

# Configuration Manual

Axpert VMIII / KING  
48V/5KW  
SOLAR INVERTER / CHARGER

# 1 . Operating Sample

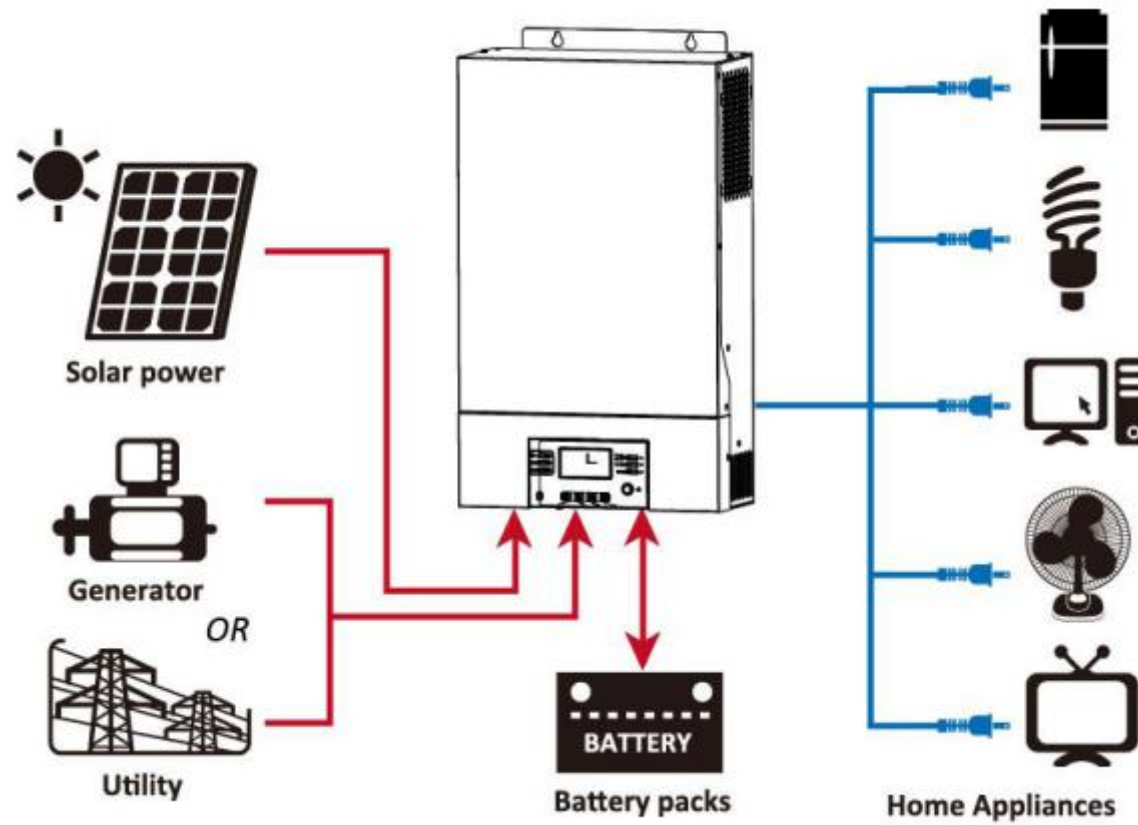
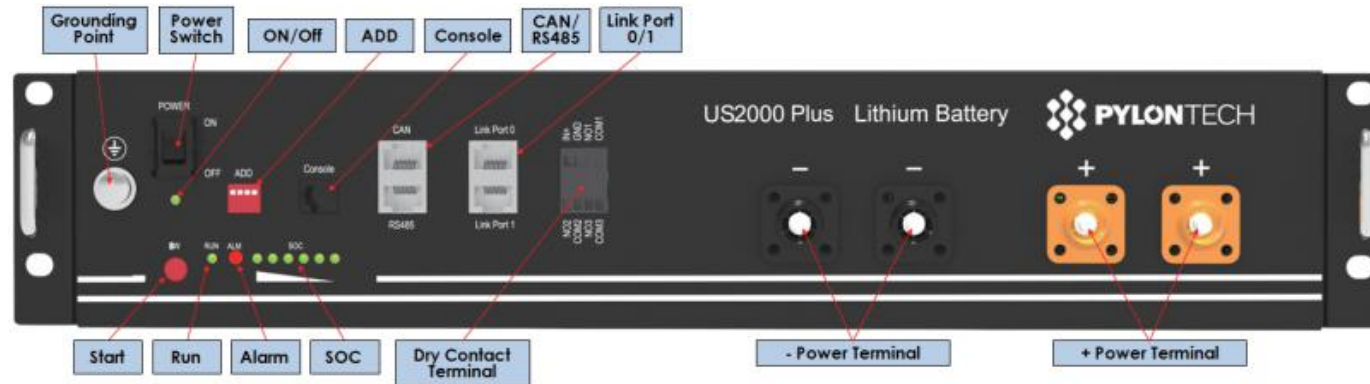


