

# INSTALLER'S MANUAL

## AQ-LITH<sup>®</sup> EnergyBox or EnergyRack & Victron MultiPlus-II

This manual is valid for the following kits

SOL/VIC1R3M1	kit with VICTRON single-phase inverter retrofit 3kVA for single-phase grid, for 1 battery
SOL/VIC1R3T1	kit with VICTRON single-phase inverter retrofit 3kVA for three-phase grid, for 1 battery
SOL/VIC1R5M2	kit with VICTRON single-phase inverter retrofit 5kVA for single-phase grid, for 2 batteries
SOL/VIC1R5T2	kit with VICTRON single-phase inverter retrofit 5kVA for three-phase grid, for 2 batteries
SOL/VIC1H3M1	kit with VICTRON single-phase inverter hybrid 3kVA for single-phase grid, for 1 battery
SOL/VIC1H3T1	kit with VICTRON single-phase inverter hybrid 3kVA for three-phase grid, for 1 battery
SOL/VIC1H5M2	kit with VICTRON single-phase inverter hybrid 5kVA for single-phase grid, for 2 batteries
SOL/VIC1H5T2	kit with VICTRON single-phase inverter hybrid 5kVA for three-phase grid, for 2 batteries

Version 3.1  
(Jan 2023)

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### 1. Introduction

This first part of this manual is intended to assist in the installation of an AQ-LITH® battery storage system. It should only be installed by persons qualified in electricity and installation techniques.



The installer must always ensure that the contents of this manual comply with the installation in question and with the latest local legislation such as the AREI, etc.



This manual is for support purposes only. Taking a training course (approved by us) is necessary for the correct installation and commissioning of a battery storage system.

**Before installing a battery storage system, always check the conditions for a grid study and the resulting additional safety measures.**

## 2. General information

### 2.1 Battery Supplies contact information

- Nijverheidslaan +50/56, 8540 Deerlijk, Belgium
- Phone: +32 (0) 56 61 79 77
- Fax: +32 (0) 56 61 79 55
- Email: [info@batterysupplies.be](mailto:info@batterysupplies.be)
- Web: [www.batterysupplies.be](http://www.batterysupplies.be)

### 2.2 Type of manual

This manual is an **installation guide** intended to assist a licensed installer in setting up and commissioning a Battery Supplies battery storage system.



**It is necessary to read this manual thoroughly before installing or using any battery.**

### 2.3 Intended use

The EnergyBox (3-5-7kWh) and the EnergyRack module (5kWh) from Battery Supplies is a storage battery intended to store excess solar energy and use it later with the added option of ups function for a limited time.

The EnergyBox is not suitable for powering life support medical devices and applications. Modifications to this product may only be made with the written permission of Battery Supplies. Without such permission, the warranty will no longer apply. Battery Supplies will not be responsible in the event of injury or damage caused by such modifications.

Battery Supplies (EnergyBox) batteries should only be used with compatible inverters. If in any doubt contact Battery Supplies.

## 3. Safety

This section contains all the safety information that must be observed during the installation and use of a home battery. To avoid device damage or injury, this section should be read



carefully.



### 3.1 environmental requirements

- Do not expose the battery to temperatures above 50°C.
- Do not place the battery near external heat sources
- Do not expose the battery to moisture or liquids
- Do not expose the battery to corrosive gases or liquids
- Do not expose the battery to direct sunlight for extended periods of time
- Do not allow the power connectors to come into unwanted contact with conductive materials
- Place the battery in a safe environment away from children or animals
- Place the battery in an environment with minimal dust and dirt



**Failure to meet the environmental requirements may have a negative impact on the operation and life of the product.**

### 3.2 operating precautions

- Never remove the battery housing
- Never touch the battery with wet hands
- Do not drop or dent the battery.
- Never puncture the battery cells or battery housing
- Never place the battery in series
- Always respect the polarity of the power connectors on the battery
- Before installation, remove any jewelry or items that could cause a short circuit.
- Never short the power connectors
- Store the battery according to the guidelines in this manual
- Ensure proper and reliable grounding
- Disconnect the connection between inverter and battery and then disconnect the battery before servicing, installing or cleaning it.
- Continued use of a damaged battery may cause serious injury
- The battery should never be covered, painted,...
- Never connect the solar panels directly to the battery

- Never connect the battery directly to the AC mains.

### 3.3 emergencies

#### Turn off the power supply and battery in an emergency!

- Wet batteries: if the battery is wet or submerged , do not let people near the battery. Contact Battery Supplies for further steps.
- Fire: **never extinguish with water!** Only use a dry powder extinguisher and if possible move the battery to a safe place.
- Leaking battery: if electrolyte leaks from the battery, avoid all contact with this leaking gas and/or liquid. If anyone did come in contact, take the following steps immediately:
  - o Eyes: immediately flush eyes with water for 15 min and seek medical attention.
  - o Skin: Rinse and wash touched skin with soap and water. Seek medical attention.
  - o Ingestion: try to vomit and seek medical attention.
  - o Antitoxin center phone number Belgium : 070 245 245
- Damaged battery: damaged batteries are extremely dangerous and should be handled with care. These should no longer be used. Contact Battery Supplies for further steps.

### 3.4 Personal Protective Equipment (PPE)

It is recommended to wear the protective equipment below when working with a battery storage system.




- Insulated gloves
- Safety glasses
- Safety Shoes

### 4. Overview of components




This first part of "component overview" describes the products provided in the kit. A second part describes the items that must be provided by you as the installer yourself. This information should help you get an overview of the additional costs you will have to incur to complete the installation. Separate manuals can always be found with the listed products.

#### 4.1 parts list of kit

The parts lists below are for the retrofit kits. For the hybrid kits, the Multiplus II is replaced by the Easysolar II inverter.


	BATnr	article	function	SOL/VIC1R3M1	SOL/VIC1R3T1	SOL/VIC1R5M2	SOL/VIC1R5M2
	BAT/49148	Victron Multiplus II 3 kVA with built-in GX controller	charger/inverter	x1	x 1		
	BAT/49839	Victron Multiplus II 5 kVA with built-in GX controller	charger/inverter			x1	x1
	BAT/50854	Victron CT (current transformer)	current measurement from/to grid	x1		x1	



	BAT/49149	Carlo Gavazzi ET112	single-phase power meter for grid or PV	x1		x1	
	BAT/50856	Carlo Gavazzi ET340	three-phase power meter for grid or PV		x2		x2
	BAT/49630	Victron interface from RS485 to USB	connection between Carlo Gavazzi and Victron	x1	x2	x1	x2
	BAT/50857	USB HUB	4 leg USB hub for multiple energy meters		x1		x1
	BAT/50765	comm.cable between Victron and battery	comm.cable with specific pinconfig and sometimes termination resistor	x1	x1	x1	x1

	BAT/50259	bus bar 150A 4-pole	connection between 2 batteries and inverter			x1	x1
	BAT/50742	bus bar and fuse holder 6 MEGA fuse	connection between 2 batteries and inverter			x1	x1
	BAT/50217	MEGA fuse 125A	fuse			x3	x3
	BAT/50351	cable 35mm2 red	connection between inverter and bus bar			x1m	x1m
	BAT/50352	cable 35 mm2 black	connection between inverter and bus bar			x1m	x1m
	BAT/18741	cable eye 35mm2	to be mounted on inverter- busbar connectors			x4	x4
	BAT/50256	patch cable CAT6A 1.5m	comm cable between 2 batteries			x1	x1

### 4.2 Provided by installer (not in KIT)

Victron Energy Interface MK3-USB	Interface to connect your PC to the Multiplus-II via the VE.bus (one-time purchase by installer) <b>Only needed when no internet available.</b>	
Extension cable Ct's	The stranded cable is 1m long and may be extended.	Use cable with a section of at least 0.75mm and must be "shielded"
UTP cable (optional)	Needed to extend the data cable if the distance between energy meter and Multiplus-II-GX is greater than 5m.	You may extend the data cable by <b>up to 100m maximum.</b>
Wiring AC side	To connect all devices according to the diagrams.	Use the correct cross sections in accordance with local laws.
AC side circuit breakers	All circuit breakers on the AC side of the arrangement are not provided in the kit.	



