



*Best Solution Lithium Battery*

**BSLBATT Powerline -5  
& VICTRON  
Installation Manual  
V1.3**



**victron energy**  
B L U E P O W E R

## SAFETY GUIDELINES



**Work or maintenance on the BSLBatt should be carried out by qualified personal only.**

**Do not attempt to open or dismantle battery and / or cells.**



The electrolyte contained in the battery cells is highly corrosive. In the event of any damage to or leakage from cells, treat contents with care, do not allow contact with exposed skin or eyes. **DO NOT INGEST!**



The Terminals of the BSLBatt should always be considered live, therefore do not place tools or any other items across the terminals. Do not pierce, short or damage the terminals in any way. Do not touch the terminals of the battery.



Fire Hazard: Do not discharge battery below specified minimum level as this poses an increased fire risk. Do not attempt to charge a swollen or damaged battery. In the event of a fire, a CO<sub>2</sub> or Dry Powder extinguisher should be used. Class D extinguishers are not suitable.



Dispose of batteries through the proper local regulations. Not suitable for regular refuse / recycling.

## Contents

SAFETY GUIDELINES .....	i
Contents.....	ii
1. Pin-out Diagram .....	1
2. Battery Set-up.....	2
2.1 General.....	2
2.1.1 Turning battery on & Off.....	2
2.1.2 CAN Communication .....	2
2.1.3 Dry Contacts.....	2
2.1.4 Other Ports.....	2
2.2 Multiple Batteries .....	3
2.2.1 Max Number of Parallel Batteries .....	3
2.2.2 Installing Multiple Batteries.....	3
2.2.3 Cable Sizing with Multiple Batteries.....	3
2.2.4 Dip Switch Settings for Multiple Batteries (5.1 kWh, 6.4 kWh, 10.2kWh) .....	3
2.2.5 Dip Switch Settings for Multiple Batteries (8.2 kWh, 15 kWh) <b>Error! Bookmark not defined.</b>	
3. Inverter Set-up.....	5
3.1 Batteries Per Inverter Size.....	5
3.1.1 5.1 kWh (100 Ah) .....	5
3.1.2 6.4 kWh (125 Ah) .....	5
3.1.3 7 kWh (135 Ah).....	5
3.1.4 8.2 kWh (160 Ah) .....	5
3.1.5 8.8 kWh (172 Ah) .....	6
3.1.6 10.2 kWh (200 Ah) .....	6
3.1.7 15 kWh (300 Ah) .....	6
3.2 Battery Set-up on Victron GX Device .....	7
3.3 Battery Set-up on Victron MPPT Device.....	8
4. Inverter Settings (Victron).....	9
4.1 General Tab .....	9
4.2 Grid Tab.....	10
4.3 Inverter Tab .....	11
4.4 Charger Tab.....	12
4.5 Assistant Tab (a).....	14
4.6 Assistant Tab (b).....	15
4.7 Assistant Tab (c).....	16
4.8 Assistant Tab (d).....	17
4.9 Assistant Tab (e).....	18
4.10 Assistant Tab (f).....	19
5. Revision History.....	20

# 1. Pin-out Diagram

Figure 1: Pin-out diagram for 51.2V BSL Powerline-5 Battery.



**Introduction of The Panel**

①SOC、RUN\ALM	②Dial switch	③Positive	④RS485
⑤RS232	⑥CAN/485 of inverter	⑦Dry contact	⑧Reset
⑨Negative	⑩Handle	⑪GND	

## 2. Battery Set-up

### 2.1 General

#### 2.1.1 Turning battery on & Off

The battery can be switched on or off by holding down the small, recessed button marked "RESET" for around 3 seconds.

#### 2.1.2 CAN Communication

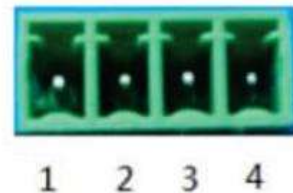
A VE.Can to CAN-bus BMS "Type B" cable is required for CAN-Bus communication between the BSL battery and the Victron GX device. Some inverters will use different cable configuration, please check this with inverter suppliers. (Black to inverter/GX device, red to battery).

Function	Victron <u>VE.Can Side (GX)</u>	Battery side
GND	Pin 3	Pin 2
CAN - L	Pin 8	Pin 5
CAN - H	Pin 7	Pin 4

#### 2.1.3 Dry Contacts

Dry Contacts are mostly unused, but for communication with some non-smart systems please see the table below. Working current should be less than 2A, mainly to connect with an external indicator light or buzzer

PIN1 to PIN2	Always open, will close with low battery signal
PIN3 to PIN4	Always Open, will close with fault/protection signal.



#### 2.1.4 Other Ports

Port 1 (RS485) and port 3 (RS232) are used for programming and retrieving information only and must be left open.

## 2.2 Multiple Batteries

### 2.2.1 Max Number of Parallel Batteries

A maximum of 15 batteries can be connected in parallel. Each battery will require a unique binary address which can be setup via the 485-1 & 485-2 ports located on the bottom of the battery.

### 2.2.2 Installing Multiple Batteries

When installing more than one battery in parallel, a standard RJ45 patch network cable will be required for inter-battery communication. These cables will need to be connected to port 1 or 2 between all the connected batteries.

### 2.2.3 Cable Sizing with Multiple Batteries

It is recommended to make use of a common rail bus-bar when more than 4 batteries are to be installed. All positive cables running between the battery and bus-bar must be the same length and all negative cables must be the same length. The batteries should be evenly grouped where possible.

The recommended battery cable sizes from the batteries (going to the inverter) in parallel are as follows: 1 battery - 35mm<sup>2</sup>, 2 batteries - 50mm<sup>2</sup>, 3 batteries 70mm<sup>2</sup> or 2 × 35mm<sup>2</sup>, 4 batteries - 95mm<sup>2</sup> or 2 × 50mm<sup>2</sup>

### 2.2.4 Dip Switch Settings for Multiple Batteries Powerline-5

Table 1: Dip-switch set-up for multiple batteries

1. Can only connect 15 Powerline-5 batteries in parallel.
2. Connect the cables in order 485-2 to 485-1
3. Turn on batteries in order ( 1-2-3-4....15)

- Master battery: 485-2 port connect to battery 2 (Slave) 485-1 port.
- Slave battery 1: 485-2 port into battery 3 (slave 2) 485-1 port.
- Slave battery 2: 485-2 port into battery 4 (slave 3) 485-1 port.

