Installation Manual
Victron Energy & Dyness

Safety Instructions

GENERAL

Please read the instructions in the documentation provided with this product carefully before using the equipment. This product has been designed and tested in accordance with international standards. The equipment must be used exclusively for the purpose for which it was designed.

WARNING: RISK OF ELECTRICAL SHOCK

This product is used in conjunction with a constant power source (battery). The input and / or output terminals can be dangerously energized, even when the equipment is switched off. Always disconnect the battery before servicing the product. Do not remove the faceplate or operate the product if any panels are removed. All maintenance must be carried out by qualified personnel. Never use the product in places where there is a risk of explosion by both gas and dust. Consult information from the battery manufacturer to ensure that the product is intended for use in conjunction with the inverter. Always follow the battery manufacturer's safety instructions.

WARNING: Do not carry or lift large weights without assistance.

INSTALLATION

WARNING: CONNECTING THE PRODUCT WITH BATTERY POLARITY REVERSION WILL DAMAGE THE EQUIPMENT WITHOUT REPAIR CONDITIONS AND WILL BE CONSIDERED EXCLUSION OF WARRANTY.

Please read the installation instructions in the manual before installing the equipment. This product has a Class I protection factor (supplied with protective earth terminal). Uninterrupted protective ground must be installed at the AC input and / or output terminals. Alternatively, the earthing point located externally on the product can be used. If the earth connection is damaged, the product must be disconnected and protected against unintended operation. Contact a qualified service center. Make sure that the DC and AC input cables are protected with fuses and circuit breakers. Never replace a safety component with a different type. Consult the manual to determine the correct component. Before feeding the product, make sure that the available power source matches the power settings.product configuration described in the manual. Make sure that the equipment will be used in the correct environmental conditions. Never use the product in a humid or dusty environment. Check that there is enough free space for ventilation around the product and check that the ventilation openings are not blocked. Make sure that the required system voltage does not exceed the capacity of the product.
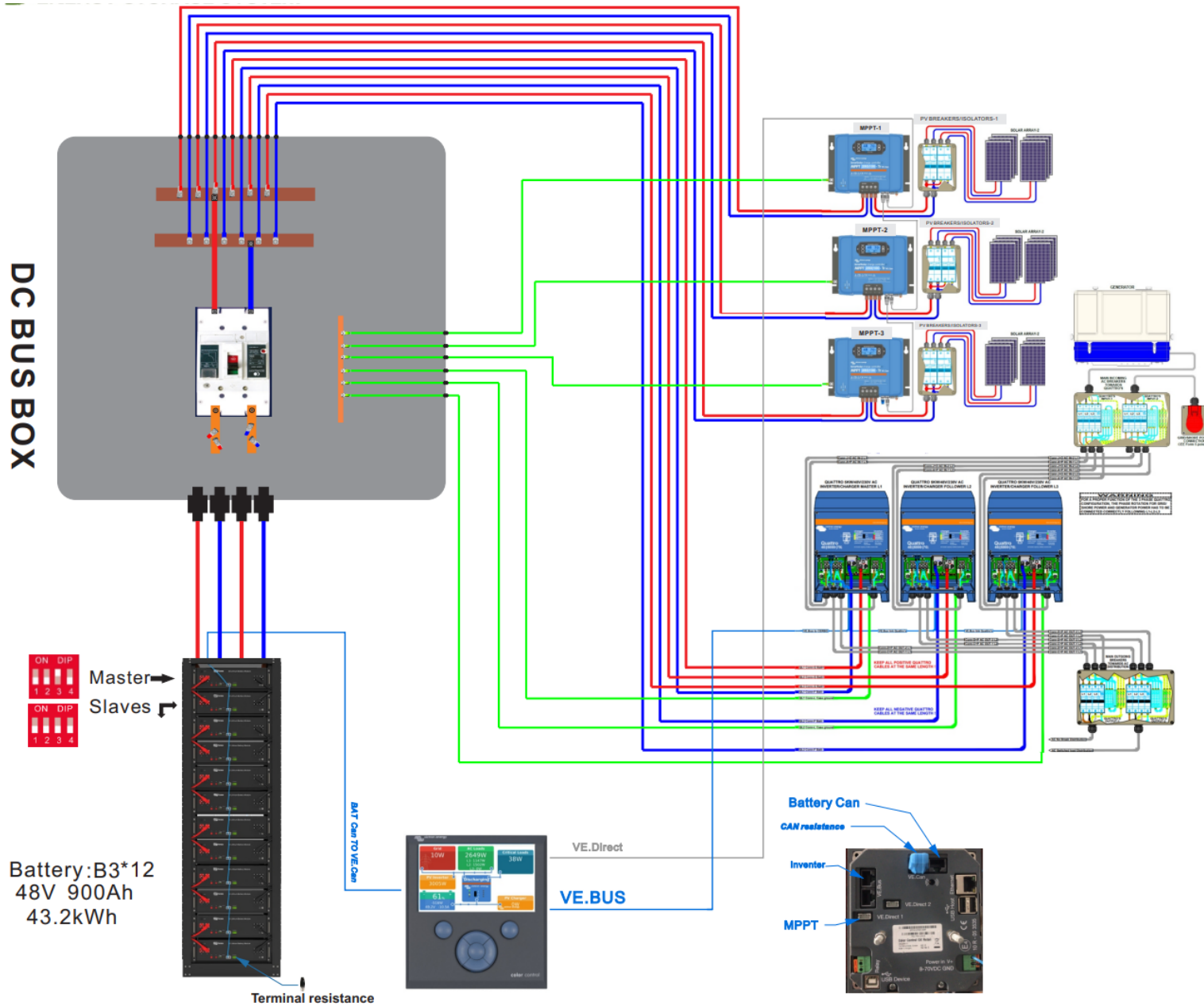
Electrical Diagram – Simplified
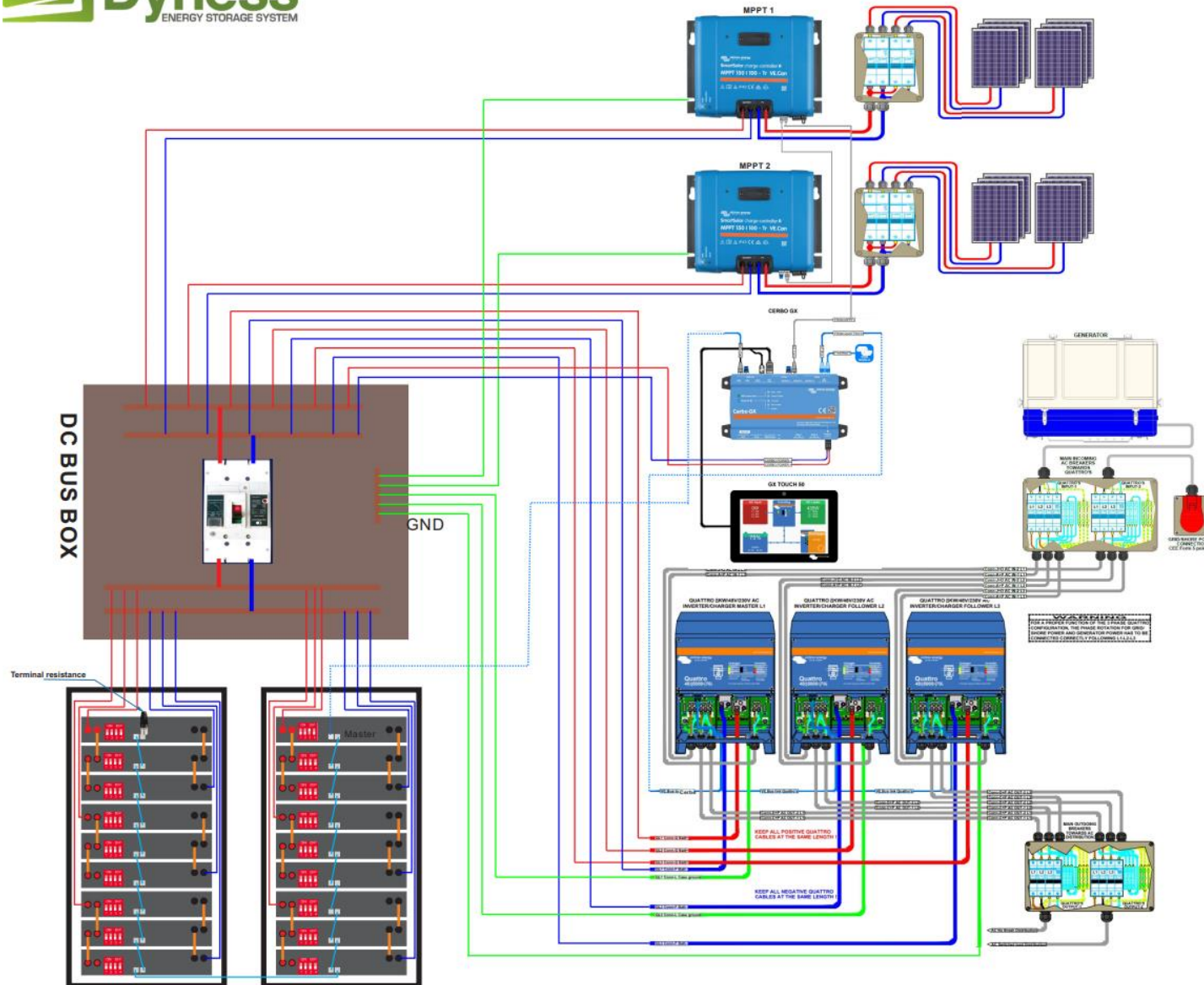
WARNING:Is required the use of protective devices like:
- Breakers
- SPD
- Groundind
- Others

We always recommend the use of cables with a color pattern differentiating each phase, polarity, grounding, etc., to facilitate installation and possible future maintenance. Remembering that an incorrect installation can always bring damage to the equipment, losing their warranty.