The local situation has a major influence on the necessary extra material (cabling, extra power cabinet,...) and thus on the installation cost. Take this into account when preparing the total price.

## 5. Transport and storage

- Transporting large quantities of lithium is not permitted without reason. Be sure to check local laws.
- When transporting the battery, expose it as little as possible to: vibration, moisture, direct sunlight and external impacts.
- For long-term storage, charge the EnergyBox every six months to an SOC of more than 60 percent.

- Storage temperature one month: : between -20 and 25°C.
- Storage temperature one year: between 0 and 25°C.
- Storage humidity: relative humidity between 45-85%
- Make sure the battery is off during storage (by pressing the button for 5 seconds until the LEDs are off)

## 6. Installing the battery and inverter

The AQ-LITH® EnergyBox is to be used indoors only. To ensure long life, the battery should be placed out of the sun and frost-free. A **dry indoor area** with a constant temperature is always the best place to place a lithium battery.

The MultiPlus-II GX should be installed in a dry and well ventilated room (IP21) and there should be at least 10 cm free space around the device. The MultiPlus-II GX should not be placed directly above the batteries. However, the distance between the batteries and the MultiPlus should be kept as small as possible so that cable losses would be minimal. The length of data cables, Ethernet connection, ... should also be taken into account. Also take into account any ventilation conductors when installing the Victron.

## 7. Connection diagrams: data and power cables

This section provides some diagrams that are needed when connecting this battery storage system. **Be sure to check if a grid study (or the additional safety measures associated with it) are needed. These are not included in the diagram!**

These diagrams serve as an overview to clearly see the scope of an installation. Before you start connecting, you should carefully read the safety instructions of the battery and the Victron Multiplus-II-GX.



Attached diagrams are principle diagrams. The installer is responsible for choosing the correct safety components according to local application(s) and current legislation. **Check whether a mains study/disconnection relay is mandatory! (vreg)**



No circuit breakers should be installed with a rated current other than that indicated on the diagrams.



If the PV inverter is single-phase, you are **required by law** to place the battery on the same phase as the PV system.

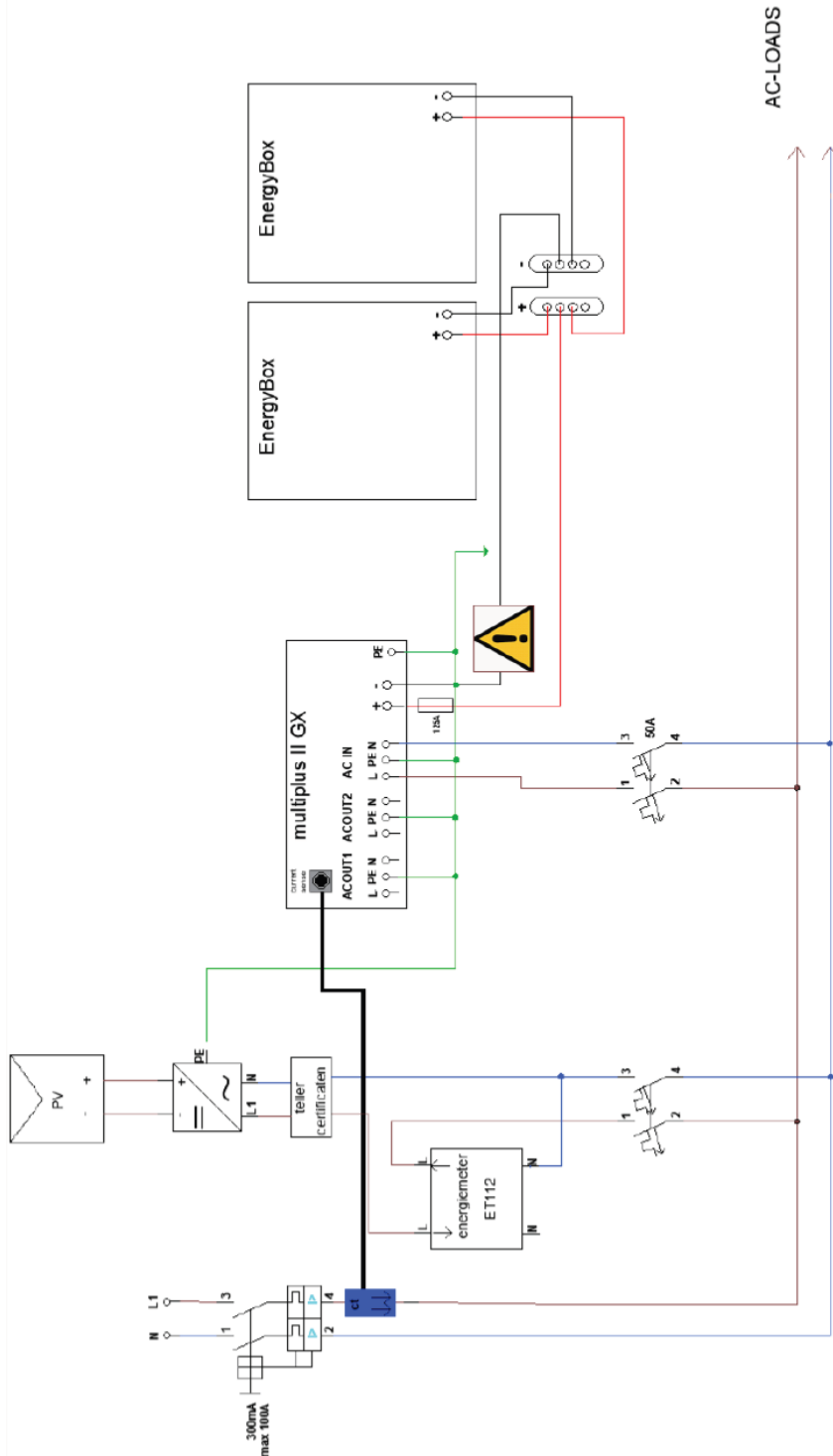


Place the blue CT on the **same phase** as the Victron Multiplus II GX! **Min terminal battery must be connected to ground!!!**