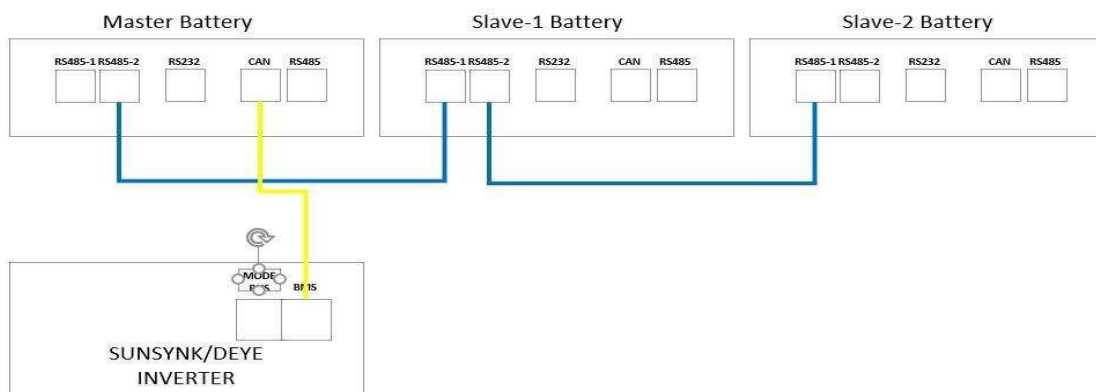


Figure 2: Powerline-5 pin-out image showing 485-1 & 485-2 ports:



### 3. Inverter Set-up

#### 3.1 Batteries Per Inverter Size

##### 3.1.1 5.1 kWh (100 Ah)

Inverter Size	Recommended Batteries	Minimum Batteries
15 kVA	4	3
10 kVA	3	2
8 kVA	2	2
5 kVA	2	1
3 kVA	1	1

##### 3.1.2 6.4 kWh (125 Ah)

Inverter Size	Recommended Batteries	Minimum Batteries
15 kVA	4	3
10 kVA	3	2
8 kVA	2	2
5 kVA	2	1
3 kVA	1	1

##### 3.1.3 7 kWh (135 Ah)

Inverter Size	Recommended Batteries	Minimum Batteries
15 kVA	4	3
10 kVA	3	2
8 kVA	2	2
5 kVA	2	1
3 kVA	1	1

##### 3.1.4 8.2 kWh (160 Ah)

Inverter Size	Recommended Batteries	Minimum Batteries
15 kVA	3	2
10 kVA	2	2
8 kVA	2	1
5 kVA	1	1
3 kVA	1	1



## 3.1.5 8.8 kWh (172 Ah)

Inverter Size	Recommended Batteries	Minimum Batteries
15 kVA	3	2
10 kVA	2	2
8 kVA	2	1
5 kVA	1	1
3 kVA	1	1

## 3.1.6 10.2 kWh (200 Ah)

Inverter Size	Recommended Batteries	Minimum Batteries
15 kVA	4	3
10 kVA	3	2
8 kVA	2	2
5 kVA	2	1
3 kVA	1	1

## 3.1.7 15 kWh (300 Ah)

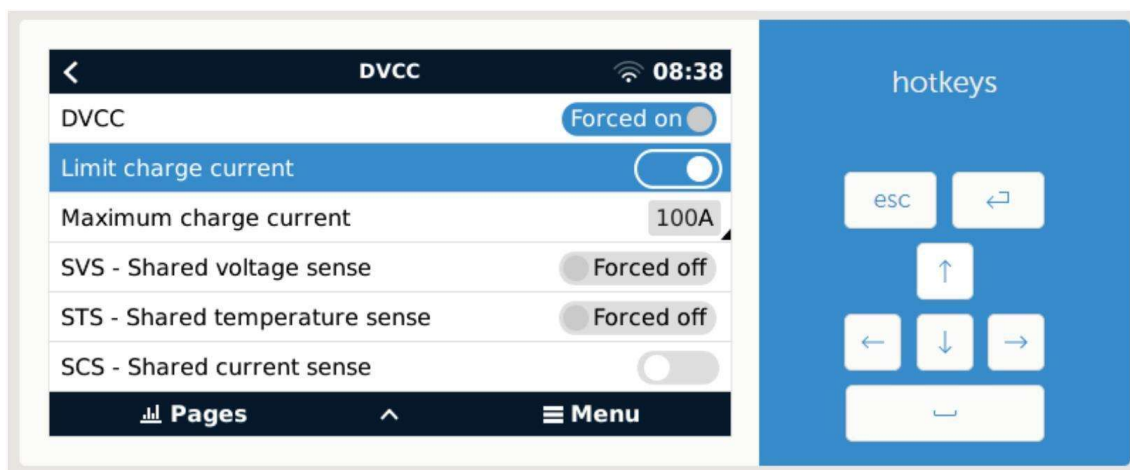
Inverter Size	Recommended Batteries	Minimum Batteries
15 kVA	2	2
10 kVA	2	1
8 kVA	1	1
5 kVA	1	1
3 kVA	1	1

## 5.1kw Powerline-5

Inverter Size	Recommended Batteries	Minimum Batteries
15 kVA	4	3
10 kVA	3	2
8 kVA	2	2
5 kVA	1	1
3 kVA	1	1

### 3.2 Battery Set-up on Victron GX Device

1. The VE.Can to CAN-bus BMS Type B cable needs to be connected to the VE-Can port on the GX device and the second unused VE.Can port needs to be terminated with the Victron blue terminator. Ensure that the cable is marked CCGX at the end.
2. Press the enter button on the GX device. This should take you to the device list page. Scroll down to settings, press enter, and scroll to services and press enter again. Navigate to the CAN settings and change the CAN speed from 250 KB to 500 KB.
3. Scroll to DVCC and select Switch DVCC on. Flag SHARED VOLTAGE SENSE and CHARGE LIMIT. Set CCL (charge current limit) to 50% of battery capacity.
4. Navigate back to the device list and the BSL battery should appear on the device list.
5. Select the BSL battery set the parameters as follows:
  - Charge Voltage 54.5V.
  - Charge Current Limit: 80A per battery.
  - Discharge Current Limit: 150A per battery.