Electrical Diagram –Modules with CCGX

DC BUS BOX

Battery:B3*12
48V 900Ah
43.2kWh

Master
Slaves

Terminal resistance

Battery Can
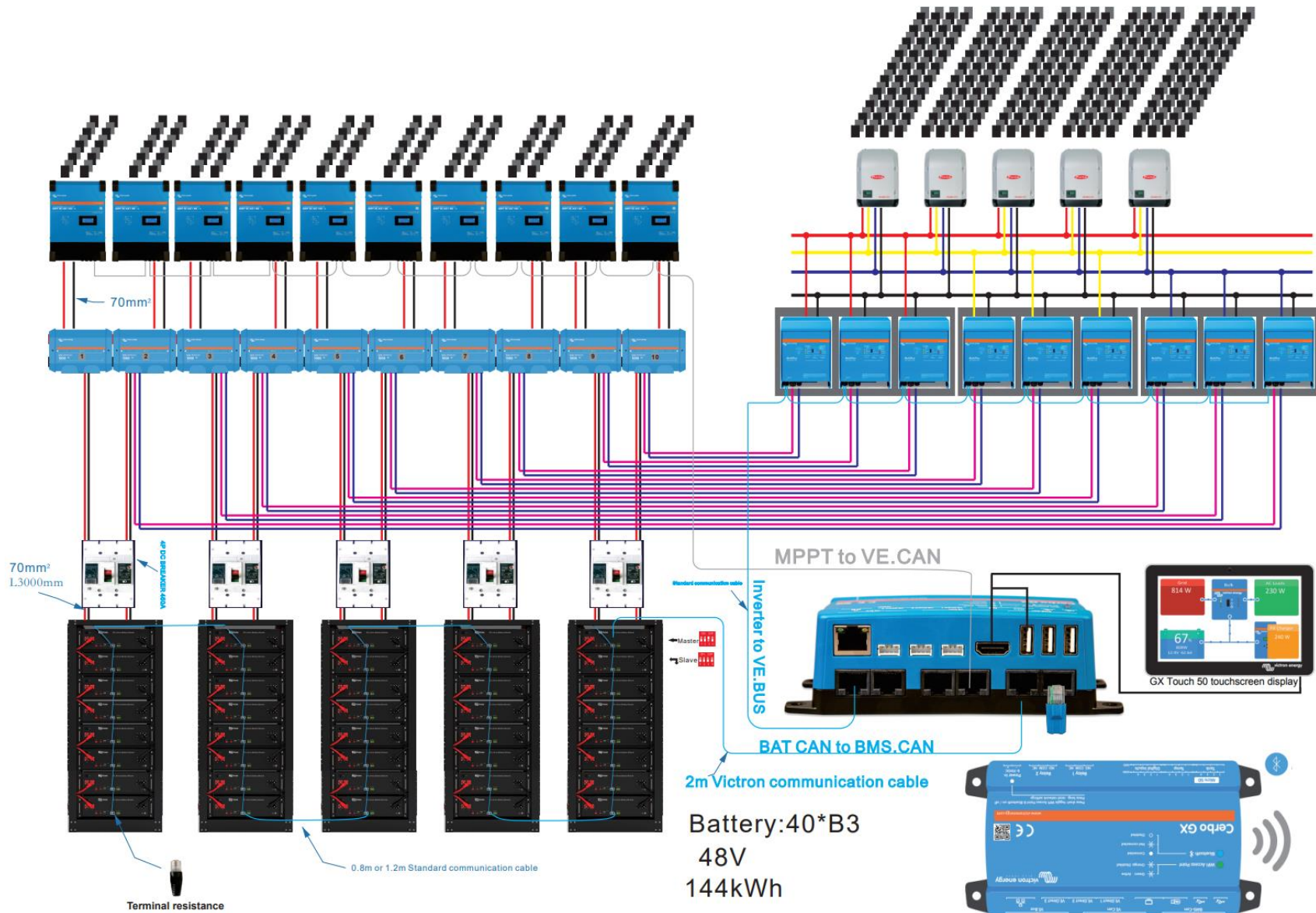CAN resistance
Inventer
MPPT

VE.Direct
VE.BUS

NOTE
Please note that all the DYNESS LV batteries use the same protocol,so the DIP switch setting and cable connection is always same for Victron GX device, such as:
B4850,B3,POWERBOX,POWERDEPOT,A48100,BX51100,B51100,B48100 and so on.

1.The master DIP 0010,all the other slaves are 0000
2.Connect the **special pinout** comms cable from the **Master CAN IN** to the **CCGX VE CAN** port,connect the blue CAN RJ45 terminator also to VE CAN port
3.Connect the normal pinout **Type B** cable from **inverter VE BUS** port to the **CCGX VE BUS** port
4.Connect the VE direct cable to from the MPPT to the CCGX VE.Direct port.

Electrical Diagram –Modules with Cerbo GX

70mm²

70mm²
L3000mm

4P DC BREAKER 40A

Master
Slave

Inverter to VE.BUS

Standard communication cable

MPPT to VE.CAN

BAT CAN to BMS.CAN

2m Victron communication cable

Terminal resistance

0.8m or 1.2m Standard communication cable

Battery:40*B3
48V
144kWh

GX Touch 50 touchscreen display

Cerbo GX

Note:
Cerbo GX is different from CCGX
1.You need to connect **special pinout comm cable** from the Master **battery CAN IN** to the Cerbo **BMS.CAN** port.Also connect the blue CAN RJ45 terminator on the BMS CAN port.
2.You need to connect **Type B cable** from **inverter VE.BUS** to the **Cerbo VE.Bus** port.
3.You can connect the **VE direct cable** from MPPT to Cerbo **VE.Direct port**;
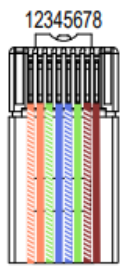Or connect **Type B cable** from MPPT **VE.CAN port** to the Cerbo **VE.CAN port**.

Master battery CAN IN

CCGX-VE.CAN, or
CERBO GX-BMS CAN

Master battery CAN IN

CCGX-VE.CAN,or
CERBOGX-BMS CAN

Battery （RJ45 IN）

PIN	Color	Definition	
1	Orange/white	485_A	
2	Orange	XGND	
3	Green/white	485_B	
4	Blue	CANH	
5	Blue/white	CANL	
6	Green	X+5V	
7	Brown/white	XIN	
8	Brown	NC	

Inverter

| PIN	Color	Definition	
1	Orange/white	485_A	
2	Green/white	485_B	
3	Orange	GND	
4	Green	NC	
5	Brown/white	NC	
6	Brown	NC	
7	Blue	CANH	
8	Blue/white	CANL	
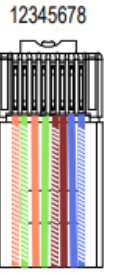
Special comms cable pinout
Battery :PIN4=CAN H,PIN5=CAN L
GX side:PIN7=CAN H,PIN8=CAN L

