



User Manual

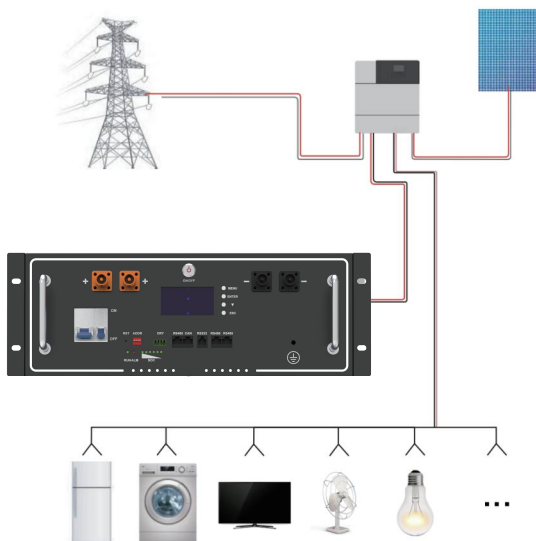
Rack-mounted battery

User Manual

Ver.1.1

>> Applied to model

- ·MIC-51100R-A
- ·MIC-51100R-B



1.Safety Introductions	2
1.1 Important safety instructions	2
1.2 General Safety Instructions	2
1.3 Personal Safety	3
1.4 Electrical Safety	3
1.5 Environmental Safety	4
1.6 Transport Safety	5
1.7 General Requirements	5
2. Preface	6
2.1 About This Document	6
2.2 Energy Storage System Architecture	6
3.Appearance and Functionality	7
3.1 Product appearance	7
3.2 Dimensions	7
3.3 Appearance function	8
4.Function Description	9
4.1 Product Features	9
4.2 Indicator Lights	10
4.3 Communication	11
4.4 Parallel Communication	12
4.5 Online Connection or Debugging	13
4.6 LCD Display Panel Functions	15
4.7 Application Software Functionality	19
4.8 Other Features	19
4.9 BMS PCB Schematic	21
5.Major Technical Specifications	22
5.1 Basic Configuration	22
5.2 MIC-51100R-A	23
MIC-51100R-B	24
6.Installation Instructions	25
6.1 Installation Precautions	23
6.2 Power System Connection	23
7.Routine Maintenance	28
8.Additional Precautions and Notices	28
9.Packing List	29
10. Application Scenarios	29

1. Safety Introductions

1.1 Important safety instructions

Please retain this manual for future reference!

This manual contains all necessary safety precautions for the installation and operation of rack-mounted LiFePO₄ energy storage batteries. Read all instructions and cautions in the manual carefully before installation and use.

- To avoid personal injury, the battery system should be disassembled by professional installers only. For repairs, please contact our company's professional maintenance staff.
- Do not install LiFePO₄ energy storage batteries within reach of children.
- Do not install energy storage LiFePO₄ batteries in environments that are damp, greasy, flammable, explosive, or prone to dust accumulation.
- Do not open the battery pack casing while the energy storage lithium iron phosphate battery is in operation. It is recommended to install an appropriate fuse or circuit breaker externally.
- After installation, check that all wiring connections are secure to avoid the risk of heat accumulation due to loose connections.
- Rack-mounted batteries should be used with inverters to charge from solar or grid power sources, and it is prohibited to parallel them with other AC power sources or batteries of different voltages or brands.

1.2 General Safety Instructions

- Read the user manual carefully and check all safety instructions on the device and in this document. The terms "DANGER," "WARNING," and "CAUTION" in this document are not exhaustive of all safety precautions. They are supplementary to the safety instructions.
- For the safety of users and the efficient use of this manual, a series of symbols are designed to alert to dangers. Understand and follow the indications to avoid personal injury or property damage. The relevant safety symbols are listed below:

 DANGER	DANGER indicates a hazardous situation that, if not avoided, could result in serious injury or fire.
 WARNING	WARNING indicates a potential hazard that could lead to property damage or void the warranty if not avoided.
 CAUTION	CAUTION suggests careful adherence to standard procedures, indicating actions that should be handled carefully or observed to avoid potential hazards or severe consequences.
 NOTE	NOTE is for normal situations, generally posing no direct safety hazard!

■ Table-1

NOTE

When installing, operating, or maintaining equipment, comply with local laws and regulations. The safety precautions in this document are supplementary to local laws and regulations.

1.3 Personal Safety

Prerequisites for Personnel

- Only qualified professionals or trained personnel should install, operate, and maintain battery equipment.
- Personnel installing or maintaining battery equipment must be trained, understand all necessary safety precautions, and be able to perform all operations correctly.

DANGER

- Keep batteries away from children and pets.
- Do not touch batteries that are powered; this may cause the battery casing to become hot during operation.
- Do not touch the terminals of batteries that are powered.
- Do not stand, lean on, or sit on batteries.

1.4 Electrical Safety

There are several signs related to electrical safety on the batteries. Ensure you fully understand them before installation.

	Electrical Hazard	Batteries are live with voltage when powered. Only qualified engineers are authorized to handle them.
	Grounding Wire	Identify the grounding wire.
	DC Positive and Negative Connectoers	Identify the positive and negative connectors of the DC power supply.
	CE Certification Mark	This product complies with CE certification standards.
	Battery Label	Batteries should not be disposed of with general waste and must be recycled properly according to local regulations.
	Recycling and Disposal	Batteries are recyclable. Please refer to local regulations for the correct disposal methods.

■ Table-2

DANGER

- Ensure the equipment is undamaged before installation. Otherwise, it could lead to electric shock or fire.
- Do not connect or disconnect the power cables while the battery is powered.
- Before connecting the power cables, ensure the polarity of the cables is correct to avoid arcing, sparks, and potentially causing a fire or personal injury.
- Do not parallel batteries with different styles or models.
- Do not directly connect the batteries to an AC power source.
- Do not directly connect the batteries to a photovoltaic power source.
- Do not connect batteries in series.
- Do not connect batteries to a faulty or unqualified inverter or charger.
- Avoid creating a short circuit with external connections.
- Ensure the power grid is turned off and the batteries are disconnected before maintenance.
- Ensure the grounding wire is correctly connected before operation.

WARNING

- If not in use, charge the battery every six months.
- After complete discharge (SOC=0%), ensure to recharge the battery within 10 days.
- Ensure battery cables are correctly installed before operating the system.
- When installing or servicing batteries, ensure they are powered down and isolated. Use a multimeter to verify there is no voltage across the terminals.

CAUTION

- Use appropriate insulated tools during installation and maintenance.
- After powering the battery, check the LED status indicator.
- Ensure the communication cable between the battery and the inverter is correctly connected.
- Once communication is established between the inverter and battery, check the inverter's alarms and SOC readings.

1.5 Environmental Safety

CAUTION

- Install the battery in a dry, well-ventilated area.
- Avoid installation sites directly exposed to sunlight and rain.
- Keep the installation site away from sources of fire.
- Keep the installation site away from any water sources.
- Do not install the device in locations containing flammable gases and/or liquids.
- The operation and lifespan of the battery depend on the ambient temperature. Avoid high temperatures; the suitable operating temperature for the battery is 0°C to 45°C, with a recommended ambient temperature range of 2°C to 30°C.

1.6 Transport Safety

WARNING

- This product is classified as a Class 9 hazardous material.
- Ensure the packaging is protected from being:
 - Wet by rain, snow, or submerged in water;
 - Dropped or subjected to mechanical impacts;
 - Stored or transported upside down or at an angle.

