The NFC reader is located on the front of the EV Charging Station NS.



5.6.1. Adding NFC tags

NFC tags need to be added to the EV Charging Station NS before they can be used.

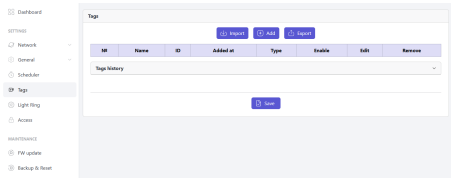
You need the tags you want to add and you need to have physical access to the EV Charging Station NS, to present the new tags.

Two NFC tags are included with the EV Charging Station NS.

NFC tags can only be added via the web interface.

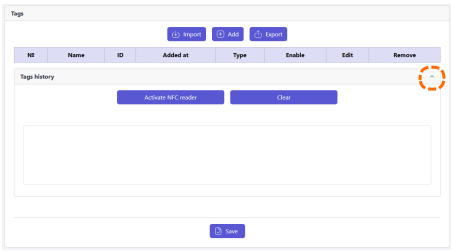
From the web interface select the Tags section on the left.

On the right hand side there is a table which lists all authorized tags. The table is currently empty.



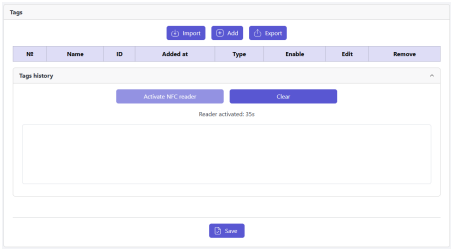
Expand the Tags history field using the small arrow on the right.

Click the button called Activate NFC reader.

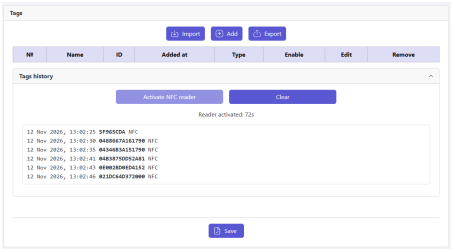


You now have 120 seconds to present the tags you want to add to the EV Charging Station NS.

Hold each tag up to the reader one at a time.

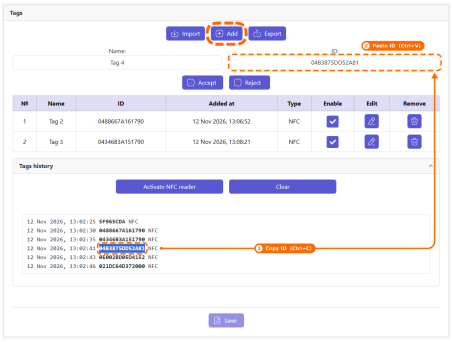


After all of the tags have been presented, they'll be listed in Tag history.



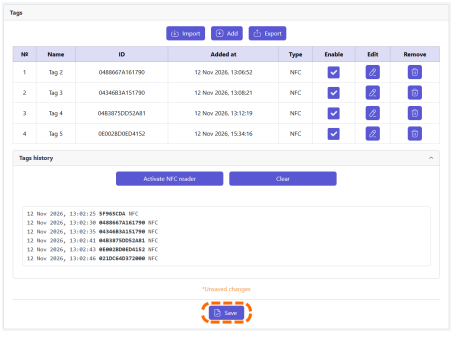
The scanned tags now need to be added:

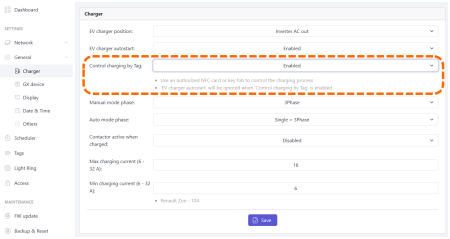
- Click Add at the top of the page.
- Highlight the ID of the tag you want to add from the list to copy it, right click + copy or simply Ctrl+C.
- Paste the ID into the ID box at the top right.
- Give you new tag an appropriate name.
- Click Accept. The tag will be added to the list.



The table on the right hand side now lists all authorized tags.

Click Save to save the tag list.





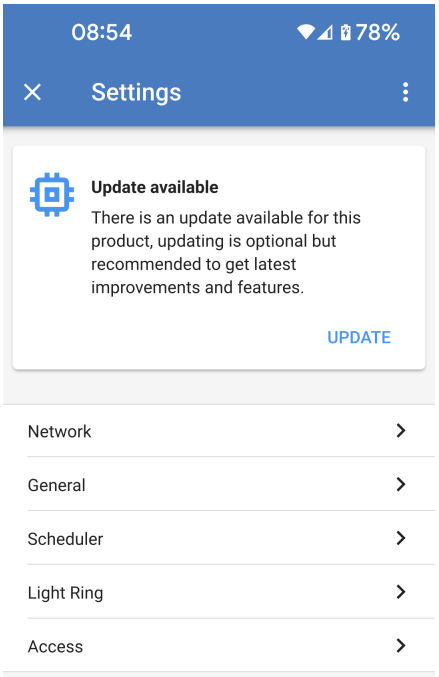
Under the General -> Charger settings menu, Enable the option Control charging by Tag.

Now the charging process can be controlled by any of the tags in the tag list.

