V2412-Ho-01-04

## 51.2V LiFePO4 Battery

LFP48100P~48300P



# USER MANUAL

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## 1. Safety Instructions

- 1. Please confirm the package is in good condition after getting the product. If there is any damage, please take photos to record and contact the supplier in time.
- 2. Because this is an electronic energy storage product, please handle it gently, and please pay attention to safety when moving products.
- After unpacking, please check whether the product appearance is intact, press the ON/OFF switch to start the battery, confirm whether it can be turned on normally, and whether the LCD screen is displayed normally.
- 4. Please connect to other devices in the correct way with the battery power off.
- After devices connected, before turning on the battery, please turn off the loads (including the inverter). If it is turned on with loads, it may trigger the BMS short-circuit protection mechanism.
- Charge as required, take 51.2V products as an example: normal charging voltage is 57.6V-58.4V, recommend current 0.2C. Mismatched current and voltage will cause damage to the circuit system, shorten the service life of the battery, and even bring safety hazards.
- 7. Charge rate should not exceed 0.5C, discharge rate should not exceed 0.7C.
- 8. Avoid using it in humid environments and in areas where it will be exposed to sunlight.
- 9. When not in use for a long time, it should be charged regularly, and it is best to keep half-charged storage (40%-60%).
- 10. Battery should be recharged within 12 hours after being fully discharged.
- 11. When different batches of batteries are installed in the same system, all batteries should be balanced to the same voltage (the voltage difference within 0.3V) by charging and discharging individually.
- 12. Do not disassemble the equipment without professional assistance.
- 13. Do not connect batteries with different brands or different capacities.

## 2. Product Overview



No.	Item	Function
1	Power Switch	ON/OFF Switch
2	Positive Terminal	Charge & Discharge
3	SOC	Indicators for Capacity
4	ALM	Indicator for Alarms
5	RUN	Indicator for Running Status
6	ADD	DIP Switch of Communication
7	RS485A/CAN Interface	For Communicating with Inverter or Upper Computer
8	RS485B Interface * 2	For Communicating between Multiple Batteries
9	Reset	Activate/Hibernate/Reset the BMS
10	LCD Screen	Display Battery Information
11	Negative Terminal	Charge & Discharge

## 3. Battery Specifications

Nominal Parameters					
Model No.	LFP48100P	LFP48120P	LFP48150P		
Nominal Voltage	51.2V	51.2V	51.2V		
Nominal Capacity	100Ah	120Ah	150Ah		
Energy	5.12KWh 6.14KWh 7.68KW				
Dimensions (without handles) (L*W*H mm)	480*440*160	480*440*200	480*530*180		
Weight (KG)	Approx 45	Approx 52	Approx 55		
Built-in BMS	16S 100A	16S 100A	16S 200A		
Electrical Parameters					
Overall Over Voltage Alarm Value		57.6VDC			
Overall Under Voltage Alarm Value	44VDC				
Overall Over Voltage Protection Value	58.2VDC				
Overall Under Voltage Protection Value		40VDC			
Recommend Charge & Discharge Current		0.2~0.5C			
Max. Cont. Discharge Current	100A	100A	150A		
Basic Parameters					
Life Time(25°C)		10+ years			
Communication Interface		RS485 / CAN			
Display Method and Language		LCD, English			
Bluetooth & APP	Available				
Life Cycles (80% DOD, 25°C)	≥6000 times Cycles				
Charge Temp. Range (Cell)	0°℃~55°℃				
Discharge Temp. Range (Cell)		- <b>20℃~60℃</b>			
Environmental Temp. Range		-25℃~65℃			

Nominal Parameters				
Model No.	LFP48200P	LFP48230P	LFP48300P	
Nominal Voltage	51.2V	51.2V	51.2V	
Nominal Capacity	200Ah	230Ah	300Ah	
Energy	10.24KWh	11.78KWh	15.36KWh	
Dimensions (without handles) (L*W*H mm)	480*600*180	480*445*255	480*570*255	
Weight (KG)	Approx 70	Approx 80	Approx 107	
Built-in BMS	16S 200A	16S 200A	16S 200A	
Electrical Parameters				
Overall Over Voltage Alarm Value		57.6VDC		
Overall Under Voltage Alarm Value		44VDC		
Overall Over Voltage Protection Value		58.2VDC		
Overall Under Voltage Protection Value		40VDC		
Recommend Charge & Discharge Current		0.2~0.5C		
Max. Cont. Discharge Current	200A	200A	200A	
Basic Parameters				
Life Time(25°C)		10+ years		
Communication Interface		RS485 / CAN		
Display Method and Language		LCD, English		
Bluetooth & APP	Available			
Life Cycles (80% DOD, 25°C)	≥6000 times Cycles			
Charge Temp. Range (Cell)	0°℃~55°℃			
Discharge Temp. Range (Cell)		<b>-20℃~60℃</b>		
Environmental Temp. Range		-25℃~65℃		

## 4. List of Accessories

No.	ltem	Picture	Qty	Remarks
				For 51.2V 100AH~120AH:
				6 AWG cable 0.3M
1	Parallel Power Cable		2	For 51 2V 1504H~3004H
				101 51.2V 150AH 500AH.
				4 AWG cable 0.4M
2	Parallel Communication Cable	Q.	1	RJ45 cable 0.5M
3	Upper computer Connecting Cable	0	1	RJ45 to USB cable 2M
4	Screws	S.	4	M8

## 5. Connection

## 5.1. Battery Module

If there are multiple batteries to be connected in parallel, ensure that the voltage difference of all batteries is within 0.3V before proceeding. If the voltage difference is over 0.3V, discharge all batteries until the low voltage alarm and discharge stops. Confirm the voltage difference is within 0.3V, then ensure all battery modules are turned off. Connecting each battery module "+" (positive) and "-" (negative) terminal to "+" (positive) and "-" (negative) terminal to "+" (positive) and "-" (negative) busbar. Connect all sources and loads to the busbar, observing proper polarity. Note: There may be fuses, contactors, switches, etc. between the busbar and the connected sources and/or loads.

## 5.2. Communication Cable

When multiple batteries are connected in parallel, set the battery Address (or ID) of each battery according to page 14~15 (also ensure no duplicate address codes are used). Then connect one end of the provided RJ45 communication cable into a battery "RS485B"

interface and connect the remaining end of the RJ45 communication cable into another battery "RS485B" interface. Continue connecting communication cables until all batteries are connected.

