ENGLISH

EV Charging Station

rev 01 - 09/2022

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1. Safety Instructions

Please read safety instructions below before using the EV Charging Station 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, in accordance with 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 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.
- 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 if this 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 EV Charging Station 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

The 22kW EV Charging Station is suitable for outdoor and indoor use. It is recommended not to be placed in direct sunlight, so that you can easily view and read the screen.

High power EV Charging Station

The EV Charging Station has three-phase and single-phase capabilities. It delivers a maximum of 22kW AC in three-phase operation or 7.3kW in single-phase operation.

The EV Charging Station has two operation modes:

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

   Thanks to the seamless integration of the EV Charging Station with the rest of the Victron installation, it detects when surplus power is available and uses only this power to charge the vehicle.

   Instead of loosing surplus energy when the batteries are full or instead of feeding back into the grid at a lower price, the energy is stored into 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.

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 slider on the LCD touch screen.
   - By using a web browser via the web interface.
   - 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 our VRM Portal.

   It allows to manually start or stop the charging process when a EV is connected to the charging station and allows charging the EV independently of PV production.

Wi-Fi Communication Wi-Fi 802.11 b/g/n for configuration and monitoring

The internal Wi-Fi module can be configured in Access Point mode or Station mode for both the initial setup and monitoring.

LCD Touch Screen

It incorporates a 4.3-inch LCD Touch Screen for monitoring and control.

Light Ring for fast viewing the device state

It also includes a fully programmable RGB Light Ring around the charging port, to quickly determine the device state. It can be programmed from the web interface to display different light effects based on the current state (disconnected, charging, charged etc.). The objective is to help the user see the current state from a distance.

Integration with GX devices

The EV Charging Station can be configured and monitored from a GX device and Remote Console.

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 our VRM Portal

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.
- For charging at 22kW we recommended a 40 amp RCD type B protected supply.
- Recommended cable cross-section is 6mm² / AWG 10.
- There is a sticker containing the model, the serial number and password inside the unit. Note the password on the internal label for future reference. This initial password can be used for both logging in on the webpage 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 our EV Charging Station website.

Installation steps:

1. Remove the black backing plate by removing the 8 screws.
2. Mark the wall where it should be mounted using the removed backing plate.
3. Drill 4 holes with wall plugs ready for installation.
4. Measure a suitable location and drill through the wall for the cable (when main supply cable comes from inside the building).
5. Label each individual cable and pass it through the wall, the nylon gland, the grommet and into the charging station.
6. Terminate the cable ends with ferrules and connect to the relevant points.
7. If this is a single-phase installation, use L1, neutral and earth connections.
8. Tighten the nylon gland around the cable.
9. Mount the black panel onto the charging station and screw back the 8 screws.
10. Mount the station on the wall.

Please also watch our Technical Guide video on Youtube to see an installation example.

4. Setup

4.1. WiFi

When the device is first turned on:

- An IP address is displayed on the EV Charging Station screen.
- The unit will broadcast its own WiFi hotspot.

To connect to the WiFi hotspot:

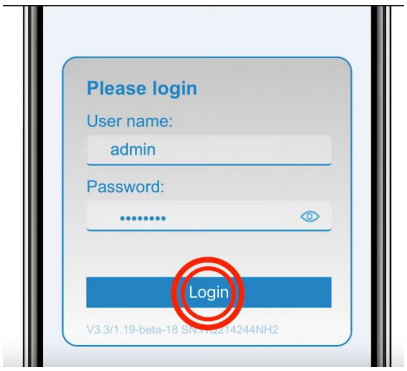
- Scan the QR Code on the internal label, or
- scan the QR Code shown on the display in the initial setup phase only.

Include username & password and automate the connection:

Once connected, enter the default IP address 192.168.0.1 in a web browser.

Log in details:

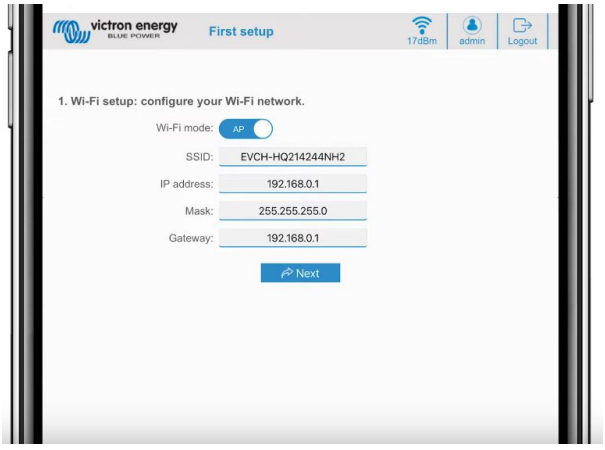
- User: admin
- Password: from the internal label, inside the station.
- Click Login