5.7. Firmware updates

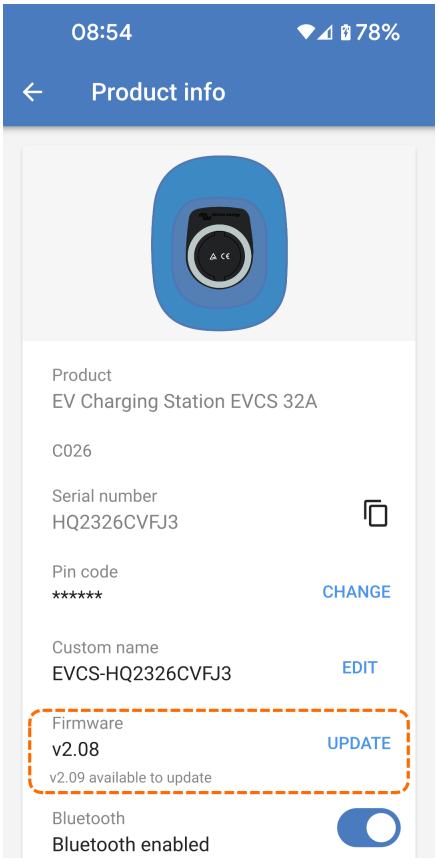
There are three different ways to perform firmware updates.

1. Using VictronConnect.



If a new firmware update is available, then a notification will pop up in the settings menu.

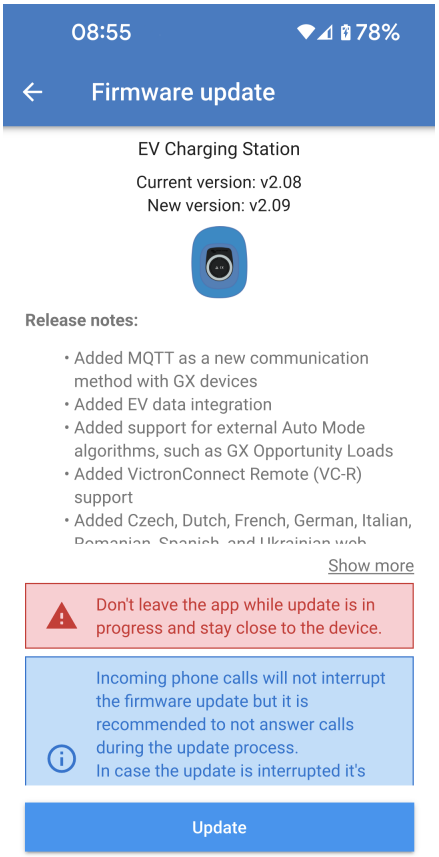
Tap the blue Update text to install the update.



Alternatively, tap the three dots menu from the settings page, and select Product Info.

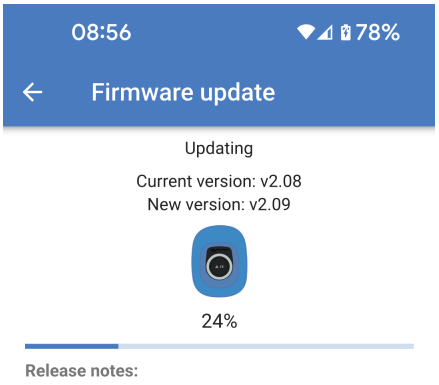
If a new firmware update is available, it'll be highlighted under the Firmware field.

Tap the blue Update text to proceed.

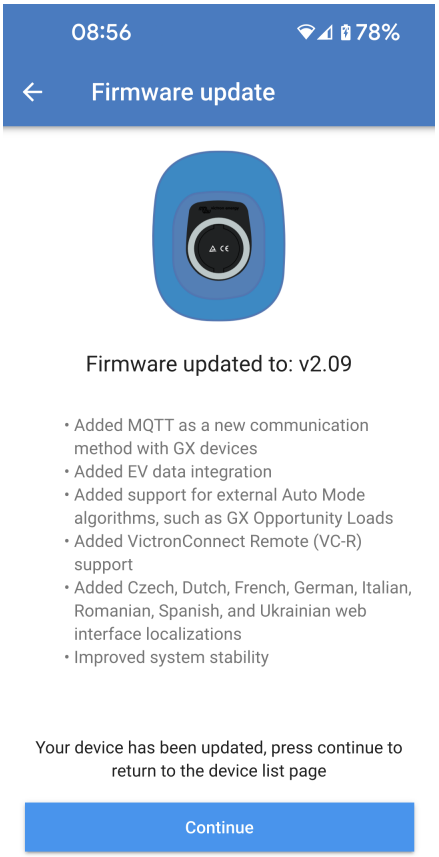


A confirmation page will show the current and new firmware versions along with release notes for the new version.

Tap the blue Update button at the bottom of the page to install the update.



Wait for the firmware update to install. A progress bar shows the installation progress.



Once complete, a confirmation page will be displayed, including the release notes.

Tap Continue to close the page and return to the settings menu.

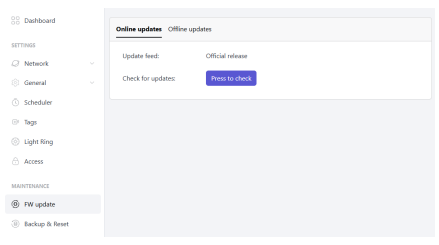
The EV Charging Station NS will reboot.

2. Via the web interface.

Under the Maintenance section, click FW update.