The other pin is not useful.
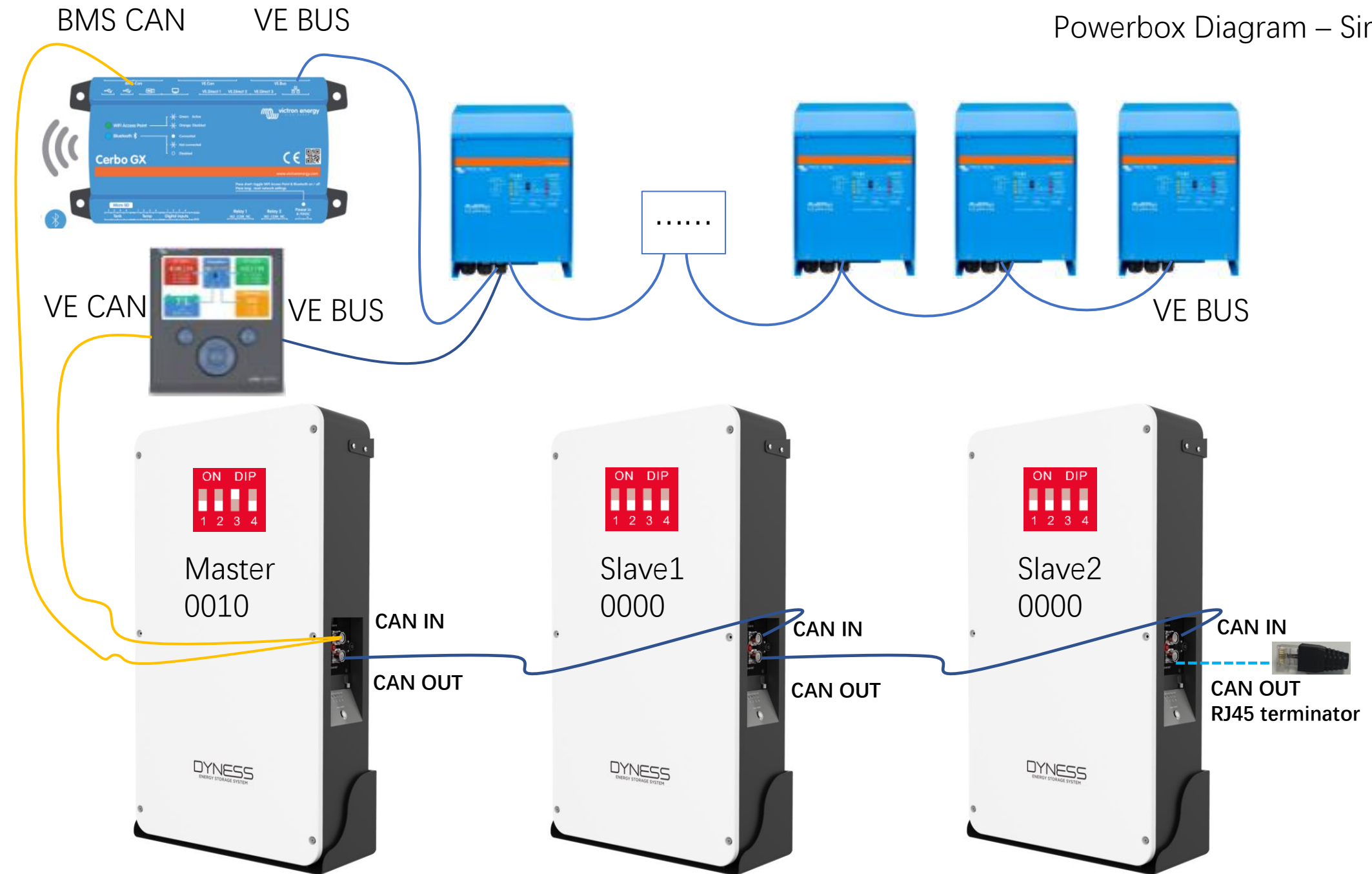
Electrical Diagram –Modules with CCGX
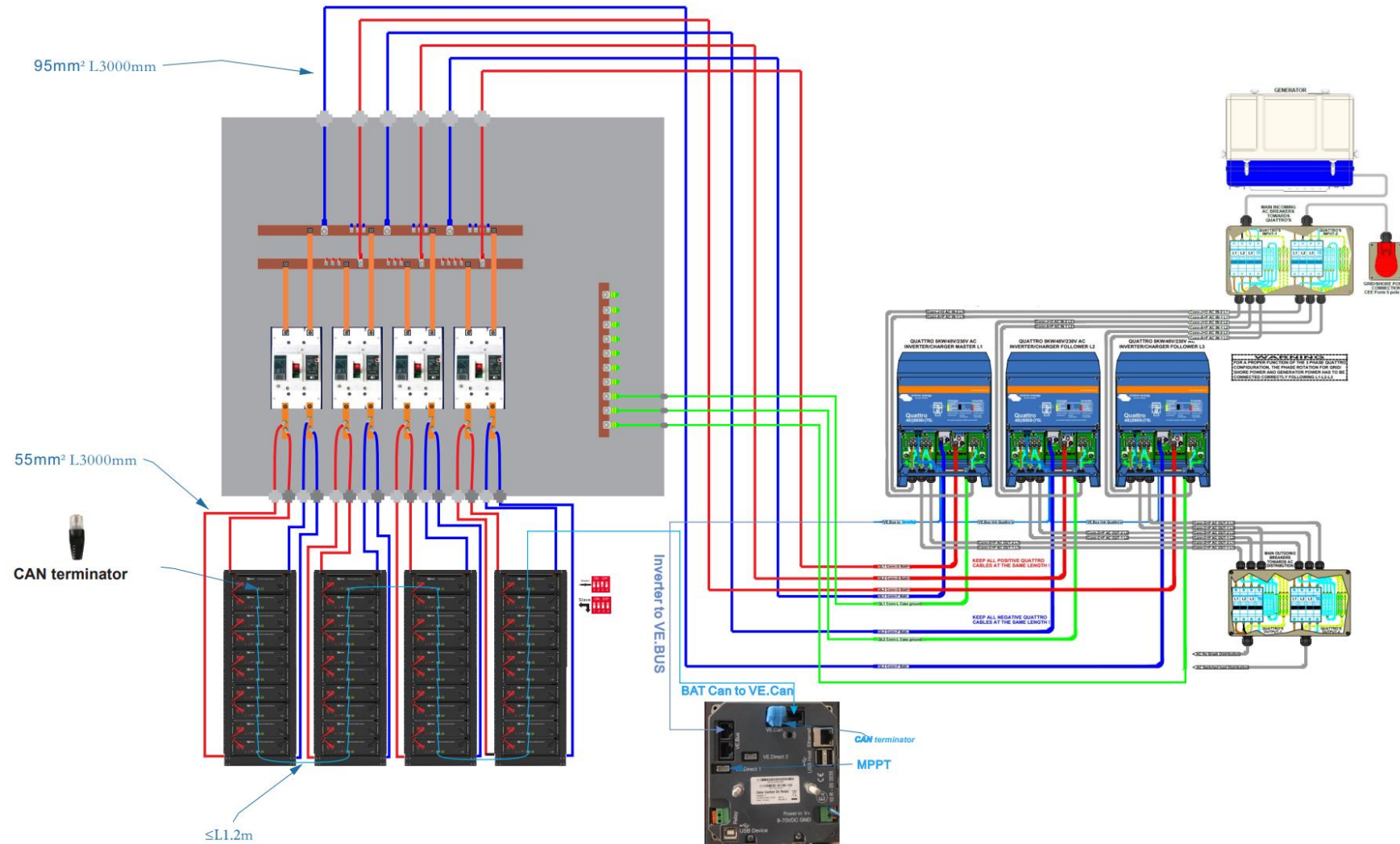
This diagram is to show you:

1.No matter how many modules you parallel in the system,it's only the master module need to be setup 0010,all the other 39 slaves are 0000

2.When you parallel modules more than 30 units,we recommend you connect a Dyness CAN RJ45 terminator on the last slave CAN OUT port,it's good for the communication stability.

3.Try to make the comms cable between batteries shorter when you parallel many modules, it's good for the communication stability.