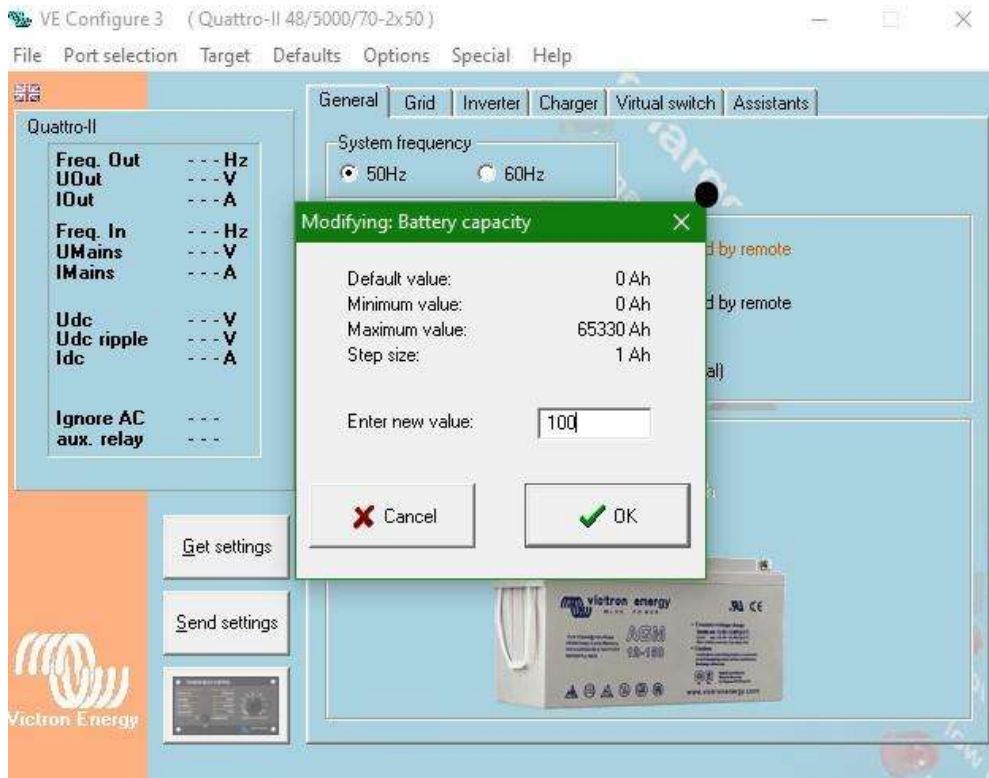
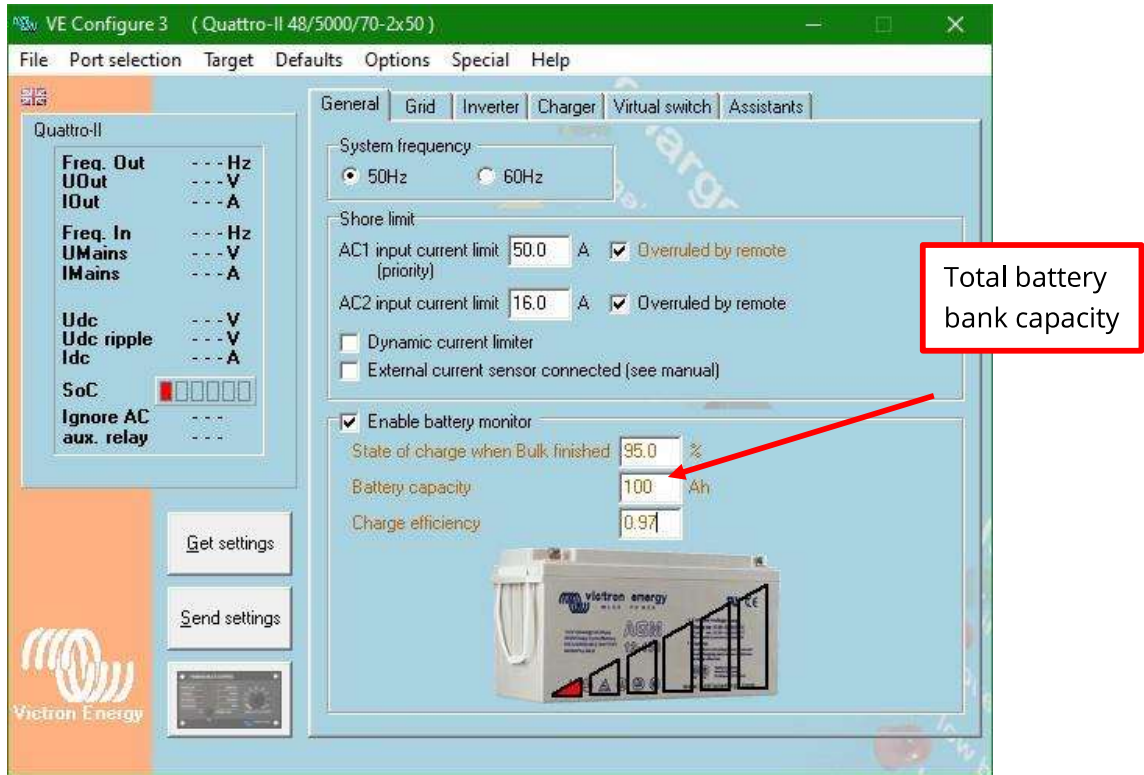
### 3.3 Battery Set-up on Victron MPPT Device

The screenshot displays the 'Settings' screen of a Victron MPPT device. The status bar at the top shows 'VoWiFi', 4G signal, Wi-Fi, and a battery level of 75% at 12:23. The settings are organized into several sections:

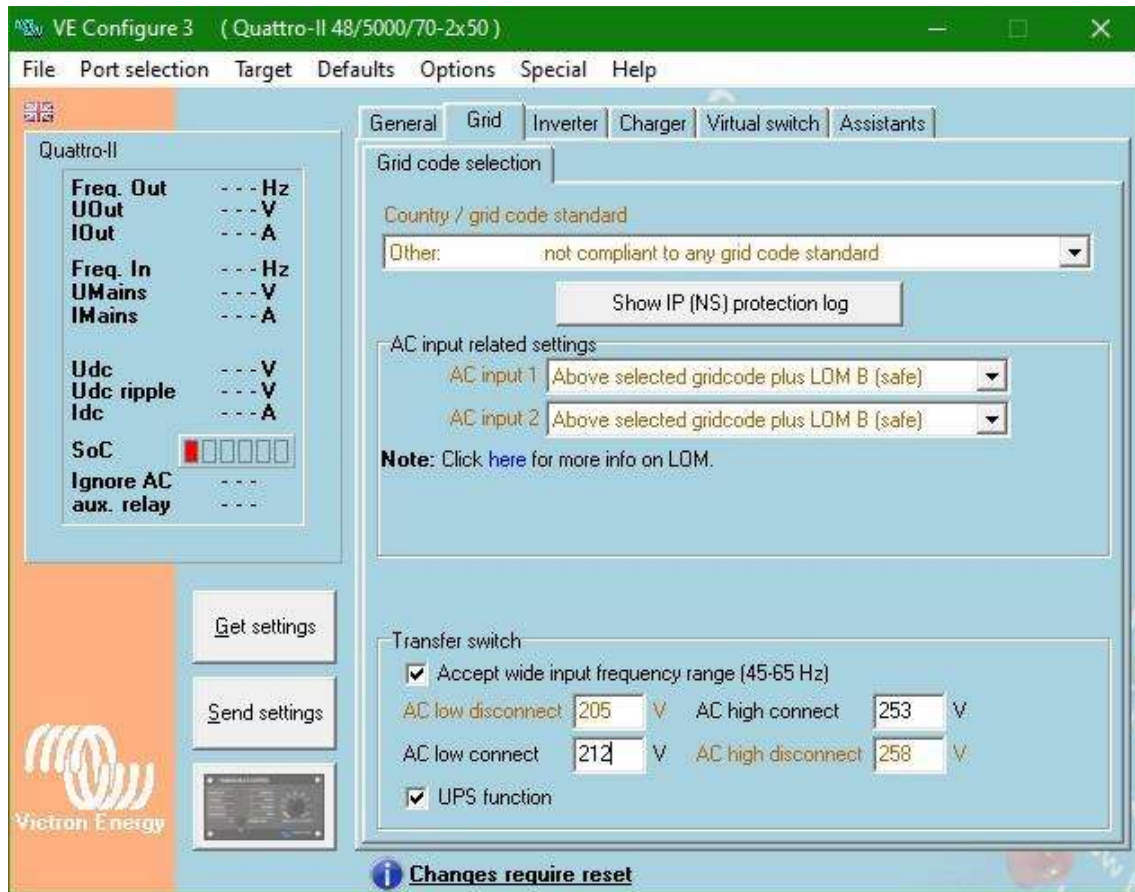
- General Settings:**
  - Battery voltage: 48V (dropdown)
  - Max charge current: 100A
  - Charger enabled:
  - Battery preset: User defined (dropdown)
  - Expert mode:
  - BMS controlled: Yes (arrow)
- Charge voltages:**
  - Absorption voltage: 55.00V (checked)
  - Float voltage: 54.80V (checked)
  - Equalization voltage: 54.00V
- Equalization:**
  - Automatic equalization: Disabled
  - Manual equalization: [START NOW](#)
- Voltage compensation:**
  - Temperature compensation: Disabled
- Battery limits:**
  - Low temperature cut-off: 2°C (checked)