For communication between the battery and the inverter, please contact your supplier for communication guidelines.

## 6. Working Mode

## 6.1. Basic Mode

#### 6.1.1. Charging Mode

The BMS turns on the charging MOSFET for charging when it detects an external charging voltage, and the cell voltage and temperature are within the chargeable range. When the charging current reaches the effective charging current, it enters the charging mode. Both charging and discharging MOSFETs are on in charge mode.

#### 6.1.2. Discharging Mode

The BMS enters the discharge mode when it detects that the load is connected and the cell voltage and temperature are within the dischargeable range and the discharge current reaches the effective discharge current. Both charging and discharging MOSFETs are on in discharge mode.

#### 6.1.3. Hibernation and Wake Up Mode

The system enters hibernation mode when the following conditions are met:

1. Individual low-voltage protection or overall low-voltage protection has not been released within 30 minutes;

2. Press the reset button for 3 seconds and then release the button;

3. The minimum cell voltage is lower than the dormancy set voltage (default value 3350mV), and the duration reaches the delay time (the default value is 1440min, which meets the requirements of no communication and no charging and discharging current at the same time);

4. Compulsory shutdown through the upper computer software.

Before entering hibernation, make sure that the negative terminal is not connected to external voltage, otherwise it will not be able to enter the low power consumption mode.

\* When the minimum cell voltage is lower than the under-voltage protection value -300mV,

the battery will be forced to enter hibernation mode after a delay of 10 minutes.

5. The wake-up conditions of hibernation mode:

- 1) Connect to the charger, and the input voltage of the charger must be greater than 48V;
- 2) Wake up by pressing the power switch button for 1S and releasing the button.

## 6.2. Description of Reset Button

When the BMS is dormant, press the button for 1S and then release it, the BMS will be activated and the LEDs will light on sequentially for 0.5 seconds starting from the "RUN". When the BMS is in the working state, press the button for  $3S^6S$  and then release it, the BMS will enter dormant and the LEDs will light sequentially for 0.5S starting from "SOC4". When the BMS is in the working state, press the button for  $\geq 10S$  and then release it, the BMS will be reset, and the LEDs will display according to the current electricity level.

## 7. Status Indicator Light

Four green capacity indicators, one red alarm indicator, one green running indicator.

SOC4●	SOC3	SOC2	SOC1	•	•
	SC			ALM	RUN

#### **SOC Indicator Light**

Status		Cha	irge			Disch	narge	
SOC	6064	6063	6063	5061	5064	6063	6063	6061
Indicator	5004	5003	SUCZ	SUCI	5004	5003	SUCZ	5001
0~25%	Flash 2	OFF	OFF	OFF	ON	OFF	OFF	OFF
25~50%	ON	Flash 2	OFF	OFF	ON	ON	OFF	OFF
50~75%	ON	ON	Flash 2	OFF	ON	ON	ON	OFF
75~100%	ON	ON	ON	Flash 2	ON	ON	ON	ON
RUN		0	N		Flash 3			
Indicator		0	'IN					

<u>Chattan</u>	Normal / Alarm / Protection		SOC			ALM	RUN
Status	/ Fault	•	•	•	•	•	•
OFF	OFF			A	LL OFF		
Standby	Normal	ON	accordin	ng to bat	ttery	OFF	Flash 1
Stanuby	Alarm		сара	acity		Flash 2	Flash 1
	Normal	ON	accordin	ng to bai	ttery	OFF	ON
	Alarm	capacity (The largest SOC LED Flash 2)		t SOC	Flash 2	ON	
Charge	Over Voltage Protection	ON	accordin capa	ng to bai acity	ttery	OFF	Flash 2
Charge	Over Current Protection (Enter current limit charging)	ON according to battery capacity (When there is charging current, the largest SOC LED Flash 2)		OFF	ON		
	Temperature Protection	ALL OFF			ON	OFF	
	Normal			OFF	Flash 3		
	Alarm	ON according to battery		Flash 2	Flash 3		
Discharge	Low Voltage Protection	сарасиу		Flash 2	OFF		
Discharge	Over Current Protection, Short Circuit Protection	ALL OFF		ON	OFF		
	Temperature Protection		ALL	OFF		ON	OFF
Fault	NTC fault, MOS fault, reverse polarity, differential voltage protection, ultra-low voltage protection		ALL OFF		ON	OFF	

#### **Description of Status Indicator Light**

Note:

1. There are only normal and alarms in standby mode. Protection and faults are reported as charging and discharging status.

2. Alarms include: over voltage difference alarm, low capacity alarm, over voltage and low voltage alarm of single cell or whole battery, temperature alarms.

3. When charging over current protection occur, it will enter current limited charging. If

8

there is charging current, it will displayed as normal state; if no charging current, it will displayed as fault state, ALM ON and others OFF.

Flash Types	ON	OFF
Flash 1	0.25 S	3.75 S
Flash 2	0.5 S	0.5 S
Flash 3	0.5 S	1.5 S

#### Flash Type of Status Indicator light

## 8. LCD Display Introduction



#### Button

MENU: Enter the main menu

ENTER: Enter to the sub-menu

- UP: Cursor down or page down
- ESC: Return to the previous menu



**Note:** When there is a protection status of the battery, it will show the corresponding protection code at (5) position, otherwise, it will show --.

Protection Code:	
OV: Over Voltage	LT: Low Temp
LV: Low Voltage	OC: Over Current
OT: Over Temp	SC: Short Circuit

After 1 minute of no button operation in normal running, the display screen will be off (only the backlight is off). Pressing any button while the screen is off will allow the screen light and operate normally.

## 8.1. Main Menu

Press the "MENU" button to enter the main menu. You can see that there are 4 sub-menus, namely BMS Parameter, Battery Status, GYRO Status and Version Number.



## 8.2. Sub-menu 1: BMS Parameter

Access the "BMS Parameter" from the main menu.