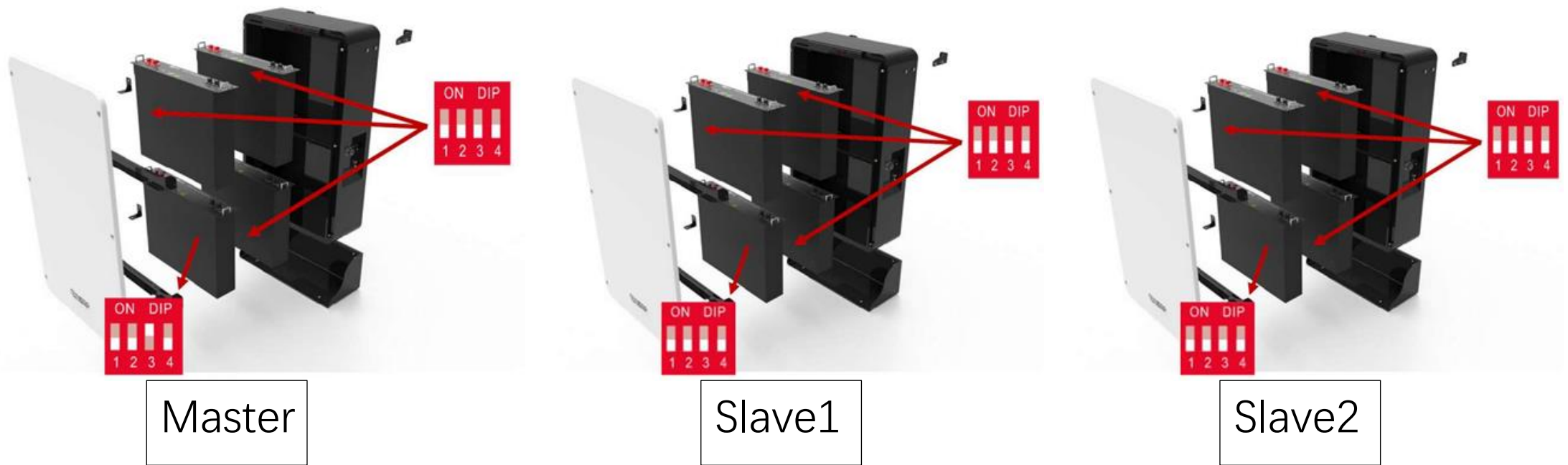**4.**Make sure the power cable is enough to pass high current
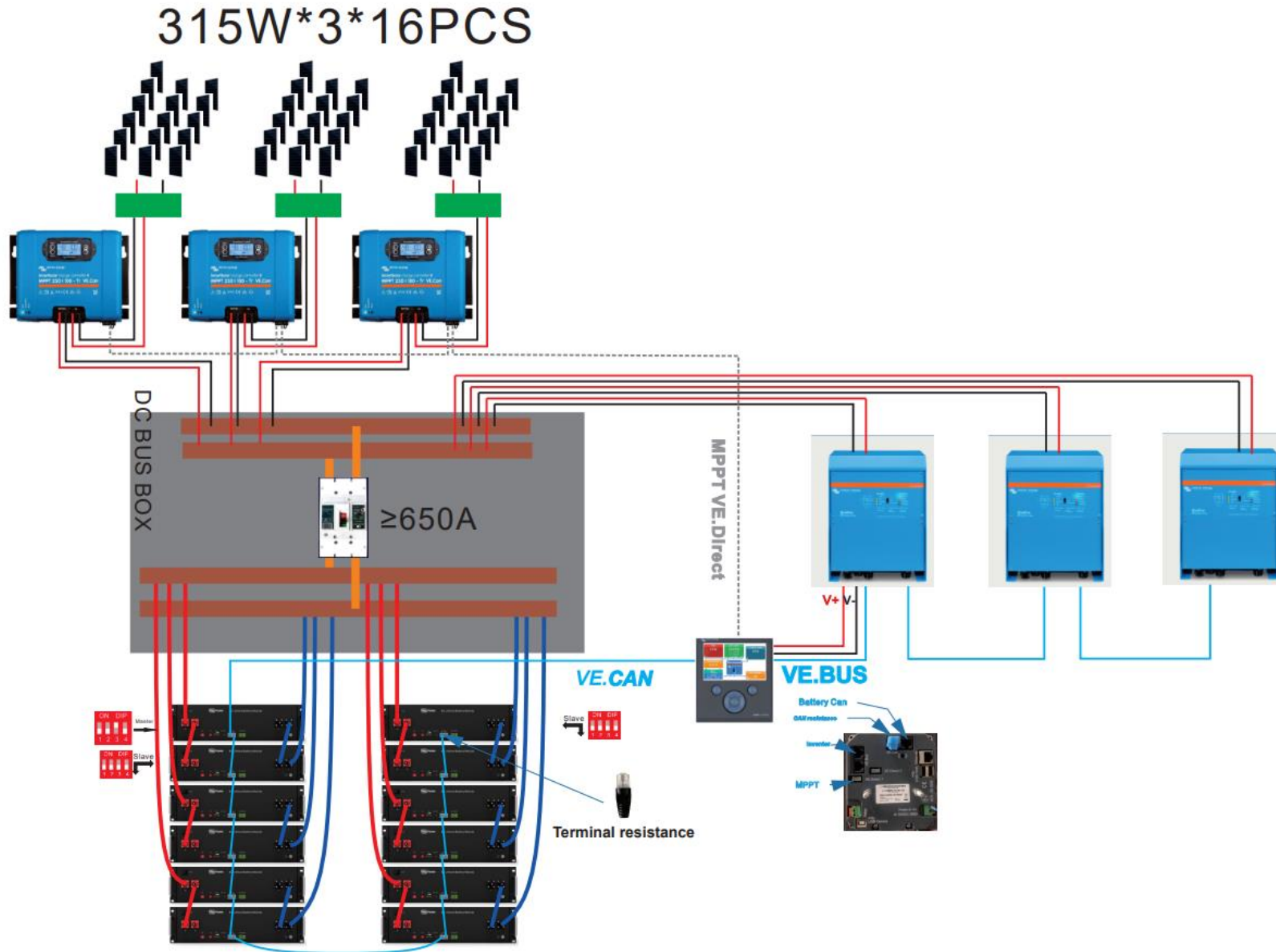
This diagram is to show you:
When you connect many pairs of power cable on the modules,you need to **evenly distribute** the number of modules,and connect each pair of **power cables** to each group **diagonally**.Then you parallel all the powerc cables on the busbar. The power cable must be connected **diagonally**,it's the most important thing.
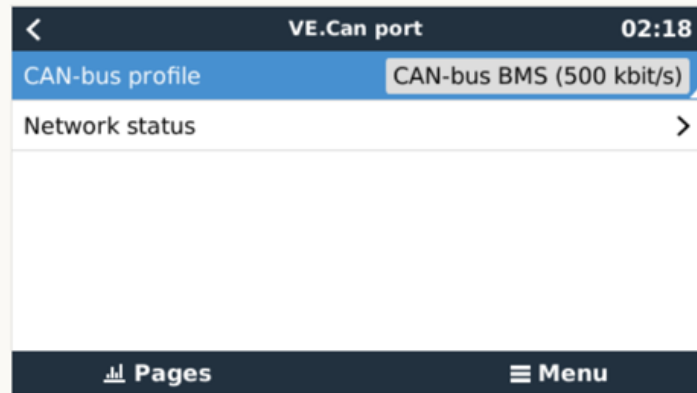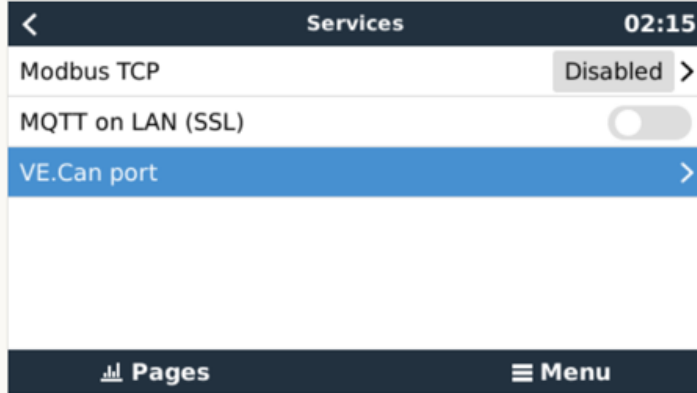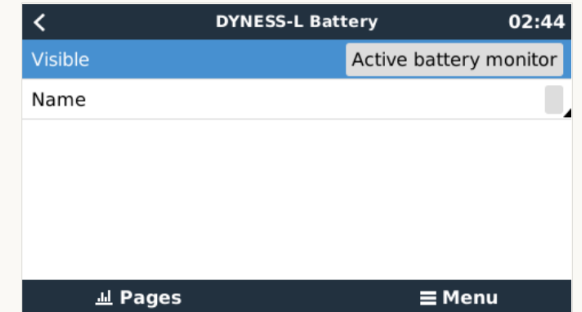
Powerbox Diagram – Simplified

BMS CAN   VE BUS

VE CAN   VE BUS   VE BUS

Master
0010

ON DIP
1 2 3 4

CAN IN
CAN OUT

Slave1
0000

ON DIP
1 2 3 4

CAN IN
CAN OUT

Slave2
0000

ON DIP
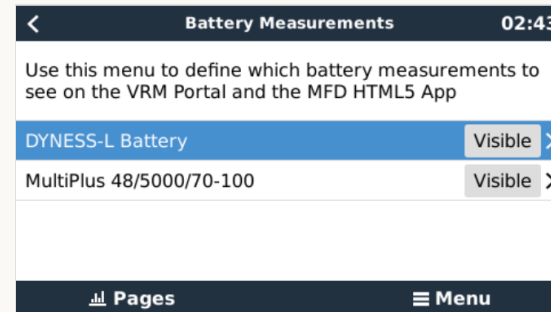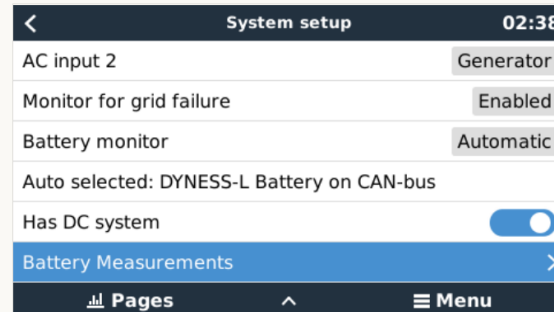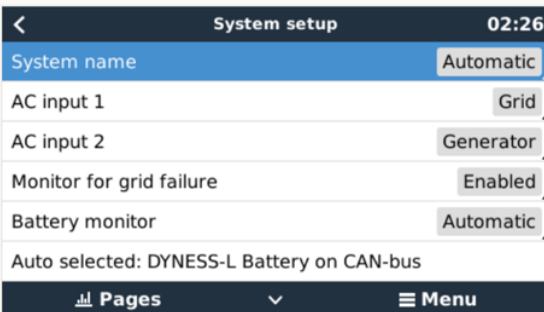1 2 3 4

CAN IN
CAN OUT
RJ45 terminator

Master

Slave1

Slave2

1.The master: factory default is 0010,so no need open the cover to change anything,use it directly.
2.If only one POWERBOX ,it is the master itself.
3.All slaves :you need to open their cover to change inside 1# module to be 0000.

Setup on the CCGX(Firmware version greater than V2.42)

Settings ⟶ Services ⟶ VE.Can port ⟶ CAN-bus BMS(500 kbit/s)

Services	02:15
Modbus TCP	Disabled >
MQTT on LAN (SSL)	⬤
VE.Can port	>

⊪ Pages   ≡ Menu

VE.Can port	02:18
CAN-bus profile	CAN-bus BMS (500 kbit/s)
Network status	>

⊪ Pages   ≡ Menu

Settings ⟶ System setup ⟶ Battery monitor:Auto selected:DYNESS-L Battery on CAN-bus
Battery Measurements ⟶ DYNESS-L Battery:Visible ⟶ Active battery monitor

System setup	02:26
System name	Automatic
AC input 1	Grid
AC input 2	Generator
Monitor for grid failure	Enabled
Battery monitor	Automatic
Auto selected: DYNESS-L Battery on CAN-bus	

⊪ Pages   ⌄   ≡ Menu

System setup	02:38
AC input 2	Generator
Monitor for grid failure	Enabled
Battery monitor	Automatic
Auto selected: DYNESS-L Battery on CAN-bus	
Has DC system	⬤
Battery Measurements	>

⊪ Pages   ⌃   ≡ Menu

Battery Measurements	02:43
Use this menu to define which battery measurements to see on the VRM Portal and the MFD HTML5 App	
DYNESS-L Battery	Visible >
MultiPlus 48/5000/70-100	Visible >

⊪ Pages   ≡ Menu

DYNESS-L Battery	02:44
Visible	Active battery monitor
Name	

⊪ Pages   ≡ Menu

Setup on the CCGX

Settings ⟶ DVCC:Activate
Limit charge current:OFF ,it will follow BMS
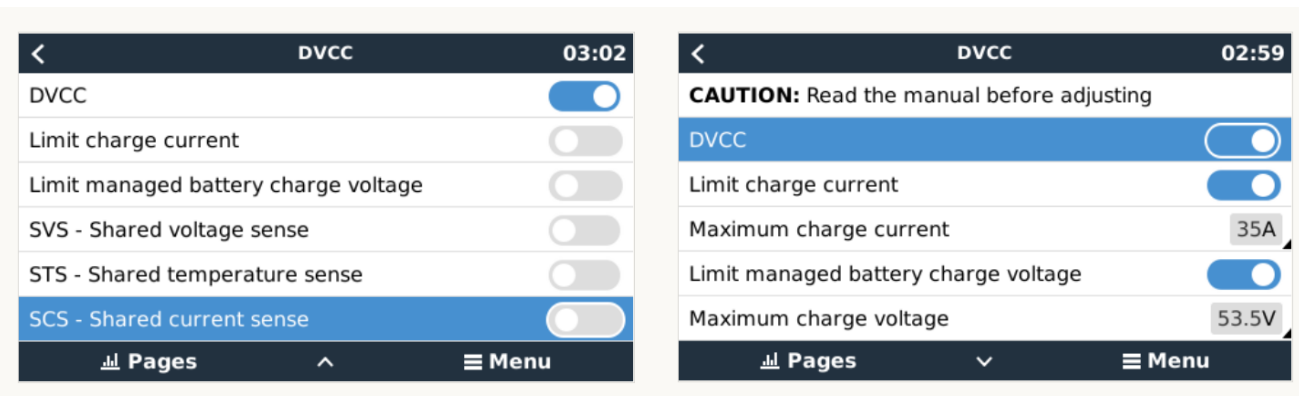Limit managed battery charge voltage:OFF,it will follow BMS
SVS:OFF
STS:OFF
SCS:OFF