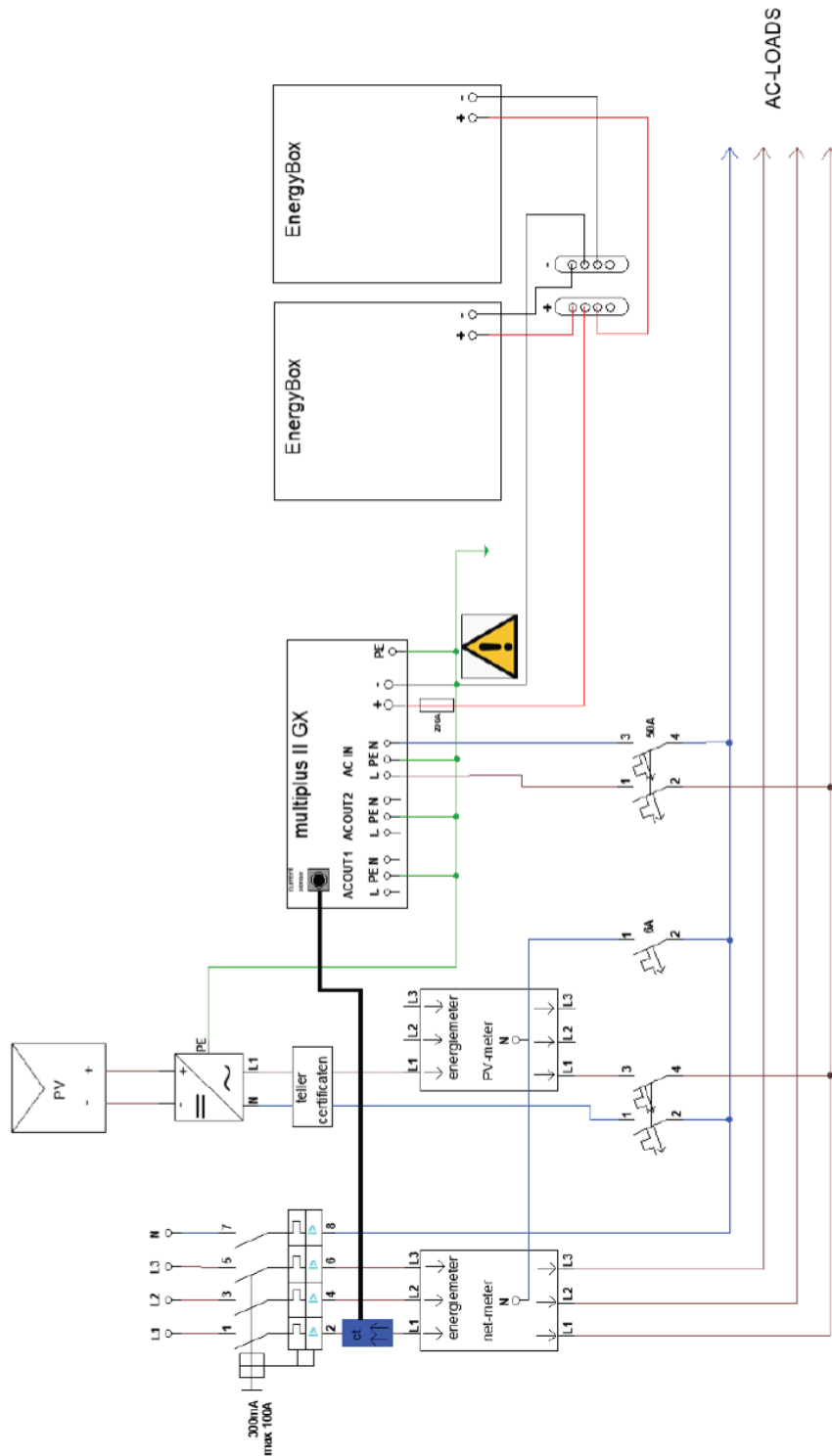
The diagrams can also be used for a three-phase grid 3x230V. Keep in mind that the absolute values of the power measurements are no longer correct but deviate by a factor of 1.7. This is not a major problem for the grid measurement: the Victron will always aim for zero consumption or zero injection. Then this deviation does not matter much. So the absolute value of the grid measurement and PV measurement does deviate. To avoid confusion, it is better not to mount the PV meter and to get the yields from PV through the PV inverter.

Schedule: single-phase grid, 1 or optionally 2 batteries.



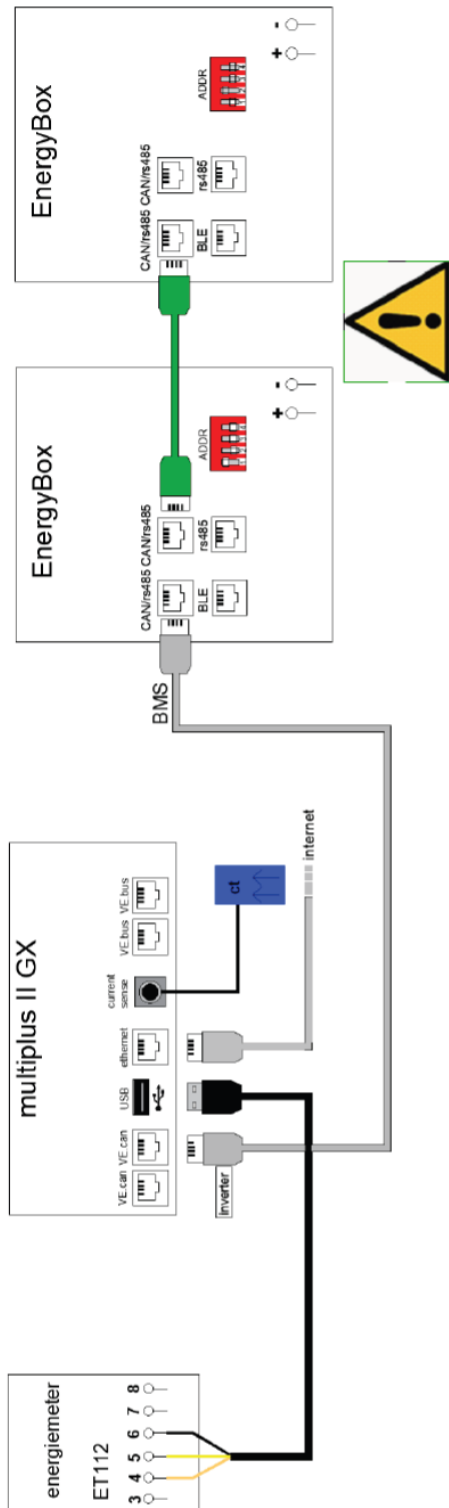
Note : the 32A or 50A automatic fuse on the Multiplus II can also be replaced with 25A type D. Connect the Victron to phase L1. In the hybrid solution, the PV panels are connected to the MPPT connection of the Easysolar II (not drawn)

Schedule: three-phase grid, 1 or optionally 2 batteries.



Note : the 32A or 50A automatic fuse on the Multiplus II can also be replaced with 25A type D. Connect the Victron to phase L1. In the hybrid solution, the PV panels are connected to the MPPT connection of the Easysolar II (not drawn)

Diagram: Data cables (single-phase) for 1 or optionally 2 batteries

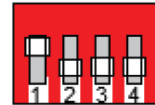


Only the supplied data cable labeled (bms/inverter) should be used to connect the battery to the inverter as shown on the diagram. Insert the plug labeled "BMS" into the battery, the plug labeled "inverter" into the inverter. Connect the cable to the power meter FIRST, only then plug it into the Victron, otherwise you risk damage. Yellow wire = terminal 5, orange wire = terminal 4

The Victron comes standard with a temperature sensor for lead-acid batteries, do NOT install this sensor. The temperature is reported automatically.

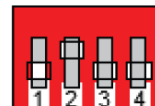
For two batteries: the master is the battery connected to the Victron, the DIPswitch must be set to 1000.

ADDR



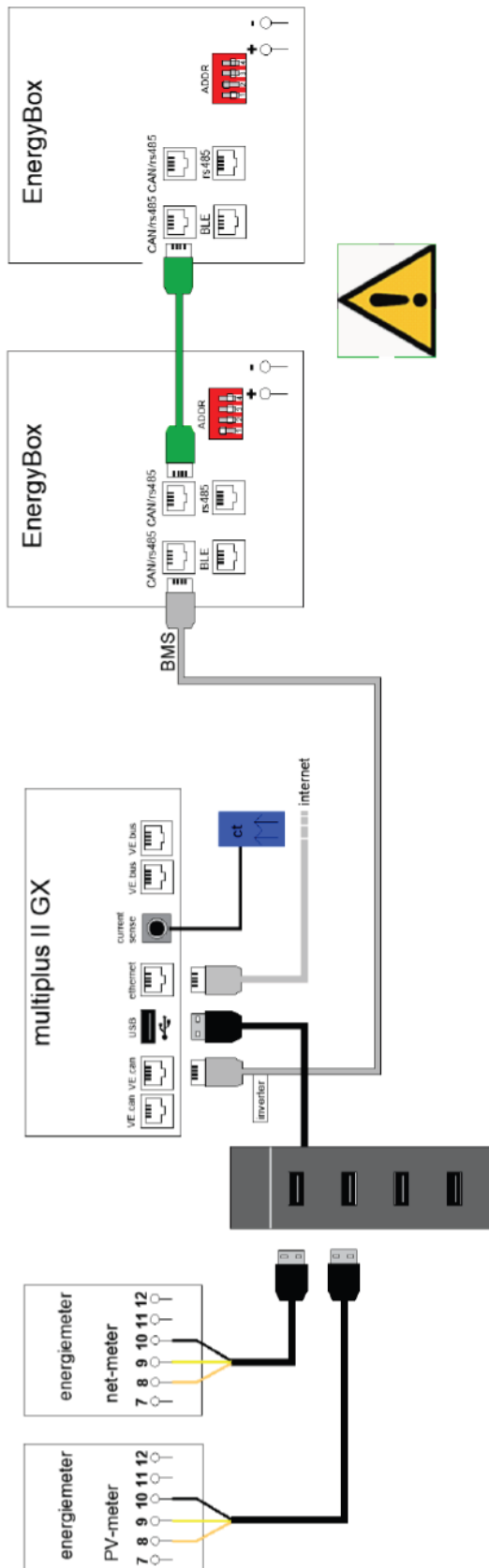
The slave (battery not connected to the Victron) must be set to 0100.

