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/ccgx: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/ccgx:firmware_upgrade_to_v2

Which 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:

v3.61 – June 16ᵗʰ 2025

Released for the Venus GX only

- Fix Ethernet LAN port not working on certain Venus GX production series, produced in or after 2022. Broken in v3.60.

v3.60 – June 10ᵗʰ 2025

For details and screenshots, see this slide deck: https://ve4.nl/v360-slides.

Known issues
- *Firmware updates to version v3.60 for the Color Control GX (CCGX) have been temporarily disabled due to reported issues, which are most likely related to CPU overload. Until further notice, the latest available firmware version for the CCGX in the online update system is v3.55. We are currently investigating the problem and will provide updates as soon as more information becomes available. Further details in [this post on Community](#).*
- *Venus GX: see v3.61 release.*

Highlights

- Add the new "Switch pane". Switching of lights and loads, as well as dimming of lights, straight from the UI, locally and remotely over the internet. Works with 3ʳᵈ party digital switching hardware partners. Compatible with the SmartSwitch by Energy Solutions.
- Add the new boat page, a dedicated page for electric boats, enhancing your system with seamless GPS integration and electric propulsion monitoring.
- Add control for battery(cell) heating & cooling (new parameter in relay temperature control feature)
- Add feature to backup and restore the configuration of Multis and Quattros (VE.Bus). This allows to (a) seamlessly reconfigure a replacement unit: restoring the settings will automatically identify the missing/failed and new unit, and configure that accordingly. And (b) to switch between different configurations.
- Redesigned settings menu in the new UI.

Product related

- Orions XS
  - Add option to reset the "Controlled by BMS" setting.
  - The Orion XS usually charges the main battery from an alternator. In this update, the Orion XS can be configured to charge another battery from the main battery. In this configuration, the Orion XS is not controlled by DVCC and is seen as a DC load. Fixes potential overvoltage issues.

- Multi RS, Inverter RS and Multi RS:
  - Fix showing incorrect system state in case a Multi RS is switched off.
  - Hide solar trackers when disabled in VictronConnect. Decreases clutter when not using all trackers.

- o Ask user for confirmation before restarting a VE.Bus system, to eliminate accidental system switch-offs.
  - o Add scheduled charging settings (New UI)
  - o Add RS to start/stop features: warm-up and cool-down support, and start/stop conditions on Inverter overload, Inverter temperature, AC load.
- Multi, Quattro, EasySolar inverter/chargers
  - o Clear phase rotation warning when AC input is ignored, unit is switched off or to inverter-only
  - o Add feature to backup and restore the configuration of Multis and Quattros (VE.Bus)
  - o Fix issue preventing Remote VEConfigure for systems running S99 (External Transfer Switch) firmware.

- Tank & temperature senders:
  - o BLE connected tanksenders: recalculate levels on setting changes
  - o make tank senders and temperature senders that are connected to the GX using BLE visible in the VictronConnect App when logged in remotely.
  - o Fix occasional "Open circuit" alarm by increasing the upper margin for the tank inputs on the Cerbo GX, Ekrano GX and GX Tank 140.
  - o Increase tank sensor value limits precision (when full and empty) to 3 decimal places and the step size to 0.005

- Energy Meter VM-3P75CT
  - o Reduce CPU usage when using the VM-3P75CT for AC load measuring by using the high update interval only when configured for the grid metering role. Both when connected on VE.Can network as well as Ethernet/WiFi.

Marine MFD HTML5 app
- Improve layout on High DPI screens (Garmin 9000)
- Add translations for af, ar, cs, da, es, ro, ru, sv and tr.
- Add night colors support (everything RED, for when using this in the dark).
- Add support for opening the New UI Remote Console, on MFDs that support that (requires up to date webbrowser)
- Improve support for systems having multiple connected Multis/Quattro's.

Networking
- Fix issues with the feature that allows to have a WiFi and an Ethernet network connected at the same time and then wanting WiFi to be used for internet. This had issues, also in v3.55. Now fixed, and the way to make this happen is to configure the ethernet connection, which normally has priority over the WiFi connection, with a gateway of 0.0.0.0.
- Fix GX GSM & GX LTE issues when the mobile network issues an IPv6 address rather than an IPv4 address.
- VE.Can / NMEA2000 port: fix issue causing GX to queue up messages while the CAN-bus is down to thereafter send them all out in case connection is up/restored. This is mostly an issue in combination with for example an NMEA2000 network.

ESS
- Fix issue where MPPTs stop would stop production when minimum SOC is set to 100%.
- Fix issue in peak shaving feature in combination with the *Self-consumption from battery* setting set to *Only critical loads.*

Managed Batteries
- Do not force SVS off for BlueNova batteries
- Users can now select their own setting, if they prefer to use SVS. Our recommendation remains to leave SVS off.
- Add Sunwoda battery support
- Add Soluna battery support

Dynamic ESS
- Dynamic ESS now responds more accurately when actual consumption or solar production differs from the forecast. For example, when there is more solar then expected, the updated algorithm will in many cases use that extra solar power to charge the battery, even if that would exceed the planned SOC level for the current hour. Instead of feeding that excess solar back into the grid for a low price, to later have to buy it back at a higher price.

- Fix device selection when having more than one Multi/Quattro system connected to the GX. Now it select the device with the lowest device instance, similarly to how DVCC and other features work.
- Add Remove hardcoded 32kW feed-in limit to allow import/export at higher power values.

PV Inverters

- Add zero feed-in power control on any PV inverter that supports Sunspec™ information models 123 or 704. Equipment from SMA, SolarEdge, Kostal and Enphase has already been confirmed.

Various
- Distinguish between Atlantic Standard and Atlantic Daylight time zone, as well as reword the time zones that where previously available under a menu called Etc. Its now called Other, and at below the list of global regions like Europe, Atlantic, ….
- Fix Cerbo GX MK2 VE.Can 2 port issues.
- Add warning that the data partition is nearly full or full. Trigger level is less than 10% free space. This is mostly useful for people using Node-RED, Signal-K, or third-party add-ons. Venus OS is not design to operate with a full data partition, hence this useful warning. For further information see the, new per Venus OS v3.60!, Settings -> General -> Modification checks menu, its at the bottom of the General menu.
- Fix setting the hardware clock in the large image.
- Improve Remote Console for Classic UI.

VRM Portal related
- Significantly increase the speed of searching for firmware updates. On a simple test system with a Cerbo GX and one of each device, scan time was reduced from 44 seconds to 16 seconds.
- A QR code has been added to to the VRM Portal menu in the New UI. Visible on GX Touch and Ekrano GX, facilitates easy registration. When views in Remote Console, a direct link is shown instead.

Generator start/stop and integration
- Add option to automatically stop a generator based on tank level, helping to avoid airlocks when the tank runs empty.
- Add option to check that DC gensets have started properly, for connected DC gensets (Fischer Panda and Hatz). An alarm will be raised when the DC genset does not reach at least 5A within the first 5 minutes after starting.
- ComAp genset integration: Fix oil pressure scaling
- Hatz DC genset integration: Various improvements
- DSE Genset integration: add support for more models, including DSE7320 and DSE7320 MKII. All applicable DSE models are now supported. The range not support is the DSE8000 range, which is a more advanced range used for paralleling gensets.
- Better handle systems having multiple gensets. The start/stop features will work with the genset having the lowest device instance and ignore the others.

New UI

- Brief page:
  - Add option to select individual tanks and batteries for the center gauges.
  - Show battery SOC percentage or Temperature in Brief center up to three circular gauges, instead of only when there is one gauge.
  - Add option to disable the circular center gauge levels, which allows showing Battery SOC in the centre as large as possible, and have tanks on the Levels page.
  - Fix Amps/Watts issue.
- Add modification checks page, which provides a quick view of the status of the software running on a GX device, and - importantly - to give installers and distributors insight into whether a system has been modified while providing support.
- Improve UX for warnings, alarms and other notifications. Previously the display would move away from its current page to the notifications page. Now it stays at the same page and shows a toast/popup while leaving the user on the page where she/he was.
- Add control card for EV Charger
- Add language Zuid-Afrikaans

Venus OS Large / Node-RED
- Add support for our GX IO-Extender 150, a USB connected accessory especially designed to further empower Node-RED.

- Add "Virtual devices", which enable to create virtual equivalents of the following products: Batteries, PV inverters, Temperature sensors, Tanks, Grid meters, Meteo/irradiance sensors (irradiance, wind speed, wind direction), GPS, Electric motor drive (see boat page).
- Add option to control the relay on an MPPT via Node-RED.
- Reduce Node-RED related CPU usage by improving efficiency of code & internal communication
- Add option to disable ESS control schedules from Node-RED as well as add a monthly schedule.
- Venus settings node: Fix AC import current limit setting.
- For further details, on Node-RED improvements in Venus OS v3.60, see the changelog for node-red-contrib-victron, release v1.6.0 upto and including v1.6.31.

- Update NodeJS from 18.20.3 to 20.18.2. NodeJS change log.
- Node-RED v3.1.10 -> v3.1.15

Venus OS large / Signal K Server

- signalk-server 2.11.0 -> 2.13.5, for details ee https://github.com/SignalK/signalk-server/releases
- signalk-venus-plugin v1.41 -> v1.43.1. https://github.com/sbender9/signalk-venus-plugin/releases
- signalk-to-nmea2000 v2.20.0 -> v2.21.0. https://github.com/SignalK/signalk-to-nmea2000/releases
- course-provider v1.1.0 -> v1.2.3
- freeboard-sk v2.11.3 -> v2.14.3
- resources-provider v1.1.2 -> v1.3.2
- instrumentpanel v0.25.0 -> v0.26.0

Modbus-TCP
- Add 32-bit registers for a number of values that have outgrown their 16-bit size:
  - Battery DC power, register 256. Used to be limited to 32kW.
  - Solar charger PV power, register 792. Used to be limited to 6553.5kW.
  - Generator power, registers [3230-3235]. Used to be limited to 32kW per phase.
  - AC load power, registers [3924-3929]. Used to be limited to 32kW per phase.
- Add register for Multi RS ESS Active SocLimit: This is the actual minimum SOC the system is using, it can be different from the Minimum SOC setting if BatteryLife is active, register 4926, uint16
- Add registers for AC input current limits for RS-systems
  - Register 4940: AC input current limit for AC-in-1
  - Register 4942: AC input current limit at the meter

Developers / under water

- Update Linux kernel from v5.10.109 to v6.12.23, an up to date LTS version.
- Disable no longer recommended TLS 1, TLS 1.1 and DTS 1 system wide, by defaulting to minimal TLS2 and cyphers as recommended by Mozilla, see https://wiki.mozilla.org/Security/Server_Side_TLS.
- Update FlashMQ, the built-in MQTT broker, to v1.21.1
- Update OpenEmbedded from Dunfell version to Scarthgap.
- dbus-spy command line tool: Add search capability to find a service/path quickly (/ to search, n forwards, N backwards)
- Add htop as optional installable package

v3.55 – March 7nd 2025

- New UI: Fix bug that prevented the tank alarm thresholds to be configurable.

v3.54 – January 29th 2025

- Multi RS: Add setting to enable and disable the Multi RS grid lost alarm. It is the same setting as for Multis and Quattros: the "Monitor for grid failure" setting in Settings → System setup.
- Managed CAN-bus BMS connected batteries: reword the High battery voltage alarm into High cell voltage alarm. The new term better indicates the actual issue. Note that in most situations such alarm indicates an imbalance issue in the battery. Consult your battery documentation on how to restore cell balance.
- NMEA2000-out feature: add VREGs with detailed AC in/out current for inverter/chargers.

v3.53 – January 8th 2025

- Fix Cerbo GX MK2 VE.Can 2 port failing after some time on a certain percentage of units, especially when running the New UI.
- New UI
  - Fix access level issue in various device list controls
  - Fix the max gauge range setting for AC input 2 current gauge.
  - Show multi-phase solar inverter output in watts not amps
  - Fix bug in energy meter firmware version formatting
  - Add missing data for Lynx Smart BMS
  - Fix bug in Bluetooth temperature sensor offline/online transition handling when operating the New UI in a webbrowser
  - Update translations
- VE.Bus inverter/chargers: add kWh counter mechanism for [external transfer switch based systems](#).

v3.52 – November 21th 2024

New UI
- Fix Settings → ESS → Peakshaving switches not working as well as issue in Limit inverter power and similar settings, where they could end up in -1W when trying to set them to 0W.
- Use BMS custom name in Device List even when BMS is off
- Fix issue with the scan button in the Modbus TCP/UDP devices configuration menu. It didn't work on GX Touch / Ekrano GX.
- Overview page: fix all known issues related to grid/genset input
- Make sure to always show grid/shore on top, genset below it
- Fix which AC input to select/highlight
- Add ESS and Min SOC controls to Inverter/Charger control card for RS systems
- Add "has AC Out setting" into system settings
- Fix problem where VE.Bus system reset button could end up to be disabled/unusable when loading the UI in a certain way.
- Update translations

Temperature senders
- Fix issue where, depending on sensor type versus UI combination, it wasn't possible to select temperature types other than Battery, Fridge or Generic. Fixed for all combinations and situations.

ESS, Managed Batteries and DESS
- Autoconfiguration for Batrium BMS "0xB038" profile, BatriumD. This includes enforcing DVCC on, and SVS on, and STS off.
- Autoconfiguration for LBSA. DVCC on, SVS off, STS off
- Fix two issues where an DESS error could be raised while there is actually no error.
- Fix peak shaving feature sometimes not working in system with Energy Meter + VE.Bus MultiPlus/Quattro system. This affects cases where the Multi is charging the battery, while other high loads such as EV-charging is also present.

Parallel Lynx Smart BMS & Lynx Smart BMS NG functionality
- Fix that, while charging, the user interface sometimes shows an (outdated) Time To Go. Now it shows dashes again, as expected. (TTG is only valid while discharging)

Marine MFD HTML5 app
- Fix Remote Console (Classic UI) not working on Furuno MFDs since Venus OS v3.50 release.

Other
- Fix WiFi dongle not working (recent batches have an updated chipset), applies to CCGX WiFi module simple (Nano USB) / BPP900100200.

v3.51 – November 5th 2024

New UI
- Fix EVCS connection line on the Overview page, it now connects to the AC Load box, instead of directly to the Inverter/charger

- Add support for a USB-connected mouse; used in systems where a large screen is connected over HDMI to a Cerbo GX with an additional mouse to USB for navigation. Note that it can respond sluggish.
- Hide onboarding / what's new wizard in case the touch input is disabled.
- Fix and improve various more small user interface issues.

Classic UI
- Remove the "Good news! There is a new user interface" pages.

Known issues
See [this post on Victron Community](#) for the known issues.

v3.50 – October 30th 2024

For details and screenshots, see [the v3.50 release blog post](#).

User interface
- A completely renewed UI. Available for the physical displays of the Ekrano GX as well as the GX Touch display accessory of the Cerbo GX, and on Remote Console on LAN as well as Remote Console on VRM for all GX devices, including the Color Control GX and Venus GX. For further details, read the v3.50 release blogpost.

  After updating a GX device to Venus OS v3.50, it will at first still use the old user interface. See Settings -> Display -> User interface to change to the new UI.

Marine MFD HTML5
- Add support for DC gensets.
- Show Amps or Watts, configuration is in the new UI.

Tank metering integration
- Add support for NMEA2000 tank senders using class/function 80/150, includes NMEA Tank converter CX5001, as well as class/function 25/132, includes the KUS NKC42 Network Converter.
- Add support for the soon to be launched Safiery STAR-tank sensors. Wirelessly connected to the GX via Bluetooth. These are Bluetooth Long Range radar tank level sensors, which are part of the Safiery STARSHIP product range, to be released at the METSTRADE Amsterdam November 2024 (https://safiery.com/starship-digital-switching-marine/).

Alternator Controller integration
- Argo Zeus Alternator Regulator: add DVCC control
- Add MG Energy Systems AFC 300 Alternator Regulator

ESS
- Add "AC output only" feature to System setup -> Position of loads, which allows to hide the Essential loads box – for systems having loads on the input only. Applies to systems with an Energy Meter only.

Managed battery integration
- Add auto-configuration for Leoch, ZYC and Pytes batteries. DVCC is force enabled, SVS and STS is force-disabled
- Add remote firmware updates for ZYC
- Venus OS 3.50 now better handles Pylontech batteries experiencing cell voltage imbalance. For this improvement to be active, the GX needs to have access to the cell voltages from the Pylontech BMS. To check if a system has this capability, navigate to the Battery, then Details, and check for Lowest cell and Highest cell voltage readings. If not, it might indicate that the BMS doesn't support it or needs a firmware update.

Genset integration and start/stop features
- Add option to skip warm-up delay in case the start is triggered by an inverter overload warning.
- Increase the maximum configurable warm-up time from 10 to 30 minutes.
- Improve menu structure.
- Improve runtime accuracy for connected controllers, by using the run time as reported by the controller
- Improve runtime accuracy for genset started and stopped via a relay by adding the option to use a digital input to enable and disable genset running status.
- For further details, see [this Generator integration and start/stop presentation](#).

Genset integration – compatibility
- Add support for the CRE AMD, Compact Prime and Compact Mains models.
- Add support for the DEIF AGC 150 series.
- Add RS485 RTU connection support for DSE controllers. This allows a low-cost connection to most used DSE start/stop controllers, including the DSE7310MK2, DSE7410 MKII, DSE7420 MKII, DSE8610 MKII, DSE8620 MKII and DSE8660 MKII. Requires an isolated RS485 to USB interface, such as the Hjelmslund USB485-STIXL 2.
- Add support for DSE 4520 MKII controller, including option to use wired relay for start/stop as that controller does not support start/stop commands over the comms channel.
- Add support for Fischer Panda DC gensets, does not include DVCC current and voltage control.
- Add support for Hatz fiPMG DC gensets, includes DVCC current and voltage control.
- For further details, see this Generator integration and start/stop presentation.

Security and VRM Portal settings
- Various changes have been made to increase local network security as well as simplify the related configuration options and reduce configuration and commissioning time.
- Add secure encrypted communication (https) for Remote Console on LAN, both for the Classic UI as well as the New UI.
- Three new settings:
  1. Settings -> General -> Network Security Profile (Secured, Weak and Unsecured)
     The setting controls how secure connections made to the GX are on the local (WiFi-) network. Three options: Secured (https + password), Weak (https or http + password) and Unsecured (https or http and no password). After being update to Venus OS v3.50, this setting is automatically initialised to the option that matches the previous settings.
  2. Settings -> VRM Portal -> VRM Portal mode (Off, Read-only and Full)
     Controls the connection to the VRM Portal. For newly produced GX devices, Full is the default.
  3. Settings -> Services -> MQTT access. This setting enables or disables MQTT access over ports 1883 (plaintext) and 8883 (secured). For details, see Developer section further down. Note that, unlike previous versions, its no longer needed to enable MQTT for the Marine MFD HTML5 app. Instead, set the Network Security Profile to Unsecured.
- These settings have been removed as they are replaced by above settings: VRM Logging Enabled, VRM http plaintext, VRM Two way communication, MQTT on LAN (plaintext) and MQTT on LAN (SSL)

Other changes
- Energy Meters ET340, EM24-RS485 and EM540: add read-out of AC frequency. Available locally and on VRM.
- Add VRM Portal trouble shooting details for the real-time connection, which is also used for Remote Console on VRM with the New UI. See Settings -> VRM Portal. Details are only visible in case there is a connection issue.
- Lynx Smart BMS paralleling: only parallel Lynx Smart BMSes which are configured to the same voltage (12, 24 of 48V).
- Fix remote update issue with MultiPlus 12/3000/120-50 specifically; this bug has been in the system since the introduction of remote updates, in 2018.

Venus OS Large – Node-RED
- Various new nodes and improvements to existing nodes. See this change log for the full details. Venus OS 3.50 ships node-red-contrib-victron v1.5.23. Venus OS v3.42 shipped v1.5.18

Venus OS Large – Signal K Server
- signalk-server updated from v2.8.3 to v2.11.0 – change log.
- signalk-venus-plugin updated from v1.37.0 to v1.41.0 – change log.
- signalk-n2kais-to-nmea0183 updated from v1.4.1 to v1.5.0

RV-C Out Feature
- Battery: Fix issue where some values were always reported as 0.
- Tanks: Add support for TANK_CALIBRATION_COMMAND to be able to set the capacity of a GX tank input (ie. analog input on Cerbo GX or GX Tank) through RV-C.

RV-C In Feature
- Garnet tank senders: add feature to configure tank capacity, in order to show indication in liters aside from already existing 0 to 100% indication.
- Battery support: add DVCC / closed loop control for Lithionics; same as already support when using N2K protocol with Lithionics.

- Add register 2717: ESS grid metering point setting (meter or AC-in) for Multis and Quattros.
- Add register 2644: AC Frequency from the grid meter.
- Add register 3922: AC Frequency by Energy Meters configured to be metering an AC Load.
- Add register 2716: VE.Bus ESS systems: setting volatile AC power setpoint. All systems doing frequent updates of the power setpoint, ie. systems having their own control loop, are recommended to use register 2716 instead of registers 2700 and 2703. The difference is that 2716 is a volatile setting, and doesn't result in writes to (settings-) log files.
- Add registers 5400 – 5429: Dynamic ESS settings and feedback
- Add registers 2713 – 2715: Controlling the peak shaving mechanism
- Fix register 3209, AC Frequency for gensets
- Add register 4620: Multi RS Short circuit alarm
- Add register 4615: Multi RS Sustain state

Developer related – MQTT
- The new MQTT access setting enables or disables MQTT access over ports 1883 (plaintext) and 8883 (secured). It no longer controls their websocket equivalents, they are always enabled since they are needed to gui-v2.
- FlashMQ broker: block incoming topics matching "N/<portalid>/#" This is to prevent external equipment from publishing messages into the Victron topic tree of an installation, possibly overwriting real data and as such causing confusion and very hard to diagnose system behaviour.

Developer related – other
- fix issues created by certain third party add-ons, which fill up the data partition with log files: truncate log files created by third party add-ons during Venus OS boot. When larger than 1MB, all files matching /data/..../current.log, typically created by dbus-shelly-* will be truncated. For details [see this commit](#) and the linked issue.

v3.42 – September 11th 2024

Changes
- Fix error #122 which occurred when, remotely over the VRM Portal, updating Multi- and Quattro inverter/charger systems with a VE.Bus BMS v2 installed.
- Fix all known communication issues with ComAp genset start/stop controllers. This includes issues that occurred in combination with the recent ComAp firmware version v1.6.0.49.

v3.41 – July 31th 2024

Changes
- Orion XS: a continuous connection lost and reconnection cycle between the GX Device and an Orion XS has been fixed. This occurred when the Orion XS had certain data in its history.
- Fixed a bug that made it impossible to update the firmware of the MultiPlus-II 48/3000/35-32 (id 2699xxx) via the VRM Remote Firmware update feature.
- Reduced CPU usage for systems not using the parallel Lynx Smart BMS feature. This unnecessary increase of CPU was introduced in v3.40, and has been solved by only activating that subsystem (automatically) when there are two or more Lynx Smart BMSes in the system. The effect is approximately a 6% reduction in CPU on a simple system on a CCGX, and approx. 2% on a Cerbo GX.
- Reduced CPU usage for systems not using the Generator start/stop functionality, with similar percentages and solution as the above.
- Managed batteries: fix compatibility issue with certain firmware versions of Pytes batteries; This bug was introduced per Venus OS v3.40 and is now fixed.

v3.40 – July 17th 2024

Highlights
- Add parallel redundancy for Lynx Smart BMS and Lynx Smart BMS NG. Multiple Lynx BMSes, each with their own battery bank, can now be installed together to form a single system. This adds (a) redundancy, (b) increases the maximum installable capacity and (c) increases the maximum allowed high charge and discharge currents. Requires Lynx BMS firmware v1.11, available for both the Lynx Smart BMS and Lynx Smart BMS NG – will be released today.
- Add remote access, via VRM, to the Victron EV Charging Station web interface. Allows remote configuration, trouble shooting and monitoring.
- Add integration with the Integrel E-Power generator.

For further details of above features, keep an eye out for the coming blog posts and documentation updates.

Genset controller integration
- Add generator engine oil temperature reading to the gui, works for those generator controllers that support that.

DVCC and managed batteries
- Add MeterBoost batteries and force good settings
- Force enable DVCC for the Lynx Smart BMS NG

Venus OS Large
- Add Victron-VRM-API node, a node that makes it easy to get data from the VRM database. v0.2.6. [Change log](#).
- Victron Node-RED palette
  - Add feature to write strings to a custom output node
  - Fix a bug that could cause relay 1 on the GX to be disabled
  - node-red-contrib-victron was updated from v1.5.15 to 1.5.18. [Change log](#).
- Signal K Server: update all Signal K plugins as well as all other (less visible) nodejs packages to their latest version. Signal K Server itself remained at version v2.8.3, which is the latest available version and unchanged compared to the previous release of Venus OS, v3.34.
- Update Node-RED from 3.1.5 to 3.1.10. [Node-RED change log](#).
- Update NodeJS from 18.18.0 to 18.20.3. [NodeJS change log](#).

Other changes
- Ruuvi wireless temperature sensors: increase low battery alarm hysteresis to avoid repeated triggers.
- Cerbo GX MK2: change the name of the CAN-bus ports in the UI to VE.Can 1 and VE.Can 2 to match the wording printed on the enclosure.
- UI: hide submenus in the battery menu in case they are empty, for example the history submenu, which is available for SmartShunts and BMVs but not for CAN-bus connected batteries.
- Add monthly option to ESS Scheduled Charge levels menu
- Various improvements on visualization
- Various stability improvements

Modbus-TCP
- Add register 4614: ESS Minimum SOC limit for the Multi RS.
- Add registers 1320 to 1324 for the Lynx Smart BMS NG.
- Add registers 4900 to 4924 for the ac system, which aggregates Multi RS systems.
- Add registers 868 to 871 for the system wide inverter/charger power and current summary
- Add registers 872 to 883 for the totalised consumption power data, which on the GX UI is also visible as loads and critical loads
- Add registers 106 to 109 that give access to the UPS, boost factor, Power Assist and Inverter voltage settings in VE.Bus Multis and Quattros. This replaces (!) the same registers added earlier, since they didn't work properly. In the new implementation, the registers control these settings for all devices in the VE.Bus system.

Developer related
- Add more pts as securetty. This is reported to improve Tailscale connections.
- Add com.victronenergy.acsystem: this D-Bus service serves as an aggregator for multiple individualy Multi RSes (which are each individually on D-Bus as com.victronenergy.multi).
- MQTT improvements to reduce internet traffic used, by not sending data to VRM when data is requested locally by for example the VictronConnect App or the Marine MFD HTML5 App.
- Add a patch to python3-dbus-next package, which is used by our dbus-acsystem package. [Details](#).
- Linux kernel used for all GX devices: enable various netfilter modules needed for Tailscale. Not needed for the kernel used on the RaspberryPi since it already had these modules enabled.

v3.34 – June 27th 2024 (Venus OS Large only)

Signal K Server

- Improve App store user friendliness
- Various security updates
- Various other bugfixes and improvements

- Allow users without a password
- signalk-venus-plugin update from v1.34.1 -> v1.37.0

For details, see [the full Signal K Server change log](#), and [signalk-venus-plugin changelog](#).

v3.33 – June 12th, 2024

Generator management

- Improvements to the "generator auto-start is off" alarm. The purpose of this feature is to warn when the auto-start functionality has been forgotten to be re-enabled. And for a digitally connected gensets, such as DSE, ComAp and Fischer Panda, it includes checking that Remote starts are enabled on the genset panel. These are the two alarms:

  1) when the GX auto-start stop is disabled, the "GX Auto start/stop is disabled" alarm is raised.
  2) when Remote starts are not allowed by the genset panel, ie inside the DSE, ComAp or Fischer Panda - usually this is done while servicing the genset, the "Remote start is disabled on the genset" alarm is raised.