1.7 General Requirements

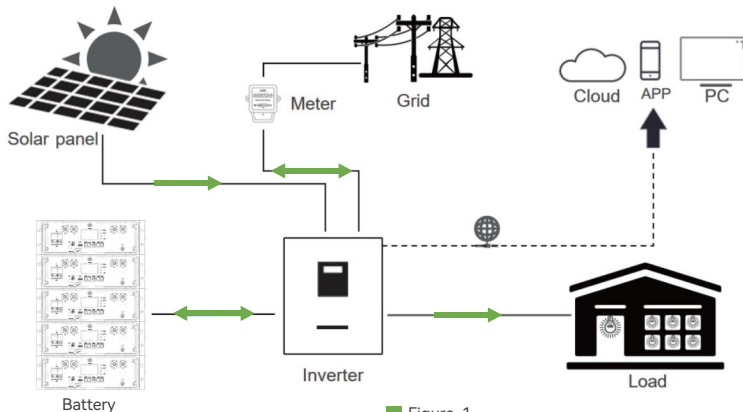
- The installation and usage environment must comply with international, national, and local standards related to lithium batteries and adhere to local laws and regulations. Users are obliged to protect the battery from extreme cold and other hazards.
- Place the battery out of reach of children and in areas not commonly accessed by the general public, away from daily work or living areas, including but not limited to workshops, bedrooms, lounges, living rooms, music rooms, kitchens, studies, playrooms, home theaters, sunrooms, bathrooms, laundry rooms, and attics.
- When installing batteries in a garage, keep them away from driveways. It is recommended to install batteries above the bumper height on walls to prevent collision.
- Do not install the battery in poorly ventilated, enclosed spaces, and do not place flammable or explosive items near the battery. It is advisable to mount the battery on a wall to avoid contact with water.
- This battery product is designed for indoor installation; do not install or place it outdoors.
- Ensure that the installation and operating environment are within acceptable limits; otherwise, performance and safety may be compromised.
- Do not install the device in environments exposed to direct sunlight, dust, smoke, volatile or corrosive gases, infrared radiation, organic solvents, or salty air.
- Do not install the device in environments containing conductive metal or magnetic dust.
- Do not install the device in locations prone to fungus, mold, or other microbial growth.
- Do not install the device in areas subject to strong vibrations, noise, or electromagnetic interference.
- Ensure the installation environment has a solid ground, free of spongy or soft soil that is prone to sinking. The site should not be in a low-lying area prone to water or snow accumulation, and the level of the site must be higher than the historical highest water level of the area.
- Do not install the device in locations that may be submerged in water.
- After installation, remove all packing materials such as cardboard boxes, foam plastic, plastic, and zip ties from the area around the device.

2. Preface

2.1 About This Document

This user manual is primarily intended for on-site installers or users, and it covers the basic principles of energy storage systems, product information, system integration, installation guidance, precautions, operation, and maintenance. For more detailed specifications, please contact the manufacturer or relevant distributors to obtain the product technical specifications!

2.2 Energy Storage System Architecture



- Small to medium-sized energy storage systems are efficient, compact solutions suitable for various applications. The main components include the Battery Module (BMS), Photovoltaic Energy (PV), Inverter (PCS), and Monitoring System (EMS).
- The battery module is the core component, responsible for storing and releasing energy. It consists of several individual cells connected in series and parallel to achieve the required voltage and capacity.
- The Battery Management System (BMS) monitors the battery module to ensure safe operation, preventing overcharging and deep discharging, and optimizing the charging and discharging process. The BMS also provides real-time monitoring and reporting of battery status to predict and maintain battery performance.
- The inverter converts DC electricity into AC electricity, which is used for grid connection or supplying power to loads within the grid. It also provides and supplements power during power outages or peak demand periods.
- The monitoring system is another critical part of the small to medium-sized energy storage system. It is responsible for collecting, processing, and analyzing data from various components to monitor the system's operational status and performance. This monitoring system also offers remote monitoring and management capabilities.
- The system is designed for easy installation, maintenance, and use, providing a reliable and efficient energy storage solution for users.

① Special note:

The inverter in the diagram may use our own or a third-party compatible communication protocol.

3. Appearance and Functionality

The lithium iron phosphate rack-mounted energy storage system is a storage solution based on lithium iron phosphate batteries. Its principle is to store and release energy through energy conversion. During charging, electrical energy is converted into chemical energy and stored in lithium iron phosphate batteries; during discharge, chemical energy is converted back into electrical energy and released.