🕞 BMS Paramete	er 🚿	→ Voltage:	0.00V		
Battery Stat	us >>	Current:	0.0A		
GYRO Status	>>	CellTemp	>>		
Version Numb	ier >>	CellVolt	>>		
Enter the "CellTen	np"	-		r	
Voltage:	0.000	Temp01	0 °C	MOS Temp	0 °C
Current:	0.0A	Temp02	0 °C	Env Temp	0 °C
<mark>-&gt;</mark> CellTemp	>>	Temp03	0 °C		
CellVolt	>>	Temp04	0 °C		
Enter the "CellVol	t"			n-	
Voltage:	0.00V	Cell01	0 mV	Cell05	0 mV
Current:	0.0A	Cell02	0 mV	Cell06	0 mV
CellTemp	>>	Cel103	0 mV	Cel107	0 mV
<mark>-&gt;</mark> CellVolt	>>	Cell04	0 mV	Cell08	0 mV

Cell09	0 mV	Cell13	0 mV	SOC		0%
Cell10	0 mV	Cell14	0 mV	Nominal		0.0 AH
Cell11	0 mV	Cell15	0 mV	Remain		0.0 AH
Cell12	0 mV	Cell16	0 mV	BMS Cycles	8 :	0

## 8.3. Sub-menu 2: Battery Status

Access the "Battery Status" from the main menu.

BMS Parameter >>	→ Status: IDEL	
→ Battery Status →>	Alarm Status 🛛 >>	
GYRO Status >>	Protect Status >>	
Version Number	Failure Alarm	
Enter the "Alarm Status"		
Status: IDEL	Over Volt : NO	Low SOC : NO
→ Alarm Status →>	Low Volt : NO	Diff Volt : NO
Protect Status	Over Temp : NO	Over Curr : NO
Failure Alarm >>	Low Temp : NO	Reverse : NO
Enter the "Protect Status"		
Status: IDEL	Over Volt : NO	Over Curr : NO
Alarm Status	Low Volt : NO	Short Curr : NO
→ Protect Status →>	Over Temp : NO	
Failure Alarm >>	Low Temp : NO	
Enter the "Failure Alarm"		
Status: IDEL	Sample Line: N	SC Times : 0
Alarm Status 💦>>	Charge MOS : N	OverTempCNT: 0
Protect Status	DisCHG MOS : N	OverCurrCNT: 0
<mark>→</mark> Failure Alarm →>	Sample Chip: N	OverChgCNT : 0
OverDchgCNT: 0		1

## 8.4. Sub-menu 3: GYRO Status

Access the "GYRO Status" from the main menu.



## 8.5. Sub-menu 4: Version Number

Access the "Version Number" from the main menu.



## 9. Serial Communication

With RS485 and CAN interface, which supports communicating with multiple battery modules in parallel, with inverter and with the upper computer. RS485 baud rate is 9600 defaulted, CAN baud rate is 500K defaulted.

## 9.1. Pin Definition of Communication Interface



	Pins 1	Defir	ition		
	PINS	RS485A / CAN ports	RS485B port		
87654321	1	RS485A_B1	RS485B_B2		
	2	RS485A_A1	RS485B_A2		
	3	/	/		
	4	CAN_H	/		
	5	CAN_L	/		
	6	GND	GND		
	7	RS485A_A1	RS485B_A2		
	8	RS485A_B1	RS485B_B2		

The multi-unit parallel connections are shown in the following figure.



## 9.2. DIP Switch Setting

Support battery modules parallel and inverter communication protocol selection.

When batteries are used in parallel, different batteries are distinguished by the dial address

(or "ID"), and the ID of each battery in the entire battery group is unique.



There will be only one master battery and others will be slave batteries. The slave dialing address should be selected from 1 to 15, and the master dialing address should be selected from 0 or 16 or 32 or 48 according to the different communication protocol and inverter brand.

\*Exception: When batteries communicate with Voltronic inverter (by RS485 protocol), there will be no master battery, all batteries are used as slaves, and all the dial code address should be selected from 1 to 15.

The reference table is as follows.

		DIP S\	NITCH			ADD	DEMADIZ		
1	2	3	4	5	6	(ID)	REIVIARKS		
Communicate via CAN Communication Protocol									
OFF	OFF	OFF	OFF	OFF	OFF	0	Victron, SMA		
OFF	OFF	OFF	OFF	OFF	ON	32	Pylon, Deye, Goodwe, Solis, Sofar, LXP		
OFF	OFF	OFF	OFF	ON	OFF	16	AiSWEI		
OFF	OFF	OFF	OFF	ON	ON	48	Growatt, Sacolor		
Communicate via RS485 Communication Protocol									
OFF	OFF	OFF	OFF	OFF	ON	32	SRNE		

#### FOR MASTER BATTERY.

#### FOR SLAVE BATTERY

		DIP S\		ADD			
1	2	3	4	5	6	(ID)	KEIVIARKS
ON	OFF	OFF	OFF	OFF	OFF	1	Slave Pack 1
OFF	ON	OFF	OFF	OFF	OFF	2	Slave Pack 2
ON	ON	OFF	OFF	OFF	OFF	3	Slave Pack 3
OFF	OFF	ON	OFF	OFF	OFF	4	Slave Pack 4
ON	OFF	ON	OFF	OFF	OFF	5	Slave Pack 5
OFF	ON	ON	OFF	OFF	OFF	6	Slave Pack 6
ON	ON	ON	OFF	OFF	OFF	7	Slave Pack 7
OFF	OFF	OFF	ON	OFF	OFF	8	Slave Pack 8
ON	OFF	OFF	ON	OFF	OFF	9	Slave Pack 9

OFF	ON	OFF	ON	OFF	OFF	10	Slave Pack 10
ON	ON	OFF	ON	OFF	OFF	11	Slave Pack 11
OFF	OFF	ON	ON	OFF	OFF	12	Slave Pack 12
ON	OFF	ON	ON	OFF	OFF	13	Slave Pack 13
OFF	ON	ON	ON	OFF	OFF	14	Slave Pack 14
ON	ON	ON	ON	OFF	OFF	15	Slave Pack 15

**Note:** The factory default settings support up to 16 batteries in parallel, if you need more than 16 batteries in parallel, please contact manufacturer to upgrade the software (supports up to 32 batteries in parallel).

\*Exception: When batteries communicate with Voltronic inverter, only support up to 15 batteries in parallel.

## 9.3. Settings for No Communication Situation

Without communication protocol, inverter cannot communicate with our battery. You need to make some setting on your inverter, for example, select the user-defined mode and set the corresponding voltage level (according to the inverter user manual), so that they can work together without communication.

