

LiFePO4 Battery Specification

Model: RM48100 & RM48200



General Information

This specification defines the performance of rechargeable LiFePO4 battery pack, describes the type, performance, technical characteristics, warning and caution of the battery pack.

Basic Specification

NO	Items	Description	
Normal specification			
1	Rated Voltage	51.2V	51.2V
2	Rated Capacity	100Ah	200Ah
3	Rated Energy	5.12kWh	10.24kWh
4	Battery Configuration	16S1P	16S2P
5	Battery Cell	LF100 (3.2V100Ah) 16PCS	LF100 (3.2V100Ah) 32PCS
Standard Charge			
1	Operation temperature range @charging	0~45°C	
2	Rated charge voltage	55.2±0.4V	55.2±0.4V
3	Max charge voltage	56.8±0.4V	56.8±0.4V
4	Overcharge protection	58.4±0.4V	58.4±0.4V
5	Allowed MAX charge current	55A withstand 30s	110A withstand 30s
6	Peak charge current	60A withstand 5s	120A withstand 5s
7	Rated charge current	50A	100A
8	Recommend charge current	<50A	<100A
Standard discharge			
1	Operation temperature range @discharging	-20~60°C	
2	Output Voltage Range	40~56Vdc	40~56Vdc
3	Recommend Working Range	46~54Vdc	46~54Vdc
4	Discharge Cut-off voltage	40V	40V
5	Allowed MAX discharge current	110A withstand 30s	220A withstand 30s
7	Peak discharge current	120A withstand 5s	240A withstand 5s
7	Rated discharge current	100A	200A
8	Recommend discharge current	<100A	<200A
Operation and Indicator			
1	Power Switch	ON: all function start OFF: all function shut down	
2	Run LED (green)	Lighting: System working normal Flash: System standby	
3	Alarm LED (red)	Lighting: System fault Flash: System warning	

4	SOC LED (4pcs green)	<p>Charging: SOC<25% LED1、LED2、LED3、LED4 flash in turn 25%<SOC<50% LED1 lighting,LED2、LED3、LED4 flash in turn 50%<SOC<75% LED1、LED2 lighting, LED3、LED4 flash in turn 75%<SOC<95% LED1、LED2 lighting, LED3、LED4 flash in turn LED1、LED2、LED3 lighting, LED4 flash</p> <p>Discharging: SOC>75% LED1、LED2、LED3、LED4 lighting 50%<SOC<75% LED1、LED2、LED3 lighting, LED4 off 25%<SOC<50% LED1、LED2 lighting, LED3、LED4 off 10%<SOC<25% LED1 lighting, LED2、LED3、LED4 off SOC<10% LED1 flash, LED2、LED3、LED4 off</p>
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Communication

1	RS485	For LCD remote control (option)
2	CAN	PC control and monitor (one communication CAN card support ten packs parallel)

Mechanical Characteristics

1	Dimension	L*W*H (unit):535*483*245mm LFP48100R L*W*H (unit):825*483*245mm for LFP48200R
		L*W*H (shipping):650*545*380mm LFP48100R L*W*H (shipping):950*545*380mm LFP48200R
2	Weight	Approx.53Kg (N.W), 57kg (G.W) LFP48100R Approx.100Kg (N.W), 110kg (G.W) LFP48200R

Storage and Transportation requirements

1	Storage Temperature	Less than 1 month	-20~35°C
		Less than 6 month	-10~30°C
2	Storage Humidity	45~75%RH	
3	SOC	Storage	60~75% SOC
		Transport	45~55% SOC

