victron energy
BLUE POWER

ENGLISH

VRM Portal manual

Re 00 - 03/2024

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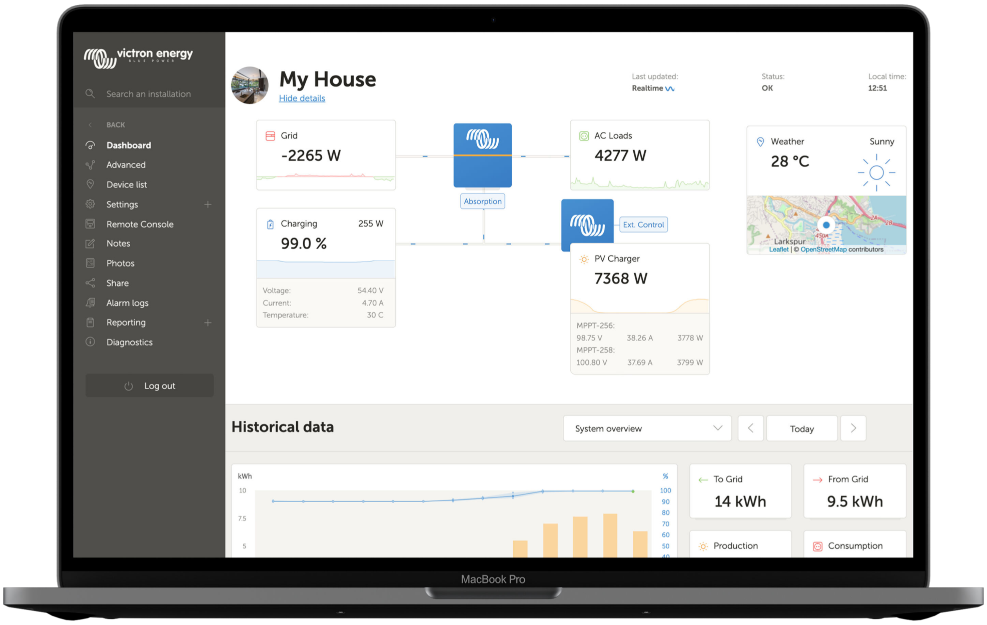
This manual is also available in HTML5.

1. Introduction

1.1. VRM - Victron Remote Monitoring

With VRM (Victron Remote Monitoring) you can remotely monitor, control, manage and optimise your Victron Energy systems and identify potential problems early by setting alerts and alarms.

VRM is free and works with a GX device such as the Ekrano GX or Cerbo GX with internet connection or the GlobalLink 520 for smaller systems.



My House

Last updated: Realtime

Status: OK

Local time: 12:51

Grid -2265 W

AC Loads 4277 W

Weather Sunny 28 °C

Charging 255 W 99.0 %

Voltage: 54.40 V
Current: 4.70 A
Temperature: 30 C

PV Charger 7368 W

MPPT-256: 98.75 V 38.26 A 3778 W
MPPT-258: 100.80 V 37.69 A 3799 W

To Grid 14 kWh

From Grid 9.5 kWh

Production

Consumption

1.2. Features

The VRM Portal and the VRM App offer extensive features for monitoring, alerting, control and management. A brief overview of the most important features are summarised below.

Installations Overview

The installations overview is the top of the VRM menu structure. Most users will only see their single installation, and clicking on it will taken them to the dashboard. For installers and fleet managers, the installation overview can provide high level summary data and filtering for thousands of systems.

VRM Portal - Dashboard [14]

The dashboard is the main page. It shows all information about the installation in a schematic visualisation including historical data at a glance.

Advanced Dashboard [48]

Predefined and custom widgets: detailed charts for all devices connected to the VRM portal, enabling very precise troubleshooting.

Device control [22]

VRM offers control over some of your Victron devices directly from the VRM dashboard. This feature allows you to quickly adjust ESS settings, control the inverter or inverter/charger and relays, start/stop the generator, and control your EV Charging Station, without needing to open the remote console.

Real-time data [21]

Insights and actions based on real-time parameters are critical for optimal system performance and utilisation. With insights in real-time data, you can adapt your energy usage behaviour to better balance with the energy harvest, for instance using heavy appliances only when the solar yield is sufficient.

Solar Production Forecast [18]

See your estimated future solar yield. This feature combines an AI model of your sites solar production potential with irradiance forecasting data from a global fleet of weather satellites.

Alarms and monitoring [26]

Catch potential issues early by setting alerts and follow up on alarms to prevent definitive system failure. The VRM Portal constantly monitors and watches over your system and can also inform you by email or push notifications if something is amiss.

No data alarm, automatic alarm monitoring, geofencing, and user-configurable alarms ensure potential problems are caught early to prevent eventual system failure.

Remote Console [25]

This feature allows full remote control of a GX Device, as if you were standing in front of it live over the internet.

Remote firmware update [37]

Remotely update Victron products straight from the VRM Portal without need to install any software. There is no need to search for the correct firmware file either: the system has them all and clearly indicates when a newer version is available.

Remote VEConfigure [41]

Remotely change settings including Assistants in your MultiPlus, MultiPlus-II, Quattro and high power VE.Bus Inverters. All power products with a VE.Bus communication port are supported.

Notifications [32]

Advanced notification: Email, push and web notifications per device

VRM App & Widgets

Monitor and manage your Victron Energy system from virtually anywhere in the world via the VRM app. Login with your VRM account and see all your installations in one list. Tap on an installation to view its status and details, create custom widgets, or place one of the many VRM app widgets on your mobile device's home screen to have the most important information available at a glance.

More features

- **Venus OS Large**
  - Venus OS Large is an extended build of Venus OS that adds Node-RED and Signal K Server to a GX device (except the Colour Control GX and CanVU GX). Node-RED and Signal K Server can be accessed via the VRM portal. See the Venus OS Large image: Signal K and Node-RED documentation and consult the Venus OS Large image chapter in the GX manual for installation and setup.

2. Getting started with VRM

To connect your system to the VRM Portal, there are two separate steps that need to be taken. First, you need to create a VRM user account and then secondly, the installation needs to be paired with that user account.

It is possible to pair one installation to multiple user accounts. And also it's possible to have multiple users connected to the same installation.

2.1. Requirements

1. A computer, or mobile device, that can access the Internet.
2. The VRM Portal ID, which uniquely identifies your system. Depending on the communication device (GX device or GlobalLink 520), the VRM ID can be determined in the following way:
   a. GX devices in general: go to Settings → VRM online portal menu and type down the number shown under VRM Portal ID. The VRM ID consists of a 12-digit combination of letters and numbers. Example: be300d83ff04

   b. Venus GX & Cerbo GX only: the VRM Portal ID is printed on a label on the side of the GX device.

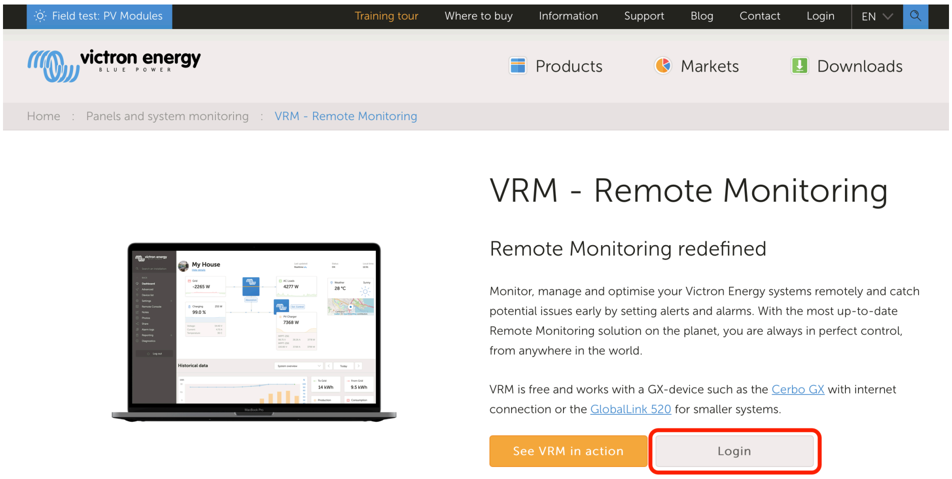
   c. GlobalLink 520: the VRM Portal ID is printed on a label on the back of the device.
3. A GX device or a GlobalLink 520 that is connected to the internet.
4. In order for the installation to register on VRM the GX device or GlobalLink 520 needs to have had at least one successful connection to the internet. Only once the GX has connected to the internet is the unique VRM Portal ID able to added to the user account on the VRM Portal.

> It is recommended, especially when working with SIM cards, to first configure and test the internet connection in your office, before installing it on location. It is not necessary to connect any equipment, such as a MultiPlus or BMV battery monitor: applying power to a standalone GX device or Victron Global Remote will do, as they also connect to the VRM Portal when there are no products connected.

2.2. Step 1 - Create a user account

1. Open a browser window on your computer and go to https://vrm.victronenergy.com.

2. Click on 'Login'.



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Home : Panels and system monitoring : VRM - Remote Monitoring

VRM - Remote Monitoring

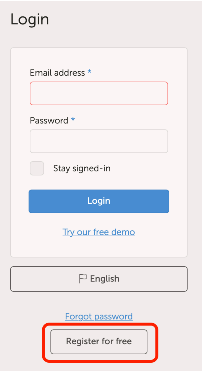
Remote Monitoring redefined

Monitor, manage and optimise your Victron Energy systems remotely and catch potential issues early by setting alerts and alarms. With the most up-to-date Remote Monitoring solution on the planet, you are always in perfect control, from anywhere in the world.

VRM is free and works with a GX-device such as the Cerbo GX with internet connection or the GlobalLink 520 for smaller systems.

See VRM in action | Login

3. On the next screen scroll down to 'Register for free' and click on it.



Login

Email address *

Password *

□ Stay signed-in

Login

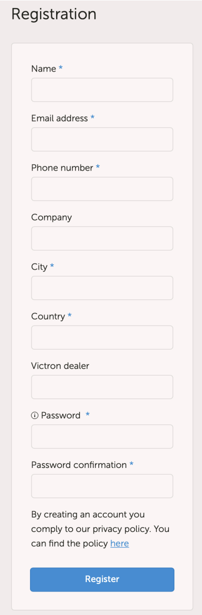
Try our free demo

English

Forgot password

Register for free

4. Complete all the requested information and then click on 'Register'.



Registration

Name *

Email address *

Phone number *

Company

City *

Country *

Victron dealer

ⓘ Password *

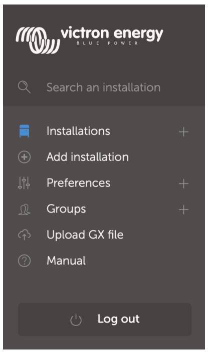
Password confirmation *

By creating an account you comply to our privacy policy. You can find the policy here

Register

5. You will now receive a confirmation email with a link to activate your account.

6. Once activated, account creation and registration is finished. Click 'Add installation' on the left side menu to continue pairing an installation to this user account.

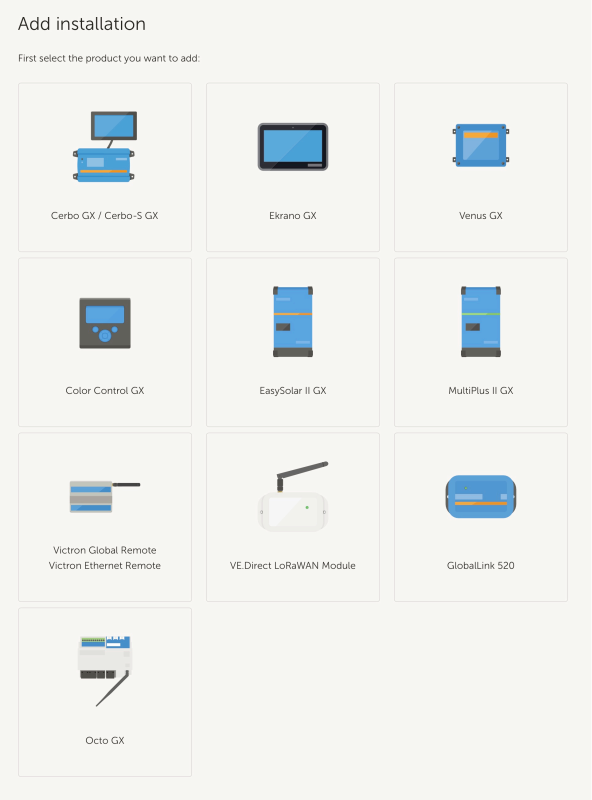


For added security we recommend adding a two factor authentication [44] (2FA) method to your account.

2.3. Step 2 - Add an installation to the user account

Adding an installation is only possible after the VRM Portal has received the first data transmission of your system. Therefore, make sure that the system has already started communicating with the VRM portal. Or, if it is an off-grid installation using an SD card or USB stick, upload the data file first.

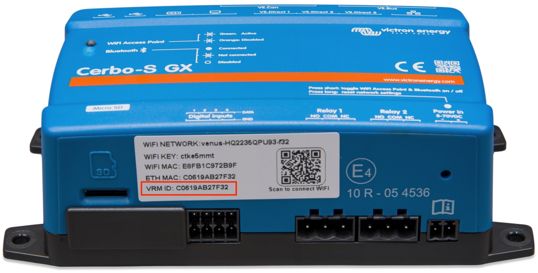
1. Select the product you want to add. This should be either a GX device, a GlobalLink 520 or one of the other devices shown on the page.

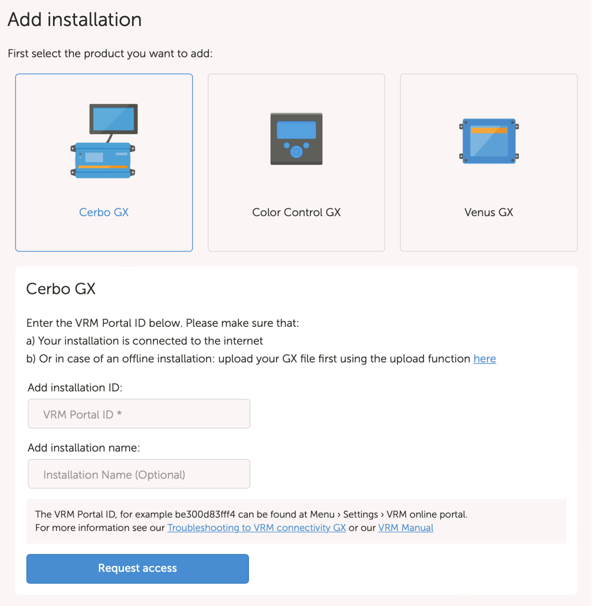


Add installation

First select the product you want to add:

2. Enter the VRM Portal ID of the device. The VRM ID can be found on a sticker of the respective device, and also in the VRM Online Portal menu. See Requirements [5].





Add installation

First select the product you want to add:

Cerbo GX

Enter the VRM Portal ID below. Please make sure that:
a) Your installation is connected to the internet
b) Or in case of an offline installation: upload your GX file first using the upload function here

Add installation ID:

VRM Portal ID *

Add installation name:

Installation Name (Optional)

The VRM Portal ID, for example be300d83fff4 can be found at Menu › Settings › VRM online portal.
For more information see our Troubleshooting to VRM connectivity GX or our VRM Manual

3. Click Request access and your device is now paired with your VRM user account.

If you are the first user to add this installation to an account, you will automatically have Full Control rights for this installation. Any subsequent users who try and add the same VRM Portal ID will need to get approval of the site owner. This approval email is automatically sent when they try and add the site to their user account.

Subsequent users will also be added as read only users who cannot change any settings. However, the Full Control user can assign Full Control rights to other users via the Settings -> Users page for that installation.

If you get the "Installation could not be found" error, see the Requirements section [5] and check the system's internet connection.

2.4. Step 3 - Configure the installation

To access configuration settings for an installation select it from the installation overview. Then open the Settings link in the left menu. This menu is only visible when you have Full Control permission.

General tab

- **General settings**

  This menu allows you to change the system name, see the VRM portal ID and enter the GSM number of the SIM card (e. g. of your router if available, the only function of this field is to keep it in a safe place, nothing else).

- **Realtime updates**

  Toggle real-time updates for this installation. This setting is disabled by default. Note that enabling real-time updates will significantly increase data consumption while real-time data is in use. It is suggested to leave this disabled if the site bandwidth or download quota is very limited.

- **Inverter/Charger Control**

  Toggle Inverter/Charger control for this installation. Warning - enabling this feature makes it very easy to turn off AC output power, It is suggested to leave this disabled unless you are frequently turning your inverter/charger off. Please read the Inverter controls in VRM [22] chapter for more information before enabling this feature.

- **Installation avatar**

  Here you can upload an avatar icon graphic for this installation. This will replace the current avatar visible in the Dashboard.

- **Unlink this installation from your user account**

  Unlink removes this installation from your list of installations, without deleting all the data in the database. Other users of this installation will still be able to see its data.

- **Delete this installation**

  All data in the database will be deleted. Note that, after deleting, the device needs to be rebooted to resume sending data to the VRM portal. Use this option in case the GX device is moved to another installation.

- **Replace the GX device of this installation**

  Use this option in case the old GX device is defective and has been replaced by a new one.

  Carefully follow the procedure explained on VRM.

Tags tab

- **Set Tags**

  Useful for accounts that have many installations. For example a hybrid generator rental company with four depots: North, South, East, and West. Add the tag of the right depot to all installations. Then in the installation overview you can filter based on these tags.

Set location tab

- **Set location**

  Set the location of the installation by dragging the cursor to the right place. This automatically sets the timezone that is used for all x-axes on the graphs as well.

  Note that your timezone setting will be updated using the new location only if you do not have it set on the GX device.

  Setting a location is also required for the Solar Production Forecast feature.

Set geofence tab

- **Set geofence**

  Here you can set a geofence for your installation (typically used in RVs and Boats). This requires a GPS connected to the GX device, for example, connecting a USB GPS to a Cerbo GX.

  The GlobalLink 520 does not support GPS but has the ability to identify the cell tower it is connected to, which we can locate using VRM. Note that once you set the location manually in VRM, the location should not update with the cell tower location.

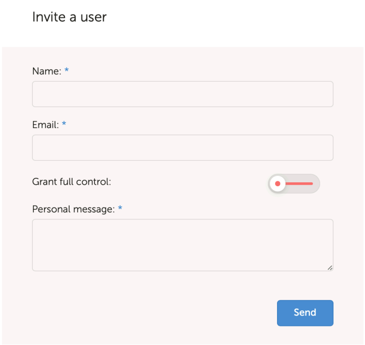
Users

- **Users**

  Configure which users are Full Control and which not. Full Control users can change settings on all installations for which they have Full Control rights.

- **Pending invitations**

  Invite new users to this installation.



Invite a user

Name: *

Email: *

Grant full control:

Personal message: *

- **Teams**

  Add teams linked to the installation. See the Teams section.

- **Installation groups**

  Shows the installation groups to which this installation belongs. See the Installation groups section.

Alarm rules

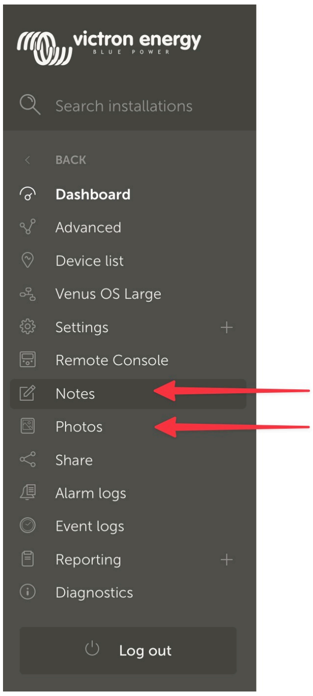
- See VRM Portal alarms and monitoring section.