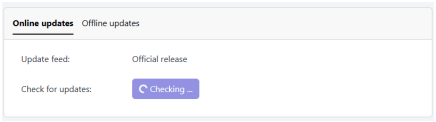
Two options are presented , Online updates tab or Offline updates tab. Online updates is the easiest method to download and install the latest firmware updates.

Click the Press to check button to check for any firmware updates.



> For offline updates, see the step for Optional Offline updates further down.

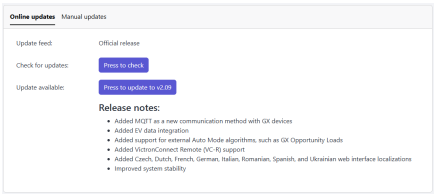
The EV Charging Station NS will check for any newer firmware update online.



If an update is available, the new version number will be shown in the Press to update button.

The release notes for the new version will be listed below the button.

Click the Press to update button to proceed with the firmware update.

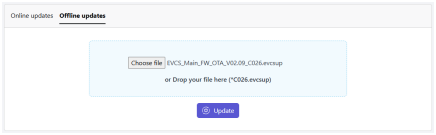


Optional Offline updates step:

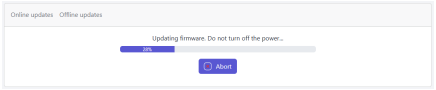
> This is an optional method to Online updates. You can use Offline updates if your EV Charging Station NS is not connected to the internet.

You'll need to download the offline firmware file from Victron Professional beforehand. Ensure you have the correct firmware file for the model of EV Charging Station NS you are updating. The last four characters of the firmware file represent the product ID. These should match the product ID of your EV Charging Station NS. This is in bold text e.g. **(*C026.evcsup)** in this example.

Click Choose file to select the offline firmware file, then click the Update button to continue.

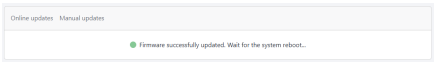


The EV Charging Station NS will now install the new firmware.



Once complete, a confirmation message will be displayed.

The EV Charging Station NS will reboot.



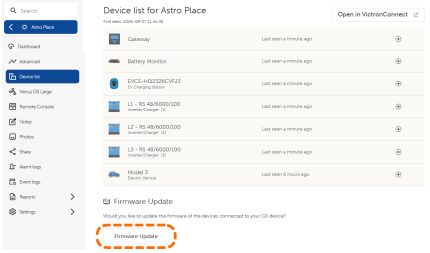
3. Through VRM.

> For this method to work, the EV Charging Station NS needs to be connected to a GX device connected to the VRM portal.

Log in to your VRM site and click on the Device list using the menu on the left.

The devices in your VRM site will be listed.

Click the Firmware Update button at the bottom of the page.



Wait for VRM to return a list of firmware versions for all your devices. Any devices which have newer firmware update available will have a blue bar at the left.

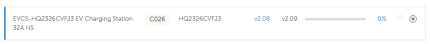
Look for your EV Charging Station NS in the list.

The Installed column shows the firmware version that is currently installed on your device and the Latest column shows the latest firmware version that available for it.

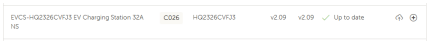
Click the blue Update Device button to install the latest firmware version.



Allow the update to complete in the background.



Once finished, the Installed and Latest firmware versions will be the same, with the Updatable column showing Up to date.

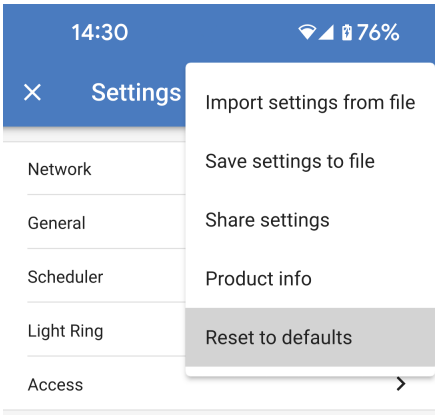


5.8. Reset procedure

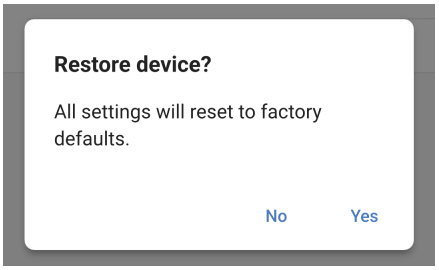
You can reset the EV Charging Station NS in one of three ways.

1. From VictronConnect app.

Tap the settings cog icon, followed by the three dots icon.



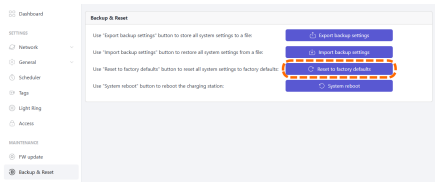
Choose "Reset to defaults" at the bottom of the menu.



2. From the web interface.

Select "Backup & Reset at the bottom of the menu tree.

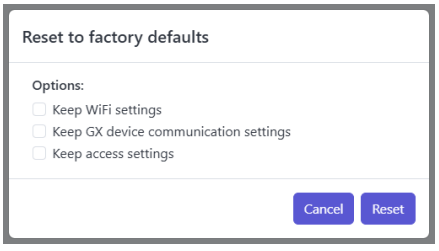
Click on "Reset to factory defaults".



Select the tick boxes for settings that you may wish to keep.

> If you want to clear all settings then don't select any tick boxes.

