

INSTALLER'S MANUAL AQ-Lith EnergyRACK

Victron MultiPlus -II Three-phase Victron installation (3*5KVA)

installation guide part I for kit BAT/49848

PART 1

Version 2.0
(September 2021)

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1 Introduction

This first section of this manual is intended to assist you in installing an AQ-Lith three-phase battery storage system. It should only be installed by persons with a qualification in the field of electricity and installation techniques.



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



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



Be sure to refer to part 2 of the manual before starting to connect and start up an installation. You will receive part two with the purchase of your first installation.

The second part of the manual contains an extensive step-by-step plan for both connecting the installation and setting the various devices and parameters. Furthermore, the second part also contains an overview of the most common problems and their solutions.

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 contact details supplies

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

2.2 Type of manual

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



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

2.3 Intended use

The EnergyRack from Battery Supplies (30-46kWh) is a storage battery intended to store excess solar energy and use it later with the added possibility of UPS function for a limited time.

The EnergyRack is not suitable for powering life-supporting medical devices and applications. Changes to this product may only be made with the written permission of Battery Supplies. Without this permission, the warranty will no longer apply. Battery Supplies will not be responsible for injuries or damage caused by such modifications.

The batteries from Battery Supplies (Energybox /Energyrack) may only be used with compatible inverters. If in doubt, contact Battery Supplies.

3 Safety

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



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
- Do not allow the power connectors to come into contact with conductive materials
- Place the battery in a safe area away from children or animals
- Place the battery in an environment with a minimum amount of dust and dirt



Failure to comply with environmental requirements can have a negative impact on the operation and life of the product.

3.2 Operation Precautions

- Never remove the battery case
- Never touch the battery with wet hands
- Do not drop or crush the battery.
- Never pierce 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-circuit the power connectors
- Store the battery according to the guidelines in this manual
- Provide good and reliable grounding
- Disconnect the connection between inverter and battery and then switch off the battery before maintaining, installing or cleaning it.
- Continuing to use a damaged battery can 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 and battery in an emergency!

- Wet batteries: If the battery is wet or submerged, do not leave 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 someone has come into contact with you, take the following steps immediately:
 - o Eyes: Immediately flush eyes with water for 15 min and seek medical attention.
 - o Skin: Play and wash the touched skin with soap and water. Seek medical help.
 - o Ingestion: Try to vomit and seek medical attention.
- Damaged battery: Damaged batteries are extremely dangerous and should be handled with care. These may no longer be used. Contact Battery Supplies for further steps.

3.4 Personal protective equipment (PPE)

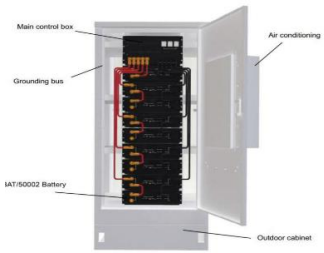




It is recommended to wear the following protective equipment when working with a battery storage system.





- Insulated gloves
- Safety glasses
- Safety shoes

4 Overview components


This first part of the “Component overview” describes the products included in the kit. A second part describes the matters that you as an installer must provide yourself. This information should help you to get an overview of the additional costs you will incur to complete the installation.

4.1 Installation KIT 3*5kVA

EnergyRack	44-56.7V DC Up to 46 kWh (NOT INCLUDED IN KIT)	
2 x Victron Energy MultiPlus -II 48V / 5000VA / 70A	Charger / Inverter 5000VA (https://www.victronenergy.com/inverters-chargers/multiplus-ii)	
1 x Victron Energy MultiPlus -II-GX 48/ 5000VA / 70A	Charger / Inverter 5000VA Built-in GX Function (https://www.victronenergy.com/inverters-chargers/multiplus-ii)	
1 x Carlo Gavazzi EM24	Three-phase energy meter suitable for current transformers (these CTs are not included and depend on the site setup)	
Victron Energy RS485 to USB converter	Provides connection between energy meter and MultiPlus	

2*UTP cable	VE bus connection between the three inverters	
Fuse 200A DC + fuse holder	Securing the DC side of the Victron	
CanBus Cable	Provides connection between the Energyrack and the MultiPlus . This cable MUST be the supplied cable.	
DC cable red (35mm ²) 20cm	Connection between Victron and 125A DC fuse	

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 the installer)	
DC cables 35mm ² (red and black)	Cables to connect the three Multiplus-II devices to the battery.	Different lengths available on request.
CTs (3x)	Current Transformer for the energy meter (5A)	These CTs must be adapted to the local installation!
UTP cable (optional)	Needed to extend the data cable if the distance between energy meter and Multiplus-II-GX is greater than 5m.	extend the data cable by a maximum of 100m.
AC side wiring	To connect all devices according to the diagrams.	Use the correct cross-sections according to local legislation.

Vending machines AC side	All breakers on the AC side of the setup are not included in the kit.	Also the fuses that have to protect the energy meter! (3*315mA and 1*50mA)
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The local situation has a major influence on the additional material required (cabling, additional power box, etc.) and therefore on the installation cost. Keep this in mind when drawing up the total price.

5 Installing the battery

The Energyrack is delivered in its entirety and therefore has a weight of more than 600 kg. So check in advance how the battery can be moved to its place. If necessary, the modules (each 48 kg) can be removed to make it easier to move the battery. The battery itself is not wired on arrival for safety reasons.

The inverters are best placed as close to the battery as possible to minimize cable losses. Hang the inverters in a cool place because too high temperatures reduce the maximum power of the inverters (see datasheet at the back). The MultiPlus -II GX must be placed in a dry and well-ventilated room (IP21) and there must be at least 10 cm of free space around the device.

6 Connection diagrams: data and power cables

In this chapter some diagrams are given that are necessary when connecting this battery storage system. **Be sure to check whether a network study (or the associated additional safety measures) is necessary. These are not included in the schedule!**



These diagrams alone are not sufficient to correctly position and connect the installation. Follow the step-by-step installation plan (part 2) to avoid damage to battery and inverters.