2.5. Step 4 - Add Notes and Photos

Once your site has been added to VRM it is possible to add notes about the system and photos of the installation.

These can be very useful. For example adding photos of system wiring diagrams, and photos of the system as it is installed can help a technician provide remote support.

The Photos and Notes features are both in the left hand sidebar for the site.



2.6. More tips and tricks

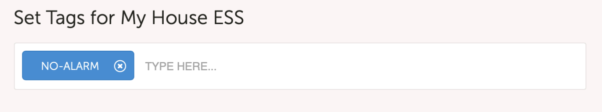
- Use the 'Invite a user' function to pair this installation to other user accounts as well. It is also possible to invite users that do not yet have a VRM user account. They will automatically be directed to the account creation page.

- To see a list of all connected products, their firmware version and serial numbers, go to the Device list tab.

- The screensaver enables you to quickly see what state the installation you're currently viewing is in. Configure the screensaver by going to the sidebar -> 'Preferences' -> Display preferences to automatically start after a period of inactivity, or press the “s” key twice while viewing an installation.

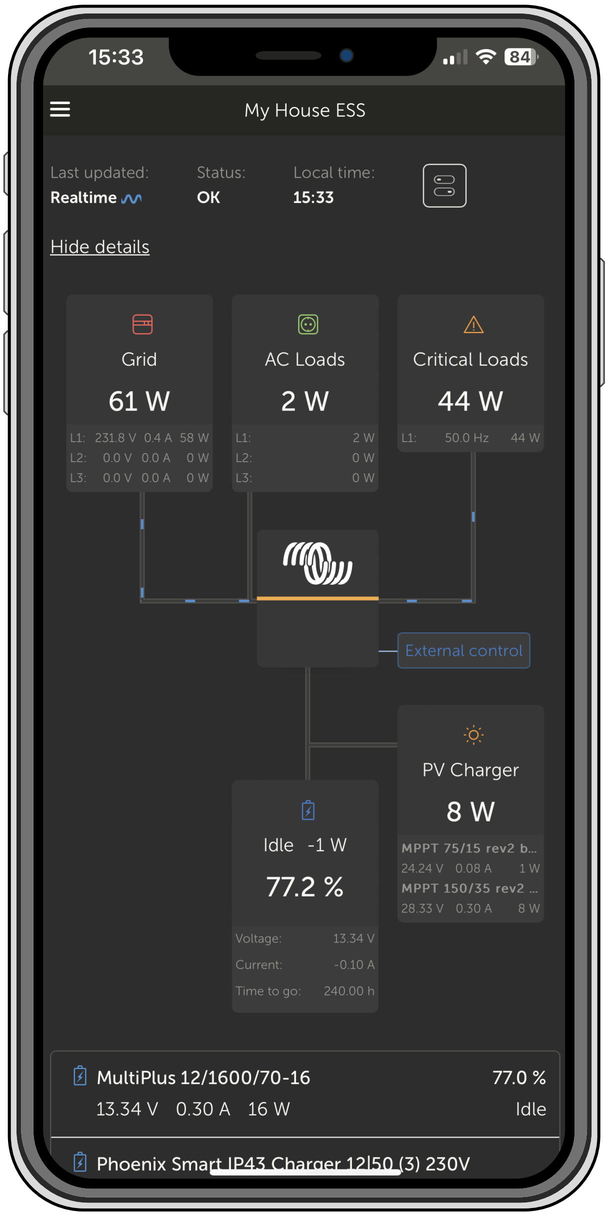
- Check and if necessary alter the default alarm monitoring setup to your needs. See the VRM Portal alarms and monitoring chapter.

- Adding tags to an installation is done in the Settings page. There are two types of tags, automatic tags, and custom tags. In the example below, an automatic tag is shown for this installation with the name: 'NO-ALARM', allowing you to filter and show only systems without active alarms. You can add custom tags by typing the tag name and clicking 'save'.



Set Tags for My House ESS

- Remember to install the VRM App on your phone. It is available for free in the App Store and Google Play, for iOS and Android. For Android, it is also possible to download the APK files on our software and downloads page.



15:33

My House ESS

Last updated: **Realtime**

Status: **OK**

Local time: **15:33**

Hide details

Grid

61 W

L1: 231.8 V 0.4 A 58 W
L2: 0.0 V 0.0 A 0 W
L3: 0.0 V 0.0 A 0 W

AC Loads

2 W

L1: 2 W
L2: 0 W
L3: 0 W

Critical Loads

44 W

L1: 50.0 Hz 44 W

External control

PV Charger

8 W

MPPT 75/15 rev2 b...
24.24 V 0.08 A 1 W
MPPT 150/35 rev2 ...
28.33 V 0.30 A 8 W

Idle -1 W

77.2 %

Voltage: 13.34 V
Current: -0.10 A
Time to go: 240.00 h

MultiPlus 12/1600/70-16 77.0 %
13.34 V 0.30 A 16 W Idle

Phoenix Smart IP43 Charger 12|50 (3) 230V

3. VRM Portal - Dashboard

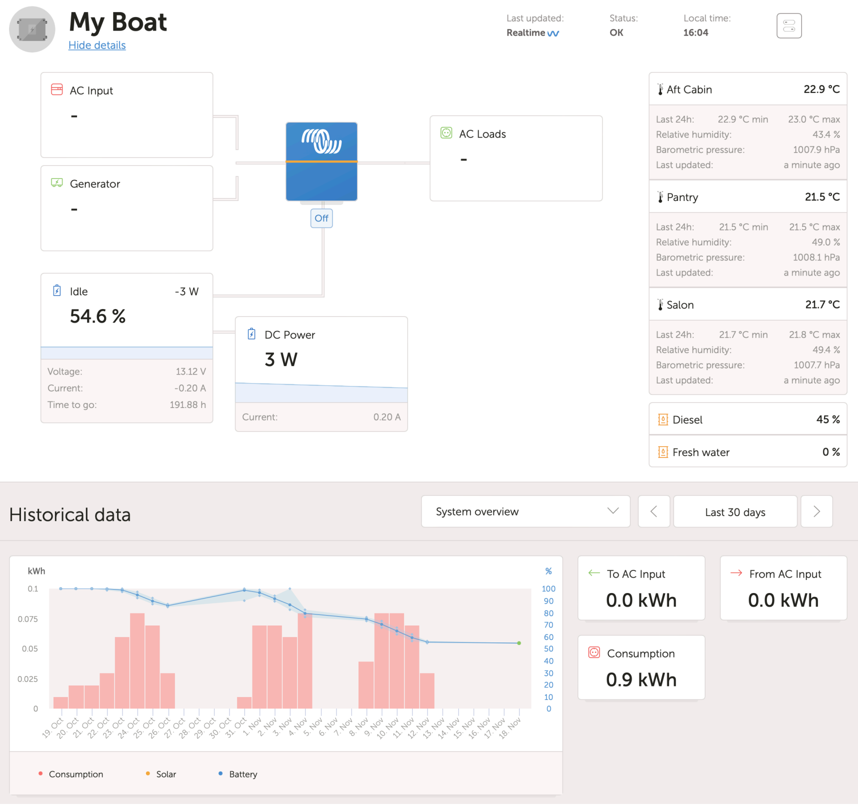
3.1. Introduction

The dashboard is the main page. It shows all information about the installation at a glance.

3.1.1. Introduction video

See the new Victron Remote Management Dashboard

3.2. Example screenshot for yacht installation



My Boat
Hide details

Last updated: Realtime
Status: OK
Local time: 16:04

AC Input
-

Generator
-

Off

AC Loads
-

Idle -3 W
54.6 %

Voltage: 13.12 V
Current: -0.20 A
Time to go: 191.88 h

DC Power
3 W

Current: 0.20 A

Aft Cabin		22.9 °C
Last 24h:	22.9 °C min	23.0 °C max
Relative humidity:		43.4 %
Barometric pressure:		1007.9 hPa
Last updated:		a minute ago

Pantry		21.5 °C
Last 24h:	21.5 °C min	21.5 °C max
Relative humidity:		49.0 %
Barometric pressure:		1008.1 hPa
Last updated:		a minute ago

Salon		21.7 °C
Last 24h:	21.7 °C min	21.8 °C max
Relative humidity:		49.4 %
Barometric pressure:		1007.7 hPa
Last updated:		a minute ago

Diesel 45 %

Fresh water 0 %

Historical data

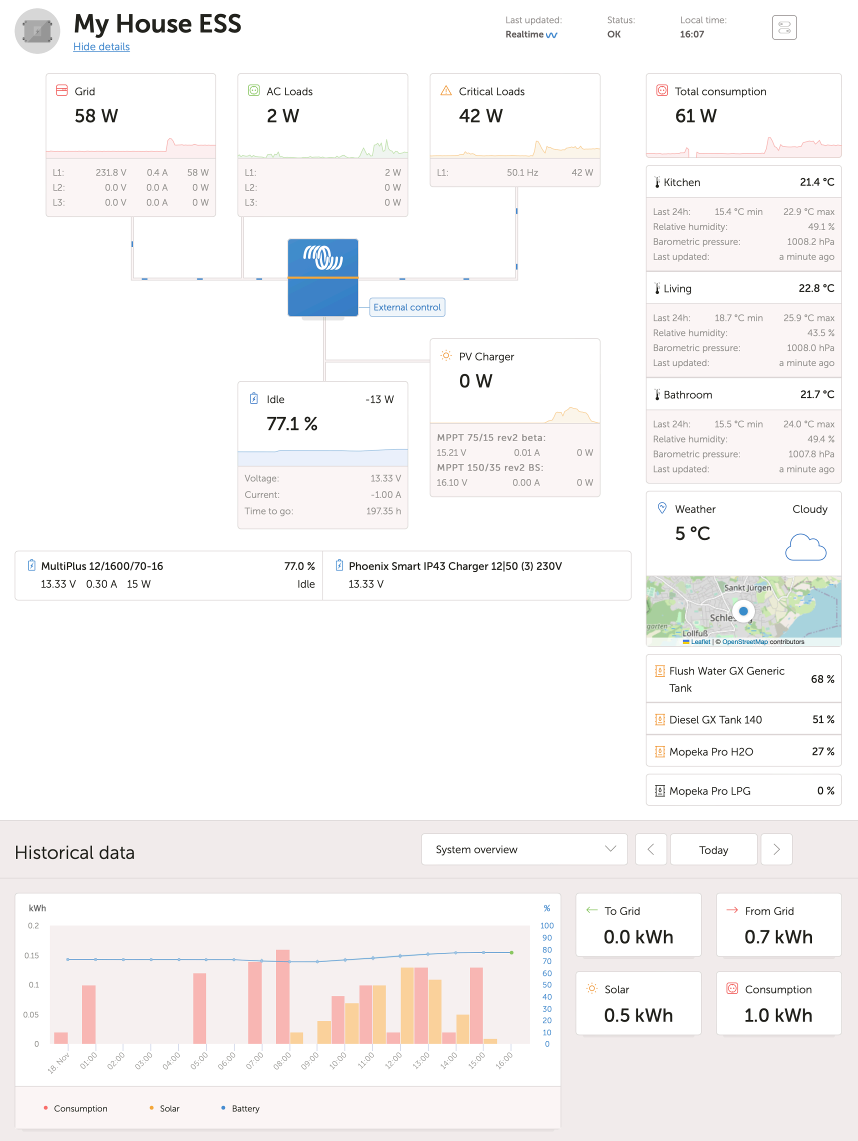
System overview
Last 30 days

To AC Input
0.0 kWh

From AC Input
0.0 kWh

Consumption
0.9 kWh

3.3. Example screenshot for ESS installation


My House ESS

Hide details

Last updated: Realtime

Status: OK

Local time: 16:07

Grid

58 W

L1:	231.8 V	0.4 A	58 W
L2:	0.0 V	0.0 A	0 W
L3:	0.0 V	0.0 A	0 W

AC Loads

2 W

L1:	2 W
L2:	0 W
L3:	0 W

Critical Loads

42 W

L1:	50.1 Hz	42 W

External control

PV Charger

0 W

MPPT 75/15 rev2 beta:

15.21 V	0.01 A	0 W

MPPT 150/35 rev2 BS:

16.10 V	0.00 A	0 W

Idle -13 W

77.1 %

Voltage:	13.33 V
Current:	-1.00 A
Time to go:	197.35 h

Total consumption

61 W

Kitchen 21.4 °C

Last 24h:	15.4 °C min	22.9 °C max
Relative humidity:		49.1 %
Barometric pressure:		1008.2 hPa
Last updated:		a minute ago

Living 22.8 °C

Last 24h:	18.7 °C min	25.9 °C max
Relative humidity:		43.5 %
Barometric pressure:		1008.0 hPa
Last updated:		a minute ago

Bathroom 21.7 °C

Last 24h:	15.5 °C min	24.0 °C max
Relative humidity:		49.4 %
Barometric pressure:		1007.8 hPa
Last updated:		a minute ago

Weather Cloudy

5 °C

MultiPlus 12/1600/70-16 77.0 %

13.33 V 0.30 A 15 W Idle

Phoenix Smart IP43 Charger 12|50 (3) 230V

13.33 V

Flush Water GX Generic Tank	68 %
Diesel GX Tank 140	51 %
Mopeka Pro H2O	27 %
Mopeka Pro LPG	0 %

Historical data

System overview · Today

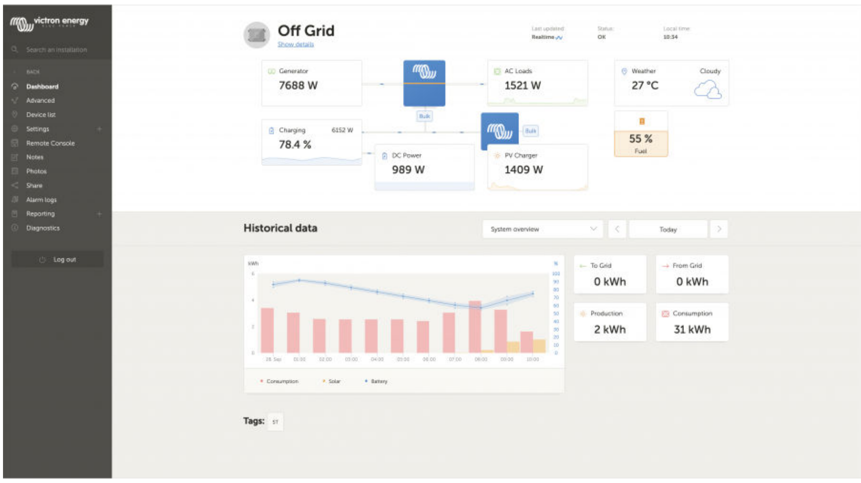
To Grid 0.0 kWh

From Grid 0.7 kWh

Solar 0.5 kWh

Consumption 1.0 kWh

3.4. Example screenshot for off-grid installation


Off Grid

Show details

Last updated: Realtime

Status: OK

Local time: 10:34

Generator 7688 W

AC Loads 1521 W

Weather Cloudy 27 °C

Charging 6152 W 78.4 %

DC Power 989 W

PV Charger 1409 W

55 % Fuel

Historical data

System overview · Today

To Grid 0 kWh

From Grid 0 kWh

Production 2 kWh

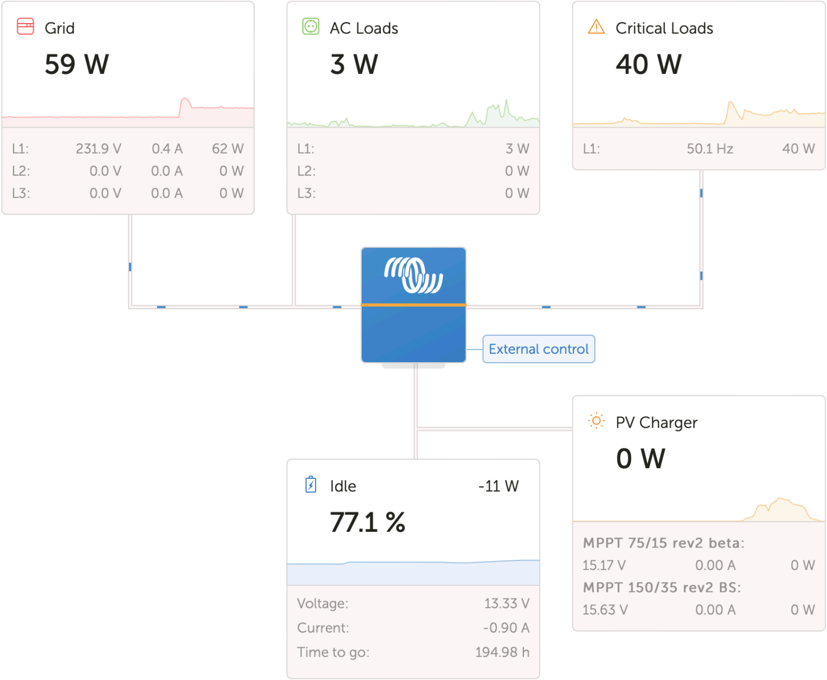
Consumption 31 kWh

Tags: ST

3.5. Details per section

3.5.1. Schematic visualisation

The information shown adapts itself to the system installed. VRM is designed to perform best for systems with a Victron Inverter/Charger, for systems without an inverter/charger, you may see some variations from this layout.



Grid
59 W

L1:	231.9 V	0.4 A	62 W
L2:	0.0 V	0.0 A	0 W
L3:	0.0 V	0.0 A	0 W

AC Loads
3 W

L1:	3 W
L2:	0 W
L3:	0 W

Critical Loads
40 W

L1:	50.1 Hz	40 W

External control

Idle -11 W
77.1 %

Voltage:	13.33 V
Current:	-0.90 A
Time to go:	194.98 h

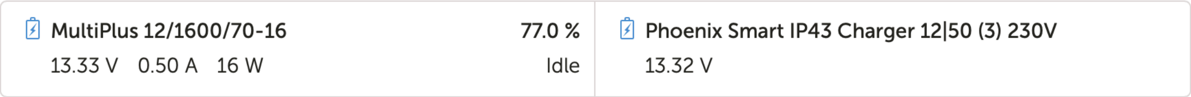
PV Charger
0 W

MPPT 75/15 rev2 beta:
15.17 V 0.00 A 0 W
MPPT 150/35 rev2 BS:
15.63 V 0.00 A 0 W

3.5.2. Battery block

The purpose of this part of the dashboard is to show all available batteries for installations having multiple batteries. For example, a yacht with two main engines (and thus two starter batteries), another starter battery for a generator and two service batteries.

For each of the configured batteries, the VRM Portal will show its name, the voltage, current and state of charge.



MultiPlus 12/1600/70-16 77.0 %
13.33 V 0.50 A 16 W Idle

Phoenix Smart IP43 Charger 12|50 (3) 230V
13.32 V

Configuration:

1. Configure the battery settings on the GX Device, in the Menu → Settings → System setup → Battery Measurements.
2. Meet all the requirements for the Realtime feature [21], as this information is only available when in Realtime mode.
3. Two or more batteries must be configured. If there is just one, then the information is already shown as part of the main system overview.

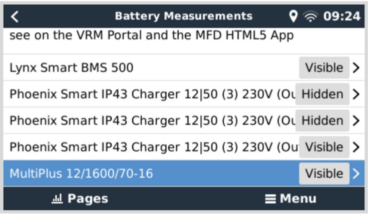
The Battery Measurement configuration menu:

It lists all available battery measurements including battery monitors, but also a simple voltage measurement by a solar charger or battery charger for example. For a three-output charger, it will list all three measured voltages.