Figure 1 Hybird power system

## 2 . Battery Module (US2000 Plus/US3000) Front Interface



Power Terminal connect to VMIII/KING 10 port .

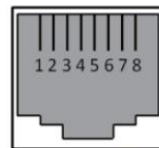
Battery input.

RS485 port connect to VMIII 15 port/KING 17 port.

BMS Communication port: RS485

### Definition of RJ45 Port Pin (Battery side)

No.	RS485 Pin
1	--
2	--
3	--
4	--
5	--
6	GND
7	RS485A
8	RS485B



RJ45 Port

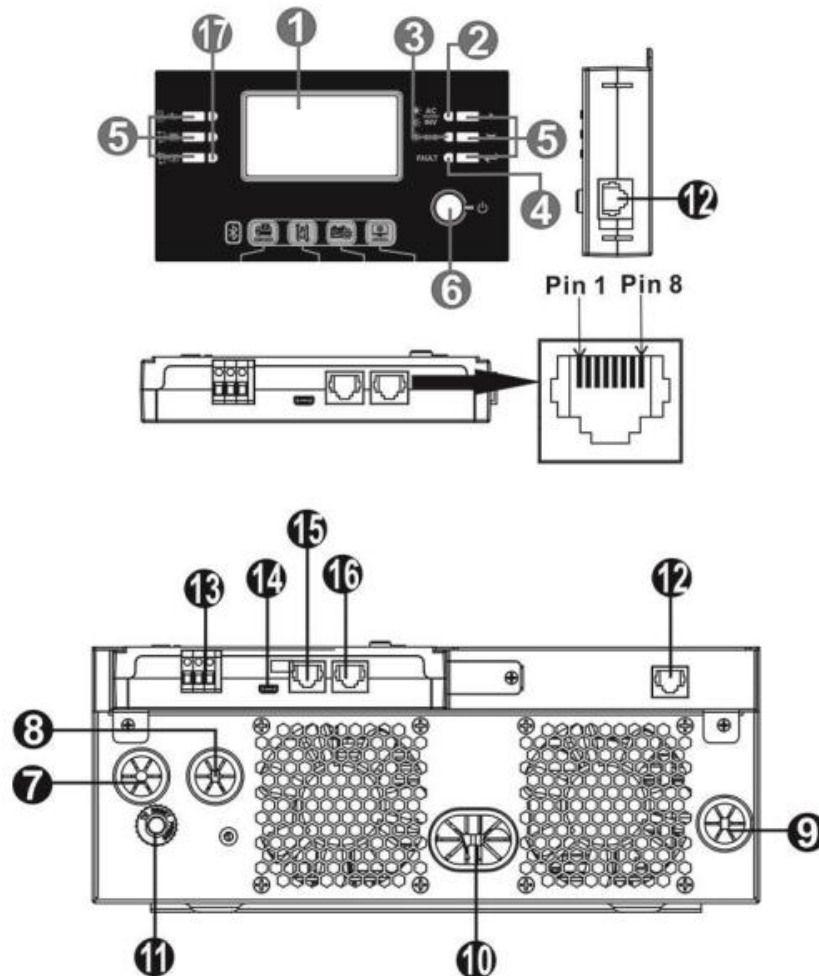


RJ45 Plug

### Definition of RJ45 Port Pin (Inverter side)

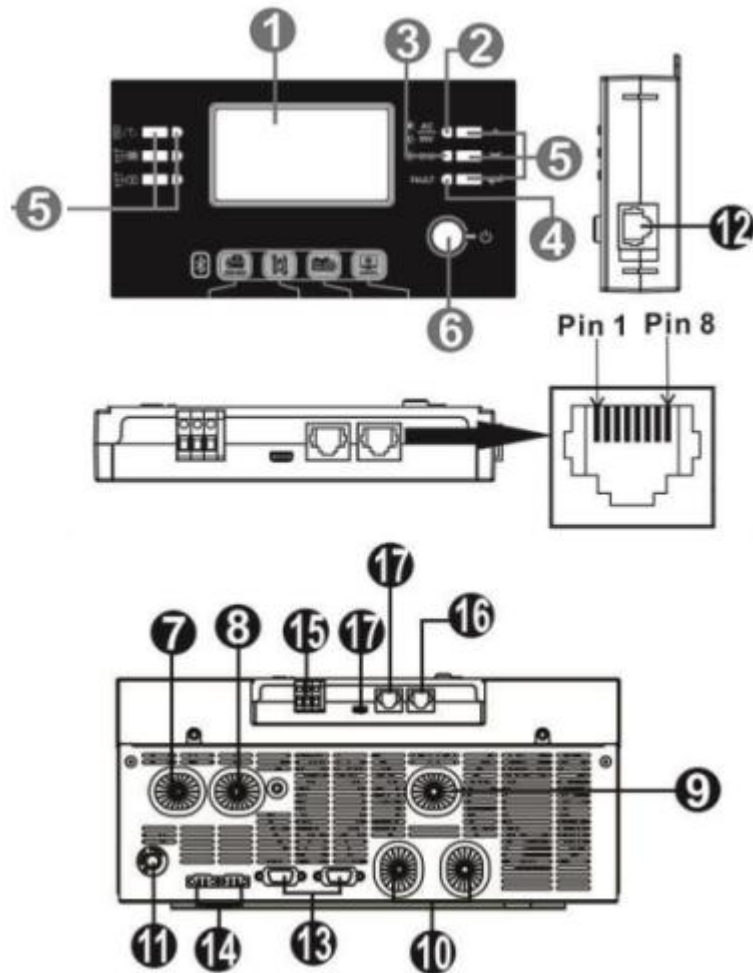
No.	RS485 Pin
1	--
2	--
3	RS485B
4	--
5	RS485A
6	--
7	--
8	--

### 3 . Axpert VMIII Overview



1. LCD display
2. Status indicator
3. Charging indicator
4. Fault indicator
5. Function buttons
6. Power on/off switch
7. AC input
8. AC output
9. PV input
10. Battery input
11. Circuit breaker
12. Remote LCD panel communication port(optional)
13. Dry contact
14. USB communication port
15. BMS Communication port: RS485( to Battery )
16. RS-232 communication port (to PC )
17. LED indicators for USB function setting/ Output source priority timer / Charger source priority setting