ADDR





### Schema: 3kVA Data kabels (driefasig)

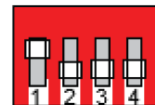


Only the supplied data cable labeled (bms/inverter) should be used to connect the battery to the inverter as shown on the diagram. Insert the plug labeled "BMS" into the battery, the plug labeled "inverter" into the inverter. Connect the cable to the power meter FIRST, only then plug it into the Victron, otherwise you risk damage. Yellow wire = terminal 9, orange wire = terminal 8

The Victron comes standard with a temperature sensor for lead-acid batteries, do NOT install this sensor. The temperature is reported automatically.

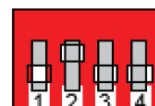
For two batteries: the master is the battery connected to the Victron, the DIPswitch must be set to 1000.

ADDR



The slave (battery not connected to the Victron) must be set to 0100.

ADDR



### 8. Technical Data Sheet: Victron MultiPlus-II (GX)

MultiPlus-II GX	24/3000/70-32	48/3000/35-32	48/5000/70-50
PowerControl & PowerAssist	Yes		
Transfer switch	32 A		50 A
Maximum AC input current	32 A		50 A
Auxiliary output	Yes (32 A)		
<b>INVERTER</b>			
DC Input voltage range	19 – 33 V		38 – 66 V
Output	Output voltage: 230 VAC ± 2 % Frequency: 50 Hz ± 0,1 % (1)		
Cont. output power at 25 °C (3)	3000 VA		5000 VA
Cont. output power at 25 °C	2400 W		4000 W
Cont. output power at 40 °C	2200 W		3700 W
Cont. output power at 65 °C	1700 W		3000 W
Maximum apparent feed-in power	3000 VA		5000 VA
Peak power	5500 W		9000 W
Maximum efficiency	94 %	95 %	96 %
Zero load power	13 W	11 W	18 W
Zero load power in AES mode	9 W	7 W	12 W
Zero load power in Search mode	3 W	2 W	2 W
<b>CHARGER</b>			
AC Input	Input voltage range: 187-265 VAC Input frequency: 45 – 65 Hz		
Charge voltage 'absorption'	28,8 V	57,6 V	
Charge voltage 'float'	27,6 V	55,2 V	
Storage mode	26,4 V	52,8 V	
Maximum battery charge current (4)	70 A	35 A	70 A
Battery temperature sensor	Yes		
<b>GENERAL</b>			
Interfaces	BMS-Can, USB, Ethernet, VE.Direct, Wi-Fi		
External AC current sensor (optional)	50 A	100 A	
Programmable relay (5)	Yes		
Protection (2)	a – g		
VE.Bus communication port	For parallel and three phase operation, remote monitoring and system integration		
General purpose com. port	Yes, 2x		
Remote on-off	Yes		
Operating temperature range	-40 to +65 °C (fan assisted cooling)		
Humidity (non-condensing)	max 95 %		
<b>ENCLOSURE</b>			
Material & Colour	Steel, blue RAL 5012		
Protection category	IP22		
Battery-connection	M8 bolts		
230 V AC-connection	Screw terminals 13 mm <sup>2</sup> (6 AWG)		
Weight	19 kg	30 kg	
Dimensions (hxwx d) mm	506 x 275 x 147		565 x 323 x 148
<b>STANDARDS</b>			
Safety	EN-IEC 60335-1, EN-IEC 60335-2-29, EN-IEC 62109-1, EN-IEC 62109-2		
Emission, Immunity	EN 55014-1, EN 55014-2 EN-IEC 61000-3-2, EN-IEC 61000-3-3 IEC 61000-6-1, IEC 61000-6-2, IEC 61000-6-3		
Uninterruptible power supply	IEC 62040-1		
Anti-islanding	Please consult the certificates on our website.		
1) Can be adjusted to 60 Hz	3) Non-linear load, crest factor 3:1		
2) Protection key:	4) At 25 °C ambient		
a) output short circuit	5) Programmable relay which can be set for general alarm, DC under voltage or genset start/stop function.		
b) overload	AC rating: 230 V / 4 A, DC rating: 4 A up to 35 VDC and 1 A up to 60 VDC		
c) battery voltage too high			
d) battery voltage too low			
e) temperature too high			
f) 230 VAC on inverter output			
g) input voltage ripple too high			

### 9. Data for premium application

This chapter serves to provide you, the installer, with the correct information needed to apply for the home battery premium from the **Flemish government**. For all provisions related to this premium: [www.energiesparen.be/thuisbatterij](http://www.energiesparen.be/thuisbatterij).

- Battery system brand : **AQ-LITH® EnergyBox**
- Actual capacity:
  - EnergyBox 3 kWh : actual capacity at 80%DOD = **2.4 kWh**
  - EnergyBox 5 kWh : actual capacity at 80%DOD = **4.1 kWh**
  - EnergyBox 7 kWh : actual capacity at 80%DOD = **5.6 kWh**
- Type or technology battery : **Li-ion (LFP)**
- Method of connection to the PV inverter: **AC**
- Power (kW): Multiplus II 48/3000/35-32 : discharge power **2.4 kW** at 25°C
- The installed electricity storage plant has a hybrid inverter for both a solar-based production plant and electricity storage plant : **NO**
- The installed system with the Victron MultiplusII and the Venus-GX controller has a **two-way communication interface** and can communicate digitally and in two directions (incoming and outgoing) with external parties such as a grid operator, an energy supplier,... So the battery system can be controlled externally and communicate back itself about certain parameters such as e.g. the state of charge (SoC) of the battery. In this way, the battery system is ready for the future and can eventually provide energy or flexibility services to the grid operator or other parties:  
**YES**

## 10. Connecting the installation

**Please check the packaging of the delivered products before unpacking!** It is possible that the packaging has been damaged during transport. If this is the case, do not remove the battery from the box and contact Battery Supplies immediately.

Using the diagrams found in this chapter, you will be able to connect all devices and meters correctly.

### 1.1 hanging and installing appliances

The **Victron Multiplus-II (GX)** should be hung on the wall. It is important to maintain at least 15cm of free space on all sides of this unit so that the ventilation of the unit is not impeded. Never hang the inverters directly above the battery. Ensure that the circuit breakers protecting the inverters are not less than shown on the diagrams in Part 1. Hang the inverter in a **well-ventilated** area.

The **EnergyBox** should best be in a dry place with constant temperature (20-25°C) and out of the sun. Excessively high or low temperatures may adversely affect battery life and operation.

Try to minimize the distance between the battery and inverter to minimize any cable losses.

The first **energy meter** is placed just after the pv inverter. First connect the cables to the energy meter and only then plug in the Victron. The CT (blue) is placed just after the digital counter just like the second energy meter (these already serve to enable phase compensation). Hang the CT only **after** the connector of the CT is connected to the Multiplus II GX. . **It must be on the same phase as the Victron Multiplus II GX.**

Also, all the circuit breakers can also be provided with which the inverter can later be connected to the grid. Do not connect the inverter to the grid yet!