  These alarms are raised on the GX as well as on VRM.

  Until now, there was only one alarm rather than two. And due to a bug it didn't always work well, and the alarms weren't available via VRM. That has all been solved.

- Improvements to the menu structure for digitally connected gensets, such as DSE, ComAp and Fischer Panda.

  For details, see [the supporting power point](#), available in the Venus OS firmware section on https://professional.victronenergy.com, same location as where this change log is.

VE.Bus connected Inverter/chargers (Multis, MultiPlus-II, Quattro)
- Fix ESS peak shaving menu for the "Above minimum SOC only" option: when set to that option the export and input current limit were not available. Note that for most peak shaving applications, the other mode, "Always", is recommended.

Tank inputs on Cerbo and Ekrano GX, as well as GX Tank 140.
- Reword the "Disconnected" state to "Open circuit", which is more clear and less ambiguous with other states.
- Remove limit of max 32 sensors, the maximum is now limited by memory and CPU.
- Internal changes.

Internal / developer related
- MQTT Broker on the GX (FlashMQ): stability improvement, fix possible spinning while loop in websockets.
- Add feature to allow analog input (temperature and tank levels-) calibration in production

v3.32 – May 23rd, 2024

General
- Fix notifications not being shown as acknowledged. Probably introduced per v3.30
- RV-C protocol: Fix bug that causes crashes and restarts + RV-C Out Tank feature.
- VRM and VictronConnect connectivity (MQTT): Fix connection to cloud service not reconnecting/restoring in a certain edge case.
- Fix problem where the error code sometimes gets stuck. But was present since Dynamic ESS introduction (Venus OS v3.30)

Managed batteries
- Fix issue that causes Freedomwon batteries to sometimes disappear after a reboot, causing the Inverter/charger and other components to show "Error 67 - no BMS". In more technical terms: we fixed an issue that caused the BMS-Can interface to sometimes hang on high traffic during boot. Details:
  - The issue, and fix, only involve the BMS-Can port. Not any of the ports marked as VE.Can on enclosures. Products having a BMS-Can port, and that were affected, are the Cerbo GX (not the recent MK2 model) and the earlier EasySolar-II GX and MultiPlus-II GX series.

- The issue exists since mid or late 2023, the high traffic is caused by a recent BMS Firmware/Profile released by Freedomwon around then. Any system installed and commissioned since then will benefit from updating to Venus OS v3.32 or later.
- EasySolar-II GX and MultiPlus-IO GX recent hardware series that have a VE.Can port: fix communication with Pylontech Force-L2

v3.31 – April 22nd, 2024

General

- Fix a bug that can cause the onscreen UI to show a green square as well as Remote Console locking up. This issue was introduced in v3.30.
- Fix EVCS firmware updates over VRM failing on fast network connections.
- User interface: fix alarm icon showing while there is no alarm, issue was introduced in v3.30
- User interface: remove DESS Minimum SOC menu entry, since that is now configurable on the VRM portal rather than in the GX menu structure.
- Dynamic ESS: fix bug where PV from grid-inverter was fed back into the grid rather than used to charge the battery, in certain conditions.
- VM-3P75CT Energy Meter: fix power readings not properly available when using multiple of these energy meters on the same VE.Can network.

Venus OS Large, signalk-server:
- Update signalk-server from v2.5.0 to v2.7.1. Change log: https://github.com/SignalK/signalk-server/releases.
- Update signalk-venus-plugin from v1.34.0 to to version 1.34.1, which fixes a rare crash. Change log: https://github.com/sbender9/signalk-venus-plugin/releases/tag/v1.34.1.

Developer related

- FlashMQ, an internal tool: update from v1.9.1 to v1.11.0 as well as allow empty usernames. Allowing empty usernames fixes certain MQTT clients not being able to login as well as other tools that used to work up to Venus OS v3.20 but didn't since we switched to FlashMQ. For the complete FlashMQ change log, see https://github.com/halfgaar/FlashMQ/tags. And for more details on this issue see https://github.com/victronenergy/venus/issues/1257.
- Add mosquitto_pub and mosquitto_sub clients to the standard toolset on Venus OS.

v3.30 – March 19th 2024

Highlights
- Add current limiting, aka peak shaving, for ESS systems with an energy meter. Requires ESS Assistant version 018C to be installed. Note that when that Assistant is not up to date, the new current limit settings are not visible in the UI).
- Marine MFD App: reduce load time, fix Fahrenheit support, fix tank gauges flickering bug, fix sensors not visible in certain circumstances, improve tank gauges responsiveness and alignment and icon shrinking, improved battery gauges responsiveness.

General
- Ruuvi wireless temperature sensors: add low battery warning. This is for the small coin battery inside the Ruuvi tag. When temperature is below 20 °C, the threshold is 2V. When temperature between -20 and 0 °C, the threshold is 2.3V, and otherwise its 2.5V.
- MPPT RS: Fix spurious low and high battery voltage alarms. This bug was introduced per Venus OS v3.20, and affected MPPT RSes connected over VE.Can.
- Lynx Smart BMS: Fix spurious low and high voltage alarms active on VRM, typically happened after restarting the GX.
- Cerbo GX: add option to disable the LEDs, see Settings -> General -> Enable status LEDs.
- Cerbo GX: fix missing restart of the UI after hotplugging a GX Touch. This was broken in v3.20 or earlier.
- GUI: Remove option to toggle the relay in the Settings -> Relay menu when its configured to for a specific purpose (Alarm or Generator start/stop). When using it for automatic generator start/stop relay, use the Manual start/stop option instead. To switch the relay by hand otherwise, set it to manual control first.

Generator start/stop controller integration

- DSE: Add support for the DSE 8620-MKII and the DSE 6120.
- ComAp: Fix coolant temperature and oil pressure register decimals

Modbus-TCP Registers
- Add register 105 for redetecting the VE.Bus system
- Add registers 142, 143 and 144 for enabling/disabling UPS function on Multis/Quattros
- Add Orion XS registers

Venus OS Large – Node-RED
- Node-RED updated from v3.1.3 to v3.1.5 - https://github.com/node-red/node-red/releases
- Victron nodes: output enumerated value as msg.textvalue: For input nodes that use an enumerated value as data, also output the textual value as msg.textvalue. For these nodes also show this textual value in the status text.
- Victron nodes: add read-out + control of the Cerbo GX status LEDs via the settings nodes.

Venus OS Large – Signal K Server
- Fix N2K VE.Can port not being configured out of the box for the Ekrano GX.

v3.22 – Feb 27th 2024

Changes:

- Fix MQTT issue that caused time-outs and/or internal MQTT service restart in systems where the GX was receiving many MQTT writes. This affects systems with customer-own software, for example special control loops that run a different ESS algorithm than the standard Victron one. The bug was introduced per v3.20.
- Improve firmware update stability of the Victron VM-3P75CT energy meter.
- Fix bug that (sometimes) caused the VM-3P75CT to not be read out properly – when connected over VE.Can.
- GUI: fix text in alarm and warning notifications of BMS and Charger alarms.

Known issue:

- Spurious low and high battery voltage alarms are generated for the MPPT RS, when connected via VE.Can. Both on the GX itself, visible on the notifications page, as well as on the VRM Portal. Per 2024-03-12, the VRM part of it has been solved – the VRM Portal no longer. The remaining problem, the spurious notifications on the GX itself, will be solved in the next official release, planned for latest end of March. This bug was introduced per Venus OS v3.20.

v3.21 – Feb 19th 2024

Changes:

- Fix MQTT issue that prevented writing negative numbers over the MQTT protocol. This bug affected systems with customer-own software, for example special control loops that run a different ESS algorithm than the standard Victron one. The bug was introduced per v3.20, last week.

v3.20 – Feb 13th 2024

Changes:

Highlights

- Completely renewed Marine HTML5 App
    - Increased readability by increasing font sizes and other changes
    - Tank levels readout has been added.
- Add support for our [new Orion XS 12/12 50A DC-DC Battery charger](). Feature set:
    - Monitoring locally as well as remotely on the VRM Portal
    - When configured as a charger, there are these DVCC features: (1) Shared Voltage Sense, Shared Temperature Sense and Shared Current Sense. (2) System wide charge

current limiting. For charging, Solar has first priority, then the DC/DC Converter and any remaining charge budget is given to chargers and inverter/chargers. (3) BMS Control.

Managed batteries
- Add auto-configuration for the WeCo batteries (Force enable DVCC and SVS, and disable STS)
- Add auto-configuration for the FinDreams battery (Force enable DVCC and SVS, and disable STS)
- Cerbo GX, BMS-Can 500kbps port: improve connection stability by enabling auto-recovery after a BUS-OFF event. It is now no longer necessary to power cycle the GX after for example having connected a battery with a different baudrate.
- Fix issue causing rare non-existing notifications for battery warnings and alarms.

Ekrano GX
- Fix the LCD displays showing up distorted when the Ekrano GX is cold.

Generator monitoring
- Add error code descriptions for DSE generator controllers
- Add read-out of "number of engine starts" for DSE generator controllers
- Add read-out of tank level when monitored by DSE generator controllers or ComAp generator controllers. The tank will show as a separate tank sensor.
- DSE: Fix engine speed reporting

PV Inverter integration
- Fix compatibility with the recent SMA TriPower 3.04.16R firmware release.

Multi RS
-
- Add support for custom tracker names
- Add option to set the Multi RS in passthrough
- Report MPP state per tracker (on maximum powerpoint vs limited). This is used by the VRM solar forecasting algorithms.
- Fix the enabling and disabling of the short circuit alarm

Other
- Add Ukranian as a language
- IMT Sensors: add support for the second temperature sensor, a new feature on recent model IMT irradiance sensors.
- IMT Sensors: add support for older IMT sensors having firmware version prior to v1.53
- Update Motorhome/boat demo 2 to include an alternator
- Remove support for the Quby AC sensor; a type of energy meter we sold briefly many years ago.
- Ekrano GX and Cerbo GX: Make the temperature calibration parameters accessible to "user and installer", so that users and installers can now manually correct and optimise the temperature readings of the Cerbo and Ekrano built-in temperature ports.

NMEA2000
- add support for reading generic alternator data. Requirements: N2K device class=35 (electrical generation), function=141 (DC generator), PGN 127506 DC Details with DC type set to alternator, PGN 127508 Battery Status (voltage, current and temperature). Works with the Curent monitor of Across Ocean Systems.

Modbus-TCP Registers
- Add registers for the Orion XS when configured as DCDC Converter. Full register set when configured as a charger is coming soon.
- Add registers for setting the boost factor, PowerAssist & Inverter output voltage settings for VE.Bus devices (Multis, Quattros). Of use in certain advanced hybrid generator systems to further optimise them (automatically).
- Fill the gap between register 826 and 840 for the system service. This allows all values to be fetched in a single block. Unused values return 0xFFFF
- Report system time as a 64-bit register (uint64).

Venus OS Large – Node-RED
- Update Node-RED from v3.0.2 to v3.1.3

- Update nodejs from v1.18.16 to v1.18.18
- Various new features in de Victron pallet and its nodes
  - Add option to show the values in the flow. Instead of OK and Connected. A very nice improvement, see below screenshot.
  - Add option to store the last value in the global context. This allows for easier use of the current value by other nodes. Both showing the values as storing it in the global context can be (de)activated in the configuration.
  - If "only changes" and rounding values has been configured, now only send a value when the rounded value changes.
  - New nodes: input-dcdc / output-dcdc, supporting the new Orion XS when configured as DC-DC Converter. Nodes for Orion XS when configured as a DC-DC Charger (represented as an alternator) are coming soon; until then the custom node can be used.
  - Above is the summary of changes, for full detail – see the node-red-contrib change log. Venus OS v3.14 shipped node-red-contrib v1.5.0. This was updated to v1.5.10 in Venus OS v3.20
- Add the new Node-RED Dashboard 2.0: a completely renewed dashboard by Flowfuse. It can be accessed remotely over VRM. For further details about Dashboard 2.0, see https://dashboard.flowfuse.com/about.html.

Venus OS Large – SignalK

- Update SignalK Server from v1.46.3 to v2.5.0
  - Fixes various UX issues
  - Adds user documentation, see https://demo.signalk.org/documentation
  - Many improvements and changes, see full change log at https://github.com/SignalK/signalk-server/releases
- Update signal-venus-plugin from v1.30.2 to v1.34.0
  - Change log: https://github.com/sbender9/signalk-venus-plugin/releases
- Update signal-n2kais-to-nmea0183 from v1.3.1 to v1.4.0
  - Change log: https://github.com/sbender9/signalk-n2kais-to-nmea0183/tags

Developers / under the hood

- Replace the Mosquitto MQTT broker by FlashMQ. Increases performance, meaning reduced load and connection time of the HTML5 App and VRM Portal real-time data connection; as well as reduced CPU load on the GX device. For further details of changes, including a few MQTT API changes, see https://github.com/victronenergy/venus/issues/1098.
- Add files for the RaspberryPi 3a Plus model.
- Update Openembedded Dunfell branches, increasing package version various (linux) components; including security fixes.
- Add Ignore AC in option on dbus for Multis. The same was already available for Quattros. (com.victronenergy.vebus /Ac/Control/IgnoreAcIn1)
- Add wireguard-tools as optional package (opkg) as well as enable the wireguard driver in the kernel.

v3.14– Jan 24th 2024

Changes:

- Add support for all new Mopeka tank sensor models: Universal Pro, TD40, Pro 200 and Pro+.
- Add support for the ARCO Zeus alternator controller. Includes reading out locally on the display of the GX device as well as monitoring on the VRM Portal. Note that there is no DVCC integration. See Arco ZEUS their documentation on Victron integration for further information.
- PV Inverter integration:
  - Fix issues in detecting newer models of Fronius inverters that caused them to be recognised as single phase inverters rather than what they are: three phase; when not

using the Sunspec/ModbusTCP type of integration (which is disabled by default in the configuration of the Fronius).

- o Add support for new SMA TriPower X PV-inverters, and possibly even more models. All PV-inverters that use the newer Sunspec data-models in the 700 series (IEEE1547) will now be supported. Limiting, aka Zero-feedin is not (yet) supported on any of these.
- o Add support for read-out of KACO PV Inverters. Note that Zero feed-in is not supported at the moment
- Multi and Inverter RS: Fix bug where Multi-RS and Inverter-RS turns on and off in a 60 second loop when the battery sends DCL=0.
- Remote firmware updates (via VRM Portal): Fix bug/crash during scanning for devices with the mk3 on old firmware and Multi switched off.
- Fix analog inputs on Cerbo to disappear after having updated to beta version v3.20~34 (or later) and then having restored back to v3.13 or earlier. Once updated to v3.20, the only way to go back and still have the analog inputs working is to go to v3.14. The analog inputs will not work on earlier versions.
- NMEA2000 out: Fix sending of the Configuration Information PGN fields.The Manufacturer Information field was incomplete.

v3.13– Dec 6th 2023

Changes:

Generator integration

- ComAp: fix Runtime hours display which was off by a factor of 60. Thanks to Srdjan Savic.
- DSE: fix engine speed reporting
- DSE: fix 7xxx MKII support

ESS

- Increase limit of 32.7kW per phase limit to 138kW.
- Fix problem where the recently introduced setting "Self-consumption from Battery" to "only critical loads" did not work correctly if a Multi on L1 was compensating for loads on other phases.

DVCC

- Fix bug where DVCC user charge current limit is ignored in systems with a VE.Bus BMS. Bug was introduced in Venus OS v3.00.

RV-C protocol

- Fix TANK_STATUS DGN not being sent out; this was broken per v3.00
- Fix transmission of DGNs related to the GX itself; this was broken per v3.00
- Fix External control state field in the CHARGER_STATE DGN
- Improve CHARGER_STATE in case the charger is disabled or mains is not present.
- Improve INVERTER_STATE in case the inverter is disabled or cannot invert due to low battery.

v3.12– Okt 31th 2023

Changes:

- Add support for the new Victron Energy Meter, VM-3P75CT.
- Add enable/disable switch for EV Chargers and VE-energy meters. Defaults to disabled: from now onwards, when installing an EV Charger with a GX, the EV Charger needs to be enabled in the GX. Any EVCS already seen in a prior GX firmware version will be enabled automatically.
- Add digital read-out as well start/stop control of DSE generator controllers. Connection is over Ethernet, using the Modbus-TCP protocol.

Note that adding a DSE chapter into the GX documentation is still being worked on. Meanwhile, the most important hints are: (1) connect the controller and GX on the same LAN. (2) make sure that the Modbus-TCP server in the DSE is enabled. (3) no further Modbus-TCP related settings are required: the GX expects all register configuration in the DSE to be as per their DSE defaults (4) in the GX, menu Settings -> Modbus TCP/UDP, find and then enable the generator controller. (5) now, the DSE generator controller will show up in the Device List, further configuration, including auto-start stop, is done in its submenus.

Supported DSE models:
- o 4510 MKII
- o 4620
- o 6110 MKII
- o 7310 MKII
- o 7410 MKII
- o 7420 MKII
- o 8610 MKII
- o 8660 MKII

- Fix MultiPlus II 2x120V device screen shows large negative current on AC-Out L2 when inverting or with single phase grid connection, for systems running VE.Bus firmware version 504 or later.

v3.11– Okt 10ᵗʰ 2023

Changes:

- Show a warning if the firmware for the MK3 controller built into the GX device has not been updated yet. For details, see the v3.00 blog post.
- Fix Ekrano GX remote firmware update issues with VE.Can products: the remote firmware update mechanism did not accept having two ports configured with the VE.Can profile, which the Ekrano has by default.
- Fix user interface bugs concerning generator start/stop, related to modifying the total run time as well as service interval, as well as (sometimes) Oil pressure and RPM no longer being shown for Fischer Panda gensets.
- Solar and wind priority: fix a small bug around charge battery to 100% visualisation.
- Various fixes for Dynamic ESS.
- Remote Multi/Quattro firmware updates: fix bug where the Multis and Quattros don't show on on the VRM firmware update device list if the mk3 firmware has not been upgraded.

v3.10– Sept 11ᵗʰ 2023

Changes:

Generator start/stop
- Add integration with ComAp generator controls, via the ComAp CM Ethernet module. To enable, go to the ComAp CM Ethernet Module configuration (using the ComAp InteliConfig software), and enable the MODBUS Server.
- Add resettable down-counting service interval.
- Add an option that monitors if the generator is in autostart mode. If the generator is not in autostart mode for more than 10 minutesm an alarm will be raised.
- Fix generator detection alarm being triggered during warmup and cooldown.
- Fix generator unwanted restarts in combination with "Stop generator when AC-input is available" and regular grid failures.
- Add option to set a start and stop delay for the SOC condition. This is useful when using the "Stop generator when AC-input is available" option. Setting a delay on SOC helps to prevent starting the generator for very short grid outages.
- Add "stopping" state to the generator. It is now first running, then, if enabled, cooling down, and then 15 seconds stopping. This is to accommodate generators that take a while to stop.

Only after those extra 15 seconds, the inverter/charger will reconnect to mains; if available. Fixes issues with generators that take a while to stop in combination with the recently added cooling down option.

ESS and DVCC
- Add new setting that allows for ESS to only use battery power for essential loads. This is relevant for ESS systems with (a) a grid meter, (b) quite significant non-essential loads, (c) Feed-in disabled. The setting allows battery banks to be sized to get critical loads through the night, without the battery being discharged into the non-essential loads.
- Add support for 12V Pylontech batteries
- Managed batteries: add per-module diagnostics, so that technicians and support personnel can more easily identify, especially remotely, which battery module has an issue. There are currently no battery makers yet that support this.

Ekrano GX
- Fix remote firmware updates for VE.Can connected devices.

Multi, Quattro and EasySolar
- Add visualisation and control for the new Solar and wind priority feature, relevant for boats, vans and other systems with a shore power connection as well as solar or wind power. Further details.
- Update the product name list, fixes a generic name showing for recent models, instead of full name.

Other products (RS, SmartShunt, Energy Meters, EVCS and more)
- Fix bug causing SmartShunt IP65 not always working on GX device.
- Improve remote firmware update discovery for EVCS.
- Fix connection issue with ABB meters.
- GX Touch 50 fix resolution issues (in case of bad connection from hdmi plug to socket), by making the Cerbo GX default resolution the same as GX Touch 50 requires. Note that we've analysed various RMAd GX Touches, and in almost all cases the issue was solved by removing and then re-inserting the hdmi plug a few times.
- Improvements for EM300 and EM500 meters in case using them for single phase systems, with their main measurement on L1, + piggybacking an inverter on L2.
- Fix bug where sometimes, consumption from a Multi-RS is not correctly logged to VRM.

Modbus-TCP
- Add 32-bit registers for power values, for grid meter and pv-inverter services.
- Change the ESS max discharge current register to being a signed integer. This allows setting -1, which is needed to disable the limit.
- Add registers for reading- and resetting generator service interval: Registers 3510 (32-bit) and 3512
- Add MppOperationMode registers Individual Trackers on RS devices
  - adds registers 3731 t/m 3734 for MPPT RS
  - adds registers 3169 t/m 3172 for Inverter RS
  - adds registers 4605 t/m 4608 for Multi RS
- Add 32-bit registers for ESS/Hub4 setpoints. This is for systems larger than 32kW, using external control. The existing registers were only 16-bit.
- Add registers for PreferRenewableEnergy and Generator selection. This allows using Modbus-TCP to force a charge cycle on a system with Solar and Wind priority enabled. Indicating that a generator is running, or reading the state of generator selection has been added as well.
- Extend ModbusTCP mapping list for unit ids above 255. From now on it will not longer be required to get into difficulties when having a VE.Direct-connected or other type of device that has a VRM Instance above 255.

Venus OS Large
- Node-RED: Update Victron palette, node-red-contrib-victron v1.4.32 -> v1.5.0
  - Adds a custom input and output node. This is an extremely powerful new tool in Victron Node-RED palette. Further details.
  - When 'only changes' is checked make sure the initial is reported.
  - Support for reading from and writing to ESS schedules.
  - Don't show rounding on output node.
- Signal K Server
  - Update signalk-server from v1.46.2 to v1.46.3. Details.
  - Update signal-venus-plugin from v1.29 to v1.32. Details.

- o Fix issue that caused the app overview page on Navico MFDs be slowish every 30 orso seconds.
- NodeJS: update from v14.17.6 to v18.16.0.
- Fix npm-shrinkwrap: versions of all nodejs dependencies are now 100% according to how they are listed.

Developer / stability
- VRM Real-time mode/MQTT: Fix bug where a network issue could cause the connection to VRM to be lost.
- Improve vrmlogger stability in case of storage issues, to enhance remote diagnostic options.
- RaspberryPi: add support for the RS485 on the Waveshare RS485 CAN HAT (B)
- RaspberryPi: add wifi for raspberrypi zero2w and rpi4.
- Various updates to system packages
- Change how venus-data files are handled:
  - o pass extraction result as argument to the post-hook ('success' or 'extraction-failed'), so it can cleanup in case of failure and/or stop continuing.
  - o look for venus-data-*.suffix as well, so the file name can be changed to describe what it does. Multiple files can be present now.

v3.01 – July 17th 2023

Changes:

- Fix issue in CAN-Bus timing for Ekrano GX
- Fix bug where a network issue could cause the real time connection to VRM (MQTT) to be lost, until rebooted.
- Fix Modbus-TCP bug, causing VE.Bus Inverter/state, register 31, to show External control state.
- Increase measured temperature range by temperature inputs on Venus GX, Cerbo GX and Ekrano GX to minus -40 °C
- Add missing translations.
- Add support for Pylontech Pelio-L battery: SVS off, STS off, DVCC on.
- Fix bug causing approx 70 EasySolar-II GXes and/or MultiPlus-II GXes to not have a uniue VRM Portal ID, and therefore failing to be registered on the VRM Portal.
- Multi and Inverter RS: Fix battery power reading missing or be wrong when Multi-RS or Inverter-RS is used as battery monitor.
- Fix CAN-Bus timing issue for RaspberryPi HATs using the MCP2518 chipset.

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.

v2.94 – April 13th 2023

Changes
- DVCC: Fix bug where data from a CAN-bus connected battery could get stuck/freeze until GX devices was rebooted. We've seen this happen in a handful of support cases; and it related to certain timing in the canbus messages.

- NMEA2000-out: Fix PGN Fluid Level 127505 - fluid level instances not being writable. The fluid level instance is also refered to as the tank instance or data instance.

  Note that this bug was found while doing extensive integration testing with all popular brands of MFDs. And besides finding and fixing the bug, the other outcome of that test was that there are only very few system types in which it is still necessary to make any changes in either device-, battery-, DC- or fluid-instances. Also the prior limitation of the Raymarine Axiom displays of a maximum of 5 tanks (fluid instance 0-4) is resolved per a recent version. For further details, see the today updated [Changing NMEA2000 instances documentation](#). All together great progress when it comes to NMEA2000 interoperability.

  The other NMEA2000 instances, such as the Device instance, Battery instance and DC instance have always worked fine, the now fixed bug does not relate to them. Only the fluid level instance was affected.

v2.93 – February 13th 2023

Changes

- Fix a problem where Remote Console wouldn't work, and required a factory reset to be repaired. Any systems now having the issues will be fixed automatically once updated to v2.93.
- Add the new Scheduled mode and more for the EV Charging Station. Fixes "unknown" showing when the EV Charging Station is configured for that mode. For more information on that, read here.
- Fix timezone bug related to ESS Scheduled Charging: after changing the time zone, a reboot was required to make that use the new time zone. Bug was introduced in v2.80. Thank you Patrick M. for your help on this!
- Restore Modbus-TCP register 31, VE.Bus State. Per a recent version, that register returned "Ext. control" which broke customer implementations. Now the register will return the usual status (Bulk, Absorption, Float, etc) again, when the inverter/charger is in fact externally controlled by a smart battery.
- Fix detection issue with certain batch(es) of Zigbee/RS485 converter used to wirelessly connect energy meters.
- VE.Can/NMEA2000: Add support for Dragonfly manufacturer code for WS500. This is required for a future change planned by Wakespeed/Dragonfly.

v2.92 – October 17th 2022

Changes:

- Add support for ABB B-series meters, for use in ESS. Three types:
  B21: Single phase meter up to 65A. Same size as the ET112, but it has a small LCD screen.
  B23: Three phase meter, internal shunt, up to 65A per phase. Same size as the EM24 (70mm wide).
  B24: Three phase meter, external CTs. Same size as B23. Ratio configurable, up to 1000A per phase.
- Fronius PV Inverter integration: fix a bug that on, very seldomly but still, causes huge spikes of PV power to be logged and show up (mess up) the graphs on the VRM Portal.
- Fix GUI not showing proper color for LPG on an overview.

v2.91 – September 28th 2022

Changes:

- DVCC for FreedomWON batteries, including the eTower model: change SVS to no longer be forced off. Instead, the installer can choose between On and Off. For most systems, we recommend keeping it off. Contact FreedomWON for more information.
- Reduce data transmission to the VRM Portal which is caused by a bug introduced in v2.91, related to logging CPU temperature of the GX device.

v2.90 – September 12th 2022

Changes:

Main changes:

- Add Venus OS Large: Node-RED, which is PLC-alike configurability and automation, as well as SignalK. To learn the details, read [the Venus OS large manual](#).
- Add Wakespeed alternator regulator support (monitoring it). Requires Wakespeed 2.5.0 or newer. See new chapter in the GX manuals for details.
- Add RV-C. RV-C is a protocol used mainly in the US, by large RV manufacturers. See new chapter in the GX manuals for details.
- Add remote configuration of VE.Can connected products using VictronConnect. Until now, remote configuration was only possible for connected using the other types of comm. ports (VE.Direct and VE.Bus).
- Add support for Carlo Gavazzi EM530 and EM540 meter. Sub-Family X and PFC is supported, part numbers:
  - EM530DINAV53XS1X
  - EM530DINAV53XS1PFC
  - EM540DINAV23XS1X
  - EM540DINAV23XS1PFC
- Add support for more Carlo Gavazzi EM330 and EM340 meters. Note that these meters count kWh like the ET340, which is unlike the EM24 and unlike most utility meters do. For more info that, see energy meter manuals. It can nevertheless be interesting due to shortages on the EM24. Meter model numbers (note the 27 suffix):
  - EM330DINAV53HS1X27
  - EM330DINAV53HS1PFB27
  - EM340DINAV23XS1X27
  - EM340DINAV23XS1PFB27
- Add option to configure the UI to show all temperatures in Fahrenheit.
- Add support for the Cegasa eBick and eNerlit batteries. Details below.
- Add Generator Start/Stop control widget on the VRM Portal.
- Add support for the new VE.Bus BMS v2. Includes control of Solar Chargers and other products via DVCC as well as remotely firmware updating the BMS in case needed.
- Add support for Mopeka Pro LPG and Mopeka Pro Water level wireless sensors. With thanks to Rob and others for their help on this. Some details:
  - Butane ratio can be configured for LPT sensors
  - Both temperature and sensor battery voltage is shown
  - Only the pro sensors are supported, the older non-pro sensors are not and most likely also will not be supported.