## 4. Inverter Settings (Victron)

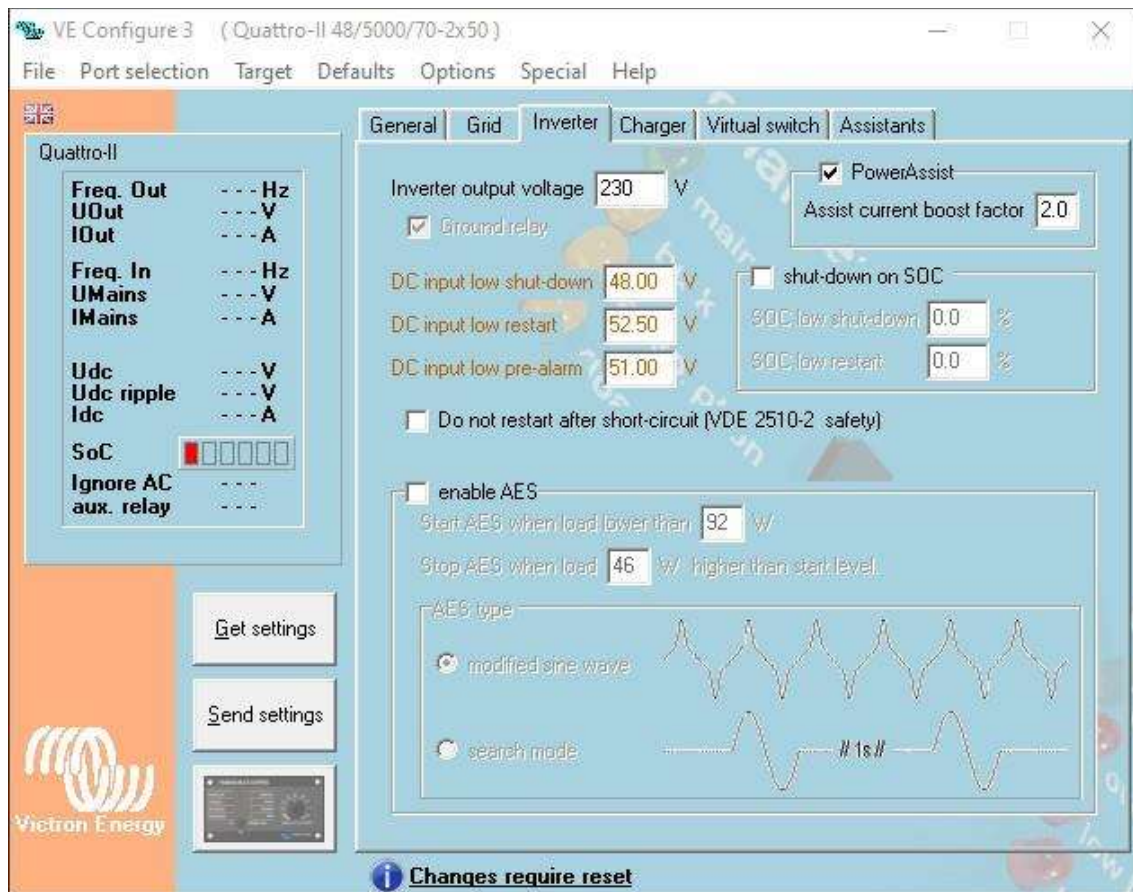
### 4.1 General Tab



### 4.2 Grid Tab



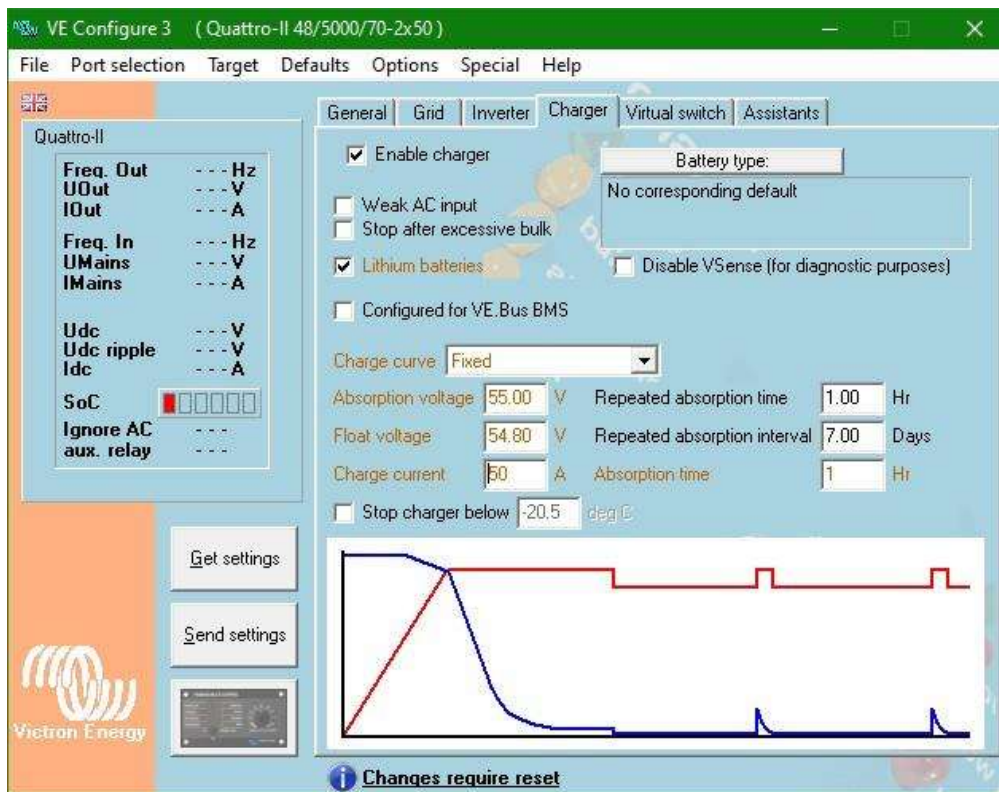
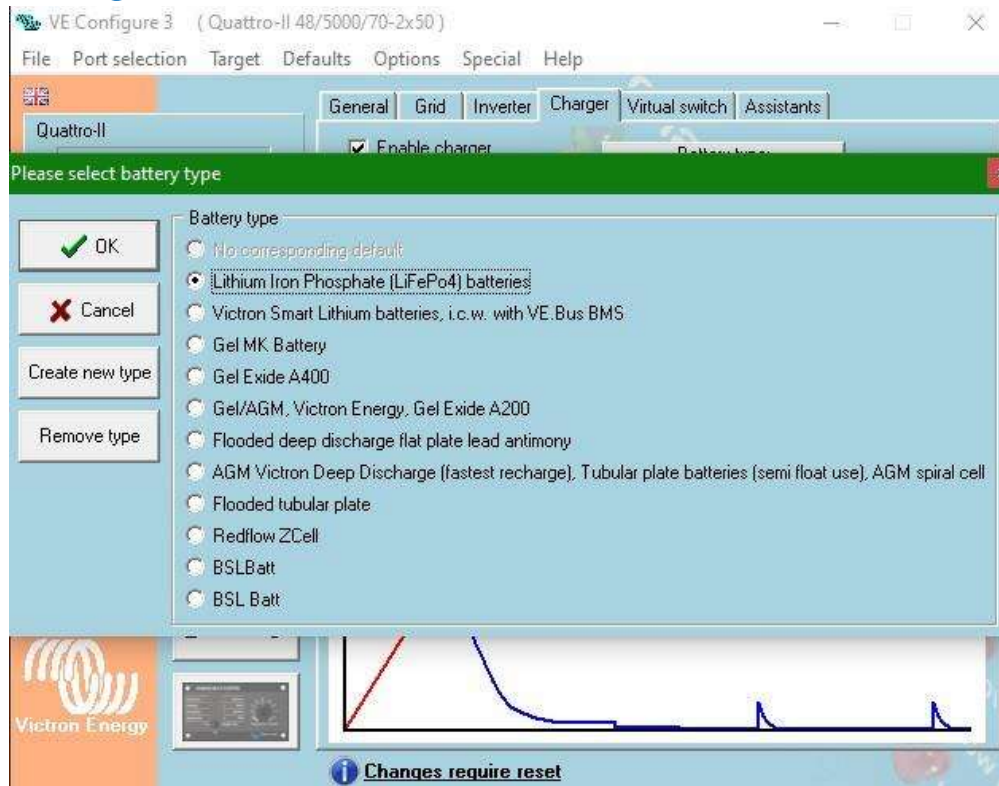
### 4.3 Inverter Tab



Take note: Shutdown on SOC optional but recommended to untick, the charger source can then shutdown on voltage instead.