3.1 Product appearance

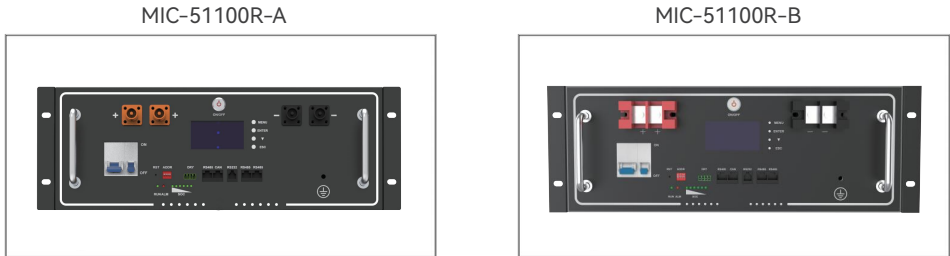


Figure-2

3.2 Dimensions

MIC-51100R-A

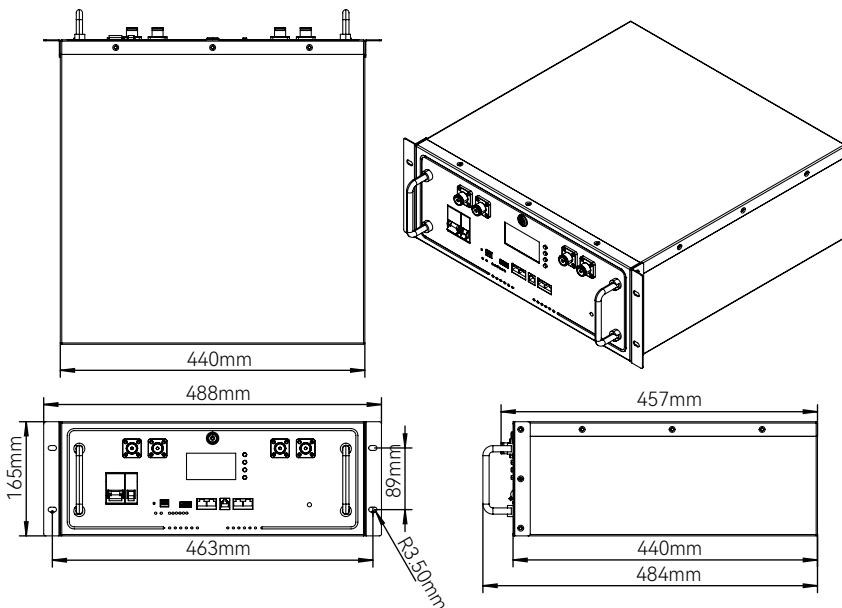


Figure 3 - Battery Box Dimension Diagram

MIC-51100R-B

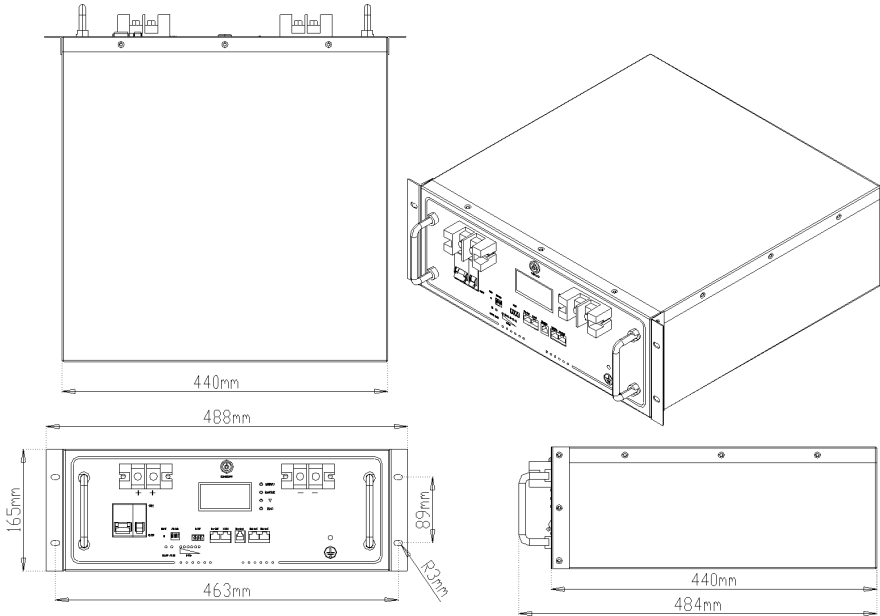


Figure 3 - Battery Box Dimension Diagram

3.3 Appearance function

MIC-51100R-A

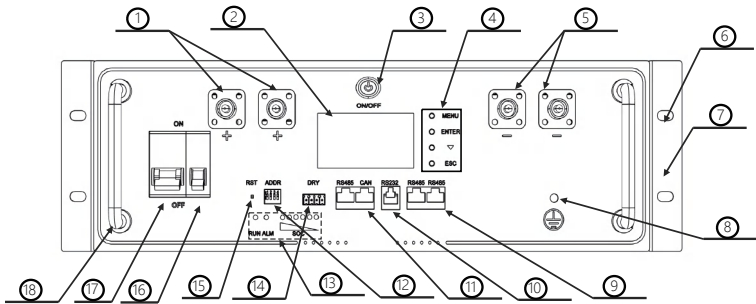


Figure 4 - Battery Panel Function Diagram

①	Battery Positive Terminal	⑦	Battery Box Casing	⑬	From left to right: Operation, Alarm, Battery SOC Indicator Lights
②	LCD Display Screen	⑧	Grounding Terminal	⑭	Dry Contact Input/Output Port
③	System Power On Button	⑨	RS485 Parallel Communication Port	⑮	BMS System Reset Button
④	Display Screen Menu	⑩	RS232 Debugging Communication Port	⑯	Battery Power Positive Circuit Breaker
⑤	Battery Negative Terminal	⑪	RS485/CAN Communication Port with Inverter RS485 Upper Machine Debugging Port	⑰	Battery Power Positive Circuit Breaker
⑥	Casing Installation Hole	⑫	RS485 Communication Address DIP Switch	⑱	Battery Chassis Handle

Table 3 - Panel Function Table

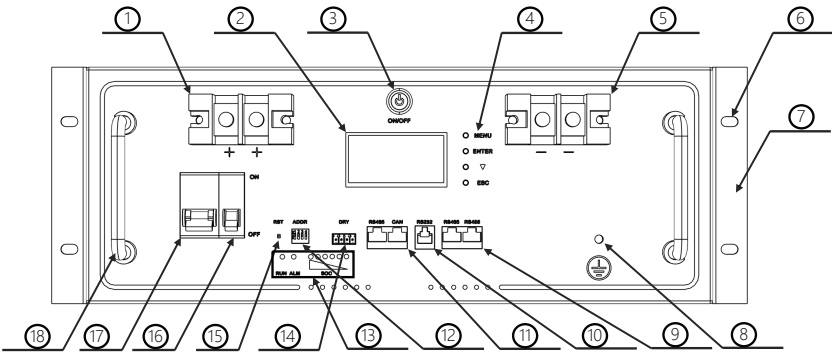


Figure 4 - Battery Panel Function Diagram

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⑥	Casing Installation Hole	⑫	RS485 Communication Address DIP Switch	⑱	Battery Chassis Handle

Table 3 - Panel Function Table

4. Function Description

4.1 Product Features

- The product is made of lithium iron phosphate (LiFePO4) material, which offers high safety and a long cycle life.
- It features a high-performance BMS (Battery Management System) that includes protection functions against over-discharge, overcharge, over-current, short-circuit, and extreme temperatures. It also boasts precise SOC (State of Charge) calculation methods for high capacity accuracy.
- Autonomous charging and discharging management, with the ability to monitor and report information in real time via Bluetooth or WiFi (optional).
- Includes current limiting feature; BMS activates current limiting when a single current exceeds the protection value.
- Automatic wake-up function that reactivates the system upon re-powering without the need for manual startup.
- Remote communication and adjustment capabilities allowing for remote monitoring by computer.
- Multiple modules can be used in parallel for flexible power configurations.
- Natural cooling without fan noise.
- BMS software upgrades can be performed online through the RS485(A) interface.
- In a paralleled state, the upper machine can select a slave machine through the RS485(B) interface to upgrade the BMS software.
- Intelligent battery balancing technology.

- Includes a reverse connection protection circuit; if the external power source's polarity is reversed to the BMS, it will not damage immediately but will trigger an alarm and enter a reverse cutoff protection state. Note: Damage may occur to the external power source if it lacks reverse protection.
- Includes a reverse connection protection circuit; if the external power source's polarity is reversed to the BMS, it will not damage immediately but will trigger an alarm and enter a reverse cutoff protection state.

NOTE Damage may occur to the external power source if it lacks reverse protection.

4.2 Indicator Lights

Power Indicator Light

Corresponding to Figure 4's item ⑬ marked SOC feature, from highest level L1 to lowest level L6..



Figure 5 - Battery SOC Indicator Lights

State	Charging						Discharging					
	L1	L2	L3	L4	L5	L6	L1	L2	L3	L4	L5	L6
0~16.6%	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON
16.6~33.2%	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON
33.2~49.8%	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	ON	ON	ON
49.8~66.4%	OFF	OFF	ON	ON	ON	ON	OFF	OFF	ON	ON	ON	ON
66.4~83.0%	OFF	ON	ON	ON	ON	ON	OFF	ON	ON	ON	ON	ON
83.0~100%	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON

Table-4-SOC Battery Level Indication

System Status Indicator Lights

Operating Mode	System Status	Power Button	On Button	Running Light	Alarm Light	Note
Off	Sleep	Off	⊙	⊙	⊙	System is turned off
Standby	Normal	ON	●	●	⊙	System is in standby mode
	Alarm	ON	●	Blink 1	⊙	SOC too low or temperature alarm ALM-L ^[1] blink 3
Charging	Normal	ON	●	●	⊙	SOC-L ^[2] highest stage ^[3] blink 2
	Overcharge Protection	ON	●	Blink 2	⊙	Overcharge protection ALM-L off
	Overcurrent Protection	ON	●	●	⊙	\
	Over/Under Temperature	ON	●	Blink 1	●	Battery indicator off
	Current Limit Charging	ON	●	●	⊙	Highest stage blink 2
Discharge	Normal	ON	●	Blink 3	⊙	\
	Alarm	ON	●	Blink 3	Blink 3	\
	Over-discharge Protection	ON	●	Blink 1	⊙	Over-discharge protection ALM-L off
	Over Temperature, Under Temperature, Filter, Short-circuit, Reverse Connection Protection	ON	●	⊙	●	All SOC continuously on
Failure	Fault	ON	●	⊙	●	BMS, MOS, sensor failure or damage

Table-5-Indicator Light Status

Right Superscript [X] Annotation Explanation

[1]: Refers to the Alarm LED indicator light.