The GX device allows the following configuration of the available batteries:

1. Show or hide the battery on the dashboard.
2. Give the battery a custom name instead of the default device name.

Screenshot from the Remote Console of the detailed menu with a 3-output AC charger (only output 3 is visible), Lynx Smart BMS and a MultiPlus:



Battery Measurements 09:24

see on the VRM Portal and the MFD HTML5 App

Lynx Smart BMS 500 Visible

Phoenix Smart IP43 Charger 12|50 (3) 230V (Ou Hidden

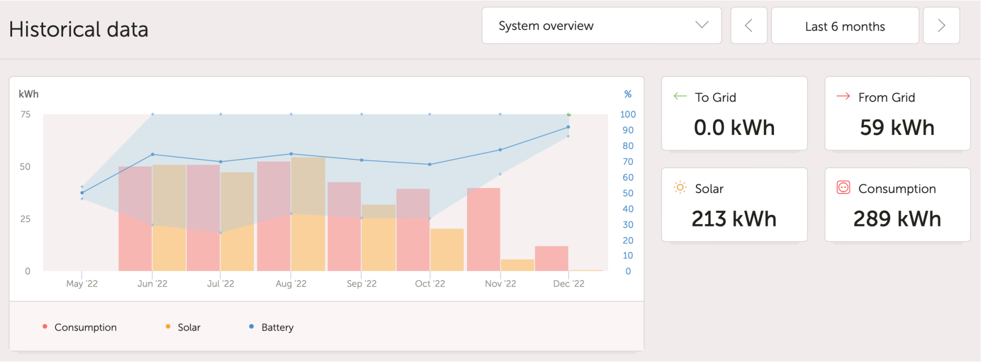
Phoenix Smart IP43 Charger 12|50 (3) 230V (Ou Hidden

Phoenix Smart IP43 Charger 12|50 (3) 230V (Ou Visible

MultiPlus 12/1600/70-16 Visible

3.5.3. Historical data

Depending on available information, this block will show a bar graph for kWh production and consumption, together with a blue line showing state of charge.



Historical data

System overview

Last 6 months

To Grid 0.0 kWh

From Grid 59 kWh

Solar 213 kWh

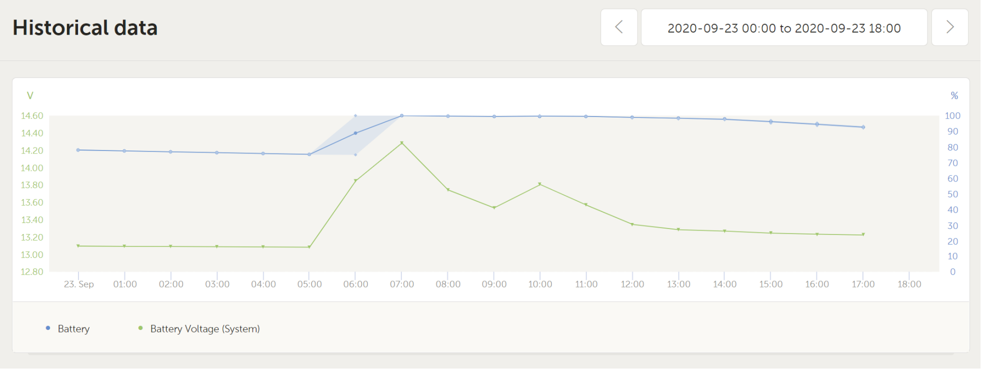
Consumption 289 kWh

In case that information is not available, it will show a line diagram. The parameters used in the line diagram depend on the products installed:

- Battery monitor (BMV, SmartShunt or similar): Voltage on the left axis and SOC on the right axis.
- Phoenix Inverter: Output power on the left axis, Battery voltage on the right axis.
- Solar Charger: Output power on the left axis, Battery voltage on the right axis.

Requirements for the kWh production and consumption data are explained in the VRM Portal - Frequently asked questions [60] chapter.

Screenshot of an installation with only a Phoenix Inverter, and thus showing the line diagram:



Historical data

2020-09-23 00:00 to 2020-09-23 18:00

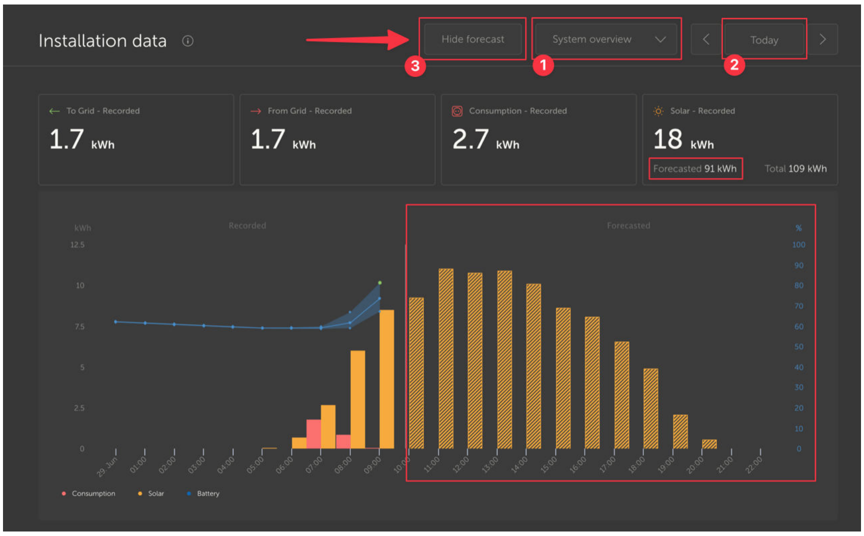
3.5.4. Solar production forecast

This feature combines a model of your sites solar production potential with irradiance forecasting data from Solcasts global fleet of weather satellites.

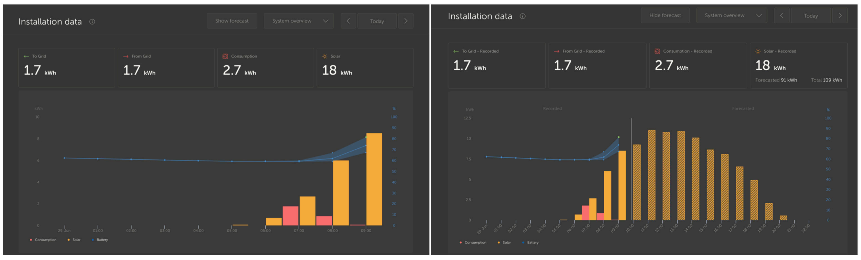
Getting started

Existing installations with a solar history and location set can show their solar forecast immediately.

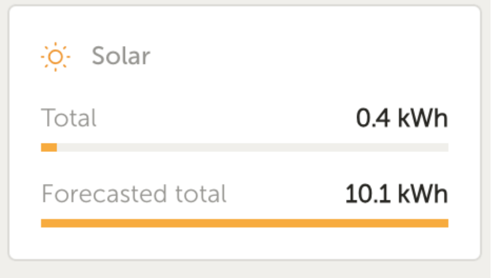
To see the solar forecast, open your site VRM dashboard and select ‘Today’. This should reveal a Show/Hide forecast button.



Clicking the Show Forecast button will expand the view to show what remains of the current day, and also draws bars to show the estimated solar production.



Showing the forecast adds more information to the Solar info box on the dashboard as well.


Solar

Total 0.4 kWh

Forecasted total 10.1 kWh

“Total” shows the actual solar energy that has been converted from the sun today.

“Forecasted total” is the estimate for the solar production.

There might be some rounding of these figures.

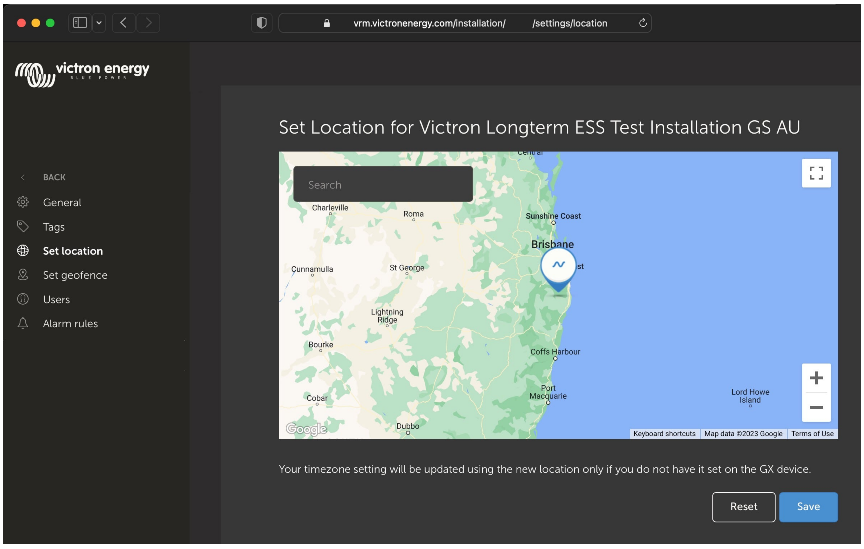
Troubleshooting

If the forecast button isn’t there, please check:

1. Your installation has a location set
2. Your site is recording hourly solar yield
3. You are on the ‘today’ view

For new sites that don’t yet have a solar yield history, or if you’ve only recently set the site location, please wait up to 48 hours for it be enabled and have enough information to be accurate.

This feature uses location data as a 4 km² grid, and doesn’t link any personally identifiable information or co-ordinates of your Victron site. This is accurate enough for the solar data while still maintaining your location privacy.



Set Location for Victron Longterm ESS Test Installation GS AU

Your timezone setting will be updated using the new location only if you do not have it set on the GX device.

If you need to reset the solar forecast model for your site, you can do this by clicking the "Reset" button in the system location settings, saving, and then reselecting the location.

How is it done?

Solar forecast uses a machine learning model that compares historical solar production and the irradiance at the time of day and then calculates the future projected solar production based on the estimated irradiance forecast.

This automatically takes into account factors like system sizing, panel orientation & pitch, efficiency degradation, and shading without requiring any user input.

This model requires a minimum of 2 days of data, and uses a rolling 28 days of historical data to improve accuracy.

This means that over time the model will get more accurate, even as panels degrade and trees grow.

The model accounts for when MPPT trackers were at maximum production, or limiting themselves (for example when batteries are full in an off-grid system).

In addition to the dashboard estimate, we also have the underlying Solar Irradiance Forecast (W/m²) available as an advanced VRM widget.

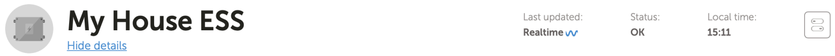
4. Real-time data

4.1. Introduction

The dashboard can show real-time data, meaning that every two seconds data updates are sent straight from the installation to your browser - rather than pulled from the database at which the information is stored at the interval configured in Settings → VRM Portal → Interval (default 15 minutes).

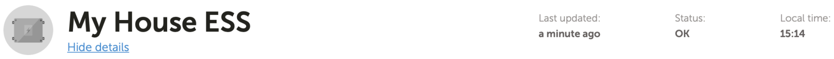
The new dashboard increases the GX CPU load. Data usage is also increased. The CPU load and data usage are only increased while the dashboard is being observed.

Check the top of the page under "Last updated" to see if its in real-time mode. Here is a screenshot when using real-time data. Notice the icon for Controls on the right hand side; it only appears in real-time mode:



My House ESS
Hide details
Last updated: Realtime
Status: OK
Local time: 15:11

And here is a screenshot of a system not using real-time data:



My House ESS
Hide details
Last updated: a minute ago
Status: OK
Local time: 15:14

4.2. Requirements

- A GX Device, with Venus OS v2.60 or later
- Good internet connection
- Sufficient CPU resources (see GX device CPU load section)
- Two-way communication in Settings → VRM Portal → Two way communication must be enabled

4.3. Enable and disabling the real-time data feature

It is possible to disable the real-time data feature for each installation. Go to VRM site → Settings → General → Realtime updates green(on) / red(off).

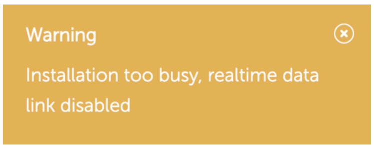
Examples of when you want to disable real-time data are:

- To keep data usage to a minimum, while keeping the VRM two-way communication setting enabled to be able to remotely configure and for remote firmware updates.
- For systems where CPU load is already at the edge of what is possible, so rather than each time waiting for it to be automatically disabled (see below), and thus also having a short time of high CPU load on the system, disable it pre-emptively.

4.4. GX device CPU load

Transmitting the data to the VRM Dashboard causes an extra load on the CPU in the GX device. As such, systems already operating at 100% CPU, or close to it, would be overloaded with the result that tasks are left waiting, slow response on Remote Console, slow data updates, and eventually also reboots of the GX device.

To prevent this, the dashboard will automatically suspend itself in case the CPU load is too high, in which case a warning is shown on the lower right on your screen:



Warning

Installation too busy, realtime data link disabled

5. Control your devices in VRM

VRM offers control over some of your Victron devices, straight from the VRM dashboard. With this feature, you can quickly adjust and control the following devices or settings without needing to open the Remote Console:

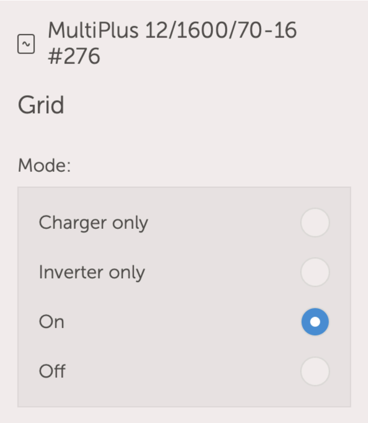
- ESS settings: ESS mode, Minimum SoC
- MultiPlus/Quattro: Grid current limit, Mode (Charger only, Inverter only, On, Off)
- GX device relays: Relay 1, Relay 2 (if available)
- EV Charging Station: Auto, Manual, Charge current, Charge on/off
- Generator: Autostart, Manual control, Timed run, Start/Stop

To access the Controls, go to your VRM dashboard. The Controls icon is located at the top right of the installation dashboard and the controls will open on the right side of your screen. Note that access to controls requires the real-time data connection [21] to your installation.

5.1. Inverter/Charger controls in VRM

Inverter/Charger controls can be made available on the VRM Dashboard, but require an additional step to enable in the settings for that specific VRM installation. This is to prevent accidentally switching off the system.

1. Go to the Settings → General tab of the installation.
2. Scroll down to Inverter/Charger Control.
3. Toggle Inverter/Charger control for this installation. Enabling this feature will allow you to remotely control your inverter's current limit as well as turn it on/off, and to Charger only or inverter only from the Controls panel on the VRM dashboard.



MultiPlus 12/1600/70-16 #276

Grid

Mode:

Charger only ○
Inverter only ○
On ●
Off ○

It is ONLY recommended to enable this easy system shutdown control for small systems in non-critical environments. It is STRONGLY recommended to leave this feature disabled for large mission critical systems, or where there are multiple users with access to the Full Controls.

Note that there is a limitation where these controls are not available when using a Digital Multi Control or VE.Bus BMS V1 in the system.

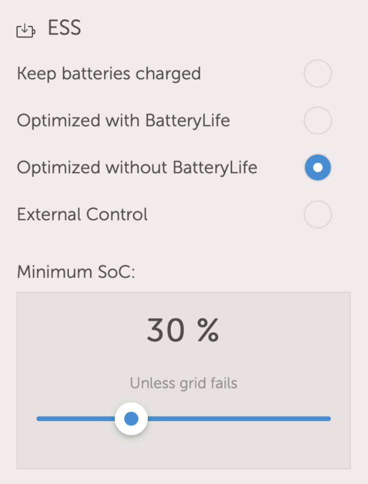
5.2. ESS controls in VRM

For your ESS system, you can switch your settings between the following ESS modes:

- Optimized with BatteryLife
- Optimized without BatteryLife
- Keep batteries charged
- External control

As with the inverter settings, you will have 5 seconds to cancel any change in settings before it is sent to the device.

It is also possible to adjust the minimum state of charge. Note that setting the minimum state of charge will not be possible when the ESS is set to Keep batteries charged as that mode will override and charge the battery to 100% when possible.



ESS

Keep batteries charged ○

Optimized with BatteryLife ○

Optimized without BatteryLife ●

External Control ○

Minimum SoC:

30 %

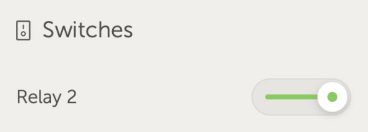
Unless grid fails

5.3. Manual relay controls in VRM

The relays of the GX device can also be switched manually via the control panel. To do this, they must first be set to Manual in the GX device. The hardware relays will not appear here if they are used by another process, such as a generator start stop.

1. In the GX device go to Settings → Relay.
2. Set the Function (Relay 1) to Manual.
3. Repeat step 2 for Relay 2, if present.

With the 5 seconds delay (in which the switching command can still be aborted), the respective relay can now be switched from the Controls panel on the dashboard.



Switches

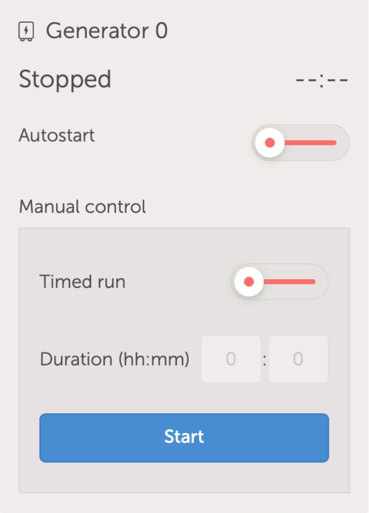
Relay 2

5.4. Generator controls in VRM

A generator that is controlled via the start/stop function of the GX device can also be controlled via the control panel. For setup see the GX - Generator auto start/stop chapter in the GX device manual.

The following control and monitor elements are available:

- Autostart: Controls the Auto start functionality as been set in the GX device.
- Manually controlled Timed run: Toggle to enable/disable a timed run.
- Running: How long has the generator been running in the current period.
- Duration: Time span for how long the Timed run should last.
- Start/Stop: Start or stop a timed run.

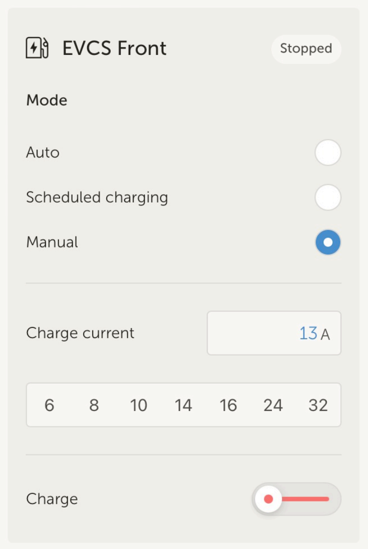


5.5. EV Charging Station controls in VRM

The Victron EV Charging Station can also be controlled via the Controls panel on the dashboard.

The following options are available:

- Auto: detects when surplus power is available and uses only this power to charge the vehicle.
- Scheduled charging: Charge the EV at certain time intervals, for example during the night hours when grid energy is cheaper.
- Manual: Enables the user to turn the vehicle charging ON and OFF manually, using the CHARGE toggle.
- Charge current: Set the amount of current the station provides using the Charge current control.
- Charge: manually start or stop the charge process.



EVCS Front Stopped

Mode

○ Auto

○ Scheduled charging

● Manual

Charge current 13 A

6 8 10 14 16 24 32

Charge

5.6. Remote Console

Remote Console is a powerful feature that allows access to the GX device interface in real time over the internet.

Remote Console needs to first be enabled on the GX device before it is accessible on VRM.