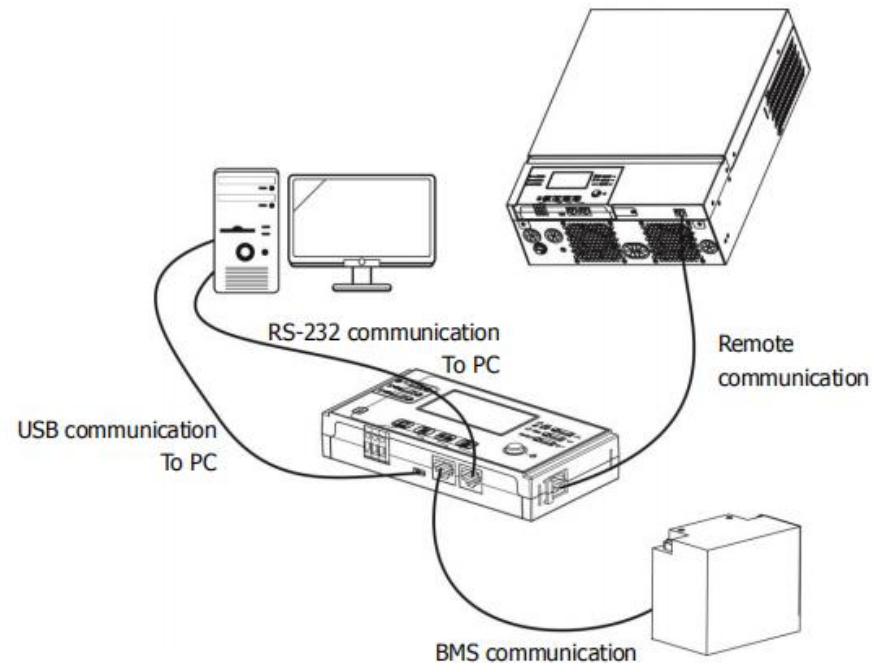
## Apkert KING Overview



1. LCD display
2. Status indicator
3. Charging indicator
4. Fault indicator
5. Function keys
6. Power on/off switch
7. AC input
8. AC output
9. PV input
10. Battery input
11. Circuit breaker
12. Remote LCD panel communication port
13. Parallel communication cable (only for parallel model)
14. Current sharing cable (only for parallel model)
15. Dry contact
16. RS-232 communication port ( to PC )
17. BMS Communication port:RS485( to Battery )

#### 4 . Communication Connection

Connect LCD panel to the inverter with an optional RJ45 communication cable as below chart.






Please use supplied communication cable to connect to inverter and PC. Insert bundled CD into a computer and follow on-screen instruction to install the monitoring software. For the detailed software operation, please check user manual of software inside of CD.