DVCC:

- Add support for Cegasa eBick and eNerlit batteries. Force enables DVCC, and forces SVS and STS to be off. Documentation:
  https://www.victronenergy.com/live/battery_compatibility:cegasa
- Force good settings for the FreedomWON eTower batteries: DVCC on, SVC and STS off.
- Better handle BMS disconnection issues: in some cases the solar chargers would not start showing Error #67 when unplugging the BMS. Now they do.
- Detect Dyness batteries, so they no longer show up under as a Pylon battery. No forced settings.
- Inverter/chargers: show state as "Ext. control"; instead of Bulk or Absorption, when controlled by a BMS/DVCC. When controlled by a BMS the inverter/charger would never show float, which caused questions. Now it just shows externally controlled, simpler, and more accurate: there is no bulk -> absorption -> float charge algorithm when controlled by BMS.

Various updates:

- Improve Bluetooth sensor menu & options (continuous scanning, see all inserted adapters, and more)

- GX LTE & GX GSM: Add modem username/password settings, required by some providers
- EV Charging Station: various improvements (menu, connection stability, VRM, new models)
- Fix the sign of the current and power for DC meters that are configured as source (except fuel cell and alternator, which were correct). broken since venus v2.80
- Add missing "Inverter only" mode to mobile overview in the GUI
- HTML5 app: fix white screen issue on MFDs that do not support localStorage, eg. Simrad NSX 3007, 3009 & 3012. Thank you Gustav for reporting.
- Fix IMT Irradiation sensor connection issue; after the sensor is turned off and back on; which happened specially on faster hardware such as MultiPlus-II GX, EasySolar-II GX and certain RaspberryPis.
- Log GX relay functions to VRM
- Log generator start/stop AutoStartEnabled to VRM.
- Fix main battery temperature missing, or wrong value shown, sometimes on the VRM Dashboard.
- Add various new VE.Bus model names (Quattro-IIs and MultiPlus-IIs)
- Add daily tracker history for Inverter RS and Multi RS, including transmission to VRM.
- Prioritise ethernet over WiFi. [Background here](). This is done by increasing the metric for WiFi routes.
- Fix handling of DC Alternator power in relation to the DC system power wrt showing it on the system overview page.
- Lynx Smart BMS: add low SOC alarm as well as timestamps to the error log.

Multis and Quattros:

- Fix too long descriptions (Ext. control, Rep. Absorption, Power supply).
- Improve the control via VRM for systems with a VE.Bus BMS v1 or Digital Multi Control: for such systems the mode (on/off/charger only) cannot be controlled, and now VRM knows this and will hide the option, rather than showing a non working one.
- Add option to see serial numbers of all Multis/Quattros in a system

RS products:

- Add low SOC alarm
- Add alarm and warning configuration: these can now be configured in the same manner as with VE.Bus products: disabled, alarm only, alarms + warnings.

EV Charger:

- Fix EV Charger input/output position
- Make the remote firmware updating more robust.

Modbus TCP:

- Add energy registers for energy counters in our inverter/chargers (Multi/Quattro)
- Add registers for Wakespeed alternators
- Add diagnostic registers for CAN-bms batteries
- Add registers for low SOC alarm on Inverters RS and Multi RS

NMEA2000-out:

- add support to AC chargers, such as the Phoenix Smart IP43 charger. Tested with both the 230V as well as 120-240V Phoenix Smart Chargers.

Venus OS Large feature versions:

- Node-RED v3.0.2
- Node-red-contrib-victron v1.4.23
- signalk-server v1.44
- signalk-venus-plugin v1.29.0

RaspberryPi

- Add support for raspberrypi4 board rev 1.4 and 1.5, as well as the Raspberry Pi Zero 2 W. Possibly other models work as well now, such as the RaspberryPi4 Compute Module. The mentioned ones were tested, and work; for an up to date list, always check our RaspberryPi image documentation. Possibly the RaspberryPi Zero2w works now also; Special thanks to

@Bathnm for spending lots of hours on this to make it all work; as well as a handfull of other enthusiasts for helping to test and such. Details:

- o   u-boot goes to v2022-01
- o   kernel goes from 4.19 to 5.10
- o   bcm2835-bootfiles go to 2022-331

- NOTE: Reflashing the SD-Card is required: to go from a prior version, ie v2.90~10 or early like v2.86 or even earlier, to a newer version. Pis running those prior versions will not auto-update themselves any further. As an alternative, to prevent having to reconfigure Venus OS, you might be able to extract the new boot files from the new image, and copy them across; nobody tested this.
- Canbus handling is changed; might/will effect some rpi installs. See next section (Developers).

Developers / under water:

- Available CAN-busses on a system are no longer defined statically. Instead they are enumerated at run time. Naming is handled in udev and is optional. All commercial products (Cerbo, CCGX, etc) still behave the same as they did. What is different in behavior, as a side effect, is that plugging in more canbusses, for example a Kvaser USB is now automatically recognised and results in an extra canbus. (Not officially supported! Works half on a Cerbo: the BMS-can port will disappear. Use at your own risk and don't be surprised if some day it breaks, we don't test it). For raspberry pis, the only device for which it was needed and common for a user to tell the system that there is a canbus, things will have changed. It will be easier now to get canbus working on a pi. Making the /etc/venus/canbus_ports file is no longer needed. For mode details, read the code by looking at the commits around July 8th in meta-victronenergy, especially this one https://github.com/victronenergy/meta-victronenergy/commit/e9ba4487c2997f021e7548ddea5e0b16c15bb46c and this one: https://github.com/victronenergy/meta-victronenergy/commit/f3f18a3c521b31a6b6d49ff0c234a59334ead565, as well as here: https://github.com/kwindrem/VeCanSetup/issues/6. Note that all interfaces are automatically recognised, except for slcan: the system only recognises those if something/someone started the slcan binary with the proper parameters. Of which you can see an example in our code. For the einstein for example, we defined in udev that when it sees a certain uart; that it should start slcan.
- Update Linux kernel from 5.10.42 to 5.10.109, which updates to LTS for security issues and bug fixes, also adds support for Cerbo B1 and Ekrano, and adds ntfs support.
- Update Open Embedded Dunfell branches: various fixes to low level systems and tools.
- Various stability fixes to the xupd & xupc tools (which are part of remote firmware updates)
- Transmit default gateway to VRM as well as CPU temperature; for debugging.
- Add pre/post hooks to installation from USB stick: https://github.com/victronenergy/venus/issues/853
- Changed implementation concerning the starting/stopping for canbus, mqtt, modbus-tcp and other services that are conditionally started and stopped.
- Speed up GUI initialisation
- Re-implement generator start/stop handling
- More underwater changes on how certain drivers are started and stopped.
- Change some implemenations concerning tank monitoring.
- VE.Can: fix device instance not able to change above 100 from the gui. thank you Wilco.
- Remove mqtt-n2k; broken since 2019 and not used.

v2.89 – July 15th 2022

Changes:
- Fix issue where display was permanently dimmed on older MultiPlus-II GX and EasySolar-II GX models. Issue introduced in v2.80.

v2.88 – June 23th 2022

Changes:
- Internal changes related to Cerbo manufacturing

v2.87 – May 31st 2022

Changes:
- Fix communication issues with EV Charging Stations with firmware prior to v1.21. Issue was introduced in v2.86.

v2.86 – May 25th 2022

Changes:
- Fix communication loss issues with EV Charger
- MFD HTML5 App: Fix white screen Simrad NSX 3007, 3009 & 3012 MFDs
- Add support for new Carlo Gavazzi EM530 and EM540 meters, sub-families X and PFC. Part numbers: EM530DINAV53XS1X, EM530DINAV53XS1PFC, EM540DINAV23XS1X, EM540DINAV23XS1PFC. For now, these mainly serve as an alternative for the EM24DINAV53DISX meter, not stocked by Victron, and the recommend meter for larger systems (> 65A per phase).
- MPPT RS Fix issue with daily tracker history retrieval

Known issue:

- Per Venus OS v2.86, EV Charging stations with firmware version older than 1.21 are no longer properly detected. The charging station will continuously appear and disappear. A new Venus OS version that fixes this, v2.87, is expected within a few days. Meanwhile as a work around, downgrade the GX device to v2.85. At this moment the system will work again. Now, using Remote firmware updates on VRM, update the Charging station. And thereafter update the GX device back to v2.86.

    Fixed in v2.87

v2.85 – April 19th 2022

Changes:
- Complete support for currently available uses of Multi RS.
- Improve support for the Lynx Smart BMS.
- DVCC: reduce (possible) latency of data transmitted by the GX to VE.Can, by sending values immediately rather than on a 4 second interval. Parameters included: Voltage sense, Temperature sense, Battery currents, State of charge.
- Fix an issue with VRM for some of the Cerbo GXes produced after February 1st 2022. Details below.
- Fix display of manually configured IP settings (as opposed to setting it to DHCP): in some situations, the user interface would show dashes for the default gateway, while there actually was one configured.
- Fix productid transmission to VRM for a few data models, including DC Load, DC System and Multi RS.
- Update PHP to v7.4.28. CVEs: CVE-2021-21703 CVE-2021-21706 CVE-2021-21707 CVE-2021-21708. Note that due to the way PHP is used (extremely minimal), the CVEs were not exploitable on a GX Device.

Multi RS:
- Add full DVCC support.
- Fix overviews where necessary.
- Fix missing data points in transmission to VRM portal.
- (excludes ESS, three phase, parallel, and operation with a generator)

Lynx Smart BMS:
- Add alarm notifications for fuse blown events as well as a loss of connection to the Lynx Distributor.
- Remove obsolete BMS errors.
- Add status.

Cerbo GX produced after February 1st 2022:
- For some of the Cerbo GXes, their data would not being processed at VRM, even though in the Settings -> VRM Portal menu all seemed OK. This issue is fixed by changing the VRM Portal ID to be

derived from the WiFi MAC address, rather than the Ethernet MAC address, for all units produced after Feb 1st 2022. Effects:
- o Any unit already reporting OK to VRM will keep reporting OK after updating to v2.85.
- o All units, including the affected units, can be updated via the online download mechanism, as well as using the offline one, using USB stick or sdcard.
- o Note that downgrading, after first updating to v2.85 or later, causes a problem: the VRM Portal will reject all received data. Even if it worked before the update.

v2.84 – February 16th 2022

Changes:
- GX LTE / GX GSM: Fix connection not working when an APN is required by either the SIM card or the operator. This issue was introduced per v2.80.
- Add selectable VE.Can port profile for MultiPlus-II GX and EasySolar-II GX new hardware revision. For more details about this, see footnote 23 in the GX device datasheet.

v2.83 – February 14th 2022

Changes:
- Fix the Input current limit, for Multis and Quattros. That field, under certain conditions, showed the wrong value (40A). This issue was introduced per v2.80.
- Fix issue that caused Fronius PV-inverters (when configured differently then as instructed in the Victron/Fronius documentation) to shut down instead of opening up to their maximum power. Maybe this affected other PV Inverters as well; it depends how they interpret a certain command; which for this one can differ slightly on configuration and make. The different behaviour was introduced in v2.80, and now per v2.83 simply changes the behaviour back to how it was, so it for sure works good.

Known issues
- On the new MP-II GX hardware revision, that add Bluetooth and change the BMS-Can port into a real VE.Can port, the VE.Can cannot be configured in the menu. It (still) allows BMS-Can only. Expected fix in a firmware update per March 2022.

v2.82 – February 8th 2022

Changes:
- Fix missing Modbus-TCP register 777, which is the register for Solar Charger PV current. The register was removed in v2.80.
- Fix issues (MPPT Error #67 – No BMS, and Inverter shutdown) when having a CAN-bus connected battery, DVCC and another battery monitor on the same battery bank. This is fixed by reverting the related code & functionality to how it was on v2.73. The issue was introduced in v2.80.
- Fix issue that, sometimes, greyed out the Enable toggles of analog tank inputs. Issue was introduced a long time ago.
- Improve the recently introduced wireless Bluetooth sensor feature, used for the Ruuvi sensors, to use always use all connected Bluetooth adapters. This allows increasing the range by adding a USB adapter on a slightly longer USB extension cable; as well as allows to use a USB Bluetooth adapter on a Cerbo GX. For which adapter to use, see this list of tested third party USB Bluetooth adapters.

v2.81 – February 2nd 2022

Changes:
- Fix GX GSM and GX LTE 4G modems not working when used with a SIM card that has PIN locking enabled. This bug was introduced in v2.80. Note that, while running v2.80, the PIN will have been removed from the settings: it needs to be configured again. More information – community link.

Known issues (all fixed in v2.82):
- The change in DVCC, "Only use the selected battery monitor; affects systems that have a managed battery and a BMV (or similar) Victron battery monitor installed.", causes a MPPT Error #67 and possible Inverter shutdown (recovered from by switching it off and on), on systems with a managed battery and another battery monitor in the same install. This issue was introduced in v2.80. We are working to fix that. FIXED in v2.82.
- The change to remove the PV/Current data internally, not only removed it from Modbus-TCP, but also breaks range queries. This issue was introduced in v2.80. We will -most likely- fix this by adding it back – only for ModbusTCP; it is being worked on. FIXED in v2.82

- On a Venus GX, and possible also a Cerbo GX, the Settings -> I/O -> Analog inputs -> Temperature enable/disable switches can be greyed out. To work around it, toggle one of the working inputs. This issue was introduced before v2.80; a fix is expected soon, weeks. FIXED in v2.82.

v2.80 – January 31st 2022

Main new features:
- Add support for the wireless Ruuvi temperature sensors, which also measure humidity and air pressure. Data is available in the GUI, as well as on VRM. The Ruuvi sensors are available for sale via www.ruuvi.com, Victron is not stocking them. Note that while the sensor itself also reports movement aka acceleration data, that information is not available within Venus OS.
- Add relay control by temperature.
- Add DC load monitoring, and production. Details below.
- Add AC load monitoring. Details below.
- Complete support for the Inverter RS.

AC Load monitoring details:
- All energy meter types can now be configured to a new "role": AC Load monitor. This is done in the menu where you also choose between Grid, PV Inverter and Generator. With AC Load monitor selected, the load will be shown in the Device list. Such metered loads are not used in any calculations, just monitoring.

DC Load monitoring details:
- SmartShunts and BMV-712s can now be configured and used to meter a DC loads, or sources such as an alternator. The amps and power is shown in the user interfaces and available on the VRM Portal. There is a list of predefined types, such as Alternator, DCDC charger, Fridge, DC System, and so forth.

  When configured as type "DC System", the GX does more than just recording and visualisation: (1) the power shown in the DC system box is the sum of powers reported by all SmartShunts configured as such. Allowing multiple meters is done to accommodate for example a catamaran, so the DC Systems on Port hull and on Starboard hull can be measured and monitored separately. (2) the DC System Current is being compensated for when setting DVCC charge current limits to Multis, Quattros and Solar Chargers. For example when a load of 50A is being measured, and CCL by the battery is 25A, the limit given to the Multis & Solar Chargers is 75A. An improved for systems with significant DC loads such as Yachts, Coaches and RVs.

  Notes and limitations: (A) this feature is available for SmartShunts and BMV-712. Not for BMV-700 or BMV-702. (B) Setting the meter mode is done with VictronConnect, in the BMV/SmartShunt itself. (C) The NMEA2000-out feature does not support these new types, for example when using a SmartShunt to measure output of an alternator, that data is not made available on NMEA2000.

DVCC and managed batteries, connected by CAN-Bus:
- Force DVCC settings for Pylontech batteries as per documentation (DVCC on, SVS and STS both off). This is now the same as already in place for various other battery makes.
- Detect- and for good settings for- BMZ ESS Batteries: DVCC=ON, SVS=Off, STS=Off
- Force-enable SVS for the Lynx Smart BMS
- Add custom name support: user and installer can configure a name for the battery. This name is stored on the GX device.
- Only use the selected battery monitor; affects systems that have a managed battery and a BMV (or similar) Victron battery monitor installed. ← see known issues.
- Fix bug: Shared Temperature Sense did not work between an temperature sensor attached to the GX device and VE.Can devices. Bug in Venus since v2.40.
- Automatically switch to charging if a grid connection is available and a managed battery requests charge. Currently only Pylontech and some BYD batteries support a charge request indication
- Stop solar chargers when the BMS is disconnected in an ESS system. Solar chargers will show error #67 – No BMS.

ESS:
- Change the "Total of all phases" mode to be symmetrical: all phases are adjusted to convert the same amount of power from, as well as to, DC. In the past, this option primarily avoided passing power through the DC-bus to avoid inefficiency, but didn't take full advantage of the billing arrangement to use all the available power when there is a shortfall on another phase. Now it divides the work equally across the phases, thereby making the full inverter capacity available, and with no impact on billing. More detailed text on the Community v2.80~16 beta announcement, and soon in the manual.

VRM Portal
- Add information to show detailed Generator information (running/not running, last run, why its running, and more) on the VRM Portal Dashboard, when enabling the Detailed view.
- Add information to show detailed information about AC input (grid/shore) as well as AC Loads. Includes frequency and other information.

Inverter RS:
- Inverter RS: complete the support for the Inverter RS. Includes DVCC, control by managed batteries, SOC sync and Extra battery current, showing its error code.
- Inverter RS: remove support when connected on VE.Direct. From v2.80 onwards, the only working connection for an Inverter RS to a GX device is on a VE.Can network.

Multi RS :
- Add limited support for the (new and limited available) Multi RS. Complete support for Multi RS is expected to be completed in February or March 2021.

MultiPlus-II 2x120V:
- Show output current & power on the second leg, as well as transmit that to VRM for logging and visualisation on the dashboard.

HTML5 Marine MFD App:
- Fix Garmin MFD issue that appeared in a certain start-up sequence, this issue most likely existed in the design since the beginning.
- Show the inverter/charger widget even when the AC Inputs are configured to Generator or Not available.
- Fix fault description for non-VE.Bus chargers
- Fix on/off state buttons for non-VE.Bus chargers
- Add lock button that helps prevent accidental button presses like "Start generator" or "Multi Off".
- Add Dutch, Chinese, French, German and Italian to thelanguages.
- Add a placeholder & message in case no data is present.
- Add 3A button to the input limit selector.
- Hide 3rd phase in case of a split-phase system.
- Fix keyboard buttons not working in Remote Console.

Various:
- Remove transmission of load averages to VRM. Those values, visible on the diagnostics page on VRM, are not used, confusing, and the D-Bus RTT time is a much better indicator of (over-)load of a GX device, hence remove them.
- Reduce GX device CPU load for many system types.
- NMEA2000-out: fix Solar sender DC instance storage to non-volatile memory. This never worked right, until now.
- Update recognition of Fimer grid-tie PV Inverters: Fimer recently acquired ABB and is now updating the names and recognition strings in the code.
- Increase the maximum possible power value for starting a generator, was 100kW now 1MW. Thank you Jens-Uwe P for reporting.
- Tank inputs on Cerbo GX and Venus GX: increase max tank resistance to 300 Ohm, thank you Alex Muir for asking.
- Improve WiFi recovery from Failure status.
- Improve ET340 in combination with Zigbee link, when installed in a lossy/noisy environment.
- Support exfat filesystem, for large removable media (sdcards, usb sticks). Note that this is not for the raspberrypis, since (only they) still ship with a version of Linux that does not support exfat.
- Remove transmission of load averages to VRM. Those values, visible on the diagnostics page on VRM, are not used, confusing, and the D-Bus RTT time is a much better indicator of (over-)load of a GX device, hence remove them.

User interface (CCGX, GX Touch, Remote console):
- Add eject button to the offline firmware update menu.
- Fix issue that caused the overview to change when switching off the Multi in a system configured for ESS
- Fix an issue where the grid meter reading disappeared from the gui when the Multi is off
- Slightly renamed a few VE.Bus errors and error 8 & 11 detailed status codes to be less ambiguous. And VE.Bus error 15.
- Wifi menu: ask for confirmation before forgetting/disconnecting from a network, as well as before disabling the Access Point; to prevent accidental locking oneselves out, especially when remote.
- In the WiFi connection menu, give so-called hidden WiFi networks a name (their mac address), so that they no longer appear as empty rows in the menu.
- Fix missing "Recharge" text in ESS BatteryLife state field. It said "Uknown" since Venus OS v2.20.

Bluetooth:
- Fix Bluetooth pincodes starting with a 0; this was broken since the first release of BLE functionality in Venus OS. While 000000 worked, any other code starting with a 0 did not work.
- Implement keep-alive functionality: improves robustness with certain phones by avoiding Venus OS thinking its still connected and thus refusing new connections, while its not connected at all.
- Fix GX device not being visible on other phones while already connected to one. Now it is visible in the 2nd phone, but then with an explanation that to connect, the other phone needs to actually disconnect first. This is now on par with how other Victron products work with Bluetooth.

- Improve compatibility with USB-bluetooth dongles, relevant for CCGX and Venus GX.

Developers, ModbusTCP, Node-RED, MQTT:
- Removed the Pv/Current path aka register from our internal databus. D-Bus. Going forward, to use that, you need to calculate it by dividing the power by the voltage. Affects all APIs, including Modbus-TCP – there it is register 777.
- Fix the definition for Modbus-TCP register 2710 (DVCC override charge voltage). Since the mistake rendered it largely useless, and this is a fairly new register, no new register is allocated.
- Change the rootfs to be default read-only. Careful, this is quite the change in case you're modifying your rootfs. The reason behind this is quality and robustness. Every boot is now the same, instead of an initial boot possibly being different from the second or the third. And less writes to the storage, which reduces the wear, and more advantages. The downside is obviously that its a bit more hassle in case you want to modify the software. To learn how, read [this commit](#).
- Change the used Open Embedded release from Zeus to Dunfell. More details about OE releases are [here](#). Dunfell is relatively recent LTS (long term support) version. The expectation is to be able to stay at Dunfell for quite some time to come.
- Change the used Python version from v2.7 to v3.. This was something we needed to do anyway, and sort of a requirement that comes with switching over to Dunfell. For those that wrote their own code this does mean work. See also this post on community.
- Enable https support for php

Known issues (all fixed in later versions):
- The change in DVCC, "Only use the selected battery monitor; affects systems that have a managed battery and a BMV (or similar) Victron battery monitor installed.", causes a MPPT Error #67 and possible Inverter shutdown (recovered from by switching it off and on), on systems with a managed battery and another battery monitor in the same install. We are working to fix that. [More information – community link](#). FIXED in v2.82
- The change to remove the PV/Current data internally, not only removed it from Modbus-TCP, but also breaks range queries. We will -most likely- fix this by adding it back – only for ModbusTCP; it is being worked on. [More information – community link](#). FIXED in v2.82
- GX GSM and GX LTE 4G modems were not working when the SIM-card is configured with a pin code. The issue does not cause a SIM-card to be blocked and then require a PUK code. FIXED in v2.81

v2.77 – April 19th 2022
This version was released only as a production install & customer downloadable image for the Cerbo GX products. Not released to the auto-update feed.

Changes:
- Fix an issue with VRM for some of the Cerbo GXes produced with v2.75 (released on Feb 7nd) and v2.76. Their data would not being processed at VRM, even though in the Settings -> VRM Portal menu all seemed OK. This issue is fixed by changing the VRM Portal ID to be again derived from the WiFi MAC address, rather than the Ethernet MAC address. Just like it was for units produced before v2.75. For more details see v2.85. Effective changes for units produced with v2.77:
  - VRM Portal ID on the label is correct again. When produced with v2.75 and v2.76, the label shows VRM portal ID based on ethernet mac address, but after updating such unit to v2.77, the actual VRM Portal ID would be based on the WiFi mac address.
  - Units produced with v2.77 have VRM Portal ID based on mac address, which is also printed on the label, and which also does not change to be based on WiFi mac address after updating.
  - Units produced with v2.77 do not require a firmware update by the customer, unlike v2.75 and v2.76.
- Update PHP to v7.4.28. CVEs: CVE-2021-21703 CVE-2021-21706 CVE-2021-21707 CVE-2021-21708.

v2.76 – March 14th 2022
This version was released only as a production install & customer downloadable image for the Cerbo GX products. Not released to the auto-update feed.

Change:
- Improve test script used for production of GX Touch 50 and 70, better test edges of the touch area/screen.

v2.75 – February 7th 2022
This version was released only as a production install & customer downloadable image for the Cerbo GX products. Not released to the auto-update feed.

Changes:
- Add support for Cerbo CPU-PCB rev. A12
- Change origin for VRM Portal ID from WiFi to Ethernet mac-address, only for newly produced units.
- Update RTL8723DU driver, fixes intermittent latency issue on WiFi.

v2.74 – January 25ᵗʰ 2022

This version was released only as a production install image for the EasySolar-II GX and MultiPlus-II GX products.

Changes:
- Add support for PCB rev. A7 for character display, a PCB used in the MP-II GX and ES-II GX product ranges.

v2.73 – August 31th 2021

Changes:
- Fix issue causing Cerbo GX-es with a serialnumber below HQ2026 to be incompatible with newer GX Touches. In such case, the GX Touch display would flash at powerup and then remain off. Not anymore. Thank you Matthias for reporting & helping to fix this.
- Fix issue in the Venus GX auto-repartition script. That script was introduced in v2.70. It didn't work on all Venus GX-es, which is now fixed. On the affected Venus GX-es, it was impossible to install v2.80. Conclusion: on any Venus GX that doesn't install v2.80, make sure to first install v2.73.
- VRM: transmit power (watts) per tracker, right now needed for the VRM Dashboard, rather than current (amps).
- Fix I/O settings not visible on a CCGX even though GX Tank 140 is installed.
- Fix GX device not being visible on other phones while already connected to another one. Now it is made to be the same as other Victron products that work with Bluetooth visible in the 2nd phone, but then with an explanation that to connect, the other phone needs to actually disconnect first. This is now on par with how other Victron products work with Bluetooth.