BMS

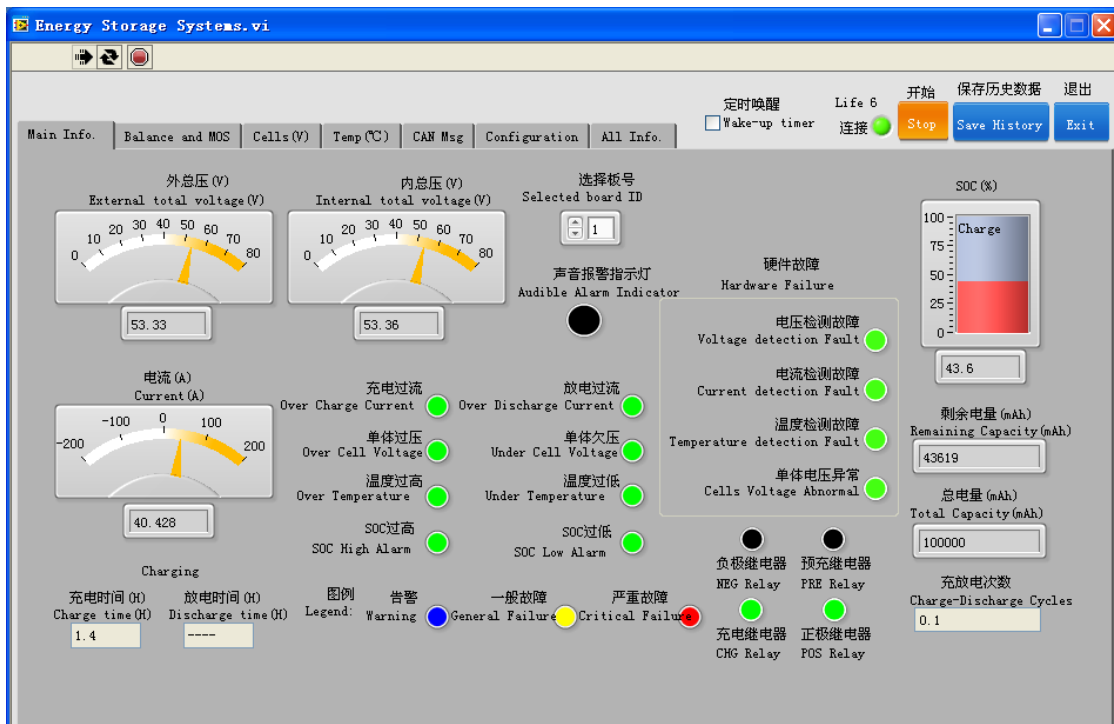
The batteries are supplied with a LiFePO4 Battery Management System (BMS) that can monitor and optimized each single prismatic cell during charge & discharge, to protect the battery pack overcharge, over discharge, short circuit. Overall, the BMS helps to ensure safe and accurate running.