### 1.2 Connecting the devices.

Connecting the various devices



When connecting the installation, the sequence (given in the roadmap) is REQUIRED to be followed. Failure to do so correctly may result in damage to the devices.

#### 1. Connecting the grounding cables

The Victron Multiplus II GX must be grounded at the casing with the appropriate cable cross-section. The EnergyBox itself must also be grounded (at the bottom left of the battery). **Do not forget to connect the minus terminal of the battery to ground as well!**

### 2. Connecting DC cables

**Make sure the DC switches are off from the battery!** (Tip: check that there is no voltage on the DC cables with a multimeter as well as the polarity) First the ground (black cables) of the Multiplus are connected to the battery. Only then may the red cable be connected to the plus terminals of the battery and the Victron.

**Make sure all nuts are tightened properly to a torque of 14Nm.** After all, very large dc currents are involved.

Make sure the cables between inverter or bus bar and batteries are all the same length. If not, the internal resistance is not equal and the batteries will charge or discharge unevenly. See also additional tips at <https://www.victronenergy.com/upload/documents/Wiring-Unlimited-EN.pdf>

### 3. Connecting the AC-in input

Connect the inverter through the AC-in jack as shown on the diagram. Do not turn on the circuit breaker yet.

### 4. Installing and connecting the CT (current transformer).

Insert the CT according to the diagram provided. **Make sure the CT is placed in the correct direction and on the same phase as the Victron.**

### 5. Connecting the data cables

Now all the data cables may be connected according to the diagram. So this is about the power meters, the CT and the internet cable.



Placing and connecting CTs requires some knowledge and experience. Incorrect placement/removal of these CTs can cause damage to the CTs.

**CTs always short out when assembling!!!**

### 6. Connecting the MPPT if applicable

### 1.3 startup

#### Preparation : installation of appropriate programs

First, install the necessary software such as VE configuration tools and Victron connect

Go to the website via Laptop: <https://vrm.victronenergy.com/>

The program below must also be installed on the PC.

VeConfiguration tools: <https://www.victronenergy.com/support-and-downloads/software>

You may need to create an account here the first time. This account can be used again later for other installations and will give you access to all installations you have installed. At the end of this manual you will find more information about giving the end customer access to the installation in question.

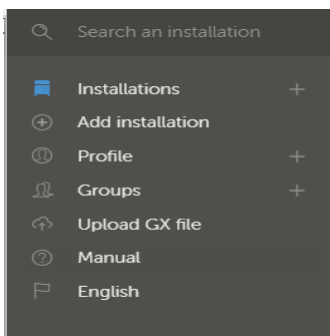
#### 1. Startup

To turn on the Victron, first close the battery main switch. Then turn on the Victron via the main switch right at the bottom of the unit to position I. Check the internet connection by lighting the green-orange status LEDs on the Victron's Ethernet port.

Only then may any MPPT be turned on

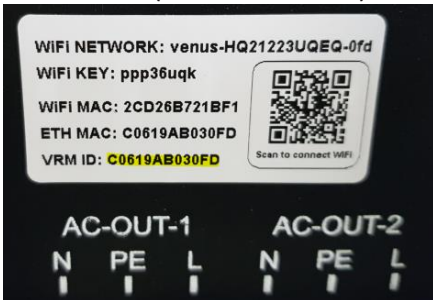
#### 2. Creation of the installation

After creating your account, the installation can be added to the VRM portal. To do so, click on "add installation."



Then choose the Multiplus II GX by clicking on the icon pictured above.

The requested VRM ID (indicated in yellow below) can be found on the bottom of the Victron on a sticker (under the cover) or with the manual.



Next, give the installation an appropriate name. It is best to choose the name of your customer followed by your own name as installer. This makes it easier for us to link the installation to the uiste installer during a later inspection.

MultiPlus II GX

Enter the VRM Portal ID below. Please make sure that:

- a) Your installation is connected to the internet
- b) Or in case of an offline installation: upload your GX file first using the upload function [here](#)

Add installation ID:

Add installation name:


The VRM Portal ID, for example be300d83fff4 can be found at Menu > Settings > VRM online portal.  
For more information see our [Troubleshooting to VRM connectivity GX](#) or our [VRM Manual](#)

[Request access](#)

Complete the addition by clicking "Request access."

### 3. Check the setup

Go to the VRM portal, on the left column click on Remote Console. Press 'esc' and then the

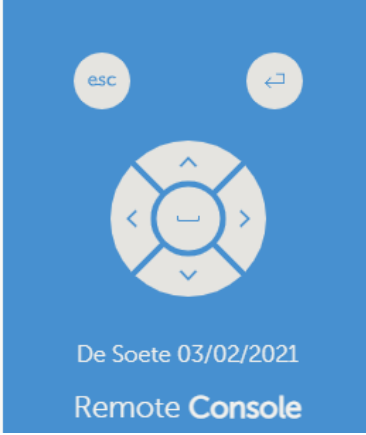
enter key  Now check that you see all components coming in.

Battery : starts with BS followed by the capacity of one battery

If you have a single-phase or three-phase meter installed, you will also see it listed under grid meter

If not, check the setup

Apparatenlijst		10:21
Grid meter	-1W	>
MultiPlus-II 48/3000/35-32	Bulk	>
PV inverter on input 1	10W	>
Berichten		>
Instellingen		>

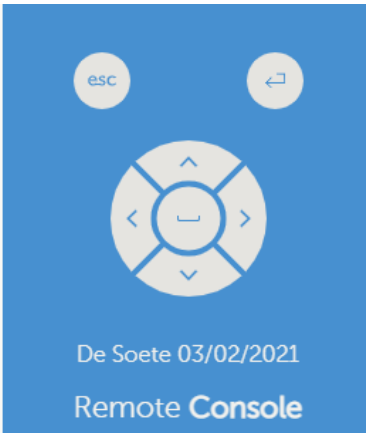


### 4. settings

Go to settings

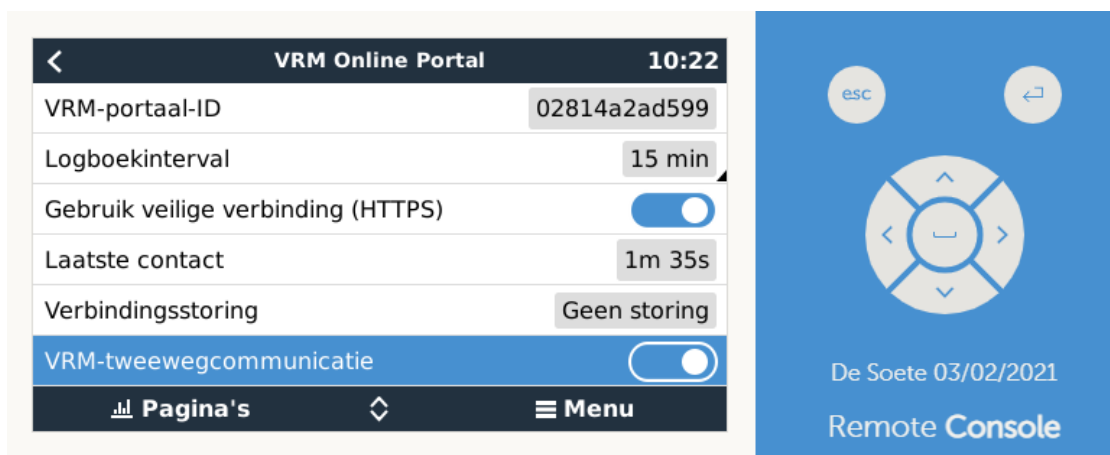
Move down using the arrows until you see "VRM online Portal" and click it.