RaspberryPi and other developer related:
- Venus OS image for raspberrypis: Fix backlight issue
- Raspberrypi / Debian packages: drop support for Jessie. Building for Jessie broke on our system, and also Jessie is EOL.

v2.72 – July 6th 2021

Changes:
- Fix regression that broke the SDcard slot in the CCGX. This bug was introduced in v2.70. The sdcards were no longer recognised, causing them to be no longer used to storing VRM data as well as no longer working for firmware updating.

  Instruction or customers normally using SDCards for their updates: in case the CCGX has already been updated to v2.70/v2.71, then follow these instructions to update to v2.72. First Check Settings -> Firmware Updates -> Backup firmware. If that has v2.66 or earlier, revert to that version. Wait for boot-up, then insert an SD-Card with v2.72 and finally install v2.72. In case there is no such backup available, then either connect to the internet and use online updates; or use a USB stick. Using a USB stick required access to the back of the panel. Our apologies for inconvenience caused!
- PV Inverter read-out: fix regression introduced in v2.70: connection could be lost to PV-inverters when PV-inverter is connected through both Wi-Fi and Ethernet connection, or PV-inverter IP address changes and then changes back to the first value.
- DVCC: Stop charging (of Solar Chargers and VE.Bus Inverter/chargers) when a Lynx Smart BMS reports a charge current limit of 0A.
- Add more drivers for USB WiFi dongles; for future use
- Venus GX: increase .swu file number to 2. Offline updates will look for venus-swu-2-beaglebone-*.swu instead of venus-swu-beaglebone.swu. This change has been made in preparations for v2.80, which can only be installed after v2.7x has been installed first.

v2.71 – June 21th 2021

Changes:
- Fix regression that under some conditions cause a failure to reconnect to a sunspec PV-inverter.

v2.70 – June 12ᵗʰ 2021

Note, v2.70 was released to the production of MP-II GX and ES-II GX only. Its first public release as an update was v2.71.

Changes:

Tanks:
- Add the new tank overview page. Screenshot below.
- Increase the margin above the full tank level to 20%. An example to explain this: instead of showing an error in case the measured current is above 20.5mA, show an error when its over 24mA. In that

margin, ie. between the configured full level (20mA in my example) and the error level, it will just clip to 100%. Thank you John M. for reporting this improvement.
- Use the same tank name in the alarm notifications, the Device list, the mobile overview as well as the new tank overview page.
- Add tank level alarms. High level alarm and low level alarm. Note that this is only for tank levels measured via the Venus GX, Cerbo GX or GX Tank analog inputs. No alarm levels are supported for tank levels that come in via NMEA2000.
- Add fluid type 6, gasoline. To fully match the NMEA2000 supported set of fluid types.
- Support tank senders that send out levels for multiple tanks using different data instances, such as the Garnet Seelevel N2K product, and the Maretron FPM100. Note that it is not possible to set a custom name for these multi-level tank senders. Details also here: https://github.com/victronenergy/venus/issues/551.

User interface & various:
- Change the name of the battery measurements menu to "Battery Measurements" and add a help text indicating that it is (also) for the MFD HTML5 app. This same info is also used for the VRM Dashboard.
- Better handle AC-Coupled PV on the output of an Inverter RS by adding AC Frequency item, and by showing negative current and power instead of clipping that to zero.
- Add the firmware version of a Fronius datamanager on the Device subpage. This is added next to the (already shown) firmware version for the PV Inverter itself.
- Add EM24 Ethernet meter phase configuration setting
- Improve the CAN-bus statistics page so it all fits on one screen.
- Fix issue related to Garmin MFDs and the Victron App, because of which the App wouldn't work on the Garmin when doing a certain sequence of power-ups or reboots (ie Garmin first, or GX device first or other way around).
- NMEA2000-out: include SOH in the NMEA2000-out function. Note that Victron battery monitors such as the BMV series don't have SOH; this applies only when using a lithium battery with integrated CAN-bus *and* that has SOH.

DVCC / ESS / Mode 3 (External control)
- Hide the Grid feed-in menu when ESS is set to External control, since they are not relevant in that mode.
- Disable the PV-limiter when ESS mode is set to External Control. This avoids problems where the PV-limiter aims for a different grid setpoint than that set with ESS mode 3. Instead, the customer is responsible for doing his/her own control.
- Improvements related to Inverter RS Smart Solar. But not fully finished yet.

Managed (CAN-Bus) batteries & PV Inverters:
- Recognise REC BMS, and show only supported alarms, ie hide all alarm types for which the REC does not send any status, rather than saying "OK" for those. This (showing only the supported alarms) is a nice feature; for which REC is now the only one that supports it; we're looking forward to seeing the same from other battery manufacturers.
- Fronius PV monitoring: further improve support for large systems by more intelligently quering the Fronius datamanger. Eliminated unnecessary reconnects, and because of that also reduces CPU load on the GX device. Tested at a site with 6 Fronius ECP PV-inverters, and works well: never disconnects now.
- Can-bus BMS: support CCL & DCL current limits above 3276A.

Connection to VRM:
- log a warning to VRM in case one or more modules in a managed (CAN-bus) battery is blocking charge.
- Add various data for the Inverter RS Smart Solar (AC-out power, energy values, some history data for solar)
- Show VRM down in case the VRM-data-receival system is down; instead of a vague error that might make people think there is an issue on their side.
- Change the logging frequency of min/max cell voltage/temperature to fix the gaps in the graphs on VRM.

Modbus-TCP
- Add registers for total power, power capacity, and power limiting. The power limit register is for external control in ESS mode 3. This is an easier method than controlling the PV-inverter directly through SunSpec. https://github.com/victronenergy/venus/issues/821.
- Add registers for /Hub4/TargetPowerIsMaxFeedIn and for /Hub4/FixSolarOffsetTo100mV
- Add registers for Inverter RS Smart

Networking / modem
- Allow using a GSM modem while connected to a local-only network by not setting a default route if there is no default gateway received from DHCP and/or configured manually.

RaspberryPis
- Note that installing v2.70 on a rpi can only be done by re-installing. Meaning: burn a v2.70 image to an sdcard, overwriting anything on there. Detailed instructions here. And more details in the discussion going on in the comments.
- Restored the packages (but to anyone using those, be aware that they are really not maintained, and if there in the way again for us we'll just as lightly as previously decide to take them out again. I'm sorry but that's what it is).
- Support (some of the) RaspberryPi4s. Some of the means that only some older versions work. Newer do not.
- Make the Bluetooth work on RaspberryPi3 and RaspberryPi4. The functionality is same as other GX Devices: to setup the network. Which means also that there is nothing else: no monitoring of your Victron system, use Remote Console on LAN, or http://venus.local/app/ instead.
- Use the complete SD-Card size, rather than a fixed size rootfs, by resizing on boot.
- Enable the radio on by default, instead of blocking it until unblocked by navigating to the wifi menu page in the gui. This fixes it being impossible to configure the wifi on a raspberrypi via VictronConnect/BLE without first going to said menu via Remote Console. Thank you @Stefanie for reporting - quite some time ago.

More developer / hobbyist:
- Switch from version Rocko to version Zeus of Open Embedded. A (perhaps too) simplified explanation for this is that its like going from Windows 7 to Windows 8, and then not in what you see, but just in what's running in the background. For those interested, more info [here](https://wiki.yoctoproject.org/wiki/Releases). And yes, Zeus is EOL as well. We'll soon switch over to Dunfell.
- Linux kernel updated from 4.19 to 5.10 for CCGX, Cerbo GX, GX-Card in MP-II and ES-II products as well as the CANvu GX. And updated from 4.9 to 5.10 for the Venus GX. No change for the raspberrypi, that is still on 4.19.
- Venus GX: Resize partitions on boot to the "new" large style partitioning. Background: up until the end of 2018, we produced our Venus GX-es with a file system partitioning similar to the CCGX. But the Venus GX has much more flash memory inside. So end of 2018 we changed the production methods. And now with this change, any unit produced before then will also automatically be upgraded to the new (larger) size. This change allows us to add more standard functionality in those older Venus GX-es. And also it makes it easier to install Venus OS Large on a Venus GX produced before end of 2018: its no longer necessary to manually do the repartitioning. Just run v2.70 once, and presto.
- Fix some management dbus-paths in dbus-pump & dbus-generator-starter, no user visible changes.
- Update Qt5 to 5.13.
- Mark menu items that are only visible in debug or other special modes with a color; so thats its clear that its not visible in normal usage.

v2.66 – April 12th 2021
Changes:
- Remote VE.Bus Firmware improvements. More detailed error messages, to better guide the user/installer in case something goes wrong. And improvements that increase the robustness of the process (more retries for example).
- Fix saving a custom range (min and max voltage for example) for the GX Tank 140. Settings for the built in tank inputs, in for example the Cerbo GX, were not affected by this bug.

v2.65 – April 1st 2021
Changes:

New product support:
- GX Tank 140. More information on the product page: https://www.victronenergy.com/panel-systems-remote-monitoring/gx-tank-140.
- Lynx Smart BMS.
- The MPPT RS 100A and 200A models are now fully supported, including DVCC and seeing individual tracker data.
- Inverter RS: various features added; but support is not fully completed yet. DVCC is one of the features not fully working yet. There will be a new Venus OS version that finishes it up asap.

Marine HTML5 App:
- Improve scaling on high resolution displays: no longer show a small box in the middle and nothing around it; instead use the full screensize.

Managed batteries / DVCC/ BMS-Can:

- Add support for the BSLBATT batteries from Wisdom Industrial Power Co. The models supported are the 51.2V 100Ah, 120Ah, and Powerwall 200Ah Powerwall model. DVCC is force enabled, and besides all normal options, the BSL batteries also show the number of modules blocking charge and discharge.
- Add user configurable maximum charge voltage override. This feature is for managed batteries such as Pylontech, BYD, Freedomwon, MG and others that are connected via CAN-bus. Normally, the battery controls the charge voltage. For newly installed batteries, there can be so much imbalance that its necessary to slowly charge them to prevent cell-overvoltage shutdowns. That is what this new setting is for: allow installers to efficiently take matters into their own hands when necessary. Right from the GX Device, no need to open VEConfigure and/or reconfigure the Solar Chargers. We do recommend to disable this setting again once everything runs normally, typically after a few days. There is a screenshot below, that shows the setting.
- Force enable DVCC for BYD BBox-L and BYD Premium batteries
- Fix bug causing Shared Current Sense (SCS) to not work when having Solar Chargers connected through the VE.Can network. This bug was introduced in v2.40. Thank you Al and Canarias on Community for helping with this.

GUI (user interface on CCGX, GX Touch and Remote Console)
- Sort the Device list, nice for large systems! It will remain sorted also when new devices are connected while already running. Thank you @audiether for helping in this!
- Add feature to remove a Disconnected device: in case there are disconnected devices, the option to remove them is visible at the bottom.
- In the device-list, show the irradiation for the IMT meters, so it is no longer required to go into the menu to see it.
- Improve showing of inverter/charger "AC-in ignore" status, and move them to the submenu called Advanced; requires VE.Bus firmware 475 or later.
- Change the default of the Adaptive brightness setting to "on". This will only affect newly produced Cerbo GX-es.
- Improve stability on overloaded systems
- Fix various translations

Tank monitoring
- Configurable averaging filter (1 to 60 seconds) to dampen the effect of fluid movement. Works for resistive tank senders when connected directly to Venus GX as well as Cerbo GX (resistive). And works for tanks senders connected to the new GX Tank (4-20mA and voltage).

PV Inverter monitoring
- Improve serial number and firmware version display. For Fronius, now the inverter firmware and the datamanager firmware are reported, rather than inverter only.
- Better handle Fronius datamanagers that are slow in response due to having many PV Inverters connected to them.
- Reduce data consumption and clutter in VRM download logs by no longer triggering an interim transmission every time the PV Inverter status code changes. Some Fronius inverters change state often, cycling through error and startup states at night.

ESS
- Show warning "#49 Grid meter not found" when while ESS is configured to work with a grid meter there is no grid meter is available.

VE.Direct communication
- Improve how the VRM device instance number is obtained. This fixes VRM instance renumbering occurring sometimes for products such as Solar chargers or BMVs when connected via USB.
- Fix (another) bug leading to false "Error #48 - DVCC with incompatible firmware" messages in certain situations.

VRM Portal

- Transmit the status of the DVCC user configurable voltage- and current-limits, for support purposes.
- Update Ignore AC input status source.

Modbus-TCP

- Unit-ids for VE.Direct connected products could change on reboot when connected via USB. Not anymore.
- Add register for the new DVCC max charge voltage setting.
- Fix registers for the inverter/charger Ignore AC-status.

Other
- Fix race condition that sometimes caused for the MultiPlus to not be available in the list of configurable Battery measurements: Settings -> System Setup -> MFD HTML5 Battery setup. Note that that same setting is also used for the VRM Dashboard.

- Add feature to Remote update MultiPlus-II, MultiPlus, Quattros, EasySolars, and other VE.Bus products. Systems consisting of a single unit as well as parallel and three-phase systems can be updated remotely. Settings are maintained, which does require VE.Bus System Configurator to be installed on your computer, ie. only do this from a Windows computer.
Limitations: no VE.Bus BMS or Digital Multi Control can be installed, minimum already installed firmware in the inverter is 426 and the CCGX must have serial number starting with HQ1707 or higher. Other GX device have no minimum hardware version.
Documentation: https://www.victronenergy.com/live/venus-os:remote_ve.bus_firmware_updates.
- Fix counting of TX errors. It was counting certain events (arbitration interrupts) as TX errors; while arbitration interrupts are not an error, they are normal.

v2.64 – February 27th 2021
This version was not released to the auto-update system, as there the changes only related to the factory process.

Changes:
- Venus GX: the boards will switch to a new wifi module, add the required driver.
- Update eeprom format to v2.

v2.63 – February 16th 2021
Changes:

VE.Can / NMEA2000-out:
- Add VE.Direct Inverters to the NMEA2000-out feature.
- Fix issue that caused a crash, cq. endless restart loop of the driver, in case the custom name was set to just a single character.
- Inverter RS (when connected on VE.Can): add on/off control -visible in the gui- as well as fix an issue recognising recently produced units (HQ2049 and newer)

Other:
- Fix VE.Direct communication to no longer cause a false "Error #48 DVCC incompatible firmware" alarm; this bug has been in the software for a long time.
- Fix an issue in ESS PV Inverter control that would happen if the ESS "Limit System feed-in" setting was enabled, and then a maximum feed-in limit was configured, and thereafter ESS "AC-coupled PV - feed in excess" setting was disabled. This was a regression introduced in v2.60.
- Fix an issue in the CAN-bus BMS driver that causes alarm by the batteries to remain hidden in some cases. Note that the impact of this is only in the notifications / visualisation. The charge & discharge control & safety mechanisms do not use the alarms at all. This was a regression introduced in v2.60.

v2.62 – February 8th 2020

Inverter RS and MPPT RS:
- Both: support being connected on the VE.Can port as well. The only data still missing when connected over VE.Can is the data (PV V, I and P) of the individual trackers, as well as its daily history.
- MPPT RS: Show individual tracker data in the GUI as well as transmit to the VRM Portal.
- MPPT RS: Show daily history in the Venus GUI.
- Inverter RS: Add option to use the battery monitor in the Inverter RS as the main battery monitor. It will be auto-selected as such in case it's the only battery monitor data available.
- Inverter RS: Add reading out its battery temperature sensor.
- Inverter RS: Fix remotely firmware updating an Inverter RS when connected via VE.Direct

There are still some open points for both the Inverter RS and the MPPT RS:
- MPPT RS: Individual tracker data when connected on its VE.Can port
- Inverter RS: Individual tracker data, as it currently misses for either port type
- Inverter RS: transmission and visualisation to/on VRM of all Solar data, as well as Relay State ,DC Battery current, Device Off Reason and AC Output Frequency.

General:
- Add feature to Remote VEConfigure which allows replacing one Multi (or Quattro or VE.Bus inverter) in a VE.Bus system. Steps:
    - Read the configuration of the whole system (or use an existing remote VEConfigure file)
    - Replace the failed unit
    - Write the configuration (at this step, the system will automatically detect that one previous device has gone missing, and that there is a new unknown serial instead, and will thus assume that one has been replaced and write the settings accordingly
    - (optionally) Read the new configuration file and store in your records.
- Add Network status menu for the CAN-bus(ses). This menu shows network status and error counters. The aim of these menus is to help identifying that there is an issue in the CAN communication. Bus off errors are never to occur in a running system, another error now and then is fine and ERROR ACTIVE is a normal state thats not to worry about. We'll later add this to the manual and explain the details.
- Fix connecting to another WiFi network after a failure.
- Fix issue with the GX GSM for networks multiple PDP contexts, seen on Vodafone UK and EE UK)
- Fix a quite rare issue with the AC Current Sensors.
- Fix grid alarm flapping in systems having a PV Inverter on the AC-Output. This issue was introduced in v2.60. Thank you @ThomasW. for reporting.
- Fix unreliable detection for BMV-600s running firmware v2.08 and later as well as MPPT Solar Chargers running firmware v1.09 or earlier. Issue was introduced in v2.40.
- Remove parameters "Nr. of modules blocking charge" and "Nr. of modules blocking discharge" for the BYD batteries, since there is a bug in the parameter as reported by the battery bms.

- Fix Bluetooth connection issues: VictronConnect would get stuck in "Fetching data" on certain phones/under certain conditions. Make sure to also restart VictronConnect after updating Venus OS, see Google for how to do that properly, ie search for "restart app iPhone" or "restart app android".
- Fix Remote VEConfigure Error 61 on large systems. This error frequently occurred on systems with more than 6 Multis and a MK3 based GX device. The more Multi's the higher the probability of Error 61 occurring during Remote VEConfigure.
- Improve stability of TCP connection to PV Inverters, most importantly SolarEdge PV Inverters.
- Various fixes to digital inputs handling on Venus GX and Cerbo GX, thank you [@bathnm]:
    - Digital inputs were called GPS-es on the VRM Device Overview, no longer
    - Connection parameter in the Device submenu in the gui was missing, not anymore.
    - Changing the input type wouldn't reset the related settings, which could be confusing, no longer.
- Fix Remote Console on VRM & Remote Support tunnel not working when customers network included IPv4 over IPv6.
- Fix Remote Firmware update issue when having many (for example 20 or more) VE.Can device in the network by increasing the scan time from 2 to 4 seconds.
- Fix bug that caused the gui to run out of memory when connecting many VE.Can or VE.Direct devices (15, 20 or even more MPPTs). After running out of memory the gui would (in most cases) restart, causing a chain of other issues.
- Add VE.Bus high DC voltage & high DC current alarms (to the gui for readout, to the gui for notifications, as well as sending them to VRM).
- Fix some issues with regards to setting the TCP/IP address manually.
- Fix IP address type (DHCP vs Manual) showing "Unknown" when DHCP failed. Even when requesting an IP address had failed, it should still show thats its configured for DHCP, which it now does.
- Fix Dutch translation (change 'gewoon' into 'aangepast')
- Fix bug in the Grid alarm: it worked well when the AC input was configured to be "Grid", but not when configured to be "Shore power". Now it does.
- Fix issue where limiting feed-in of excess AC-coupled PV did not work when the PV Inverter indicated an error condition.
- Improve EM24 ethernet meter read-out stability and add support for EV Charger
- VE.Bus: add more overload diagnostics logging
- VE.Bus: fix very rare cause of VE.Bus error 14 & Error 17 when Cerbo GX is powered from unreliable power supply.
- Update dnsmasq as per recent CVEs
- Cerbo GX: Fix bug in Remote Console on LAN password handling. This bug was introduced in version v2.57. Note that this change, unfortunately, breaks passwords set on versions before v2.57. To reset the password, press and hold the reset button for a minimum of four seconds. This bug only refused login on Remote Console on LAN with the password enabled: logging in through Remote Console on VRM works OK. Thank you [@JetWire] for reporting.
- Cerbo GX: Increase buzzer volume. Thank you [@vince.farrar & @Robert Leonard].

VRM Portal:
- Add logging of battery module status for managed batteries with multiple modules: nr of modules that are online, offline, or blocking charge or discharge, as also visible in the gui for a while already. Note that not all managed batteries support this feature and that the BYD implementation is currently being checked as it seems like the field is not yet in line with actual mosfet status in the batteries.
- Add logging the status of the an ESS protection that temporarily disables Feedback when the AC input frequency variation is too high. This protection has been in the ESS Assistant for a long time, and version 0x017A or newer is needed to see its status.
- Reduce data consumption by no longer initiating a transmission when the state of a Solar charger changes, which happens often during sunrise and sunset.
- Add logging the Ignore AC Input status for VE.Bus systems

Changes relevant for software developers:
- Add support for remotely controlling the relay in a BMV, through for example MQTT. Support for this in ModbusTCP will follow later.
- ModbusTCP:
    - Add registers for the multiple MPP Trackers of Inverter RS and MPPT RS.
    - Add register for the VE.Bus Ignore AC Input state.
- ModbusTCP: add registers for generator start/stop functionality
    - State: Stopped, Running or Error
    - FisherPanda remote error: No Error, remote disabled, remote error
    - No AC at inverter input alarm
- Fix bug in previous fix for race condition between BMV and systemcalc that caused kWh consumption not to be logged in some cases (only seen on a raspberrypi).

v2.61 – November 9ᵗʰ 2020

(only released for CCGX & Cerbo GX manufacturing; not into auto-update systems)

Change log:
- Fix issue in production test scripts for CCGX & Cerbo GX (Einstein).

v2.60 – September 7ᵗʰ 2020
Change log:
Product support:
- Add Inverter RS (possibly there are some limitations. Monitoring when connected through VE.Direct works. Remote firmware updating & connecting through VE.Can are still being looked into.)
- Phoenix Inverters VE.Direct
  - o Fix how these inverters are visualised in the GUI on the overview, as well as on the detailed menus.
  - o Use the best available power reading: first generation Phoenix VE.Direct inverters. Future models will have a better current & power measurement – which now also the GX device shows when available.
- VE.Bus Inverters:
  - o Hide non-relevant, inverter/charger related, items from the detailed menus
- VE.Bus Inverter/chargers:
  - o Add option to name the inverter/charger (see the Device submenu, its at the bottom of the inverter/charger menu)
  - o Fix kWh reading errors on all Multi Compacts as well as the newer MultiPlus 500/800/1200/1600 when on firmware version 467 or newer. Issues with kWh readings are most noticeably visible on the VRM Portal graphs.
- For all products that didn't have the option yet, make it possible to set a custom name. This includes tanks as well as Solar Chargers connected in a VE.Can network, and more.
- Phoenix Smart Charger IP43: Fix voltage and current not properly shown for output 1. This bug was introduced in v2.30
- Add support for the new GX LTE 4G.

Marine MFD integration via App:
- Various layout improvements, including using pagination rather than hiding metrics when there is too much to show for the used screen size.
- Add Generator on/off control (for generators controlled with start/stop wired to the relay on the GX device)
- Fix the Victron App icon Navico displays; in some situations it would blink.
- Add support for Fischer Panda Generators connected through NMEA2000. They are now shown on the page, including details (XYZ) as well the option for the user to switch between Off, On and Auto.
- Stability improvements such as automatically reconnect to MQTT in case the connection was lost due, for example, a power cycle of the GX device or loss of network.

NMEA2000-out feature:
- Add Solar Chargers: now, solar charger data, including PV Array Voltage & Current, is available as standard N2K PGNs.
- Add Tank levels, including automatically numbered default data instances. Those defaults are the same as the NMEA2000 Device Instance, instance 0 is assigned to the first tank, instance 1 is assigned to the second tank, and so forth.
- Add a page to configure the VE.Can & N2K Device instance. Its available under the Settings -> Services -> VE.Can menus.
- Add reading of GPS location from a NMEA2000 connected GPS. This changes Venus OS from handling only one GPS to (potentially) reading data from multiple GPS-es. All available (USB & NMEA2000) GPS-es are visible in the "Settings -> GPS" menu. And for the location as sent to VRM, as well as the icons in the GUI, it picks one with a valid position fix.
- Add battery temperature as measured by the (VE.Bus-) inverter/charger to the related PGN.
- Improve the menus by changing wording and making the more intuitive to use.

ESS:
- Add installer 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, ánd 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.
- Add the missing % sign to the keyboard on the Cerbo GX & CanVU GX - needed in case a wifi password contains that character.
- Add support for newly used USB controller IC in the 2nd generation Zigbee controller (DRF2658C). That 2nd generation was first produced with a different USB controller.

DVCC & Managed batteries:
- Freedomwon batteries: force enable DVCC, and SVS & STS off, similar to other managed batteries.
- Freedomwon batteries: show Freedwon logo on the GUI overview page
- Pylontech: increase the charged battery voltage from 52 to 52.4. This fixes the issue that some batteries would always linger 98 or 99% rather than their SOC showing 100%.
- Add BlueNova battery detection as well as enforcing good settings for it: DVCC on, SVS & STS off.

- Fix issue in which the GX Device applied current control to solar chargers configured to a VE.Can Device instance of 1 and higher; while as per documentation it should only control them when configured with their VE.Can Device instance set to 0 (which is the default). The feature to have an option to not control all solar chargers is for systems with multiple battery banks, such as a yacht. This is similar to synchronised parallel charging on VE.Can: also that works by VE.Can Device Instance.
- Fix temperature source selection. The names were so long that it was impossible to see which one you were selecting.
- Fix Shared Temperature Sense (STS) not always used to VE.Bus Inverter/chargers;

ModbusTCP
- Add various new registers, such as one for the new Grid feed-in limiter setting.
- Change the grid failure alarm register. This was at register 830, unit id 0 & 100, and is now at register 64 on the vebus unit id. See the Unit ID mapping tab in the ModbusTCP spreadsheet. This is a breaking change that requires customers that use this register to update their ModbusTCP configuration, we know that is not good, and don't like it ourselves - but saw no sensible other solution.

v2.58 – August 12th 2020
- Fix VRM Portal ID issue on Cerbo GX, when using an external wifi dongle.

v2.57 – July 13th 2020
- Complete the VRM Portal ID change for the Cerbo GX

v2.56 – July 7th 2020
(only released to Cerbo GX manufacturing; not to field update systems)
- Change VRM Portal ID to be based on the WiFi MAC address instead of the Ethernet MAC address. No effect for installed units: the VRM Portal will seamlessly migrate existing systems to the new portal id, and both the old vrm portal id (as written on the label on the unit) as well as the new one (which is visible in the Settings -> VRM Portal menu), can be used in the VRM Add installation wizard.
- Fix mouse/touch handling when pressing multiple times that could lead to a frozen screen. Mostly seen on the GX Touch, but also happened on other devices, such as the CCGX.

v2.55 – June 30th 2020
(only released to Cerbo GX manufacturing; not to field update systems)
- Disable the USB port that is closest to the HDMI port – now it provides only power.

v2.54 – May 25th 2020 (blogpost**)**
Change log:
- Add compatibility with the Pylontech UP2500 module: a 24V managed lithium battery. More information in the detailed instructions for Pylontech batteries.
- Fix "Could not connect to the MQTT server" bug in the Marine MFD App, aka Glass bridge integration. It worked well in most systems, but not when "VRM Two Way Communication" was enabled in a system without internet connection. Now, also when there is no internet, enabling that setting does not cause any issue. This bug was originally introduced in Venus OS v2.40
- Fix a bug in relation to Fronius PV Inverters, that caused some systems to read a false 0W output now and then. This issue caused downward spikes in graphs on VRM, and could also affect the Fronius Zero feed-in functionality: all works better now.
- Fix issue that (in quite rare cases) resulted in the maximum discharge current and voltage not being communicated to the inverter/charger. Thank you Wilco P. for reporting & helping to fix it.
- Fix bug that (in very specific circumstances) caused Assistants to fail to be updated with a new version when using Remote VEConfigure. This bug has been in in Venus OS quite a long time.
- Fix certain GPS's not being recognised on the CANvu GX. Thank you Sturm Udrang for reporting this!
- Remove BYD Premium LV battery energy counters, there is a bug in its calculation which will be fixed by BYD soon.
- Improve handing of 2nd gen Zigbee Ethernet bridges by increasing the timeout
- Internal improvements for the GX card in the EasySolar-II GX, MultiPlus-II GX and the Maxi GX.
- Internal improvements concerning GX Touch.
- Internal improvements in the VE.Can communication driver (only handle 29-bit messages)
- Internal improvements in the VE.Bus communication driver (general stability / no effect on installed systems)

v2.53 – April 6th 2020 (blogpost**)**
Change log:
- Add EasySolar-II GX and MultiPlus-II GX ModbusTCP unit id mappings – the VE.Direct port mappings were missing
- Fix bug affecting our new generation of VE.Can SmartSolar Chargers, when used in systems with a CAN-bus Managed Battery: the maximum charge current limit wasn't always communicated properly

to the solar chargers – when connected using their VE.Can port rather than their VE.Direct port. Note that (a) the practical effect of this issue is small or even negligible, since all control of charging, also when a battery is full, is done using voltage limits. Not charge current limits. And (b) to get the charge current limit communicated across properly on the VE.Can network, also a firmware update is necessary for these SmartSolar MPPTs, which is expected within a few weeks.

