Victron GX product range

Introduction

GX products are Victron's state-of-the-art monitoring solution. The family consists of the different GX products, and their accessories.

The GX-device lies at the heart of the system - providing monitoring, and operating as the communication-centre of your installation. All the other system-components - such as inverter/chargers, solar chargers, and batteries - are connected to it. Monitoring can be carried out locally and remotely - via our free-to-use Victron Remote Management portal (VRM). The GX device also provides Remote firmware updates and allows inverter/charger settings to be changed remotely.

The GX Family consists of these models:

- Ekrano GX - Our latest GX product with integrated 7 inch touchscreen.
- Cerbo GX - Most commonly used GX product.
- Cerbo GX MK2 - Almost identical to the Cerbo GX, this new model has improvements in its VE.Can ports, USB ports and pulse counting. See table below for details, as well as foot note 26.
- Cerbo-S GX - Lower cost version, same as normal Cerbo GX but without BMS-Can port, Tank- and Temperature monitoring inputs.
- Color Control GX - Our first released GX product, the CCGX has a display and buttons.
- Venus GX - The Venus GX has more analog and digital IO, no LCD and is more cost effective than the CCGX.

Lastly, there is a GX device built into our MultiPlus-II GX and EasySolar-II GX Inverter/chargers.

Available accessories

- GX Touch - Touch screen display accessory for the Cerbo GX and Cerbo GX MK2
- GX GSM - A 2G and 3G cellular modem. It connects to GX device via USB, and takes a simcard
- GX LTE 4G - A 2G, 3G and 4G cellular modem. It connects to GX device via USB and takes a simcard
- WiFi USB sticks
- Energy Meters - Measures PV Inverter Output where PV Inverters cannot be read-out directly. Also used as a grid meter in an Energy Storage System (ESS).
- VE.Can resistive tank sender adapter - Allows a standard resistive tank-level sender to be connected to the GX device. Note that some GX Devices feature resistive tank-level inputs themselves.
- GX Touch adapter for CCGX cut-out - An adapter that fits in a cut-out made for a CCGX, into which fits a Cerbo GX. For when upgrading a CCGX system to a Cerbo GX. More details available asap.
- Ekrano GX Wall Mount - For surface mounting the Ekrano GX without a cut-out.
- Temperature sensor for Quattro, MultiPlus and GX Device - Temperature sensor accessory for the temperature inputs of the Venus GX, Cerbo GX, Cerbo GX MK2 and Ekrano GX.

Comparison table

User interface	**Ekrano GX**	**Cerbo GX**	**Cerbo GX MK2**	**CCGX**	**Venus GX**	**CANvu GX**	**MultiPlus-II GX and EasySolar-II GX**	
Appearance								
Display	 1024 x 600 LCD built-in 7“ touchscreen	 GX Touch optional touch display [16] GX Touch 50: 800 x 480 GX Touch 70: 1024 x 600		480 x 272 LCD Display & 7 buttons	no display	4.3” touch-screen	 2×16 character display	
Remote Console	yes							
Buzzer	yes					no		
Product detail page & manual download	Ekrano GX	Cerbo GX		CCGX	Venus GX	CANvu GX	MP-II & ES-II GX	
Victron comm. ports	**Ekrano GX**	**Cerbo GX**	**Cerbo GX MK2**	**CCGX**	**Venus GX**	**CANvu GX[12]**	**MultiPlus-II GX and EasySolar-II GX**	
VE.Direct ports (always isolated)	3 [1]			2 [1]		3 [1]	1	
VE.Bus (always isolated)	2 paralleled RJ45 sockets							
VE.Can	yes VE.Can 1 isolated VE.Can 2 non-isolated	yes - non-isolated	yes VE.Can 1 isolated VE.Can 2 non-isolated	2 paralleled RJ45 sockets – isolated			depends [14, 23] 2 paralleled RJ45 sockets	depends [14, 23]
Other comm. ports	**Ekrano GX**	**Cerbo GX**	**Cerbo GX MK2**	**CCGX**	**Venus GX**	**CANvu GX**	**MultiPlus-II GX and EasySolar-II GX**	
USB	2 USB Host ports	2 USB Host ports & 1 power only port [21]	3 USB Host ports	2 USB Host ports		1 USB Host port		
Ethernet	10/100 RJ45 socket - isolated except shield					10/100 RJ45 socket [12]	10/100 RJ45 socket	
WiFi	built-in			optional [2]	built-in, but see [3]	optional [2]	built-in	
Bluetooth Smart	yes [17]			no			depends [24]	
Micro SDcard slot	SDHC cards up to max. of 32GB [5]					no	no	
Second CAN bus interface [18]	yes - see VE.Can	BMS-Can only [15]	yes - see VE.Can	no	yes terminal port connection - non-isolated	no	no	
Built-in RS485	no							
IO	**Ekrano GX**	**Cerbo GX**	**Cerbo GX MK2**	**CCGX**	**Venus GX**	**CANvu GX[12]**	**MultiPlus-II GX and EasySolar-II GX**	
Programmable relay [7]	2 x NO/NC [8] DC up to 30VDC: 3A AC: 1A, 125VAC	2 x NO/NC [8] DC up to 30VDC: 6A DC up to 70VDC: 1A AC: 6A, 125VAC		1 x NO	1 x NO/NC [8]	1x NO / NC	n/a	