Instellingen		10:21
Datum & Tijd		>
Console op afstand		>
Systeemset-up		>
DVCC		>
Weergave & taal		>
VRM Online Portal		>





Next, scroll down again with the arrows until you see "VRM two-way communication" and click the switch so that it turns blue. With this, you have activated two-way communication.



Then the remote console may be closed by clicking the white cross on the top right of the remote console.

### 5. Update from the GX

Go back to remote control ( esc and enter)  
Go to settings - firmware - online updates  
check for updates ( last line)



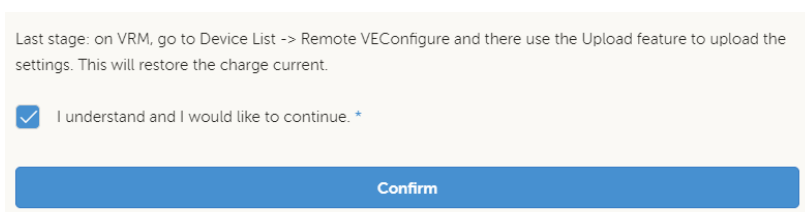
If updates are available, press "press for update to v...  
Wait until the GX is updated.  
Leave the 'autom update' choice on 'check only'.

### 6. victron inverter firmware update

To do this, go to "Device list" in the left column. Click on "Firmware Update.

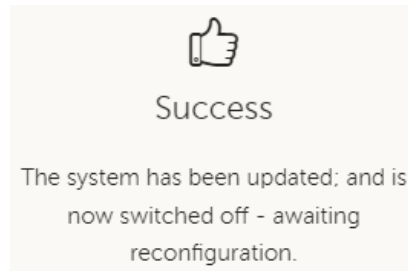
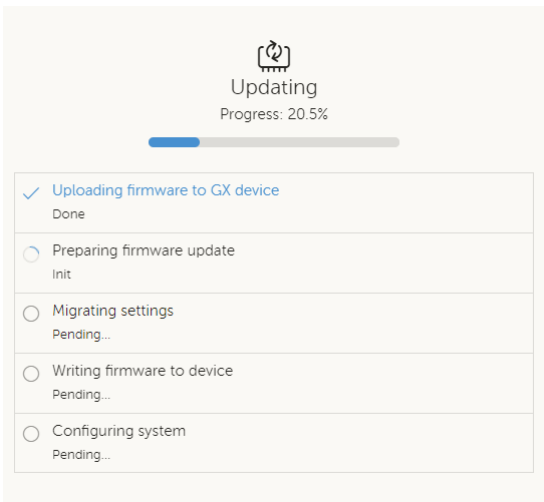
Next, click on "update device"

Some warnings will now appear as shown below. You may confirm each of these by clicking on the check mark and then clicking on "Confirm".



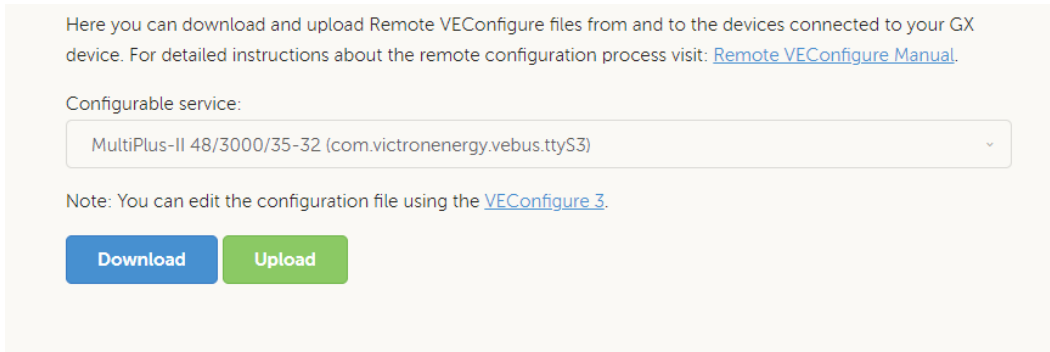
After this is done, the screen below will appear. Updating the firmware may take several minutes. **Do not close your internet browser during this update!**

After the update, the Victron will reboot and be available again on the VRM portal after a few minutes. When the update is successful, you will see the image below appear on your screen.

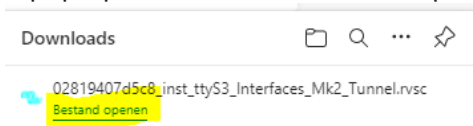


### 7. Downloading original settings from inverter to PC

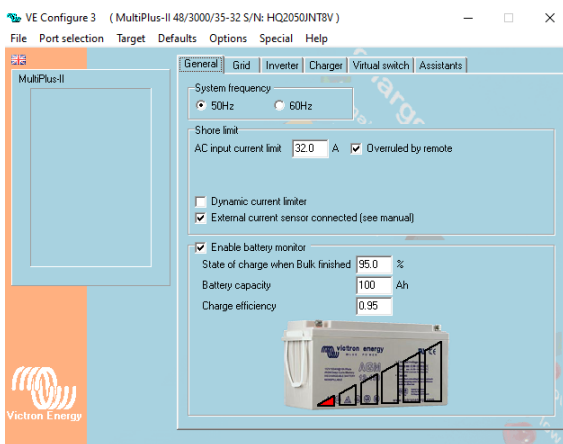
Then click on "device list" again in the left column and now choose the "remote VE configure" option. This will reveal the screen below. Click on the blue "download" box.



A pop-up window will now come up. Now open the downloaded file by double clicking on it.



This will automatically open the file in Victron's VE config program. You will see the screen below.



The use of an external CT is mandatory according to the Belgian Synergrid directive. If you do not wish to use an external CT because it is not required for the application, you can omit the CT but then the box 'external current sensor connected' must be unchecked.

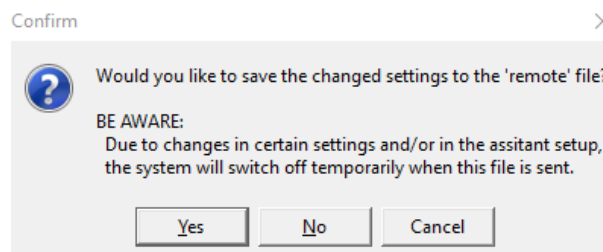
8. Now write the correct settings file on these settings  
Then go to File-> Load settings in the upper left corner.

The files with the correct settings can be found on our website :  
[www.batterysupplies.be/victron](http://www.batterysupplies.be/victron)



Choose the correct file for your installation otherwise battery damage may occur. So choose the file named as the total capacity of the battery(s).

Then close the program by clicking on the cross in the upper right corner. This will display the screen below.




Select "Yes". You may ignore any messages about updates. Now the settings are saved on the file on your computer.

9. Write the adjusted settings back to Victron

Then again go to left column under 'device list' to 'remote VE configure' and now click 'Upload'. Select 'select file' and choose the file you just downloaded. The correct settings will now be loaded into the Victron.

10. Manual adjustments through the VRM portal  
Using the left column, go to 'remote console'

1. Open the menu by clicking , then go to settings/settings  
It is possible to set this screen in Dutch in the "Display & Language" menu option.
2. Arrow back to "Date & Time." Then 'time zone', choose 'Europe' and select 'Romance standard time'
3. Left arrow to "System Setup": click 'ACinput1' on 'grid'

System name	(choose your own)
AC Input 1	Grid


AC Input 2	Not Available
Monitor for grid failure	Disabled
Battery monitor	Automatic
Has DC System	<input type="checkbox"/>



If an MPPT is present, the DC system will automatically jump to "on" at contact.