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

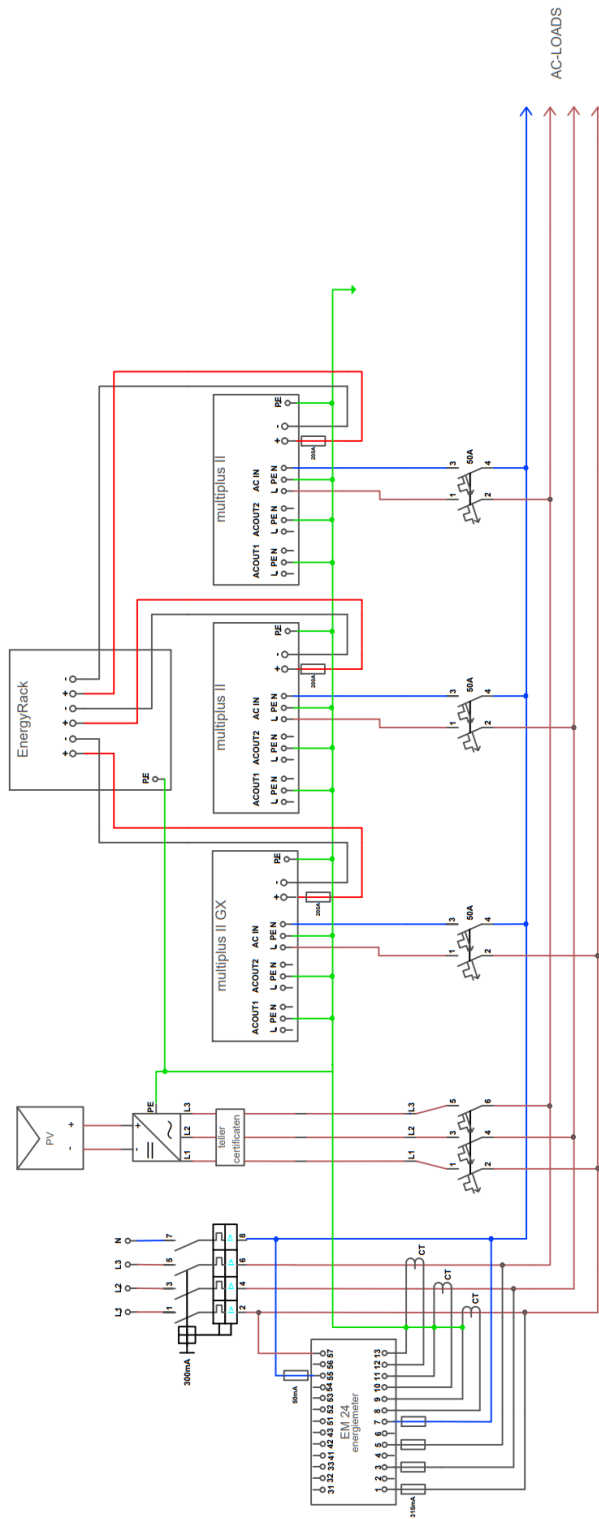


The attached diagrams are principle diagrams. The installer is responsible for choosing the correct safety components according to the local application(s) and current legislation. **Check whether a grid study/decoupling relay is mandatory! (verg)**

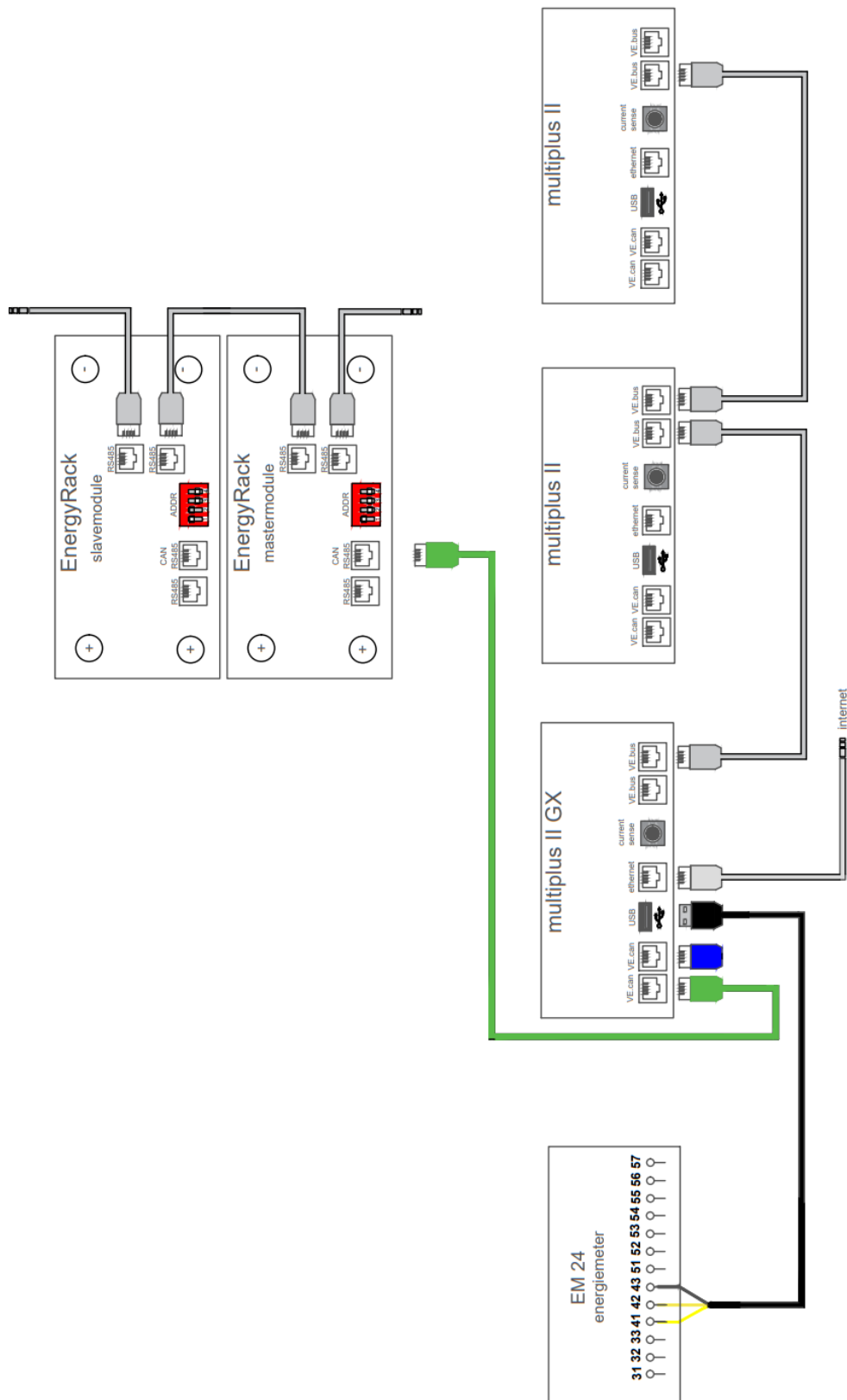


Circuit breakers may be installed with a nominal current other than that indicated on the diagrams. 25A circuit breakers are best chosen of type D.

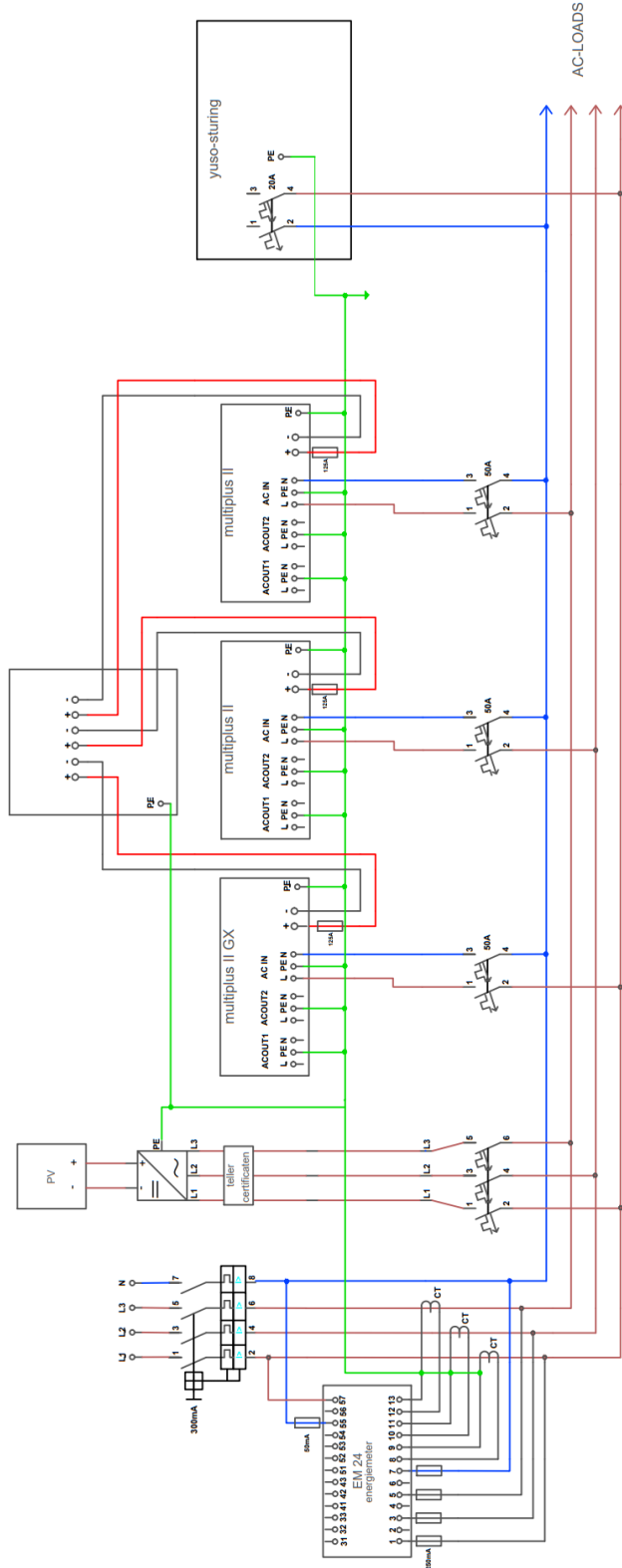
6.1 Schematic: 3*5kVA Victron (without Yuso)



