

Venus OS – Firmware change log

This change log applies to the [GX product family](#). Venus OS is the name of the software.

How to update?

See http://www.victronenergy.com/live/ccqx:firmware_updating for update instructions. Note that when connected to the internet, the system will automatically check for updates every day, around 02:00 UTC. When new updates are found, it will automatically update itself. This feature can be switched off in the setup menu.

Still running v1.74 or earlier? Then you need to, only once, do a special upgrade procedure in order to run the latest versions again: https://www.victronenergy.com/live/ccqx:firmware_upgrade_to_v2

What firmware version is on my device?

After power-up, you can find the firmware version in the Setup menu. The version is also visible on the VRM Portal: Settings -> System overview.

Change log:

v3.00 – May 30th 2023

Changes:

Generator start/stop

- Add backup-generator auto-stop (for when mains power has returned) for systems where the generator is wired to AC-in 1. This was already possible for systems with a generator wired to AC-in 2. Note that AC-in 1 is the recommend AC input for wiring the generator, more details on that [here on Victron Professional](#). Note that this does not yet work for the Multi RS. Requires VE.Bus inverter/charger to be loaded with firmware version 502 or later.
- Add warm-up and cool-down feature, with configurable timing. Requires VE.Bus inverter/charger to be loaded with firmware version 502 or later.
- Transmit generator run time to VRM. Note that this is not used for any reporting yet, as this still needs work in VRM. Prior to this, VRM would calculate the generator run time by looking at AC input data from the inverter/charger, which is (a) unnecessarily heavy on the database, and (b) not always correct.

GX Touch

- Add option to disable the touch input. See settings -> I/O -> Digital inputs for the new feature. This is intended for systems where the GX Touch is wanted to show the users what the system is doing; but nothing else. The status of the touch (enabled/disabled) is toggled by pulling the Digital input to ground. More information about locking a system down [is available here](#).

Multi, Quattro and EasySolar

- VE.Bus BMS v2: add Victron Smart Lithium pre-alarm warning. This shows as a notification in the GUI as well as an entry in the alarm log on VRM. Note that this works only with the VE.Bus BMS v2 model. Not the earlier model.
- Add Error #67 - BMS connection lost alarm, similar to the [same alarm code that is already in our MPPT Solar Chargers for a long time](#). The details: once the inverter/charger has received CVL/CCL or DCL data from a managed battery, it will switch off in case the battery (or GX device) is disconnected. Prior to adding this new Error #67, it would also shut down, but then while only showing a Low voltage error. Showing Error #67 will make trouble shooting easier by being able to distinguish between an actual low voltage alarm and a BMS connection issue. When in this situation, restore the connection with the BMS, or power cycle the inverter/charger.
- Fix bug that could cause the reported state for a system of six inverter/chargers or more to be stuck; when very quickly switching the system on and then off again.
- VE.Bus BMS v2: fix bug where solar chargers shut down in Error #67, BMS lost, when the Multi is turned off. Broken since Venus OS v2.90.
- Fix issue causing a repetitive low battery alarm in case the battery is disconnected.
- Add various new models (2681, 2723, 2766, 2776).
- MK2 firmware update: this version includes a newer version for the onboard MK3-controller, version v216. Because updating that has a 1 to 10% possibility of a short (30 seconds max) system outage, the update needs to be initiated manually. See Device List -> MultiPlus-II. In case the MK3 requires a manual update, there is a menu entry called "Update the MK3".

ESS & Energy Meters

- Add peak shaving option (by observing the AC input current limit using PowerAssist), for all loads connected to the output of the inverter/charger, ie the critical loads.
 - Peak shaving already worked in Keep batteries charged mode; no changes there, other than making it more obvious by adding in the Peak shaving menu entry.
 - Peak shaving did not work with the Optimised modes. It did work as long as battery SOC was above the configured ESS Minimum SOC level, but once discharged there the system would not assist the loads. This is now solved: use the new peak shaving option in the ESS menu, to let the system keep PowerAssisting when needed. And as soon as the peak is over, it will recharge the battery using power from the grid, while prioritising solar. Note that there is a 5% hysteresis on that: lets say Minimum SOC is set to 80%, it will then start recharging back to that 80% once (by peak shaving) the battery dropped to 75%.
 - The default setting, when using the Optimised mode, is off, to not change behaviour of running systems.
- ESS: add option to scheduled charging to allow discharging the battery (if SOC is above the configured minimum) while in the window; and more.
- Fix issue with EM540 phase sequence check for three phase systems. It – for some systems - reported the phase sequence as being incorrect while it wasn't.
- Add support for all EM300 series meters.
- Fix bug where PV was not used for loads when scheduled charging to 100% during daytime.
- Fix bug in systems where AC-in-2 is connected to the grid, and a PV-inverter on AC-in-2 was not shown on the ESS interview. In the past this was worked around by configuring the PV-inverter on AC-in-1. This workaround is not necessary anymore.