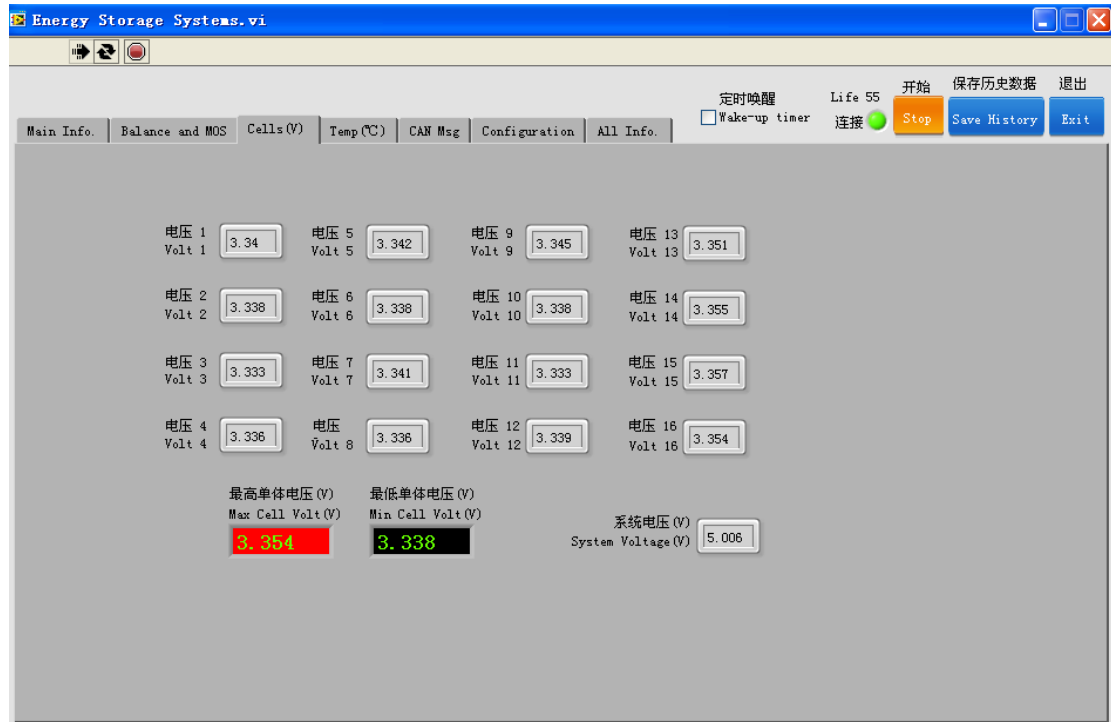
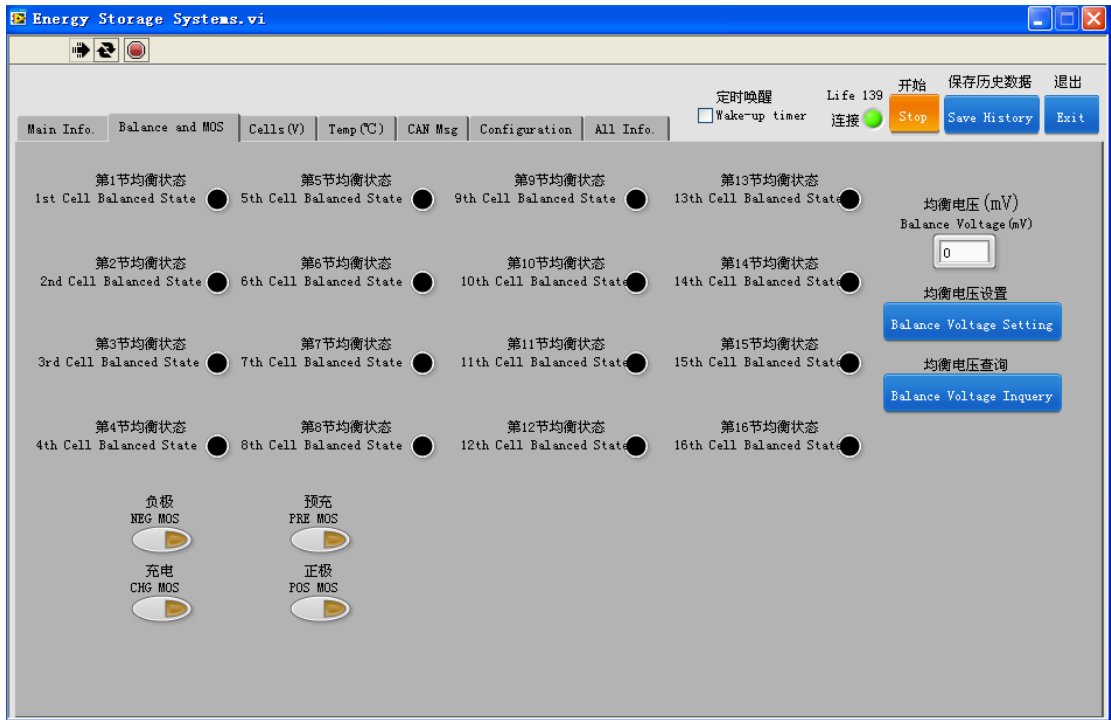
Items	Content (for each cell)	Criterion	Alarm LED(red)
Over charge	Over-charge warning	3700mv	once/3s flash, keep output
	Over-charge protection	3750mv	once/1s flash, relay cut off
	Over-charge warning release	3400mv	
	Over-charge protection release	3350mv	
	Over-charge release method	Discharging(Automatic)	
Over discharge	Over-discharge warning	2700mv	once/3s flash, keep output
	Over-discharge protection	2500mv	once/1s flash, relay cut off
	Over-discharge warning release	2900mv	
	Over-discharge protection release	2800mv	
	Over-discharge release method	Charging	
Over current (CHG&DISCHG)	Overcurrent warning	110% rated	once/1s flash, 30s off
	Overcurrent protection(PEAK)	120% rated	Lightning, delay 10s off relay cut off
	Overcurrent release method(CHG)	Restart	
	Overcurrent release method(DISCHG)	Cut off loads and Restart	
Over & Lower Temp (Discharging)	Overtemperature	Warning@55°C	once/3s flash, keep output
		Protection@60°C	once/1s flash, relay cut off
		WarningRelease@40°C	
		Protection Release@55°C	
	Lower temperature	Warning@-20°C	once/3s flash, keep output
		Protection@-25°C	once/1s flash, relay cut off
		Warning Release@-15°C	
		Protection Release@-20°C	
Over & Lower Temp(Charging)	Overtemperature	Warning@45°C	once/3s flash, keep output
		Protection@50°C	once/1s flash, relay cut off
		WarningRelease@40°C	
		Protection Release@45°C	
	Lower temperature	Warning@0°C	once/3s flash, keep output
		Protection@-5°C	once/1s flash, relay cut off
		WarningRelease@5°C	
		Protection Release@0°C	

