victron energy
BLUE POWER

- Victron Energy IBC Automotive Training

Training topics

Victron Energy Automotive Products:

Phoenix Inverters

IP65 & IP67 Chargers

Small MPPT Chargers

Orion TR Smart & Cyrix Battery Combiners

BMV & Smart Shunt & Battery Balancers

Cerbo GX & Ekrano GX

Automotive Products

Phoenix Inverters

- Battery Inverter for Automotive
- 250 - 1200VA
- Fully Configurable
- VE.Direct communication port
- IP21 protection

VE.Direct to Bluetooth Smart dongle

- Bluetooth Connectivity for non-smart products

  BlueSolar MPPTs & Phoenix Inverter

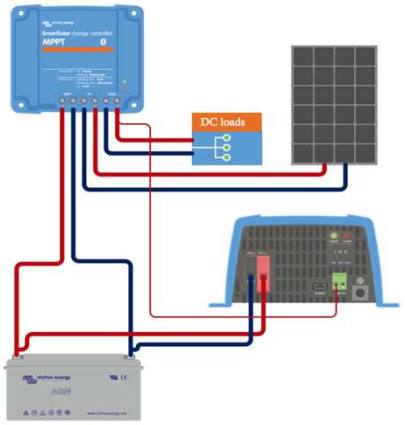
  VE.Direct & BMV
- VE.Smart Networking
- Instant Readout

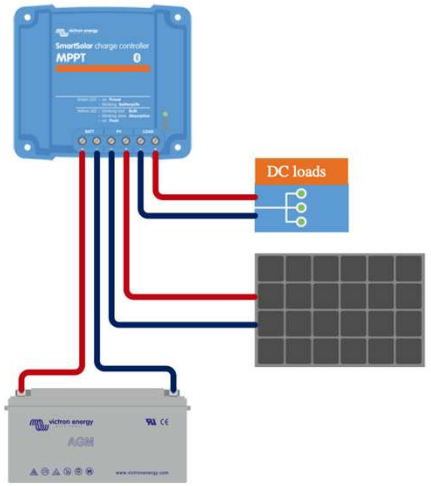
IP65 & IP67 Smart Chargers

- 6V & 12V 1,1A (Automotive IP65)12V, 4A - 25A
- 24V, 5A, 8A, 12A & 13A
- Bluetooth built in (except Automotive IP65)
- Can be used as Power Supply (except Automotive IP65)
- Quick Battery Connectors & Accessories – For IP65 models

SmartSolar Charge Controllers

- MPPT 75/10, 75/15, 100/15, 100/20-48 V
- Load Output
- Outstanding MPPT Algorithm
  - Ultra fast MPP tracking
  - Optimal Solar Yield





Solar charger system with DC loads connected to the load output

Solar charger model	Maximum PV voltage	Maximum battery charge current	Suitable battery voltages
MPPT 75/10	75V	10A	12 and 24V
MPPT 75/15	75V	15A	12 and 24V
MPPT 100/15	100V	15A	12 and 24V
MPPT 100/20	100V	20A	12, 24, 36 and 48V

MPPT Solar Charger range

BlueSolar											
75 V	10	15									
100 V		15	20	30			50				
150 V					35	45		60	70		100 VE.Can

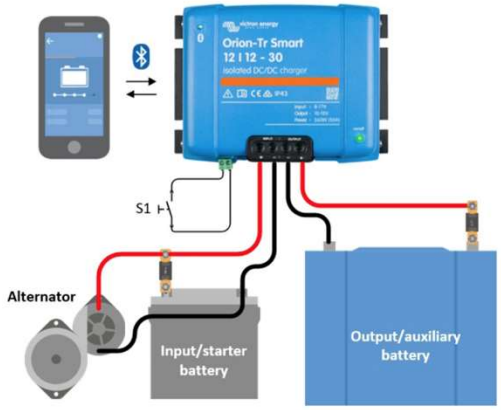
SmartSolar											
75 V	10	15									
100 V			20	30			50				
150 V					35	45		60	70	85	100