- Fix the Cerbo GX not being recognised in the VRM Portal: it showed "Generic Venus Device" instead. Not anymore.
- Improve handling of Sony aka Murata CAN-bus BMS batteries
- Fix issues related to Custom name handling when using the soon expected Remote feature in VictronConnect.

v2.52 – March 17ᵗʰ 2020 (blogpost)
Change log:
- Add support for the BYD Premium LV batteries.
  https://www.victronenergy.com/live/battery_compatibility:byd_b-box
- Fix the Grid alarm, reducing the likely hood of it being triggered temporarily when the user switches the Inverter/charger off and on. Note that there are still situation in case switching the Inverter/charger off and then on can trigger the grid alarm. It relates to grid codes and mandatory waiting times of up to 60 seconds. We'll fix that properly in a future release.

v2.51 – March 3ʳᵈ 2020
Change log:
- Fix Victron App icon blinking on Navico MFDs (Simrad, B&G, Lowrance), and the same bug can cause more issues (plotter becoming unresponsive, communication errors) as well.
- Fix bug causing DVCC to be auto enabled for the (long discontinued-) Lynx Ion.
- Fix DVCC Error #48 Incompatible firmware alarm activating and clearing repeatedly, as well as all values on the overview disappearing, every 5 seconds on systems with too old firmware and DVCC enabled. Now, the error (firmware too old for having DVCC enabled) stays visible permanently.
- Fix grid alarm not being raised on some systems.
- Fix a few issues in the relatively new NMEA2000-out function:
  o Make it possible to change the system instance. This used to work with our VE.Bus to NMEA2000 interfaces, now also on GX Devices.
  o Fix a bug that prevented the device instance of the batteries to be changed.
  o Change the default device instances for VE.Bus devices, to be as they used to be in the VE.Bus to NMEA2000 interfaces (0 for AC-Out and 1 for AC-In)
- Installer: write only one rootfs to save time in production, and drop the scratch partition and expand /data to use the available space.
- Cerbo GX & Venus GX: fix a bug in the mouse position on Remote Console on LAN
- Cerbo GX: fix issue when plugging an external WLAN dongle into the most left one of the USB ports.
- Ethernet menu: show the link local address. (a GX Device always has two IP Addresses on its ethernet interface, one permanent link local address, for use with MFD App integration, and another one, which is the normal configurable one).
- Fix issue with enabling Remote Console on the CCGX. This was already partially improved in v2.41, but not entirely fixed. Now it is.
- Cerbo GX: add ModbusTCP mappings for the Cerbo GX
- Cerbo GX: add menu to enable & disable Bluetooth as well as change the pin code.
- Move the VRM Two Way communication setting to the VRM Portal menu.
- Fix that the time, for example in scheduled charging, could not be set above 23:00 hours on a few time zones.

v2.50 – January 13ᵗʰ 2020
This version was released only for the Cerbo GX. Changes to apply to other products as well, once a newer release has been made.)

Change log:
- Complete Cerbo GX support
- Tank & temperature inputs on Cerbo GX & Venus GX: always read the correct value on startup – instead of sometimes first the wrong value that than very slowly aggregates to the correct one.
- Speed up Remote VEConfigure – in some cases up to 2 or 3 times faster.

v2.42 – December 20ᵗʰ 2019 (blogpost)
Change log:
- Fix a bug in the VE.Bus Diagnostics menu, it could get stuck; to be fixed only by a reboot. This was broken in v2.40, solved in v2.42. Thank you Elvis R. for reporting.

v2.41 – December 20ᵗʰ 2019 (blogpost)
Change log:
- Fix intermittent BYD communication. (Only) on some systems, the connection to the BYD battery timed out, to then restore again, and later time out again. Besides showing 'disconnected', it can also cause the MultiPlus to go into passthrough, or even worse, shut down. This is now fixed. Our

- apologies for this bug and problems that it caused; it shouldn't have happened. And my thanks to the various customers that have reported this and helping pinning it down. Bug was introduced in v2.4.
- Fix setting the Tank capacity on the Venus GX no longer working. Also this problem was introduced with v2.40 also. Thank you Craig W for reporting this very cleanly, it helped making an immediate fix.
- Improve enabling of Remote Console on LAN and VRM on the CCGX. A change several versions ago made it possible, but not likely, that setting (or disabling) the password wasn't stored to disk properly, causing Remote Console to not work at all or not accept the newly set password.
- Fix the 12h and 24h interval setting in the VRM Portal menu. When 12h was selected, it used a 2 hour interval instead. And instead of a full day it used four hours. Note that we added the 2 hour and four hour intervals, and systems previously set to 12h and 1 day are now set to 2 hour and 4 hour; to not change their behaviour. To get 12h or 24h, change the setting. This bug was introduced a long long time ago.
- Small fix in the LED handling of the Venus GX and Octo GX. It now fully matches the behaviour as documented in the manual, also when using the button to reset all network settings to default (a new feature, introduced in v2.40).

v2.40 – December 10th 2019 ([blogpost](#))
Change log:

General:
- Add NMEA2000-out function. The GX devices can now transmit battery monitor as well as inverter/charger data out on the VE.Can/NMEA2000 network, where it can be picked up by Marine MFDs. This setting is disabled by default, enabled it in Settings -> Services -> CAN-bus. This is now the recommended way to integrate. The [VE.Bus to NMEA2000](#) and [VE.Direct to NMEA2000 interfaces](#) are now deprecated.
- Add support for the professional irradiance meters from Mencke and Tegtmeyer GmbH in Germany. The type of meter supported is [their Si-RS485TC series](#). They also feature an optional temperature sensor and wind meter. [Details in the manual](#).
- The System setup menu has been cleaned up. DVCC now has its own menu.
- Added a reset network settings to defaults feature for the Venus GX & Octo GX, by pressing and holding the small push button that's hidden behind a small hole on the side of the Venus GX. [Details in the manual](#).
- Force the BMS-Can port on the EasySolar-II GX and MultiPlus-II GX to be able to be used only for that purpose, no longer as a VE.Can port. The reason why we changed that is that we can't guarantee proper functioning of that port for connecting VE.Can products, even worse: we know for sure it won't work reliable. The hardware is not good enough. Product documentation of those products has been updated already a while ago.

Inverter/charger monitoring and control:
- Add "Inverter only" option to the On/Off/Charger-only switch in the Multi/Quattro menu page.
- Changing the AC input current limit is now possible for systems with a VE.Bus BMS. Requires VE.Bus firmware 415 or newer on the inverter/charger. The other limitation, switching between On/Off and Charger-only is unfortunately still not possible for systems with a VE.Bus BMS.
- Add Grid failure aka Shore disconnect detection and notification. [Details in the manual](#).
- Fix bug where, in rare certain conditions, the Multi/Quattro could not be switched on.
- Update VE.Bus Error 8 and Error 11 titles to be in line with the [updated documentation](#).

SmartSolar Chargers with VE.Can (the new range introduced in 2019)
- Add option to configure a custom name for each charger.
- Complete the support for DVCC & ESS. All DVCC features now work for these chargers: Voltage and current control when used with Managed batteries, Charge current limiting, SVS, STS, SCS, and so forth.

DVCC, ESS & Scheduled charging:
- Scheduled charging: change the hysteresis on SOC when battery full from 0.1% to 5%.
- Add Shared current sense (SCS). When enabled, this function will forward the battery current as reported by a battery monitor to the solar chargers, to be used for the tail current end of charge detection. [Details in the manual, section 4.4.2](#).
- Improve the Shared Temperature Sense (STS) feature. It used to work only with a temperature sensor connected to the battery monitor. Now it can also use temperature sensors attached to a Venus GX, Multi/Quattro inverter charger as well as a solar chargers as its input.
- ESS: use the inverter/charger as the source for Solar Charger voltage sensing – always.
- Add warning notification when DVCC is enabled and either inverter/charger or VE.Bus firmware is not compatible (too old). See [DVCC requirements section in the manual](#) for details.

Managed Batteries (BYD, Pylontech, Freedomwon, Redflow, Discover – and similar)
- Added a new battery to list of supported & tested batteries: [Discover AES](#).
- Add battery capacity field (for the batteries that support sending that information). Visible in the GUI as well as on the VRM diagnostics page.
- Fix Freedomwon Lite recognition. These batteries were being recognised as an LG battery.

- Force good DVCC & SVS settings for BYD, MG Energy Systems, Discover AES as well as Victron batteries connected with a Lynx Ion BMS. For all of them, DVCC is forced on, and the SVS setting is forced off. Therefore it is no longer needed for the installer to set those parameters; and no longer possible to set it to a non-supported configuration. Making it easier to install such systems and reducing support.
- Recognise and distinguish the BYD B-Box L battery from the other BYD battery types.

PV Inverter monitoring
- Support using a single-phase PV-inverter connected across a split-phase connection (no neutral). This is a common option in North America where a 240V or 208V PV-inverter is connected to a split-phase supply. Half of the Energy and power as reported by the PV Inverter is attributed to (reported on) L1 and the other 50% on L2.
- Add an option to disable automatic scanning. Note that we recommend to leave automatic scanning enabled. Only disable it in systems where it gives problems, typically large more complicated computer networks.

Other changes:
- Fix that Disabling the built-in WiFi Access Point also made the device to not connect to a WiFi network automatically as well. The workaround was to go into the WiFi menu, or (?) power cycle (I'm not 100% sure about this one). Now its fixed: disabling the built-in access point no longer affects how the device handles connecting to other access points.
- Restore the Relay state on the GX Device after boot (when configured as Manual controlled). It used to always reset to Open on boot.
- Fix a mistake in the calculation behind the DC System box on the overview. The PV current was not added to the total, causing the value to be wrong. See "Has DC system" in the manual to see what the DC System Box is about.
- Fix bug that prevented entering certain IP Addresses. Thank you ScottB for finding this.

ModbusTCP
- A page was added to the gui that shows the last error messages. Very useful for customers to debug issues they might be having when developing a ModbusTCP application.
- New register: Grid lost alarm – 830
- Added support for the EasySolar-II GX and MultiPlus-II GX, the inverter/charger section is mapped to unit id 228.

MQTT
- The previous setting, MQTT on LAN has been renamed to "MQTT on LAN (Plaintext)". There is a new setting called "MQTT on LAN (SSL)". The difference between Plaintext and SSL is just that: enabling the plain text one opens it on port 9001 (MQTT over websockets) and on port 1883 (pure MQTT) and the SSL one opens the encrypted variant of that on port 8883. Also new is that it is now possible to enable MQTT for use on the local LAN, without also enabling the uplink to our cloud broker, which often was required. After the update, settings of existing systems are migrated such that nothing breaks. For details, see here: https://github.com/victronenergy/venus/issues/480.
- The very rarely used and specialty service 'NMEA2000 on MQTT' is now hidden under the superuser access level: we saw far too many people that had enabled that while they don't use it. And it increases CPU load.

Developers
- Add ntp and gpsd as optional opkg installable packages
- Change address of mqtt server. [More information](#).
- Various kernel updates and more.

Known issues
- ~~Setting the tank capacity on a Venus GX is broken in v2.40. Fix is expected (v2.41) within a few weeks; the work around is to install, or revert using the built-in revert function to, v2.33.~~
- ~~BYD batteries might show connected/disconnected now and then; Fix expected in v2.41 within a few weeks; work around is to install, or revert using the built-in revert function, v2.33.~~

Both known issues, and more, have been fixed in v2.41.

v2.34 – July 19th 2019
- Only released for production of the CANvu GX. Fixes an issue due to new flash layout.

v2.33 – July 15th 2019
Change log:

General:
- Remote VEConfigure: add support for (soon to be released) VE.Bus inverter/charger firmware version 460.

v2.32 – July 2nd 2019
Change log:

General:
- Fix CCGX causing VE.Bus communication errors, such as <u>VE.Bus Error 3, 4 and Error 17</u>. Also it can cause a false <u>VE.Bus Error 24</u>, which is normally not related to communication. To be affected by this issue, the system must have a CCGX, with part number BPP010300100R. Also recognisable by the country of origin: Hungary. All other CCGX part numbers, made in China and India, are not affected.

  We started shipping the affected model in 2017. And since early 2019 we're only shipping the affected units: by that time there was no more stock of the older units in any of our warehouses. The CCGX as used in some EasySolar models is not affected.

  The issue was that that version CCGX transmitted on the VE.Bus network even when it should not. Causing collisions, ie. errors in the communication. More units in a system (three phase, and then especially with parallel units also) means that its more sensitive to this issue. Single system units are very unlikely to be affected by it; I've not yet seen that once.

  Thank you to all people that have reported and helped to fix this.

- Fix issue that made it impossible to turn a Multi back on after a (GX Device internal-) MK3 firmware update was performed. Fix issue that made it impossible to turn a Multi back on after a (GX Device internal-) MK3 firmware update was performed. This issue was introduced in v2.09. Thank you to Daniel Boekel for helping to get this fixed.

- Fix the System Setup -> DVCC -> Charge current setting not working, if the Venus booted while there is no PV on systems with normal batteries. Systems with intelligent can-bus connected batteries are not affected by the bug. Thank you John Hagtharp for all your effort in getting this fixed. This issue was introduced in v2.30

- Fix the ModbusTCP register for the PV Inverter serial number(s) no longer working. The recently introduced 32-bit energy registers for PV-inverters overlapped with the serial number registers. This is fixed by moving the new energy registers from 1040 to 1046. The issue was introduced in v2.31. Thank you Jens M. for reporting this.

- Production: fix Venus GX eeprom id issue & MK3 test issue

v2.31 – 6 June 2019
Change log:

General:
- Fix digital inputs in Venus GX, Octo GX and Maxi GX not working properly (broken in v2.30)
- Fix summary of scheduled charging missing in the gui (broken in v2.30)
- Fix WiFi reconnect issue: in some cases; a disconnect/reconnect fails and then it ends up in Failure Mode. If at that same time the GUI menu was left on the WiFi menu; the system would not carry out further reconnect attempts. This is solved: the GUI automatically jumps out of the WiFi menu after 5 minutes of keyboard inactivity. (this issue has been in the software for a long time; it is not new)
- Fix DNS resolving issue (which lead to loss of Remote Console & VRM connections), that affected systems where one or more of the DHCP advertised (or manually configured) DNS servers don't work. Normally, the system would then switch to the other working one; and now it -sometimes- did not. Not many computer networks have a non-working DNS server configured; so the good news is that this affected only a small number of installations. Thank you Paul S. & Chris S. for reporting. (broken in v2.30)
- Add new MultiPlus-II model names
- Add ModbusTCP registers , 32-bit registers for PV Inverter Energy measurements
- Fix Automatic system voltage detection not working properly for systems with a MultiPlus Compact that is switched off & has dipswitch 2 set to On. Thank you at Suavek for reporting. (broken in v2.30)

~~Known issues~~
- ~~On some CANvu GX devices; the digital input & relay does not work. This is being worked on; and expected to be resolved quickly.~~
  This turned out to be a wrong report. There is no issue on the CANvu-s.

v2.30 – 27 May 2019
Change log:

General:

- Add Marine MFD Chart plotter aka Glass bridge integration. More information in the GX Manual, chapter 4.
- Add support for ABB PV Inverters; including Zero feed-in. For details & manual, see the PV Inverter chapter in the manual.
- First release for our new Maxi GX, a new member of the GX family. The Maxi GX allows up to 25 MPPT Solar Chargers connected with their VE.Direct port. See our GX Products page for more information.
- First release for the GX in our new MultiPlus-II GX and EasySolar-II GX inverter/chargers.
- CANvu GX: various fixes and improvements.
- Rename the "ESS" state to "External control" for solar chargers. This fixes the confusion around off-grid systems where no ESS was running; but still were reporting it. Thank you JohnC, Guy and others for reporting this.
- Firmware updates: allow downgrading.
- Fix Phoenix VE.Bus Inverters being called MultiPlus. They are now properly recognised as an Inverter.
- Add so-called 'Zeroconf discovery': on iOS, macOS, and Windows, you can now find your GX Device in the local network by typing venus.local in a webbrowser. Unfornutaly it was not possible to make that work on Android. But, on all mentioned platforms, you can use always use the recently released VictronConnect feature to find GX Devices; see this video.
- Fix issue in Remote VEConfigure: changing battery capacity and a few other settings do not require a system reset; but that reset was carried out anyway. Now, those settings can be changed without a short, unannounced, blackout.
- Fix bug that, in certain specific conditions, caused a CPU overloaded system to hang; rather than restart and start clean.
- Add an option in the menu to manually switch the second relay in the Venus GX
- Add diagnostics page for the Fiam48TL Salt batteries
- Report data partition errors on the GUI & and on VRM (Error #42)
- Change the "Solar Charger" -> "BMS Controlled switch" into a reset button. As that feature auto-enables itself when it sees a BMV, having an on/off switch was confusing. Use the reset when re-using the Solar Charger in another system with no BMS.
- Have multiple demo modes to choose from, rather than just one: one ESS demo, and two Marine/motorhome oriented demos.

Remote Console:
- Improve Remote Console on VRM. The IP-Address security check has been replaced by a more robust solution. This solves the problem that some customers where not able to use Remote Console on VRM, even though they had a stable and high quality connection to the internet.
- Improve the GUI in various areas for touch operation.

Inverter/charger monitoring
- Add the phase rotation warning: For a three phase system to connect to the supplied AC, either Generator or Utility, the phases need to be connected in the correct rotation, also known as sequence. If not, then the VE.Bus Inverter/chargers will ignore the AC supply and remain in Inverter mode. It used to do that silently, leaving the operator wondering what he did wrong. No longer, the GX-device as well as VRM will raise a warning now. Details in the manual.
- Improve Inverter/charger Overload, Temperature, Low battery and High DC ripple warnings and alarms. Both in the notifications page on the device itself as on VRM, only one event will show. Not multiple duplicates, or other resulted errors, at the same time.
- Add the battery temperature as measured by the Inverter/chargers (Multis, Quattros, etc.) to the display and to VRM.
- Small improvements for systems monitoring a second system using an MK3-USB: store the (alarm) settings separately.

VRM Portal uplink:
- Show more error details in the GUI to help diagnosing connection problems to the VRM Portal. For details, see the VRM Portal chapter in the manual.
- Add a watchdog: automatically reboot the Venus-device in case it has not been able to sent data to VRM for a while. See Settings -> VRM online portal -> Reboot device when no contact.

DVCC:
- Fix a bug in the Limit Charge current feature, part of DVCC. For systems with multiple inverter/chargers on a phase, the limit wasn't applied correctly, resulting in a twice too high max current when having two units per phase; three times too high limit when having three units per phase; and so forth. This same bug affected CAN-bus controlled batteries as well. This bug has been in the code since the introduction of DVCC. Thank you @John Hagtharp for finding it; and helping to fix this.
- Fix incorrect charge current limit remaining in a VE.Bus system after disabling the DVCC Limit Charge Current feature: the inverter/chargers would retain the last configured limit, until another limit was set, or a reset/restart of the inverter/chargers happened. Not anymore: now it correctly resets to the value set with VEConfigure as soon as the Limit Charge Current feature is disabled.

- CAN-Bus BMS batteries: hide the Time-to-go field from the GUI Menu; since it is not supported by the protocol and thus always empty and raising questions.
- Shared Voltage Sense: Always prefer the VE.Bus voltage over others when there is no suitable battery monitor. This avoids a confusing situation where in some cases a solarcharger is used for voltage even though a Multi is present.
- Make multiple BMSes in the same system work well by making the BMS selection deterministic: it will use the BMS with the lowest configured BMS instance for DVCC. Any others are just shown in the menus. This allows, for example, to add a second Lynx Ion BMS with battery pack used for (only) a large electric bow-thruster; besides another pack that is used as the boats main service battery which powers the inverter/chargers.

ESS:
- Don't stop discharging when SOC indicates 0%. When Minimum SOC setting is configured to 0%; the system is now allowed to run until another threshold makes it stop; there is no more checking on SOC.
- Fix bug that caused the system to power the loads from the grid while in the scheduled charging window once the batteries were fully charged. Now; first the grid is used to fully charge the batteries, as it should when in a scheduled charging window, and once the batteries are full it prioritises PV over the grid, only using the latter in case there is not enough PV power.
- Fix ESS operation in systems with more than one VE.Bus system connected (second is then connected using a MK3-USB): ESS will always use the main VE.Bus system, selected by sorting on instance number.
- Add support for the next generation of Zigbee to USB Converters - DRF2658C, used for Energy Metering.
- Carlo Gavazzi Energy Meter power or current is now better handled, by skipping the records; instead of storing a very high value that distorted the graphs on VRM. Thank you Tilo Ritz for reporting.

Generator start/stop:
- Fix issue in saving the generator run time; thank you Paul B for reporting this one.
- Change 'Periodic test run" wording into "Periodic run"; less confusing. Thank you Paul B.
- Generator start/stop: remove the battery monitor selection. It now always uses the same battery monitor as is used by the rest of the system. For systems that already had a different battery monitor configured the behaviour will not change by installing this update: it still shows and uses the selected battery monitor.
- Generator start/stop: log the condition that is causing the generator to be running to VRM so it is possible to analyse why the generator was started. For now only visible on the XLS and CSV download buttons on VRM.

GX GSM:
- GX GSM: Enable the GPS also when there is no simcard inserted. Thank you Jondal for raising this.

ModbusTCP (download the new Excelsheet from our website)
- Add register for ESS Maximum inverter power
- Add register for DVCC Maximum system charge current
- add register for AC-input Phase rotation warning for inverter/charger systems.
- add register that shows MPPT solar charger operational state (0=Off;1=Voltage/current limited;2=MPPT active;255=Not available)
- add register 2902 for ESS mode: 1: Enabled with phase compensation. 2: Enabled without phase compensation, 3: external control.
- Add registers for Generator manual start, runtime, and RunByConditionCode which shows why the generator is running.
- Add inverter/charger battery temperature measurement

Developers
- Raspberrypi 3B+: Fix the WiFi. Thanks to Per and others.
- Remove the /log symlink. From now on for non-volatile storing of logs, use /data/log
- Add a feature to automatically install files to /data from an SD-card or USB stick on boot. Details in the Venus OS root access document.
- Enabling ssh is now a separate setting; no longer tied together with the Remote Support Setting. For this and some other changes; we've start using iptables firewalling.
- Fix a few bugs in vebus-updater
- VE.Direct driver: Add check that bidirectional communication is possible (except for BMV60x). In the support desk we have seen multipe self-made USB-VE.Direct cables now; of which only the RX signal works; rather than RX and TX. And that works somewhat; but not 100%; and nobody understands why: a waste of time. So; now the code tests if it is a properly working cable; and if not; hides the connected device completely.
- Enable tun/tap module for all kernels
- Enable netfilter module for various kernels
- CCGX Kernel updated from 3.7 to 4.19

v2.23 – 19 February 2019
Change log:

General:
- Fix that changing the date & time did not work properly for off-grid systems: changes to the date and time were only stored to the device when being rebooted from within the menus (which nobody ever does). Power cycling a unit would make it jump back to the previous date & time. This is now fixed. Note that only installations without internet were affected: with internet, the date and time are set automatically; as well as stored properly. This bug has always been in the system, since the first release.
- Update Eastern Europe time zones; fixes issues with Romania and other countries
- Add a low-cell voltage warning and alarm for Lynx Ion BMS systems. Note that this warning and alarm is only available for systems with a Lynx Ion BMS. Not for the (discontinued) Lynx Ion + Shunt models; and also not for any other (CAN-bus connected) battery types. How does it work? It will first issue a warning; and that will change to an alarm once the voltage is so low that the system has disabled the 'allow-to-discharge' signal; which shuts down any connected inverters and other loads.
- Fix internet connection issues for a small number of systems; by lowering the MTU to 1450. If affected you typically see that logging data to the VRM works, but Remote Console does not work; and Remote VEConfigure and Remote Firmware Update work partially: scanning typically works; but anything using full packet sizes; such as uploading a firmware file; or transferring the VEConfigure file; does not work and returns error 1300. More information here: https://community.victronenergy.com/questions/3608/how-to-solve-error-1300-on-remote-ve-configure.html
- Fix VE.Bus Low Battery, Overload and Temperature warnings and alarms showing up twice in the menu and notifications (bug was introduced in v2.18)
- Fix vup-error-9 on VRM Remote Firmware system. The error in itself was harmless; but raising questions.
- Debounce VE.Bus warnings: warnings now stay valid for at least 20 seconds in order to reduce the number of warning -> ok -> warning changes; notifications and VRM emails.
- Add the names of various new VE.Bus inverter/chargers

ESS:
- Fix bug in Scheduled charging that failed to make optimal use of the PV when in the scheduled charging window.
- When Active AC input is a generator, enable the Fronius zero-feedin limiter. Thanks to Simon Hackett for reporting.
- For systems with CAN-bus BMS batteries, MPPT Solar Chargers, and DVCC enabled, the use of PV power in systems with a relatively small batteries has been improved. An example to illustrate it: lets say the battery indicates a discharge limit of 25A. And at the same time, there is 40A of solar available from the solar charger. In the old situation; the maximum draw from the DC bus would be 25A = 1250 W. Net result for the battery would be that it was being charged with 40 – 25 = 15 Ampere. With v2.23 installed, it will allow up to 65 A draw from the DC: 25A from the battery, and 40A from the solar charger.

Venus GX:

- Improve flexibility of the multiplier setting for the pulse counter; the spinbox has been replaced with a normal edit box where a number can be entered now; with up to 6 decimal places. (thank you Greg for helping with this)

ModbusTCP:

- Make battery relay writeable, i.e. Lynx Shunt (thanks Shane)
- Add registers related to charge current and temperature alarms.
- Add register for LowCellVoltage alarm & warning sent by the Lynx BMS
- Add register for Battery Temperature on VE.Bus devices.
- Add register for VE.Bus system reset; same function as in the inverter/charger menu in the Device List.
- And then there are a few more improvements, enhancing system stability and robustness.

v2.22 – 3 December 2018
Change log:

General:
- First official version for Octo GX
- Fix that the 'Inverter AC output in use'-setting was visible when it should not be; and the other way around. This bug was introduced in v2.20; and fixed thanks to Meisl in Germany.