Operation Panel



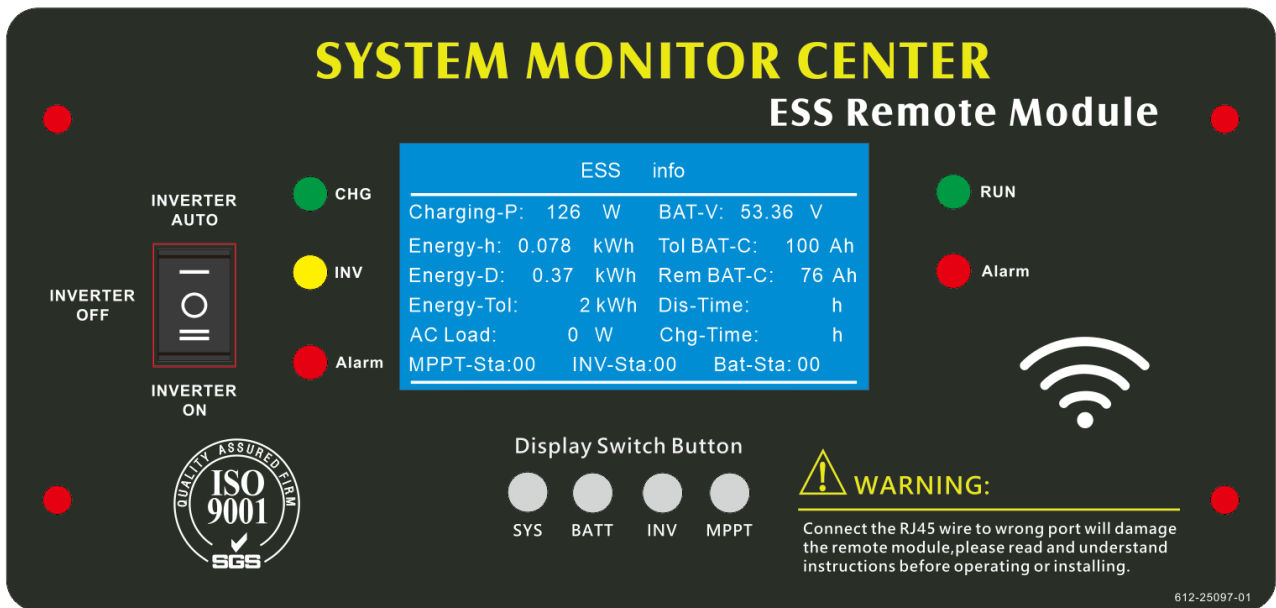
CAN Communication and PC Software information