## 5 . Parameter configuration in “watchpower”

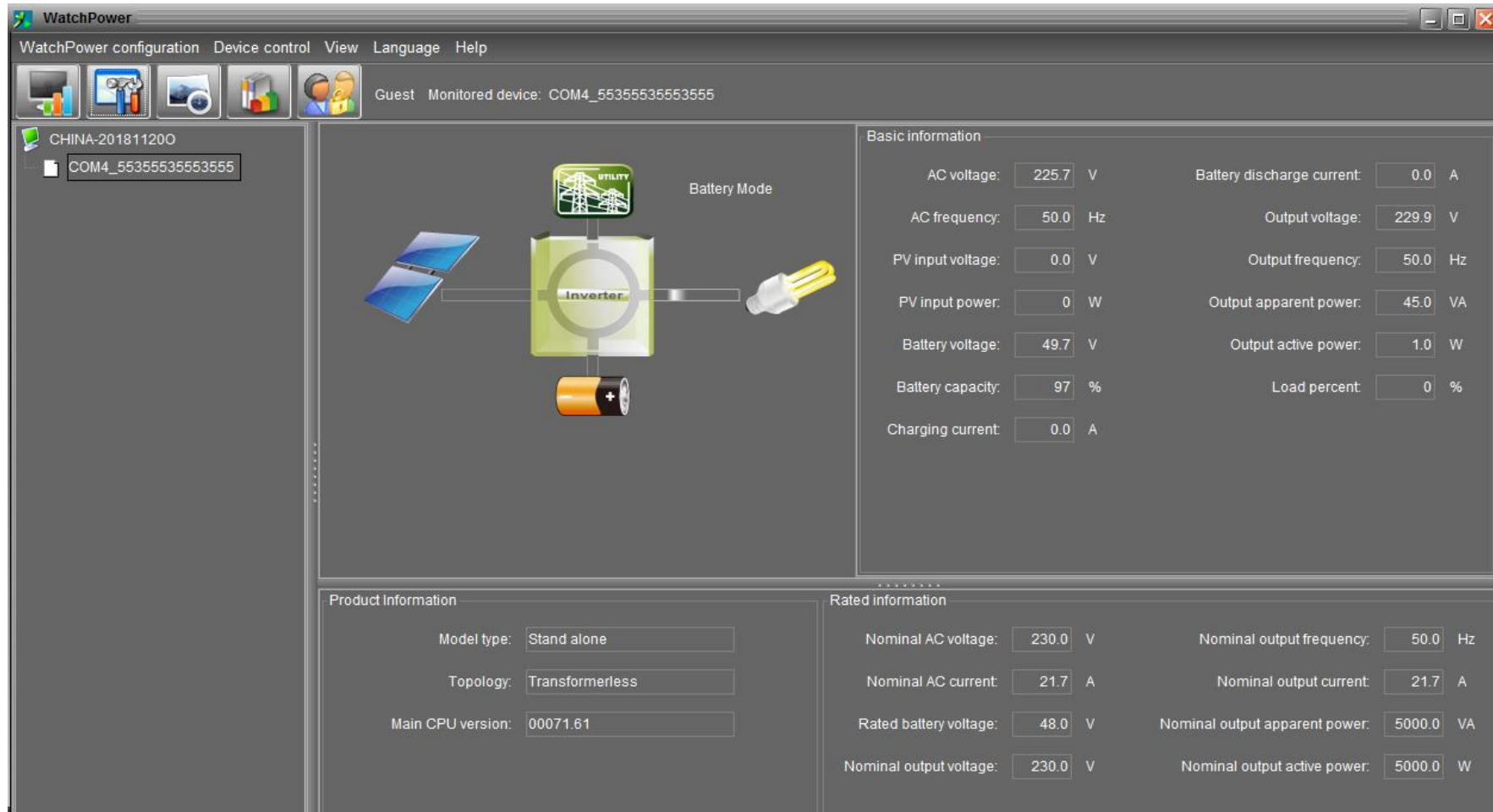
The setting parameters of the two Inverter types are basically the same. Charging current and working mode are set according to on-site requirements.

5.1 First of all,it needs to manually set the “Battery type” to “PYL” or “USE” In the Section Numbers 05, Please select "PYL" first if "PYL" is an option.

05	Battery type	AGM (default) 05 	Flooded 05 
		AGm	FLd
		User-Defined 05 	If “User-Defined” is selected, battery charge voltage and low DC cut-off voltage can be set up in program 26, 27 and 29.
		USE	

5.2 Run the “WatchPower.exe”,  Then It will connect with Battery automatically.

### 5.3 If the Basic information showed values, which means connect successfully.



The screenshot displays the WatchPower software interface. The window title is "WatchPower" and the menu bar includes "WatchPower configuration", "Device control", "View", "Language", and "Help". The user is logged in as "Guest" and is monitoring a device with ID "COM4\_55355535553555".

The interface is divided into several sections:

- Left Panel:** Shows the system name "CHINA-201811200" and the monitored device ID "COM4\_55355535553555".
- Central Diagram:** A schematic diagram labeled "Battery Mode" showing a central "Inverter" connected to a "UTILITY" source (top), a battery (bottom), and an AC load (right). PV panels are also shown on the left.
- Basic information:** A table of real-time system parameters.
- Product Information:** Details about the inverter's configuration.
- Rated information:** Nominal specifications for the inverter.