4. Left arrow back to "DVCC" . 'DVCC'is enabled  .

Limit charge current	<input checked="" type="checkbox"/> 3kWh: 30A 5 and 7 kWh: 50A
Limit managed battery charge voltage	<input checked="" type="checkbox"/>
Maximum charge voltage	56.4 V
SVS , STS, SCS	<input type="checkbox"/> (all turn off)

5. Left arrow back, to "ESS" option:

Fashion	Optimized (with BatteryLife)
Grid metering	External meter
Inverter AC output in use	<input type="checkbox"/> If the UPS function is redundant. <input checked="" type="checkbox"/> If the UPS function is desired (AC OUT 1 connected).
Multiphase regulation	Total of all phases
Minimum SOC (unless grid fails).	20%
Limit charge power	<input checked="" type="checkbox"/>
Maximum charge power 	AQ-Lith EnergyBox 3kWh: - recommended: 1500W - maximum: 2500W AQ-Lith EnergyBox 5 & 7kWh: - recommended: 2000W

	- maximum: 3000W
Limit inverter power	
Maximum inverter power 	AQ-Lith EnergyBox 3kWh: - recommended: 1500W - maximum: 2500W AQ-Lith EnergyBox 5 & 7kWh: - recommended: 2000W - maximum: 3000W
grid set point	50W (standard)

Under "scheduled charging" -> choose "schedule 1" and click Enable.

- 1) Choose a weekday of your choice (best day when no one is home)
- 2) Choose a start time of your choice (best 10 a.m.)
- 3) Select minimum time of 6 hours
- 4) Stop on soc should NOT be checked.



Failure to set scheduled charging will adversely affect battery life and capacity. This may void the warranty.

Left arrow back to "Energy meters" option:

You will see two energy meters with different serial numbers on the screen. The serial number is located on the back of the meter. If you do not have this number, you can find out the correct function by taking off the automatic fuse of the solar panels. The counter that is now no longer supplying power is this one from the solar panels

We distinguish between the meter that measures the electricity grid (the "Grid meter") and the meter connected with the PV inverter(s) (the "PV meter"). Configure the meters respectively with the parameters below:

Meter 1 (Grid meter):

Role	Grid Meter
Phase type	Multi phase

Meter 2 (PV meter):

- For monophasic inverter and when using CT

Role	PV inverter
------	-------------

Position	AC OUT
Phase type	single-phase inverter

- With three-phase inverter and when using CT

Role	PV inverter
Position	AC INPUT 1
Phase type	multiphase inverter

Beware, the values are not quite right on the screen, you cannot add them up. This is because the values of the CT and the digital counter interfere with each other. You can solve this by removing the CT, keep in mind that you then no longer work according to the Synergrid directive.

- without CT

Role	PV inverter
Position	AC INPUT 1
Phase type	Monophase or multiphase inverter

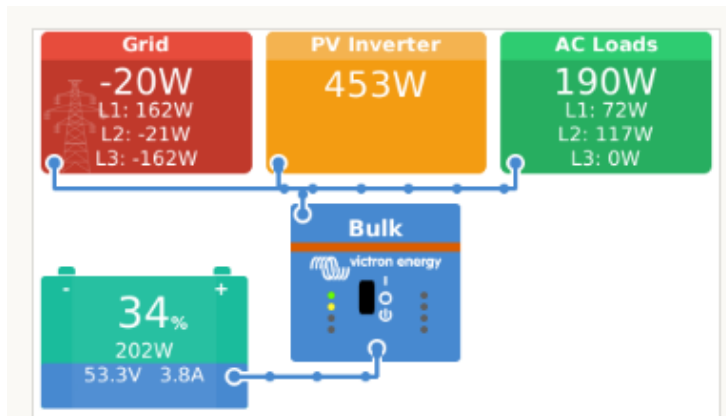
Check carefully if the correct serial numbers match the function of the meter. If there is an error in this, the system will operate incorrectly.

To do this, go to the home screen of the remote control ( press ESC)

- turn off the PV's automatic fuse, the output on the screen should now drop out (there may be a very small consumption )
- all currents of the grid must be positive, if not there are of these phases the sense is wrong and must be reversed
- turn the PV's automatic fuse back on. The currents on the PV inverter should always be positive

Check operation, the battery should charge when there is injection (negative grid), should discharge when there is sufficient offtake (positive grid)





Chances are that the capacity of the battery is different from the actual capacity. This is normal at startup and will smooth out over time (with full charges). It may be interesting to first fully charge the battery at startup so that it jumps to 100% forcibly.

### 11. Inviting the customer to the application on the smartphone

On the VRM portal, other users can be added so that the customer can follow the installation via the "Victron Connect" app. Follow the steps below in the VRM portal to add the customer:

- Go to left column "Settings" -> "users"
- At the bottom in blue, click on: "invite user" and add the customer via his email address

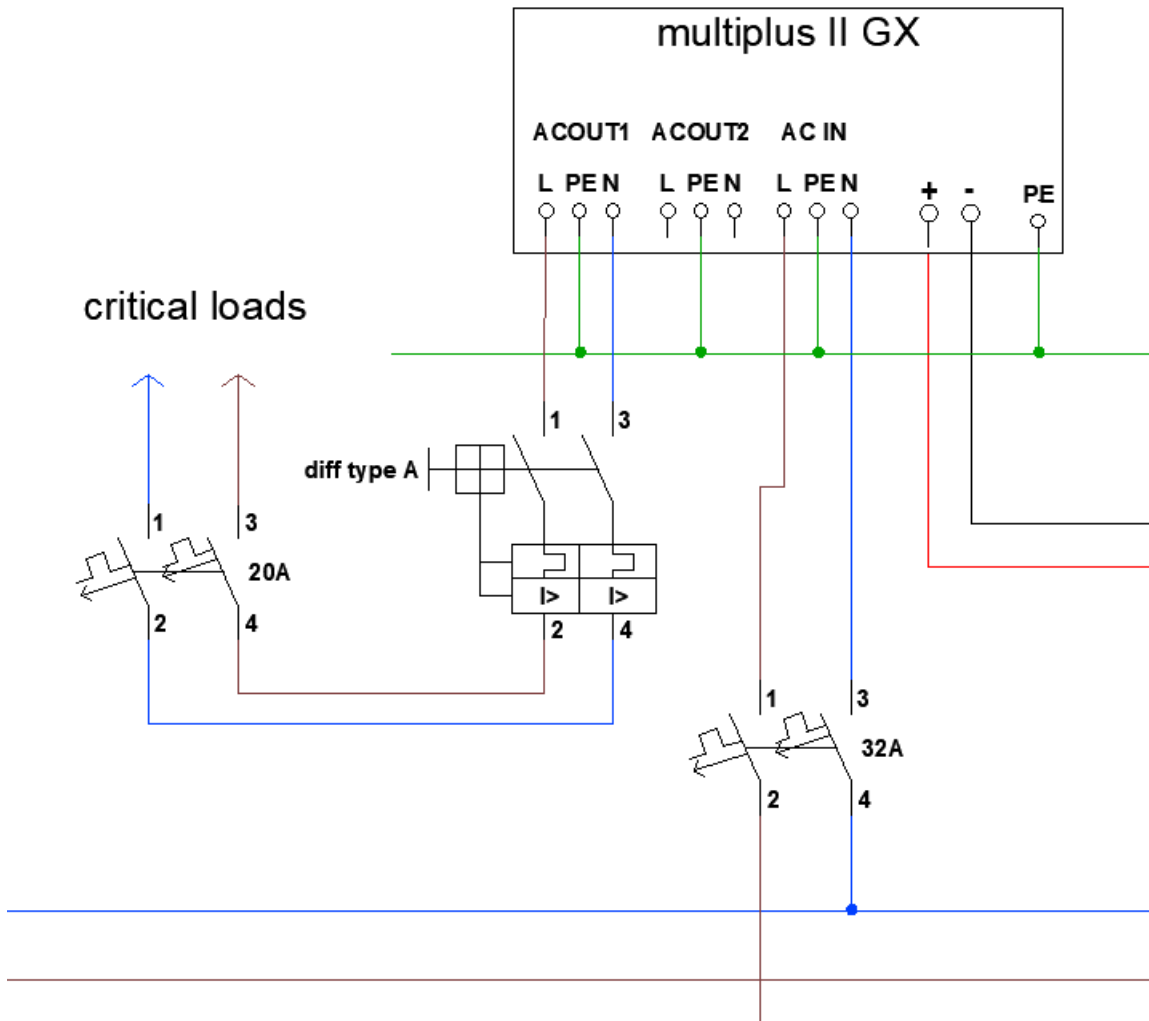


**NEVER** give your customer "full control" otherwise they may make adjustments that will counteract the operation of the unit or even damage inverters and battery.