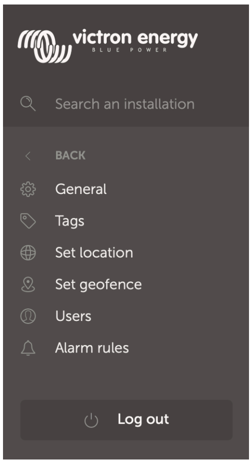
For further details on how to enable and use Remote Console, please see the Remote Console on VRM section in the GX device manual.

6. Alarms and monitoring

The VRM Portal constantly monitors and watches over your system and can also inform you by email or push notifications if an issue is detected. There are four categories of monitoring:

- Communication monitoring: monitors the connection between the VRM Portal and the Victron installation
- Automatic alarm monitoring: monitors a predefined list of parameters on all connected products
- Geofence: monitors location (requires a GX device with a USB-GPS)
- User configurable alarms

The Alarm rules setting can be found under Settings → Alarm rules:

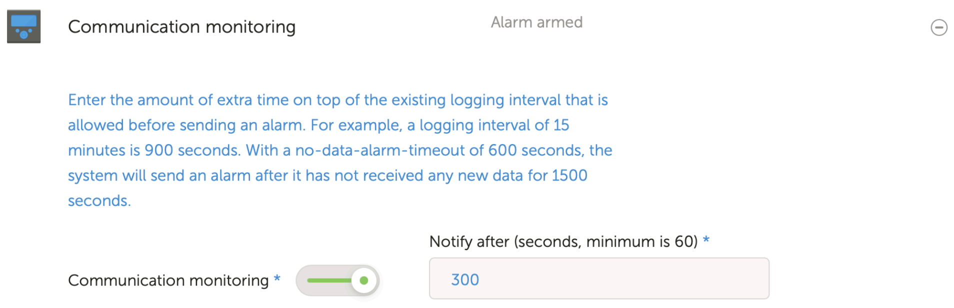


6.1. Communication monitoring

Typically used for stationary installations such as off-grid systems and telecommunication installations where it is important to know that communication between the GX device (i.e. the installation) and the VRM Portal may have been lost.

Available options:

- Communication monitoring on/off toggle
- Notify after: extend the interval (as been set in the GX device VRM portal online settings for Log interval) that is allowed without data being received before sending a no-data alarm



Enter the amount of extra time on top of the existing logging interval that is allowed before sending an alarm. For example, a logging interval of 15 minutes is 900 seconds. With a no-data-alarm-timeout of 600 seconds, the system will send an alarm after it has not received any new data for 1500 seconds.

Notify after (seconds, minimum is 60) * 300

Communication monitoring *

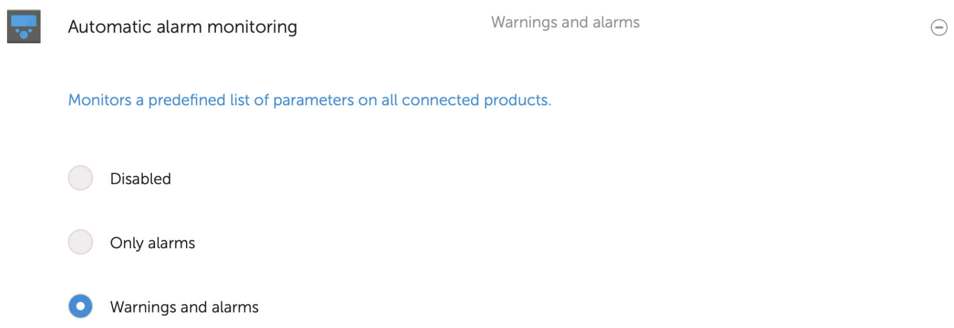
6.2. Automatic alarm monitoring

Monitors a predefined list of parameters on all connected products. With this feature, it is not necessary to manually configure alarm rules for all the different parameters. A notification will be sent if any of the parameters listed below enters an Alarm state, and optionally for Warnings too. A recovery notification will be sent if the parameter returns to its normal value.

This is set to Only alarms by default.

Available options:

- Disabled: disables the Automatic alarm monitoring
- Only alarms: send notifications for alarms only
- Warnings and alarms: send notifications for warning and alarms



Automatic alarm monitoring — Warnings and alarms

Monitors a predefined list of parameters on all connected products.

○ Disabled

○ Only alarms

● Warnings and alarms

6.3. Parameters being watched by the Automatic alarm monitor

6.3.1. VE.Bus products (Multi, Inverter and Quattro)

- VE.Bus state
- VE.Bus Error
- Temperature alarm
- Low battery alarm
- Overload alarm
- AC Input phase rotation (for three phase systems)

6.3.2. BMV, Lynx Shunt VE.Can and other batteries

- High voltage alarm
- Low voltage alarm
- High starter-voltage alarm
- Low state-of-charge alarm
- Low battery temperature alarm (BMV-702 only)
- High battery temperature alarm (BMV-702 only)
- Mid-voltage alarm (BMV-702 only)
- Low fused-voltage alarm (Lynx Shunt only)
- High fused-voltage alarm (Lynx Shunt only)
- Fuse blown alarm (Lynx Shunt only)
- High internal-temperature alarm (Lynx Shunt only)
- Low starter-voltage alarm (Lynx Shunt only)
- High charge current alarm
- High discharge current alarm
- Cell imbalance alarm
- Internal error alarm

6.3.3. Lynx Ion BMS

- Error code
- Error

6.3.4. Solar charger

- Charger fault
- Charge state
- Equalization pending
- Alarm condition
- Low voltage alarm
- High voltage alarm
- Error code

6.3.5. Skylla-i charger

- Charger fault
- Charge state
- Error
- Low voltage alarm
- High voltage alarm

6.3.6. Venus devices

- Digital input

6.3.7. Generator start/stop

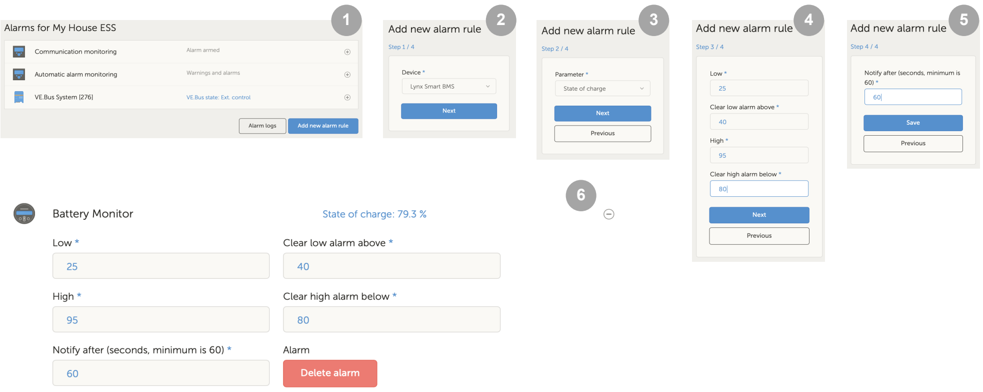
- Generator not detected at AC-input. See GX - Generator auto start/stop manual for details.

6.3.8. Inverter RS, Multi RS models

- High temperature alarm
- High voltage DC alarm
- High voltage AC out alarm
- Low temperature alarm
- Low voltage DC alarm
- Low voltage AC out alarm
- Overload alarm
- Ripple alarm

6.4. User configurable alarms step-by-step

Advanced rules, including hysteresis, can be configured for all parameters available in the VRM database.



Alarms for My House ESS

Communication monitoring — Alarm armed

Automatic alarm monitoring — Warnings and alarms

VE.Bus System [276] — VE.Bus state: Ext. control

Add new alarm rule — Step 1 / 4 — Device *: Lynx Smart BMS

Add new alarm rule — Step 2 / 4 — Parameter *: State of charge

Add new alarm rule — Step 3 / 4 — Low *: 25; Clear low alarm above *: 40; High *: 95; Clear high alarm below *: 80

Add new alarm rule — Step 4 / 4 — Notify after (seconds, minimum is 60) *: 60

Battery Monitor — State of charge: 79.3 %

Low *: 25; Clear low alarm above *: 40; High *: 95; Clear high alarm below *: 80; Notify after (seconds, minimum is 60) *: 60; Alarm

1. Go to Settings → Alarm rules and click on Add new alarm rule.
2. Select the device for which you want to create a new alarm rule.
3. Select the parameter to be monitored.
4. Configure high, low values and their hysteresis (see How to properly configure high, low and their hysteresis [30]).
5. Set the notification time and then save the new alarm rule. Use this to avoid spikes in data from causing nuisance alarms, for example tank levels in mobile applications, where a pump running can cause a temporary low alarm on pressure based level sensors located on the pump suction pipe.
6. As soon as the new alarm rule is saved, it is armed. To delete the alarm rule, click on Delete alarm.

6.5. How to properly configure high, low alarms and their hysteresis

The hysteresis is important to prevent the nuisance clearing and re-triggering of an alarm state when the system is close to the trigger. Consider the following example: you want an alarm as soon as the battery voltage drops below 10V that only clears when the voltage rises again above 11.5V. The hysteresis is 11.5V

A properly configured alarm rule meets the following criteria:

- The low hysteresis should be equal to or higher than the low alarm threshold.
- The high hysteresis should be equal to or lower than the high alarm threshold.
- The low hysteresis should be lower than the high alarm threshold (otherwise a high alarm will be triggered as soon as the low alarm is cleared).
- The high hysteresis should be higher than the low alarm threshold.

Taken together, these rules should ensure that alarms don't frequently toggle on and off due to minor fluctuations around the threshold values.

6.6. Receiving an alarm on mains failure

This alarm is typically wanted when a mains grid is normally expected to be available.

Depending on if the system is an ESS system, or a backup system (without ESS) this alarm is configured differently.

The following steps are required to set it up:

Primary method via GX device

1. On the GX device, go to Settings → System setup
2. Set AC input type to 'Grid'

3. Set 'Monitor for grid failure' to 'Enabled'

Alternative method via VRM alarm rules

1. In VRM; go to Settings → Alarm rules and click on Add new alarm rule.

2. Select the Multi (or Quattro) as the device on which you want to monitor a parameter.

3. Select VE.Bus State as the parameter.

4. Set the Inverting state as 'Armed'. You might want to add Off and Fault there as well.

5. Set the notification time to 300 seconds, i.e. 5 minutes.

6. Save the alarm rule.

6.7. Geofence

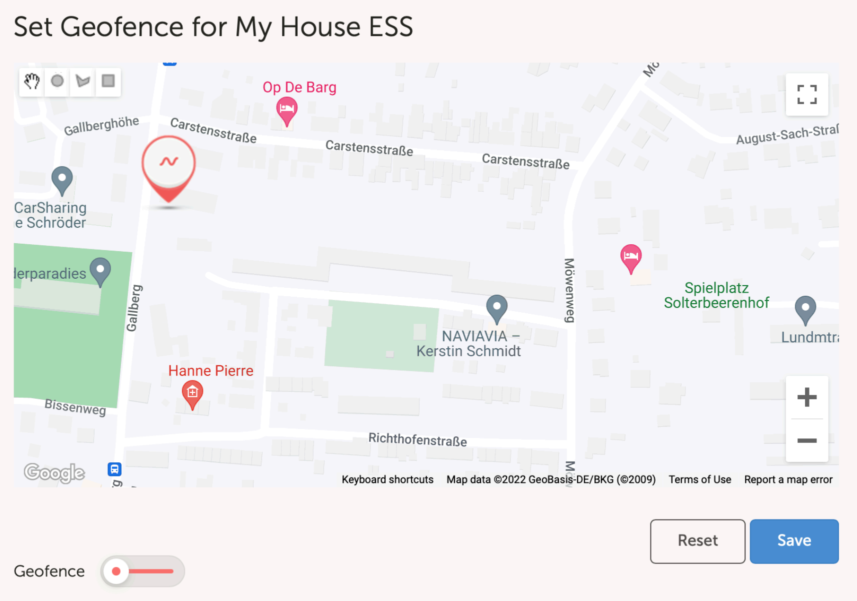
Typically used for RVs and boats. The example below shows a Geofence that will give an alert when the RV leaves the designated parking space. An alarm will also be generated when the location data is no longer being received, for example when the GPS receiver is unplugged. Use this in combination with the Communication monitoring alarm for full coverage.

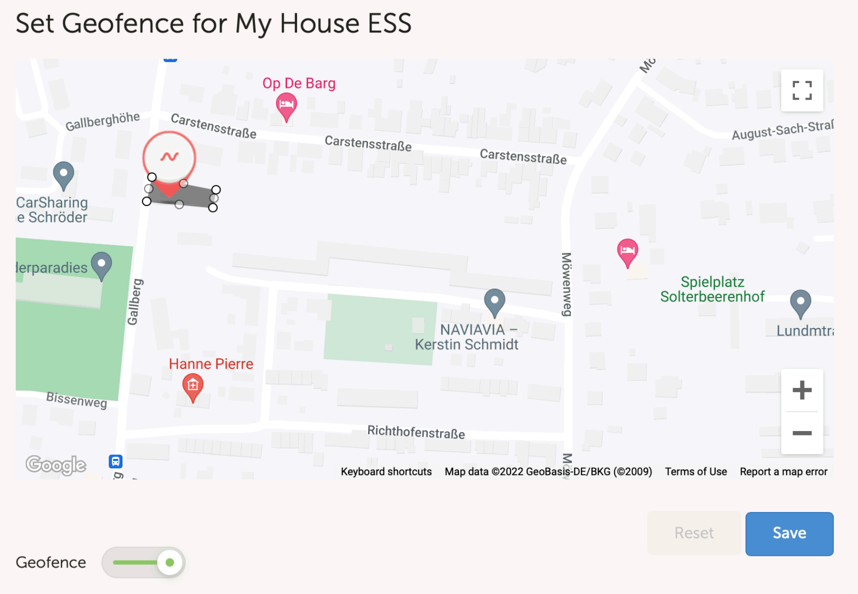
Steps to configure a Geofence:

1. Go to Settings → Geofence and click on Set geofence.

2. Draw a circle, shape or rectangle (available at top left) around the current GPS position (marked with a teardrop shape icon with a sine wave inside). Note that it is also possible to draw Irregular shapes with the shape tool.

3. Once the Geofence is saved, it is armed. Use the slider on the bottom left to disable the Geofence alarm before moving the RV or boat out of position.





6.8. Notifications

When a warning or alarm is triggered on an installation that you are monitoring on VRM, an alarm notification is sent. To receive these alarm notifications, you must configure what type of notification you want to receive for alarms. There are three notification types:

1. Email
2. VRM App push notifications directly to the notification center of a mobile phone, tablet or Apple laptop
3. Web push notifications to a browser such as Google Chrome or Safari on Windows and macOS.

Note that the Rate limiter [36] is also active for push notifications.

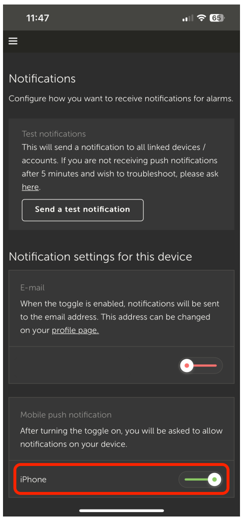
The following chapter describes how to set up notifications per type.

6.8.1. How to set up push notifications on a mobile device

1. Install (or update) the VRM App on your phone, table or Apple laptop (with Apple M1 or later)
2. Allow VRM to send notifications

   After a fresh install or update, a popup will appear asking if you want to allow push notifications. If you do not allow this, this can be done later in the app settings of the device. On Android notifications are enabled by default.
3. Login to your VRM account. The installation overview is then displayed.
4. Tap the menu bar in the top left and then tap on 'BACK' to get to the Preferences menu.
5. Tap Preferences and then tap Notifications.

   If you have allowed VRM to send notifications, mobile push notifications will be automatically enabled for that specific device as can be seen in the image below.



Notifications

Configure how you want to receive notifications for alarms.

Test notifications

This will send a notification to all linked devices / accounts. If you are not receiving push notifications after 5 minutes and wish to troubleshoot, please ask here.

Notification settings for this device

E-mail

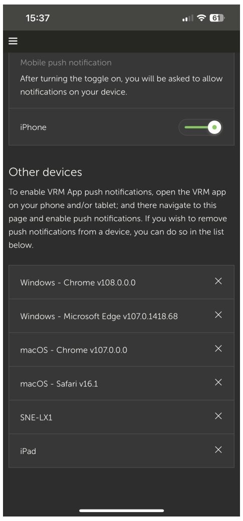
When the toggle is enabled, notifications will be sent to the email address. This address can be changed on your profile page.

Mobile push notification

After turning the toggle on, you will be asked to allow notifications on your device.

iPhone

6. In addition, all devices that have push notifications enabled are listed under 'Other devices', from where you can also remove push notifications for specific devices or browsers.



Mobile push notification

After turning the toggle on, you will be asked to allow notifications on your device.

iPhone

Other devices

To enable VRM App push notifications, open the VRM app on your phone and/or tablet; and there navigate to this page and enable push notifications. If you wish to remove push notifications from a device, you can do so in the list below.

- Windows - Chrome v108.0.0.0 ×
- Windows - Microsoft Edge v107.0.1418.68 ×
- macOS - Chrome v107.0.0.0 ×
- macOS - Safari v16.1 ×
- SNE-LX1 ×
- iPad ×

7. Make sure it works; Tap on Send a test notification.

   All devices and browsers that have push notifications for VRM enabled should receive the test notification.

Note that it works in a similar way with an Apple laptop (M1 and later) that has the VRM App installed from the App Store, except that it identifies itself as an iPad.

6.8.2. How to set up web push notifications in a browser

Push notifications can also be enabled for a web browser like Apple Safari, Google Chrome and others on macOS and Windows. This chapter explains the steps to do this.

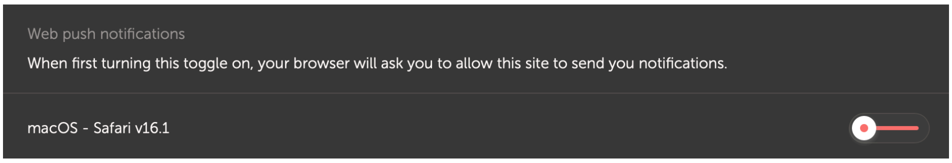
1. Login to your VRM account via a web browser.

2. Click on 'BACK' in the top left.

3. Click Preferences and then click Notifications.

4. In 'Notification settings for this device' under 'Web push notifications' the browser is already listed but not activated yet. Toggle the slider to turn on web push notifications.

   When you enable the toggle for the first time, your browser will ask you if you want to allow the VRM URL to send you notifications. You will only be asked for it once. If permission is not granted, this can be done later in the settings of the browser app (see also the FAQ Why can't I get push notifications in my Google Chrome browser on a Apple Mac? [64]).



Web push notifications

When first turning this toggle on, your browser will ask you to allow this site to send you notifications.

macOS - Safari v16.1

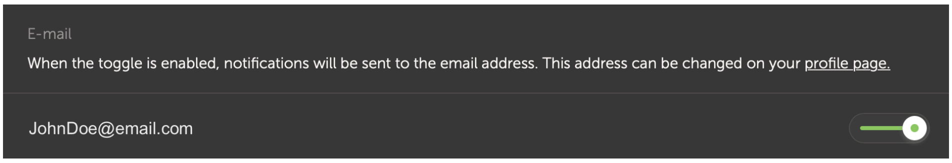
5. Make sure it works; Tap on Send a test notification.

   All devices and browsers that have push notifications for VRM enabled should receive the test notification.