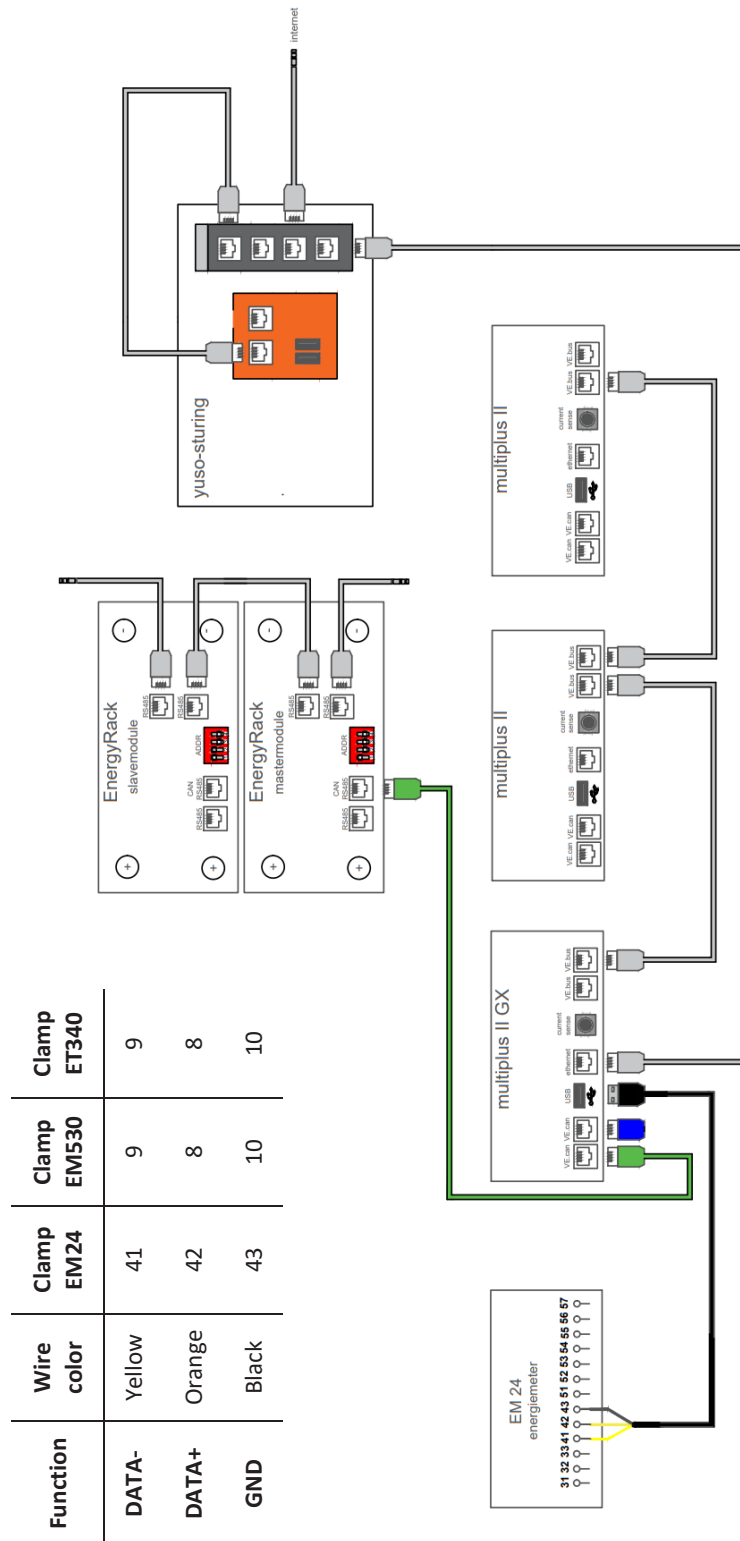
6.2 Schematic : 3*5kVA Data cables (without Yuso)



6.3 Schematic: 3*5kVA Victron (with Yuso)



6.4 Schematic: 3*5kVA Data cables (with Yuso)



7 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)		
INVERTER			
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
CHARGER			
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		
GENERAL			
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 %		
ENCLOSURE			
Material & Colour	Steel, blue RAL 5012		
Protection category	IP22		
Battery-connection	M8 bolts		
230 V AC-connection	Screw terminals 13 mm ² (6 AWG)		
Weight	19 kg	30 kg	
Dimensions (hwxwd) mm	506 x 275 x 147	565 x 323 x 148	
STANDARDS			
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			

INSTALLER'S MANUAL AQ-Lith EnergyRack

Victron MultiPlus -II
Three-phase Victron installation
3x5 kVA – BAT/49848

PART 2
Version
June 2022 version

BAT/50317

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1 Introduction

This second part of this manual is intended to assist you in installing an AQ-Lith three-phase battery storage system. It should only be installed by persons with a qualification in the field of electricity and installation techniques.

This manual consists of three chapters:

- 1) Connecting the installation
- 2) Starting up and setting up the installation
- 3) Problems and Solutions

Also make sure to check in advance that you have the latest version of this manual.



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



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



Be sure to consult part 1 of the manual before starting to connect and start up an installation.

2 Connecting the installation

With the help of the diagrams and the step-by-step plan that you can find in this chapter, you are able to connect all devices and meters correctly.



When connecting the installation, the sequence (given in the step-by-step plan) is **MANDATORY** to follow. If this is not done correctly, damage may occur to the devices.

2.1 hanging and placing appliances

The **Victron Multiplus-II (GX)** units should be hung on the wall. It is important to keep a free space of at least 15 cm on all sides of these appliances so that the ventilation of the appliances is not impeded. Never hang the inverters directly above the battery. Make sure that the breakers protecting the inverters are not smaller than shown on the diagrams in part 1.

The **EnergyRack** should be in a dry place with a constant temperature (20-25°C) and out of the sun. Temperatures that are too high or too low can negatively affect battery life and performance.

Try to keep the distance between the battery and inverters to a minimum to minimize any cable losses.

The **energy meter** is placed just after the digital meter. Any **Yuso controller** may also be placed on the wall near the inverter.

It is also possible to provide all the machines with which the inverters can be connected to the grid at a later date. Do not connect the inverters to the grid yet!