Click the Reset button.



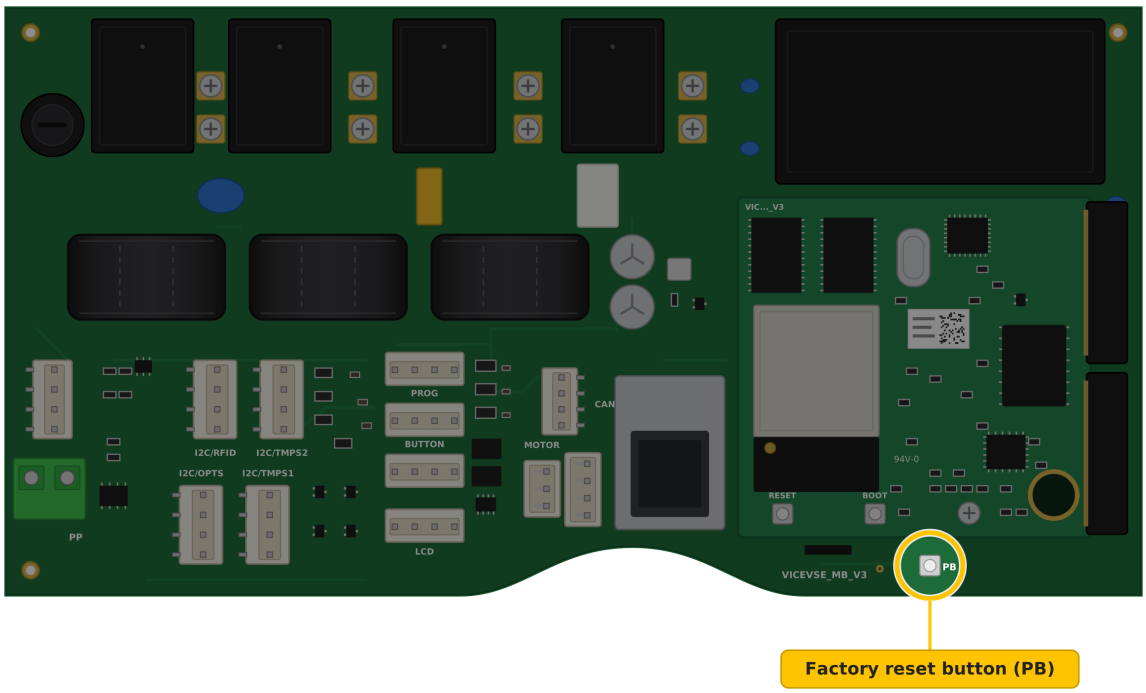
3. Reset button inside theEV Charging Station NS.

> The DEF button procedure should only be performed by qualified personnel, as this process requires the EV Charging Station NS to be powered. Working under high voltage is very dangerous and can be fatal if done incorrectly. Do not touch any parts of the circuit board assembly while it is powered on. Use an insulated tool to press the DEF button.

Use an insulated tool to press the DEF button on the circuit board. Press and hold the DEF button for at least 15 seconds to perform a full reset.

> If you hold the DEF button for more than 5 seconds but less than 15 seconds, only the password will be reset.

The location of the button is shown in the image to the right.



5.9. Maintenance

The EV Charging Station NS does not require specific maintenance.

6. Troubleshooting

6.1. CP Line Calibration

CP calibration is performed automatically every time an EV is connected to the EVCS. The Calibration button is hidden in the VictronConnect application and the web interface. However, it is still possible to perform manual calibration if you experience issues with EV detection. To do this, set Modbus TCP register 5133 to 0 (see section Q11: I would like to control the EVCS via Modbus TCP. Is this possible and if so, how? [51]). This disables automatic CP calibration and makes the Calibration button available for manual calibration.

What is CP?

CP is the control pilot signal (line) inside each Type2 charger connector. It is a bi-directional communication line that enables communication between the charging station and the EV. Among other things, the charging station informs the EV of the maximum charging current available. At the same time, the EV informs the charging station about its status, for example whether the EV is connected or whether it is currently charging.

Why is CP line calibration necessary?

Due to differences in cable length and manufacturer as well as deviations in the ratings of electronic components, the CP signal may show deviations. The CP calibration takes the signal deviation into account and adjusts the signal values to the required ranges.

When does the calibration of the CP line have to be carried out?

There are several reasons for a CP line calibration. The most important are:

- The EV is connected to the EVCS via the charging cable, but still reports a disconnected state
- The EV was disconnected from the EVCS but was not reported as disconnected.
- When charging the EV, the EVCS frequently switches between the 'charging' and 'charged' states
- The EVCS does not start charging after connecting the vehicle because it cannot detect the correct state after connection