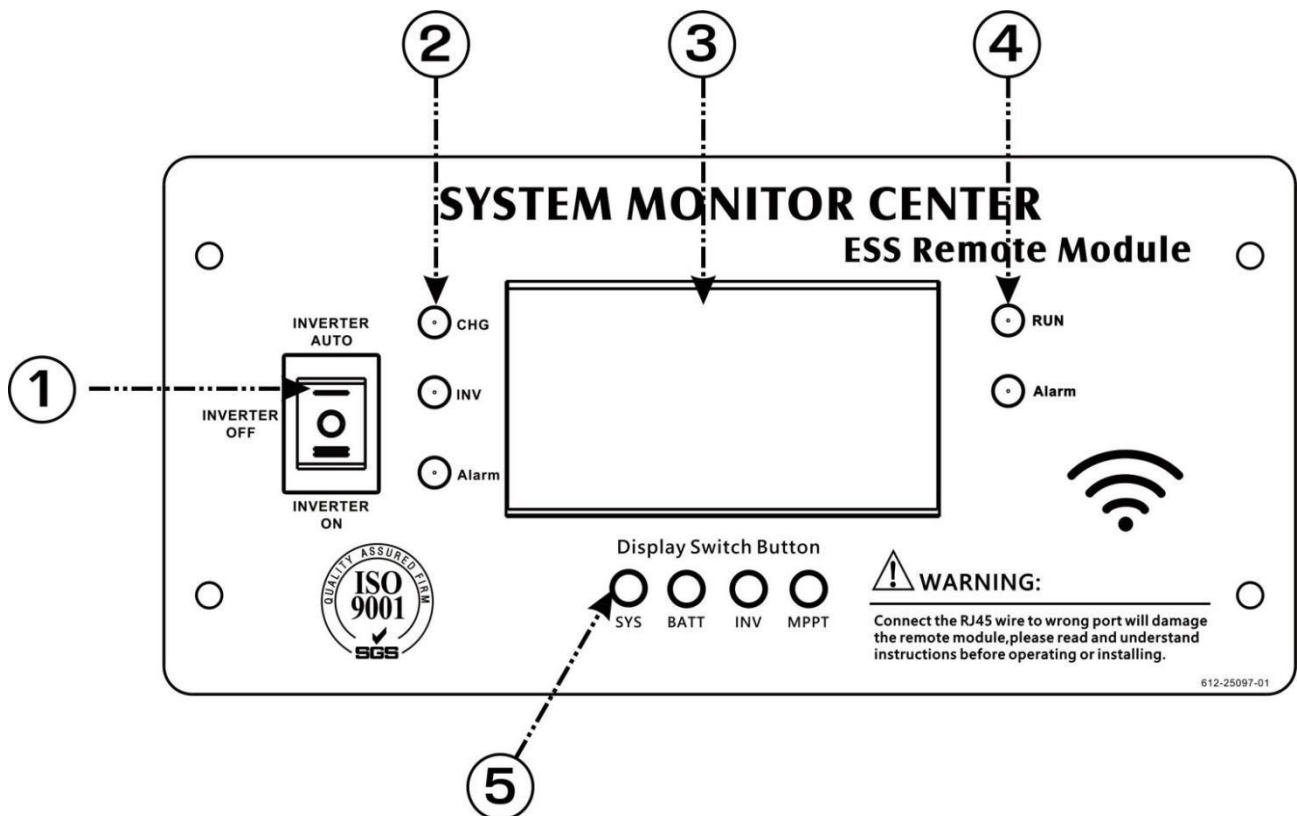


LCD Module Introduction (Optional)