If you turn on the "Limit charge current" ,you can setup a value according to the battery manual ,and the inverter will follow the minimum value between "BMS charge current limit" and "DVCC limit charge current".You can find the BMS charge current limit in "Device list---DYNESS L---Parameters"

If you turn on the "Limit managed battery charge voltage",you can setup a value according to the battery manual,
for **DYNESS 48V model**:B4850,B3,Powerbox F,PowerDepot,VB4850,A48100,BX48100,B48100 and so on,it's recommended **53.5V**
for **DYNESS 51V model**:BX51100,B51100,Powerbox Pro,PowerDepot H5B and so on,it's recommended **56.5V**

<	DVCC	03:02
DVCC		🔵
Limit charge current		⚪
Limit managed battery charge voltage		⚪
SVS - Shared voltage sense		⚪
STS - Shared temperature sense		⚪
SCS - Shared current sense		⚪
📊 Pages	∧	☰ Menu

<	DVCC	02:59
CAUTION: Read the manual before adjusting		
DVCC		🔵
Limit charge current		🔵
Maximum charge current		35A
Limit managed battery charge voltage		🔵
Maximum charge voltage		53.5V
📊 Pages	∨	☰ Menu

Setup on the CCGX

After communication succeed,you can see DYNESS-L Battery program in Device List.
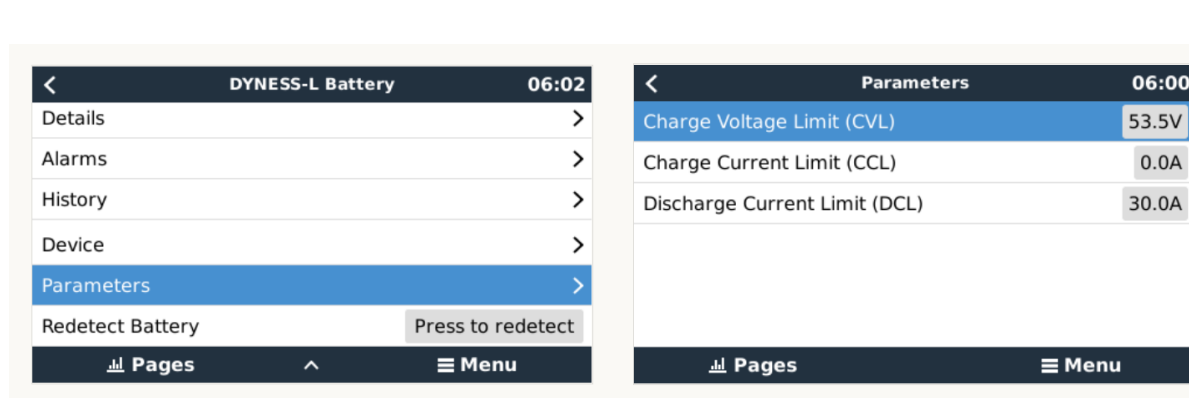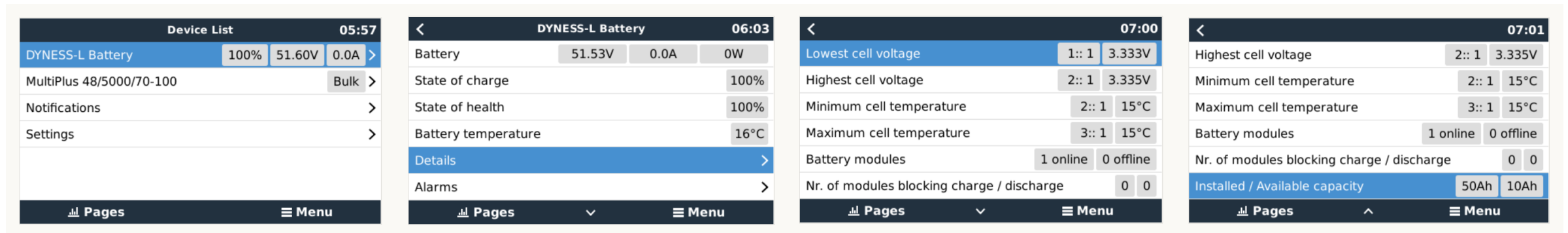DYNESS-L Battery:Battery present voltage,current,power,SOC,SOH,temperature
DYNESS-L---Details:In the future version(**in testing**) ,you can see battery information below:
Max.cell voltage/temp,
Min.cell voltage/temp,
battery modules number,
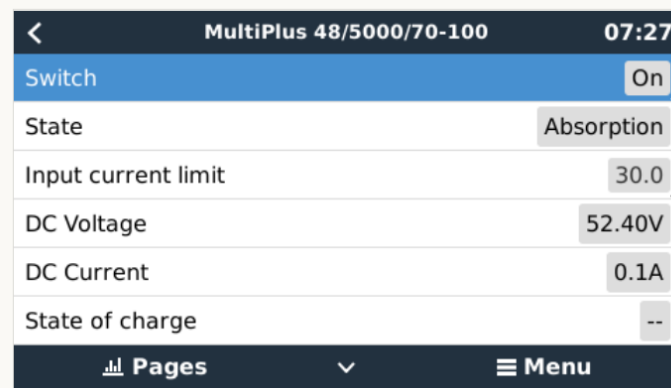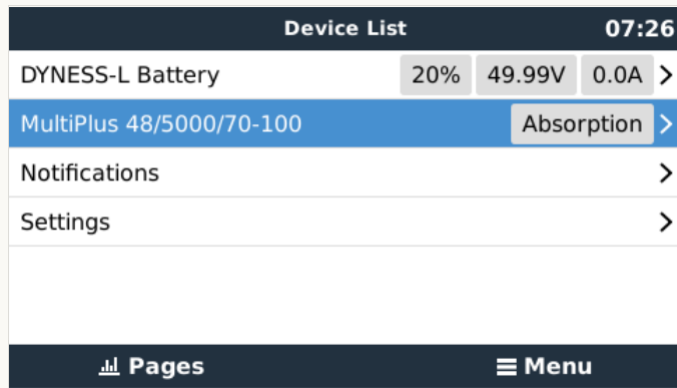Installed/Available capacity

Device List	05:57			
DYNESS-L Battery	100%	51.60V	0.0A	>
MultiPlus 48/5000/70-100			Bulk	>
Notifications				>
Settings				>
ⅈⅈ Pages		≡ Menu		

< DYNESS-L Battery	06:03		
Battery	51.53V	0.0A	0W
State of charge			100%
State of health			100%
Battery temperature			16°C
Details			>
Alarms			>
ⅈⅈ Pages	∨	≡ Menu	

<	07:00		
Lowest cell voltage		1:: 1	3.333V
Highest cell voltage		2:: 1	3.335V
Minimum cell temperature		2:: 1	15°C
Maximum cell temperature		3:: 1	15°C
Battery modules		1 online	0 offline
Nr. of modules blocking charge / discharge		0	0
ⅈⅈ Pages	∨	≡ Menu	

<	07:01		
Highest cell voltage		2:: 1	3.335V
Minimum cell temperature		2:: 1	15°C
Maximum cell temperature		3:: 1	15°C
Battery modules		1 online	0 offline
Nr. of modules blocking charge / discharge		0	0
Installed / Available capacity		50Ah	10Ah
ⅈⅈ Pages	∧	≡ Menu	

< DYNESS-L Battery	06:02	
Details		>
Alarms		>
History		>
Device		>
Parameters		>
Redetect Battery	Press to redetect	
ⅈⅈ Pages	∧	≡ Menu

< Parameters	06:00	
Charge Voltage Limit (CVL)		53.5V
Charge Current Limit (CCL)		0.0A
Discharge Current Limit (DCL)		30.0A
ⅈⅈ Pages		≡ Menu

DYNESS-L ---Parameters:
Charge Voltage Limit(CVL):sent by BMS,
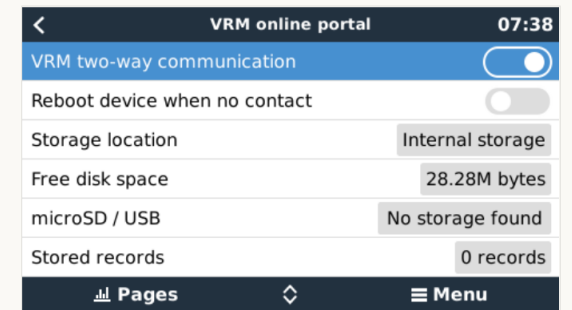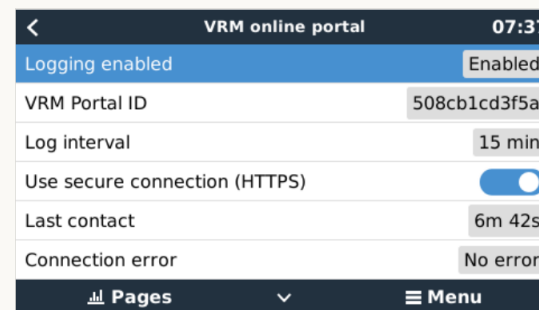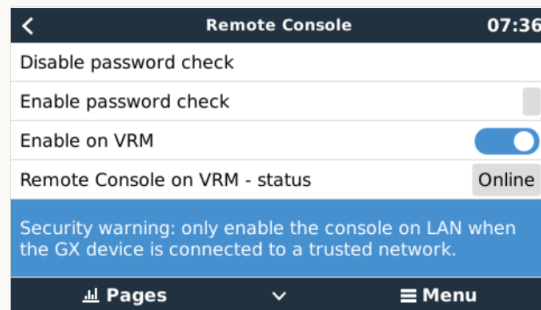**48V model** is **53.5V**,**51V model** is **56.5V**.
Charge Current Limit(CCL):sent by BMS,it will change with SOC changes,when battery SOC is 100% it will become 0A.
Discharge Current Limit(DCL):sent by BMS,it will change with SOC changes,when battery SOC is 15% it will become 0A.