2.2 Connecting the devices.

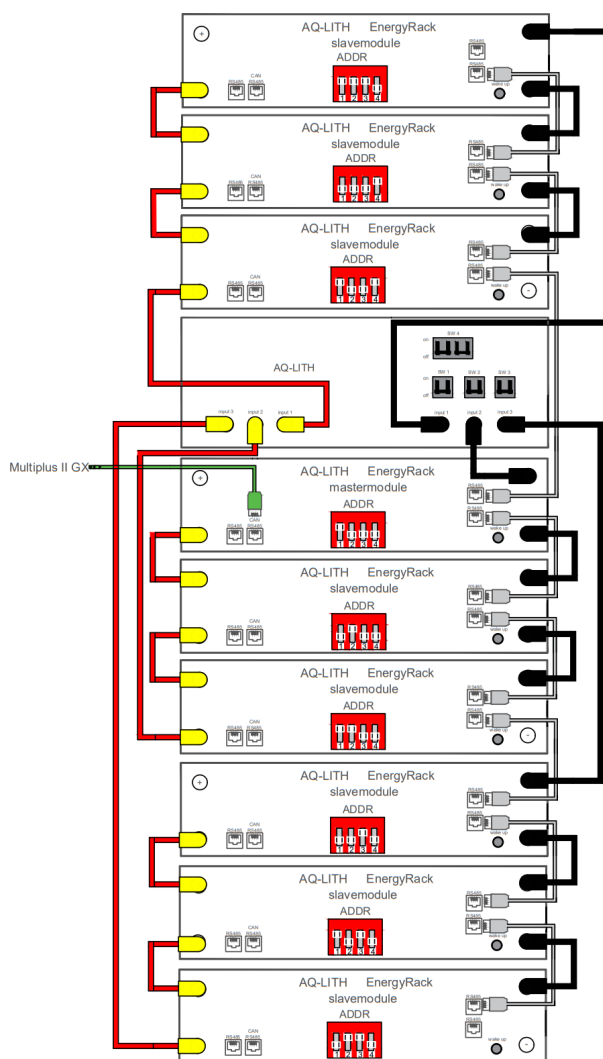
The wiring diagrams for connecting the power and data cables can be found in part 1 of this manual. The first step here is connecting the EnergyRack internally. The schedule on the next page can be followed.



The Multiplus GX requires an internet connection via the cable. Check beforehand that there are no security features that block the access of the device to the network.

2.2.1 Wiring the EnergyRack

- Connect the dedicated CAN cable from the inverter to the master module (only use the supplied cable)
- Place the dip switches according to the drawing above
- Connect the data cables between the different modules.
- Connect the power cables as indicated above, make sure that the long connection cables are connected 'diagonally'.



2.2.2 Connecting the various devices



When connecting the installation, the sequence (given in the step-by-step plan) is **MANDATORY** to follow. If this is not done correctly, damage may occur to the devices.

1. Connecting the ground wires

The devices must each be earthed at their housing with the appropriate cable cross-section. Furthermore, all earths of AC-in, AC-out1, and AC-out2 must also be connected. The Energyrack itself must also be grounded.

2. Placing the 125A DC fuses

By using the short plus cable (red) the connection can be made between the plus terminal of the Multiplus and one side of the fuse holder. These fuses must be mounted on the wall.

3. 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 masses (black cables) of the Multipluses are connected to the battery. Only then may the other side of the DC fuses be connected to the positive terminals of the battery.

As long as the setup does not work, the cooling group must be disconnected so that it does not empty the battery. Also, don't press the wake-up button.

4. Connecting the AC inputs

Connect the three inverters via the AC-in connection as shown in the diagram. Make sure that each device is connected to a different phase and remember which device is on which phase.

5. Placing and connecting the energy meter.

Place the energy meter and CTs according to the given diagram. Refer to the EM 24 manual for proper installation of this device. The meter can then be connected to the USB input of the Multiplus GX via the supplied cable. It is best to install a separate circuit breaker for the power supply of the meter. **DO NOT connect the USB side of the data cable to the USB input of the Multiplus II GX yet.**

6. Connecting the data cables

Now tomorrow all data cables will be connected according to the scheme. Two CAN ports are provided in the multiplus GX. One is used to connect to the battery. The other must be

“terminated” with a CAN bus end supplied with the Multiplus GX. Only the CAN cable that is supplied can be used for this.

3 Connecting and setting the energy meter EM24

The manual of the EM 24: www.productselection.net/MANUALS/UK/em24_IS_im_use.pdf



Placing and connecting Cts requires some knowledge and experience. Inserting/removing these CTs incorrectly can damage the CTs themselves as well as the energy meter. **CTs always short circuit!!!**

3.1.1.1 Connecting the power and data cables

Connect the power supply of the energy meter, as well as the data cables (rs485 to usb interface) according to the diagram found in part 1 of the manual.

3.1.1.2 Connecting the CTs to the EM24.

Connect the Ct's to the correct inputs of the EM24. Do this before placing the CTs in the cabinet. Also don't forget to connect in the right place and to the ground as shown on the schematic.



Check that the primary current of the CTs is greater than or equal to the maximum current that can be supplied by the mains. The secondary current should be equal to 5A.

3.1.1.3 Placing the CTs in the cabinet.

First, turn off the power to the cabinet. Now place the three CTs on the correct corresponding phase.

- Phase 1: CT on ports 8 and 9
- Phase 2: CT on ports 10 and 11
- Phase3: CT on ports 12 and 13









Make sure that the L side of the CT is facing the mains connection.

To correctly set up the EM24, the power supply must be turned on again. For a 3 - phase network with neutral conductor , only 1 setting has to be adjusted, namely the CT ratio.

Example calculating the CT ratio:

Primary current : 100A Secondary current 5A

CT ratio= $100A/5A = 20$ -> this value must already be entered as follows:

Step	Action	Button
1	Power on the energy analyzer	
2	Press the joystick for at least 3 seconds	
3	In the PASS? page, select the correct password (default 0)	
4	Confirm operation	
5	Scroll pages until Ct rAtio	
6	Enter the editing mode	
7	Select 20	
8	Confirm operation	
9	Scroll pages until End to exit	

Now only the USB side of the data cable needs to be connected to the USB input of the Multiplus II GX.

4 Updating the firmware



It is best to update the firmware in advance and not on site at the customer. This step may take a while the first time.

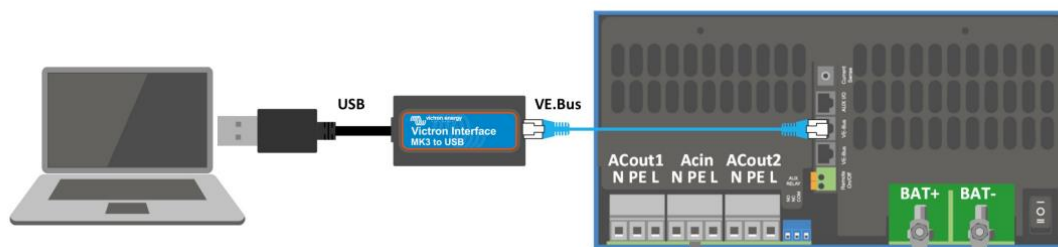
The following programs must be installed:

- VictronConnect : <https://www.victronenergy.com/panel-systems-remote-monitoring/victronconnect#victronconnect-downloadsVictron Energy>
- VeConfiguration tools: <https://www.victronenergy.com/support-and-downloads/software>

To connect the inverters in three phases, all three must have the same firmware. The firmware of the devices can be updated via the VictronConnect program (downloadable from the Victron energy website).