- Venus GX & Octo GX: fix the wifi interface mac addresses; now they no longer swap across reboots, which makes the dhcp address assignments stable.
- Fix a bug that occasionally caused for the VRM device-authorisation token to get lost during generation. This showed up to the user as a popup in VRM 'Error, xx hours ago, data from an unauthenticated device has been received for this installation'. In such case, VRM logging still worked, while MQTT based services such as remote firmware update & remote VEConfigure no longer worked. All sites that have that issue have been fixed; there is no need to worry about anything for your running system.
- Send the value of the Shared Voltage Sense setting (on/off) to the VRM portal, for diagnostics.

Known issue:
- ESS "Keep batteries charged" mode does not work well for systems that have MPPTs, DVCC disabled, and the "Feed-in excess solar charger power" setting disabled: while connected to the grid (or another AC source) the solar charger may be throttled down more than required. Causing unnecessary consumption from the grid. This problem is in ESS since the beginning.

  Solution: set the mode to Optimize, and set the minimum SOC to 100%. Note that with this workaround there is still a difference with the "Keep batteries charged" mode: the system will not recharge the battery from the grid after a power outage.
  Or, in many cases a better solution, enable DVCC (check CCGX manual to see if that is allowed for the used battery type, make & model!)

v2.21 - Skipped

v2.20 – 16 October 2018
Change log:

General:
- Add support for the GX GSM; a 3G cellular modem accessory for Venus-OS devices; This is a new product, expected to be in stock in a few weeks.
- Add Start Equalisation button to the Multi/Quattro menu. See Device List -> Multi or Quattro -> Advanced. In this same change we have re-ordered the menus at the bottom of the VE.Bus page. Note that this only works for VE.Bus firmware version 400 and newer. Finally, no more flipping the rocker switch back and forth on the Multis & Quattros.

ESS:
- Add scheduled charging. Configure up to 5 schedules during which the system will take power from the grid to charge the battery during off-peak tariff time windows.
- Increase maximum grid setpoint from 100kW to 1MW.
- ESS Systems with a grid meter, Fronius Inverters and Zero Feed-in enabled: no longer shut the PV Inverters down when there is a power failure. Instead; let the Multi/Quattro regulate them with frequency shifting. Thanks to Eon F. for reporting.
- ESS with DVCC enabled: fix a bug that prevented the Multi to discharge in some very specific conditions. Only seen with Lynx Ion battery systems. Introduced when launching DVCC, v2.12.

DVCC:
- Improve (= reduce) LG and Pylontech max working voltage for DVCC enabled systems to eliminate over-voltage errors. LG: change from 57.5V to 57.3V, Pylontech: change from 53.2V to 52V
- Add shared temperature sense, and a switch (default on) for the feature. At present only a single configuration is supported: a BMV-702 or 712 with the temperature sensor accessory. When such a battery monitor is connected, and temperature sense is enabled, the Venus-device will send the battery temperature to the connected Solar Chargers and Inverter/chargers.
- Always show the Max Charge Current setting in the System Setup menu so it can also be used when there is no inverter/charger in the system.
- Sony/Murata: fix issue that occurred in off-grid three-phase systems with PV Inverters: the PV Inverters were throttled too much, causing the load to be powered from the battery instead of from the sun. Thank you Hubert D. for helping with this.

ESS Auto-recharge (a feature introduced in v2.12 as a DVCC only feature):
- This feature now also works when DVCC is not enabled.
- Simplify the logic for starting an auto-recharge: start only when SOC <= minSOC - 5%, which
  - Fixes auto-recharge not starting when BatteryLife-setting was disabled and minSOC set to 5% (0% wasn't far enough below 5% to activate).
  - Removes the 'feature' that would always start an auto-recharge when the BatteryLife-setting was enabled and SOC <= 0%.

- Thank you to Simon Hackett for reporting & getting to the bottom of this.

GUI:

- Add WiFi and GSM GX status icons to the status bar:
  - WiFi icon is only visible when WiFi is used to connect to internet.
  - 3G/Edge/etc. icon only visible when modem is used to connect to internet.
  - Modem signal strength icon is visible when there is a modem.
- Change the layout of the on/off & yes/no switch: no more text in the switch; more versatile and less translation issues.
- Reword several ESS-related menu items (remove the double negatives)
- Only show the SOC as reported by the inverter/charger when its actually enabled and configured in VEConfigure.
- Add notification to user that a VE.Bus system requires a reset after disabling DVCC. Not doing so will make the system go into pass-through after a while.

CCGX Only:
- Fix display not working and backlight making noise on some units. (thank you to various people alerting us)
- Fix display brightness setting issue. Note that this might, only one time, increase the backlight setting on a CCGX during the update.

ModbusTCP:
- Fix bug that caused stale values to be returned for disconnected devices. Instead of returning the last value, it will now return the error that means device not found: 0x0A - GatewayPathUnavailable.

Other:
- Always connect to WiFi (when configured). Instead of only connecting to WiFi when ethernet is not plugged in.
- Add the "Hjelmslund Electronics USB to RS485 Iso converter" as a supported RS485 interface
- Add support for the Fiamm FzSonick batteries (connected via RS485)
- Change the demo mode data to ESS
- Add support for Murata batteries, and rename Sony batteries to Murata.
- Fix error in VRM Remote Firmware update mechanism when a "NMEA 2000<->0183 Gateway (NGW-1)" device was connected to the canbus. Thank you Charles P. for reporting it.

Developer related:
- Add websockets to MQTT. This is on port 9001, there Mosquitto is running as a broker on Venus, see here for example usage: https://github.com/victronenergy/venus-html5-app
- Raspberrypis: update bootloader to v1.20180417, fixing issues with recent Raspberrypi2 hardware
- Raspberrypis: add device tree overlay for waveshare/ft5406 LCD screen
- Venus GX: update the Linux kernel from 4.1.44 to 4.9.113
- Enable netfilter / iptables in the kernel config for all machines
- Debian packages: drop wheezy packages
- Update build environment (OE) from Jethro to Rocko, and also update Linux kernels for various machines
- Serial-starter mechanics have been reworked, see /etc/venus/serial-start.conf
- Add driver for the Bornay WindPlus MPPT. No GUI or VRM integrations yet.

v2.18 – 17 September 2018

Change log:
- Restore the ModbusTCP VE.Bus alarm registers for High temperature (34), Low battery (35) and Overload(36). They were replaced by phase specific ones in version v2.20. Breaking the old registers should not have happened; they are back in place now.
- Upgrade mqtt-n2k to v0.1.11; adds AIS PGNs.

Known issue: see v.17

v2.17 – 11 September 2018

Change log:
- Replace "VE Power Setup-style Remote Firmware Update and -VEConfigure" by a similar, but easier to use feature on the VRM Portal. See bottom of the "Device List" page on the VRM Portal.
  - Adds remote firmware updating VE.Direct products

- o Adds firmware library: no need to find a file: VRM Portal has it already
- Add feature to upload OEM logo; for the Boat & Motorhome page.
- Add reconnect button to Remote Console on LAN
- Fix Generator start/stop issue in combination with the Lynx Ion BMS and Lynx Shunt VE.Can.
- Fix bug in Tank Sender Adapter driver
- Add support for supporting more other types of (NMEA2000 type) tank senders

GUI:
- Add MultiPlus-II and other model names; fixes "Generic VE.Bus device" entry in the device list
- Fix drawing error; some times in the device list multiple names where overlapping. Not anymore.
- Hide the Fronius HTTP port setting: nobody needs that, and it causing confusion

Venus GX Digital inputs:
- Add switch that allows inverting the alarm logic.
- Fix bug where the alarm was not raised if the alarm signal was present on startup.
- Our thanks to Greg Sosna for reporting & helping to fix these issues

USB-GPS
- Improve support for USB GPSes; GPS, GLONASS and GNSS. Thank you Malcom H. for your work on this.
- Fix GPS not showing up in case it was connected while the Venus-device was already running

Other:
- Lynx Shunt VE.Can: Fix bug in the "Zero current" & "Synchronize"; they didn't always work; now they do.
- Lynx Shunt VE.Can & other VE.Can devices: Fix unknown temperature being recorded as 382C.
- Add High Charge Temperature & Low Charge Temperature alarms (Device List -> BYD -> Alarm Status)
- Improve format of Fischer Panda serial number
- Add (feature limited) option to connect a 2nd VE.Bus system, using a MK3-USB.
- Modbus-TCP: Add 32-bit integers for Grid meter forward & reverse energy (thank you Coen van Leeuwen for contributing this!)

Developer related changes:
- Increase Venus GX partition sizes to 1.3GB for each rootfs and 512MB for the data partition. See
- Upgrade mqtt-n2k to v0.1.10

Known issue:
- ESS "Keep batteries charged" mode does not work well for systems that have MPPTs, DVCC disabled, and the "Feed-in excess solar charger power" setting disabled: while connected to the grid (or another AC source) the solar charger may be throttled down more than required. Causing unnecessary consumption from the grid. This problem is in ESS since the beginning.

  Solution: set the mode to Optimize, and set the minimum SOC to 100%. Note that with this workaround there is still a difference with the "Keep batteries charged" mode: the system will not recharge the battery from the grid after a power outage.
  Or enable DVCC (check CCGX manual to see if that is allowed for the used battery type, make & model!)

v2.16 – 25 May 2018

Change log:
- Fix problem where generator tests stopped at midnight; thank you Seth L for reporting!
- Fix Energy Meters not being detected in same rare instances; thank you Sander van N for reporting!
- Fix GPS not showing up in case it was connected to a system that was already up and running;
- Add MultiPlus-II to the model name database;

Known issue:
- ESS "Keep batteries charged" mode does not work well for systems that have MPPTs, DVCC disabled, and the "Feed-in excess solar charger power" setting disabled: while connected to the grid (or another AC source) the solar charger may be throttled down more than required. Causing unnecessary consumption from the grid. This problem is in ESS since the beginning.

  Solution: set the mode to Optimize, and set the minimum SOC to 100%. Note that with this workaround there is still a difference with the "Keep batteries charged" mode: the system will not recharge the battery from the grid after a power outage.
  Or, in many cases a better solution, enable DVCC (check CCGX manual to see if that is allowed for the used battery type, make & model!)

v2.15 – 26 April 2018

Change log:

General:
- In the previous version, PV Inverters measured with an [AC Current sensor] were not visible anymore. This is now fixed.

Known issue:
- ESS "Keep batteries charged" mode does not work well for systems that have MPPTs, DVCC disabled, and the "Feed-in excess solar charger power" setting disabled: while connected to the grid (or another AC source) the solar charger may be throttled down more than required. Causing unnecessary consumption from the grid. This problem is in ESS since the beginning.

  Solution: set the mode to Optimize, and set the minimum SOC to 100%. Note that with this workaround there is still a difference with the "Keep batteries charged" mode: the system will not recharge the battery from the grid after a power outage.
  Or enable DVCC (check CCGX manual to see if that is allowed for the used battery type, make & model!)

v2.14 – 24 April 2018

Change log:

General:
- Fix the demo mode. It was broken in v2.12
- Fix Multi/Quattro Input current limit reset bug. Firmware versions 415 and later were affected. When the Multi was switched "off" and switched back "on" within 10 seconds the input current limit settings would reset to a previous value. Bug was introduced in v2.09. Thank you Jeff and others for helping to pin this down.
- Fix sending the Fronius model name to VRM. Bug was introduced in v2.12.
- Fix VE Power Setup showing Error 30 in certain conditions during Remote VEConfigure operation. Bug was introduced in v2.12.
- Change the BMU firmware version as shown on VRM for BYD, Sony, LG, and other intelligent CAN bus connected batteries. The GUI and VRM now show the same version.
- Add HighChargeTemperature and LowChargeTemperature alarms; only relevant for some CAN bus BMS connected intelligent batteries.
- Add sending digital input and pulse meter data to the VRM Portal. Note that they are currently only visible in the download page; there is no proper visualisation made yet.

DVCC enabled only:
- Improve BYD operation when the battery is full (CCL=0 behaviour).

Venus GX only:
- Fix PV-Inverter scanning. Thank you Eon and others for helping to pin this down.

Raspberry Pi only:
- Fix Restore backup firmware feature (Settings -> Firmware).

v2.13 – Not released

v2.12 – 13 February 2018

Change log:

Highlights:
- Add naming of devices connected via VE.Direct. This is very useful when having multiple battery monitors or MPPT Solar Chargers in one system.
- Add monitoring for SMA & Solar Edge PV Inverters. They must be connected via WiFi or Ethernet. The ModbusTCP Sunspec profile is used to communicate to the PV inverter. Note that the Zero-feed-in feature that we have for Fronius inverters remains Fronius-only. A zero-feed-in system cannot be made for other brands & types of PV Inverters. Solar Edge support was tested only with the SE2200H – SE6000H (HD-Wave) range. Other models may or may not work.
- Increase the maximum number of connectable devices.
- Venus GX: add support for the digital inputs. They can be used as an alarm input and for pumps: counting pulses.
- Introduce DVCC - Distributed Voltage and Current Control. See [DVCC chapter in the CCGX manual] before enabling.

ESS
- Fix oscillating battery current problems that happened on some systems using the EM340 meter.

- Fix bug where in systems with CAN-bus batteries the loads would under certain conditions be powered from the grid instead off from the battery.
- Fix bug in split- and three-phase systems where under certain conditions one of the phases would start charging or the MPPT would reduce its output power while it shouldn't. output power, while it shouldn't, in some specific conditions. Thank you Rainer and various other people in helping to fix this.
- Remove the limits on Max charge & Max discharge power settings

User interface
- Fix overviews not being shown automatically after a reboot. Bug was introduced in v2.00.
- Fix overview showing half on the screen on ESS systems.
- Remove the Lynx Shunt 'fused voltage' item from the menu.
- Fix PV Inverter not being shown in the overview when connected to L2 or L3
- Rename the MPPT `Parallel operation` submenu to Networked operation, as well as reword some of the items in that menu.
- Hide VE.Bus BMS submenu for systems that don't have that installed.

Other
- Add support for the GlobalSat MR-350PS4 (5Hz) Serial GPS Receiver - thank you MikeShipp!
- Venus GX: increase the maximum configurable tank volume to some insane high number
- Fix the reset option of the Generator start/stop runtime counters. This bug was introduced in v2.07.
- Fix the tank & temperature senders that show up on a Venus GX in disconnected state when they are disabled. My thanks for Warwick for reporting.
- VE.Bus devices: show 'not connected' for the Active AC Input when in islanding mode (works for all VE.Bus firmware versions)

ModbusTCP
- Add registers to read voltage and current from grid meters
- Add registers to read digital input status
- Add register to read the Active AC In status (Connected to AC IN1, Connected to AC IN2, Disconnected) from the system device, unitid 0.

MQTT:
- Change port used to connected to mqtt.victronenergy.com from 8883 to 443: reduce the chance of being blocked by a firewall.
- Fix bug that caused MQTT to work only when internet was available. Now the local broker works also when the system is unable to push its mqtt updates to mqtt.victronenergy.com.

Developers & community:
- Raspberrypi: increase rootfs size to 512MB and data partition to 768MB, allowing for easier self installing of extra software.
- Raspberrypi: Fix automatic swupdate
- Add pymodbus & pyserial packages to be standard installed
- Add touchscreen wake-up for devices with a touch-enabled screen.
- Add hooks to be run at startup, making customization easier
- Add & improve dbus-spy tool
- Add mqtt-n2k service
- And more changes, see the developer email list for full change log

Known issues:
- ESS "Keep batteries charged" with MPPTs and the "Feed-in excess solar charger power" setting disabled: while connected to the grid (or another AC source) the solar charger may be throttled down more than required. Causing unnecessary consumption from the grid. This problem is in ESS since the beginning.
  Workarounds:
  1) set the mode to Optimize, and set the minimum SOC to 100%. Note that with this workaround there is still a difference with the "Keep batteries charged" mode: the system will not recharge the battery from the grid after a power outage.
  2) Enable DVCC. See manual for more information on DVCC, and note that it has not yet been tested with all battery types.
- When after changing the input current limit, the Multi or Quattro is switched "off" through the user interface, and switched back "on" again within 10 seconds, the input current limit toggles back to the maximum input current limit instead of maintaining the user configured value. Thereafter its also not possible to change the limit: it keeps reverting back to the maximum. Multi firmware version >= 415. Introduced in Venus v2.09. Fixed in v2.13.
- The demo mode is broken. Introduced in v2.12. Fixed in v2.13.
- Error code 30 error in Remote VEConfigure. Affects Multi firmware versions 418 and older. When retrieving the system configuration remotely, using the Remote VEConfigure feature in VE Power Setup, some systems with above combination of versions will give Error code 30. On systems where this happens, almost all successive attempts will result in error code 30. It is random: for many other systems, also running v2.12 and a VE.Bus system of 418 or older, it does work fine. Fixed in v2.13.

v2.11 – 3 October 2017
Update image CCGX: https://updates.victronenergy.com/feeds/venus/release/images/ccgx/venus-swu-ccgx-20171003130155-v2.11.swu

Update image Venus GX: https://updates.victronenergy.com/feeds/venus/release/images/beaglebone/venus-swu-beaglebone-20171003130349-v2.11.swu

Change log:
- Fix compatibility issue with (some, not all) BMV-712 Smarts.

Known issues:
- ESS "Keep batteries charged" with MPPTs and the "Feed-in excess solar charger power" setting disabled: while connected to the grid (or another AC source) the solar charger may be throttled down more than required. Causing unnecessary consumption from the grid. This problem is in ESS since the beginning.
  Workaround: set the mode to Optimize, and set the minimum SOC to 100%. Note that with this workaround there is still a difference with the "Keep batteries charged" mode: the system will not recharge the battery from the grid after a power outage.
- When after changing the input current limit, the Multi or Quattro is switched "off" through the user interface, and switched back "on" again within 10 seconds, the input current limit toggles back to the maximum input current limit instead of maintaining the user configured value. Thereafter its also not possible to change the limit: it keeps reverting back to the maximum. Multi firmware version >= 415. Introduced in Venus V2.07.

v2.10 – 26 September 2017
Update image CCGX: https://updates.victronenergy.com/feeds/venus/release/images/beaglebone/venus-swu-beaglebone-20170925154035-v2.10.swu

Update image Venus GX: https://updates.victronenergy.com/feeds/venus/release/images/beaglebone/venus-swu-beaglebone-20170925154035-v2.10.swu

Change log:
- Fix Remote VEConfigure not working with VE.Bus firmware version 418. Note that Remote VEConfigure does not work for 416 and 417, and also will never work. Have you recently installed or updated a system where you need the option to remotely change settings in the Inverter, Multi or Quattro? In that case do check if they are running 416 or 417, and if so update to 418.
- Fix rounding of battery 'Time To Go' and 'Time since last full charge' values for systems where the battery monitor is connected via VE.Can. Such as the Lynx Shunt VE.Can, the Lynx Ion BMS, or a BMV connected via a VE.Direct to VE.Can interface cable. The error caused the values to be rounded to full hours, losing the minutes.

Known issues:
- ESS "Keep batteries charged" with MPPTs and the "Feed-in excess solar charger power" setting disabled: while connected to the grid (or another AC source) the solar charger may be throttled down more than required. Causing unnecessary consumption from the grid. This problem is in ESS since the beginning.
  Workaround: set the mode to Optimize, and set the minimum SOC to 100%. Note that with this workaround there is still a difference with the "Keep batteries charged" mode: the system will not recharge the battery from the grid after a power outage.

v2.09 – 4 September 2017
Update image CCGX: https://updates.victronenergy.com/feeds/venus/release/images/ccgx/venus-swu-ccgx-20170902215010-v2.09.swu

Update image Venus GX:

Change log:

Changes for the Venus GX only:
- Add various missing ModbusTCP definitions (VE.Direct ports, VE.Bus, Tank sensors, Temperature sensors)
- Fix bug, the tank level standards were swapped: a European style sender, 0-180 Ohm, required the American standard to be selected in the settings, and the other way around. Not any more.
- Add profile setting for the second CAN-bus port. Note that this port is not galvanically isolated. If the devices on the other end are not isolated either, both the Venus device and all other devices need to a common battery minus. Also, the minuses of those devices need to be connected first (and never disconnected with a switch!) as long as their CAN-bus ports are connected. We'll look into using it for CAN-bus connected lithium batteries and document the options on the various Battery compatibility pages in the near future.

- Fix Wi-Fi not reconnecting after power cycling the access point. Thank you, Jan P. for reporting.

Changes that apply for both the Venus GX and the Color Control GX:
- Fronius Zero feed-in:
    - This feature can now control multiple Fronius inverters instead of just one.
    - Fix the '200W is being drawn from the grid in certain situations' bug, thank you, Dietmar, for your help.
    - Increase the minimum Fronius firmware to 3.7.3-2
    - No longer supports Fronius IG Plus
- Solar chargers in an error state are now more easily recognized on the device list: the error number is visible.
- VE.Direct inverters can now be switched on and off from the menus.
- Add enable/disable 'BMS controlled' setting for solar chargers. This allows users to discard 'Error #67' from the solar charger. See the Solar Charger error codes list for more info on #67.
- Fix "Sync VE.Bus SOC" feature not working on systems that have no Assistants.
- Fix the overviews showing "Unknown" as the Multi state, when the system is switched off. This issue was introduced a long time ago: v1.28. Thank you, Owen for helping to fix this.
- Fix the BatteryLife state changing all the time in certain situations. This didn't have any adverse affects on charging or discharging, but did cause lots of unnecessary data transmissions to the VRM Portal. Thank you, Andries for reporting.
- Remote Console on LAN: improve user interaction by implementing keypress repeating. A few months ago we had already added this same improvement to Remote Console on VRM.
- ModbusTCP: Add ESS Minimum SOC setting, read & write.
- Fix Grid meters & Tank senders not showing up properly on the VRM Portal device list.
- Rename various occurrences of "Hub-1" to "ESS", in relation to Solar Chargers: there is no difference between the two for a solar charger, the indication just means that its remotely controlled (by the Multi/Quattro) instead of running its own charge algorithm.
- Fix overview glitch in the gui: in some cases, the overview page was misplaced after updating firmware on a ESS/Hub-4 system
- Oceanvolt Motordrive & Oceanvolt Valence battery service improvements.

Internal improvements:
- New serial starter (improves start-up efficiency and this was the last step of making RaspberryPi Venus images fully functional).
- Use new on/off and and AC input current limiter setting mechanism, as introduced since VE.Bus firmware 415 (no functional changes)
- Various performance improvements, which are part of a continuous effort to increase the maximum number of VE.Direct devices that can be connected. Note that the maxima have not been increased, yet.

Known issues:
- ESS "Keep batteries charged" with MPPTs and the "Feed-in excess solar charger power" setting disabled: while connected to the grid (or another AC source) the solar charger may be throttled down more than required. Causing unnecessary consumption from the grid. This problem is in ESS since the beginning.
  Workaround: set the mode to Optimize, and set the minimum SOC to 100%. Note that with this workaround there is still a difference with the "Keep batteries charged" mode: the system will not recharge the battery from the grid after a power outage.
- Remote VEConfigure does not work with VE.Bus firmware versions 416, 417 and 418. Also earlier versions of Venus, v2.08 and earlier, are not able to Remote VEConfigure a VE.Bus system that is running on those versions.
  The next Venus version, v2.10, will fix this, but only for 418. Remote VEConfigure for 416 and 417 will never be possible.

v2.08 – 7 August 2017

Change log:
- Fix bug related to the ET340 Energy Meter when used in an ESS System: the reported direction of the current and power measurements was always 'buying'. Even when selling/feeding back to the grid. Thanks you Morten and Thomas for reporting this issue.
- When using the L2 of a three phase meter to measure the output of a single phase PV inverter, the device list would always show 'Disconnected'. Even though it was connected and also all values were properly being shown. This has been fixed, thank you Anco for reporting.

Known issues:
- ESS "Keep batteries charged" with MPPTs and the "Feed-in excess solar charger power" setting disabled: while connected to the grid (or another AC source) the solar charger may be throttled down more than required. Causing unnecessary consumption from the grid. This problem is in ESS since the beginning.
  Workaround: set the mode to Optimize, and set the minimum SOC to 100%. Note that with this

workaround there is still a difference with the "Keep batteries charged" mode: the system will not recharge the battery from the grid after a power outage.
- When enabling Fronius Zero Feed-in, sometimes 200W is taken from the grid. This problem is in ESS since the beginning, and fixed in v2.09

v2.07 – 12 June 2017

Change log:
- To be added, for now see blogpost.
  https://www.victronenergy.com/blog/2017/06/13/ccgx-v2-07-fischer-panda-ess-and-more/

Known issues:
- ESS "Keep batteries charged" with MPPTs and the "Feed-in excess solar charger power" setting disabled: while connected to the grid (or another AC source) the solar charger may be throttled down more than required. Causing unnecessary consumption from the grid. This problem is in ESS since the beginning.
  Workaround: set the mode to Optimize, and set the minimum SOC to 100%. Note that with this workaround there is still a difference with the "Keep batteries charged" mode: the system will not recharge the battery from the grid after a power outage.
- When enabling Fronius Zero Feed-in, sometimes 200W is taken from the grid. This problem is in ESS since the beginning.

v2.06 – 11 April 2017
Update image: https://updates.victronenergy.com/feeds/venus/release/images/ccgx/venus-swu-ccgx-201704101117-v2.06.swu

- Add support for USB-Wifi dongles to the Venus GX: its internal WiFi signal reception is not very good.

Known issue:
- ESS "Keep batteries charged" with MPPTs and the "Feed-in excess solar charger power" setting disabled: while connected to the grid (or another AC source) the solar charger may be throttled down more than required. Causing unnecessary consumption from the grid. This problem is in ESS since the beginning.
  Workaround: set the mode to Optimize, and set the minimum SOC to 100%. Note that with this workaround there is still a difference with the "Keep batteries charged" mode: the system will not recharge the battery from the grid after a power outage.
- When enabling Fronius Zero Feed-in, sometimes 200W is taken from the grid. This problem is in ESS since the beginning.

v2.05 – 5 April 2017
Update image: https://updates.victronenergy.com/feeds/venus/release/images/ccgx/venus-swu-ccgx-201704041349-v2.05.swu

- Fix VE.Bus devices missing, in certain cases, after upgrading to v2.00 or later. This problem occurred when the CCGX was restarted, or its power cut, shortly after completing the upgrade. Thank you Bernd W. for helping to find and fix this.