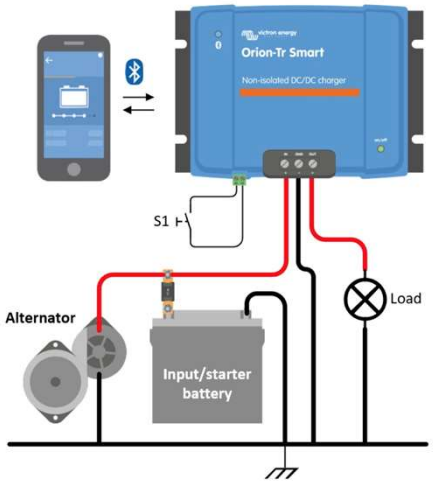
SmartSolar VE.Can											
150 V									70	85	100
250V									70	85	100

SmartSolar RS												
450 V											100A	200A

Orion TR Smart Non-Isolated & Isolated

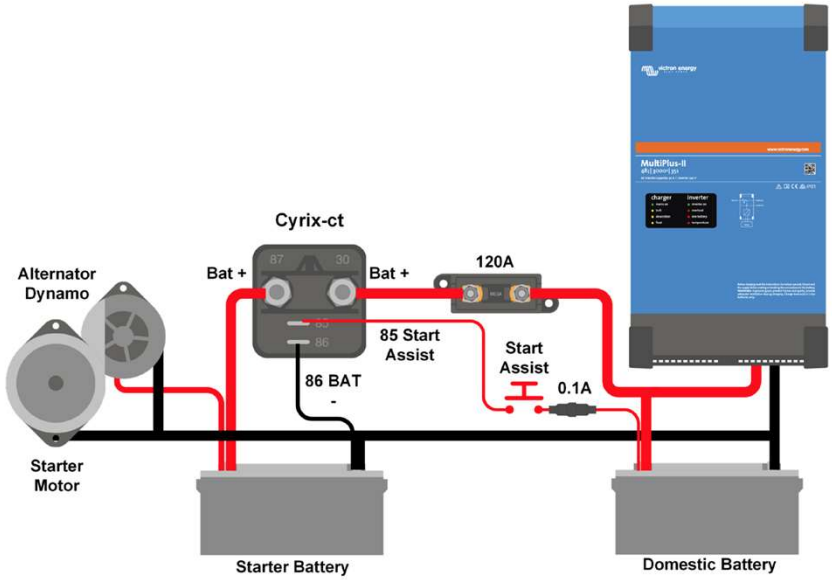
- Bluetooth Smart Enabled
- Suitable for use in vehicles with a smart alternator
- Adaptive 3-stage charge algorithm: bulk – absorption – float
  - 220-400W – Isolated range
  - 360-400W – Non-Isolated range
  - Can be paralleled
  - IP43 protection





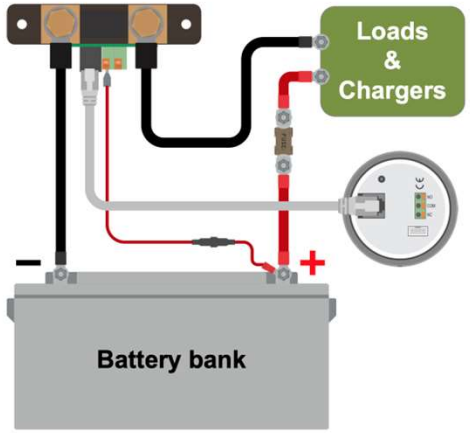
Cyrix-ct 12/24V 120A & 230A

- Intelligent battery monitoring to prevent unwanted switching
- 12/24V auto ranging
- Prioritising the starter battery
- Protection against overheating
- No voltage loss
- IP 54 protection



BMV 700 series - Battery Monitors

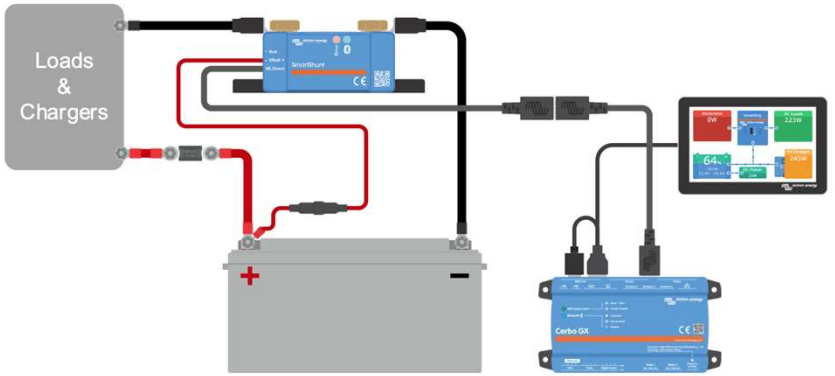
- Battery ‘fuel gauge’, time-to-go indicator, and much more
- 500A Shunt included – 1000A, 2000A & 6000A Shunt optionally available
- Midpoint voltage or temperature monitoring (702 & 712 series only)
- Bluetooth built in on BMV 712
- Flush Mount Display
- VE.Direct Communication