[2]: Refers to the SOC battery level indicator light.

[3]: Refers to the SOC indicator lights L1~L6, from highest to lowest stage. When the battery

percentage is within one of these stages (as in Table-4), the system will light up all indicator lights for that stage and below, and flash the indicator light for the highest stage of charge.

Indicator Light Blinking Explanation

Blinking Mode	● Indicator Light On	● Indicator Light Off
● Blink 1	0.25S	3.75S
● Blink 2	0.5S	0.5S
● Blink 3	0.5S	1.5S

4.3 Communication

- Supports communication with an upper machine via the RS232 interface.
- Features a BMS networking parallel communication interface RS485A for multi-device parallel communication.
- Supports RS485B/CAN interface for communication with inverters or terminals.
- For communication protocol specifications, please contact relevant parties to obtain technical documentation on communication protocols.
- For detailed information on communication interfaces, refer to the interface definition



RJ45 Communication Interface



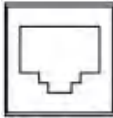
RS485



CAN



RS232(RJ11)



RS485



RS485

Figure 6



RJ11 Communication Interface

The battery communication interface uses an 8Pin 8C RJ45 socket.						
Interface	PIN	1 , 8	2 , 7	3	4	5
RJ45	Protocol					
	RS485/CAN	RS485-B	RS485-A	\	CAN-H	CAN-L
RJ11	RS232	\	\	TX	RX	GND

Table 4-3-1 Communication Interface Pinout

DIP Switch Addressing

- When multiple devices communicate in parallel, you must first configure the DIP address of each PACK. The DIP switch is in BCD code format.
- For example, address 0 is defined as ((black dot represents off state, blank represents ON state, as shown in the actual diagram below),
- address 1 is: ,address 2 is: , and so on. Note: The master device address must be set to 0, and slave devices are set within the 1~15 range. Please refer to Figure-7 and Table 4-3-2 for address settings.



Figure-7-DIP Switch

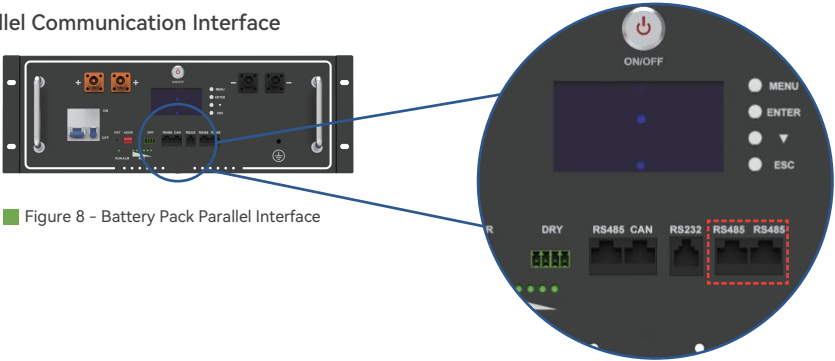
Configuring Communication Address DIP Switches				
DIP Switch Number Communication Address (for up to 16 devices)	#1	#2	#3	#4
	DIP Switch State			
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

■ Table 4-3-2 DIP Switch Configuration

4.4 Parallel Communication

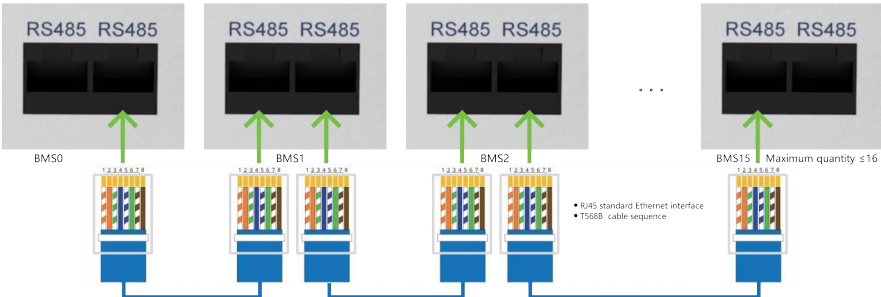
The BMS battery pack communicates in parallel via the RS485(A group) bus, and it can also communicate with other smart devices via the RS485 bus. The multi-device parallel bus interface is shown in the following figure.

Parallel Communication Interface



■ Figure 8 - Battery Pack Parallel Interface

Use standard Ethernet cables to connect up to 16 battery BMS units for parallel operation.



■ Figure 9 - Battery Pack Parallel Connection Diagram

Standard Ethernet T568B wiring sequence.

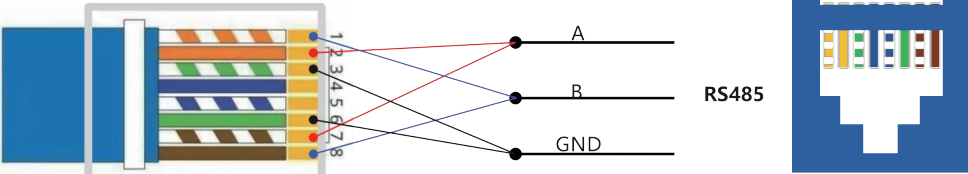


Figure 10 - Battery Group RS485 Wiring Sequence

4.5 Online Connection or Debugging

Supports communication with inverters via RS485 and CAN, as well as debugging with PCS, upper machine terminals, or other functional terminals via RS232 and RS485.

Online Connection Interface

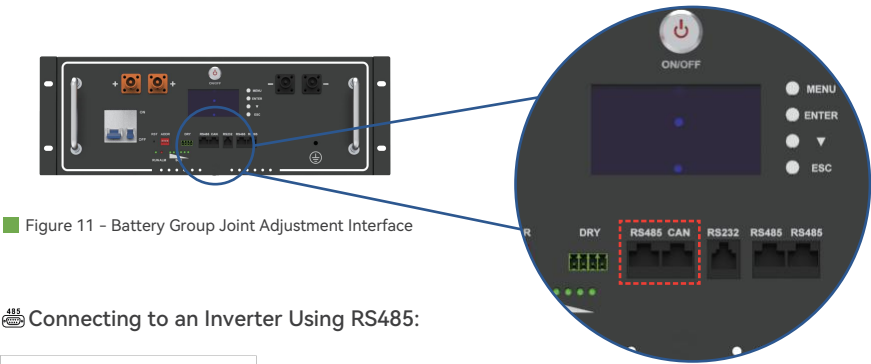


Figure 11 - Battery Group Joint Adjustment Interface

Connecting to an Inverter Using RS485:

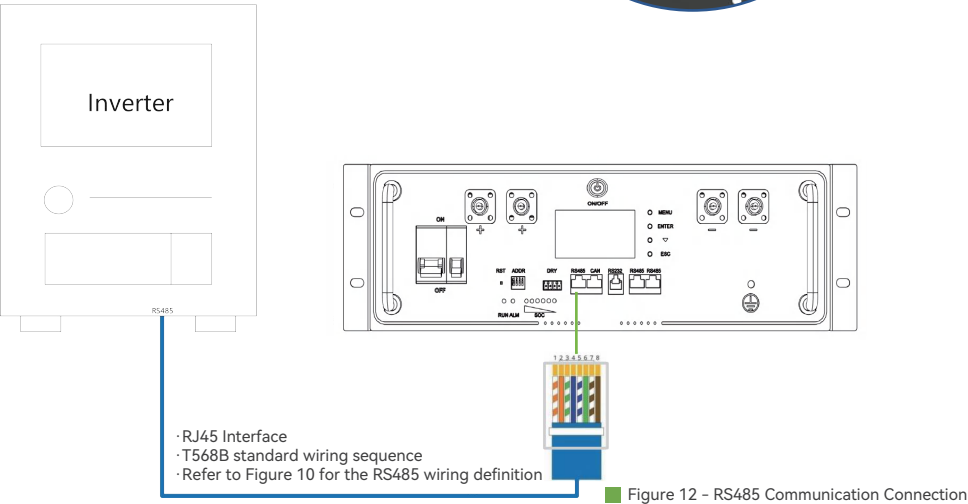
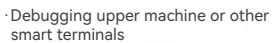
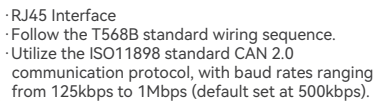


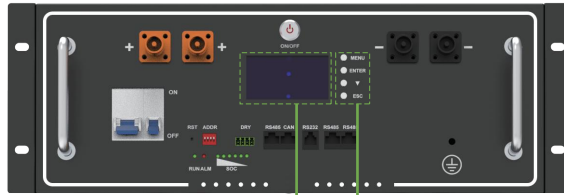
Figure 12 - RS485 Communication Connection

Note: The selected inverter should support the BMS communication protocol of the battery box;
The method for connecting to a PC or other host for debugging is the same as this method;



4.6 LCD Display Panel Functions

Display Screen Explanation



Special Note: The following description is for the generic version. If there are significant discrepancies with the actual product, please contact relevant personnel for the latest version.

- System Menu Button
- Confirm Button
- Scroll Down Button
- Back or Cancel Button

• LCD Display

Display Screen System Menu

The display screen shows blue background with white text, default in English.

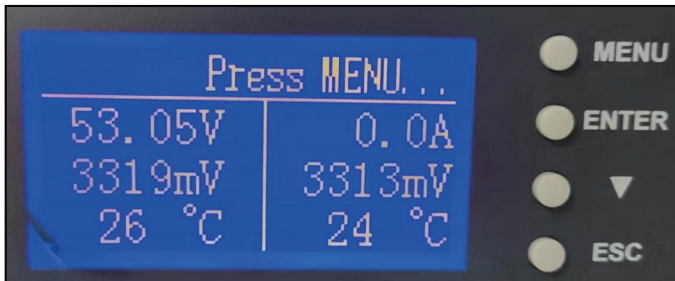
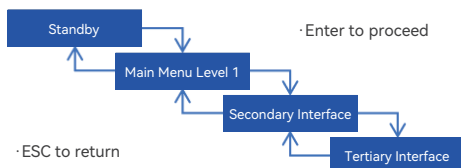
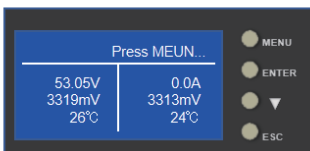


Figure 15 – Actual Photo of the LCD Display

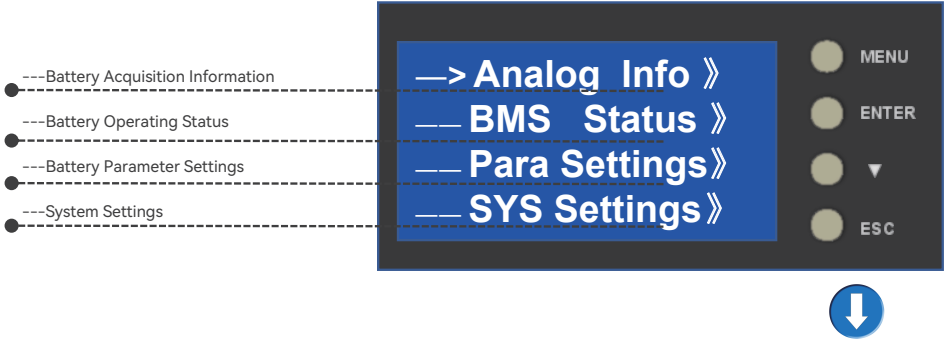
Power-On Screen

Upon powering the BMS or waking the screen from sleep mode, pressing any key activates the screen, which then sequentially displays total voltage, total current, highest and lowest single cell voltage, and highest and lowest NTC temperatures from left to right, from top to bottom as follows:



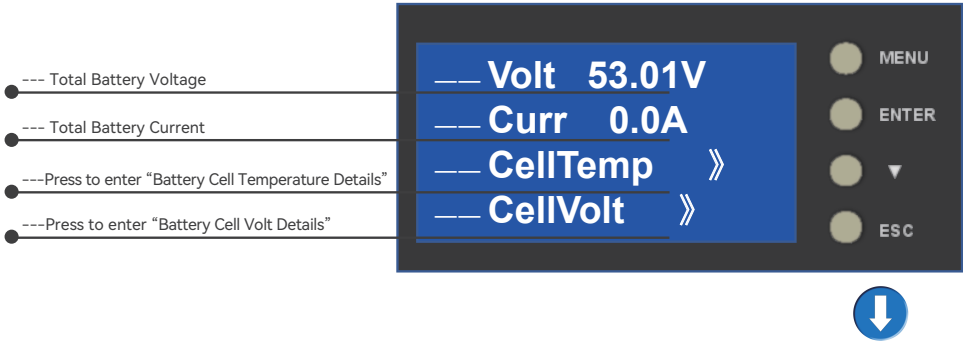
☐ Main Screen Menu

When the system is activated (i.e., the “start” button has been pressed), pressing any key will exit the sleep or standby screen and enter the primary menu interface. The screen will sequentially display the following from top to bottom:



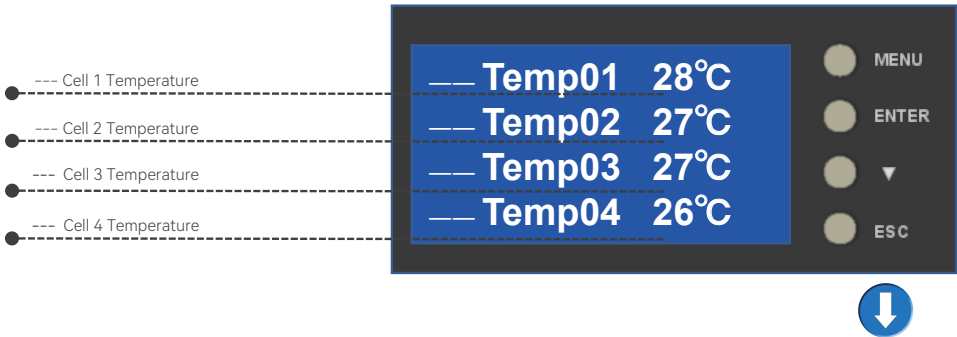
Entering the “Analog Info” Menu

When the system is active, select the “Analog Info” menu item and press “Enter” to access the secondary menu. The display will show sequentially from top to bottom:



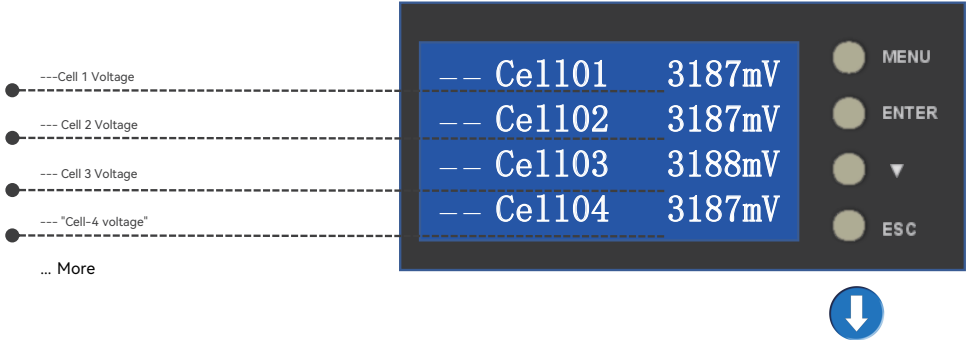
Entering the “CellTemp” Menu

From the steps above, select the “CellTemp” menu item and press “Enter” to access the tertiary menu. The display will show cell temperatures sequentially from top to bottom. Press the “▼” key to scroll down for more:



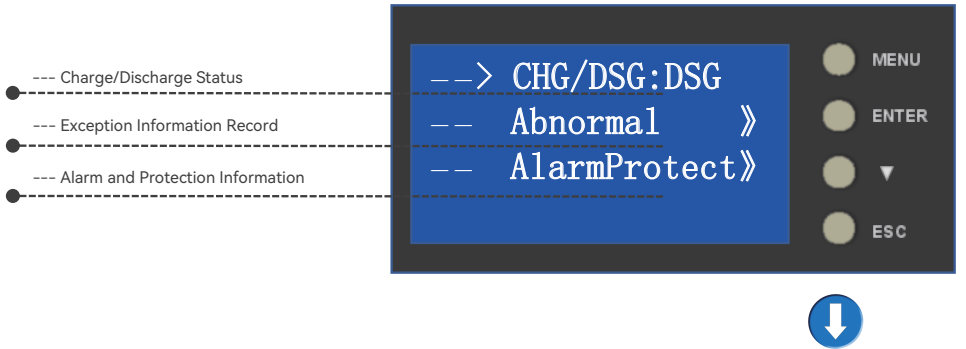
Entering the “CellVolt” Menu

Following the same steps, select the “CellVolt” menu item and press “Enter” to enter the tertiary menu. The display will show the voltage parameters of each cell sequentially from top to bottom. Press the “▼” key to scroll down for more:



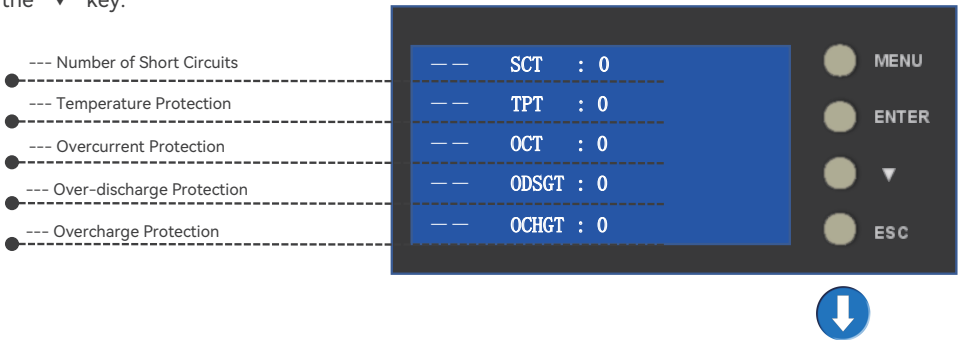
Entering the “BMS Status” Menu

When the system is powered on, pressing any key will exit the sleep or standby screen, or press the “ESC” key from another menu to return to the primary menu interface. Select “BMS Status” and press “Enter” to enter. The screen will sequentially show:



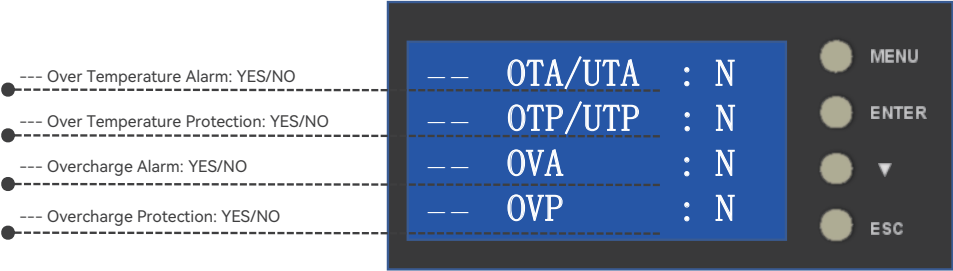
Entering the “Abnormal” Menu

Following the previous steps, select the “Abnormal” menu item and press “Enter.” The screen will sequentially display the following parameters, with the option to scroll through pages by pressing the “▼” key:



Entering the “Abnormal” Menu

Repeat the same operation steps, select “Alarm & Protect” and press “Enter.” The screen will sequentially display the following parameters:



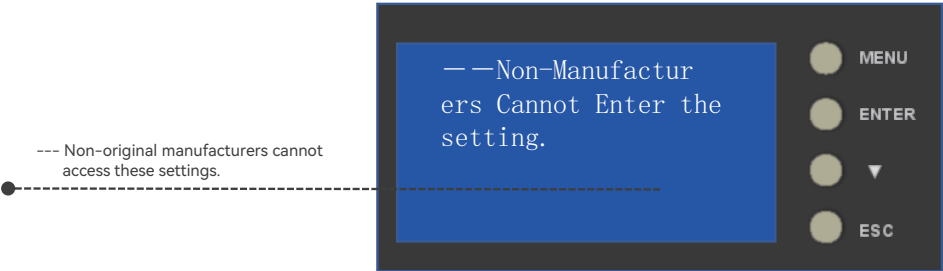
- Press the “▼” key to scroll through all parameters:

--- Overcharge Protection: YES/NO	-- UVA	: N
--- High Over-discharge Alarm: YES/NO	-- UVP	: N
--- Over-discharge Protection: YES/NO	-- OCA	: N
--- Overcurrent Alarm: YES/NO	-- OCP	: N
--- Overcurrent Protection: YES/NO	-- SCP	: N
--- Short Circuit Protection: YES/NO	-- FAIL	: N
--- Failure Warning: YES/NO		