6.8.3. How to set up email notifications

In contrast to push notifications, which have to be set up per device, it is sufficient to turn on email notifications on any device. These are then automatically active on all other devices. The following steps are necessary to enable email notifications.

1. Open the VRM App or login to your VRM account on a web browser.
2. Tap/click on 'BACK' in the left menu.
3. Tap Preferences and then tap Notifications.
4. Click the toggle in 'Notification settings for this device' under 'E-mail' to enable email notifications.



E-mail

When the toggle is enabled, notifications will be sent to the email address. This address can be changed on your profile page.

JohnDoe@email.com

5. Make sure it works; Tap on Send a test notification.

   You should receive the test notification via email.

6.8.4. Email and push notification rate limiter

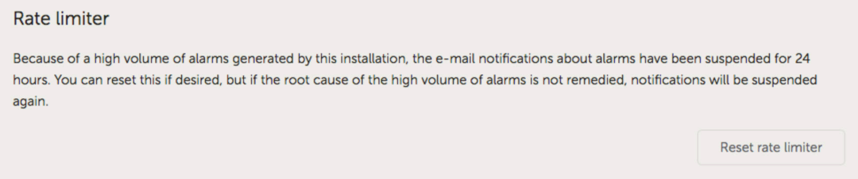
Under certain conditions, some installations can hover near a warning or alarm condition. This can yield a flow of redundant email and/or push notification messages, leading to user alarm fatigue and spam false positives, not to mention an overflowing inbox.

In case the system detects that this is going on, it will send one last email out, which contains a warning that due to rate limiting it will stop sending out new emails.

In case the flood of alarms ceases, the system will automatically resume sending out emails after 24 hours.

The rate limiter can also be reset manually on the VRM Portal:

1. In VRM go to the installation
2. Go to Settings → Alarm rules
3. In case the rate limiter is active, you'll see the below image.
4. Click on Reset rate limiter.



Rate limiter

Because of a high volume of alarms generated by this installation, the e-mail notifications about alarms have been suspended for 24 hours. You can reset this if desired, but if the root cause of the high volume of alarms is not remedied, notifications will be suspended again.

7. Remote firmware update

7.1. Introduction

This chapter describes how to update the firmware remotely via the VRM Portal. This functionality requires the device to be connected to a GX device (Cerbo GX, or other, whose firmware can also be updated via VRM).

See the demonstration video Remotely update VE.Direct firmware on Youtube

7.2. Details

7.2.1. Requirements

- GX device must be running Venus OS v2.17 or later

  To update the GX device itself remotely via VRM, it must be running Venus OS v2.80, preferably v2.90 or later.
- System must be connected to the internet and communicating to the VRM Portal.
- The VRM two-way communication setting, which is on the GX device menu Settings → VRM online portal, must be enabled.

7.2.2. Compatible products

The following product ranges can be updated remotely via VRM. Be sure to read the Limitations [38] section before performing a remote firmware update.

Product ranges for which the firmware can be updated remotely:

- Products connected via VE.Direct communication port:
  - MPPT Solar Charge Controllers, including MPPT RS (See note 1 below)
  - BMV Battery Monitors
  - SmartShunts
  - Phoenix Inverters
- Products connected via VE.Can communication port:
  - MPPT Solar Charge Controllers
  - Skylla-i battery chargers
  - Inverter RS, Multi RS and MPPT RS
  - Lynx Smart BMS
- Products that communicate with VRM via internet:
  - GX devices (see the Limitations [38] and Requirements [37] section for more info)

Victron Energy Multis, Quattros, and other VE.Bus-connected inverter/chargers can be updated as well, see these instructions.

7.2.3. How does it work?

1. The new firmware file is first uploaded to the system.
2. Once received and verified, the GX device starts updating the firmware of the connected device. This eliminates any problems that could be caused by an intermittent internet connection. In case the internet does break while performing the update, the system will continue with the firmware update.

7.2.4. Where to find the firmware file?

It is not necessary to get a file yourself; the VRM Portal already has all the latest firmware files available. See Victron Professional for the changelogs.

7.2.5. Notes on firmware updating in general

Stable systems should be left with their current firmware.

A firmware update may introduce new issues, either in the update process itself, or as a result of a change made.

It is not required to keep your Victron equipment updated to the latest firmware version.

Firmware updates should only be done when it is recommended to fix an issue you are experiencing, or add a new feature that is required by the installation.

- Newer is not always better
- Don't break it if it works

Changelogs can be downloaded from Victron Professional.

7.2.6. Limitations

- **MPPT Solar Chargers connected with VE.Direct**
  - During the update of a VE.Direct connected MPPT Solar Charger, any configuration in the device will be maintained, but in the event that the update fails, which is unlikely, VE.Direct MPPT Charge Controllers will have lost their configuration. Also it is not possible to reconfigure them remotely. All other devices work with a different process and will not lose their settings during an update; even if it fails.
- **BMVs**
  - Updating firmware on a BMV that is connected via a canbus interface is not possible.
- **Lynx Ion BMS Series**

  Remotely updating firmware of these Lynx series of products is not possible:

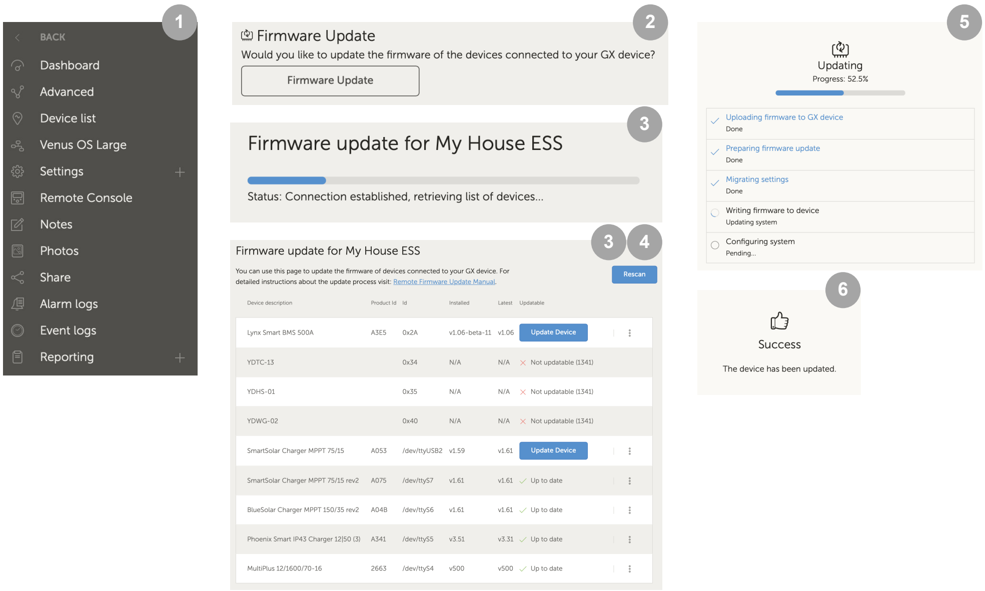
  - Lynx Ion - product-id 0x0142
  - Lynx Ion + Shunt 350 & 600A model: product-id 0xA130

  Whereas remote updating the Lynx Ion BMS 150A, 400A, 600A and 1000A model is possible.

  Notes:

  1. The firmware library does not always have the files. Download the file from Victron Professional and use the option to self upload a file.
  2. Make sure that the GX device is powered on the Aux-power output. That is the only port that will remain powered during the firmware update process. All others (main contactor, and also Allow-to-charge and Allow-to-discharge signals) will disconnect; causing Multis and also loads to switch off. Once the update is completed, the Lynx BMS will restart and restore everything.
  3. In case the update fails, it can be retried; just like all other products. But in case of the Lynx BMS, this has to be done within 5 minutes. Otherwise it will go to sleep mode and a push on the start button is required.
- **GX devices**
  - GX devices will not be shown in the device list of updatable devices if they are running a firmware version prior to v2.80.
  - It does not allow manual updating of the GX device.
  - The firmware version to search and update is the same as configured in the GX device Settings → Firmware → Online Updates menu. Example: If 'Image type' is set to 'Large' and 'Update feed' is set to 'Latest release candidate', the latest Venus OS Large beta firmware will be searched for and updated.

7.2.7. Step-by-step instructions



Firmware Update

Would you like to update the firmware of the devices connected to your GX device?

Firmware Update

Firmware update for My House ESS

Status: Connection established, retrieving list of devices...

Firmware update for My House ESS

You can use this page to update the firmware of devices connected to your GX device. For detailed instructions about the update process visit: Remote Firmware Update Manual.

Device description	Product Id	Id	Installed	Latest	Updatable
Lynx Smart BMS 500A	A3E5	0x2A	v1.06-beta-11	v1.06	Update Device
YDTC-13		0x34	N/A	N/A	✕ Not updatable (1341)
YDHS-01		0x35	N/A	N/A	✕ Not updatable (1341)
YDWG-02		0x40	N/A	N/A	✕ Not updatable (1341)
SmartSolar Charger MPPT 75/15	A053	/dev/ttyUSB2	v1.59	v1.61	Update Device
SmartSolar Charger MPPT 75/15 rev2	A075	/dev/ttyS7	v1.61	v1.61	✓ Up to date
BlueSolar Charger MPPT 150/35 rev2	A04B	/dev/ttyS6	v1.61	v1.61	✓ Up to date
Phoenix Smart IP43 Charger 12|50 (3)	A341	/dev/ttyS5	v3.51	v3.31	✓ Up to date
MultiPlus 12/1600/70-16	2663	/dev/ttyS4	v500	v500	✓ Up to date

Updating

Progress: 52.5%

- ✓ Uploading firmware to GX device
  Done
- ✓ Preparing firmware update
  Done
- ✓ Migrating settings
  Done
- ○ Writing firmware to device
  Updating system
- ○ Configuring system
  Pending...

Success

The device has been updated.

1. In VRM go to the installation and click Device list on the left hand menu.

2. Scroll down to the Firmware Update button. Click it.

3. After scanning for connected devices, a list of upgradable devices is displayed. Devices with an available firmware update have a blue Update Device button.

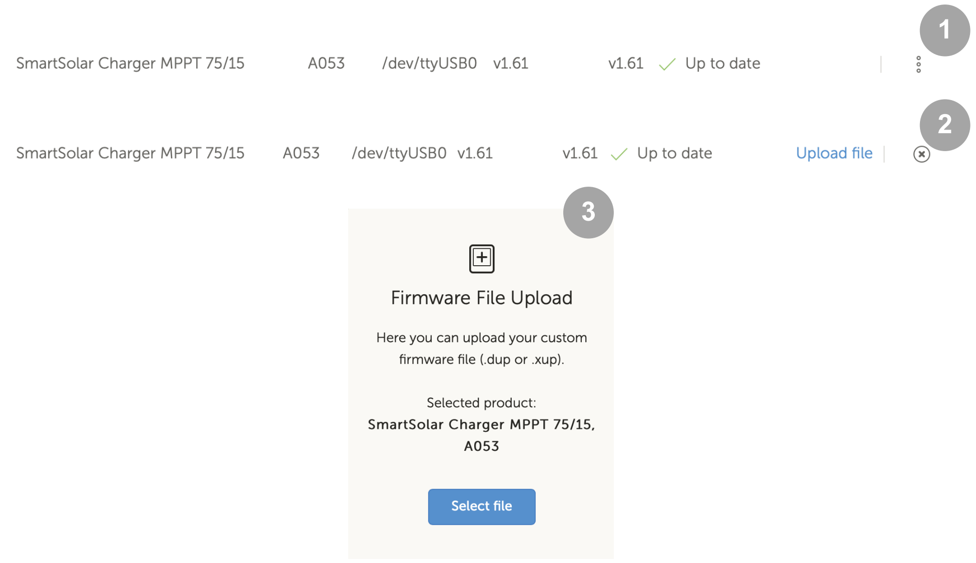
4. Click on one of the Update Device buttons (if available) to start the firmware update process for that specific device.

5. A pop-up window will appear showing the update process.

6. Once update is finished, another pop-up window will appear indicating that the firmware update was successful.

7.2.8. Manually uploading a firmware file

In most situations the system will already have a firmware file available; no need to upload anything yourself. Sometimes however it is necessary to upload a file from your computer; and this chapter explains how that's done.



SmartSolar Charger MPPT 75/15 A053 /dev/ttyUSB0 v1.61 v1.61 ✓ Up to date

SmartSolar Charger MPPT 75/15 A053 /dev/ttyUSB0 v1.61 v1.61 ✓ Up to date

Firmware File Upload

Here you can upload your custom firmware file (.dup or .xup).

Selected product:
SmartSolar Charger MPPT 75/15, A053

1. Start with having the system list the updatable devices as explained in the Step-by-step instructions [39].

2. Click on the three dots to the right of the device to be updated; The Upload file button will show.

3. Click that and select the file on your computer; the rest of the procedure will continue as explained in the previous chapter.

7.2.9. Troubleshooting

- Error 1341 Not updatable
  - Typically shows when it is not a Victron product.
- Error 1343 Not updatable: Blacklisted
  - See Limitations chapter [38]. The product you are trying to update cannot be updated remotely.

8. Remote VEConfigure

8.1. Introduction

This chapter describes how to remotely change settings in the MultiPlus, MultiGrid, MultiPlus-II, Quattros and high power Inverters; all power products with a VE.Bus communication port. A feature called Remote VEConfigure.

8.2. Requirements and limitations

This functionality requires a GX device (Cerbo GX or other) to be installed locally on the system.

1. A GX device running Venus OS v2.17 or later (latest official version is preferred).

2. The system must be connected to the internet and communicate with the VRM portal.

3. Two-way communication must be enabled.

4. The GX device must be powered directly from the battery. Therefore, do not power it with an AC adapter connected to the AC output of the inverter/charger.

5. VEConfigure

Details:

- Remote VEConfigure works for both, single-unit systems as well as parallel and three-phase systems.

- Remotely changing Assistant configuration is possible.

- VE.Bus firmware versions 416 and 417 can not be configured remotely.

- Remote configuring firmware version 418 or later requires the GX device to run v2.10 or later.

- To Remote VEConfigure a system connected to the GX device via a VE.Bus to VE.Can interface, as was done in old Hub-1 systems, this interface cable needs to run firmware version v2.05 or higher. If necessary, first update that interface cable with the Remote firmware update feature [37].

- This (new) way of Remote VEConfigure replaces the previous mechanism, that used VE.Power Setup. See here for the manual of the old procedure. Note that, once updated to the new Venus version, it is no longer possible to use the old procedure.

In some cases the VE.Bus system is momentarily switched off when the configuration is changed.

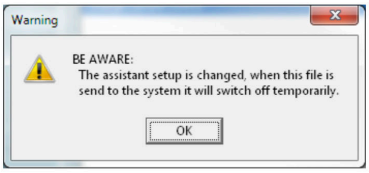
8.3. Step-by-step procedure

See the Remote VEConfigure using VRM video on Youtube

1. Check the requirements:
   - Venus OS v2.17 or later
   - Two-way communication enabled (see Settings → VRM online portal on the GX device)
   - Two-way communication up & running: check on the Device list page on VRM
2. On the VRM Portal, go to Device list and scroll to the bottom to find the Remote VEConfigure button on the VRM Portal.
3. Click the button and wait.
   - The system starts with reading all the settings of each inverter/charger in the system. This takes approximately 85 seconds per unit; and in case VEConfigure Assistants are used; then it will take longer: writing an Assistants takes anything between a few and 40 seconds per unit.
   - Once all data has been gathered; its compiled into a file and uploaded to your computer.
4. Download/save the .RVSC file to your computers downloads folder - do not 'open in VEConfigure' from your browser.
5. Modify the configuration by opening the downloaded .RVSC file in VEConfigure.
6. Save the file using the Close button in VEConfigure on the upper right. You will be asked if you wish to save the changes. Changes can be saved to both the .RVSC file, and also to another seperate .VSC file.
7. Be Aware - You can only upload the .RVSC file when using Remote VEConfigure. If the file is saved via the File, Save As menu, instead of closing VEConfigure and confirming the changes, it will save to a new .VSC file. This file can be opened, adjusted, and used to update locally with an MK3 adapter, but it cannot be uploaded to update a remote unit. You must use the .RVSC file downloaded from the system that you intend to change the settings of, and then upload that same file once changes are made.
8. On the VRM Portal, go to Device list and scroll to the bottom to find the Remote VEConfigure button on the VRM Portal.
9. Click the button and wait.
10. Click the Upload button, select the .RVSC file and click OK to send it to the system via the VRM.

8.4. System shutdown during reconfiguration

Many settings can be changed without resulting in a shutdown during the reconfiguration. Some settings though, such as a changed Assistants configuration, will cause the inverter/charger to momentarily switch off and back on again. In such situations, VEConfigure will warn when saving the settings:



BE AWARE:
The assistant setup is changed, when this file is send to the system it will switch off temporarily.

Known issue: Venus versions v2.23 and below always reset the Multi when the following settings are changed:

1. Battery Capacity
2. Start and stop limits for low power AES mode
3. State of charge when Bulk finished (only resets with Multi firmware versions < 200)

Depending on how the internet communication equipment (i.e. router) is powered, the internet connection might also be temporarily lost at that time.

This is not a problem, as the file is first uploaded to the GX device and only once received and verified it will be written to the VE.Bus system.

9. Two-factor verification

9.1. Introduction

Protect your account against unauthorized access with two-factor verification. Two-factor verification adds an extra layer of protection to your account by requiring you to enter both your password and a security code when logging into your VRM installation. The code can be sent to a phone number via SMS or obtained through an authenticator app.

This chapter describes how two-factor authentication can be switched on or off for your VRM account. The activation sequence for each two-factor authentication method is detailed below in its own section.

If you want to deactivate two-factor authentication, please refer to the last section.

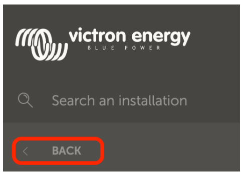
9.2. Accessing two-factor verification settings

By default, a password (the one you registered) is required to log in.

Before making changes to the two-factor verification settings on your account, you will be required to authorise those changes. This section explains where to find the two-factor verification menu and how to use it.

1. Log into your account at https://vrm.victronenergy.com/user/login

2. Once logged in, you will be redirected to your VRM homepage. On this page click 'Back' on the left as shown in the image below, where 'Back' is marked with a red box.

3. Click on Preferences in the menu on the left.

4. Next click on Two-factor verification on the left.

5. To be able to make changes, click the 'Make changes' button that appears and verify with your password. This is only necessary once per session.

6. Choose between Password only, SMS verification or Authenticator app.

7. To authorise making changes to the two-factor verification settings you are required to perform the already configured two-factor verification process.

   The authorisation form will indicate to you what information to provide.

   - In the case of Password only setting you are only required to enter your password.

   - If the active two-factor verification mode is SMS, then you will receive a security code on the phone number registered on your account. Otherwise, you will be asked to enter the country code and phone number in case you want to authorise your account via SMS in the future. You will then receive an SMS with a verification number.

   - When using an authenticator app, use the app to generate the required security code.

8. After filling in the required information, click the green button labelled ‘Verify’ to continue.

9. If the verification code is correct, you will be redirected to the two-factor verification settings page. The blue 'Make changes' button should have disappeared and you can now make changes to your settings.

9.3. SMS verification

With SMS verification mode, each login attempt will require you to enter a unique SMS code to verify your identity. In addition, the two-factor verification settings page will also be protected by the same verification sequence.

9.3.1. Activation

This section details how to activate SMS verification as two-factor verification mode.

1. Navigate to the two-factor verification settings menu and authorise making changes (see Accessing two-factor verification settings [44] section). To start setting up SMS verification, click the SMS verification labelled option on the menu on the left.