WiFi Modes:

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

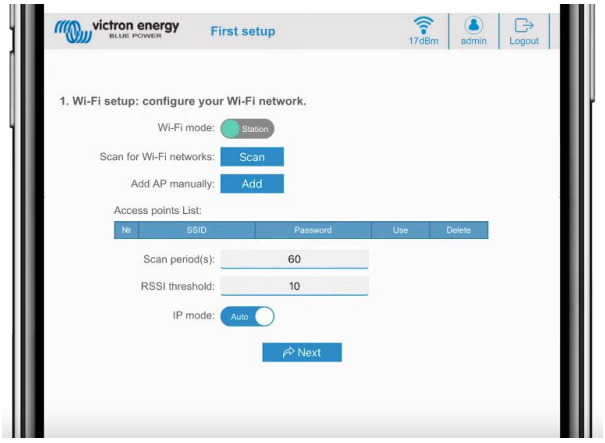
Click Next.



- Station: You connect the device to a WiFi network that includes other Victron devices like a GX device or VRM.

Scan for WiFi networks and configure an external WiFi setup:

1. Click the Scan button to search for other WiFi networks.
2. Tick the network you wish to connect to and then click Apply.
3. In the Password box enter the external WiFi password and click Next.



If the Station WiFi mode is enabled, a WiFi strength indicator between the EV Charging Station and the main WiFi is placed at the top of the web page.

4.2. Access and password recovery

In the Access menu you can choose your own username and password (strongly recommended).

To change the username and password:

1. Click into the Username field and type in your own username.
2. Click into the Password field and change the password to a new one with at least 8 characters, containing lower, upper and special characters.
3. Confirm your new password.
4. Click Next.

In case the password is lost, the initial password can be recovered:

1. Click on the Settings button.
2. Click on the Backup & FW button.
3. Click on "Reset to factory defaults".

Reset to factory defaults will reset **all** system settings to default values. The device setup described in chapter 4 [4] must be performed again.

4.3. EV Charging Station setup

1. Set the maximum charging current.
2. Click the Save button.

The EV Charging station will connect now to the external WiFi network and after a short delay to the main setup page.

Click the Settings tab at the top of the screen.

Five subtabs will appear:

1. **WiFi** tab: All settings are already completed from previous steps.
2. **General** tab: Provides setting options for the charger, GX device communication and general settings like backlight for the display.
   A. **Charger:** Select where the EV Charging Station is positioned in the system. Examples:
      I. If the charging station is on the output of an inverter as one of the main's AC outsources, select Inverter AC out.
      II. If connected to the grid and position the EV Charging Station on the grid AC input before the inverter, select Inverter AC in. Other menu items are:

a. Contactor active when charged: Keeps the contactor closed after charging. For example, when an air conditioner is active in the vehicle, it is powered by AC power rather than the car battery.

b. Maximum charging current: 10 - 32A

c. Minimum charging current: From 6A up to 1A below max. value. Example: A Renault Zoe at least 10A.

d. Min SoC to allow charging if no grid available (%): If you are offgrid and have no grid connection, you can set the minimum system state of charge (SOC) percentage to retain some power to use in the property.

e. Energy price per kWh (€): Enter the cost per kWh in EUR (later firmware versions will allow changing the currency icon).

f. CP line calibration procedure: If the vehicle is not detected or if the vehicle is fully charged and the EVCS contactor opens/closes, the calibration should be performed.

g. Power calibration procedure: If the displayed power value is not correct, a maximum correction of +/-20% can be made.

h. Actual power (kW).

B. **GX device:** The EV Charging Station can be used:

I. As a stand alone device.

II. As part of a larger Victron Energy system. When setting the GX device, the IP address is that of the GX device. Modbus TCP must be enabled in the GX device to enable communication.

C. **ModbusTCP Server:**

I. The ModbusTCP server from the GX device. The address is the same as that of the GX device.

D. **Display:**

I. Active backlight (%): The brightness of the displays when active.

II. Idle backlight (%): The brightness of the displays when idle.

III. Active timeout (s): The time after which the active display goes back to idle.

IV. Control via display: Enable/disable control on the display.

V. Hide Wi-Fi credentials: Wi-Fi credentials can be hidden.

E. **Others:**

I. Time zone: Choose the time zone.

II. Device name: Change the name of the EV Charging Station, which is also updated in the GX device and in the VRM Portal, if used.

3. **Light Ring** tab: Customizes the ring of lights on the front of the station, around the vehicle socket. A variety of modes to choose from, how long the mode is displayed, the brightness of the lights and their colour.