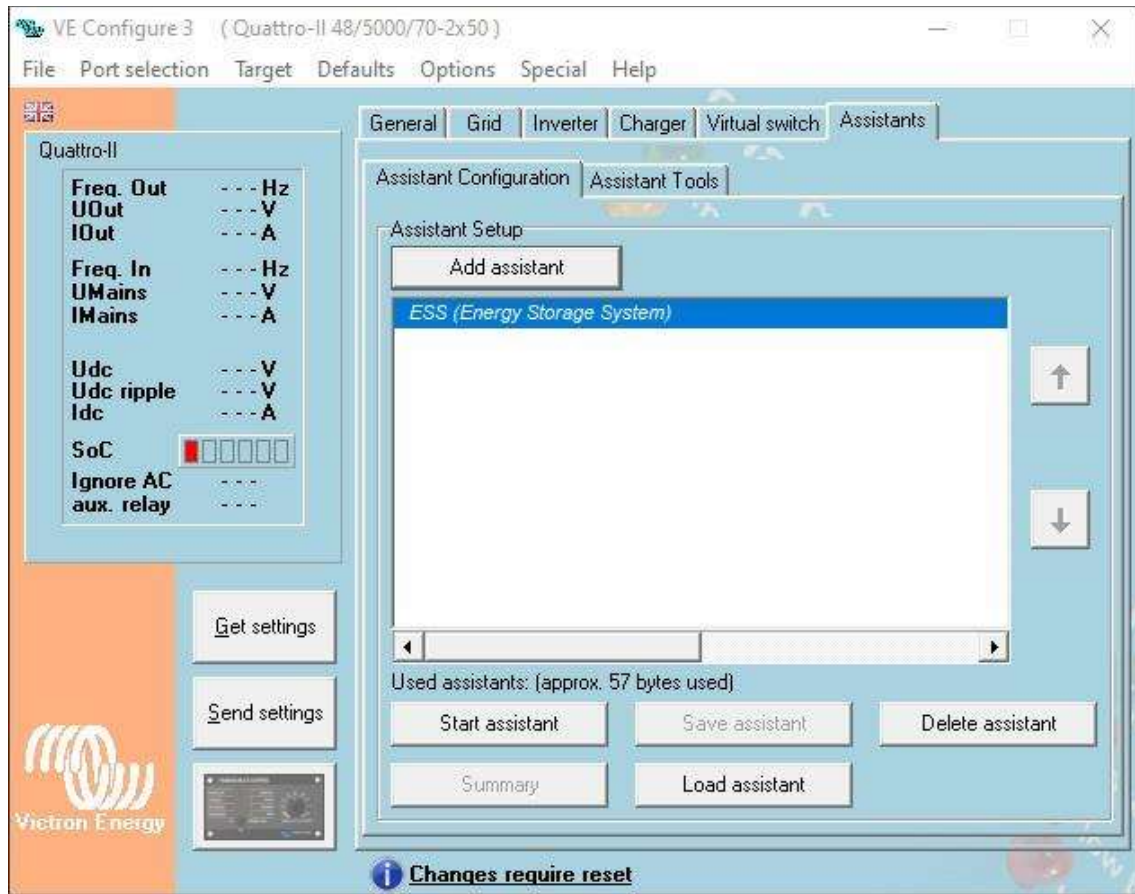
### 4.4 Charger Tab



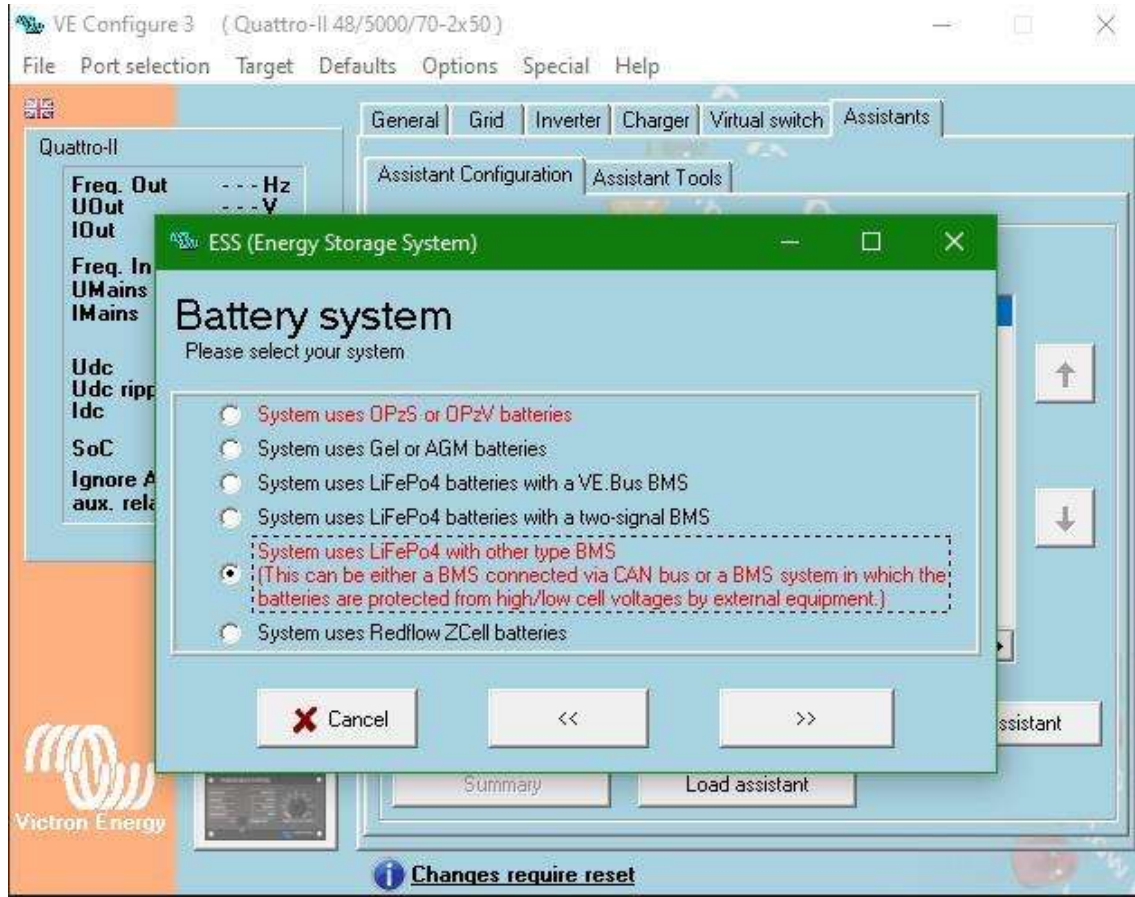