AC voltage:	225.7 V	Battery discharge current:	0.0 A
AC frequency:	50.0 Hz	Output voltage:	229.9 V
PV input voltage:	0.0 V	Output frequency:	50.0 Hz
PV input power:	0 W	Output apparent power:	45.0 VA
Battery voltage:	49.7 V	Output active power:	1.0 W
Battery capacity:	97 %	Load percent:	0 %
Charging current:	0.0 A		

Model type:	Stand alone
Topology:	Transformerless
Main CPU version:	00071.61

Nominal AC voltage:	230.0 V	Nominal output frequency:	50.0 Hz
Nominal AC current:	21.7 A	Nominal output current:	21.7 A
Rated battery voltage:	48.0 V	Nominal output apparent power:	5000.0 VA
Nominal output voltage:	230.0 V	Nominal output active power:	5000.0 W



5.4 Click “Device control” button to set the parameters as below or according to site conditions.

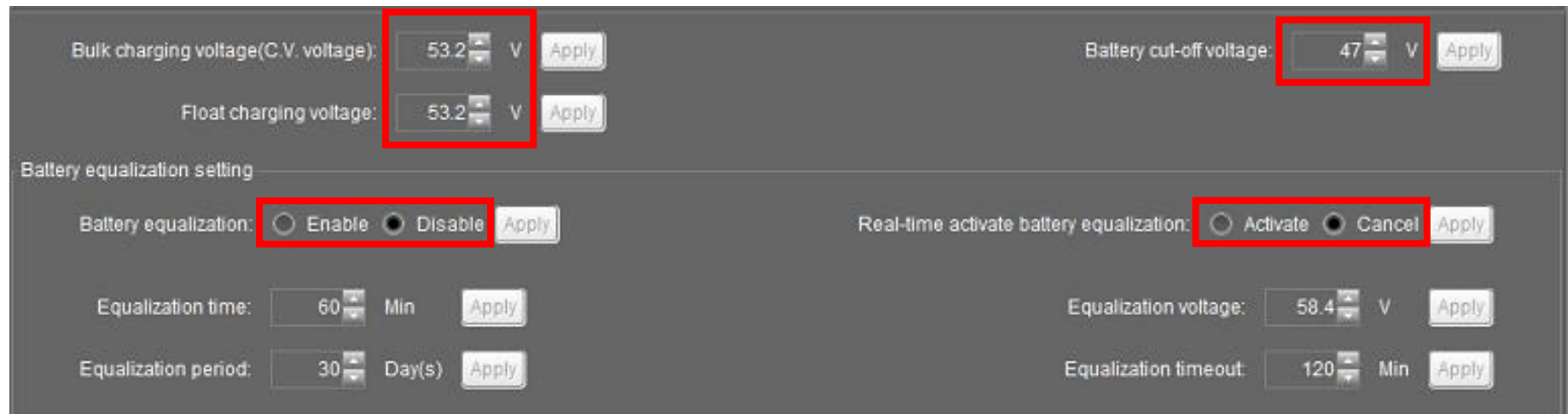
Buzzer alarm:	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	Apply	Beeps while primary source interrupt:	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	Apply
Backlight:	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	Apply	LCD screen returns to default display screen after 1 min.:	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	Apply
Overload auto restart:	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	Apply	Solar power balance:	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	Apply
Over temperature auto restart:	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	Apply			

5.5 Max.charging current: =  $N \times 20A$  (  $N$ =The battery Number in parallel ). Max. charging current = utility charging current + solar charging current.

Charger source priority:	CSO	Apply	Back to grid voltage:	48.0	V	Apply
Output source priority:	Solar->Battery->Utility	Apply	Max. charging current:	20	A	Apply
Battery type:	AGM	Apply	Max. AC charging current:	40	A	Apply
Output Mode:	Single	Apply	Back to discharge voltage:	52.0	V	Apply
Bypass function:	Enable	Apply	Operation Logic:	Automatically(AUT)		Apply
Output frequency:	50	Hz	Apply			

In SBU or SUB mode, “Back to grid voltage” is recommended to set as 48 V, “Back to discharge voltage” is recommended to set as 52 V.