   The coloured ring is to indicate at a glance what the EV Charging Station is doing: for example, when the vehicle is fully charged, when there is a low state of charge.

   Click the Save button at the bottom of the screen after any change.

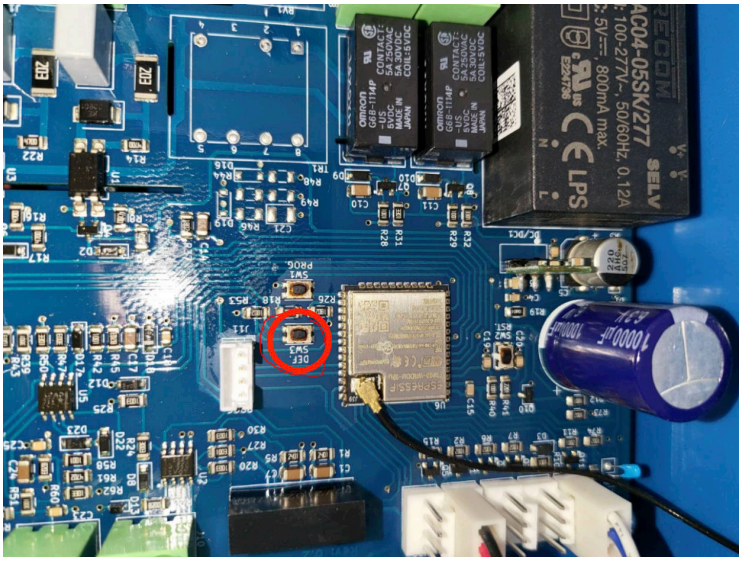
4. **Access** tab: Change the username and password from the initial setup.

5. **Backup & FW** tab: Export or import saved settings, reset the charging station back to factory defaults and update firmware manually.

   a. Reset to factory defaults: Reset the unit to the default values can be performed in 2 ways:

      i. From the webpage by selecting the Backup & FW menu and then press “Reset to factory defaults” or

      ii. from inside the unit, by pressing the “DEF” button for more than 10 seconds. See image below:



4.4. Charging mode switch

The Charging mode switch is located on the main screen and provides two different operation modes:

- **Manual** mode: Enables the user to turn the vehicle charging ON and OFF manually, using the START STOP button. The amount of current the station provides, can be changed using the Charging current slider.
- **Automatic** mode: The system will determine all the settings for the user. Similar to a GX device, the screen shows how the current is flowing. In case a GX device (Cerbo GX or Color Control GX) is included in the system on the same network as the EV Charging Station, there are a variety of settings that can be changed directly from the GX device related to either manual or automatic mode. One can see the device, its summary as well as more advanced power graphs on the main dashboard of the VRM Portal.

The manual and automatic modes ensure the best use of the charging station.

The charging mode can be changed via:

- the charger screen.
- the web interface.
- a GX device.
- our VRM Portal.

The manual mode gives flexibility in choice.

By manually determining how much power goes into a vehicle charge, you can make allowances for other loads in your home.

Manual mode charges the car independently of PV production.

The automatic mode ensures maximum efficiency of the PV system and charges excess PV power to the EV before it is fed into the grid.

When a EV Charging Station is connected to a Victron system and is in automatic mode, the surplus solar power can be used to charge the vehicle instead of feeding it into the grid at a lower price.

5. Maintenance

The EV Charging Station does not require specific maintenance.

6. Technical specification

EV Charging Station 22kW	
Input voltage range (V AC)	170 – 265
Rated charge current	32A / phase
Nominal power	22kW
Current output range	6 – 32A
Wi-Fi standards	802.11 b/g/n (2.4Ghz only)
Self-consumption	15mA@230V
Configurable Max. Current	10-32A
Configurable Min. Current	6A up to 1A below max. value
Connector type	IEC 62196 Type 2
GENERAL	
Means to Disconnect	Depending on available input power and cable cross-section - max 40A
Configurable price/kWh calculator (EUR)	Default setting: 0.13 (adjustable)
Control type	Touch Screen, Web page, GX Device over Modbus TCP
Light Ring	55 configurable light effects available
Protection	External RCD is required
Operating temperature	-25°C to +50°C
Storage temperature	-40 °C to +80 °C
Humidity	95%, non-condensing
Data communication	ModbusTCP over WIFI
ENCLOSURE	
Enclosure colour	Blue (RAL 5012)
Power terminals	6-10 mm² / AWG 10-8
Protection category	IP44
Ventilation	not required
Weight	3 kg
Dimensions (h x w x d)	390 x 300 x 150 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