Known issue:
- ESS "Keep batteries charged" with MPPTs and the "Feed-in excess solar charger power" setting disabled: while connected to the grid (or another AC source) the solar charger may be throttled down more than required. Causing unnecessary consumption from the grid. This problem is in ESS since the beginning.
- When enabling Fronius Zero Feed-in, sometimes 200W is taken from the grid. This problem is in ESS since the beginning.

v2.04 – 30 March 2017
Update image: https://updates.victronenergy.com/feeds/venus/release/images/ccgx/venus-swu-ccgx-201703301211-v2.04.swu

- Fix VE.Bus current limit maximum. If the VE.Bus system was found only after the CCGX is already running (e.g. if it was off during startup of the CCGX, or connected later) the maximum current limit would be set to 40A, instead of the actual maximum. In such cases the current limit could not be set above 40A.
- Add the tank levels to the ModbusTCP register list
- Fix bug in ESS: in very rare situations, systems with an MPPT Charge Controller, and no BMV, could get stuck at 85% SOC.
- Various changes and fixes for the Venus GX.

v2.03 – 27 February 2017

Update image: https://updates.victronenergy.com/feeds/venus/release/images/ccgx/venus-swu-ccgx-201702271607-v2.03.swu

- Fix short absorption time for lead batteries. Details in the blog-post.
- Fix bug for systems with a canbus-bms lithium battery: BYD B-Box, LG Resu, et cetera. With a full battery, the MPPT was too limited, to the point of being disabled entirely. Thus, all loads were powered from the mains, and no power sold back to the grid. This bug was introduced in v2.02. Note that this fix also removed the canbus-bms control of Solar Charger max charge-current, as introduced in v2.02. And note that there still is a similar bug, relating to ESS mode 'Keep batteries charged'. Which we'll fix as soon as possible in a later release.
- Add 15K Quattro and MultiGrid product names.
- Various changes and fixes for production and the Venus GX.

v2.02 – 30 January 2017
Update image: https://updates.victronenergy.com/feeds/venus/release/images/ccgx/venus-swu-ccgx-201701301134-v2.02.swu

Changes:
- Add support for two new energy meters, the ET112 and ET340. More information here: https://www.victronenergy.com/live/energy-meters:start
- Add canbus-bms control of Solar Charger max charge current, VE.Direct Solar Chargers only.
- Fix logging to the VRM Portal not working for systems that contain a Lynx Ion+Shunt
- Fix "Synchronize VE.Bus SOC with battery" not always working
- Genset start/stop fixes:
    o fix overload/high temp conditions trigger loss of communication state. This bug was introduced in Venus v2.00
    o fix timezone issue related to silent times
    o fix issue with configuring the quiet hours stop value
- Fix Fronius values jump up and down if Fronius has been user-configured to enable modbusTCP without setting the Sunspec Model Type to int+SF.
- Add support of new type USB-RS485 cable
- Improve some of the names in the ESS menus
- Changed BYD B-Box protocol slightly
- Various Beaglebone related improvements and fixes, preparing it for the launch of the Venus GX.
- Add Fischer Panda support (note, still a preview, not complete yet since auto start/stop is missing, and the genset overview doesn't work yet with FP gensets)

v2.01 – 30 January 2017
Never released

v2.00 – 12 December 2016
Upgrade image:
https://updates.victronenergy.com/feeds/venus/release/images/ccgx/venus-upgrade-image-ccgx-201612121006-v2.00.sdcard.zip
Upgrade instructions:
https://www.victronenergy.com/live/ccgx:firmware_upgrade_to_v2

Changes:
- See blogpost for details:
  https://www.victronenergy.com/blog/2016/12/12/ccgx-v2-00-ess-and-many-more-improvements/

Known issues:
- Logging data to the VRM Portal does not work for installations containing a Lynx Ion+Shunt. This bug was introduced in v2.00. Fixed in v2.02
- Genset start/stop:
    o overload/hightemp conditions trigger loss of communication state. This bug was introduced in Venus v2.00. Fixed in v2.02
    o changing the timezone does not affect the silent time, unless rebooted. Fixed in v2.02
    o quiet hours values stop value gets stuck. Fixed in v2.02
- The "Synchronize VE.Bus SOC with battery" feature can accidentally stop, after changing Multi/Quattro settings with VEConfigure. Workaround: restart the CCGX. Fixed in v2.02.
- ESS "Keep batteries charged" mode: with the 'Feed-in excess solarcharger power' setting disabled, the solar charger may be throttled down more than required. Causing unnecessary consumption from the grid.

v1.74 – 22 November 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_74-recover.zip

Changes:

- Fix Tank pump feature. This has never worked correctly.
- MQTT: reduce load on authentication server for mqtt.victronenergy.com.
- MQTT: add keep-alive mechanism: only send data when someone is listening. Reduces traffic as well as server load. **Note**: from now on its necessary to send a keep alive, without it the CCGX will not send any data updates. More info here: https://github.com/victronenergy/dbus-mqtt/blob/master/README.md#keep-alive

v1.73 – 7 November 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_73-recover.zip

Changes:
- Add forwarding of Hub-1 instructions from Multi to Solar chargers connected on the VE.Can port. Note that this same mechanism was already working for Solar chargers connected on the VE.Direct ports. This fixes the 'Solar yield and Consumption tab not working' problems.
- Add support for Sony, BYD-Box and Puredrive batteries.
- Stability improvement in the VE.Bus driver.
- Fix VE.Direct MPPT Solar chargers current being factor 10 too low.

v1.72 – 24 October 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_72-recover.zip

Changes:
- Fix bug in the VE.Direct driver that caused unresponsiveness and crashes
- Add SmartSolar chargers and the new VE.Direct equipped Phoenix Inverters to the list of supported products

Hub-4:
- Fix bug in the GUI: when the Minimum SOC level was set higher than the BatteryLife calculated SOC level, the 'Actual State of Charge' field showed a lower value than the real lower limit.
- Fix bug in the limit charge power and limit discharge power settings. When applying those limits, loads and/or PV Inverters connected to the AC-Out of the Multi were not taken into account. Now they are.

CanBUS-bms battery driver:
- Always follow max charge- and max discharge-current limits as transmitted by the bms; no longer react on alarms. Affects all CanBUS-bms connected batteries.
- Fix bug related to alarms and warnings coming from LG and Sony batteries. Alarms where interpreted as warnings, warnings as alarms.
- Added support for PylonTech batteries

Known issues:
- From the Mobile overview, it is not possible to switch an Inverter back on after switching it off.

v1.71 – 24 August 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_71-recover.zip

Changes:
- Since 1.70, the VE.Bus remote switch / current limits used old values after a reboot of the ccgx. v1.71 resolves this.

Known issues:
- From the Mobile overview, it is not possible to switch an Inverter back on after switching it off. As a workaround, navigate to the Device list and re-enable the device from there.

v1.70 – 8 August 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_70-recover.zip

Changes:
Multiple security updates: especially relevant for CCGXes connected to the internet without a firewall.

Multiple GUI changes:

- Add a new overview for mobile/automotive
- Add automatic starting and stopping of pumps based on tank level. See the new section in the manual for details and more screenshots. Go to Settings -> Display & Language to enable the new overview.
- Add user defined system name, this name is visible on the tiles overview. As an alternative to the automatically detected Hub-1, Hub-2, etc.
- Show the last active view(menu or pages) after a reboot
- Show the last viewed overview page when switching between menu/pages

Multiple Hub-4 related changes:

- Hub-4 settings are moved to their own dedicared menu, instead of being hidden in the Wired AC sensor menu
- Added two new user settings: max charge power and max discharge power
- Added hub-4 enable/disable setting. Intended for customers that want to use advanced mode 3 while also installing a grid meter at the same time
- The Minimum SOC setting in CCGX is now also used to stop discharging when BatteryLife is not enabled. We will soon remove the same feature, called 'Stop on low SoC', from the Hub-4 Assistant

ModbusTCP changes:

- Added the Hub-4 BatteryLife enable/disable setting to available ModbusTCP registers
- Added BMS battery parameters: Max charge voltage, Max discharge voltage, Max charge current, Max discharge current
- Added unit-id 100 as an alias for unit-id 0: some PLCs can't work with unit-id 0, and now one can simply use 100
- Fix bug that, in rare occasions, could cause values to get stuck

And more changes:

- Fix bug that made it impossible to set the Capacity of a tank connected with our VE.Can Tank Sender Adapter
- Hub-1 control combined with mppt firmware v1.18 or newer: don't overwrite mppt state. When being controlled, mppt state will show "Hub-1"
- Added deleting the Multi/Quattro data cache to the actions taken by the Redetect System button: fixes rare problems which Redetect System did not fix before

Changes relevant for customers developing software on the CCGX and Venus:

- Add mqtt. Enable disable the service in the Settings -> Services menu. Default disabled. For details on mqtt, first check the developers mailing list archive and ofcourse also welcome to ask your questions or share your plans on that mailing list.
- Various fixes to make the Raspbian packages compile again (thanks Izak!). See status here: https://github.com/victronenergy/venus/issues/36

v1.61 – 30 June 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_61-recover.zip

Changes:
-   Fix ModbusTCP sometimes reporting an invalid serialnumber for the CCGX

v1.60 – 27 June 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_60-recover.zip

Changes:
-   Fix MPPTs don't charge issue when using Hub-1 Assistant, policy 4 "Prevent feeding back energy to grid", in combination with VE.Direct MPPT firmware version v1.17 or later. The problem was introduced in the previous firmware version (v1.51) and is now fixed.
-   Updated the demo mode (is now a Hub-4 installation with a Fronius PV Inverter)
-   Fix serial console port on VE.Direct 1 not working

v1.51 – 9 June 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_51-recover.zip

Changes:
-   Integrated Hub-1 for VE.Direct MPPTs. See v1.51 blogpost for more information.
-   Added Russian language to gui
-   Fix bug in Hub-4 related to large steps in the load
-   Show connection type of VE.Bus network on VRM, to see if it is connected direct on the VE.Bus port or via VE.Can.

v1.40 – 25 May 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_40-recover.zip
-   Better data transmission to VRM Portal and increased backlogsize:
    o   User no longer has to choose between logging to sdcard or logging to internet
    o   Improve coping with bad internet connections and speed-up backlog recovery: instead of sending the backlog (if any) line by line, it sends the backlog with 100 records at a time. Also the data is now zipped.
    o   Extended the length of the backlog from 2 to the size of the inserted sdcard.
-   Added BatteryLife feature to Hub4: cycle a battery on its top end of charge. This reduces wear on, especially, lead batteries. And also makes sure that in case of a mains-outage there is plenty power available. See Hub-4 manual for more information.
-   Fix bug in genset start stop algorithm: Communication loss is always true when "Keep generator running" is selected bug. Was introduced in v1.36.

User interface related improvements:
-   Fixed memory leak in the gui: the gui now has a noticeably better response and feel, instead of slowly becoming slower (!)
-   Update all translations
-   Fixed false "Online" status being shown for Remote Console on VRM and Remote support tunnel when never enabled before.
-   Fix lockup when sliding on touch screens (Remote Console)
-   Time zone selection has been simplified (thanks to Chris Dunphy for pushing for this!)
-   Added a small popup, which explains why switching a multi on/off or changing its current limit doesn't work in an installation. (for example in case a DMC or VE.Bus BMS is in the system)

Connected-product related improvements:
-   Added LG-Circuitbreaker-trip-detection
-   Added support for the new Phoenix Inverters with VE.Direct connection
-   Redflow related improvements:
    o   Maintenance needed / active no longer interpreted as alarm: Maintenance is part of normal behavior of the battery, so there is no need to notify the user.
    o   Fixed bug: an air temperature sensor alarm was also reported as a state of health alarm
    o   Fixed bug: sometimes the clear status register bit would not be reset properly
    o   Add logging all individual Redflow batteries to the vrmportal

Other:
-   Fix: wifi-not-working bug in the Recovery Image. Bug was introduced in v1.36.
-   Added more data to the modbustcp port: Redflow Battery data, LG Battery data, state of health, solar charger yield (kWh)
-   Added newer version of dup (commandline tool, only used by developers)
-   Log the state of the relay on the ccgx to the VRM Portal. Handy when diagnosing a system with an automatic genset start-stop configuration. For a log, download the csv or xslx file from the Advanced tab on VRM.

- Changed the way the CCGX responds to alarms and other data that triggers a near-immediate transmission of data to the vrm portal: it used to wait 5 seconds after an alarm occurred. And only then send data. This could cause VE.Bus Error 1 to miss in the sequence of errors: confusing when diagnosing VE.Bus issues. Now it sends the data immediately. See also this new page explaining VE.Bus errors: https://www.victronenergy.com/live/ve.bus:ve.bus_error_codes

Known issues
- Systems with a VE.Bus to VE.Can interface cable (typically Hub-1 icm with a VE.Can Solar Charger): kWh counting for systems where the Multi or Quattro is connected with such an interface cable has never properly worked. See also this entry on the VRM Portal FAQ. In v1.32 the algorithm was changed, improving it for other installation types, but as a side effect it functions even worse for systems with this interface cable. Work around: install v1.31 and disable auto updates. Final solution is planned for June 2016.
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.

v1.36 – 20 April 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_36-recover.zip
- Genset start/stop, new features:
  o Add option to reset daily run time
  o Add option to manually change total run time
  o Add "Run until battery is fully charged" option to the test-run condition
  o Add "On loss of communication" setting that defines what needs to happen when the datalink between the CCGX and the selected battery monitor and/or vebus inverter/charger is lost. Options are: Stop, Start and Keep running. Note! See known issue below.
  o Add option to disable the autostart functionality
  o Add new start/stop conditions:
    ▪ Inverter high temperature warning
    ▪ Inverter overload warning
- Genset start/stop: fix a very rare but still that-should-never-happen-type bug: something went wrong that stopped the CCGX control over the genset. Which either caused the genset stop or for it to keep running while it should not.
- Hub-4: added dynamic derating based on actual max charge- and discharge-current limits coming from canbus connected (lithium) batteries such as the LG Chem Resu and BMZ ESS. For more information on those types of batteries, as well as the dynamic derating function, see this (new) Victron Live page: https://www.victronenergy.com/live/battery_compatibility. Note that this derating function really only works for Hub-4.
- Added Redflow and LG Resu warnings to the data being logged to the VRM Portal
- Renamed the 'LG Battery service' item in the services menu to the more generic 'CAN-bus BMS service'
- Fixed bug in valence battery support (part of the Oceanvolt electric drive integration)
- Pressing a button while the display is off now only wakes the display up. Instead of not only waking up but also performing the action associated with that button press.

Known issues
- Systems with a VE.Bus to VE.Can interface cable (typically Hub-1 icm with a VE.Can Solar Charger): kWh counting for systems where the Multi or Quattro is connected with such an interface cable has never properly worked. See also this entry on the VRM Portal FAQ. In v1.32 the algorithm was changed, improving it for other installation types, but as a side effect it functions even worse for systems with this interface cable. Work around: install v1.31 and disable auto updates. Final solution is planned for April 2016.
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.
- (new) The generator start/stop "On loss of communication" functionality wrongly reports a communication loss when the "Keep generator running" option is selected. This makes the generator continue running even when there no communication issues. The next CCGX firmware release will fix the issue, meanwhile it is recommended to switch to "Stop generator" or "Start generator" option. Issue was introduced this version, v1.36, and fixed in v1.40.
- (new) Wifi is not functional in the v1.36 recovery image: when updating automatically via the internet, the Wifi works ok. But after updating to v1.36 by a manual install (sd-card or usb-stick), Wifi will no longer work. Workaround: download and install the v1.35 recovery image manually and then update via the internet to v1.36 again. Download link below. Fixed in v1.40

v1.35 – 3 March 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_35-recover.zip
- Fix the first known issue from v1.34: Solar yield and Consumption tab for installations with a BMV.

Known issues
- Systems with a VE.Bus to VE.Can interface cable (typically Hub-1 icm with a VE.Can Solar Charger): kWh counting for systems where the Multi or Quattro is connected with such an interface cable has never properly worked. See also this entry on the VRM Portal FAQ. In v1.32 the algorithm was changed, improving it for other installation types, but as a side effect it functions even worse for systems with this interface cable. Work around: install v1.31 and disable auto updates. Final solution is planned for April 2016.
- Genset start/stop: (very rarely) something goes wrong, which stops the control of the genset. Either causing it to stop or leave it running while it should not. (fixed in v1.36)
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.

v1.34 – 1 March 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_34-recover.zip
- Fix bug in VE.Can communication port. On affected systems there was no communication necessary, visible as all VE.Can devices having disappeared from the device list. Problem started in v1.32.

Known issues
- Solar yield and Consumption tab don't work properly for installs with a BMV
  Even after all the effort in the past months, the energy (kWh) distribution graphs on the VRM Portal

are still not right. The new problem which surfaced now since v1.32 is that the charged- and discharged energy counters in a BMV don't work properly. Over time, as the counted kWh of these counters grows, the BMV counts less. A work around will be implemented in the CCGX v1.35 and is planned for early March. And later the real fix is coming, a new BMV firmware version. Work around in the meantime: clear the history in the BMV, or manually install CCGX v1.31 and disable auto updates.
- Solar yield and Consumption tab don't work properly for installs with VE.Bus to VE.Can cable Systems with a VE.Bus to VE.Can interface cable (typically Hub-1 icm with a VE.Can Solar Charger): kWh counting for systems where the Multi or Quattro is connected with such an interface cable has never properly worked. See also [this entry on the VRM Portal FAQ](). In v1.32 the algorithm was changed, improving it for other installation types, but as a side effect it functions even worse for systems with this interface cable. Work around: install v1.31 and disable auto updates. Final solution is planned for April 2016.
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.

Known issues:
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.

v1.33 – 24 February 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_33-recover.zip
- Re-add the Chinese fonts: they were accidentally removed in the v1.32 update

Known issues:
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.

v1.32 – 23 February 2016
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_32-recover.zip
- Add three-phase support to hub-4 (requires VE.Bus firmware 406 or newer)
- Improve hub-4 algorithm when using wireless link to the AC meter
- Fix bug in kWh calculations: systems with a Multi/Quattro, MPPT Solar Charger, BMV (and DC System set to disabled) would report excessive solar consumption and feedback on the Solar yield and Consumption tab on the VRM Portal. And no, or very little consumption from the battery (blue bars). This bug was introduced in v1.30, released Dec 1st 2015.
- Improve kWh-calculations: a BMV is no longer required to calculate kWh data for systems with a Multi/Quattro, Solar Chargers and no other DC chargers or loads.
- Improve kWh-calculations: in systems with a DC System (and that corresponding setting, Has DC System enabled) the energy used by DC loads is now added into the calculations.
- Show Fronius logo for Fronius PV Inverter, instead of a generic PV Inverter graphic
- Increase chance of having a connection for Remote Support and Remote Console: ssh tunnel script now tries port 22, 80 and 443, instead of only port 80.
- Improve translations

Known issues:
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.

v1.31 – 4 December 2015
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_31-recover.zip
- Fixed bug: Phoenix Inverters were no longer detected
- Fixed very rare bug: VE.Bus devices were not shown, caused by old mk2 executable not being properly removed.

Known issues:
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.

v1.30 – 1 December 2015
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_30-recover.zip
- Hub-4 development completed and test-period ended. Note that there are still further improvements coming in later CCGX versions, one is Hub-4 for three-phase VE.Bus systems.
- New: Automatic generator start/stop
- New: Synchronize VE.Bus SOC
- New: Remote Console
- New: LG Chem Resu 6.4 lithium battery
- New: Redflow ZBM Battery
- Configuring a Lynx Shunt VE.Can now works for all firmware versions, including its latest firmware which is v1.08.
- Increased the maximum amount of AC Current Sensors from 4 to 9
- Several ModbusTCP improvements:

1. Fixed bug in the Exception response (thanks to Tonyrog).
2. VE.Bus SOC is now writeable, making it possible to get the same advantages the (new) Sync VE.Bus SOC feature. Do not use this in combination with Sync VE.Bus SOC feature! And also not in combination with Hub-2.
3. Add registers for charge and discharge limits in Hub4 control loop.
4. Add registers for system serial (MAC address) and grid meter serial.
5. Add registers for charge allowed and feedback allowed flags of VE.Bus.
6. Wired AC sensors (PV and Grid) device instances, linked to the modbus tcp unit-ids, are customizable, and their defaults have been fixed instead of depending on USB instance.
- Fixed bugs in the VE.Bus driver that caused problems on the Overview pages for the following models:
    1. Quattro 24/5000/120-50/30 (2642)
    2. Quattro 48/5000/70-50/30 (2652)
    3. Quattro 48/8000/110-2x100(2655)
    4. Quattro 48/5000/70-2x100-S (2657)
- Fixed bug in rendering the password box for the Access level: the screen was messed up when you tried to change access level from User to User & installer or back. Not anymore.
- Fixed spurious 'Color Control didn't respond to command' error message in VE Power Setup / VRM Two way communication.
- Fixed the Oceanvolt Motor drive service enable/disable button.
- Fixed bug in Remote VEConfigure that could trigger Error code 61 (incompatible VE.Bus settings).
- Fixed problem of random CCGX-es getting stuck during a reboot.
- Fixed a bug in the AC Current Limit when used in combination with a VE.Bus to VE.Can interface: max set point was limited 1A, now it is limited to 100A.

Known issues:
- Support of recovery from USB sticks does not work on all sticks. (won't be repeated in future release notes any more)
- Finding a USB-GPS might take a while (won't be reported in future release notes any more)
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.

v1.29 – 22 September 2015
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_29-recover.zip
- Fixed bug causing the VE.Bus firmware version is missing on the VRM Portal.
- Fixed bug in the MicroSD/USB eject button
- Fixed bug in the Lynx Shunt Clear history button
- Fixed bug in the Fronius Port number editbox

Known issues:
- (new) the password entry box, which is shown when changing access level from user to user/installer or back, doesn't render properly. The functionality still works though.
- (new) Hub-4: The calculations behind the solar yield and consumption tab, for hub-4 systems, don't work 100% yet.
- Support of recovery from USB sticks does not work on all sticks.
- Finding a USB-GPS might take a while
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.

v1.28 – 15 September 2015
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_28-recover.zip
- Added rotating overviews: very cool feature! And this helps users to have a good overview of the navigation.
- Improved remote firmware updates: it now preserves the settings. Note that this also requires VE Power Setup 5.0 or higher.
- Fixed grid parallel hub-4 stability bug in the regulation, when used with the wireless ZigBee link.
- Added an option in the GUI to disable the Alarm relay
- Added eject option in the VRM Logger menu when logging to SD Card or USB Stick
- Fixed bug in Solar 30 day history related to Time in bulk, absorption and float. When the CCGX was set to certain time zones, the shown durations were wrong.
- Fixed bug in Fronius PV Inverter support: sometimes it would say 'Unkown Fronius type'. Not anymore.
- Added some missing translations in the GUI

Known issues:
- (new) The VE.Bus firmware version is missing on the VRM Portal. This will be solved in v1.29, expected in the week of September 21st.
- Support of recovery from USB sticks does not work on all sticks.
- Finding a USB-GPS might take a while
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.

v1.27 – 14 August 2015
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_27-recover.zip
- Fixed bug that caused the information behind the orange Historical data button in the VRM App to be empty.
- Fixed bug in Hub-4 reporting: solar yield kWhs, used in the Solar yield and Consumption tab on VRM were not calculated.
- Fixed bug that occurred on systems that were updated from an old CCGX version:
    1. The Available updates menu entry would keep showing '1 update available'.
    2. Remote VEConfigure did not work in certain cases, giving an in VE Power Setup while trying to update.
- Updated Oceanvolt motordrive services.
- Send more settings to VRM, to make it easier to help customers with CCGX related questions.
- Stability improvements: fixed a memory leak that that would cause the CCGX to have a sluggish response and finally be rebooted by the watchdog.
- ModbusTCP has support for fixed length string and signed and unsigned 32 bits integers. New registers:
    1. 2800-2807: GPS data
    2. 303: battery time to go, previous register (301) conflicted with discharged energy
    3. 789: solarcharger yield
    4. 2609: grid meter serial

Known issues:
- Support of recovery from USB sticks does not work on all sticks.
- Finding a USB-GPS might take a while
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.

v1.26 – 22 July 2015
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_26-recover.zip
- Fixed bug in 'Log to storage' option
- Fixed all known bugs in the Remote VEConfigure functionality
- Added wireless support (ZigBee) for Hub4
- Minor fixes in the Fronius service, one of them could cause the PV inverter to be reported as instance 0
- Log the error code and status code of the Fronius PV Inverters on change, instead of on the fixed interval
- Fixed BMV alarms when no alarm is active
- Fixed BMV temperature when no sensor is connected
- And more stability fixes

Known issues:
- Support of recovery from USB sticks does not work on all sticks.
- Finding a USB-GPS might take a while
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.

v1.25 – 28 June 2015
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_25-recover.zip

- Fixed an internet connectivity related bug in Remote VEConfigure / Remote firmware updates
- Internal changes in communication to VE.Bus ports (updates internal MK2 version) in preparation for soon coming VE.Bus firmware 309

Known issues:
- Support of recovery from USB sticks does not work on all sticks.
- Finding a USB-GPS might take a while
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.
- Log VRM Portal data to storage (sd-card / usb-stick) does not work
- Several Remote VEConfigure bugs, that result in errors when opening VEConfigure ("Grid code,???,???,???,???") and/or unable to communicate/send/download files

v1.24 – 22 June 2015
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_24-recover.zip

- Improved GUI responsiveness

- New: VE.Direct MPPT Solar chargers 30-day history readout
- Fixed bug which was introduced in v1.22 and 23: in certain installations, the CCGX did no longer show the Inverter, Multi or Quattro. Updating to v1.24 will automatically show the Inverter, Multi or Quattro again. (see CCGX FAQ if it remains off)
- Fixed: Live-feed on VRM now also uses AC input type settings (Genset / Grid) and the Battery monitor selection made in CCGX System Setup.
- Fixed access level that was too strict: switching Multis and Skylla-is on/off and changing current limit can be done by users also. Also setting time is now possible with access level user.
- Increase max length of wifi password to 35
- Preliminary version for Hub-4

Known issues:
- Support of recovery from USB sticks does not work on all sticks.
- Finding a USB-GPS might take a while
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.
- Log VRM Portal data to storage (sd-card / usb-stick) does not work

v1.23 – 3 June 2015
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_23-recover.zip

Changes:
- Added Remote VEConfigure. FINALLY! It took quite a while and wasn't easy. Documentation is here: http://www.victronenergy.com/live/ccgx:ccgx_ve_power_setup. The differences between the CCGX version of Remote VEConfigure and the version which some of you might be familiar with from the VGR2 are:
    1. CCGX Remote VEConfig supports changing/adding/removing assistants on a distance. VGR2 version does not.
    2. CCGX Remote VEConfig uses its internet connection to listen for commands. VGR2 version used SMS mobile text messages
- Added remote firmware update via VE Power Setup. Right now this works only for VE.Can products (Skylla-i, MPPT 150/70, MPPT 150/85 and Lynx Shunt VE.Can). Important: most or even all of those products will lose their settings during an update! And it is not, yet, possible to remotely configure those products. This is being worked on.
- Added option to Fronius menu that inverters can be hidden. This is useful when multiple CCGXs and Fronius inverters are present on the local network.
- Several GUI improvements:
    1. Allow to go to overview from the notifications page
    2. Add option to manually set the date and time
    3. Added popup notifications ('toasts'), for example when user tries changing a setting that requires a higher access level
- Several stability improvements and other changes that could affect all functions.