2. With the left dropdown select the prefix of your phone number, most likely this is the same as the country you reside in. Fill the remainder of your phone number into the Phonenumber input box.

3. Proceed by clicking on the green 'Next' button. This will cause a test SMS to be sent to the phone number you entered. Make sure you have access to the phone with the chosen phone number and that it is able to receive the test SMS.

4. It may take a moment for the test SMS to be received, the SMS should contain the verification code to verify. Enter the code into the input box fully and select the green 'Verify' button to confirm the code.
   - You can change the phone number by clicking on the '(Change)' link next to the phone number display. This will bring you back to the previous step, allowing you to send a new test SMS.
   - In the event of an error or failure to receive the SMS, double check the phone number on the screen.

5. When the test code is verified, you will see confirmation to indicate the completion of the SMS two-factor verification setup. Immediately after this, any future login attempt will require you to enter an SMS code as part of the login sequence.

9.3.2. Change phone number

Once the SMS verification mode is activated, you can change the phone number on which to receive the SMS verification using the button labelled “Change” next to the phone number display. The procedure to change the phone number follows the same steps as in the activation of the SMS verification mode. Please refer to the Accessing two-factor verification settings [44] section for a detailed explanation on each step.

9.4. Authenticator app

Protect your account through an authenticator app. This is a mobile phone app that will generate security codes used during logins.

9.4.1. Activation

This section details the steps taken to link an authenticator app to your VRM account. The guide assumes that an authenticator app has been installed (by you) on the device you wish to use for two-factor verification.

1. Navigate to the two-factor verification settings menu and authorise making changes (see Accessing two-factor verification settings [44] section). To start setting up mobile authenticator verification, click the Authenticator app labelled option on the menu.

2. Open the authenticator app and select to add an account (this varies per app, in some cases it may also be labelled 'Scan code'). Authenticator apps are linked by scanning a QR code, this must be done using the QR code on the setup page.

   Should it be the case that you are visiting VRM on the phone that has the authenticator app, then you can tap the 'Use this phone' link to activate the authenticator app directly. Note: This requires the authenticator app to be installed on your phone.

3. Once the app has scanned the QR code, finish creating the profile in the authenticator. Use the new profile to generate the first security code (6 digits) and enter it into the 'Two-factor verification code' labelled input box. If the security code is not immediately visible, the app may require you to tap the profile or a similar interaction to generate the code. After entering the code, click the 'Verify' button next to the input box to complete the link. The codes generated by the authenticator app are only valid for a short period of time (about 30 seconds), so if the verification fails it may be that the code already expired.

4. When the verification of the generated code passes, the screen shown below is shown. From here you can immediately add more devices or go back to settings. You can also add more devices at a later point in time.

9.4.2. Adding another device

Once activated, you can link more devices to use for two-factor verification. You can use any single-linked device for the two-factor verification during login.

To add more devices, use the 'Add device' button on the two-factor settings page. The process thereafter is the same as for the initial activation sequence (see activation section for steps).

9.4.3. Removing device

It may be the case that you want to remove a linked device such that it can no longer be used for two-factor verification. To do this you will have to use the 'Revoke devices' button on the settings page, this will revoke ***all*** devices to your account. The revoke process is carried out by successfully making a new link to a device, this invalidates all previously linked devices. You can reuse an already linked device during the revoke process. The process thereafter is the same as for the initial activation sequence (see activation section for steps).

9.5. Disabling two-factor verification

You can completely disable two-factor verification on your account by clicking on the 'Password only' option on the two-factor verification settings page.

Disabling two-factor verification removes the two-factor verification data for the other methods you setup. Meaning that switching back to a different verification mode afterwards will require you to go through the entire setup process again for that verification mode.

1. Navigate to the two-factor verification settings menu and authorise making changes (see Accessing two-factor verification settings [44] section). To disable two-factor verification, click the 'Password only' labelled option on the menu. This is the red outlined option in the image below. If this option has a blue checkmark, then two-factor verification is already disabled.

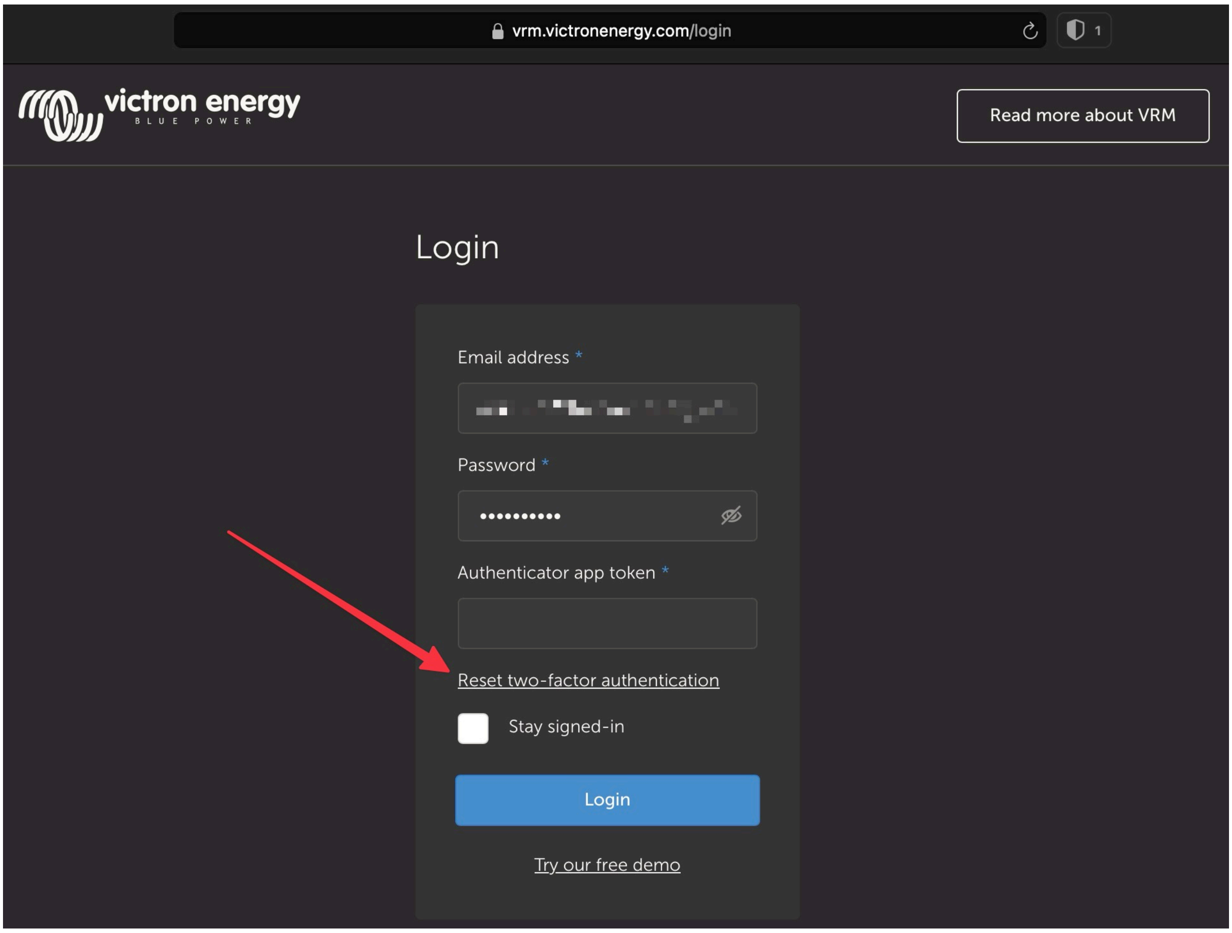
2. Mark the checkbox to indicate you want to proceed with switching back to password only protection on your account. Then you can click the red confirmation button, immediately afterwards any future login attempts will only require you to enter a password.

9.5.1. Resetting two-factor verification

When trying to log-in, after entering the password, below the 2FA box there is an option to "Reset 2 Factor Authentication"

You can reset 2FA by following these steps:

- Fill in email & password
- Click the "Reset two-factor authentication" text link
- Fill in your email (again)
- An email is sent to that mail account with a hyperlink
- Clicking the link resets 2FA

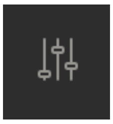
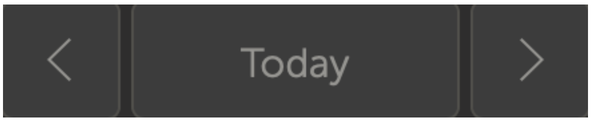


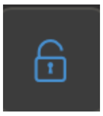
10. Advanced Dashboard - Analyse the data of an installation

The VRM Advanced Dashboard offers a number of different widgets/charts with a wide range of parameters and values (depending on the installed devices) and other tools to perform extensive diagnostics of the installation.

The widgets are mostly charts or summaries of data over a selected time period.

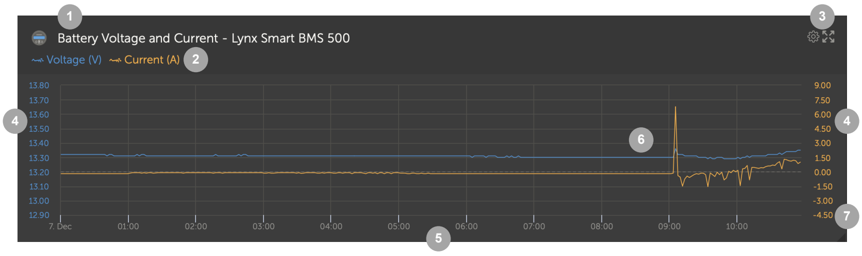
> Saving advanced widgets is only available to full control users of an installation

- To set up widgets, open the Advanced page from the VRM menu sidebar
- Click the small control widget button in the top right of the advanced page to get to the widget selection page.
- 
- This reveals the widgets available of your system, you can enable or disable them by clicking on them. Once the widgets you want are selected, you can hide the selection menu again by clicking the control widget button
- To organise the charts, each widget has a small triangle on the bottom right. It allows dragging and resizing the chart between 3 different column widths. Click and hold the widget in the top to drag it to the preferred position. This way you can visually merge related parameters of different devices when you are looking for a specific issue or want to perform advanced diagnostic.
- Use the date picker to quickly select pre-set time ranges or apply a custom time range.
- 

- And when everything is set up, lock the widgets by clicking on the lock icon so they can't be accidentally moved.
- 

> - Select a larger time frame and then simply click and drag to zoom in on the chart at events of interest.

This is how an advanced widget chart looks:

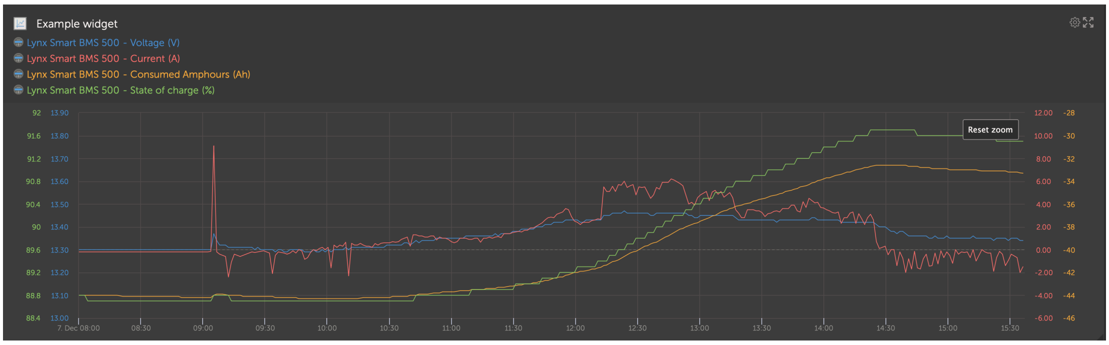


1. Device name and displayed parameters
2. Legend: By clicking on the individual parameters, the associated plot is hidden. Another click makes it visible again.
3. A click on the cog wheel reveals additional widget options: Activating the widget, show min - max range values and reset the graph zoom.

   Clicking the cross will enlarge the chart to its largest size.

4. The y-axis is scaled automatically.
5. The x-axis is scaled automatically as well.
6. The plot: click & drag into the plot to zoom in on interesting events.
7. Small triangle: drag and resize the chart.

10.1. Custom widgets



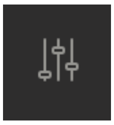
While the advanced widgets are non-modifiable and predefined by the system, there is an option to create custom widgets and add them to the advanced dashboard.

With custom widgets, system values can be displayed and compared with each other on the same graph, which is particularly helpful for system diagnosis.

The advantages:

- **To set up a custom widget**
- **1.** Go to the advanced dashboard.

  2. Click the control widget icon in the top right.

  3. Scroll down the list of available widgets to the bottom.

  4. The last widget in the list is called Custom Widget (this is also the place where all custom widgets are stored), click it.

  5. Click the Create custom widget button.

Custom widget options

- **Custom widget name**

  This will be shown in the custom widget selection area, and also be the title of the widget when it is enabled

- **Customisable y-axis (default, individual, or manual range for all)**

  A customisable y-axis allows for the best representation of your data. The default option will provide the normal automatic range for each parameter. Individual allows you to customise each y-axis with a maximum, minimum and number of interval tick points you would like to see. Manual range for all makes a single y-axis that all parameters share. This can be useful for comparison where you might not need to see the full range of data, such as only showing high voltage range.

- **Add up to 6 y-axis device parameters in one widget**

  You can add a maximum of 6 parameters per custom widget. This allows for comparison of voltage and current of each phase of a 3 phase system on a single chart.

- **Additional parameters/data to choose from beyond the default advanced parameters**

  There are many undocumented data points collected by VRM that are only available via the custom widget function. Not all are populated with useful data for all systems.

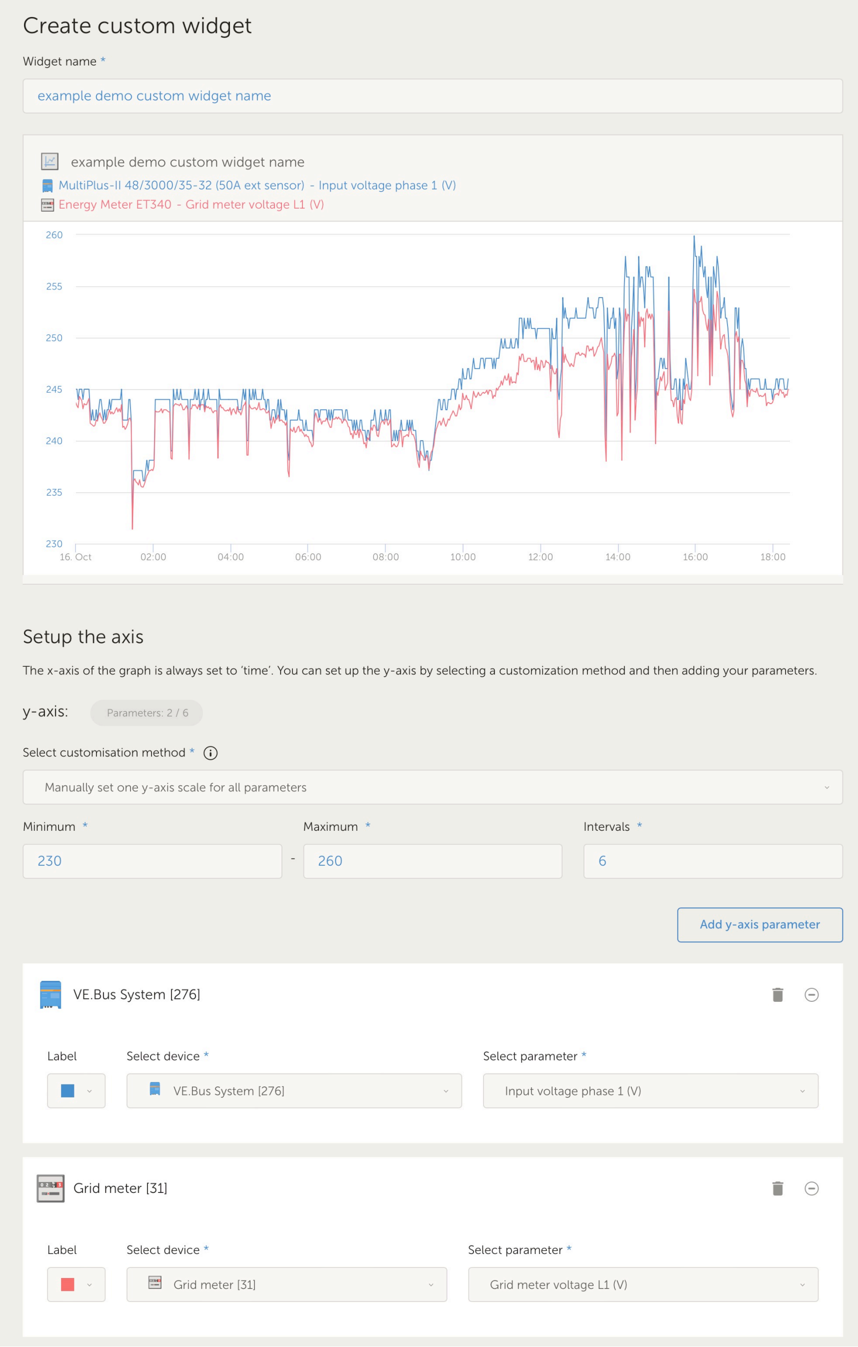
- **Custom colour labels**

  Each parameter needs to be assigned a different colour label.

- **Preview while creating the custom widget**

  As you make changes and add parameters to your custom widget the preview will be updated in real time.

- **Editable or deletable at any time once saved**
  Once saved you can edit or delete your custom widget from the same widget control area that you created it.



Create custom widget

Widget name *

example demo custom widget name

example demo custom widget name

MultiPlus-II 48/3000/35-32 (50A ext sensor) - Input voltage phase 1 (V)

Energy Meter ET340 - Grid meter voltage L1 (V)

Setup the axis

The x-axis of the graph is always set to 'time'. You can set up the y-axis by selecting a customization method and then adding your parameters.

y-axis: Parameters: 2 / 6

Select customisation method *: Manually set one y-axis scale for all parameters

Minimum *: 230 - Maximum *: 260 Intervals *: 6

VE.Bus System [276]

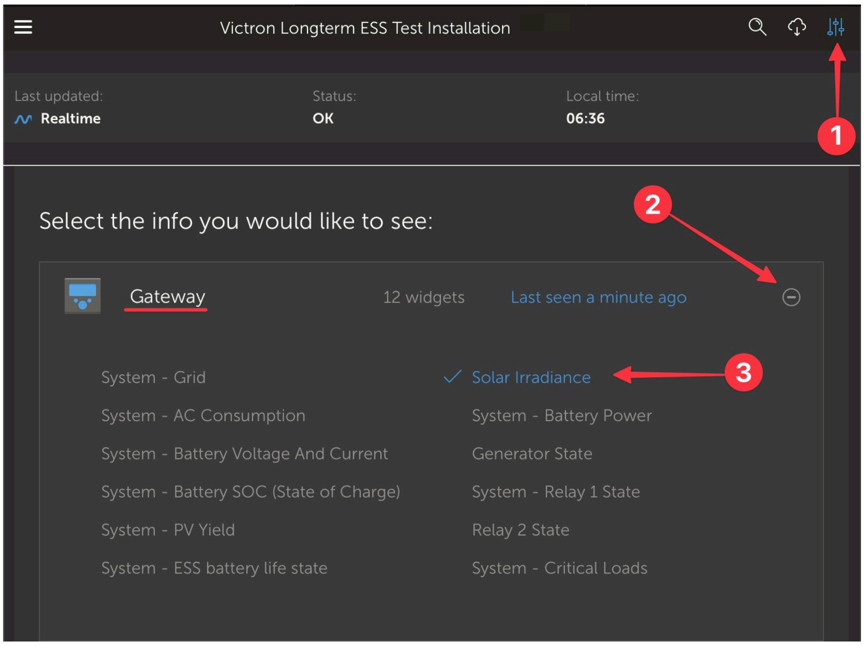
Label: 🟦 Select device *: VE.Bus System [276] Select parameter *: Input voltage phase 1 (V)

Grid meter [31]

Label: 🟥 Select device *: Grid meter [31] Select parameter *: Grid meter voltage L1 (V)

10.2. Solar forecast

In addition to the dashboard estimate, we also have the underlying Solar Irradiance Forecast (W/m²) available as a new advanced VRM widget.