Here are some commonly used battery parameters that need to be set, for reference. If need more advices about battery parameters settings, please contact the manufacturer.

Over Voltage Disconnect Voltage	57.6V
Charging Limit Voltage	58.4V
Equalizing Charging Voltage	56V
Float Charging Voltage	54V
Low Voltage Warning Voltage	45V
Cut-off Discharge Voltage	43.2V
Discharge Limit Voltage	40V

## **10. Bluetooth Communication**

## 10.1. App Download

Scan the QR code below to download and install the APP "Lithium Battery WiFi" .



Lithium Battery WiFi





IOS

## 10.2. APP Settings and Function Introduction

There are 4 main pages on the APP, "Search Devices", "Real Time Data", "Historical Data" and "Settings".









#### Search Devices

Real Time Data

**Historical Data** 

Settings

1. Open the APP, search for Bluetooth devices, you can connect to specific battery according to the product serial number. Note that the APP needs to obtain Bluetooth permissions and location permissions, if a pop-up window for obtaining permissions pops up when searching for Bluetooth devices, you need to allow the APP to obtain permissions in order to search for Bluetooth devices.

lithium battery Wifi	
Blue	
Search Close	
lookup Enter device name lookup	J
Matched device	
Linkable device 3	
CER2405-077-002-001	
364EB1D4-6338-C718-D019-1CEF51605BB5	
CEP2405 073 000 000	
CER2403-077-002-002	
RSSI-98dBm	
KBM2310060628	
90496751-ECDF-5D25-7C50-8593657C437D	
KBM2310060626	

2. After the Bluetooth device is successfully connected, it will automatically jump to the "Real Time Data" page, you can see the battery real-time data.

*111联地 +111日初3:43	10 % (	) 👯 5.4 °.4 🖅
*	1234567	
	-	
8	39%	
Estimated_R	temain_Disg_Tim	e:-H-Min
Estimated_R	emain_Chag_Tim	he:-H-Min
Battery Status		
51.89		0
Voltage (V)	Current (A)	Power (W)
Temperature (°C)	Cell Temperature (°C)	Cell Status
Cell Voltage		
Maximum call unitane	n00 Minimu	
	ere/ Miningu	

3. You can view the basic information of battery in the "Settings" page. Swipe left or right under the Settings page to view more sub-pages.

+间标准 +同标准 3:43	©1 \$1 01 \$1 \$1 101 \$1 ©	+ほK地 +店#地3:43	10 × 0 4, 5al 4al 10
Paramete			Parameter
Base Massage Cell Voltagle		ge Cell Voltagle F	Fault Data System Parameter I
Pack Voltage	51.89V	Sample Current R	OmR
Current	0A	Nominal Capacity	100Ah
зон	100%	Cycle Capacity	QAh
Number of Cycles		Full Charge Capaci	ty 100Ah
Date Of Manufacture	2022-12-2	Over Cell Volage Pr	otect 3.68V
Cell 1 Balanced State	Close	Over Cell Volage Re	elease 3.4V
Cell 2 Balanced State	Close	Over Cell Volage Pr	otect Delay 25
Cell 3 Balanced State	Close	Under Cell Volage I	Protect Delay 35
Cell 4 Balanced State	Close	Under Cell Volage I	Protect 2.5V
Cell 5 Balanced State	Close	Under Cell Volage I	Release 2V
Cell 6 Balanced State	Close	Over Pack Voltage	Protect 58.4V
Cell 7 Balanced State	E	Dver Pack Volace P	telense 🖉

4. Upgrade the BMS

In the sub-page "BMS upgrade", you can import the BMS upgrade file and upgrade the BMS

software via Bluetooth.

**Step 1:** In the sub-page "BMS upgrade", click "Select file" to select the BMS upgrade file in the file management of the phone, after selecting, the path of the loaded file will be displayed on the APP, indicating that the file has imported.

\*Note, the app restricts the upgrade file name should start with "Ks". The files shown in the picture are for reference only, the actual upgrade file should be obtained from the battery supplier.



**Step 2:** Click "upgrade", there will be a BMS upgrade prompt pop-up window, click "Upgrade now", then a progress bar will be displayed on the APP. Wait for the progress bar to finish running, the BMS upgrade will be completed.

中午12:06 👼 🔵 🥃 ،	878				
Parameter					
	BMS upgrade S				
BMS Program Version	2.1.3				
	11.53				
	upgrade				
	wnload/Ks_16S100/				
-					
10%					

Note: Stable Bluetooth connection is required during the upgrade process. If the upgrade is interrupted due to Bluetooth disconnection, you need to restart the BMS upgrade process in the APP.

## 11. Upper Computer Monitoring

## 11.1. How To Communicate With Upper Computer

1. Turn on the battery by pressing the power switch.



2. Use the provided RJ45 to USB cable to connect the battery "RS485A" port to the computer USB port.



3. Download and install the driver on your computer.

📲 (USB to 485 Driver) CH341SER.EXE

4. Download the folder "KS software", you will find a app "StartApp" in folder, double click and open it.



5. You can change the language to Chinese or English in "Help Center".



- 6. Back to Monitoring page,
- 1) Click "Series ON",
- 2) "Addr": Select according to the battery ID (refer to the ID table in page 14~15),

3) "Baud rate": Select as "9600",

4) "Serial": Select each COM one by one, until you see the number of "Sent" and "Parsed" both increasing, it means the battery and the computer communicate successfully.