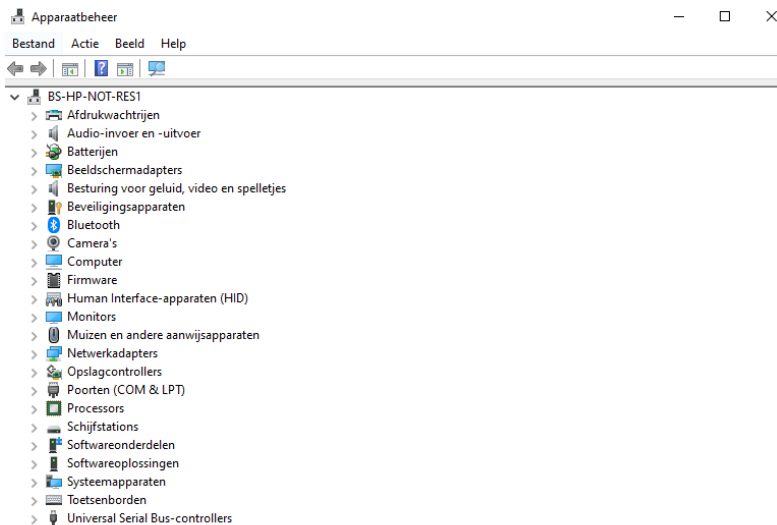
Before updating the firmware tomorrow the three inverters are not yet interconnected with the VE bus cables.

Before the firmware can be updated , a few steps have to be completed. First of all, the MultiPlus must be connected to the computer in question via an MK3-USB interface.



When using it for the first time, the drivers for this interface must be installed. To do this, first open the application “ VeConfig ”. (Make sure the interface is already connected to the PC via the USB input) Go to special and choose USB drives. Click Yes and choose an appropriate folder to save it. The drivers are NOT yet installed because of this.

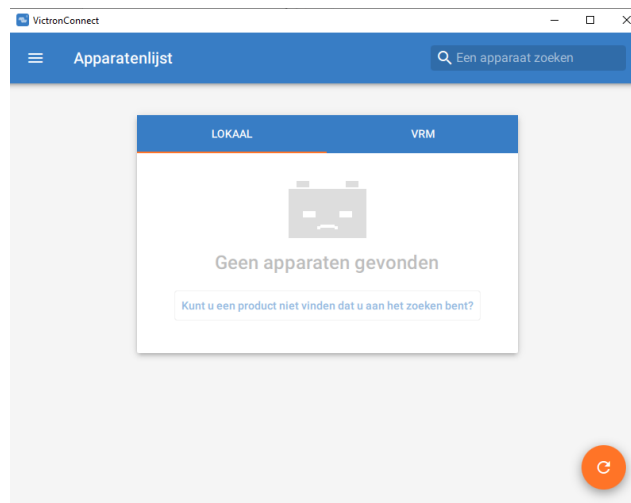
Then go to “device manager” on your PC.



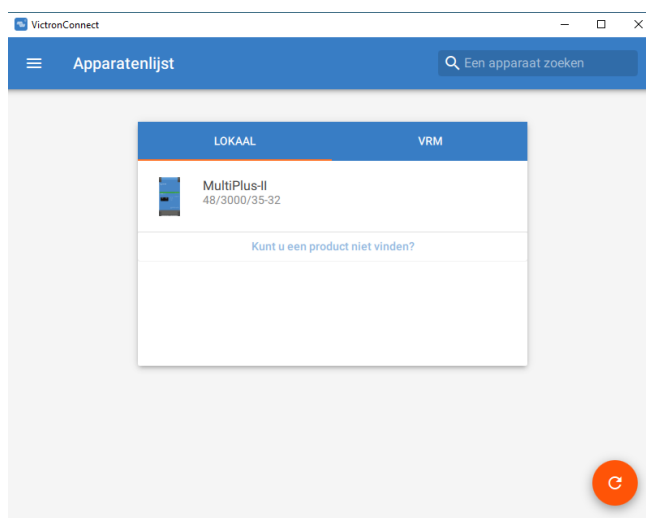
Under ports, choose the USB Serial Port. The driver can then be installed with a right mouse click. Select the correct folder for this (chosen yourself).

This installation of the drive is only necessary the first time.

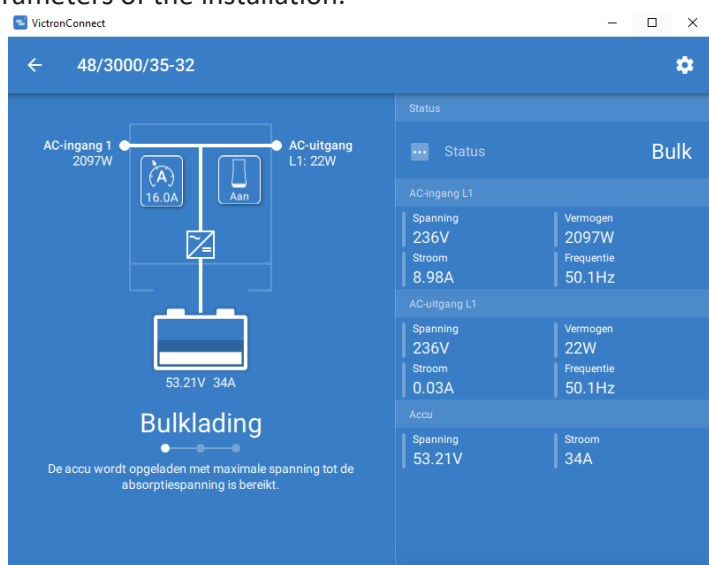
Now that the driver has been installed and the first device has been connected, it is time to open the Victron Connect app. The home screen is shown below.



Now connect the first Multiplus to your PC via the interface according to the diagram on the previous page. If the MultiPlus is connected to the computer, after refreshing the program (orange button at the bottom right), it will be visible in the list 'local' under the name MultiPlus -II or MultiPlus -II-GX. (disconnect the Mod -bus connections to any other devices)



When the MultiPlus is clicked in the list of devices, the screen below is displayed. This image shows various parameters of the installation.



Then click on the gear symbol in the top right corner.

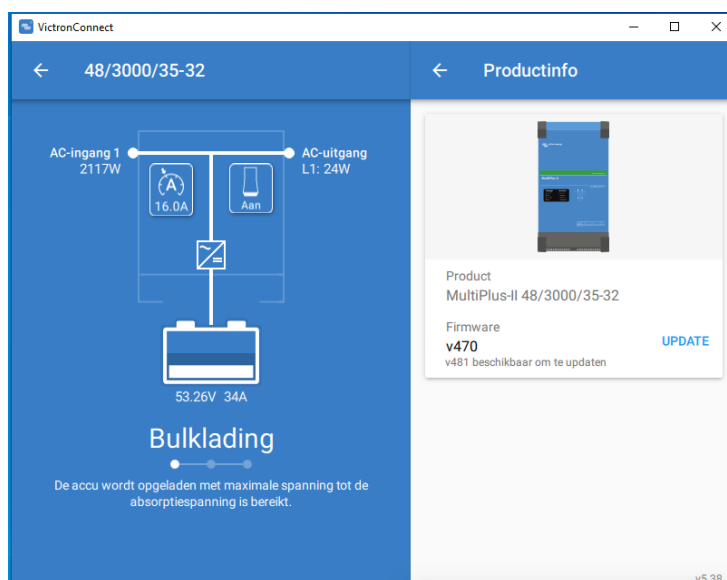
To adjust the settings of the inverter, however, they must first be switched on, this is done via 'enable settings'. The password that must be entered is the same for every installation.

