

# Remote VE.Bus firmware updates

This document is a draft version of the new Remote VE.Bus firmware update feature. Once officially released, this must be included into the main [VRM Remote Firmware update manual](#).

## 1. Firmware and hardware requirements

- Minimum installed VE.Bus firmware version must be 426
- There must be no VE.Bus BMS installed.
- GX Device minimum
  - In case of a CCGX, it must have serial number HQ1707 or newer.
  - In case of another GX Device, ie. a Cerbo, Venus or otherwise, there is no minimum hardware version - they all meet the requirements.
  - Venus OS firmware must be 2.65 or later, [currently in beta. Instructions how to install beta versions are here](#).
  - Two Way Communication must be enabled in the VRM menu of the GX device

In case either the minimum installed firmware is from before 426, or there is a CCGX installed which has too old hardware, Error message Not updatable (1342) is shown on VRM and it will refuse to start a firmware update.

There is no limitation on the type of system: single unit systems, parallel, split-phase, three-phase and also large systems of 6, 9 and more inverters can all be updated remotely using this feature.

In case a VE.Bus BMS installed, the update process will start. But then it will throw an error just before it switches off the Inverters to start the update.

## 2. Preparations

### 2.1 Make sure to switch off AC-Coupled PV Inverters

An AC-Coupled PV-Inverter is a PV Inverter connected to the AC out of the Victron Inverter.

To make sure no overcharging occurs, disable AC-Coupled PV Inverters. For example by having someone local to the system disconnect its solar input, or if it has an on/off switch: switch it off. Alternatively, perform the firmware update when the sun is down, in the evening or night. Or when the battery is far from fully charged.

Why? After the firmware update, the system will be running in default configuration until the new settings are uploaded. The means that there is no PV Inverter Assistant installed; and PV Inverter controlling by AC Frequency shift is disabled.

### 2.2 Disconnect VE.Bus BMS and/or Digital Multi Control

It is not possible to update a VE.Bus inverter, or inverter/charger in case there is also a VE.Bus BMS or Digital Multi Control (DMC) connected to the VE.Bus network.

Error 734, "Cannot update with DMC or VE.Bus BMS connected" will be shown during the process when attempting to update such system. No settings or firmware is altered at the time, the system will remain operational.

To update such system remotely, first get someone local to temporarily unplug the RJ-45 connection on the VE.Bus BMS and/or the DMC. Note that the inverter will switch off when doing that. And that it then might be necessary to provide an alternate power supply for the GX device as it will lose power.

## **2.3 Systems where the internet connection will be lost while inverters are off**

During the firmware update, the Victron inverters will be off. This is OK, as this remote firmware update process is designed to perform all critical steps without requiring an internet connection:

- the current settings are retrieved *\*before\** powering down the inverter
- the new firmware is uploaded to the GX Device *\*before\** powering down the inverter

It might be necessary to perform a few additional steps after the update, see FAQ below.

NOTE: we're currently still improving this use case. Once completed, the VRM Portal will keep trying to connect for a reasonable time compared to the number of devices that need updating. Which it will do in a manner where its clear for the user that there is no reason (yet) to worry. All this will be completed before official release. The FAQ entry will stay in case something does go wrong.

## **2.4 Be 100% sure that the GX Device is not powered by the inverter**

Though normally not recommended, and also rather unusual, some systems have their GX Device powered on the output of the Victron inverter, with an AC Adapter.

Such system cannot be firmware updated remotely. Attempting to do so will leave the inverter off in bootloader mode with all LEDs flashing. And the system unreachable, since the GX Device is powered down.

Careful: this is not automatically verified in any way.

## **2.5 Have the latest VEConfigure Tools**

The latest version available on our website includes the necessary features. If you start VEConfigure or VE.Bus System Configurator while connected to the internet, it will automatically check and update itself when necessary.

Not having the latest file installed will result in an error when opening the file (@Jos please confirm by testing)

### 3. Procedure

The inverter/charger is the heart of a Victron power system. Before continuing, make sure to fully understand the process.

Here is a video that demonstrates the process:



## Video

First stage The first stage consists of the following steps:

1. Confirm Two Way Communication is enabled in the VRM menu of the GX device
2. Open VRM → Device list for the site you wish to update
3. Click the Firmware update button at the bottom of the device list of VRM
4. Click the Update Firmware button on the VE.Bus device you wish to update
5. The new firmware file is then uploaded to the GX Device.
6. The configuration is retrieved from the VE.Bus system.
7. The inverter is switched off and its firmware is updated. Be aware that there will be no AC power available. Also the internet connection might be lost, in case the router is powered by the inverter. Which is OK, this update has been designed to remotely update an Off-grid system.
8. After the firmware update is completed, the settings will be reset to defaults and, to prevent overcharging, the charge current will be set to zero amps to prevent overcharging from mains, and then the inverter is switched on again.
9. The internet connection will be re-established (in case it was lost) and the new settings template is retrieved from the system; after which it will be uploaded to your web browser.