			BMS 59: 777777777	PCR 777777777777777777777777777777777777
	Cell V		Serial	
	Cell 01	3.212 V	SOC Time Sector	COM5 V Baudinate 9600 V Interval 1s V
	Call 02	3.210 V	60% -h-min	
	Cell 03	3.210 V	Cap Remaining33.0046 Cap Full50.0046 Meterzong	
	Cel 04	3.234 V	Set	12 Parsed 12
	Call 05	3.234 V	Info of BMS	
	Cell 00	3.225 V	O STETY O DODA AL ON O DISCHINGS O DI	charging O Charge MOS © Charging O Heating O Co
	Cell 87	3.211 V	V votage A current V Capacity	
	Call 08	3.226 V	La 1997 La 1997 La 1997	
	Cell 00	3.200 V	7 Max votage 7 i Max dif 7 i Min votage None	
	Cell 10	3.215 V	€ f 3228V	
	cakin	LWW. LW	Protect status	
	Cell 12	3.260 V	MOS 23.0°C ENV 24.0°C	
	Oil 10	1265 V High	T1 26 °C 12 26 °C Fault Status	
	Cell 14	3.260 V	13 25 °C 14 25 °C None	
	Cell 15	3.220 V	1010	
	Cell 16	3.222 V	Max dff	
Seria	-	Parial		COM1
Seria	hal OFF	Serial	OM5 V Baud rate 9600 V Interval	1s V COM1
Seria Se	rial OFF nitoring	Serial ( Addr (	OM5 V Baud rate 9600 V Interval	1s V COM1 COM2

## 11.2. Upper Computer Software Introduction

1. When you use the battery for the first time, please set the BMS time to your system time. Path: Settings -- System -- BMS Info -- "Get the BMS time" -- "Sync system time".



2. In the Monitoring page, you can monitor the basic parameters and status of the battery in real-time, including battery voltage, current, SOC, SOH, battery temperature, alarm status, protection status, etc.

C Montoring	E Montoreg - H	eb -													
Params	Cell V Cell 01	3.212 V			-	oc	-	Ne	BMS SN Serial	Serial	COM5 V Ba	ud rate 9600 ~	Interval 1s	SN5WN165-50A	
(5) Settings **	Cell 02 Cell 03	3.210 V 3.210 V			Cap Rema	en. Ining30.00Ah	Cap Full	- min 50 00Ah	Mentioning	Addr	0 ~				
History Data	Call 04	3.235 V								Sent -	14 Parsed 44				
Q Upgrade	Cell 05 Cell 05	3.234 V 3.225 V			Info of BM	s	5.000A A	* 0W	<ul> <li>Info of Syste</li> <li>DISCH M</li> </ul>	m 08 Dischar	prg O Charge	MOS () Charg		Carrent key	
<b>()</b> Нер	Cell 07 Cell 08	3.211 V 3.226 V			V vote:		Current 0 067V	Capacity 3.198V	Alarm Status						
	Cell 09 Cell 10	3.208 V 3.215 V			Co Cycle	s J	Aug voltage	Min voltage	Protect State	ß					
	CHE11 CHE12	3.250 V	-0		∩}°¢	мо	6 23.0°C ENV	24.0°C	None						
	Cell 14	3.260 V	14	a.	٢	T1 T3	26 °C 12 25 °C 14	26 °C 25 °C	- Fault Status						
	Cell 15	3.219 V			1.0 °C Max diff										
	Real-time data	Chier data	sport the state		ά.	0.	2023-11-01 00:00:00	- 2023-11-01 1	137.55	Get TR		sar della base		Sec Sold	Auto Scrott
	No time		Total volt	Total curr	SOC(%)	SOH(%)	Full capacity	The remaini	The num	Env TEMP('C)	MOS TEMP("C)	Alert status	PROT state	Fault status	Cell N
Ver. SaiNS03 165. Protocol: 1363	1 2023-11	-01 18:37:55	51.61	0.00	66,00	100	50.00	33.00	0.0	24.0	23.0				16
Web: Connected . Setel: Crit	2 2023-11	-01 1838:01	51.61	0.00	66.00	100	50.00	33.00	0.0	24.0	23.0				16
23.08.09 beta2	3 2023-11	-01 18:38:02	51.61	0.00	66.00	100	50.00	33.00	0.0	24.0	25.0				16

3. You can view the real-time data storage of the BMS and export as excel tables.

O Monitoring	More More	ntoring - Hep - Arni-Em	er Dathe i -												
D Parallel	Mont	or Chiar data	Export the data			0 1	023-11-01 00:05:00	- 2023-11-01.18	BMS 1	Chief and	teal-time C	R Narchda basa	Product SN	Set field	Acto Scrot
Real-time Data	No	time	Total volt	Total curr	50C(%)	50H(%)	Full capacity	The remaini	The num	Env TEMP(*C)	MOS TEMP('C)	Alert status	PROT state	Fault status	Cell Num
Parallel Data	5	2023-11-01 18:42:19	51.6	0	65.99	100	50	32.99	0	8	23				16
0.0	2	2023-11-01 18:41:27	51.6	0	65.99	100	50	32.99	0	25	23				16
() Params	3	2023-11-01 18:41:15	51.61	0	65.99	100	50	32.99	0	25	23				16
🖺 Settings 💎	4	2023-11-01 18:41:12	51.6	0	65.99	100	50	32.99	0	25	23				16
E History Data	5	2023-11-01 18:41:11	51.6	0	65.99	100	50	32.99	0.	25	23				16
C Upgrade	6	2023-11-01 18/41/09	51.6	0	65.99	100	50	32.99	0	25	23				16
6) нор	7	2023-11-01 16:41:07	51.6	0	65.99	100	50	32.99	0	25	23				16
	8	2023-11-01 18:41:05	51.6	0	65.99	100	50	32.99	0	25	23				16
	9	2023-11-01 18:41:03	51.6	0	65.99	100	50	32.99	0	25	25				16
	10	2023-11-01 10:41:01	51.6	0	65.99	100	50	32.99	0	25	23				16
Vec Protost 1383 Web Connected Bealt Cal 21 66 39-babl															
23.90.09.04582														2 3 4 5 6	- 17 )

4. When monitoring multiple packs, you need to set the start and end address of packs manually, you can check and compare the data of each pack. And you can also export as excel table.