The LCD display battery and inverter working information in the cabinet

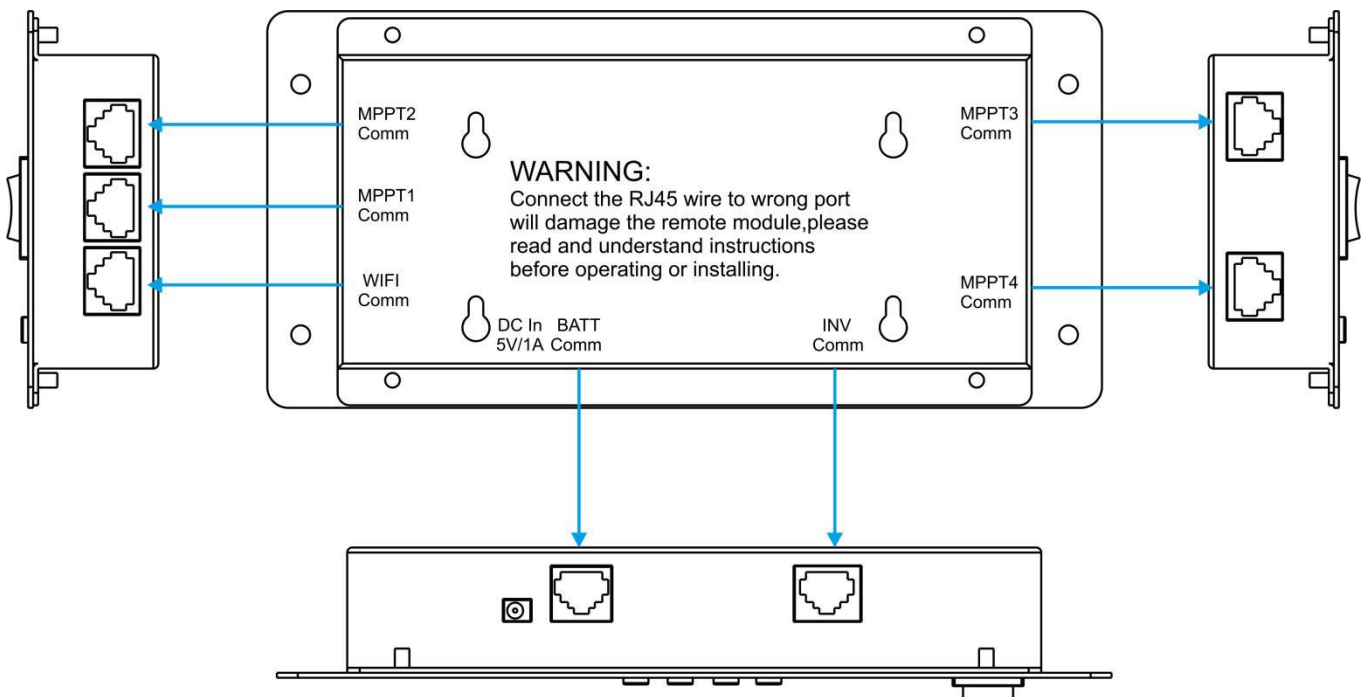


Function description



Item	Name	Description
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1	INV power switch	Power saver auto: inverter work in saver mode
		Inverter OFF: inverter power off
		Inverter ON: inverter work in normal mode
2	Inverter indicator LED	CHG: inverter working in battery charge mode
		INV: inverter working in battery discharge mode
		Alarm: inverter warning or fault
3	LCD Screen	Show the system working information
4	Battery indicator LED	RUN: battery working normal
		Alarm: battery warning or fault
		Display ON/OFF
5	Button SYS	Press button, LCD will show ESS info directly
	Button BATT	Press button, LCD will show BATT info directly
	Button INV	Press button, LCD will show INV info directly
	Button MPPT	Press button, LCD will show MPPT info directly



Note:

1. The connector of Inverter port is RJ45 type, connector of Battery is RJ11 type, never insert the wrong position or damage will happen and invalid warranty.
2. DISPLAY ON/OFF: touch any button will lighting the LCD, keep press the button, the current screen will hold for checking current module information

Display introduction

ESS INFO display

ESS info		
Charging-P:	126 W	BAT-V: 53.36 V
Energy-h:	0.078 kWh	Tol BAT-C: 100 Ah
Energy-D:	0.37 kWh	Rem BAT-C: 76 Ah
Energy-Tol:	2 kWh	Dis-Time: h
AC Load:	0 W	Chg-Time: h
MPPT-Sta:00	INV-Sta:00	Bat-Sta: 00

Charging-Power	MPPT charging power total
Energy-hour	Solar generator energy in current hour
Energy-Day	Solar generator energy today
Energy-Total	Solar generator energy total
AC Load	Current AC loads power inverter take
BAT-Voltage	System battery voltage
Total Bat capacity	System rated battery capacity in total
Remain Bat capacity	System remain battery capacity in total
Discharge-Time	System estimated time to discharge battery empty in current condition
Charge- Time	System estimated time to charging battery full in current condition
MPPT-Status	All MPPT working status in system 00: normal 01: warning occur 02: fault occur
Inverter-Status	Inverter working status in system 00: normal 01: warning occur 02: fault occur
Battery-Status	All Battery working status in system 00: normal 01: warning occur 02: fault occur