Setup on the CCGX

Device List				07:26
DYNESS-L Battery	20%	49.99V	0.0A	>
MultiPlus 48/5000/70-100			Absorption	>
Notifications				>
Settings				>

Pages   **Menu**

<	MultiPlus 48/5000/70-100	07:27
Switch		On
State		Absorption
Input current limit		30.0
DC Voltage		52.40V
DC Current		0.1A
State of charge		--

Pages   ∨   **Menu**

MultiPlus 48/5000/70-100:
Input current limit:you can setup it according to your requirement to control the AC charge power.
DC Voltage:here is the value detected by inverter
DC Current:here is the value detected by inverter

<	General	07:33
Access level		User & Installer
Remote support		⬤
Remote support tunnel		Online
Remote support IP and port		84.22.108.49;28141
Reboot?		
Audible alarm		⬤

Pages   ∨   **Menu**

<	Remote Console	07:36
Disable password check		
Enable password check		
Enable on VRM		⬤
Remote Console on VRM - status		Online
Security warning: only enable the console on LAN when the GX device is connected to a trusted network.		

Pages   ∨   **Menu**

<	VRM online portal	07:37
Logging enabled		Enabled
VRM Portal ID		508cb1cd3f5a
Log interval		15 min
Use secure connection (HTTPS)		⬤
Last contact		6m 42s
Connection error		No error

Pages   ∨   **Menu**

<	VRM online portal	07:38
VRM two-way communication		⬤
Reboot device when no contact		⬤
Storage location		Internal storage
Free disk space		28.28M bytes
microSD / USB		No storage found
Stored records		0 records

Pages   ⬍   **Menu**

Settings---General
Remote support:ON

Settings---Remote Console
Enable on VRM:ON

Settings---VRM online portal
Logging enabled:Enabled
VRM two-way communication:ON

Setup on the VE Configure 3
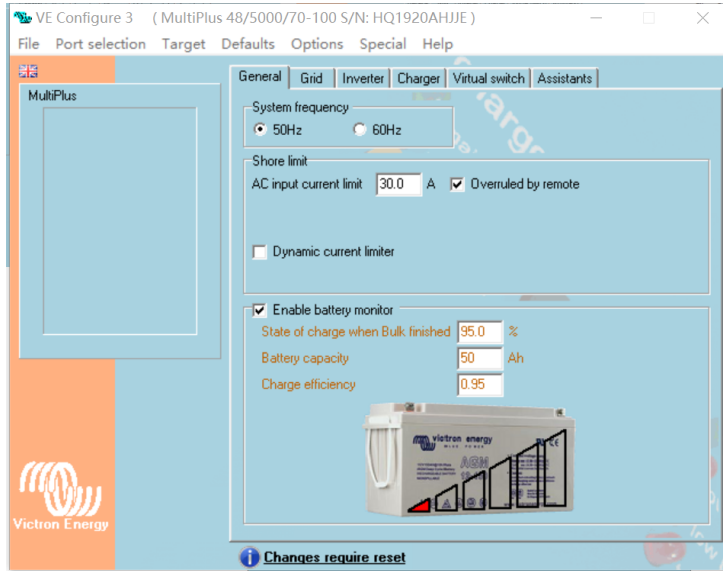
General
- State of charge when Bulk finished :95%
- Battery capacity :According to the capacity of the installed battery bank (Verify on battery datasheet)
- Charge efficiency :0.95
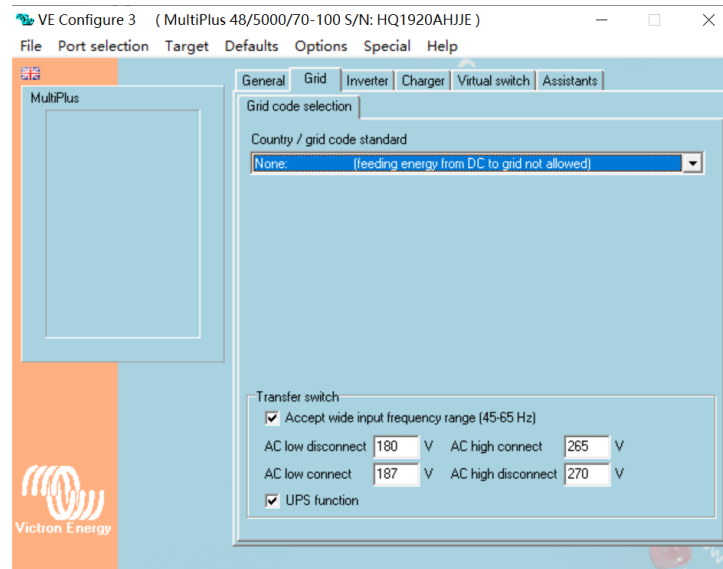
Grid
- Country / grid code standard:
Select according to your country;
You also can select None or Other

Setup on the VE Configure 3
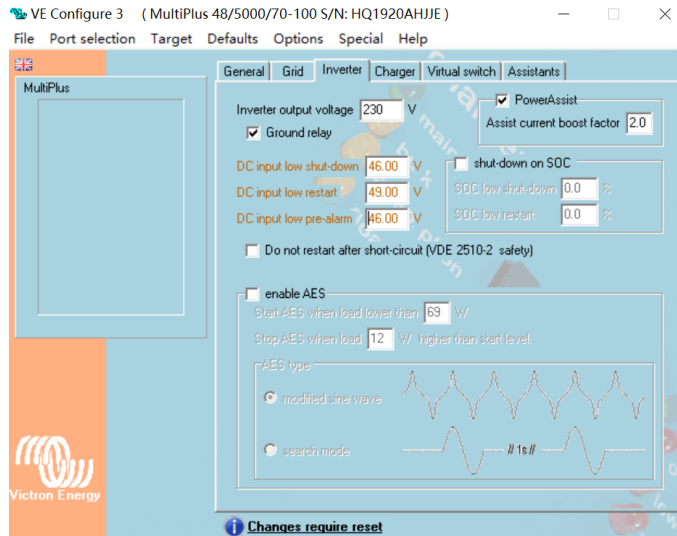
Inverter

48V model:
- DC input low shut-down 46V
- DC input low restart 49V
- DC input low pre-alarm 46V

51V model:
- DC input low shut-down 48V
- DC input low restart 52V
- DC input low pre-alarm 48V
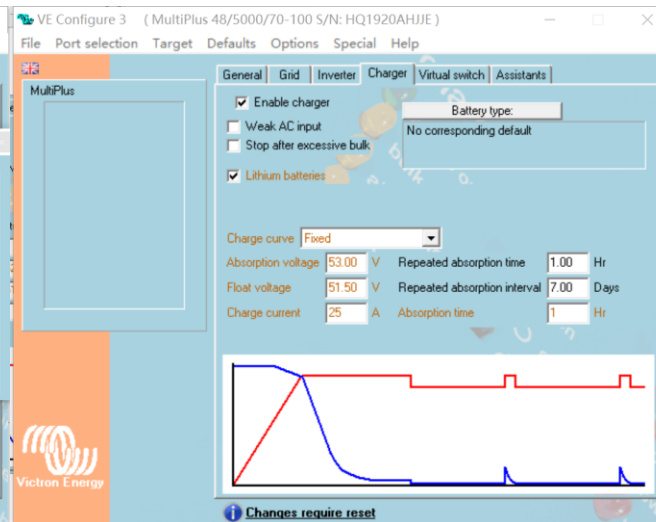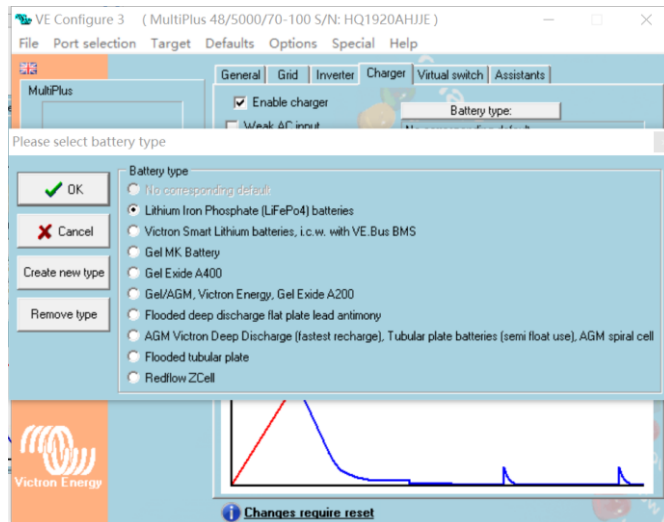
Charger
- Lithium batteries
- Charge curve: Fixed
- Absorption voltage:**48V model** is 53V; **51V model** is 55V
- Float voltage: **48V model** is 51.5V; **51V model** is 54.5V
- Charge current: According to the installed batteries*
- Repeated absorption time: 1 Hr
- Repeated absorption interval : 7 Days
- Absorption time : 1 Hr