DVCC

- Add "Controlling BMS" menu option: for systems having multiple BMSes connected, allow selecting which one should be used for DVCC. It also allows the use of a BMV for SOC tracking - by selecting BMV as battery monitor -- while still using the BMS for DVCC. A bit of a niche issue for special systems, more technical background here: <https://github.com/victronenergy/venus/issues/901> (but please don't start posting on our github - thanks).
- Add support for Hubble batteries, includes auto-configuration: DVCC on, STS off, SVS recommended off.
- Add support for Pylontech batteries with 16 cells in series (rather than usual 15 cells). Thank you, Brian Finley.

GUI

- System overview: show inverting when inverting. Instead of External Control. On the on-screen overview, as well as on Remote Console and on VRM. This was broken in Venus OS v2.93. External control should only be shown when charging.
- Increase the maximum length for the WiFi password to 63 characters.
- Add the Thai and Polish language.
- Improve text for tank sensor name in pump configuration.
- Add progress indicator (0 to 100%) to Venus OS firmware download.
- Fix tank temperature unit (Fahrenheit).

VRM Portal

- Transmit more accurate generator run time
- Fix bug related to kWh calculations (= source data for graphs on VRM Dashboards): If the position of a PV-inverter was changed, or the AC input (grid/genset) was changed, this would not take effect until a reboot.
- Add various new fields to be sent to VRM to improve the dashboard and dashboard controls.

PV Inverter integration

- Support the Fronius Tauro via SolarAPI: This is a rare edge case. Customers should use Sunspec instead of SolarAPI whenever possible, as per documentation. This change allows using SolarAPI in cases where Sunspec cannot be used. For example where modbus-RTU is in use on the DataManager and modbus-TCP cannot be used.

ModbusTCP

- Add reserved registers, 3705 and 3706, to make the range of registers for solar chargers continuous. This gap was inadvertently created in Venus v2.80, and fixing it allows fetching the entire block from 3700 to 3730 in a single call. This bug only affects MPPT-RS; the data after the gap is related to Multiple trackers.
- Add registers 2711 and 2712 for configuring AC-input sources (grid, generator, shore).

- Add a 32-bit register, 3728, for energy yield for solar chargers, Inverter-RS and Multi-RS. The existing 16-bit register is too small in larger installations.
- Add register 3730 for solar charger power with range up to 65kW. The existing register was limited to 6.5kW, with a different scale.
- Add register 95 for VE.Bus charge state. This adds additional information to the overall VE.Bus state.
- Add registers 4700 to 4704 for pump control.
- Add register 94 for reading the VE.Bus BMS v2 pre-alarm state.

NMEA2000-out

- On device and battery instance 239, transmit the data of the battery selected as the System battery in GX settings. The aim of sending this PGN is that there is one instance, always the same, for the main battery in the system. Instead of a system with a Lynx Smart BMS using instance 0, and a system with a SmartShunt using different instances.
- DC Detailed Status PGN: Add Amp Hours field, complies with NMEA200 v2.000.
- DC Detailed Status PGN: Fix a bug in the Time Remaining field: sometimes it showed zero when it shouldn't.

Node-RED (Venus OS Large)

- Change how the Node-RED nodes identify which Victron device they configured for. This now uses the dbus /DeviceInstance path, instead of the the full service path. To use that, all existing flows will need to be manually migrated. But until you migrate, your flows will remain functional. More details on this specific change here: <https://github.com/victronenergy/node-red-contrib-victron/releases/tag/v1.4.25>. Fixes certain issues and is better in general.
- A few extra nodes have been added (input-pump, output-pump, output-battery), and several existing nodes got extra paths.
- Added two options to output nodes: (1) rounding of values, and (2) output only on value changes.
- Several importable examples have been added and the documentation has been updated.
- Update nodejs to v14.17.6, which is the latest v14.17.* LTS. [Change log](#). Note that we're working to update to a later nodejs version, most likely v18.
- Increase allowed flow size (add client_max_body_size to nginx config for larger flows).

Signalk (Venus OS Large)

- Add and default-enable plugins sending NMEA data out on TCP, includes AIS data
 - With this change, the GX device is a LAN and wireless AIS and navigation server for popular apps like Navionics, iSailor, iNavX, and Aqua Map on phones and tablets. This blog post by S/V Renaissance explains it nicely; but ignore all explanations about configuring plugins: that is all already done. Two examples: (1) Aqua Map App (link to Wifi connections page), (2) Navionics Boating App (link to AIS feature page).
 - This feature requires a NMEA2000 connected AIS receiver on board. No internet is needed.
 - The data is available as NMEA0183 packets on the default TCP port (10110), as well as signalk messages on the default websocket port.
 - All powered by the open source signalk-server software.
- Update the Signalk Server from v1.44 to v1.46.2
- Fix pre-installing venus-signalk-plugin, it was missing. Unknown since which version; on v2.93 it was missing; most likely many prior versions as well.
- Fix disabling updates of the pre-installed plugins
- Enable mDNS service advertisements for signalk-server, as per Signalk specification. This allows the user to configure the navigation app on his or her phone without having to know the IP address. Note that the apps that we have tested unfortunately don't support that yet.