Password: zzz



When the password has been entered, you can adjust all settings. To update the firmware, click on the icon consisting of three dots at the top right. Once you have done this, you can see the current firmware version of the device and, if the firmware is not up to date, update it.

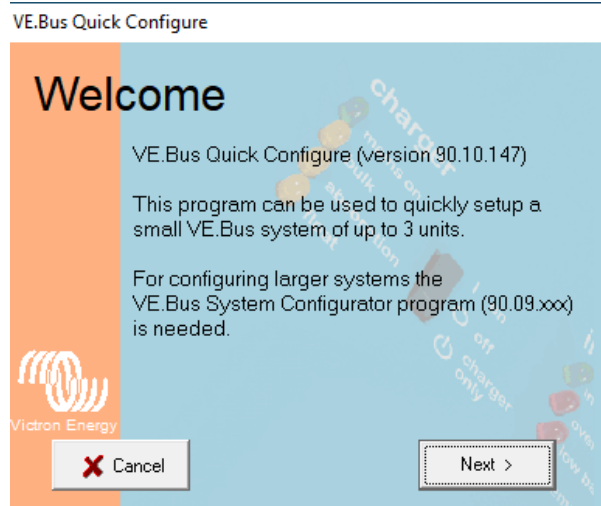
Updating the firmware must be done separately for each MultiPlus device, therefore these steps must be repeated for each MultiPlus .



After the three devices have the latest firmware, the VictronConnect program can be closed and all Mod -bus cables between the different MultiPluses can be reconnected.

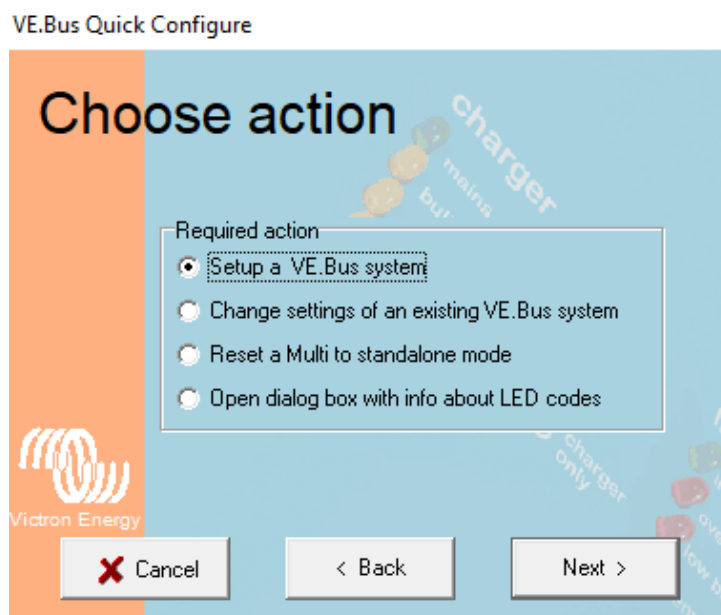
5 Load parameters with MK3-USB interface

Now open the program: “ VE.Bus Quick Configure ” to be downloaded again from the victron website. Make sure that all Mod -bus cables are connected and that 1 of the devices is also connected to your PC via the MK3 interface. Make sure all devices are turned off. The battery and the circuit breakers to the devices may be switched on. The start screen is shown below.



If the program asks for an update, you should definitely install it. Then click on “Next”.

Then choose: “Setup a VE.bus system”. If you want to make adjustments to an existing installation, choose: “Change settings of an existing VE.Bus system”. Then click on “next” again.



For configuration, choose : "Three phase " and click again on "next". Select the correct COM port (check the option: "scan for " existing port "). Then click on "next" again. The program will now ask you to make sure that all devices are turned off. Click on "next" and you should see the screen below.

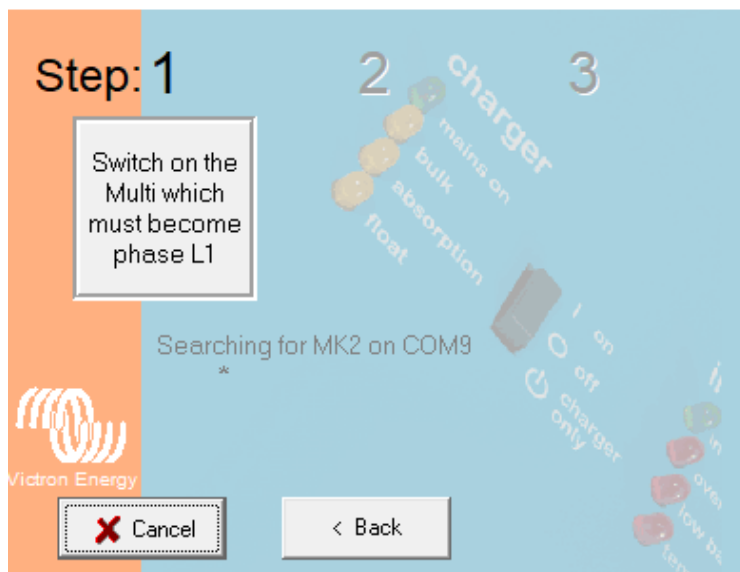
Now switch on the device that is connected to the first phase of the mains connection. Always set the devices to position 1 and not to position 2 (charging only).



The phases of the grid must correctly match the connection to the energy meters and to the connection of the inverters themselves, otherwise the installation will not work.

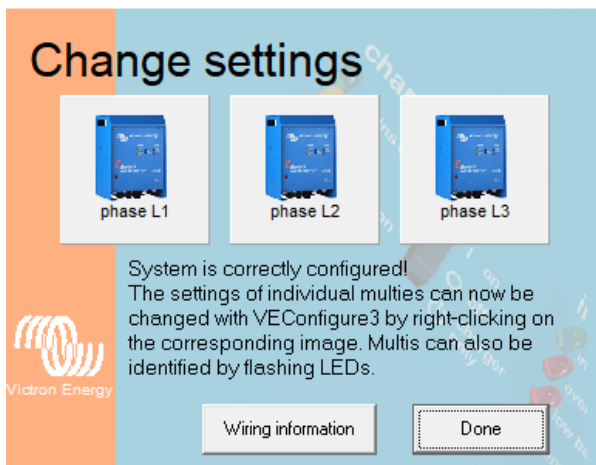
The device is connected and linked to the first phase when the above image appears on your screen.

VE.Bus Quick Configure

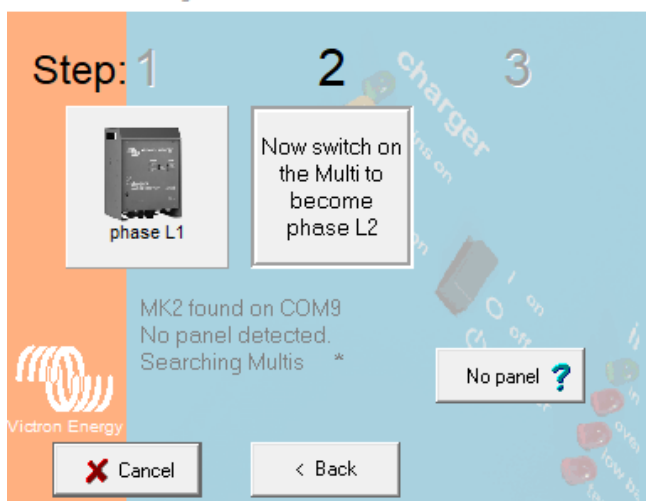


Now switch on the inverter on the second phase and then also switch on the last Multiplus II that is on the third phase. If everything went correctly, three devices should now be connected and assigned to the corresponding phase.