At this moment the first stage is complete.

Second stage Now, you'll need to open the file that was automatically downloaded for you from VRM in VE.Bus System Configurator by double clicking it. Immediately, the settings will be converted to the new firmware version; and a popup will show in case anything needs double checking. When finished, close the Configurator, it will prompt to save the file.

Third stage On VRM, go to Device List → Remote VEConfigure and there use the Upload feature to upload the settings. This will restore the charge current and the rest of the settings.

## 5. Error codes & trouble shooting

### mk2vsc-55

Error mk2vsc-55 can happen for two reasons. In case it happens while doing a remote firmware update, it typically the first one:

1) After the firmware update, but still during stage 1, something went wrong. For example VRM lost connection to the site for too long because of bad internet. What then happens is that VRM supplies a normal Remote VEConfigure settings file. Rather than a settings template with information from before and after the firmware update. **Solution:** On VRM, use the VRM Remote VEConfigure feature, download function to obtain the current information as well as settings, which will be the default settings. Now, open the first file, ie. the one provided by VRM immediately after the firmware update completed, in VE.Bus System Configurator. Next, one by one, open the VEConfigure settings for each unit in the system by right clicking on the unit and selecting VEConfig. Go to file, save settings (or CTRL-S), which will show a warning that a Remote file is open. Continue anyway and save the file and remember for which unit it is. Once this is completed for each unit, close VE.Bus System Configurator. Now, open it using the new file that you downloaded yourself. Open the VEConfigure settings for each unit again and use the Load settings feature in the menu to load the old settings. Close it, and use the VRM Remote VEConfigure upload function.

2) The uploaded file is for a different product type. The target number, for example 2659, does not match.

### mk2vsc-59 - file uploaded before merging in VE.Bus System Configurator

This error can show after uploading a settings file to the system using Remote VEConfigure. The error shows when the settings template made during a Remote firmware update was uploaded **without** first opening that in VE.Bus System Configurator.

Solution:

1. instead of uploading the file, open it on your computer with VE.Bus System Configurator. Typically done by simply double clicking the file.
2. VE.Bus System Configurator will now process file the, and show a message when completed.
3. finally, save it by closing VE.Configure. And upload the resulting file, which name will by \_merged.rvms.

## 6. FAQ

### Q1: What happens if the internet connection goes doen during the process?

The firmware update will complete without a problem, since the necessary files are uploaded to the GX Device \*before\* starting the firmware update.

What will go wrong is preparing the .rvms file that contains the settings as well as information about the system after the firmware update. Normally a file will be available that when opened in VEConfigure will automatically be converted to the new firmware version. Now, since there was no internet connection anymore after the firmware update was completed, that file will only contain the settings from before the firmware update.

Steps to recover:

1. In VRM → Device List → Remote VEConfigure, and there click download.
2. Open that file by double clicking it. In case of a single unit it will open in VEConfigure. For systems consisting of multiple units, it will be opened in VE.Bus System Configurator.
3. Click File → Load settings, and select the first file. I.e the file prompted during the Firmware update process.
4. Now, the settings will automatically be converted to the new firmware version; and a popup will show in case anything needs double checking.
5. Close the file by exiting the application; a popup will prompt to save it.
6. On VRM, go to Device List → Remote VEConfigure and there use the Upload feature to upload the settings.

## Q2: How to see if a CCGX hardware version matches the required minimal version

There are a few ways. One is by checking the serial number, it must be HQ1707 or newer. 17 is for 2017, and the 07 is the week number. The serial number is printed on a label on the back of the GX Device, and in some cases also visible on the VRM Portal, in the Device List.

The other way is in the UI (either on the CCGX itself, or through Remote Console). Go to the Device List, then into the Multi or Quattro menu, then to the bottom, Device submenu, and scroll all the way to the bottom.

Here you'll see this menu:

Device		12:23
Product ID	2612	
Firmware version	465	
VRM instance	257	
VE.Bus version	2612465	
MK2 device	MK2 20Mhz	
MK2 version	1130136	

It needs to say MK3. Above screenshot is from a CCGX which hardware is too old to perform remote VE.Bus firmware updates.

Last update: 2021-03-31 13:04 venus-os:remote\_ve.bus\_firmware\_updates [https://www.victronenergy.com/live/venus-os:remote\\_ve.bus\\_firmware\\_updates?rev=1617188695](https://www.victronenergy.com/live/venus-os:remote_ve.bus_firmware_updates?rev=1617188695)

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