Next, the newspaper will be asked to create its own account. If it then downloads the application on its smartphone and logs in, the customer will be able to follow the installation.

### 11. UPS function

The victron Multiplus II can supply power to some circuits in case of an electricity failure. These circuits must be connected to the output of the Multiplus itself. Make sure that the maximum load of these circuits does not exceed the maximum power of the inverter.



### 12. FAQ

### **How do I know if my CTs are measuring in the right direction?**

Switch off the PV inverter so that there is no more production. The grid measurement values should then be positive numbers (positive=take from the grid, negative=injection into the grid). If negative values can be read on a phase after turning off the PV inverter, this CT must be turned up.

### **Is my PV meter reading correctly?**

When there is output from the PV panels a positive value should be read. If the meter is transmitting negative power at that time, it should be reversed.

### **My battery only wants to charge and not discharge?**

Make sure all buttons at the bottom of the Victrons are set to position 1 and not position 2. In position 2, the Victron will only serve as a charger and not as an inverter.

### **My battery won't discharge or charge?**

The battery must be charged when it is first put into service. In the VRM portal under remote control, select ESS mode: Keep batteries charged.

Hold this for several hours and then reset the setting to optimized with batterylife.

### **The battery (LEDs) do not turn on?**

When pushing the battery start button, no lights come on.

- 1) Is the battery main switch on?
- 2) Press the "wake-up" button for 3-6 seconds
- 3) Consult Battery Supplies if after this there is still no light on and the battery output voltage remains zero.

### **Battery charging problem (red LED).**

- 1) Disconnect the Charger from the battery and check the voltage of the battery.
- 2) If the voltage is between 50 and 57.6 V, reconnect the charger and restart
- 3) If the product still cannot be charged: turn off the battery and contact Battery Supplies.

### **Battery discharge problem (red LED)**

- 1) Disconnect the Charger from the battery and check the voltage of the battery.
- 2) If the voltage across the battery is below 44 V: charge the battery in standby mode for a period of time.

- 3) If the voltage exceeds 48V and the battery still cannot discharge: turn off the battery and inverter and contact Battery Supplies.

### Remote system reboot

When an installation reacts strangely or has crashed, the installation can be rebooted from the VRM portal. To do this, go within the VRM portal to remote console-> settings -> general -> and choose REBOOT. It takes a while before a connection to the Victron can be established again (max 10 min).

### Error message 'AC-in not available '

In the VRM portal, go to remote console -> settings-> system setup-> and under ac-input 1, choose grid.

### My battery only discharges to 50-60-70-... percent?

This is part of the battery life algorithm that aims to maximize the life of your battery. The goal is to keep the battery at a higher charge level during the winter months as this is beneficial for cell life.

As a result, the battery is more likely to work between 70-90 percent SOC in winter instead of between 20-40 percent. So it does the same amount of work but in a regime much more favorable to the lithium cells incorporated in the battery.

For more info: 6. Controlling depth of discharge (victronenergy.com)

### I regularly get error message 'high DC ripple ' on VRM portal

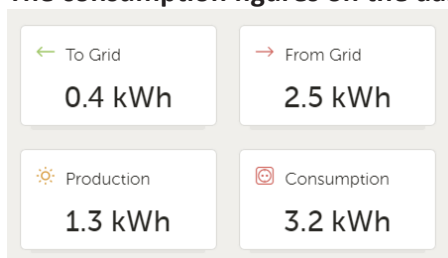
This error message indicates voltage failures in the connection between battery and inverter. Usually this is due to a bad connection. Re-tighten all the nuts on the connection.

### Error message ground relay test failed error 11 #8"

The voltage between the N and ground is not correct

- Have you connected the phase and N correctly to the Victron. Turn these around
- Is the grounding resistance okay? Is the grounding connected properly

### The consumption figures on the dashboard are not correct



For three-phase systems, Victron will add up the consumption per phase. If we work with phase compensation, this will give a distorted picture because some phases inject and other phases decrease. These values are therefore not useful in three-phase systems.

### **Can I extend my CT (Current Transformer) cable?**

Yes, up to a maximum of 40m. The easiest way to do this is to purchase a shielded 3.5mm jack audio extension cable.

### **I don't see my net or PV meter in the remote console at the energy meters. (Carlo Cavazzi)**

Is the green light on the USB-RS485 interface flickering?

If yes: grid or PV meter is faulty and needs to be replaced.

If not: check connections of colored cables. See data cable diagram manual part 1. replace cable and interface.

### **Error #24 occurs with three-phase system**

Check that the N star point is indeed properly connected to the N terminal of each Victron.

Measure the voltage between the N connections of the Victrons, it should always be 0.

Measure the voltage of all phases with the N connection of the first Victron, they should always be 230V.

### **I can't find the remote console in the VRM**

On the PC, select the wifi network of the venus Victron itself. Password is on sticker

PC- go to 'command prompt'. Type 'IPconfig'. Copy the address after 'default gateway'

Open a browser and paste in the httpbar at the top the copied address. Now the remote console will open

Go to Settings - Remote Console

Down arrows, switch 'Enable on VRM' to ON, switch 'Enable on LAN' to ON

Update the firmware ( settings - firmware - online updates - check for updates)

### AQ-LITH® ENERGYBOX & ENERGYPACK HELPDESK BATTERY SUPPLIES NV

As of June 6, 2022, you, as an installer, can access our new help desk organized at our parent company TVH Parts NV.

**! Private individuals cannot contact us directly. Please use the helpdesk number only for you, the installer. !**

For all **technical questions at OFFER** (so not yet sold): Please contact Koen Bilcke of Battery Supplies via [koen.bilcke@batterysupplies.be](mailto:koen.bilcke@batterysupplies.be) or by phone via our general phone number +32 56 617 977

For all **technical questions DURING or AFTER installation:** problems, extra info etc Helpdesk tel +32 56 434 906 or [helpdesk.electronics@tvh.com](mailto:helpdesk.electronics@tvh.com). The helpdesk can solve some problems directly, if not they will transfer to an internal team of experts.

Hereby an overview of the possibilities for training and installation:

#### **AQ-LITH® ENERGYBOX Home Battery:** Training & Programming/Startup for Installers

-> there are 4 possibilities

- We can pre-program the inverter in advance. Then it is already 80 to 90% ready for use and you as installer can do the last bits yourself. This pre-programming costs € 75.00/inverter. If desired, do not forget to mention this service, when ordering.
- You can initially try booting the system. The installation instructions are well laid out for this. If this does not work, the following steps can still be requested.
- You install everything and we check and program everything remotely at the time. Best make appointment through the helpdesk so someone is available. This service is possible for € 150.00/installation.
- You install everything and afterwards we organize a video call where we program and check everything together. There is a chance that you will have to return to the installation if, for example, the meters are not correct. This service is available for € 150.00/installation. Of course, it is advisable to schedule an appointment in advance so someone of our staff will be available.
- On-site training is very time consuming and should be avoided as much as possible in these busy times. If this service is still requested, consider a minimum of 4 hours at € 75.00/h.

#### **AQ-LITH® ENERGYPACK Energy Storage for Agriculture, Industry, SME & Retail:** Installer training & system programming/startup always on site.

- National: Our services always start up the installation on site. This requires a minimum of 4 working hours at € 75.00/hour. Depending on the size of the installation, this can go up to 8 to 10 working hours.
- International: To be coordinated with Battery Supplies during quotation phase.