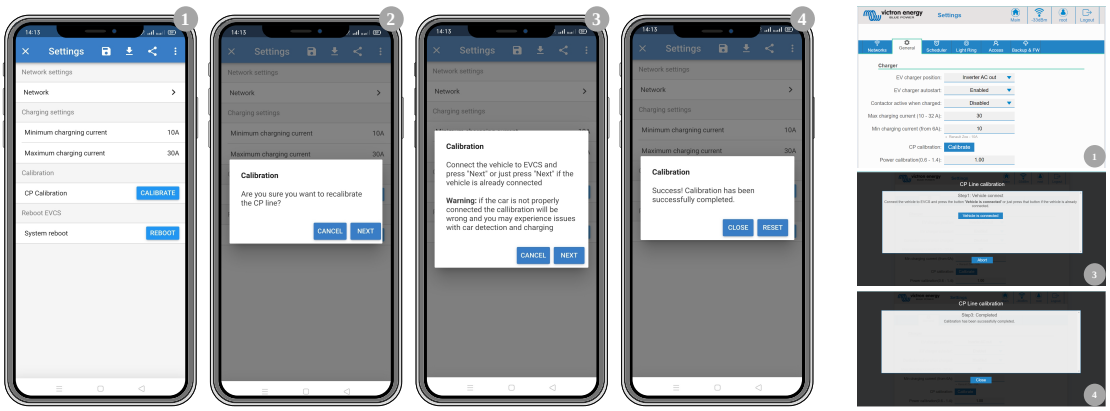
How is a CP line calibration carried out?

Please see the note above for instructions on how to enable the manual calibration feature.

The CP calibration can be done via the web interface (Settings → General → Charger → CP calibration or via VictronConnect (Settings page). The procedure is as follows:

1. Press the calibration button
2. Connect the EV to the EVCS and then tap on Next in VictronConnect
3. Press the 'Vehicle is connected' button to confirm that the EV is indeed connected to the EVCS (or tap on Next in VictronConnect)
4. Wait until the EVCS has completed the calculation

   Once the calibration is complete, a message is displayed indicating that the calibration was successful



6.2. MQTT pairing

If pairing does not succeed, check the firmware and app versions given in the MQTT activation [21] section first.

No GX devices found after discovery

- Check that the EV Charging Station NS and the GX device are on the same network and the same subnet.
- Check the WiFi signal strength of the EV Charging Station NS. A value better than -70 dBm is preferable.
- Run the discovery a few times.
- Some networks block mDNS packets, which the discovery depends on.
- If the discovery still finds nothing, enter the IP address and VRM Portal ID of the GX device by hand.

Errors during pairing

- Check that pairing mode is still active on the GX device. It times out after two minutes.
- Pairing errors are shown with an error code and the reason.
- A message reading only 'Pairing error' indicates an internal error. Check the versions, retry the pairing, refresh the web interface or reconnect VictronConnect.

W-104: GX communication warning

Communication between the EV Charging Station NS and the GX device is not working.

- Check that both devices are on the same network.
- Check that the IP address and VRM Portal ID of the GX device stored on the EV Charging Station NS are correct.
- Check that the EV Charging Station NS is still in the paired devices list on the GX device.
- Repeat the pairing procedure, see MQTT activation [21].

6.3. Frequently asked questions

6.3.1. Q1: How do I prevent the charging station from being used by unauthorised persons?

Make sure EV charger autostart is disabled in general settings. This prevents the charging station from starting to charge automatically once it is connected to an EV.

Charging can then only be started or stopped via the web interface, VRM App widget, VRM controls and VictronConnect.

6.3.2. Q2: Does the EV Charging Station have RFID?

Yes, NFC tags can be used to control the ability to start charging sessions.

6.3.3. Q3: The light ring is annoying my neighbours during night, how can I disable the light ring?

You can completely disable the light ring in the light ring menu, changing the brightness to 0 or a lower level if you like.

6.3.4. Q4: Why isn't my car recognized when I connect the charging cable?

Try calibrating the CP line (general tab in the web interface or in the VictronConnect settings). This is sometimes necessary because the charging cables can differ slightly. Ground impedance is also important as all measurements are relative to ground (GND).

Please see the note above for instructions on how to enable the manual calibration feature.

6.3.5. Q5: Why does my EV Charging Station show up on multiple GX devices?

If there are several GX devices on the same local network, there are different ways to ensure that only the intended GX device communicates with the EVCS.

1. Use direct MQTT communication with the selected GX device. This way, other GX devices will not be able to connect to the EVCS.

2. If the EVCS is still using Modbus communication, go to GX Device Settings → Integrations → Modbus Devices → Discovered Devices. There is an option to deactivate the EVCS. After deactivation, the GX device will stop communicating with it, and the EVCS can be removed from the device list.
3. Use the method already described in the manual, but only if the EVCS is still using Modbus communication.

6.3.6. Q6: How much PV power do I need at least to charge the EV in automatic mode?

The minimum current for charging an EV is 6A@230V. You therefore need more than 1.3kW of PV.

However, if there is not enough excess solar power available to meet the minimum charge current requirement, it is possible to enable the 'Allow low excess solar power for auto mode' option. This option supplements the required power with additional power from the grid to meet the minimum current requirement. See chapter VictronConnect setup, configuration and operation [28] for details.

Example: To charge the EV at 6A while there is only 800W of excess solar power, 580W will be drawn from the grid to reach the required 1380W.

Note that there are EVs that require an even higher minimum charging current, e.g. the Renault Zoe; 10A.

6.3.7. Q7: Is it possible to operate multiple EV Charging Stations in one system?

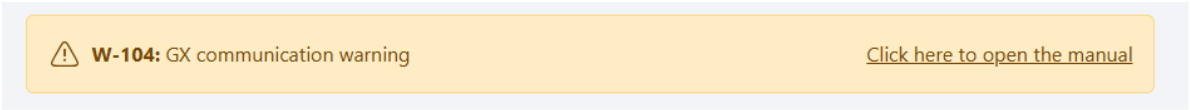
Yes, this is possible. The available power is then shared between them.