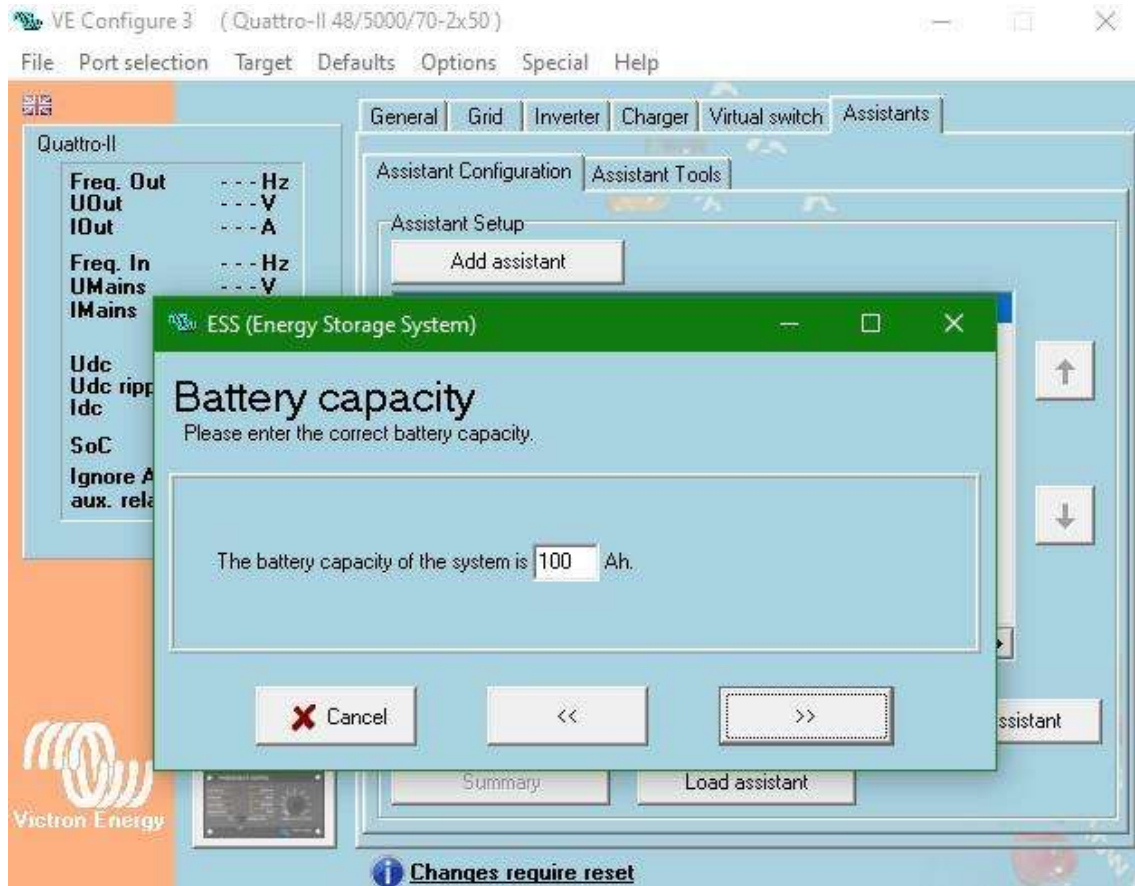
### 4.5 Assistant Tab (a)



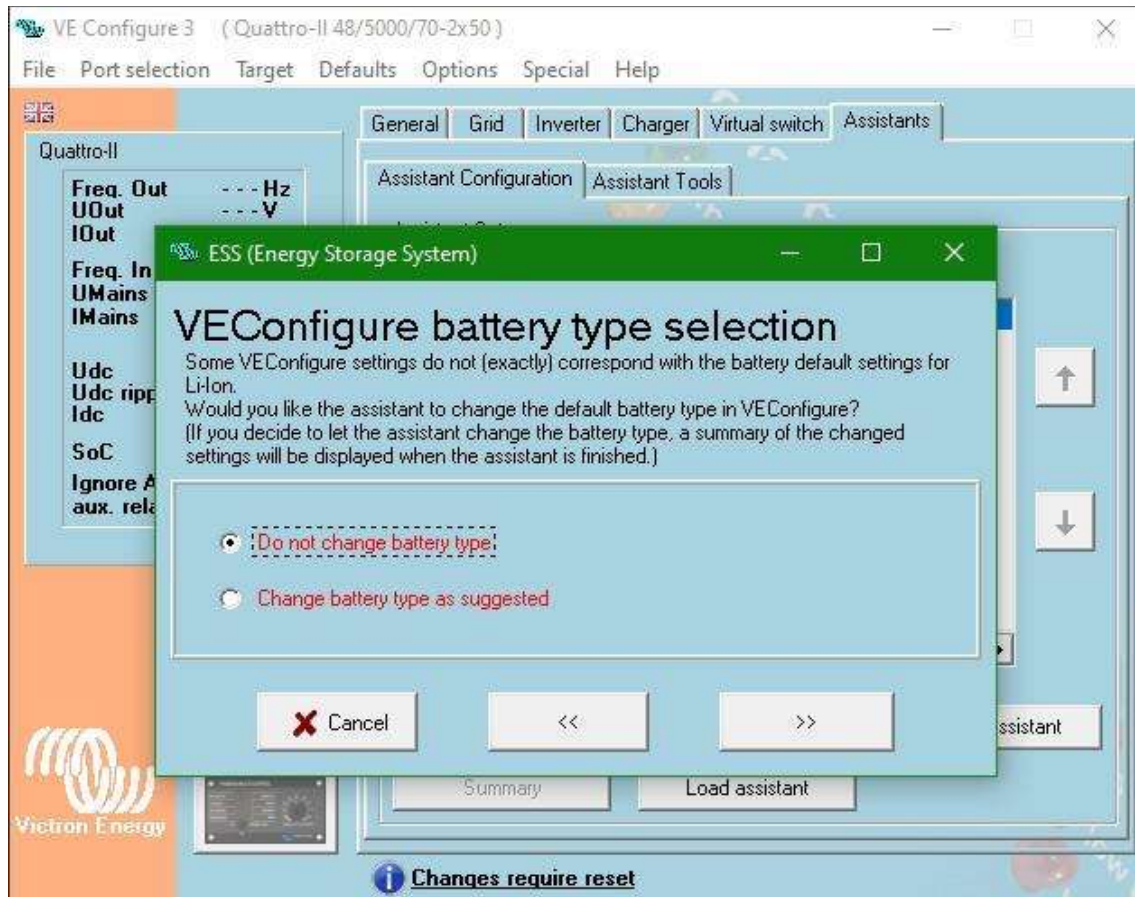
### 4.6 Assistant Tab (b)