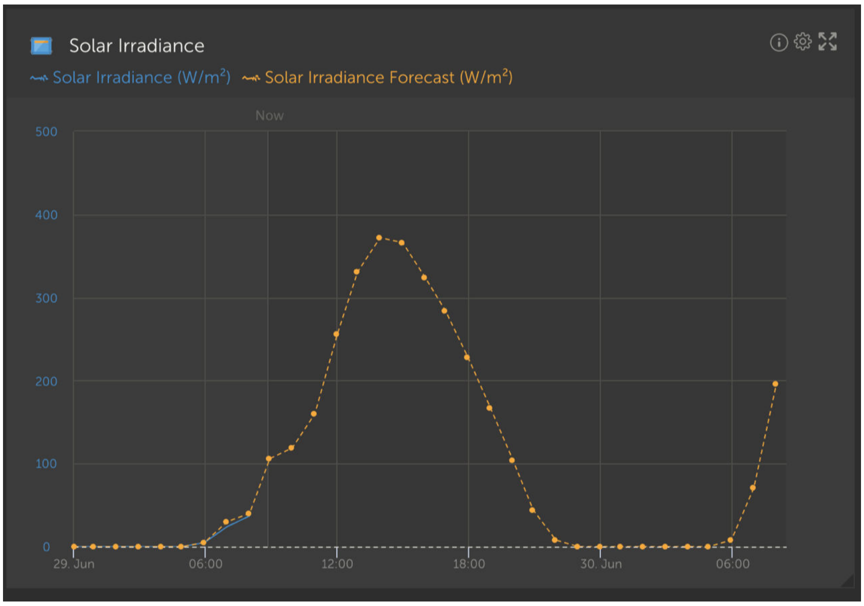


Select the info you would like to see:

Gateway 12 widgets Last seen a minute ago

- System - Grid
- System - AC Consumption
- System - Battery Voltage And Current
- System - Battery SOC (State of Charge)
- System - PV Yield
- System - ESS battery life state
- ✓ Solar Irradiance
- System - Battery Power
- Generator State
- System - Relay 1 State
- Relay 2 State
- System - Critical Loads

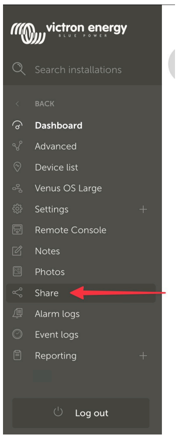
Like the dashboard, in the ‘Today’ time frame view, this widget operates slightly differently to the rest and will expand out its time x-axis to include the whole 24 hours so you can see the estimate for that day.

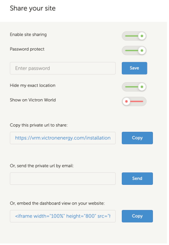


11. Share your site

You can share your VRM site using the 'Share' menu in the left hand side bar of your installation.

Sharing varies from adding a user to the site as they are not required to create a VRM account. Instead of the site being linked to their account it is accessed via a special URL.





Share your site

Enable site sharing
Password protect
Enter password — Save
Hide my exact location
Show on Victron World

Copy this private url to share:
https://vrm.victronenergy.com/installation — Copy

Or, send the private url by email:
Send

Or, embed the dashboard view on your website:
<iframe width="100%" height="800" src="h — Copy

No settings will be shown until site sharing is enabled - all site sharing features are disabled by default.

You can protect your site sharing with a password.

'Hide my exact location' will reduce location data accuracy for shared site access visitors to several sq km.

Show on Victron World will place your site on the public Victron World site - for more information about Victron World see this blog.

A private URL allows you send a link to someone, or post it on the internet sharing this URL will mean as long as sharing is enabled anyone who has it will have read-only access to your site.

If you would prefer to control individual access use the add user feature instead, which you can revoke.

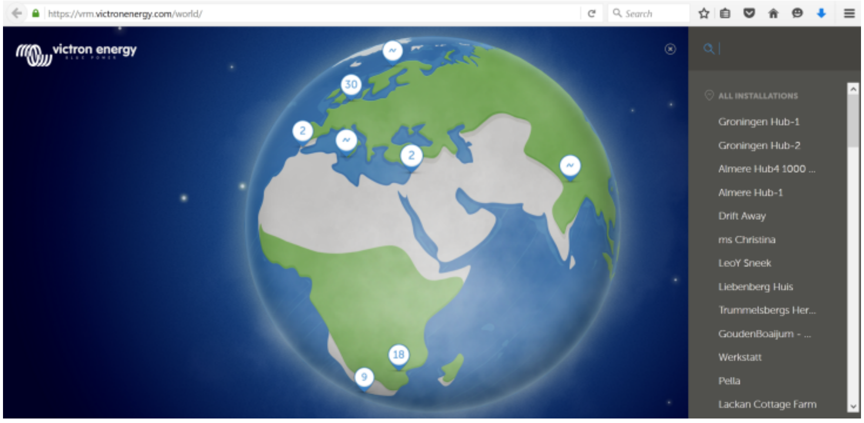
Alternatively you can change the password.

The embed option allows you to insert an iframe of your system dashboard into your own website. How this is done will vary depending on your hosting, search your content management documentation for 'inserting an iframe' and it should explain where to insert this code.

> These sharing options do not support real-time data, and will use the VRM update frequency you have set on your GX device.

11.1. VRM World

VRM World is a way to publicly share your VRM site data to the world via a searchable world map.



Access to your site configuration, precise location and any private details are excluded.

You can Visit VRM World at vrm.victronenergy.com/world

In order for your site to show up on VRM World, it needs to:

- Have sharing on VRM World enabled in VRM.
- Have fresh data (last update within the last 24 hours)
- Have data for at least one of the following: solar yield, battery SOC, AC power in or consumption
- Have its location configured (set manually in VRM or via a connected GPS)

Sites which do not meet these requirements will be hidden on VRM World. Whenever they meet the requirements again, they will show up again. If your site isn't visible despite having enabled sharing, please check that it meets the other requirements.

If your site meets the above requirements you can enable sharing your site via VRM. To do so, go to the site you want to share in VRM and click the Share menu item in the left sidebar of your installation. Here, enable the option to 'Share publicly on VRM World'.

What happens when you share your site on VRM World?

- It will be shown on the digital globe on VRM world
- Anyone will be able to click the 'Visit' button and see the site data, similar to using a private sharing link.
- The precise location will not be shown, and visitors will not be able to change any settings, nor see phone numbers nor other privacy sensitive information.

12. Event Logs

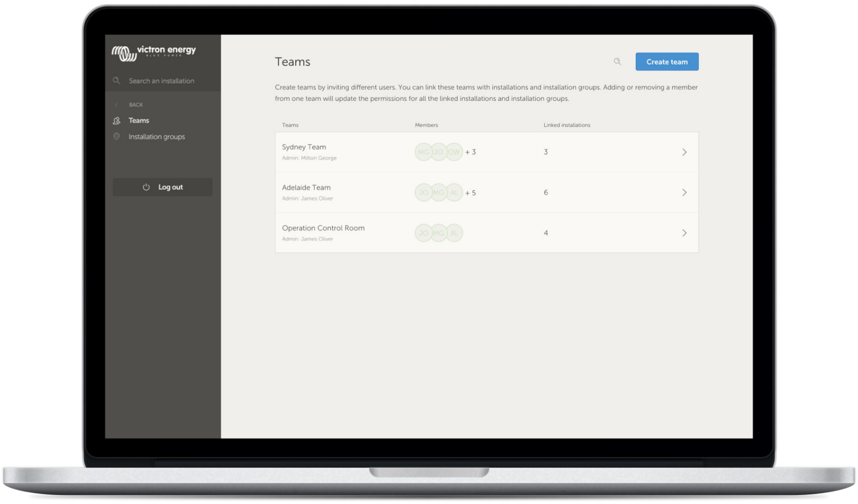
Certain data is logged in the VRM Portal, which can be viewed later to be included in troubleshooting a system.

- **Alarm logs**
    - See which device triggered an alarm, the type of alarm, when the alarm started and when it was cleared.
- **Event logs**
    - The event log contains data that you can use to view specific changes to the installation down to the minute, for example, firmware updates, which controls were activated or deactivated by whom, ESS status changes, who accessed the Remote Console, tag changes, user permission changes, etc.

Note this log data cannot be modified. If you wish to clear log data you will need to delete the installation (including all other history data), reboot the GX device, and start again.

13. Managing multiple installations with user teams and installation groups

User teams allow you to put multiple users together in a team, and then give the team access to installations. Making it easy to add a new colleague as well as remove access in case someone leaves the team or company.

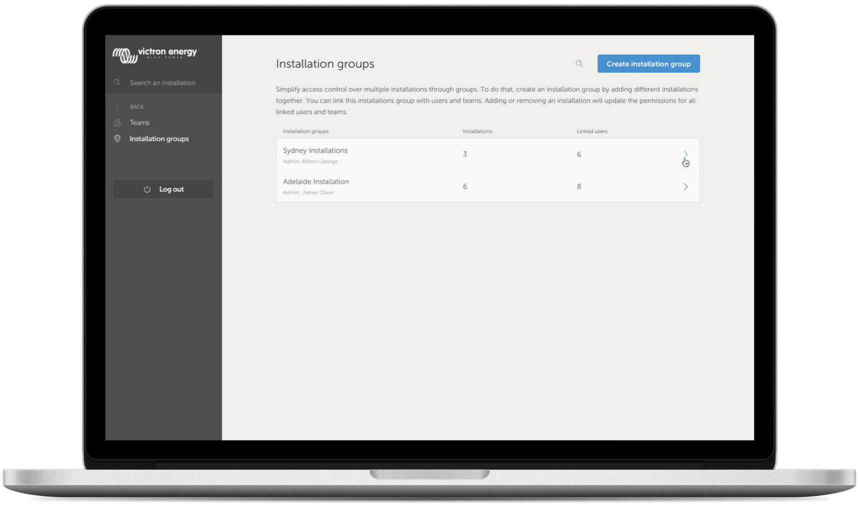


Teams

Create teams by inviting different users. You can link these teams with installations and installation groups. Adding or removing a member from one team will update the permissions for all the linked installations and installation groups.

Teams	Members	Linked installations
Sydney Team Admin: Milton George	MG JO OW + 3	3
Adelaide Team Admin: James Oliver	JO MG AL + 5	6
Operation Control Room Admin: James Oliver	JO MG AL	4

Installation groups are similar. Allowing you to group multiple installations together, and then manage user access on the level of that group rather than per individual installation.



Installation groups

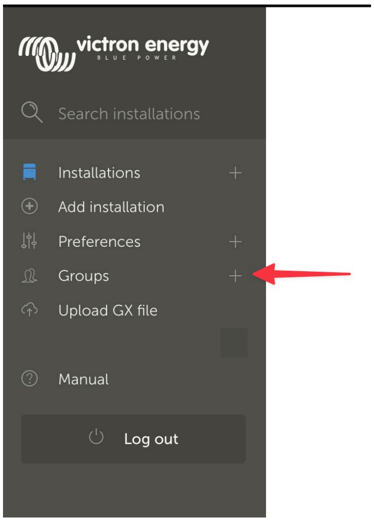
Simplify access control over multiple installations through groups. To do that, create an installation group by adding different installations together. You can link this installations group with users and teams. Adding or removing an installation will update the permissions for all linked users and teams.

Installation groups	Installations	Linked users
Sydney Installations Admin: Milton George	3	6
Adelaide Installation Admin: James Oliver	6	8

It is possible to link:

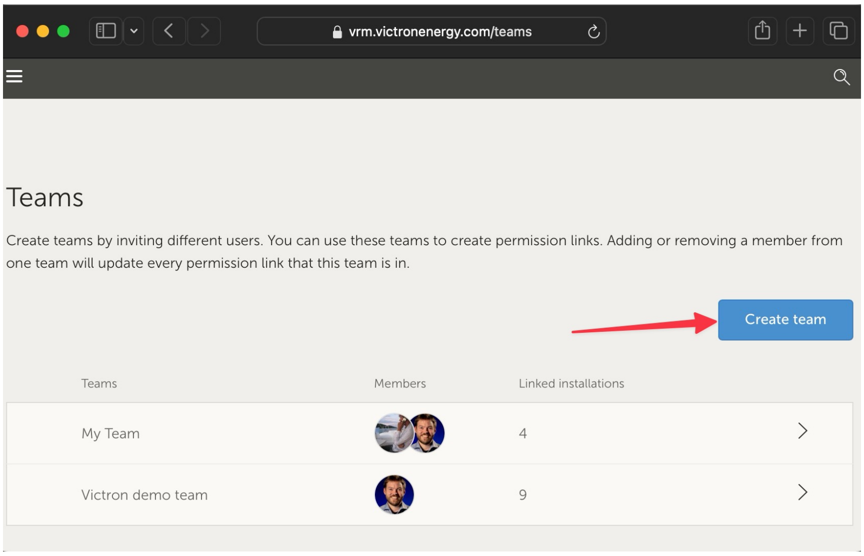
- An individual user to an individual installation
- A group of users as a team to an individual installation
- An individual user to a group of installations
- A group of users as a team to a group of installations

The 'Groups' settings are accessible via the top level menu of your VRM account.



Creating a new team

You can create a new team by opening the Groups menu, selecting Teams, and Create Team.



Teams

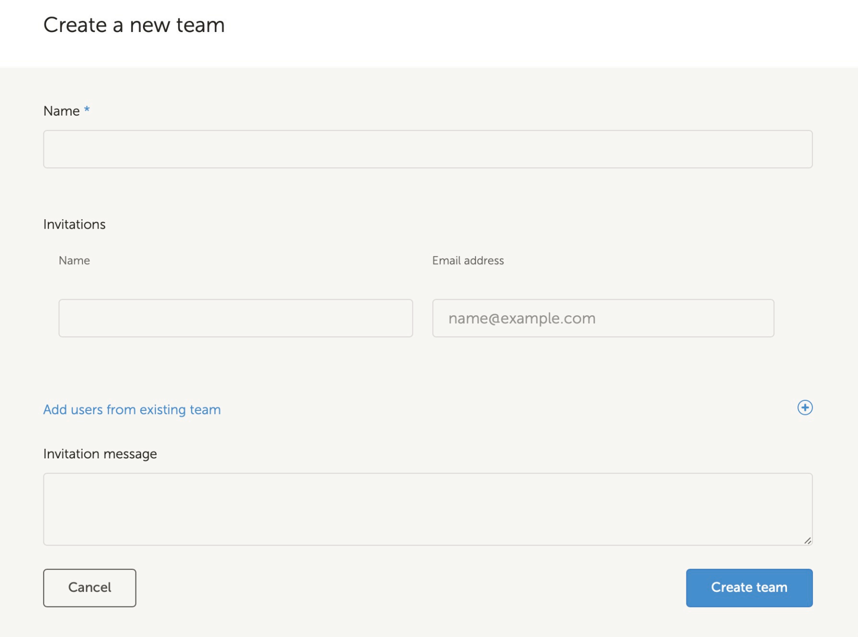
Create teams by inviting different users. You can use these teams to create permission links. Adding or removing a member from one team will update every permission link that this team is in.

Teams	Members	Linked installations
My Team		4
Victron demo team		9

When creating a new team you are automatically made the team admin.

You can name the team, invite other VRM users to join, and add users for another existing team.

Adding an existing team can save time if you have a big team, and then quickly add or remove individual people who you don't want in the new group before saving the selection.



Create a new team

Name *

Invitations

Name	Email address
	name@example.com

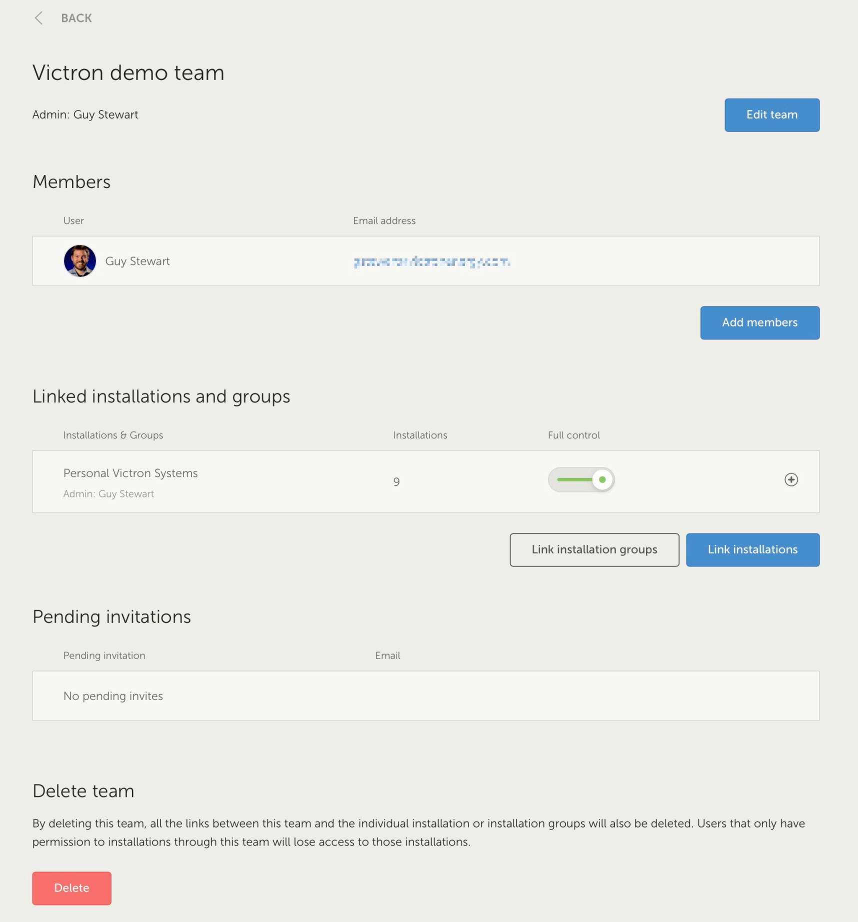
Add users from existing team ⊕

Invitation message

Cancel   Create team

Once you have created the new team and added other users, the team will appear in the teams page. From there clicking to open the team will allow you to add additional users, and also link specific installations, and installation groups.

If you have full control for an installation, you can share full control with the team.



< BACK

Victron demo team

Admin: Guy Stewart

Edit team

Members

User	Email address
Guy Stewart	[redacted]

Add members

Linked installations and groups

Installations & Groups	Installations	Full control	
Personal Victron Systems Admin: Guy Stewart	9	●	⊕

Link installation groups   Link installations

Pending invitations

Pending invitation	Email
No pending invites	

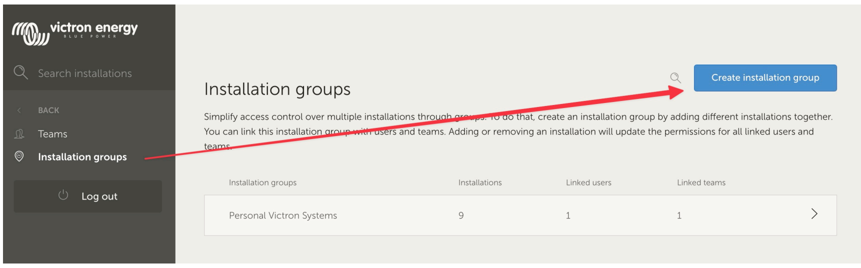
Delete team

By deleting this team, all the links between this team and the individual installation or installation groups will also be deleted. Users that only have permission to installations through this team will lose access to those installations.