	Charling Charl	Expert B	-	Contract	true 🕥	Fixed A	io Sicioli			BVID BW #BW23	29080241	Etat t	am 1 -	End of 2	Current Add	
No	time	PACK	Total volt	Total curr	SOC(%)	50H(%)	Full capacity	The remaini	The num	Env TEMP("C)	MOS TEMP('C)	Current state	Alert status	PROT state	Fault at	
3810	2023-11-03 15:04:37	2	53.40	0.00	99.99	100	110.65	110.63	1.0	32.0	28.0	notaise, notaise,				
3811	2023-11-03 15:04:38	1	53.38	0.00	99.99	100	111.91	111.09	1.0	32.0	27.7	notatse, notatse,				
3812	2023-11-03 15:04:39	2	53.40	0.00	99.99	100	110.65	110.63	1.0	31.0	28.0	notalse, notalse,				
3813	2023-11-03 15:04:40	1	53.38	0.00	95.99	100	111.91	111.89	1.0	32.0	28.0	notalse, notalse,				
3814	2023-11-03 15:04:41	2	53.40	0.00	99.99	100	110.65	110.63	1.0	32.0	28.0	nofalse, nofalse,				
3815	2023-11-03 15:04:42	1	53.38	0.00	99.99	100	111.91	111.89	1.0	32.0	27.7	notalse, notalse,				
3816	2023-11-03 15:04:43	2	53.40	0.00	99.99	100	110.65	110.63	1.0	31.0	28.0	notalse, notalse,				
3817	2023-11-03 15:04:44	1	53.38	0.00	99.99	100	11191	111.89	1.0	32.0	27.7	notalse, notalse,				
3818	2023-11-03 15:06:45	2	53.40	0.00	99.99	100	110.65	110.63	1.0	32.0	28.0	nolaise, nolaise,				
3819	2023-11-03 15:04:46	3	53.38	0.00	99.99	100	111.91	111.89	1.0	32,0	27.7	nofalse, nofalse,				
3820	2023-11-03 15:04:47	2	53.40	0.00	55.29	100	110.65	110.63	1.0	32.0	28.0	notalse, notalse,				
3821	2023-11-03 19:04:48	1	\$3.38	0.00	99.99	100	111.91	111.89	1.0	32.0	27.7	notalse, notalse,				
3822	2023-11-03 15:04:49	2	53.40	0.00	99.99	100	110.65	110.63	1.0	31.0	28.0	notaise, notaise,				
3823	2023-11-03 15:04:50	1	53.30	0.00	99.99	100	111.91	111.03	1.0	32.0	27.7	notalso, notalso,				
3524	2023-11-03 15:04:51	2	53.40	0.00	99.99	100	110.65	110.63	1.0	31.0	28.0	notalia, notalia,				
3825	2023-11-03 15:04:52	1	53.38	0.00	99.99	100	111.91	111.09	1.0	32.0	27.7	nofalse, nofalse,				
3626	2023-11-03 15:04:53	2	53.40	0.00	99.99	100	110.65	110.63	1.0	31.0	28.0	notalse, notalse,				

#### 5. Parameters 1.

Click "Get All" when enter for the first time.

This section includes reading basic parameter information, restoring default parameters, writing individual parameters, writing all parameters, importing parameters and exporting parameters (it is not recommended to manually modified default parameters).

C Monitoring	Monitoring × Help × Real-time Data × Pasano 1 ×			-
			BWD EN POD	Product SN
Parallel ×	Charle	all Set checked Stop set	Next by default import param Export param	Set at
	Cell voltage Overall volta	ege	Charging TEMP	DISCH TEMP
Params ^	Over DISCH Over DISCH Current Over C Over C Over DIS PROT Alarm Alarm PROT PROT	ICH Over DISCH Current Over C Over C Alarm Alarm PROT	Low PROT Low Alarm Current High Alarm H	igh PROT Low PROT Low Alarm Current High Alarm High PROT
Params 1	Action		Action	
ParamsOpt	Release B B B B B B B B B B B B B B B B B B B	0 0 <sup>51,61</sup> 0 0 0	Release	Reference Concentration Concentration
😭 Settings 🗠	Delay Delay Delay Delay			
E History Data	Env TEMP Current 1		Current 2 Voltaç	e diff MOS TEMP
C Upgrade	Lew PROT Lew Alarm Current High Alarm High PROT Over 0 PRO	1 Over C 1 Current Over C 1 Over C 1 T Alarm Alarm PROT	Over C.2 Current Over C.2 C PROT PROT	ament Over Alarm Over PROT Current Over High Temp Over High Temp Alarm PROT
<b>О</b> ню	Action		Action Action	
	Release 250 Release		0.00 Release	2000 Reliance 23.0
	Delay Delay Delay Delay Delay		Delay Delay	Delay
		Other		
		Constant V v	alue(10mV)	
		Constant C v	alue(1mA)	
		Standby Collision		
		Balanced		
		Cell sleep de	a)	
Ver:		Starting V		
Protecel: 1363 Web: Connected		Starting V dif		
Serial: On 23.08.09.0442		SOC low alar	m 📃	
		SOC Inv ala	m recovery	

6. System parameter setting.

Click "Get" when enter for the first time.

You can monitor the BMS parameters configuration, sleep settings and BMS information (it

is not recommended to manually modified default parameters).

C Montoring	Monitoring - Help - Real-time Data - Params 1 - Params 0	st + System +			-
	Clear		BMS SN	PCB	Product SN:
Parallel	Basic setting	Sleep settings	BMS Info		
Ø Params -	Clet Diet checked	Factory simp Robot	Out the BMS time	Sync: system time	
🔄 Settings 👘	The number of battery strings(n)	Force a sleep shuldown Start etimentbert charging		Sync cetting time	
System	Remaining Capacity0.01AH	Battery change	Product info	Cet the protocol version	
Calibration	Full Capacity0.01AH	Out Dut checked	Hardware model	Gel manufacturer Into	
Wireless Module	Design Capacity0.01AH	Total mileage travel (Km)	Product model		
C3 History Data	Total Charge Capacity AH	Change Match Opt Plane dec	Project code		
C Upgrade	Total DISCH Capacity AH	Current Limit Opt	Software version		
	Total ChargeKwh KWH 0. 1KW	CALIBRATION CONTRACTOR CONTRACTOR	DOUL AGINE		
су нер	Tetal DISCH KWH 0.1KW		fire settings	-	
	BMS SN	System Lock control			
	PackSN	OR sales			
	Product SN		Shunt signal detection set	ting With status	
		CAN protocol setting			
	Clear the record	Ort Set checked Renet by default			
Ver: Protocot 1363		C function en			
Web Connected	The number of overcharged PROT	CCL up limit(A)			
23.08.09 beta2	The number of times the PROT was placed	DCL up limit/A)			

7. Calibration: Here is calibration content of BMS data (all has calibrated by factory, not recommended for private calibration).