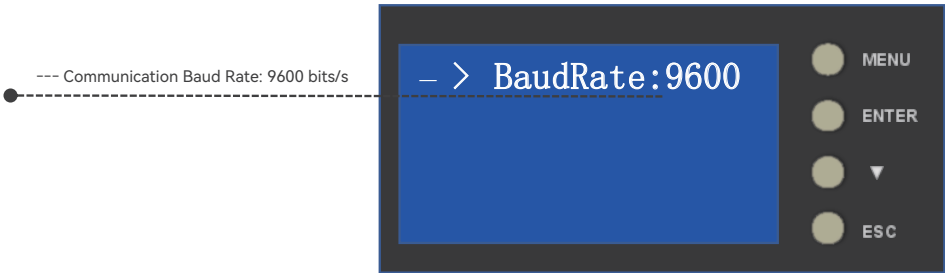
Entering the “Para Settings” Menu

Using the same method, enter the primary menu and select “Para Settings,” then press “Enter.” The screen will sequentially display:



Entering the “SYS Settings” Menu

Using the same method, enter the primary menu and select “SYS Settings,” then press “Enter.” The screen will sequentially display:

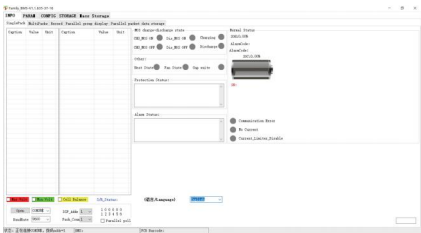


System Entering Sleep Mode

In normal operating conditions, if there are no key presses for 1 minute, the system will enter sleep mode. Press the “Enter” key during sleep mode, and the display will reactivate.

4.7 Application Software Functionality

 PC Monitoring Program (Follow the RS232 online debugging method described in section 4.5 to connect to a PC upper machine)



4.8 Other Features

 Built-in System Buzzer in Battery Enclosure

- 1. The buzzer sounds in the event of a fault.
- 2. The buzzer function can be enabled or disabled via an upper machine, with the default setting being disabled.

 Reset Button Explanation

When the system is powered (i.e., the low-voltage switch is closed), press the reset button as described below, and the system will respond accordingly. The position of the reset button is shown in Figure 4–8–1:

- 1. When the BMS is in sleep mode, press and hold the reset button for 3–6 seconds, then release. This activates the BMS protection board, and the LED indicators from L1 to L6 light up sequentially for 0.5 seconds each, followed by a display based on the battery’s SOC status checked by the BMS.

2. When the BMS is in sleep or startup mode, press and hold the reset button for 10 seconds to release the BMS protection board. The LED lights will flash fully for 0.5 seconds at first, start with “L1” lit for 0.5 seconds, and then display the status.
3. If the BMS is powered and in the on state, press and hold the reset button for 3–6 seconds, then release. The BMS protection board enters sleep mode, the LED lights turn off for 0.5 seconds, and then light up sequentially from “L6” to “L1” for 0.5 seconds each.

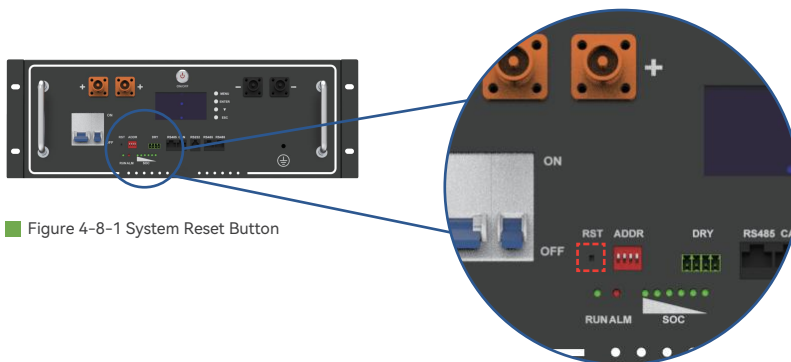


Figure 4-8-1 System Reset Button

Battery Wake-up Explanation

- A. When the system is in the off state, i.e., the low-voltage switch (round system power button) is off:
 - a). System power button wake-up - Turning on the low-voltage switch powers on the system, and turning off the low-voltage switch automatically powers off the BMS.
- B. When the system is not in the off state (i.e., the low-voltage switch is closed):
 - a). System reset button wake-up - Press the reset button for 3–6 seconds to wake up;
 - b). Charge wake-up:
 - a). Wakes up when external charging voltage exceeds 48V;
 - b). When the PCS energy storage inverter power supply returns to normal, and the charger output voltage is equal to or greater than 48V, the system exits low power mode.

Dry Contact IO Port Functionality

- Default definition:
 - Dry Contact 1: Can be set via software for alarm output as needed;
 - Dry Contact 2: Fault signal output can be set via software as needed;
- One-button start function setting (optional):
 - Dry Contact 1: One-button start system, after BMS powers on, dry contact output remains closed;
 - Dry Contact 2: One-button start system, after BMS powers on, dry contact output remains closed.

5. Major Technical Specifications

5.1 Basic Configuration

Basic Parameters	Cell type	LiFePO ₄
	rated capacity	100AH
	Battery string number	16 strings can be set
	Rated charge discharge current	20A
	Maximum continuous charge and discharge current	100A
	Maximum charging voltage	58V
Balanced function	Balanced type	Passive equilibrium of oneself
	equalizing current	55mA
Temperature collection	Battery temperature	4-route (sampling accuracy $\pm 2^{\circ}\text{C}$)
	MOS temperature	1 route (sampling accuracy $\pm 2^{\circ}\text{C}$)
	ambient temperature	1 route (sampling accuracy $\pm 2^{\circ}\text{C}$)
Communication function	Communication interface 1	RS485A Battery pack in parallel
	Communication interface 2	RS232 Upper-level computer communication or debugging
	Communication interface 3	RS485B Inverter communication
	Communication interface 4	The CAN inverter communication
Other functions	Pre-charging function	☒
	data storage	☒ EEPROM (1,000 bars) ☐ FLASH (10,000 bars, optional)
	Anti-connection protection	☒
	buzzer	☒
	LED indicate	☒
	Dry contact point	☒
	Weak current switch	☒ (Short ted with jumper cap)
	Reset-down / dormancy / wake-up	☒
Inverter protocol support	CAN	PLYON、GoodWe、Growatt、Ginlong、PCHEN、Victron、Sofar、Kstasr、Sorotec、SMA、MEGAREVO、Sol-Ark
	RS485	SRNE、PLYON、Voltronic、Deye、Growatt
	Other support	Support for other inverter protocol customization and development

5.2 MIC-51100R-A



51.2V 100Ah

Model	MIC-51100R-A
Nominal voltage (V)	51.2
Nominal capacity (Ah)	102
Minimum capacity (Ah)	100
Standard charge&discharge current (A)	50
Max constant charging current (A)	100
Max constant discharging current (A)	100
Charge voltage (V)	54.6 (Adjustable)
Charging cutoff current (A)	2 (Adjustable)
Discharge ending voltage (V)	43 (Adjustable)
Pack Impedance	≤ 60mΩ (AC/1000HZ)
Battery weight (kg)	Approx 45
Size (mm)	W440*D457*H165
Waterproofing grade	IP20
Operating temperature range(°C)	0~60
Storage temperature range(°C)	-20~45
Storage ambient humidity (RH)	5%~95%
Working ambient humidity (RH)	0~85%
Charge/discharge connector	Round single core quick plug terminal 
Display screen	LCD
Charge current limiting	Support
Heating	Optional
Storage function	Support
Parallel function	Support
Gyroscope	Optional
Bluetooth, Wifi	Optional
Mobile APP monitoring, wake up	Optional
Cycles life (RT: 25±2°C) 0.5C charge/0.5C Discharge DOD 80%	After 6000cycles charge/discharge, battery can recover 80% of its initial capacity
Appearance color	The default color is grayish white, and optional colors are available