Delete

Creating a new Installation group

You can create a new installation group by opening the Groups menu, selecting Installation groups, and Create Installation group.

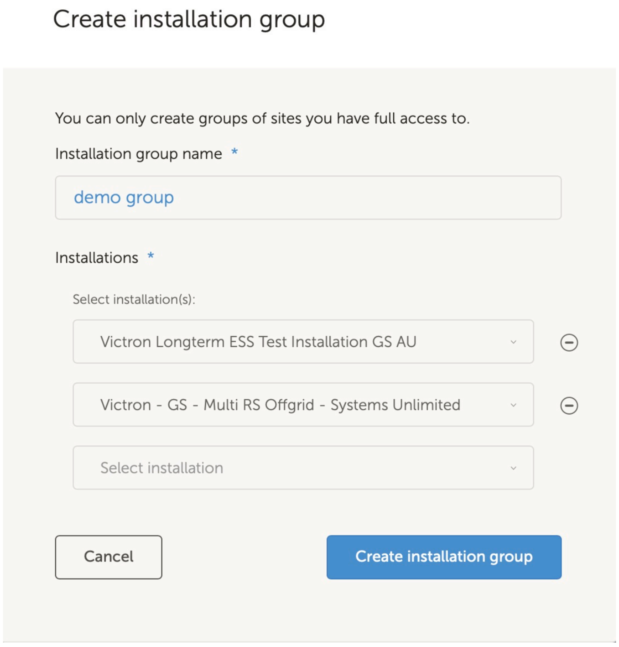


Installation groups

Simplify access control over multiple installations through groups. To do that, create an installation group by adding different installations together. You can link this installation group with users and teams. Adding or removing an installation will update the permissions for all linked users and teams.

Installation groups	Installations	Linked users	Linked teams
Personal Victron Systems	9	1	1

Add an installation group name, select the installation from the pull down menu, or using the search tool. You can only add installations that are already linked to your VRM user account.



Create installation group

You can only create groups of sites you have full access to.

Installation group name *

demo group

Installations *

Select installation(s):

Victron Longterm ESS Test Installation GS AU

Victron - GS - Multi RS Offgrid - Systems Unlimited

Select installation

Example of when to use teams and installation groups

A company rents out and maintains hybrid generators throughout Australia.

They also have teams of technicians taking care of those, some located on the Gold Coast, others near Perth and also a team around Sydney, one in Adelaide and so forth.

First group the installations together by location. For example a group called Sydney, with all hybrid generators rented out from the Sydney branch. And another one called Adelaide, and so forth.

Next make user teams, one for each area again. Then link those installation groups and the user teams together, by giving the teams access to their regional installation groups.

Lastly, perhaps there is a nation wide operation control room, make another team for those users, giving them the required access (read-only, or full) for all of the installation groups.

Now, with all that set-up, adding a newly commissioned hybrid generator is very simple, just add it to VRM and then add it to the right installation group. All users in that group will automatically have access.

Similarly, when adding new technicians, they only need to be added to the right group. Also when saying goodbye to a technician, access to all system can be easily removed by the group admin.

Instead of having a single VRM user credential that is shared by several people, this method allows far better security, control and management.

14. Frequently asked questions

14.1. In systems with a BMV, the VE.Bus state of charge is hidden. Why?

- If a BMV is in the system, the VE.Bus state of charge (SoC) is not stored into the VRM Database.

- When there is a BMV in the system together with a Multi or Quattro, there are two state of charges being calculated for the same battery. Since the algorithms differ (see next FAQ entry for more information) they will hardly ever show the same percentage, and showing both causes confusion and questions.

14.2. What is the difference between the BMV SoC and the VE.Bus SoC?

SOC stands for state of charge. The BMV SoC is the state of charge measured by the BMV Battery Monitor. It calculates this value based on measurements taken by the shunt. And, assuming the shunt is installed in the correct place in the system, it takes into account all the loads and chargers.

The SoC taken from VE.Bus is calculated by our Multis and Quattros. To calculate the SoC, they use only the internally measured charge and discharge currents. Because of this you can only use it for some system types, see here for which ones. The battery capacity can be configured with VEConfigure.

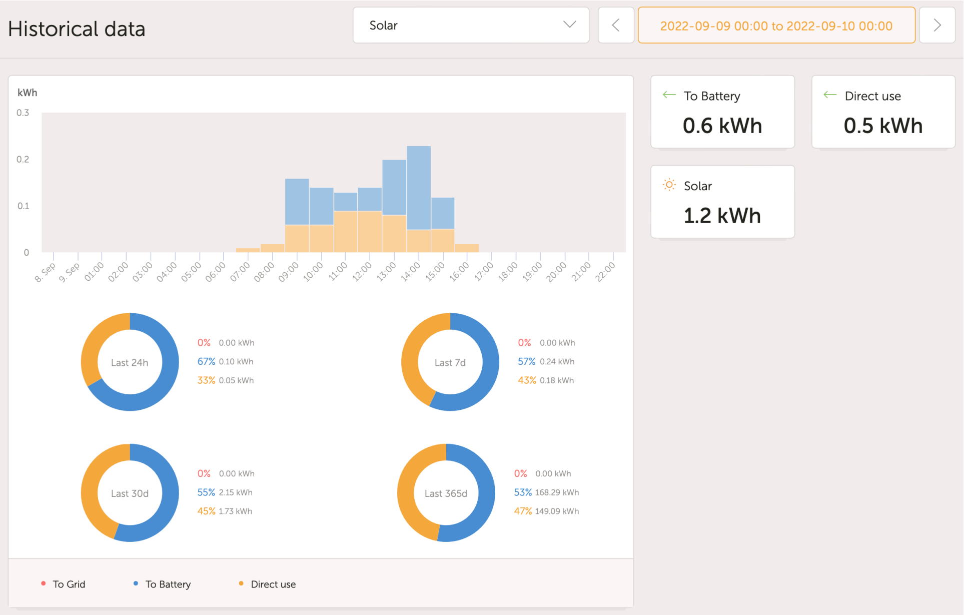
BMV SoC vs VE.Bus SoC algorithm

The BMV has the advantage in its calculations that it sees all DC currents: so this includes MPPT solar charger currents, DC loads (typical in marine and automotive applications, for example alternators, lights and pumps), or other DC chargers. The Multi and Quattro have the advantage that it knows when the bulk state is finished, and can then sync the VE.Bus state of charge to 80%. Instead of (as the BMV does) having to wait until the battery is really full (sync parameters are met), and only then will it sync to 100%. See also Battery State of Charge (SOC) in the GX device manual.

14.3. What are the requirements for the Solar yield and Consumption tab?

These are the Solar yield and the Consumption tab on the VRM Portal:

- **Solar:**



Historical data

Solar

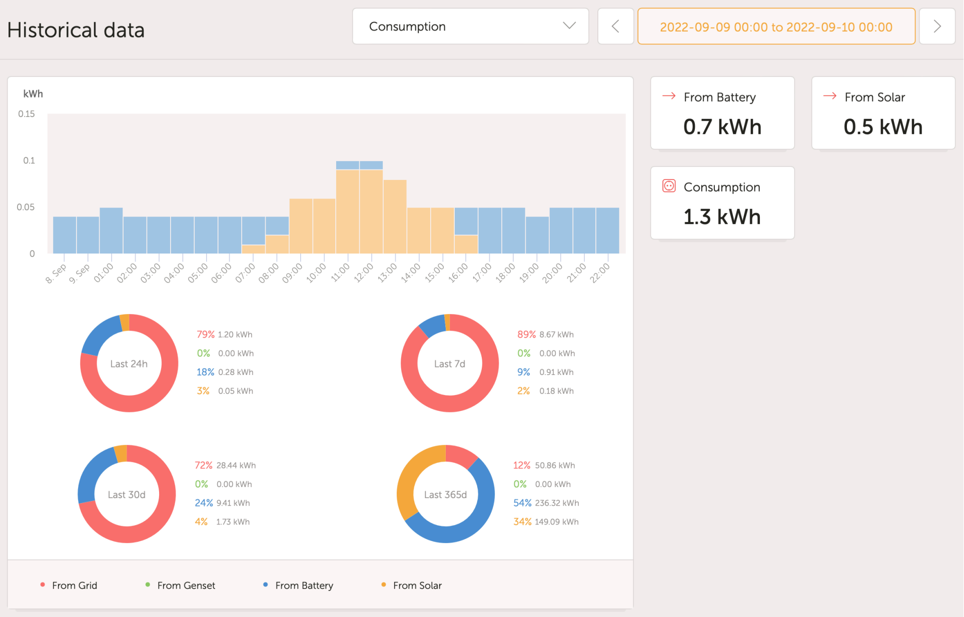
2022-09-09 00:00 to 2022-09-10 00:00

To Battery 0.6 kWh

Direct use 0.5 kWh

Solar 1.2 kWh

- **Consumption:**



These graphs work on information calculated by the GX device, based on energy counter values read from connected devices.

General requirements

- GX device e.g. a Cerbo GX with latest firmware version
- Multi or Quattro with a 26 or 27 hardware: the 7 digit firmware number needs to start with 26 or 27. If it starts with 19 or 20, the product has old hardware. To get the consumption and solar yield tabs working for these products, the product needs to be replaced or get an control board upgrade.
- Multi or Quattro firmware needs to be recent as well:
  - 1xx firmware (virtual switch), needs to be xxxx159 or newer
  - 2xx firmware (assistants gen1), needs to be xxxx209 or newer
  - 3xx firmware (assistants gen2), needs to be xxxx306 or newer
  - 4xx firmware: all versions will work
  - More information: VE.Bus firmware versions explained

Extra requirements for systems with AC Coupled PV (i.e. a grid-tie inverter on the output), for example ESS

- PV Inverter power and energy needs to be measured. For example a direct Fronius connection, or with our AC Current Sensor.
- There's an issue when a single EM24 three-phase meter is used to measure both grid- and PV-power (grid on its phase 1 terminals and PV power on phase 2). In this case the solar to grid value is incorrect. The solution is to use an ET340 or ET112. See Energy Meters for details.
- When using the AC Current Sensor, make sure to use the latest version of the Assistant, as released in October 2014. See the AC Current Sensor Assistant.

'Has DC system' GX device setting related limitations

‘Has DC system’ is a feature on a GX device. When that config switch is enabled, a new box called 'DC Power' appears on the GX display. Its value is calculated from the differential between the power measured by the BMS or battery monitor, and the power flow measured by the inverter/charger and other sources that are actively monitored by the GX. Its typical use is in Marine and Automotive applications, as they have alternators, and lights, fridges, and many more DC loads. For more details, see the GX device manual.

- If this feature is enabled, and the used battery monitor is a BMV 700 or 712, then the minimum required BMV firmware version to make the VRM Energy dashboards operate correctly is v3.08.

- The calculated value for 'DC Power' is not used in any way by the GX, beyond just being displayed 'on screen'. In particular it is not logged on the VRM portal and it is not included in system calculation and it does not appear as part of the recorded Solar Yield.

Other limitations

- A system with multiple MPPTs, even a mix of VE.Can and VE.Direct, is supported: the algorithm will totalise all the counters - as long as they are all actively monitored.
- Multiple AC current sensors measuring multiple PV inverters is supported as well.
- These overviews work correctly when Victron Solar Chargers are used. When one or more non-Victron solar chargers are used, the system cannot read their energy yields, and because of that the resulting overviews are incorrect and unreliable.
- The VGR, VGR2 and VER do not provide any energy data.
- Combining MPPT Solar Chargers and PV Inverters in a system is supported.

Note that the same data used to show these energy graphs is also available as a download. See the Advanced tab on VRM, and then the download icon on the top right.

14.4. How does the screensaver work? How is the displayed state determined?

The screensaver is disabled by default but can be configured in your profile settings to automatically show after a period of inactivity. You can also open the screensaver directly by pressing the 's' key twice.

The screensaver displays which source of energy your installation is currently running on. This is determined by looking at which source of energy (the sources being solar, generator, battery and grid) is delivering the largest amount of energy to consumers (locally connected devices using the energy). Then, if no consumers are using any power, it looks at which source provides the largest amount of energy to the battery. Then, if no battery is connected or it is not being charged, it looks at which source is delivering the most energy back to the grid. If at this point the source is still not determined, apparently no energy is being produced or used anywhere, and the state defaults to 'on grid'.

14.5. I want to analyze the data in a spreadsheet, how do I do this?

1. Open the Advanced tab.
2. Choose a date range.
3. Click the download button at the top right. A link where to download the spreadsheet (choose between CSV or XLS) will be sent to you email address.

14.6. How can I remove an installation from my account?

1. Go to the tab Settings → General.
2. Scroll to the bottom of that page.
3. Click the Unlink button Unlink . This will unlink the installation from your account.

14.7. How can I move an installation's history from one GX device to another?

1. Connect the new GX device to the internet and register it. Take note of the VRM Portal ID.
2. Open the old site on VRM and go to Settings → General.
3. Scroll down to "Replace the GX device of this installation". The further procedure is explained there.

14.8. Why are some values shown red?

In case the data is too old, which means older than would have been expected from the configured logging interval, the value will be shown red. Use the System overview page to check if there are products that are not connected anymore. One typical example where this might happen is:

- The system has been connected to a three-phase system, and now it is connected to a single-phase system. But the data for L2 and L3 is still being shown in a red color. Reboot the gateway (usually a GX device) to reset the data.

14.9. For how long is the data being stored?

- Advanced data shown in the Advanced tab is being stored for at least 6 months, with exception of Battery state of charge.
- Dashboard data used to show the solar yield and the consumption information (kWh data) is stored for a minimum of 5 years.

14.10. How can I zoom out any of the graphs?

- The graphs can be zoomed out to their original zoom level by clicking the cog wheel icon ⚙ in the top right of the graph and then clicking on 'Reset zoom' or by clicking Reset zoom on the graph itself.

14.11. Why do I get such a weird high value for AC Input when a PV inverter is feeding back to the grid through the Multi?

Since VE.Bus firmware version xxxx205, the Multis and Quattros report the direction of the AC input current. Earlier VE.Bus versions reported only the absolute value: you could not see if the power was being fed back to the mains, or taken from the mains.

- VGRs, VGR2s and VERs interpret this value incorrectly. They show around 650 Amps instead of -5 Amps.
- If you really want to see the right data, replace the VGR/VGR2/VER with a Cerbo GX.

14.12. What is the column logtime Offset in the XLS/CSV download for?

- Use it to see the quality of the Internet connection.

The values relate to the backlog feature. Usually the column is either empty, or you see series of rows with a decreasing logtime offset. Once zero, the columns are empty again. These series mean that there was a problem with the Internet connection. And the value shown is the number of seconds for which that particular row of data had been backlogged.

14.13. How can I change my email address or add new additional users?

Add new additional users:

1. Login to VRM with the existing account.
2. Go to Settings → Users.
3. Under the Pending invitations item on the right, click Invite user. See this video example.
4. If the new user will be an Admin, you will need to enable full control.

A confirmation email will be sent to the new user to accept the invitation.

Change your own email address:

1. From the Installation overview click 'BACK' in the top left
2. Click 'Preferences'
3. Click 'Profile'
4. Enter the new email address and hit the blue 'Save' button

That is all, there will be an email sent to the new email address and you can use that to login. No data will be lost during this procedure.

There is no option to delete the old account, though it can be removed from a specific installation.

14.14. How can I upload very large database files to the VRM with a 200MB upload limit?

- The VRM Portal allows up to 200MB uploads for GX device data files. The portal will accept gzip files, so you can compress the sql database file and then upload the compressed version. A compressed 200MB file can contain several years worth of data!

14.15. I have just connected my GX device after not being online for a long time, why is it not updating?

- The first thing to check is the VRM menu to make sure that the VRM is connected and communicating - if it isn't, follow the troubleshooting here.
- If you are seeing that the GX device is connecting to VRM, then it can take up to a few hours or more for the data to sync to VRM and for the updates to show, depending on how much data there is to catch up.
- If it still has not got up to date after 24 hours of connection time - try asking for more help on Victron Community.

14.16. Why can't I get push notifications in my Google Chrome browser on a Apple Mac?

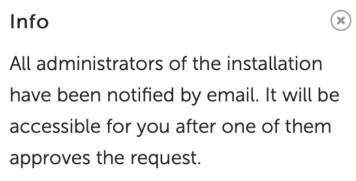
There are two possible reasons why you don't receive notifications:

1. Google Chrome is not allowed to show notifications on macOS
2. Google Chrome has disabled notifications in the app settings

Allow Chrome to send notifications to the macOS Notification Center by opening System Preferences → Notifications in macOS. Then scroll down to Google Chrome and turn on “Allow notifications”.

Also make sure Notifications are enabled in the Chrome app settings (in the Chrome app go to Settings → Content → Notifications) and the VRM domain is allowed to send notifications. Check out this Community post that explains this process in more detail.

14.17. When trying to add a new installation I get a popup message saying that all administrators of the installation have been notified by email, why?



Info

All administrators of the installation have been notified by email. It will be accessible for you after one of them approves the request.

There are two possible reasons for this to show:

1. You purchased a second-hand installation with the GX device while the system (and with that the VRM Portal ID of the GX device) is still registered to the previous owner.
2. You had the system installed by a professional installer who only registered you as a user without admin rights.

The easiest remedy is to contact your place of purchase, and ask them to approve the request in their email. This email is automatically sent.

If you do not receive a reply from them directly, and you wish to modify the Administrator of the VRM site, you will need to contact the dealer from whom the part was purchased.

Send an email or call the dealer and make a "Victron VRM Change of Administrator Request" with them, along with the VRM Portal ID, and proof of purchase/ownership of the device.

If the Installer, Dealer, Distributor chain is no longer available, or unknown you will need to open a support ticket here: https://professional.victronenergy.com/support/

14.18. How can I access more detailed diagnostic information about a VRM site?

There is a special advanced technician page that allows for quickly searching a lot of the most recently received data attributes by VRM.

You can access this data by adding the suffix /diagnostics to the site URL in the location bar of your browser. e.g https://vrm.victronenergy.com/installation/1234/diagnostics

> Not all of the information available in the diagnostics page is documented, please use the modifications space on the Victron Community for any questions.

15. VRM error codes

This section provides a comprehensive list of VRM error codes, their causes, and potential resolutions.

Table 1. VRM error codes

Code	API HTTP	Error message key	Error message text (EN)
1429 - Rate limited	429	core.rate_limiting_error	You've sent too many requests. Please try again in a few minutes.
1403 - Forbidden	403	Backend string	You don't have sufficient rights to perform this action.
1422 - Validation error	422	Backend string	{validation_error_from_API}
1500 - Internal Server Error without Status	500	core.backend_unavailable	The server back-end is not available right now, please try again in a few minutes.
1510 - Internal Server Error with Status	500	Variable: error.statusText	
1511 - error_with_data_message	200	Variable: error.data.message	Something went wrong, please try again later.
1520 - unknown_error	504	core.unknown_error	Unknown error, please try again in a few minutes.
1504 - Gateway timeout		core.request_timed_out	One of the requests timed out. Some elements might not load correctly. Please try again later.
RTT > 200		general.installation_overloaded_disabling_mqtt	Realtime connection disabled due to GX device overload.