5.6 “Battery cut-off voltage” is recommended to set as 47 V, “C.V voltage” and “Float charging voltage” are recommended to set as 53.2V. Other parameters setting as below. Remember to click “Apply” button after changing parameters.



The screenshot shows a battery configuration interface with the following settings highlighted by red boxes:

- Bulk charging voltage (C.V. voltage): 53.2 V
- Float charging voltage: 53.2 V
- Battery cut-off voltage: 47 V
- Battery equalization:  Enable  Disable
- Real-time activate battery equalization:  Activate  Cancel

Other visible settings include:

- Equalization time: 60 Min
- Equalization period: 30 Day(s)
- Equalization voltage: 58.4 V
- Equalization timeout: 120 Min

## 6 . Definitions

### A: Axpert VMIII

<b>Charger source priority:</b>  <b>To configure charger source priority</b>	<b>CSO</b>	<b>Solar energy will charge battery as first priority.</b>  <b>Utility will charge battery only when solar energy is not available.</b>
	<b>S ∩ U</b>	<b>Solar energy and utility will charge battery at the same time.</b>
	<b>OSO</b>	<b>Solar energy will be the only charger source no matter utility is available or not.</b>
<b>Output source priority:</b>  <b>To configure load power source priority</b>	<b>USB</b>	<b>Utility will provide power to the loads as first priority.</b>  <b>Solar and battery energy will provide power to the loads only when utility power is not available.</b>
	<b>SUB</b>	<b>Solar energy provides power to the loads as first priority.</b>  <b>If solar energy is not sufficient to power all connected loads, battery energy will supply power the loads at the same time.</b>

<p><b>Output source priority:</b></p> <p><b>To configure load power source priority</b></p>		<p><b>Utility provides power to the loads only when any one condition happens:</b></p> <ul style="list-style-type: none"> <li>- <b>Solar energy is not available</b></li> <li>- <b>Battery voltage drops to “low-level warning voltage” or the setting point in “voltage point back to utility source”.</b></li> </ul>
	<p><b>SBU</b></p>	<p><b>Solar energy provides power to the loads as first priority.</b></p> <p><b>If solar energy is not sufficient to power all connected loads, battery energy will supply power to the loads at the same time.</b></p> <p><b>Utility provides power to the loads only when battery voltage drops to either “low-level warning voltage” or the setting point in “voltage point back to utility source”.</b></p>

## B: Axpert King

<p><b>Solar energy priority:</b> To configure solar energy priority for battery and load</p>	<p><b>SBL</b> <b>UCB</b></p>	<p>Solar energy charges battery first and allow the utility to charge battery.</p>
	<p><b>SBL</b> <b>UDC</b></p>	<p>Solar energy charge battery first and disallow the utility to charge battery.</p>
	<p><b>SLB</b> <b>UCB</b></p>	<p>Solar energy provides power to the load first and also allow the utility to charge battery.</p>
	<p><b>SLB</b> <b>UDC</b></p>	<p>Solar energy provides power to the load first and disallow the utility to charge battery.</p>
<p><b>Output source priority:</b> To configure load power source priority</p>	<p><b>USB</b></p>	<p>Utility will provide power to the loads as first priority. Solar and battery energy will provide power to the loads only when utility power is not available.</p>

<p><b>Output source priority:</b>  <b>To configure load power source priority</b></p>	<p><b>SUB</b></p>	<p>Solar energy provides power to the loads as first priority.</p> <p>If solar energy is not sufficient ,utility energy will supply power to the loads at the same time.Battery provides power to the loads only when solar and utility is not sufficient.</p>
	<p><b>SBU</b></p>	<p>Solar energy provides power to the loads as first priority.</p> <p>If solar energy is not sufficient to power all connected loads, battery energy will supply power to the loads at the same time.</p> <p>Utility provides power to the loads only when battery voltage drops to either “low-level warning voltage” or the setting point in “voltage point back to utility source”.</p>

Data:2019.1.7