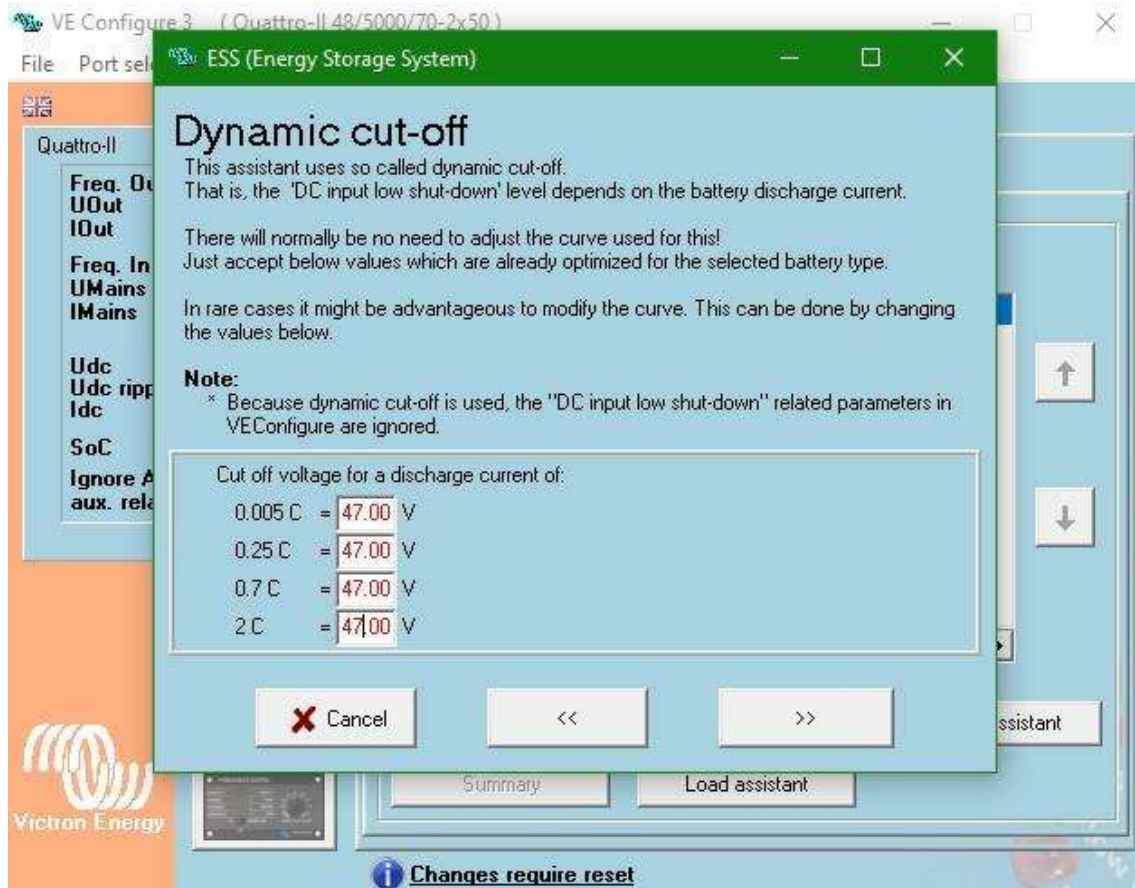
### 4.7 Assistant Tab (c)



### 4.8 Assistant Tab (d)

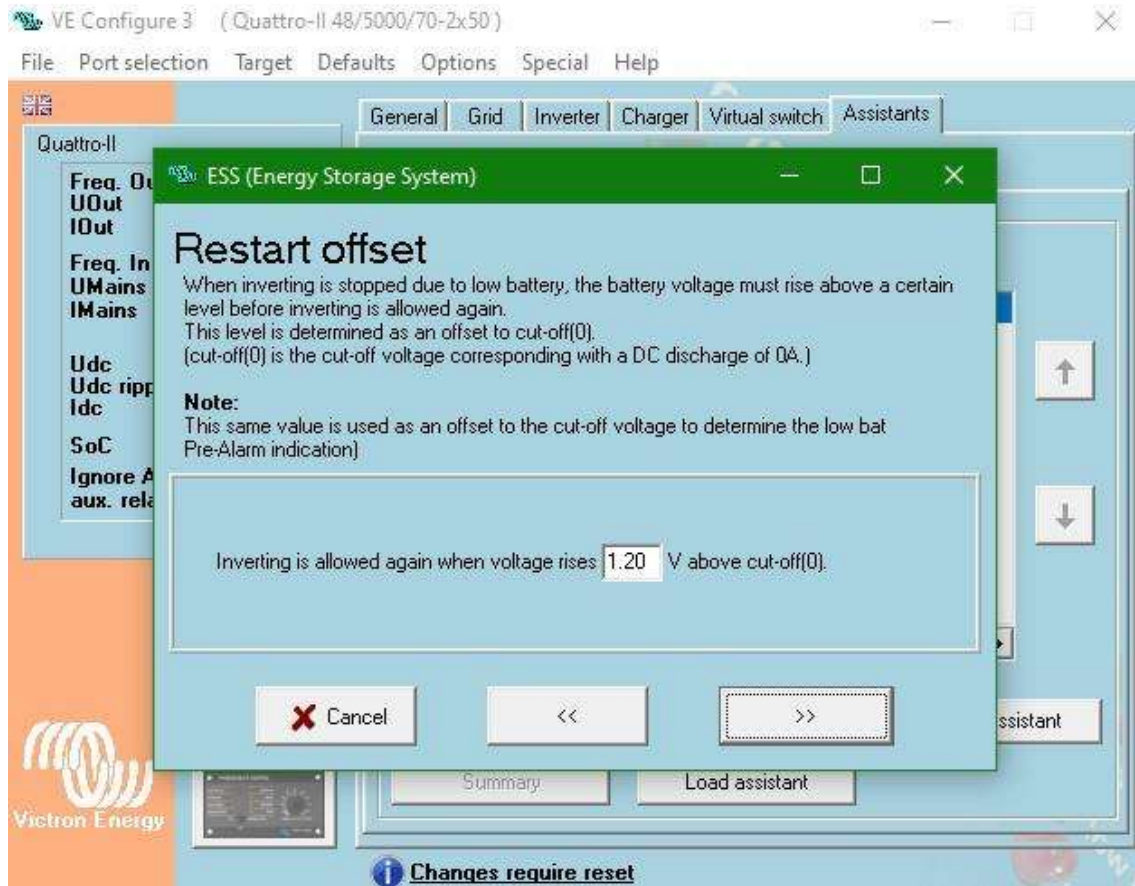


### 4.9 Assistant Tab (e)





### 4.10 Assistant Tab (f)



## 5. Revision History

Version	Date	Editor	Changes
1	Nov 2021	D. E. Cornew	-
1.1	Feb 2022	P. J. Andrew	- Address 0 column removed from Dip switch settings for multiple batteries (Tables 1 and 2) - Formatting
1.2	Nov 2022	P.J. Andrew D. E. Cornew	- Update on BSLBatt Branding. - Formatting. - Update VE.Configure Inverter Tab. (4.3) - Update VE.Configure Charger Tab. (4.4) - Updated to include 300Ah
1.3	Jun 2023	P.J. Andrew, N. Jones	- Format overhaul - Readded Images. - Removed 4.11 & 4.12