User interface	**Ekrano GX**	**Cerbo GX**	**Cerbo GX MK2**	**CCGX**	**Venus GX**	**CANvu GX**	**MultiPlus-II GX and EasySolar-II GX**
Resistive tank level inputs	3 [9]	4 [9]		no	3 [9]	no	
Temperature sense inputs	2 [10]	4 [10]		no	2 [10]	no	
Digital Inputs	2 [22]	4 [22]		no	5 [22]	1 [22]	no
Third party compatibility	**Ekrano GX**	**Cerbo GX**	**Cerbo GX MK2**	**CCGX**	**Venus GX**	**CANvu GX**	**MultiPlus-II GX and EasySolar-II GX**
Canbus-BMS batteries	Many battery brands. See here for details						
Fronius PV Inverters	See here for details						
SMA PV Inverters	See here for details						
ABB/FIMER PV Inverters	See here for details						
SolarEdge PV Inverters	See here for details						
Marine MFD App Support	Generic MFD Manual, Navico, Garmin, Raymarine, Furuno						
Mopeka Pro Check LPG & Water Bluetooth tank sensor [24]	See here for details						
RuuviTag Bluetooth temperature sensor [24]	See here for details						
Performance	**Ekrano GX**	**Cerbo GX**	**Cerbo GX MK2**	**CCGX**	**Venus GX**	**CANvu GX**	**MultiPlus-II GX and EasySolar-II GX**
CPU	quad core	dual core		single core			quad core
RAM	1GB			256MB	512MB	256MB	512MB
Max. VE.Direct devices [1]	25	15		5	6	4	25
Other	**Ekrano GX**	**Cerbo GX**	**Cerbo GX MK2**	**CCGX**	**Venus GX**	**CANvu GX**	**MultiPlus-II GX and EasySolar-II GX**
Supply voltage	8 - 70 VDC					8 - 32 VDC	powered internally, no external supply
Power draw	2,6 to 7.4 W [25]	2,5 to 5 W [19]		tbd			
Mounting	Flush panel mounting or blind hole mounting	Wall or DIN rail (35mm)[20]		Panel Integration	Wall mounting	Panel	Built-in
Outer dimensions (h x w x d)	124 x 187 x 29.8 mm	78 x 154 x 48 mm		130 x 120 x 28 mm	45 x 143 x 96 mm	tbd	
Operating temperature	-20 to +50°C					-20 to +70°C	
Battery backup clock	yes					no	yes
5V output	no				1 A [13]	no	
Standards	**Ekrano GX**	**Cerbo GX**	**Cerbo GX MK2**	**CCGX**	**Venus GX**	**CANvu GX**	**MultiPlus-II GX and EasySolar-II GX**
Safety	IEC 62368-1			EN 60950		IEC 62368-1	IEC 62109-1 IEC62109-2 IEC62040-1
EMC	EN 301489-1, EN301489-17						
Automotive	ECE R10-6			E4-10R-053535	ECE R10-6		no

Notes

1. The listed maximum VE.Direct devices on the `Performance` section in above table is the total

connected VE.Direct devices such as MPPT Solar Charge controllers. Total means all directly connected devices plus the devices connected over USB. The limit is mostly bound by CPU processing power. In relation to that, note that (a) connecting solar chargers over VE.Can is more efficient than connected over VE.Direct - and besides more efficient also makes for better communication wiring. For example, a Cerbo GX can perfectly handle 25 pieces of VE.Can Solar Charger, combined with 6 pieces of Fronius three phase PV Inverter and of course a three phase Victron system. And note (b) that CPU load is not only caused by connecting VE.Direct devices; there are also other factors. Connecting multiple PV Inverters increases the CPU load, especially when they are three phase. Enabling ModbusTCP increases the CPU load as well. Up to three or four three phase inverters can typically be monitored on a CCGX. Higher power CPU devices can monitor more.