C Monitoring	Montoring - Help - Real-Itme Data - Params 1 - ParamsOpt - System - Californian -		
<ul> <li>Paralel</li> <li>Parans</li> <li>Parans</li> <li>System</li> <li>Cathration</li> </ul>	Calibration Calibration M current Cell V calibration 3.212 mm 1 Apart calorized prot. 200 Using Parent calorized prot. 3.200 Using Parent calorized prot.	C coefficient Bus sk Crist Coefficient Gri Gri DISCA Coefficient Gri Gri	Edit         Pedd IV           Connext calibration         Colorania         Units fragment           Standy connext (A)         Colorania         Units fragment           Drager CS (A)         Colorania         Units fragment           Diager CS (A)         Colorania         Units fragment           Diager CS (A)         Colorania         Units fragment           Diager CS (A)         Colorania         Units fragment
Whetens Module		V compensation	
Vec Protocol: 1363 Web: Connectual Server: On 23 Still 09-Ontail			

8. Wireless module: Here will contains information about some additional functional

modules. • Wintess Module -EMS SN Server address and port PC8 Product SN IoT Module Info Server address Software versio Server not S Setting CIPS pos-~curacy GPS date time 3SM signal MAC at Chief d Union -XM MAC at Y101245 258-14-81 通讯路 体妆密码

9. Basic control: Here includes the control of charging and discharging MOS, heating and

other states (please consult the manufacturer for operation).

Factory config	et state	ISDN contig	-	Heating config	BMS SN	Heating Operation	POB	Forced Charge I	NOS control
Factory ON	Fadory OFF	ISDN Hgh	ISDN Low	D Heating ON	D Heading CVF	0 team	0 Dame	O Connad	O Doome
Forced DISC	MOS control	Forced Pre-DISC	CH MOS control	Clear historical o	lata	Change Match Op	ot	buzzerOpt	status
© Cimirci	C Decement	Const	O Decement	C Cher	O Our	0.00	10 m	O Exite	C Duite
			Static Balance C	Opt	Idle Sleep Opt				
dule			Ge	t status -	04	t status			
			Enable	Deable	Englis	Dutia			
Eastern Settern			Enable	Disable	Enable	Disable			
Factory Setting			C Enable	Daable	Enable Battinisme Get	Daabia			
Factory Setting	Salance 02 Balar	ice 03 💿 🖸 Balance I	Chable Chable 04 C Balance 05	exAl Cear	Enable Claft Instance Ord Balance 07	Double Black	Balance (9 : 0 : 0	Balance 10	ilance 11 💿
Factory Setting	Balance 02 💿 📄 Balar Salance 13 💿 📄 Balar	rce 03 💿 📄 Balance /	04 0 0 Balance 15	Chatte	Balance 07	Balance 06	Balance 09 💿 🖸	Balance 10 💿 🗔 Ba	ilance 11 🖂
Factory Setting	Balance 02 💿 📄 Balar Satance 13 💿 📄 Balar	tce 03 💿 📄 Balance i tce 14 💿 📄 Balance i	Crubio Co 04 Batance 05 15 Batance 15	Clear Clear	Enable Enablesce Ood Balance 07	etutut Batance 06	Balance (19 💿 📄	Balance 10 💿 🗌 Ba	siance 11 🖂
Fectory Setting     Balance 01     Balance 12	Balance 02 Balar Balance 13 Balar	rce 03 💿 📄 Balance ( rce 14 💿 📄 Balance (	Chubie Chubie O4 Balance 05 15 Balance 16	Diable      D	Eastine Out	etutur Balánce 00	Balance (9 🔘 🗌	Balance 10 💿 📄 Ba	ilance 11 🔲
Factory Setting     Difference 01 0     Balance 12 0	Batance 02 C Balar Batance 13 C Balar	ice 03 C C Balance / Ice 14 C D Balance /	Chubie Chubie O4 Datance D5 15 Batance 16	Diable      D	East Interve Cod Balance 07	Balance 08	Balance D9 💿 🖸	Batance 10 💿 🗌 Ba	aance 11 🖂
Factory Setting	Balance 02 Balar Balance 13 Balar	ne 03 💿 📄 Dalance / Ne 14 💿 📄 Balance /	Coulte Coulte O4 Datance 05 15 Batance 16	Diable	Exable End Invices End Invices Edd Edd Edd Edd Edd Edd Edd Edd Edd Ed	Balance 08	Balance (79 🕤 🗌	Balance 10 💿 🗖 Be	alance 11 🖂
Factory Setting	Balance 02 C Balar Balance 13 C Balar	rce 03 💿 📄 Balance / Rce 14 💿 📄 Balance /	04 D Balance 15	Duale	East Innexe dd Balance 07	Dudis	Barance (%	Balance 10 💿 🗌 Da	alance 11 🖾
Balance 01 0	Salance 02 C Salar Salance 13 C Salar	sce 03 🔹 📄 Balance / kce 14 🕘 📄 Balance /	Coalisie	Chaste     Case     Case     Case     Case	Exclusion: del	Duala	Banance 09	Baunce 10 💿 📄 Ba	dance 11 🤤 🗧
Pactory Setting	Balance 02 💿 C. Balar Balance 13 💿 C. Balar	toe 03 © 📄 Balance /	Calling Callin	Dash	East bases Of	Data	Barance (7) 💿 . 🗌	Balance 10 💿 🗌 Di	iance 11 🖸

10. Upgrade: software online upgrade function of BMS (please consult the manufacturer

#### for operation).

C Monitoring	🗮 Monitoring - Heip - System - Basic Contral - Olivoyada -				3
Parallel		DWO DW		s Product bis	
Ø Params -					
🛱 Settings 🗠	() Import Sin	Protocol Default ~ Usb Type Serial ~	Upgrade Baud 155200 ~		
🗅 History Data	② Sent Delay (ms) 0				
C Upgrade	C Star				
<b>О</b> Нер		Trre			
Vec.					
Protocol, 1363 Web: Connected					
Serial: On 23.08.09-beta2					
Street and the street of the s					