VE.Bus Quick Configure



VE.Bus Quick Configure

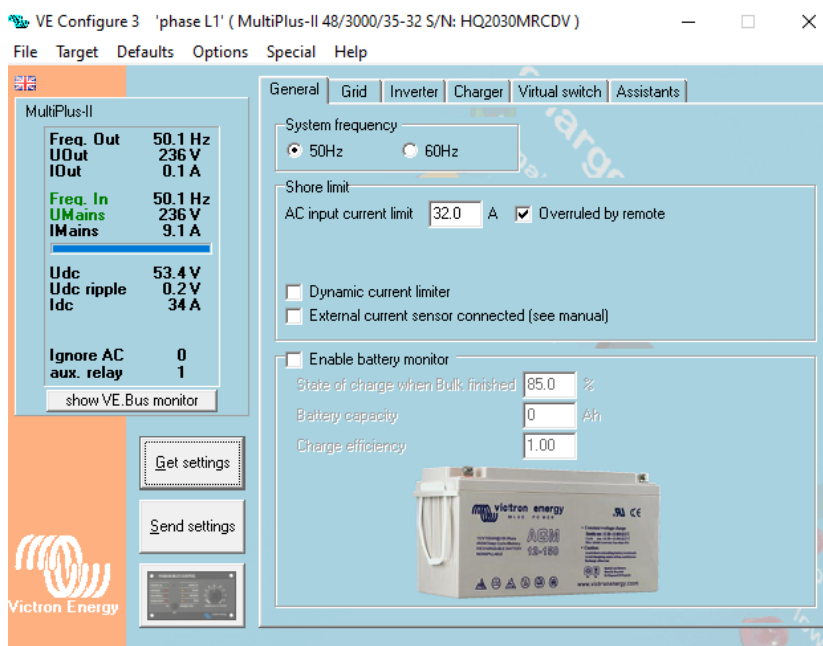


Now the correction parameters have to be added to the three devices. These can be loaded into the device using files. These files can be found at: www.batterysupplies.be/victron . Always check the parameters using the table at the end of this operation.



Choose the correct file for your installation, otherwise battery damage may occur. So choose the file with the name of the total capacity of the battery and the existing network!

With a right mouse click on the first inverter, your Ve Open Configure Multi. After all information has been retrieved from the Victron , you will see the screen below.

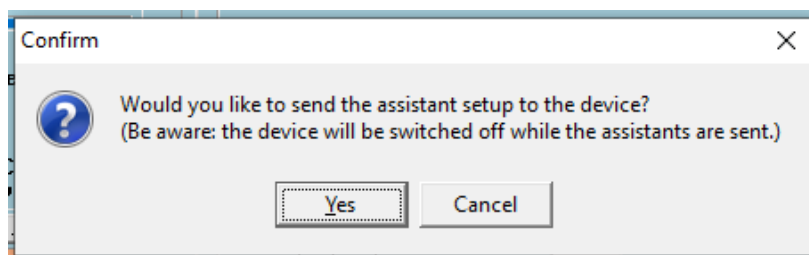


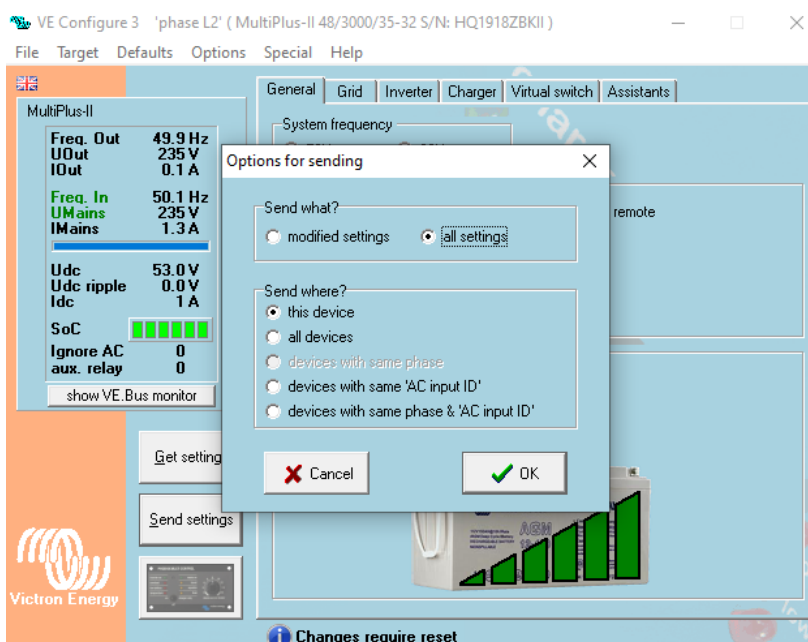
Choose file -> “load settings ” and select the correct file that you have downloaded from our website.

ATTENTION: Before sending the configuration to the Multiplus, go to the GRID tab and check that the correct “ Grid code standard” is selected. This may need to be adjusted depending on firmware updates and the location where the installation is performed. To change the “ grid code standard” a password is required: TPWMBU2A4GCC

Then click on “ Send setting”.

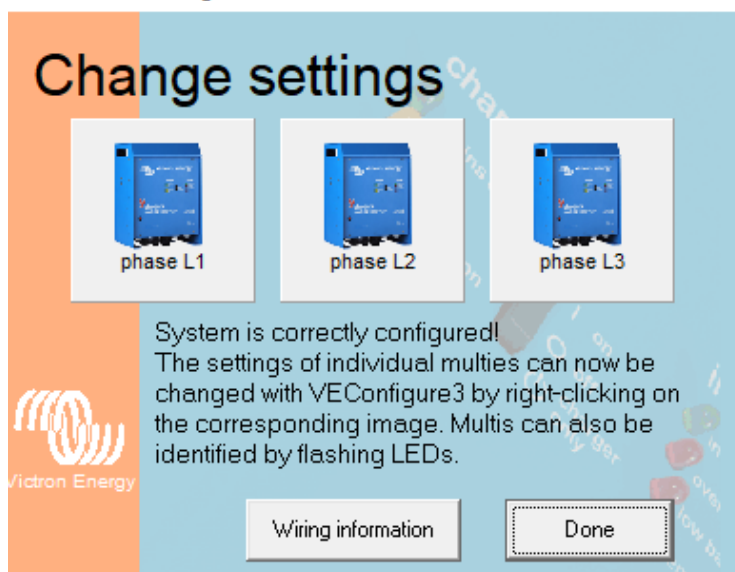
Select the options as shown below and continue with “ok”. When the message below is shown, choose “yes”.





Then you can close the window and you will see the screen below again.

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Now repeat the above steps for the second and third inverter. Then close the program via “ Done ”. All operating parameters are now in the devices and the connection via the interface can be disconnected with the PC.

6 VRM portal – settings ESS

In order for the system to work properly, some important settings still need to be made in the internal software, which controls the MultiPlus -II GX. This can be reached in two ways. This is preferably consulted online, but then an internet connection is required. See chapter 5.1 for this.

Without an internet connection, it must be reached locally, as indicated in chapter 5.2.

Note: Make sure all devices are turned on.

6.1 Connecting via VRM Online Portal

This method requires an Internet connection via an Ethernet cable. The computer, tablet or smartphone used must also be connected to the internet.