2. Though the CCGX has no built-in WiFi that functionality can easily be added by attaching a USB-WiFi dongle. See CCGX Manual, WiFi section for details.
3. The built-in WiFi in the Venus GX has a very low signal strength - unfortunately. It is strong enough to connect to a phone, tablet or laptop in order to access setup and monitoring. But to connect the Venus GX to the internet either use the built-in Ethernet port or add a USB-WiFi dongle. See Venus GX Manual, WiFi section for details. Make sure the Venus GX is running v2.06 or later - early shipments of Venus GX units ran v2.05.
4. The hardware of the Venus GX and Octo GX includes a built-in Bluetooth Smart chipset which hasn't proved satisfactory. Bluetooth Smart for GX devices is coming soon but will not use built-in chipsets.
5. Larger SD memory cards (SDXC) are not supported. SD cards can be used for two purposes:
    1. Logging data, see the Datalogging to VRM chapter in the GX manual for details.
    2. Updating firmware, see the Firmware update chapter in the GX manual for details.
6. The second CANbus port is accessible via the GND, CAN-H and CAN-L terminals. Note that the port is not isolated. See Settings → Services in the GX device menu for configuring that port.
7. The programmable relay can be set to act as an alarm relay, automatic genset start stop, or an on/off switch, and is controlled via the GUI and/or ModbusTCP.
8. In the Venus and Cerbo GX hardware there are two relays. Currently, Relay 1 can be used for programming as an alarm relay, generator start/stop, tank pump, temperature controlled relay or manual operation. Relay 2 is available for programming as a temperature controlled relay or manual operation in the Relay menu of the GX (requires firmware 2.80 or higher).
9. The tank level inputs are resistive and should be connected to a resistive tank sender. Victron does not supply tank senders. The tank level ports can each be configured to work with either European (0 - 180 Ohm); or US tank senders (240 - 30 Ohm); or to configure a custom Ohm resistance range between 0 Ohm and 300 Ohm.
10. The Ekrano GX has two, the Cerbo GX four and the Venus GX has two temperature terminals. They can be used to measure & monitor all kinds of temperature-inputs. Temperature senders are not included. The required sensor is ASS000001000 - Temperature Sensor QUA/PMP/Venus GX. (Note that this is not the same as the BMV temperature accessory.). Temperature range is -40°C to +70°C. Actually it can measure up to 100°C, but the sensor is not made to withstand temperatures above 70°C long term. Note that this is intended as a crude temperature sensor, and not calibrated. A deviation of +/- 2°C is to be expected.
11. Octo GX comes with a small Wifi antenna. You may remove and replace it with any other Wifi antenna having an RP-SMA connector.
12. Requires the CANvu GX IO Extender and wiring kit
13. The 5V output on the Venus GX can be used to power, for example, a USB hub. Note that its output is not current limited or otherwise protected, and it shares the internal power supply in the Venus GX: overdrawing from it will result in shutdown(s) of the Venus GX. It is recommended to install a fuse for prevention.
14. The CAN-Bus port of the Maxi GX, MultiPlus-II GX and EasySolar-II GX for hardware revisions

prior to Late 2021 were BMS-Can port only. It could only be used to connect to managed batteries such as Freedomwon, BYD, Pylontech, BlueNova, MG Energy Systems and others, at 500kbps. Note that some early production batches had a labelling mistake: the port was labelled VE.Can. Which -unfortunately- was wrong. The hardware prior to Late 2021 did not meet the requirements for a VE.Can port; and therefor is BMS-Can only.