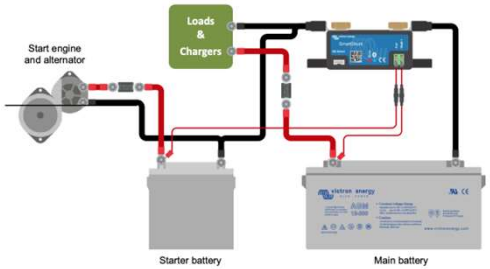


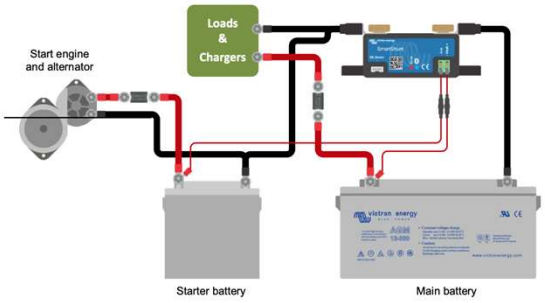
BMV-702 Black

SmartShunt & SmartShunt IP65

- 500A, 1000A & 2000A
- Measures voltage of second battery, temperature, or midpoint voltage of battery bank
- 6.5 – 70VDC operating voltage
- IP21 & IP65 protected
- VE.Direct communication





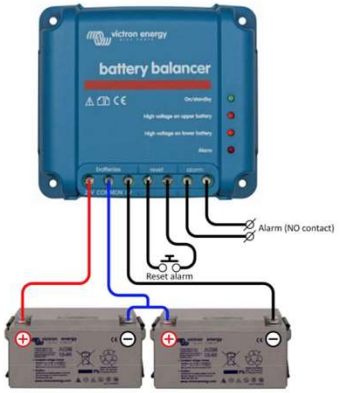


Battery Balancer

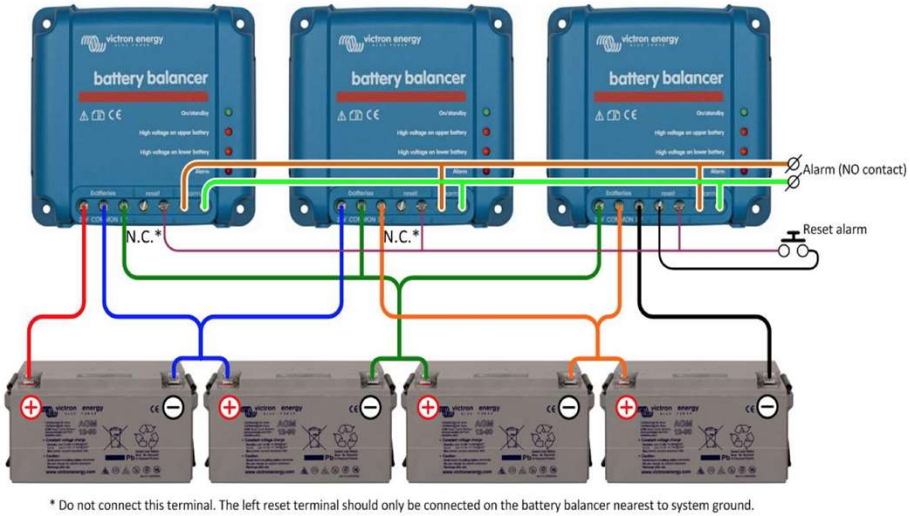
- Lead-acid Intelligent battery balancer
- For 24V Systems
- Prolongs Battery Life
- 3 units can be used for 48V Systems
- Alarm Relay
- IP22 protection

Battery Balancer

- The problem:
  - unbalanced batteries connected in series
- The Solution:
  - battery balancing
- Turn on Level:
  - 27.3V / 54.6V
- Mid Point Deviation to turn on:
  - 50mV