Steps:

1. Connect the MultiPlus -II GX to the internet via an Ethernet cable. This cable must be connected to the (only) Ethernet port on the device.
2. Verify that the network connection to the Multiplus-II GX is operational by lighting up the green-orange status LEDs on the Ethernet port. An IP address should be visible on the blue display after navigating.
3. Register or log in to VRM Portal. Via the “ Add ” button installation ” a new installation can be added to this account.


Add installation

Note: it is possible to add a second account (with any limited rights) to the system.

Example: installer (full management) + customer (view only)

4. Enter the VRM Portal ID to connect to the installation, which can be found on the sticker on the device and in the manual.
5. Open the Remote Console from the options on the left side of the page.
6. Go to chapter “ 5.3 Settings ” .

6.2 Settings

1. Open the menu by  clicking
2. You will be the first to find an overview of the connected devices. Check if all energy meters are detected. Proceed to “ Settings ” via the arrows.

Note: it is possible to set this screen in Dutch in the menu option “Display & Language”.

3. Check if “Date & Time” is correct.
4. Check the Firmware version. Check for online updates and install the latest version. **Then turn off automatic updates.**
5. Make sure the menu option “Remote Console” on VRM (possibly on LAN) is always enabled . Deactivating this option may make the MultiPlus -II GX

inaccessible! Setting a password may cause other users to lose access to this screen.

6. Settings menu option "System Setup":

System name	(choose yourself)
AC Input 1	grid
AC Input 2	not Available
monitor for grid failure	Disabled
battery monitor	Automatic
Has DC System	<input type="checkbox"/>



7. "DVCC" is turned on .

Limit charge current	<input checked="" type="checkbox"/> 30kWh: 300A 46 kWh: 450A
Limit managed battery charge voltage	<input checked="" type="checkbox"/>
Maximum charge voltage	57.2V
SVS , STS, SCS	<input type="checkbox"/> (disable all)

8. Settings menu option "ESS":

Fashion	Optimized (with battery life)
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 fail)	20%
Limit charge power	<input checked="" type="checkbox"/>
Maximum charge power	AQ-Lith EnergyRack 30kWh: 7500W AQ-Lith EnergyRack 46kWh:11000W



Limit inverter power	
Maximum inverter power 	AQ-Lith EnergyRack 30kWh: 11600W AQ-Lith EnergyRack 46kWh:15000W
grid set point	50W (default)

9. Settings menu option “Energy meters”:
 - a. Two three-phase meters (three-phase grid on meter 1 & solar on meter 2)

You will see two energy meters with different serial numbers on the screen. The serial number is located on the back of the meter.

We make a distinction between the meter that measures the electricity grid (the “Grid meter”) and the meter that is connected with the PV inverter(s) (the “PV meter”). Configure the meters respectively with the parameters below:

Gauge 1 (Grid gauge):

role	Grid Meter
phase type	multi phase

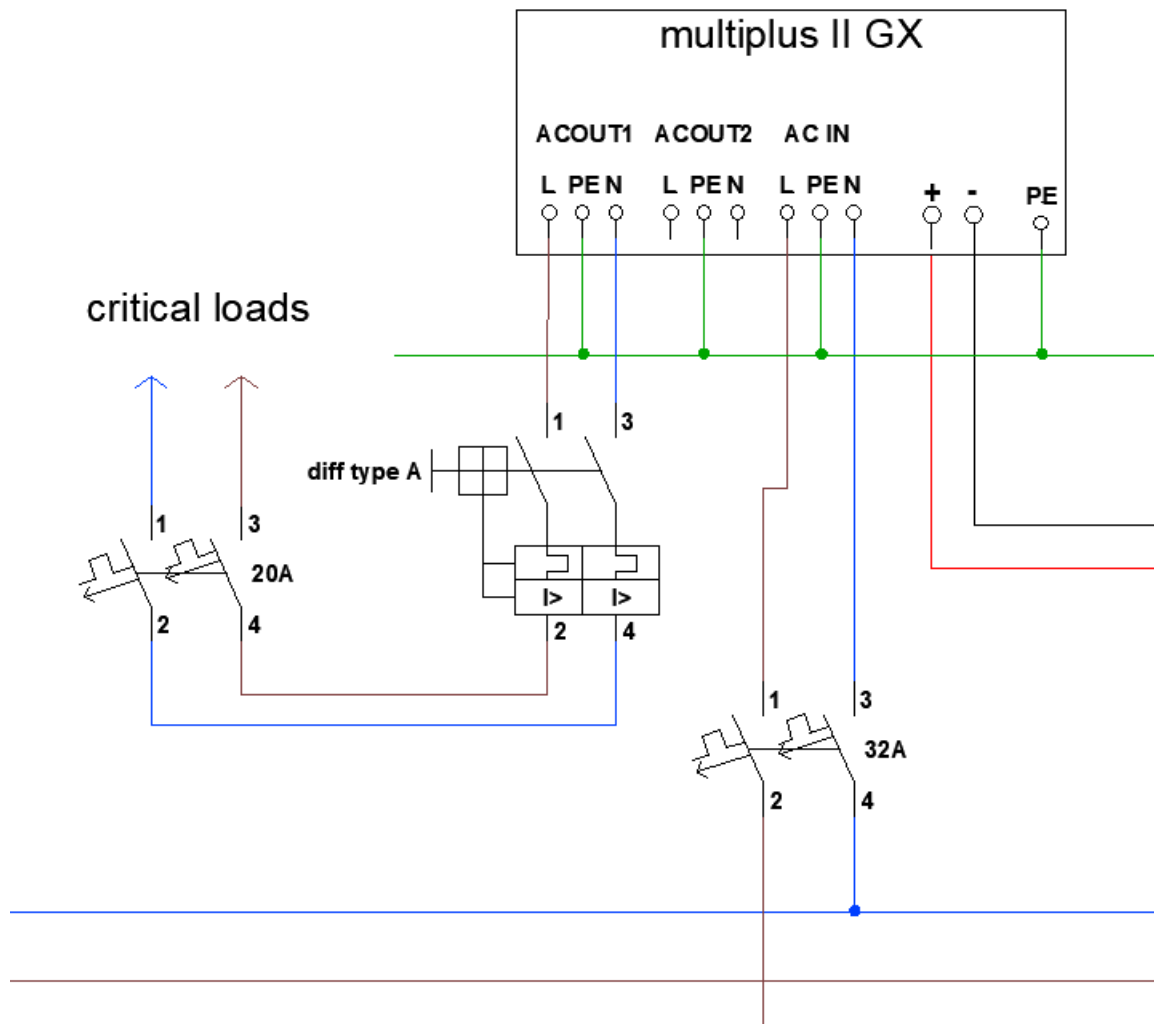
Meter 2 (PV meter/optional): this meter is NOT provided as standard in the kit

role	PV inverter
position	AC Input 1
phase type	choice of single-phase or multi-phase inverter

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

7 UPS function

electricity failure, the victron Multiplus II can supply several circuits with power. 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 (see datasheet Victron part 1 manual)



8 Inviting the customer (for the application on the smartphone)

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

- Make sure you have chosen the correct installation.
- Go to: "Settings" -> "users"
- Click at the bottom in blue on: "invite user" and add the customer via his email address



NEVER give your customer "full control" otherwise they can make adjustments that counteract the operation of the device or even damage the inverters and battery.

The newspaper will then be asked to create an account itself. If he then downloads the application on his smartphone and logs in, the customer will be able to follow the installation.

AQ-LITH® ENERGYBOX & ENERGYRACK 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 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. 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® ENERGYRACK 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.