6.3.8. Q8: The EV is fully charged, but the EVCS still alternates between start charging and stop charging, why?

The reason is most likely that the EVCS cannot correctly decode the 'charged' signal coming from the EV. Perform the CP line calibration [49] to remedy the problem.

Please see the note above for instructions on how to enable the manual calibration feature.

6.3.9. Q9: I keep getting a W-104 GX communication warning! What is the reason for this?



This warning indicates that the EVCS cannot read data from the GX device due to a communication problem, even though communication with the GX device is enabled in the EVCS web interface.

The remedy depends on the communication method in use.

MQTT

The pairing between the EV Charging Station NS and the GX device may have been lost, or may never have completed. See MQTT pairing [50]

Modbus TCP

To remedy the problem, make sure that the IP address specified in the general settings of the web interface matches that of the GX device. Use the Discover function to allow the EVCS to derive the correct IP address from the VRM Portal ID - for more details, see the EV Charging Station setup chapter. Also make sure that ModbusTCP is enabled in the GX device itself.

6.3.10. Q10: Is a GX device in the system absolutely necessary?

This depends on the operation mode.

For automatic mode, communication between a GX device and the EVCS is mandatory. For manual and scheduled mode, a GX device can be installed, but does not have to be.

6.3.11. Q11: I would like to control the EVCS via Modbus TCP. Is this possible and if so, how?

Yes, this is possible. Modbus TCP offers a much higher degree of flexibility and control and provides access to a broader range of settings than what is described in the manual or available through the normal user interfaces.

Note that changes to the settings via Modbus TCP will void any support.

The recommended method for support on Modbus-TCP questions is to use the Modifications section on Victron Community. Its frequently visited by many people using Modbus TCP and other methods of integrating with Victron products.

The EVCS Modbus TCP register list can be downloaded from the product page in the download area.

6.4. EVCS Notification, Warning, Alarm and Error Codes

The table below lists all possible warnings, alarms and error codes displayed in VictronConnect, a GX device or the web interface, which can be used for quick diagnosis and help with troubleshooting.

Errors

VictronConnect code	GX device code	Generic code	Message	Instructions/Remarks
E-01	#01	01	GND not present	Appears when the EVCS detects missing PE. Contact the installer.
E-02	#02	02	Welded contacts	Appears when the EVCS detects welded contacts of the power relay. Contact the installer.
E-03	#03	03	CP input short-circuit	Appears when the EVCS detects CP input shorted. Contact the installer.
E-04	#04	04	Residual current	Appears when the EVCS detects residual current. Contact the installer.
E-05	#05	05	Over temperature	Appears when the EVCS detects overheating. Remove EVCS from direct sunlight or contact the installer.
E-06	#06	06	Light sensor IC fault	Appears when the EVCS can't communicate with the light sensor IC (applied only for the United Kingdom of Gr. Brit. and N. Ireland). Contact installer.
E-07	#07	07	Tamper detected	Appears when the EVCS detects tampering (applied only for the United Kingdom of Gr. Brit. and N. Ireland). Contact installer.
E-31	#31	31	Welded contacts L1	Appears when the EVCS detects welded contacts of the power relay on L1. Contact installer.
E-32	#32	32	Welded contacts L2	Appears when the EVCS detects welded contacts of the power relay on L2. Contact installer

VictronConnect code	GX device code	Generic code	Message	Instructions/Remarks
E-33	#33	33	Welded contacts L3	Appears when the EVCS detects welded contacts of the power relay on L3. Contact installer
E-34	#34	34	Welded contacts neutral	Appears when the EVCS detects welded contacts of the power relay on neutral. Contact installer
E-35	#35	35	L1 - N reversed	Appears when the EVCS detects that the L1 and Neutral lines are swapped at the mains input. Contact installer
E-36	#36	36	L1 - N reversed and / or no GND	Appears when the EVCS detects wrong conditions on the mains input, but can't recognize the exact reason. Check the mains wiring: ensure that Phase (L1) is connected to the L1 input and Neutral (N) to the N input. Check that the PE line is connected to the PE input. Contact installer
E-37	#37	37	RCD IC fault	Appears when the EVCS detects an RCD IC fault. Contact installer
E-38	#38	38	EV cable fault	Appears when the EVCS detects a faulty diode in the EV cable.

Warnings

VictronConnect code	GX device code	Generic code	Message	Instructions/Remarks
W-101	#101	101	Initial setup not completed	Appears when the initial setup is not finished. Perform initial setup.
W-102	#102	102	EVCS externally blocked by grid operator	Appears when EVCS is locked externally by the grid operator. Contact your grid operator.