BATTERY PACK display

ID: 0	BATTERY info	Tol-B: 1
Battery V: 53.32 V	Rated Cap: 100.0 AH	
CURRENT: 0.47 A	Current Cap: 75.9 AH	
CHG time: h	Current SOC: 75.9 %	
DIS time: 160.8 h	Cycle times: 2	
alarm Status: 0000	OVP times: 0	
OCP times: 0	OTP times: 1	

first battery info window

Total-battery pack	Total battery packs in system
Battery V:	Current ID battery voltage
Rated Cap:	Battery rated capacity of current ID
Current I:	Positive means charge, Negative means discharge
Current Cap:	Remain capacity of current ID battery
CHG time:	Estimated time to charging battery full
Current SOC:	Remain SOC of current ID battery
DIS time:	Estimated time to discharge battery empty
Cycle times:	Battery cycle times of current ID
ID:	Current battery identity number
Alarm status:	Ref the battery pack alarm code table
OVP times	Number of battery voltage alarm times
OCP times	Number of battery current alarm times
OTP times	Number of battery temperature alarm times

Battery pack alarm code table

0000	normal
0100	Cell Over-voltage Warning
0200	Cell Over-voltage Protection
0400	Cell Low-voltage Warning

0800	Cell Low-voltage Protection
0010	Cell Over-temp Warning
0020	Cell Over-temp Protection
0040	Cell Low-temp Warning
0080	Cell Low-temp Protection
0001	Discharge Over-current Warning
0002	Discharge Over-current Protection
0004	Charge Over-current Warning
0008	Charge Over-current Protection

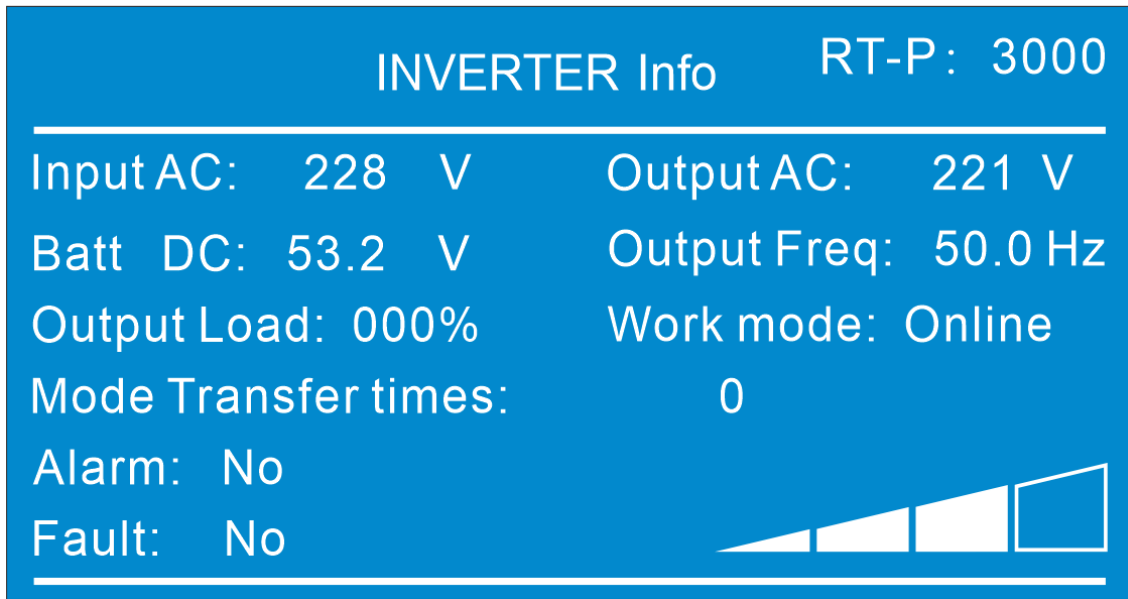
ID: 0 **Cell Details(unt: mV / °C)**

C1: 3314 C5: 3316 C9: 3311 C13: 3317
 C2: 3318 C6: 3320 C10: 3311 C14: 3314
 C3: 3318 C7: 3313 C11: 3312 C15: 3310
 C4: 3321 C8: 3314 C12: 3311 C16: 3324
 T1: 30.8 T2: 29.7 T3: 29.2 T4: 28.9
 MaxV: 3324 MinV: 3310 MaxT: 30.8 MinT: 28.9

