

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
- 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, an error message is shown on VRM and it will refuse to start the 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.

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. This means that there is no PV Inverter Assistant installed; and PV Inverter controlling by AC Frequency shift is disabled.

2.2 Systems with a VE.Bus BMS

During the firmware update, the VE.Bus BMS must be physically disconnected from the system: RJ-45 cable must be unplugged.

Izak is there more to know?

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

For now, they are only available through this [beta link](#), to be installed manually.

Once officially released, this text will be replaced by minimum firmware version numbers.

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 the 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. FAQ

Q1: What happens if the internet connection goes down 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.

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