VictronConnect code	GX device code	Generic code	Message	Instructions/Remarks
W-103	#103	103	EVCS high temperature detected	Appears when a high temperature is detected in the EVCS box, but the temperature is not yet critical to stop charging. Remove EVCS from direct sun light or contact installer.
W-104	#104	104	GX communication warning	Appears when communication with GX is enabled but not present. Check GX device IP address and VRM portal ID configuration.
W-105	#105	105	Overload detected	Appears when EVCS detects overload.
W-106	#106	106	Overload active	Appears when EVCS detects overload and it is active.
W-107	#107	107	Scheduled mode failed - time sync issue	Appears when EVCS can't synchronise the local date/time and the user switches to scheduled mode.
W-108	#108	108	The charging current is limited by an external switch	Appears when EVCS. is charging and the limit was activated by a special HW switch or over Modbus TCP. Currently only for Germany.
W-109	#109	109	The charging current is limited due to inverter overtemperature	Appears when EV is charging and inverter reported overtemperature

Notifications

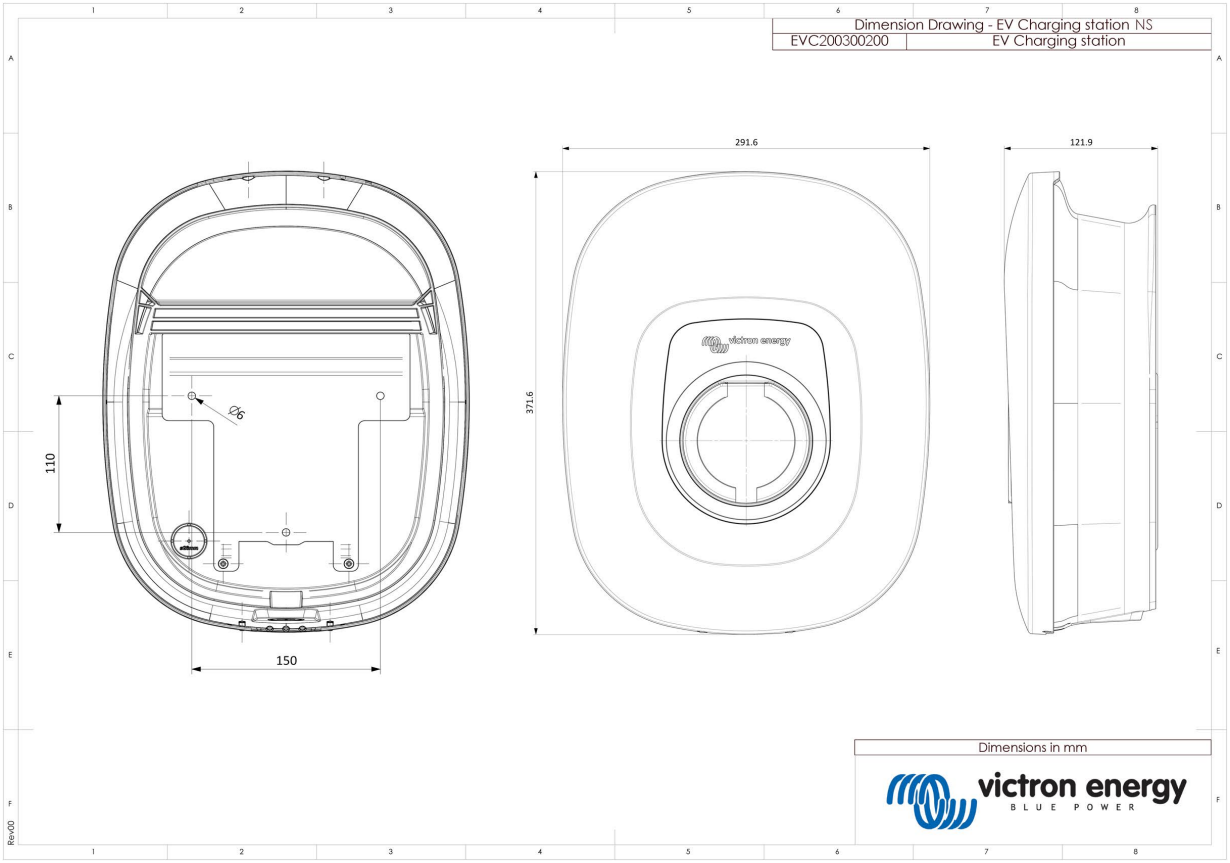
VictronConnect code	GX device code	Generic code	Message	Instructions/Remarks
N-301	#301	301	Auto mode not available	Appears when attempting to set Auto mode but GX communication is disabled. Enable communication with GX device.
N-302	#302	302	Scheduled mode not configured	Appears when trying to set Scheduled mode but the scheduler is not yet configured. Add configuration for Scheduled mode.
N-303	#303	303	Car disconnected - can't start charging	Appears when the 'Start' button is pressed but the car is not connected to EVCS. Connect the car.

VictronConnect code	GX device code	Generic code	Message	Instructions/Remarks
N-304	#304	304	Charger error	Appears when the 'Start' button is pressed but the EVCS has an error. Check errors and resolve them; contact the installer.
N-305	#305	305	Initial setup not completed	Appears when the 'Start' button is pressed but the EVCS initial setup procedure is not finished yet. Perform initial setup.
N-306	#306	306	Charging will start according to scheduler settings	Appears when the 'Start' button is pressed but the EVCS is in Scheduled mode. Switch mode to ‘Manual’ if you want to control charging.
N-307	#307	307	Overload active - can't start charging	Appears when the 'Start' button is pressed but an overload is active.