Known issues:
- Support of recovery from USB sticks does not work on all sticks.
- Finding a USB-GPS might take a while
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.
- In certain installations, the CCGX no longer shows the VE.Bus Inverter, Multi or Quattro. The underlying reason is that the firmware in the MK2 is invalid, which happens in rare occasions when updating to v1.22 or v1.23. To make the MK2 be programmed, the Multi needs to be switched on. To fix this, update to v1.24. Either by automatic update via Internet, or run the CCGX recovery procedure, explained here.
- Log VRM Portal data to storage (sd-card / usb-stick) does not work

v1.22 – 26 May 2015
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_22-recover.zip

Changes:
- Added support for Fronius PV Inverters. For more information, see link: http://www.victronenergy.com/live/ccgx:ccgx_fronius
- Added support for Oceanvolt marine electric motors. (defaulting to off)
- Added support for latest MPPT solar charger models
- Battery menu: improved layout, show V/I/P in a single item
- Battery menu: show mid-point deviation in alarm notification
- Do not show negative Power for the Wireless AC Sensor, show 0 instead.
- Added VEConfigure3 detection: the CCGX will automatically stop communication with a VE.Bus system (Multis/Quattros) when it sees VEConfigure3. Communication will be restarted once the MK2 used with VEConfigure3 is disconnected from the system. Restarting can take 30 to 60 seconds after

disconnecting the MK2. Note that this also solves the 1100kWh peaks on the consumption and solar yield tab.
- Added the name of the active input (Shore/Grid/Genset) on the overview and tiles page.
- Added pages for Lynx Shunt VE.Can configuration (requires Lynx Shunt VE.Can v1.09 or higher)
- Fixed bug that caused 'ghost BMVs and MPPTs' to show, when using the USB to VE.Direct interface.
- Fixed bug that caused a Multi/Quattro to remain invisible when the following sequence of events had occurred:
    1. First a Digital Multi Control or VE.Bus BMS is connected
    2. Then these are disconnected or powered down
    3. Then the Multi is switched off
    4. And there after the CCGX is rebooted
  See also this CCGX FAQ item.
- Fixed bug in battery status text on the tiles
- Fixed bug in reboot message size, so translations also fit
- Fixed bug in the data transmission to the VRM Portal: 'you need to pay' or 'you need to login' type http responses from (cellular) gateways were not detected. These pages would make all seeming normal on the CCGX, while there is no data coming in on the VRM Portal.
- Fixed bug in the data transmission to the VRM Portal: added sending of Time to go & State of charge for the selected battery monitor in systems with multiple battery monitors (System Setup -> Battery monitor). This change makes the related selection box on the VRM Portal obsolete, it will be removed.
- Updated Modbus-TCP gateway:
    1. added reg. 301 and 302: battery energy charged and discharged, from a BMV
    2. reg. 1030, 1034 and 1038 (PV Inverter kWh): changed scale from 1 to 100, to align with all other kWh parameters.
- Updated all translations

Known issues:
- Support of recovery from USB sticks does not work on all sticks.
- Finding a USB-GPS might take a while
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.
- In certain installations, the CCGX no longer shows the VE.Bus Inverter, Multi or Quattro. The underlying reason is that the firmware in the MK2 is invalid, which happens in rare occasions when updating to v1.22 or v1.23. To make the MK2 be programmed, the Multi needs to be switched on. To fix this, update to v1.24. Either by automatic update via Internet, or run the CCGX recovery procedure, explained here.
- Log VRM Portal data to storage (sd-card / usb-stick) does not work

v1.21 – 20 February 2015
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_21-recover.zip

Changes:
- Fixed: 'Power (W) and energy readings (kWh) incorrect for parallel systems'. See below for full a description.
- Fixed: after switching off a Multi via the CCGX, and then rebooting the CCGX, the Multi would no longer be visible on the CCGX. And because it was no longer visible, it was also impossible to turn it back on again.

Known issues:
- Support of recovery from USB sticks does not work on all sticks.
- Finding a USB-GPS might take a while
- Reconfiguring a VE.Bus system with VEConfigure, while leaving the CCGX connected to the system, can result in kWh peaks on the VRM Portal. Note that doing this (using VEConfigure without disconnecting the CCGX) might result in many other problems too!
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.
- When VE.Direct products (BMVs, MPPTs) are connected via USB, their device instance might change. This causes double entries in the device list on the CCGX. And it messes up the graphs in the advanced tab on VRM. Note that this does not happen in all such installations, it might be related to long USB cables.

v1.20 – 10 February 2015
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_20-recover.zip

Changes:
- The SOC source is now selectable from the GUI. See the System setup menu. Useful for systems with multiple BMVs. Note that this setting is not yet linked to the same setting on the VRM website! Both need to be set.
- Fix bug: Setting up manual IP configuration is difficult on networks without a DHCP server

- Fix bug: In a Hub-2 system, when no BMV is connected (so exactly as recommended), the VE.Bus State of Charge is not visible on the overview page on the CCGX.
- Fix bug: In a Hub-1 system, where the Multi or Quattro(s) is/are connected to the CCGX through a VE.Bus to VE.Can interface instead of directly on the CCGX-VE.Bus port, the AC in and AC out powers are not being shown.
- Fix bug: Even when nothing is connected to the CCGX-VE.Bus ports, there will be an empty entry 'Multi' in the device list.
- Made basic mouse/touch navigation work: using VNC on your phone a bit easier! See: http://www.victronenergy.com/live/ccgx:ccgx_vnc for more information on VNC.

Known issues:
- Support of recovery from USB sticks does not work on all sticks.
- Finding a USB-GPS might take a while
- Reconfiguring a VE.Bus system with VEConfigure, while leaving the CCGX connected to the system, can result in kWh peaks on the VRM Portal. Note that doing this (using VEConfigure without disconnecting the CCGX) might result in many other problems too!
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.
- When VE.Direct products (BMVs, MPPTs) are connected via USB, their device instance might change. This causes double entries in the device list on the CCGX. And it messes up the graphs in the advanced tab on VRM. Note that this does not happen in all such installations, it might be related to long USB cables.
- After switching off a Multi via the CCGX, and then rebooting the CCGX, the Multi would no longer be visible on the CCGX. And because it was no longer visible, it is also imposible to turn it back on again.

v1.19 has been skipped.
The v1.20 changelog contains all changes from v1.18 to v1.20.

v1.18 – 27 January 2015:
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_18-recover.zip

General:
- Updated the last not yet complete language: Dutch. All available languages are now complete.
- Fixed bug that caused the CCGX to check and install updates even when Automatic updating was set to disabled.
- Added battery charged- and discharged-energy parameters (from the BMV-700) to the data being sent to the VRM Portal. Visible in the CSV download only for now.
- Fixed bug in the mechanism sending the backlog to VRM. It would send 4 items per minute maximum. Now it sends one line, and sends the next line as soon as the previous transmission is completed: a significant improvement.
- Fix bug that in some systems caused the PV Inverter data measured by an AC Current Sensor to disappear until the CCGX is rebooted.

Known issues:
- Support of recovery from USB sticks does not work on all sticks.
- Finding a USB-GPS might take a while
- Reconfiguring a VE.Bus system with VEConfigure, while leaving the CCGX connected to the system, can result in kWh peaks on the VRM Portal. Note that doing this (using VEConfigure without disconnecting the CCGX) might result in many other problems too!
- In a Hub-2 system, when no BMV is connected (so exactly as recommended), the VE.Bus State of Charge is not visible on the overview page on the CCGX. The problem is only on the CCGX: the VE.Bus SOC is still visible on the VRM Portal.
- Setting up manual IP configuration is difficult on networks without a DHCP server: when a CCGX has not yet obtained an IP address from a DHCP server, switching the IP configuration to Manual and setting the IP address is not possible. Workaround: first leave the setting to Automatic, and wait for it to self-assign a 169.254.xxx.xxx address. It might take a minute or even longer. When you see that address show up, change the IP configuration to Manual and set the addresses.
- In a Hub-1 system, where the Multi or Quattro(s) is/are connected to the CCGX through a VE.Bus to VE.Can interface instead of directly on the CCGX-VE.Bus port, the AC in and AC out powers are not being shown. No workaround, will be fixed in v1.19
- Even when nothing is connected to the CCGX-VE.Bus ports, there will be an empty entry 'Multi' in the device list.
- The Tiles page will show 'HUB-1' in case there is an MPPT in the system, even when there is no HUB-1 assistant loaded into the Multi: confusing.
- When VE.Direct products (BMVs, MPPTs) are connected via USB, their device instance might change. This causes double entries in the device list on the CCGX. And it messes up the graphs in the advanced tab on VRM. Note that this does not happen in all such installations, it might be related to long USB cables.

v1.17 – 22 december 2014:
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_17-recover.zip

General:
- Added and updated all languages except Dutch: English, Chinese, German, Spanish, French, Italian, Swedish, Turkish, Arabic,.
- Fixed bug in the kWh calculations for the solar yield tab in VRM. (DC-coupled solar)
- Fixed several BMV/battery related ModbusTCP parameters: battery temperature, deepest discharge, last discharge, average discharge and total ah drawn.
- The VE.Bus alarms now default to generate a notification on a real alarm, such as a shutdown in low battery or overload) only. Instead of already on warnings.

Known issues:
- Support of recovery from USB sticks does not work on all sticks.
- Finding a USB-GPS might take a while
- Reconfiguring a VE.Bus system with VEConfigure, while leaving the CCGX connected to the system, can result in kWh peaks on the VRM Portal. Note that doing this (using VEConfigure without disconnecting the CCGX) might result in many other problems too!
- In a Hub-2 system, when no BMV is connected (so exactly as recommended), the VE.Bus State of Charge is not visible on the overview page on the CCGX. The problem is only on the CCGX: the VE.Bus SOC is still visible on the VRM Portal.
- Setting auto-updates to disabled has no effect: it will still check for updates and install them.

v1.16 – December 2014:
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_16-recover.zip

General:
- There is now a manual: http://www.victronenergy.com/live/ccgx:start
- GUI has a new look and feel, including a change of how the buttons work: this will take a bit of getting used to by users that are familiar with the old style. But a big improvement overall.
- Read Watts from VE.Bus products instead of VAs. Note that to read Watts instead of VAs, a recent firmware in the VE.Bus products (Multis/Inverters/Quattros) is required. See the VE.Bus firmware explained PDF for more information.
- Improved the information sent to the VRM Portal for the Consumption and the Solar yield tabs: it now also works with MPPT solar chargers, and all known calculation errors, also for AC-coupled PV systems, are fixed. See http://www.victronenergy.com/live/vrm_portal:faq#what_are_the_requirements_for_the_solar_yield_and_consumption_tab for information on supported system types and all firmware requirements to get good functioning kWh calculations.
- Improved first time configuration: it is no longer necessary to set system profiles or hub-types.
- Added a new setting 'Has DC system'. When enabled, a DC system tile is shown on the overviews.
- For systems without an internet connection, system data can now also be saved on USB stick and sd-cards. To analyze the files, take them home to a place with internet, and manually upload to the VRM Portal for further analysis.
- Added access levels to the GUI, including locking them. Useful for OEMs to prevent end users changing settings.

New products supported:
- Added support for Skylla-i battery chargers, including switch on/off and setting input current limit.
- Added support for NMEA2000 tank sensors. Note that they can also perfectly be used in non-marine systems. Developed and tested with this product: http://www.osukl.com/adaptors/3125-Tank-Sender-Adaptor.html, which is also the current candidate to put in stock. It will then be modified to have a dual VE.Can socket and also work on 48V battery systems instead of only 12 and 24. Note that the tank level info is not yet sent to the VRM Portal.
- Added support for the Lynx Ion + Shunt 350A and the Lynx Ion + Shunt 600A. (the successors of the previous Lynx Ion that needed a separate Lynx Shunt).
- Added support for Wireless AC Sensors. The system consists of two parts: all small Ethernet-DECT gateway, and one or more Wireless AC Sensors. They use the wireless DECT protocol to communicate, which is known from phones. A three-phase system will need one gateway and three sensors. They are an alternative to the already available AC Current Sensor. The Wireless AC sensors are more accurate and easier to wire: often the PV Inverter is under the roof, and the Multi is somewhere in the basement, making the already available wired AC Current Sensor a hassle. The wireless AC sensors are also more expensive.
- Fixed Lynx Ion bug from v1.14: dependency on Ion Control, see v1.14 known issues for more information
- Added support for Quattros: active input is visible in the menu, and names of the active inputs can be configured to Grid, Generator or Shore power. Note that this is not (yet) used in the overviews and the tile view.

Networking:

- Added support for Wi-Fi USB sticks. Victron has two types in stock, one very small one (Zyxel NWD2105), and one bigger one that has two real antennas (Startech USB300WN2X2D). Although some other types that can be bought elsewhere might also work, we only support the two mentioned ones.
- Added option to manually configure ip address, dns and gateway. Both for Ethernet and Wi-Fi connections. Previous versions only supported DHCP (automatic ip) configuration.
- Added full modbustcp gateway functionality. Modbustcp is an industry standard protocol used for PLCs and Scada systems, a PLC can now easily read for example information from a Multi via the CCGX. See our data communication whitepaper for more information. The version of modbustcp shipped with the CCGX is v0.6.2, in which all known problems in the version shipped with the CCGX v1.14 version are fixed. Also ModbusTCP can now be enabled from the menu, it is in the services menu.
- When auto-updates is off, the CCGX now also doesn't check for them anymore. To save bandwidth.
- Changed the url to which it sends data from http://vrm.victronenergy.com to http://ccgxlogging.victronenergy.com.
- Backlogging (buffering data while no internet is available) to local disk is now limited to 2 days. Was infinite.

Other bug fixes:
- Known issue "Remote support on/off setting will be changed from On to Off after a manual firmware update with recovery image" has been fixed.
- Known issue "For some PV Inverters, the power and current readings measured with the AC Current Sensors stick to 50 to 140 Watts during the night, instead of showing 0 Watt." has been fixed with an Assistant update. See http://www.victronenergy.com/blog/2014/10/13/ac-current-sensor-assistant-no-more-pv-power-at-night/.
- All known ModbusTCP related issues have been fixed

Known issues:
- Support of recovery from USB sticks does not work on all sticks.
- Finding a USB-GPS might take a while
- When ModbusTCP was used on v1.14, this update disables it again, and possible also some unit-ids have been changed. See http://www.victronenergy.com/live/ccgx:modbustcp_faq#i_had_modbustcp_working_on_ccgx_v114_and_now_in_v116_is_stopped for more information.
- Reconfiguring a VE.Bus system with VEConfigure, while leaving the CCGX connected to the system, can result in kWh peaks on the VRM Portal. Note that doing this (using VEConfigure without disconnecting the CCGX) might result in many other problems too!
- In a Hub-2 system, when no BMV is connected (so exactly as recommended), the VE.Bus State of Charge is not visible on the overview page on the CCGX. It is visible on the VRM Portal.

v1.15 – 3 june 2014
This release is only available as an image. It is not released online as it only solves a production testing problem.

Changes:
- Fixed bug in production image

Known issues are the same as in v1.14

v1.14 – 23 may 2014
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_14-recover.zip

Changes:
- Fixed all known CCGX internet and LAN connection problems
- Added MPPTs 100/30, 100/50 and 150/35. The 150/85 was already supported.
- Added preliminary version of the ModbusTCP gateway: very useful for systems integration / data communication.
- Fixed bug in GUI (after leaving the menu in the …, see v1.13 known issues for more info).
- Added dup (the VE.Direct command line update tool) to the remote diagnostics toolset
- Fixed issue that VE.Direct port 1 needed to be cleared during an update
- Added the active remote support port to the GUI
- Fixed issue that remote support on/off setting was lost after doing a recovery
- Fixed bug in Auto-update mechanism: the mechanism would get stuck in a small percentage of systems.
- And more internal changes

Known issues:
- Finding a USB-GPS might take a while
- Remote support on/off setting will be changed from On to Off after a manual firmware update with recovery image.

- Support of recovery from USB sticks does not work on all sticks.
- For some PV Inverters, the power and current readings measured with the AC Current Sensors stick to 50 to 140 Watts during the night, instead of showing 0 Watt.
- Almost all data from the Lynx Ion is missing if there is no Ion Control in the network. Only data shown are some cell voltages. This bug has been in the code since the beginning
- Modbus values below zero, for example battery current, will always change in to 0.
- Modbus address of the battery monitor SOC and TTG where both set to 266. In the next release of the CCGX it will be fixed by setting TTG to 301.

v1.13 – 7 may 2014
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_13-recover.zip

Changes:
- Fixed VE.Direct communication bug that could cause values from MPPTs and BMVs jump up and down every second
- Fixed VE.Direct communication bug that could cause communication from MPPTs and BMVs to halt
- And more internal changes

Known issues:
- Finding a USB-GPS might take a while
- Remote support on/off setting will be changed from On to Off after a manual firmware update with recovery image.
- Support of recovery from USB sticks does not work on all sticks.
- Internet and LAN connection problems. The Ethernet connection crashes when connected to a Cisco/Linksys WAP300 access point running a DHCP server. And also problems with Wifi-to-ethernet devices are reported.
- After leaving the menu in the User type selection screen for a long time, the interface crashes and you are left with a white display.
- For some PV Inverters, the power and current readings measured with the AC Current Sensors stick to 50 to 140 Watts during the night, instead of showing 0 Watt.

v1.12 – 31 jan 2014
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_12-recover.zip

Changes made are only affecting production testers. No functional changes.

Known issues:
- Finding a USB-GPS might take a while
- Remote support on/off setting will be changed from On to Off after a manual firmware update with recovery image.
- Support of recovery from USB sticks does not work on all sticks.
- Internet and LAN connection problems. The Ethernet connection crashes when connected to a WAP300 access point running a DHCP server. And also problems with Wifi-to-ethernet devices are reported.
- Values for VE.Direct products can jump up and down, multiple times per second. One of the shown values is constant and wrong, the other one is the actual measurement. Very easy to spot in VRM graphs. Fixed in v1.13
- Communication to VE.Direct products can halt. Fixed in v1.13
- After leaving the menu in the User type selection screen for a long time, the interface crashes and you are left with a white display.
- For some PV Inverters, the power and current readings measured with the AC Current Sensors stick to 50 to 140 Watts during the night, instead of showing 0 Watt.

v1.11 – 8 jan 2014
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_11-recover.zip

Changes:
- Fixed 'Connection to BMV is lost after random time bug'. See v1.09 for details.
- VE.Bus BMS and CCGX can now be combined in one system. Important notes on how to install and which sockets to use are in the CCGX Datasheet.
- Added support for Lynx Ion to gui and in vrm-logscript
- Added support for USB-GPS to gui and in vrm-logscript
- Added support for AC Current Sensor to gui and vrm-logscript
- Changes to vrm-logscript
    1. BMV Historic data and other similar parameters are logged on change only, to reduce bandwidth usage and database space
    2. Backlog information, and flush backlog are added to menu item VRM logger
    3. Added logging of update settings (auto-update, update-to-, local ip-address)
    4. Fixed bug in Solar charger state (ON/OFF) param: it sent 4, it should have been 0.
    5. Energy (kWh) data sent to VRM portal, as used for the consumption and solar yield tab, has been improved in many ways, but can still be further improved.

- Improved remote diagnostics. (menu Settings -> General -> Remote Support) See datasheet FAQ for more information
- Fixed bug: Temperature alarms on a Multi where interpreted as warnings, and warnings as alarms.
- Manual firmware update (with the recovery image) now also works from some USB sticks
- Added preliminary version of GPRS modem support. Test available on request.

Known issues:
- Updating from a previous v1.11-RC requires recovery from a card/stick! Even though it looks like you auto-updated to v1.11-RC4
- Finding a USB-GPS might take a while
- Remote support on/off setting will be changed from On to Off after a manual firmware update with recovery image.
- Support of recovery from USB sticks does not work on all sticks.

v1.10 – 8 nov 2013
Production test changes only, therefore not deployed to automatic update system. Production tests are fixes in the MK2 test script.

v1.09 – 6 nov 2013
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_09-recover.zip

Changes:
- Fixed 'losing internet connection' bug. See v1.08 for details.

Known issues:
- When connecting multiple BMV's or VE.Direct MPPT's, the one used for the overview is chosen randomly.
- Bug: Connection to BMV-600 and BMV-700 can be lost after a random time. To get the BMV back online you have to power cycle the BMV (unplug the RJ-12 cable at the back of the BMV, and plug it back in again – Fixed in v1.11.

Limitations:
- The CCGX connected to VE.Bus cannot be combined with other MK2-based products: VE.Bus BMS, VE.Bus to NMEA2000 interface, BPP2, CCGX, VEConfigure2 and 3, VGR2, VER, Solar-Switch and custom built applications and software based on the MK2. These combinations can result in sudden power outages and other unexpected problems.
- Do not connect two Color Controls to the same VE.Bus network, see previous limitation.
- CCGX cannot be combined with a VE.Bus BMS. Will be fixed in as soon as possible – Solved in v1.11
- Data from BMV's connected with a VE.Direct cable or the VE.Direct USB cable will be logged to the VRM website, but the data is not yet visible on the website. This is being worked on right now and will be fixed in the coming weeks – Fixed with new VRM website, 12 dec 2013.

v1.08 – 4 nov 2013

Changes:
- Added support for MPPT 70/15, MPPT 75/15, MPPT 100/15 en MPPT 75/50. Notes:
    1. They can be connected both with a direct VE.Direct cable as well as a VE.Direct to USB interface.
    2. Multiple can be connected at the same time.
    3. The firmware version in the MPPT Solar Charger must be v1.09 or later. MPPT solar charger firmware can be updated with a VE.Direct to USB interface.
    4. The 70/15 needs to be from year/week 1308 or later. Earlier 70/15's are not compatible with the Color Control GX. MPPT 70/15's currently shipping from our warehouse are of the required newer version.
- Added support for connecting multiple BMV's at the same time
- Added time zone setting in menu
- Fixed bug: grid converter power for L2, L3 is sometimes not read (and kWh-counted) properly. Sometimes it is.

Known issues:
- When connecting multiple BMV's or VE.Direct MPPT's, the one used for the overview is chosen randomly.
- Bug: in some situations, after losing its internet connection, the Color Control requires a restart to have a working internet connection again. (DHCP random address bug). For details see v1.07. Bug is fixed in v1.09
- Bug: Connection to BMV-600 and BMV-700 can be lost after a random time. To get the BMV back online you have to power cycle the BMV (unplug the RJ-12 cable at the back of the BMV, and plug it back in again.

Limitations:

- The CCGX connected to VE.Bus cannot be combined with other MK2-based products: VE.Bus BMS, VE.Bus to NMEA2000 interface, BPP2, CCGX, VEConfigure2 and 3, VGR2, VER, Solar-Switch and custom built applications and software based on the MK2. These combinations can result in sudden power outages and other unexpected problems.
- Do not connect two Color Controls to the same VE.Bus network, see previous limitation.
- CCGX cannot be combined with a VE.Bus BMS. Will be fixed in as soon as possible.
- Data from BMV's connected with a VE.Direct cable or the VE.Direct USB cable will be logged to the VRM website, but the data is not yet visible on the website. This is being worked on right now and will be fixed in the coming weeks.

v1.07 – 30-09-2013
Recovery image: http://www.victronenergy.com/feeds/ccgx/images/CCGX-v1_07-recover.zip

Changes:
- Fixed both known issues from v1.06

Limitations:
- The CCGX connected to VE.Bus cannot be combined with other MK2-based products: VE.Bus BMS, VE.Bus to NMEA2000 interface, BPP2, CCGX, VEConfigure2 and 3, VGR2, VER, Solar-Switch and custom built applications and software based on the MK2. These combinations can result in sudden power outages and other unexpected problems. Note that making a solution for the combination of the CCGX and a VE.Bus BMS is top priority; it is expected in November 2013.
- Do not connect two Color Controls to the same VE.Bus network, see previous limitation.
- CCGX cannot be combined with a VE.Bus BMS. Will be fixed in as soon as possible.
- Only one BMV can be connected. It can be connected with a VE.Direct cable, a VE.Direct USB cable or the VE.Can to NMEA2000 cable together with a BMV-60xS to NMEA2000 interface. Connecting more than one at the same time will be possible in the near future (November).
- Data from BMV's connected with a VE.Direct cable or the VE.Direct USB cable will be logged to the VRM website, but the data is not yet visible on the website. This is being worked on right now and will be fixed in the coming weeks.

Known issues:
- Bug: grid converter power for L2, L3 is sometimes not read properly. This also affects the kWh-counters. Occurrence: random. Sometimes it is counted properly. This bug has always been there, since day one. Fixed in v1.08
- Bug: in some situations, after losing its internet connection, the Color Control requires a restart to have a working internet connection again. Details:
  If the Color Control does not receive response on its DHCP request, it will generate a random ip-address. It will not retry getting an ip address through DHCP for at least 3 days, perhaps forever. A typical situation where this happens is: AC power fails, customers internet router (and DHCP server) is switched off. The Color Control GX is powered from the battery and stays connected. Its Ethernet links goes down. Then the power is restored, router gets power, Ethernet connection comes up again, but the DHCP server is not yet ready. Color Control creates the random address, and will be disconnected from VRM. Workaround: reboot the Color Control GX. This bug has always been there, since day one. Bug will be fixed in v1.09

v1.06 – 27-09-2013
Changes:
- added support for BMV-60xS and BMV-70x connected via the VE.Direct ports. Only one BMV can be connected, more will be possible in the near future.
- bug "kwh-counters not logged to vrm after mk2_dbus service restarted" is fixed
- production test changes
- the current date and time, as shown in the settings menu, is now constantly updated. It used to be updated only once when the user entered this menu.

Known issues:
- When a BMV is not connected during power up, going to the Overview will cause all values to stop working.
- When you are in a second level menu and then go to the overview, the gui does not function proper anymore when a BMV is connected. To go back to normal operation remove BMV or press escape (A, left top) button

v1.05 – 05-09-2013
Production test changes only, therefore not deployed to automatic update system

v1.04 – 05-09-2013
Changes:
- implemented workaround for missing/losing VE.Bus data bug
- removed shutdown functionality and added reboot option in menu settings/general. This is because of a hardware change (REV1): the Color Control GX will now always be on, it is no longer possible to switch it off.
- added key-press: when keeping a key pressed it will keep scrolling
- python sources are now also on CCGX, which makes it easy to change these (open source)

Known issues:
- Model and version from VE.Can products is not logged to VRM Portal
- After updating a Multi the CCGX should be rebooted for correct working of the kWh counters
- The battery values are randomly chosen from a BMV or Lynx-Ion when both are available
- Missing some translations

Limitations:
- Data is logged only with device instance 0

v1.03 – 14-08-2013
Changes:
- Added alarm relay functionality and settings to configure it
- Added support for BMV (connected through BMV to NMEA2000 interface) in the main menu
- Added support for BlueSolar MPPT 150/70 in the main menu
- Added option in menu to choose which types of automatic updates to except (Release / Release Candidate / Testing)
- Added check for updates 5 minutes after power up (it used to be only at 02:00 UTC)
- Bug fix: total PV watts reported in the overview for paralleled MPPT 150/70 is now correct
- Bug fix: total PV watts reported in the overview measured by multiple AC Current Sensors is now correct
- Various updates to the translations
- Bug fix: format of VE.Bus version number reported to VRM portal is now correct

Known issues:
- Model and version from VE.Can products is not logged to VRM Portal
- After updating a Multi the CCGX should be rebooted for correct working of the kWh counters
- The battery values are randomly chosen from a BMV or Lynx-Ion when both are available
- Missing some translations

Limitations:
- Data is logged only with device instance 0

v1.01 – 19-07-2013
Changes:
- MAC Address visible when Ethernet is offline
- Logger is on by default (only true when newly programmed or recovered)
- Added VRM portal ID in VRM online portal menu
- Added 'UTC' to current date and time
- Added notification when there is an update available online (only visible when automatic updating is switched off)
- Added possibility to define AC in 2 (for Quattro) when a custom profile is selected

Known issues:
- Model and version from VE.Can products is not logged to VRM Portal
- Model and version of VE.Bus products is not formatted correctly (2612205.0)
- After updating a Multi the CCGX should be rebooted for correct working of the kWh counters
- The battery values are randomly chosen from a BMV or Lynx-Ion when both are available
- Missing some translations
- Some texts, for example 'uur' which means hour, are shown in Dutch, even when English language is chosen

Limitations:
- Data is logged only with device instance 0
- The CCGX will log data from Lynx Ions, Lynx Shunt VE.Can, BMV and Solar Charger 150/70 to the VRM portal.

v1.00 – 17-7-2013
First release

Known issues:
- Model and version not proper logged due to missing on the dbus
- After updating a Multi the CCGX should be rebooted for correct working of the kWh counters

- The battery values are randomly chosen from a BMV or Lynx-Ion when both are available
- Missing some translations

Limitations:
- Data is logged only with device instance 0
- The CCGX will log data from Lynx Ions, Lynx Shunt VE.Can, BMV and Solar Charger 150/70 to the VRM portal. But it will not show anything about these devices on its own display. Use the System overview page on the VRM Portal to check if these products are connected OK.