Battery Balancer connected to two series connected 12V batteries (24V system)

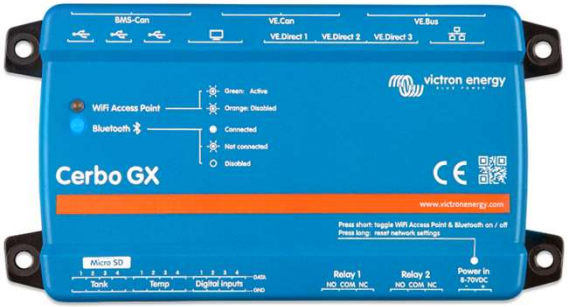


* Do not connect this terminal. The left reset terminal should only be connected on the battery balancer nearest to system ground.

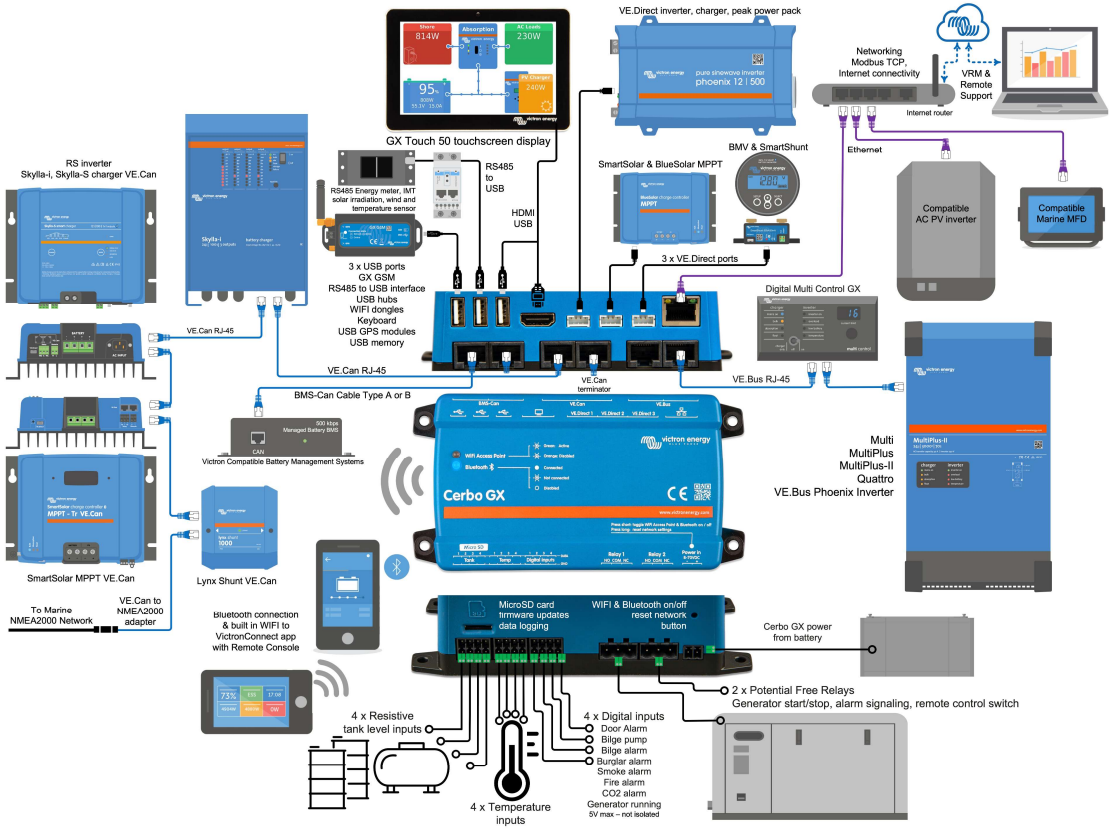
Three Battery Balancers connected to four series connected 12V batteries (48V system)

Cerbo GX & GX Touch 50/70

- Wifi and Bluetooth access via VictronConnect app
- DIN rail mountable via optional accessory
- Powerful Dual CPU that enables more connectivity
- With or Without Display
- GX Touch 50 and 70 is a waterproof, touch screen
- Also polaroid lens visible