Setup on the VE Configure 3
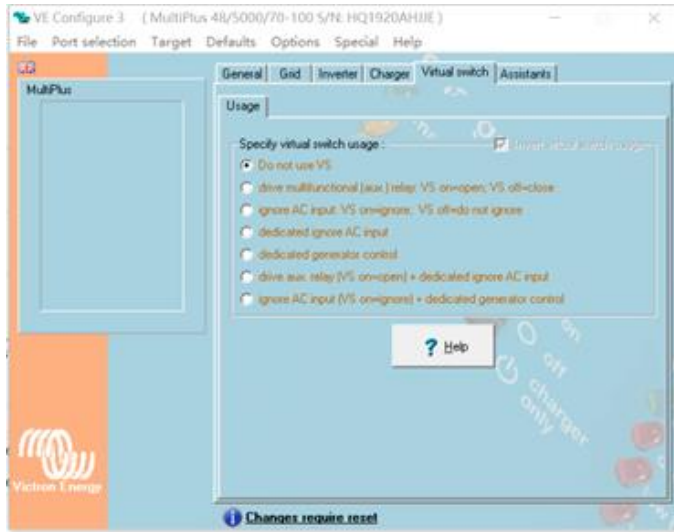
Virtual Switch:
Do not use
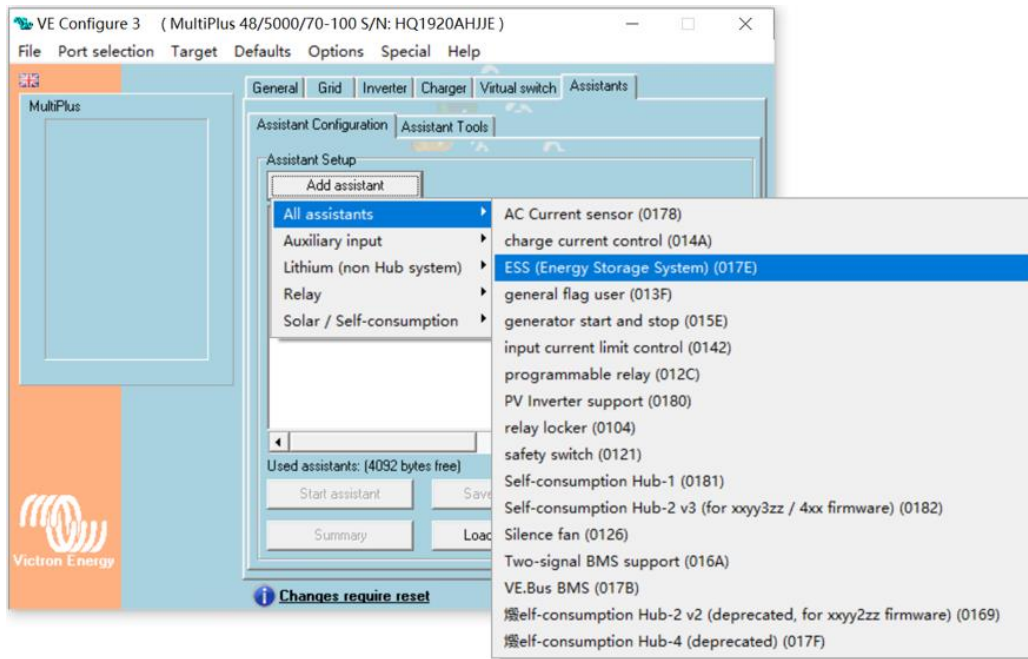
Assistants
• Add assistant → All assistants → ESS (Energy Storage System)

Setup on the VE Configure 3

Battery system:
- Select System uses LiFePo4 with other type BMS

Battery capacity:
- Fill according to the battery model and battery number paralleled in system

Setup on the VE Configure 3
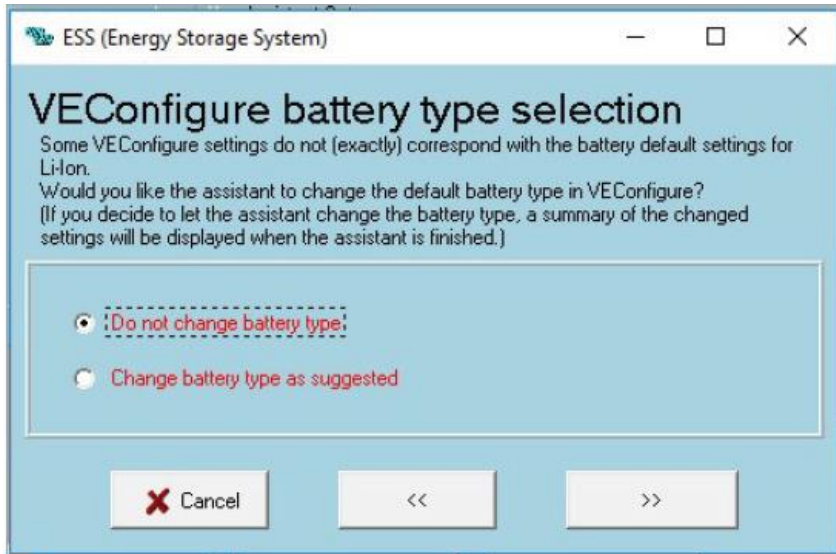
VEConfigure battery type selection:
- Do not change battery type
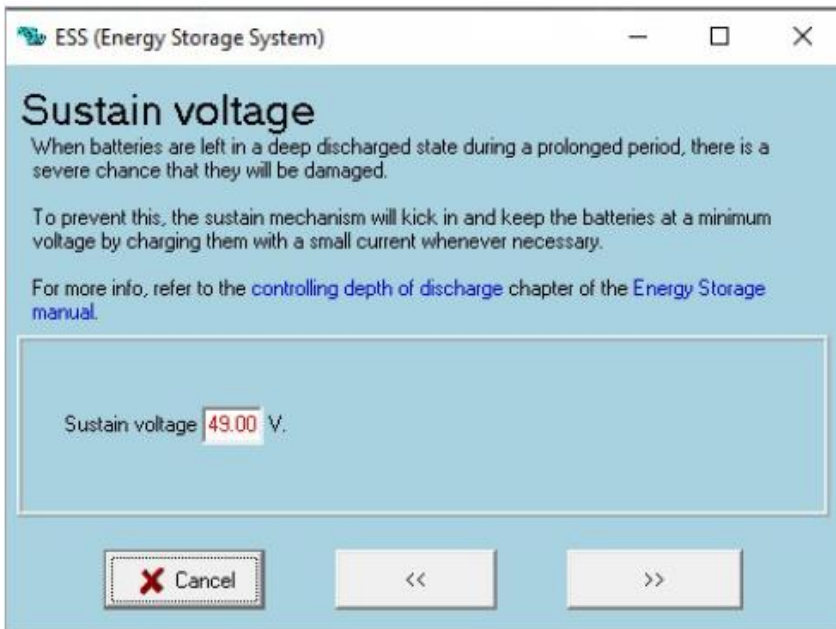
Sustain voltage:
- 48V model:49V
- 51V model:52V

Setup on the VE Configure 3
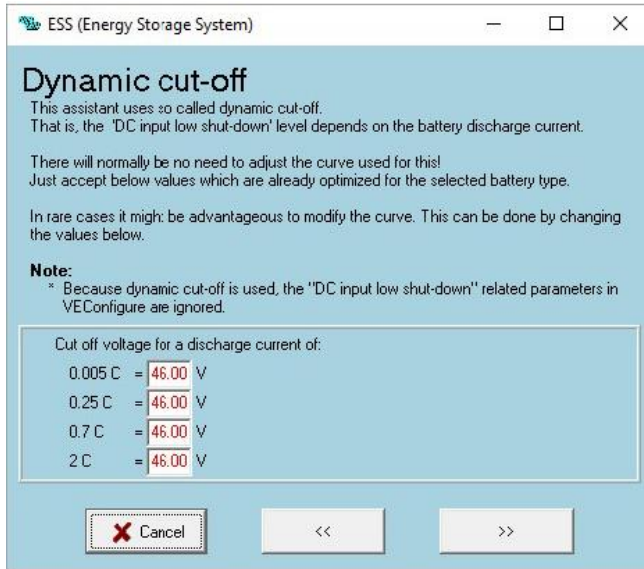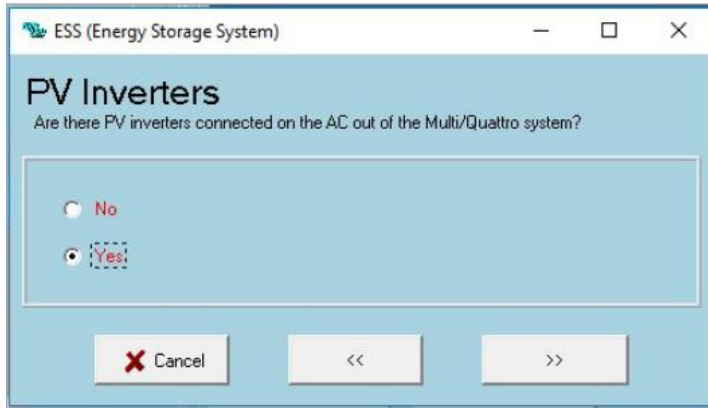
Dynamic cut-off:
- **48V model**:all of them is 46V
- **51V model**:all of them is 48V
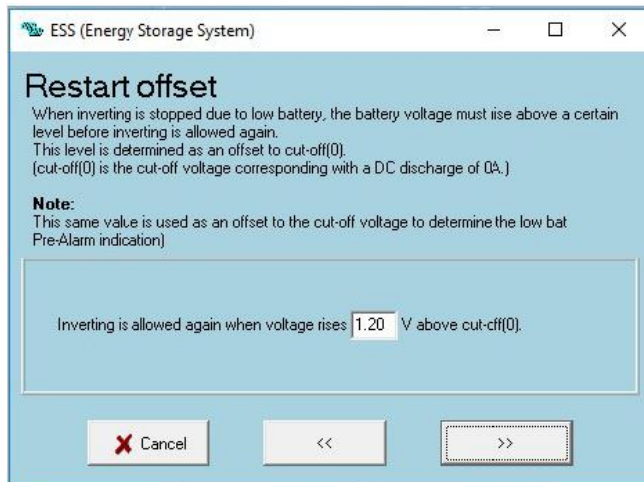
Restart offset:
- Inverting is allowed again when voltage rises 2V above cut-off.