#### 11. Click "Read Data" to get historical data and export data.

	= M	onitoring -	Help - System - Basic Co	ontrol - Upgrade - •	Holory Data ×											
	Stop Read Chier Plage Esport Interval(min) Cet Set								Pile	uu ore SNS/II	Set hald	Vuto Scroll				
A Params	No	PACK	time	EventRecord	Total volt	Total curr	SOC(%)	SOH(%)	Full capacit	Env TEMP(	MOS TEMP	Alarm sign bit	PROT the flag bit	Cell N	V difference	battery
	13	0	2023-10-19 15:05:45	Alarm	51.60	1.30	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	63	3.213
E) Settings ~	14	0	2023-10-19 15:05:45	Alarm recovery	51.60	1.40	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	63	3.213
	15	0	2023-10-19 15:05:45	Alarm	51.60	1.40	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	63	3.213
	16	0	2023-10-19 15:05:45	Alarm recovery	51.60	1.40	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm;		16	63	3.213
	17	0	2023-10-19 15:05:45	Alarm	51.60	1.40	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	63	3.213
	18	0	2023-10-19 15:05:45	Alarm recovery	51.60	1.40	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	63	3.213
	19	0	2023-10-19 15:05:45	Alarm	51.60	1.40	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	63	3.213
	20	0	2023-10-19 15:05:44	Alarm recovery	51.60	1.30	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	63	3.213
	21	0	2023-10-19 15:05:44	Alarm	51.60	1.30	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	64	3.213
	22	0	2023-10-19 15:05:44	Alarm recovery	51.60	1.30	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	64	3.213
	23	0	2023-10-19 15:05:44	Alarm	51.60	1.30	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	63	3.213
	24	0	2023-10-19 15:05:44	Alarm recovery	51.60	1.30	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	63	3.213
	25	0	2023-10-19 15:05:44	Alarm	51.60	1.30	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	63	3.213
	26	0	2023-10-19 15:05:64	Alarm recovery	51.60	1.30	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	63	3.213
Protocol: 1363 Web: Connected	27	0	2023-10-19 15:05:44	Alarm	51.60	1.30	66.50	100.00	50	29.00	26.00	CHG OC 1 alarm:		16	63	3.213
23 00.09-bets/2	28	0	2023-10-19 14:20:16	Time recording	51.50	0.00	66.50	100.00	50	31.00	27.00			16	63	3.211

## 12. Warranty Policy

We offer a standard factory warranty that is valid for 5 years for battery products, starting from the date of purchase or no more than 5.5 years from the delivery date from the factory.

#### 1. Product Quality Standards and Warranty

1) Our batteries comply with safety transportation regulations, including UN38.3 and MSDS.

2) The battery warranty terms are determined by the manufacturer and its distributor.

3) Once the products leave the factory, any appearance damage (e.g., scratches, rust, chemical damage) is not covered under the warranty.

#### 2. Warranty Exceptions

1) Battery failure caused by non-compliant inverters or chargers, such as abnormal charge voltage or unqualified inverters/chargers.

2) Battery malfunction or damage resulting from installation or handling by non-professional or unqualified personnel.

3) Failure to follow the user manual, installation guide, or maintenance regulations.

4) Product malfunction or damage due to non-compliance with relevant laws, regulations, or technical requirements in power plant design, construction, or installation.

5) Connecting a high-voltage inverter to a low-voltage battery or vice versa.

6) Product malfunction or damage due to installation on movable devices or in environments subject to vibration.

7) Failure or damage caused by corrosion, lightning, other natural events, or force majeure.

8) Unauthorized alteration or disassembly of the product.

9) Damage or malfunction caused by other equipment, such as surge damage from switching high-power generators on or off.

#### 3. Repair and Replacement

In the event of a failure, users should check the screen display and record the error code, protection values, and any necessary information.

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Once the dealer or manufacturer confirms that the issue is due to a product quality problem, the faulty product will be repaired or replaced with spare parts.

The manufacturer is responsible only for troubleshooting, repair, and replacement of its products. The manufacturer does not assume liability for any special, consequential, or incidental damages (including loss of profits, loss of goodwill, loss of business reputation, delays, etc.).

This warranty does not affect the customer's rights under any other applicable laws and regulations related to the sale of consumer goods in the host country or region.

#### 4. Force Majeure

Force majeure refers to unavoidable and insurmountable objective conditions that cannot be prevented even with the use of reasonable precautions and measures. It includes, but is not limited to, the following events:

1. Natural Disasters: Earthquakes, floods, fires, storms, and other natural calamities.

2. Hostile Actions: War, invasion, blockade, and other acts of armed hostility.

3. Civil Disturbances: Revolutions, rebellions, and riots.

4. Labor Actions: Strikes and labour disputes.

5. Government Actions: Orders, prohibitions, and other governmental directives.

6. Epidemics: Outbreaks of infectious diseases.

7. Third-Party Actions: Negligence and misconduct by third parties beyond the manufacturer's control.

#### 5. Warranty Disclaimer

We make no representations or warranties regarding the Product other than those expressly stated in this Limited Warranty. These Limited Warranties are exclusive and replace all other express and implied warranties. We specifically disclaim any implied warranties of merchantability or fitness for a particular purpose.

To the fullest extent permitted by law, we shall not be liable, whether in contract, tort (including negligence and strict liability), or otherwise, for any damages exceeding the Product's purchase price. Additionally, we shall not be liable for any indirect, incidental, special, or consequential damages of any kind, including, but not limited to, loss of revenue, profits, business, information, data, or any other financial losses arising out of or in connection with the use or inability to use the Product.

#### 6. Legal Rights

Some countries and/or states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you. This warranty provides you with specific legal rights, which may vary from country to country and/or state to state.

This warranty shall be governed by and interpreted by the laws of China. It constitutes the exclusive agreement between the parties regarding the subject matter herein. No employee or representative is authorized to make any warranty beyond those expressly stated in this agreement.

#### 7. Product Sustainability Guarantee

As a LiFePO4 battery pack manufacturer, we prioritize sustainability by investing in products and processes that minimize waste, enhance performance, and improve environmental and safety standards. We develop innovative solutions using recycled or renewable materials and ensure recyclability.

Our collaboration with suppliers and partners supports responsible environmental management and sustainability. We are dedicated to maintaining a safe workplace and delivering value in the renewable energy sector.

## \* The right to interpret this manual is owned by the manufacturer, and the manufacturer reserves the right to modify the manual without prior notice.

## Warranty Card

## **User Information**

Company / User Name:

Address:

Telephone:

Email:

Project installation location:

#### **Product Information**

Product Model:

Serial No :

Invoice Number / Order Number:

Purchase Date:

Dealer:

Commission date:

## **Fault/Error Description**