Cerbo GX


VE.Direct inverter, charger, peak power pack
GX Touch 50 touchscreen display
Networking
Modbus TCP,
Internet connectivity
VRM &
Remote
Support
Internet router
Ethernet
RS inverter
Skylla-i, Skylla-S charger VE.Can
RS485 Energy meter, IMT
solar irradiation, wind and
temperature sensor
RS485
to
USB
HDMI
USB
SmartSolar & BlueSolar MPPT
BMV & SmartShunt
Compatible
AC PV inverter
Compatible
Marine MFD
3 x USB ports
GX GSM
RS485 to USB interface
USB hubs
WIFI dongles
Keyboard
USB GPS modules
USB memory
3 x VE.Direct ports
Digital Multi Control GX
VE.Can RJ-45
VE.Can RJ-45
VE.Can
terminator
VE.Bus RJ-45
BMS-Can Cable Type A or B
Victron Compatible Battery Management Systems
Cerbo GX
Multi
MultiPlus
MultiPlus-II
Quattro
VE.Bus Phoenix Inverter
SmartSolar MPPT VE.Can
Lynx Shunt VE.Can
To Marine
NMEA2000 Network
VE.Can to
NMEA2000
adapter
Bluetooth connection
& built in WIFI to
VictronConnect app
with Remote Console
MicroSD card
firmware updates
data logging
WIFI & Bluetooth on/off
reset network
button
Cerbo GX power
from battery
2 x Potential Free Relays
Generator start/stop, alarm signaling, remote control switch
4 x Resistive
tank level inputs
4 x Digital inputs
Door Alarm
Bilge pump
Bilge alarm
Burglar alarm
Smoke alarm
Fire alarm
CO2 alarm
Generator running
5V max - not isolated
4 x Temperature
inputs

Features

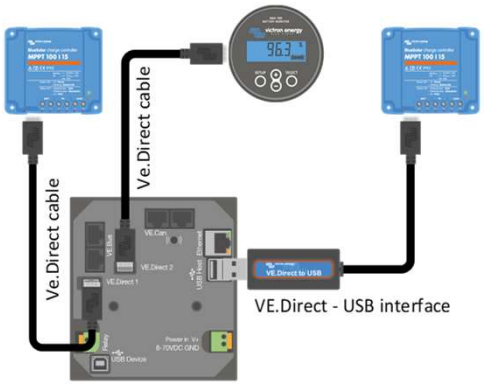
- System display
- Internet connectivity and monitoring via LAN or WiFi
- Data logging via SD card or USB stick
- Remote console
- GPS positioning with USB GPS dongle
- Remote VEConfigure
- Remote firmware updates (not VE.Bus)
- System battery state of charge, max charge current and voltage sense
- And much, much more…..

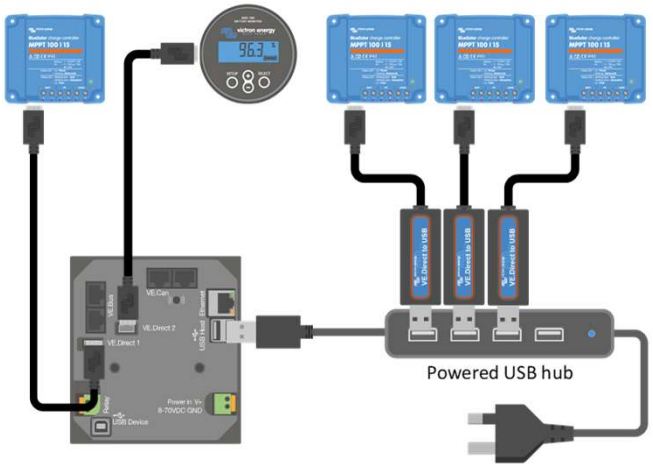
GX Accessories

Mounting enclosures For CCGX	Wi-Fi dongles Short and long range	VE.Can tank sender VE.Can power cable	GSM/GPS module 3G	CanVu extender kit (Essential)	GX touch 50 (for Cerbo)	Cerbo Din rail mounting kit	Temperature sensor

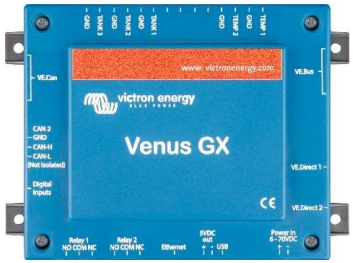
VE.Direct connections

- VE direct is a point to point protocol, maximum distance is 10 meters
- Use a VE.Direct-USB interface if more VE.Direct connections are needed
- If more connections are needed use a powered USB (or use VE.Can MPPTs)
- Maximum VE.Direct devices: Cerbo = 3, CCGX = 5, Venus= 6, Octo= 10, Maxi=25