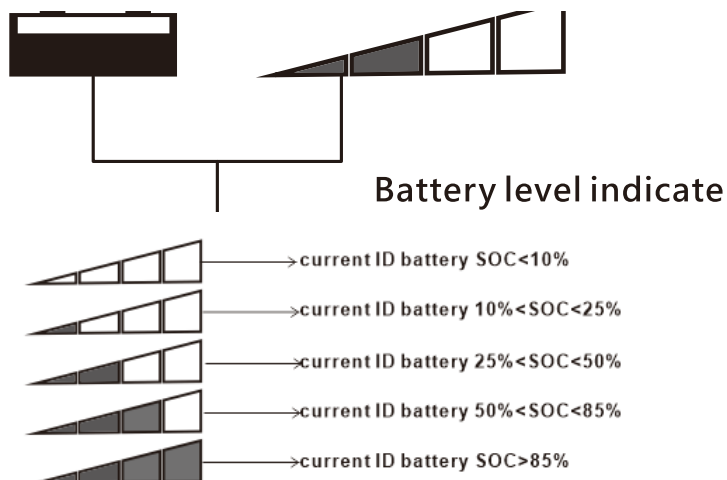
second battery info window

ID	Current battery identity number
C1—C16	Internal cells voltage
T1—T4	Internal temperature detecting value
Max V	Maximum cell voltage
Min V	Minimum cell voltage
Max T	Maximum internal temperature detecting value
Min T	Minimum internal temperature detecting value

INVERTER INFO display



Rated-Power	Inverter rated power
Input AC	Current utility or generator AC voltage
Output AC	Inverter output AC voltage
Batt DC	Current battery voltage
Output Freq	Inverter output AC frequency
Output Load	Current AC loads percentage inverter take
Work mode	Charging or Inverter
Mode Transfer times	Inverter working mode transfer times
Alarm	Ref inverter 3.3.9
Fault	Ref inverter 3.3.9



MPPT INFO display

ID: 1	MPPT	info
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PV Input Voltage:	75.3	V
Charging Current:	2.38	A
Charging Power:	126	W
Charge Voltage:	53.29	V
Unit HS Temperature:	35	C
Warning:00	fault:00	F-times: 0
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ID	Current MPPT identity number
PV Input Voltage	Current MPPT PV input voltage
Charging Current	Current MPPT charging current
Charging Power	Current MPPT charging power
Charge Voltage	Current MPPT charging voltage
Unit HS Temperature	Current MPPT internal temperature
Warning code	Ref MPPT 3.1.3
Fault code	Ref MPPT 3.1.3
Fault times	Current MPPT occurs fault times

Storage & Transportation

- * Based on the character of cell, proper environment for transportation of LiFePO₄ battery pack need to be created to protect the battery.
- * Battery should be stayed in the ware house -20°C~35°C where it's dry, clean, shade, and well-ventilated.
- * The battery should be stored in 50% SOC during transportation.
- * The battery need to be charged every 6 months if out of use
- * Keep the battery against dropping, turning over and serious stacking during loading.

Warning & Tips

Please read and follow the specification and caution remarks on battery surface before use the battery. Improper use may cause heat, fire, rupture, damage or capacity deterioration of the battery. Describes is not responsible for any accidents caused by the usage without following our specification.

Warning !

- * The battery must be far away from heat source, high voltage, and avoid to be exposed in sunshine for long time.
- * Never throw the battery into water.
- * Never connect the positive and negative of battery with metal.
- * Never sheep or store battery together with metal.
- * Never reverse two electrodes when use the battery.
- * Never disassemble the battery without manufacturer's permission and guidance.
- * Never knock, throw or trample the battery.

Tips !

- * Keep the battery against high temperature. Otherwise it will cause battery heat, get into fire or lose some function and reduce the life.
- * When battery run out of power, please charge your battery timely (≤ 15 day).
- * Please use the matched or suggested charger for this battery.
- * If battery emit peculiar smell, heating, distortion or appear any abnormity during working or storage, please stop using and take it out from device.
- * If the battery leaks and get into the eyes or skin, do not wipe, instead, rinse it with clean water and see doctor immediately.
- * Please far away from children or pets.
- * Do not put disuse battery into a fire or water.
- * It is strictly prohibited any series between the battery packs.