RV-C:

- Various protocol improvements.

Developers / internal:

- MQTT: Improve response when receiving a R/<portalid here>/system/0/Serial message. Instead of just activating the keep-alive, it will now always also respond by publishing the VRM Portal id.
- mDNS: add serial number as a TXT record, for better "pairing" with 3rd party devices.
- uPnP: update the data transmitted
- PHP: update from v7.4.28 to v7.4.33
- Replace Hiawatha webserver with nginx; which is better kept up to date (security)
- Include various OE Dunfell fixes.

- Iler configurable Feed-in limit setting (Power / Watts). It works both for AC-Coupled PV (Fronius & ABB) and DC-Coupled PV as well as a combination of both. For limiting feed-in of DC-Coupled PV, VE.Bus firmware 469 is required.
- Add a new Energy Meter, the Carlo Gavazzi EM24 three-phase ethernet model. Also stocked by us, part number REL200200100. Carlo Gavazzi part number EM24-DIN.AV2.3.X.E1.X. Compared to the existing energy meters, which are connected over RS485, this meter offers the advantage that by using the Ethernet (or WiFi when adding bridges) network can be used – no need to pull RS485 wiring between the distribution board and the battery system. More information in the manual (TODO ADD MANUAL & LINK & ADD OR UPDATE PRODUCT PAGE ON WEBSITE)
- Fix issue in scheduled charging, that made it impossible to set it above 23:00 hours on a few time zones.
- Change how the “Grid meter installed yes/no” setting works. Now there is a setting called “Grid metering”; with two options: External meter and Inverter/charger.
- Clean up the ESS configuration menus. Menu entries are better worded, and they are now better organised.
- Improve the PV-limiting (aka zero feed-in) feature for large installations; sometimes they limited too much.
- Better handle a DCL=0 limit from managed batteries by completely stopping discharge by the inverter/charger. Previously the system would try to still use power available from PV. Better to first use that to charge the battery, which will automatically make the managed battery to lift the DCL=0 restraint once sufficiently charged.

PV Inverter monitoring:

- Improve how the scanning mechanism works. For all types, and especially for Fronius PV Inverters
- Fix a bug in relation to Fronius PV Inverters was fixed that caused the system to read 0W output now and then, while the actual power was higher. This issue caused downward spikes in graphs on VRM, but could also affect the Fronius Zero feed-in functionality: all works better now.
- Add option to remove previously detected IP Addresses.
- Significantly reduce the scan time. It was accidentally increased a lot when adding the Ethernet link-local addressing in v2.30.
- Various other stability & performance improvements.

Tank level monitoring (applies to analog inputs on Venus GX & Cerbo GX)

- Add option to name tanks
- Add option to configure a custom minimum and maximum resistance level
- Add option to configure a custom shape: up to ten points can be configured, and the tank level is linearly interpolated between the points.
- Fix bug that the read-out value didn't always immediately read the correct level; at some tank levels it could take a long time for the right value to come through the filtering at start-up. Not any-more.
- Add “Sensor resistance” to the menu. This is a read-out of raw & unfiltered resistance measurement, to aide in troubleshooting.

Other changes:

- Generator start/stop: improve how it gets the battery monitor data; [details here](#).
- Increase the speed of Remote VEConfigure by a factor 2 or 3
- Move the VRM Two-way communication menu to the VRM Portal menu
- Remote Console on LAN: fix mIncrease the sharpness of Remote Console on LAN
- Improve resolution of several icons on higher resolution devices, such as the Cerbo GX by using better SVGs
- Change the name of the CAN-bus services in the Settings -> Services menu. Now the used naming matches the labelling on the physical products.
- Hide the Battery Details menu for battery (monitor) types that do no support that data.
- Fix Error #48 showing in demo mode
- Show the link-local IP Address in the Ethernet menu. To help when diagnosing Ethernet network issues as well as make it less hidden that the GX devices have a link-local address.
- Improve WiFi stability: in some rare cases it would not retry to connect after losing a connection. Now it will always reconnect, instead of timing out, or limiting attempts, or giving up on other errors.
- Disallow accidentally booting into an incompletely installed firmware update (this was -sometimes- possible by using the backup firmware menu. Not any more)
- Send ARP replies the from correct network interface. This will not affect any normal installations; but was still wrong. Details here: <https://community.victronenergy.com/questions/49662/ccgx-ethernet-mac-address-changing-link-local.html>. Thank you Kenrick for highlighting this.
- In all Device submenus, rename Device instance to VRM instance. To make it cleared that its not the same as the VE.Can instance / NMEA2000 device instance.
- GX GSM: Increase the max length of APN that can be entered
- Grid failure alarm: fix issue where it could generate alarm in case left disabled while not having any inputs configured as Grid or Shore. In which case the setting itself is hidden, making the alarms rather mysterious aka unexpected. Not anymore: it will not generator alarms when there are no AC Inputs configured to be Grid or Shore. Also, disabling the grid alarm will now automatically clear the alarm on VRM.