15. A BMS-Can port is a port dedicated to only be used for connecting managed batteries, such as Freedomwon, BYD, Pylontech, BlueNova, MG Energy Systems and others. It is not possible to connect Victron VE.Can products to that port. To connect such managed battery, use our VE.Can to CAN-bus BMS cable, and see Battery Compatibility documentation. Connect the side labelled 'VE.Can' into the BMS-Can/VE.Can port on the GX Device. And connect the other side to the battery. The baudrate of a BMS-Can port is fixed to 500kbps.
16. The GX Touch connects to the Cerbo GX using a single cable; fixed permanently to the GX Touch, which on the other end splits into a USB and a connector for the video signal. Both need to be inserted into the Cerbo GX before powering up, taking one of the three USB ports. The USB part of the cable is used to power the GX Touch. The cable is 2 meters in length; and can not be extended in length.
17. The Bluetooth feature of the Cerbo GX allows to configure its WiFi and Ethernet settings from within VictronConnect. Even though it can be used for wireless temperature monitoring, we recommend to use a USB Bluetooth adapter instead: the Bluetooth function in the Cerbo GX stops working when the internal temperature is too high. This applies for Cerbo GX units built up to and including serial number HQ2207. Units manufactured later (HQ2208 and later) do not require an additional USB Bluetooth adapter. Also note that this limitation does not apply to the Cerbo-S GX.
18. The secondary CAN port, available on some GX devices as per table above, can be configured to be used as a BMS-Can port, as well as other profiles. For details, see manual.
19. Cerbo GX power draw without GX Touch mounted: around 2.8W. With GX Touch connected, and backlight off: 3.8W. Backlight at max intensity: 4.8W
20. DIN rail mounting requires additional accessory - DIN35 Adapter.
21. On the Cerbo GX, the USB socket closest to the HDMI connector can only be used to power a GX Touch. That USB port can not be used for any data-related functions such as VE.Direct to USB cables, USB sticks, USB-GPS-es, or other common USB usages. It’s a power port only, no data. Future versions of Venus OS will disable all data-related features of this port, so it should not be used for anything other than powering the GX Touch screen. Attempting to use this port for data purposes may lead to corrupted VRM data on USB sticks or unreliable communication to, for example, a Solar Charger when using a VE.Direct to USB cable. The above limitation does not apply to the Cerbo GX MK2.
22. The digital inputs can be used for open/closed monitoring of alarms, for example doors, or fire- or bilge alarms. The digital inputs on the Ekrano GX, Cerbo GX MK2 and Venus GX can also be used for pulse counting. The digital inputs on the Cerbo GX and other devices are not able to do pulse counting. See product manual for electrical specifications of the digital inputs.
23. Late 2021 / early 2022, the hardware of the MultiPlus-II GX and EasySolar-II GX product range has been updated. The update adds Bluetooth and changes the CAN-communications port from a limited 500kbps BMS-Can only type to a full featured VE.Can port (non-isolated). Status per model, updated 2024-05-20:
    1. MultiPlus-II GX 24 3kVA; per HQ2231. Ships from all warehouses, except South Africa.
    2. MultiPlus-II GX 48V 3kVA; per HQ2124. Ships from all warehouses.
    3. MultiPlus-II GX 48V 5kVA; per HQ2220. Ships from all warehouses.
    4. EasySolar-II GX 24V 3kVA; introduced per HQ2203. Ships from all warehouses.
    5. EasySolar-II GX 48V 3kVA; per HQ2229. Ships from all warehouses.
    6. EasySolar-II GX 48V 5kVA; per HQ2220. Ships from all warehouses.
24. Non-Bluetooth GX devices require a USB Bluetooth dongle to enable the Bluetooth sensors

25. Ekrano GX power draw in detail: Display on 6.2W @ 12V | 6.6W @ 24V | 7.4W @ 48V Display off 2.6W 12V | 3.0W @ 24V | 3.7W @ 48V
26. In 2023/2024, an updated version of the Cerbo GX was released, the Cerbo GX MK2. It has the same enclosure and almost the same electronics design; except for **(A)** two fully functional CAN bus ports, called VE.Can 1 and VE.Can 2. Instead of one VE.Can and one dedicated BMS-Can port. And on the MK2 model, VE.Can 1 is isolated. On previous models, there was no isolated canbus port. All VE.Can ports can be configured to multiple profiles, including BMS-Can. **(B)** the RJ-45 sockets have been rotated 180 degrees, so its easier to take the cables out. **(C)** All three USB ports are fully functional. Instead of two functional and one for power, to a GX Touch, only. **(D)** Digital inputs can do pulse counting. Further details here.

    Identification: BPP900450100 is the first generation Cerbo GX. And both BPP900450110 and BPP900451100 are the Cerbo GX MK2. The latter two are completely identical, the only difference is country of origin, India versus Malaysia.

    The Cerbo GX MK2 revision is most valuable for some very specific applications. Such as the RV market in the US where a Lynx Smart BMS is installed, requires a VE.Can connection, as well as an RV-C port is required. And VE.Can and RV-C can not run on the same CAN network. Also for marine installations it offers an advantage when integrated into the NMEA2000 network, due to the VE.Can 1 port being galvanically isolated.