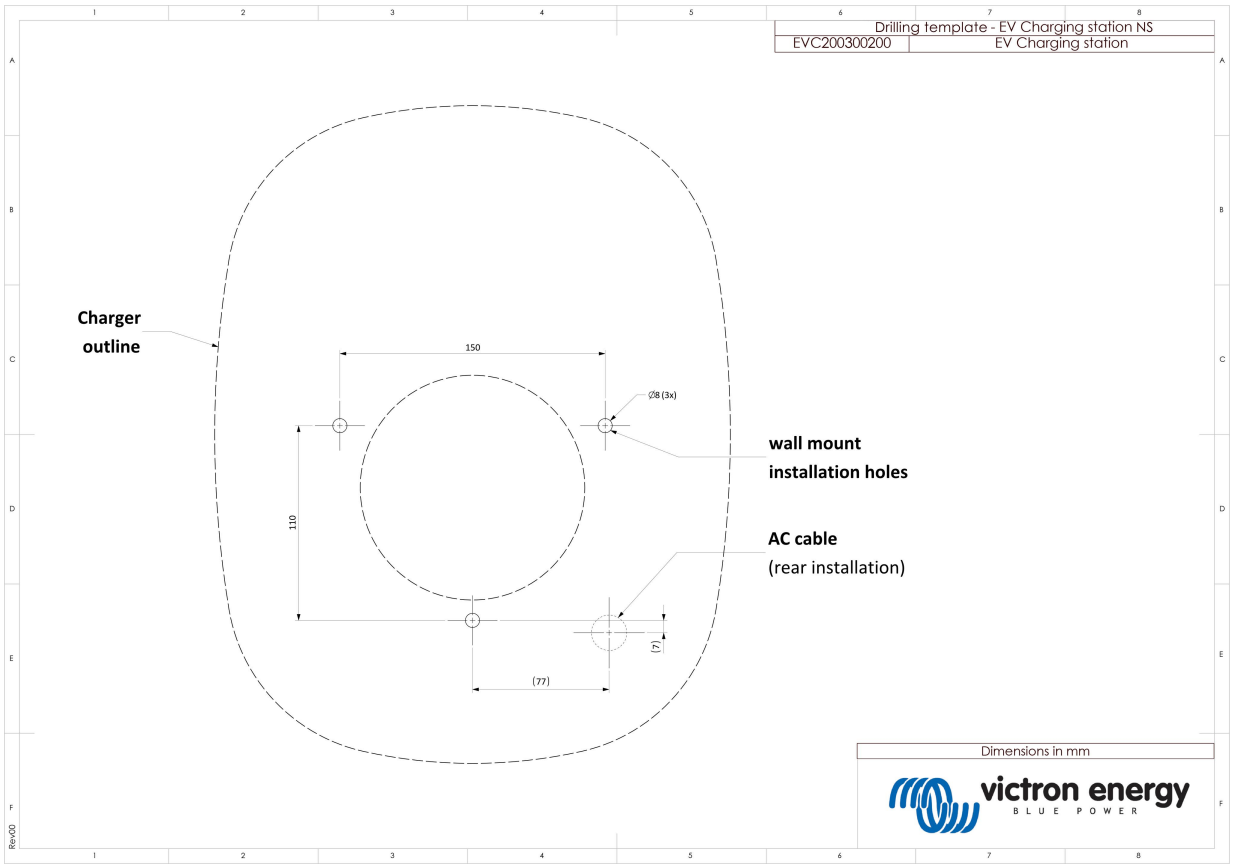
7. Technical specifications

	EV Charging Station NS
Input voltage range (V AC)	170 – 265 V AC @ 50 Hz
Rated charge current	32 A / phase
Nominal power	22 kW
Self-consumption	15 mA @ 230 V
Configurable min. / max. current	6 - 32 A
Connector type	IEC 62196 Type 2, motorised cable lock
Cable detection	Proximity pilot (PP), current limited to the cable rating
GENERAL	
Means to Disconnect	External fuse or circuit breaker, max 40 A, depending on available input power
Configurable price/kWh calculator	Default setting: € 0.13 (adjustable)
Control type	Web interface, GX device, VictronConnect (locally via Bluetooth), VictronConnect-Remote (from anywhere via VRM), NFC
Light Ring	55 configurable light effects available
Energy metering	Integrated metering IC
Protection	Internal RCD
Operating temperature	-25 °C to +50 °C
Storage temperature	-40 °C to +80 °C
Humidity	95 %, non-condensing
Data communication	MQTT and Modbus TCP over WiFi/Ethernet, Bluetooth
Wi-Fi standards	802.11 b/g/n (2.4 GHz only)
V2G	Prepared for V2G
ENCLOSURE	
Enclosure colour	Light Blue (RAL 5012) Traffic Black (RAL 9017), Traffic White (RAL 9016) covers sold separately
Power terminals	6-10 mm² / AWG 10-8
Protection category	IP44
Ventilation	not required
Weight	3 kg
Dimensions (h x w x d)	372 x 292 x 122 mm
STANDARDS	
Safety	IEC 61851-1, IEC 61851-22 Detection for Relay Contact welded Detection for missing protective conductor Detection for missing Ground Detection for shorted CP Intrusion detection (in selected regions)

7.1. Dimensions



7.2. Drilling template



8. Appendix

8.1. External control of grid-relevant power (§14a EnWG - Germany)

The charging current of the EVCS can be limited to a maximum of 6 A using an external switch. This is particularly relevant in Germany to comply with the requirements of §14a EnWG (applicable to charging stations installed from 1 January 2024) and to enable the grid operator to reduce the charging power to help maintain grid stability. Note that this feature requires EVCS firmware v2.0 or later.

A warning (W-108 – The charging current is limited by an external switch) will appear on the display, web interface, or in VictronConnect when the switch is activated.

A charging limit is applied when the switch is closed. When the switch is open, there is no charging limit.

The diagram below shows how such a switch or relay should be wired to the EVCS.