VENUS OS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Venus GX

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Octo GX

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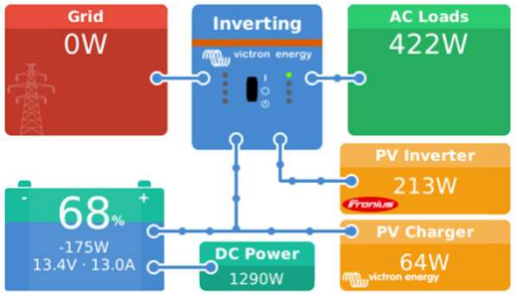
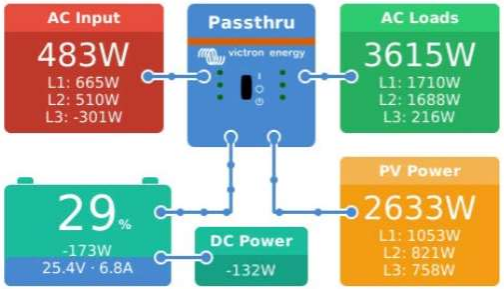
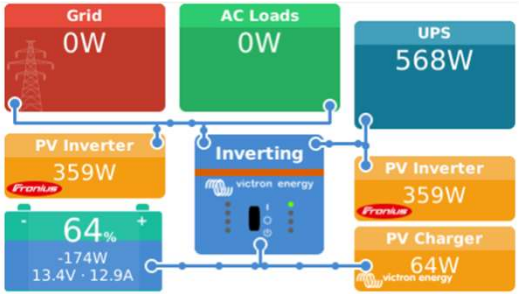
Cerbo GX
WiFi Access Point
Bluetooth