Setup on the VE Configure 3
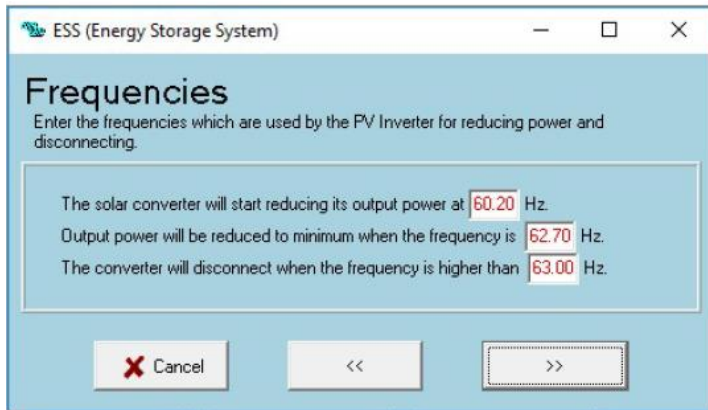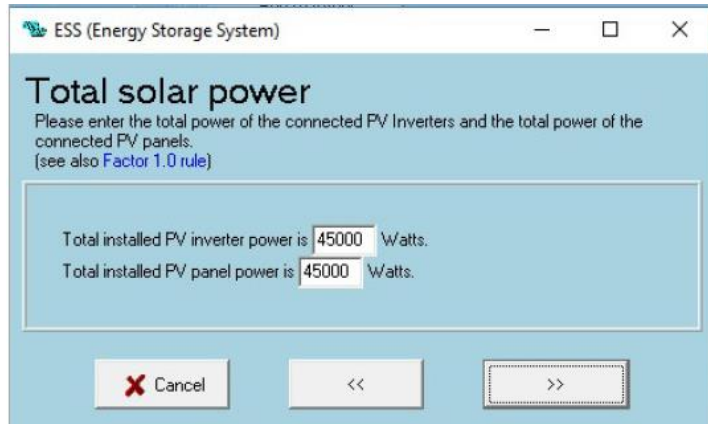
PV Inverters
- Here you will select whether or not you have an PV inverter at the Victron Energy output.

Frequencies
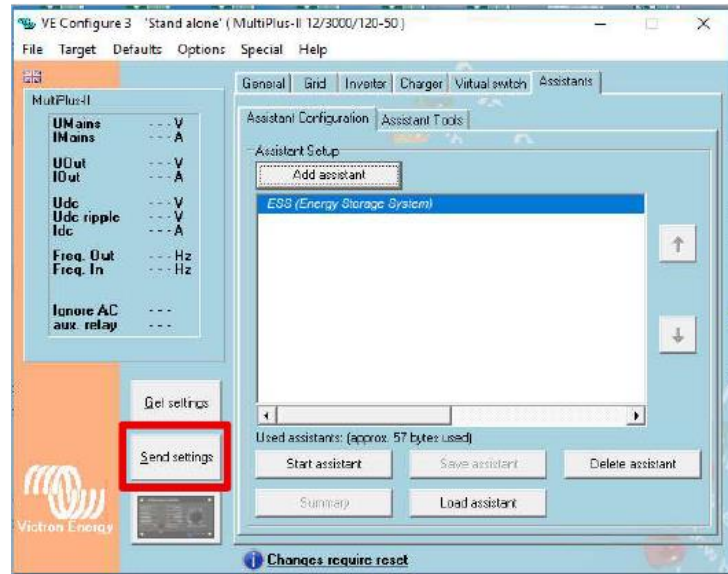- It depends on the PV inverter

Frequencies
- Configure total power of photovoltaic panels and PV inverter
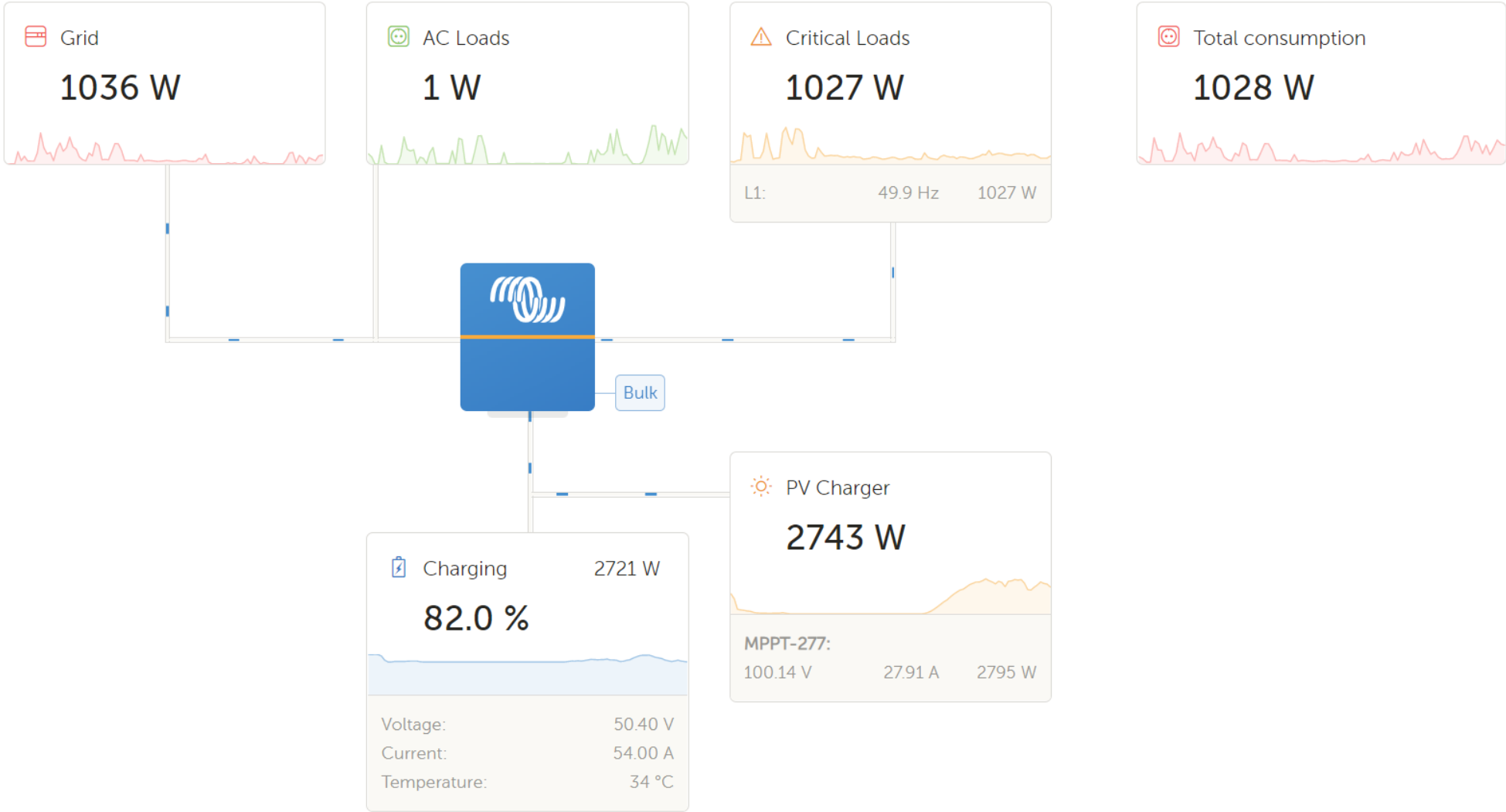
Setup on the VE Configure 3
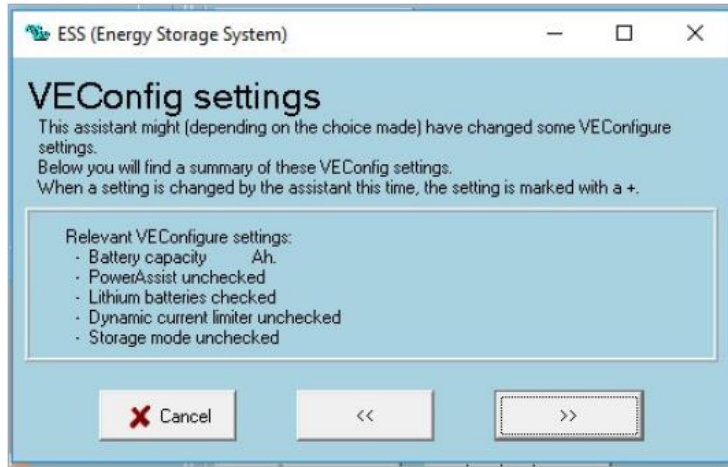
VEConfig settings

Send settings:
• After checking all the configured parameters, send the configuration individually to each inverter

Remote Access – VRM

Grid
1036 W

AC Loads
1 W

Critical Loads
1027 W

L1:   49.9 Hz   1027 W

Total consumption
1028 W

Bulk

Charging   2721 W
82.0 %

Voltage:	50.40 V
Current:	54.00 A
Temperature:	34 °C

PV Charger
2743 W

MPPT-277:
100.14 V   27.91 A   2795 W

Completed