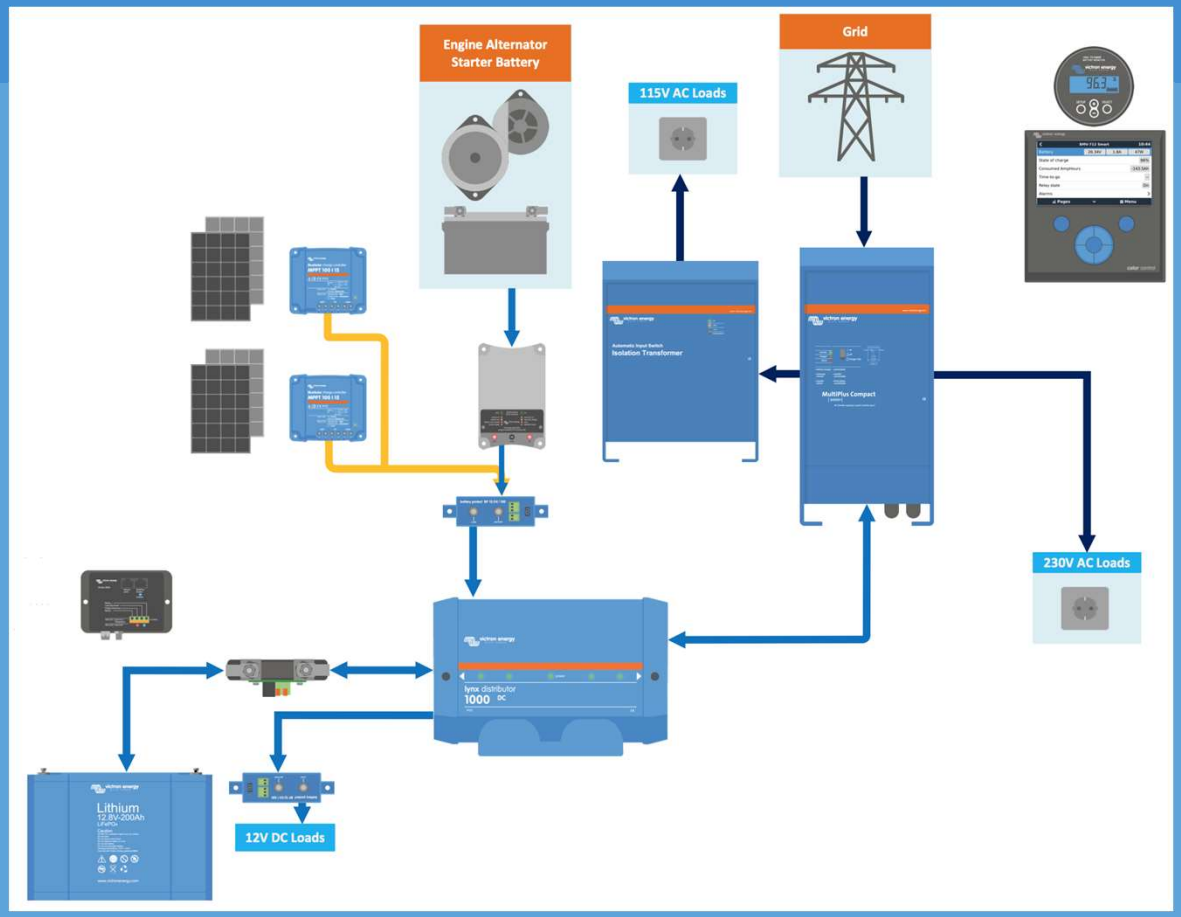
System displays

- Inverter/charger
- AC in loads
- AC out loads
- PV on AC Out
- PV on AC In
- UPS loads
- Battery parameters
- DC solar charger PV
- DC loads
- Energy flow directions








Engine Alternator
Starter Battery
115V AC Loads
Grid
Automatic Input Switch
Isolation Transformer
MultiPlus Compact
230V AC Loads
lynx distributor
1000 DC
Lithium
12.8V-200Ah
LiFePO4
12V DC Loads

Communication Ports and protocols

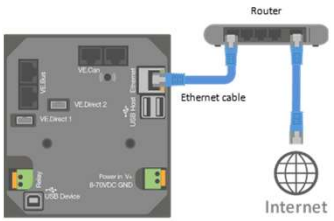
Protocol	Product	Software		Monitor
VE.Bus	Multi, Quattro, EasySolar, EasyPlus, large inverters, Phoenix charger*	VEConfigure		
VE.Direct	MPPT, BMV, PowerPack, new small inverters, Phoenix charger IP43, Skylla IP43BluePower charger**	VictronConnect		
VE.Can	CAN MPPT, Lynx, Skylla I, Skylla IP44,Skylla IP43, Tank sender	VE Power Setup		
BMS-Can (Type A or B Cable)	A BMS-Can port is a port dedicated to be used for connecting managed batteries	Battery dependant		

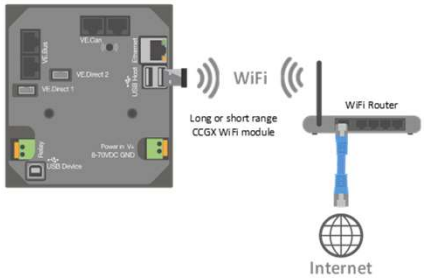
Limited connectivity: * = only VEConfigure ** only via Bluetooth

How to connect GX device to the internet

Via LAN

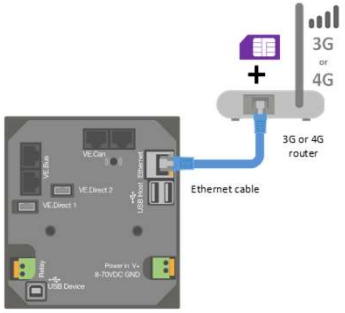
- Ethernet cable
- Wi-Fi - GX device might need a Wi-Fi dongle

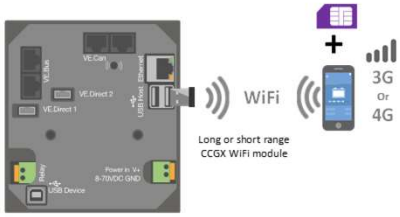




Via mobile phone network:

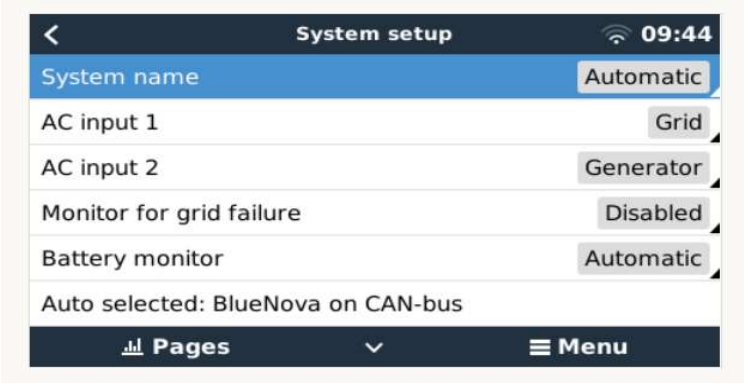
- 3G - use GX GSM
- Use a 3g or 4g router
- Use mobile phone hotspot

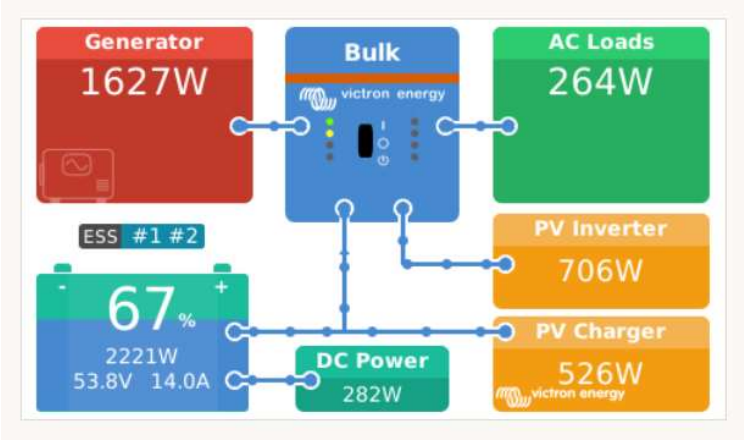




System Setup

- Define system Name
- AC input 1 & 2 source (Quattro only for ac 2)
- Monitor for Grid failure, this feature when enabled send a email when triggered.
- Battery monitor selection
- Has DC system feature is enabled if a system has DC charging or discharging sources connected to the battery bank like an Alternator or DC generator.





Generator Start and Stop

You can setup start stop functionality for generators using the relay on the GX device (potential free contact)

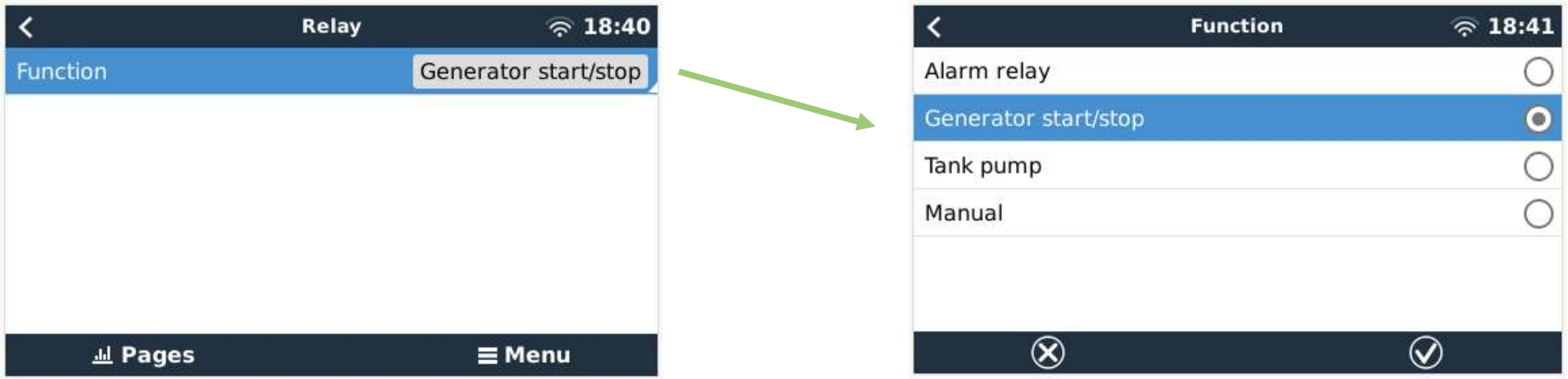
Conditions such as SOC can be defined that suits the user

Fantastic features are minimum runtime and quiet hours

Relay

Select the relay function the possible functions are

- Alarm relay
- Generator start/stop
- Tank pump



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