51.2V 100Ah

Model	MIC-51100R-A
Nominal voltage (V)	51.2
Nominal capacity (Ah)	102
Minimum capacity (Ah)	100
Standard charge&discharge current (A)	20
Max constant charging current (A)	100
Max constant discharging current (A)	100
Charge voltage (V)	54.6 (Adjustable)
Charging cutoff current (A)	2 (Adjustable)
Discharge cutoff voltage (V)	43 (Adjustable)
Pack Impedance	≤ 60mΩ (AC/1000HZ)
Battery weight (kg)	Approx 45
Size (mm)	W488*D484*H165
Waterproofing grade	IP20
Operating temperature range(°C)	0~60
Storage temperature range(°C)	-20~45
Storage ambient humidity (RH)	5%~95%
Working ambient humidity (RH)	0~85%
Charge/discharge connector	Barbed wire terminal 
Display screen	LCD
Charge current limiting	Support
Heating	Optional
Storage function	Support
Parallel function	Support
Gyroscope	Optional
Bluetooth, Wifi	Optional
Mobile APP monitoring, wake up	Optional
Cycles life (RT: 25±2°C) 0.5C charge/0.5C Discharge DOD 80%	After 6000cycles charge/discharge, battery can recover 80% of its initial capacity
Appearance color	The default color is black , and optional colors are available

- Multiple Layers of Protection: build in smart BMS with battery voltage, current, temperature and health management.
- High-Performance Cells: Excellent consistency, long cycle life,and superior charge and discharge performance.
- Support CAN, RS485 communication protocols.
- Different inverters compatiblty.

6. Installation Instructions

6.1 Installation Precautions

Read this manual carefully before installation and familiarize yourself with the installation steps:

1. Ensure there is adequate space around the installation area to allow for effective heat dissipation. Ensure that at least 200mm or more space is left on both sides of the energy storage for natural convective cooling.
2. This product does not support direct outdoor installation. If outdoor installation is required, install it in an outdoor cabinet with a protection rating of IP65 or higher, and avoid direct sunlight and rain penetration to prevent battery damage.
3. Do not place metallic objects near the installation location of the LiFePO₄ energy storage battery to avoid short circuits.
4. Loose connections and corroded wires can generate high heat, melt insulation, burn surrounding materials, and even cause a fire. Therefore, ensure connectors are tightened, and wires are secured with cable ties to prevent loosening during mobile applications.
5. Even when the battery switch is turned off, high voltage is still present inside the storage box. Do not open or touch internal components, and strictly prohibit short-circuiting external electrodes, as this can severely damage the battery and cause a fire.
6. Do not install in damp, greasy, flammable, or explosive dust-prone environments.
7. Do not invert the charge and discharge terminals of the battery, as this can easily damage the battery or cause unpredictable risks.
8. If injury occurs during installation or use, seek medical attention promptly.
9. Choose appropriate wiring or thicker wires based on actual needs to avoid unnecessary issues during use.

6.2 Power System Connection

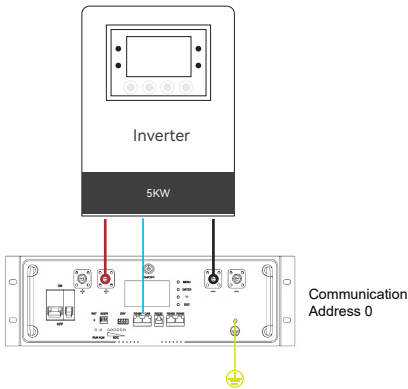
DANGER

Special Note: This battery is a low-voltage product with a rated voltage of DC-51.2V. Multiple battery packs can be used in parallel, but voltage series connection is not supported. For series connection using high-voltage output battery packs, please select high-voltage battery products and keep this in mind!

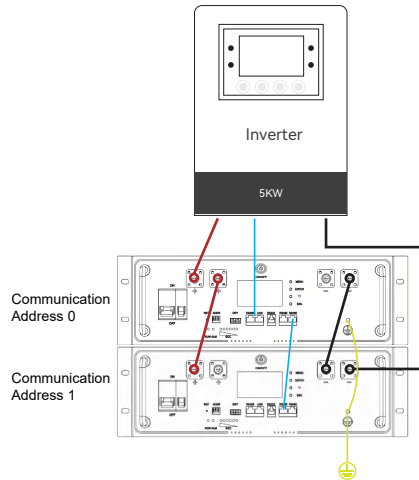
Important Tip:

- When using battery packs in parallel, it is necessary to differentiate between different battery packs through hardware addresses, and each battery pack in the entire group must have a unique hardware address Table 4-3-2 DIP Switch Configuration.
- When operating in parallel, one of the battery packs must be set as the master pack. The inverter communicates with the master pack via PRS485/CAN, and the hardware address can be set using the dip switches on the panel, as detailed in section 4.3.

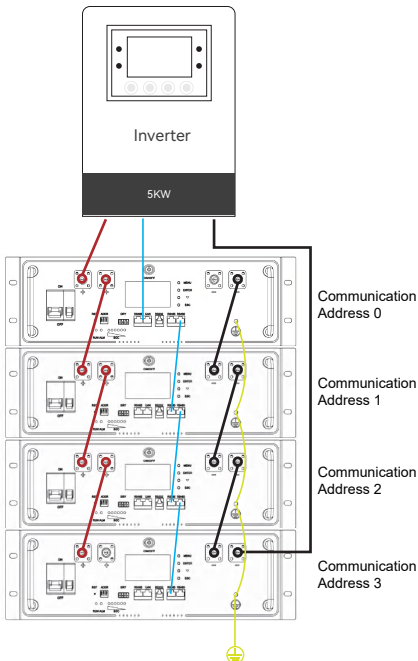
One Unit Usage



Two Units in Parallel



Four units in parallel

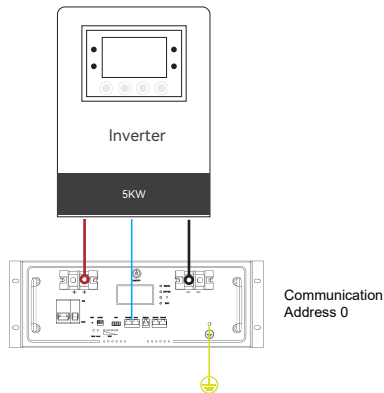


More Battery Packs in Parallel

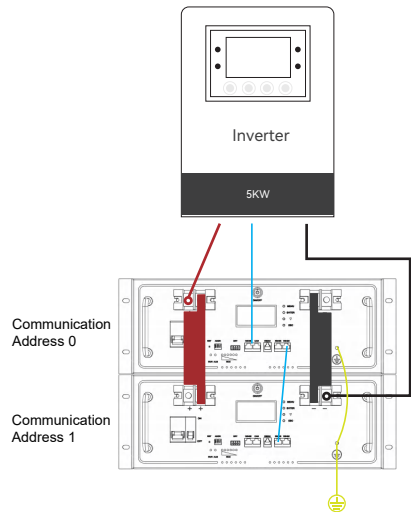
⚠WARNING

- The battery product system supports up to 16 units in a parallel combination, i.e., addresses from 0 to 15 for different parallel combinations.
- However, more importantly, the current capacity of the connection cables need to match the combined charge and discharge current.

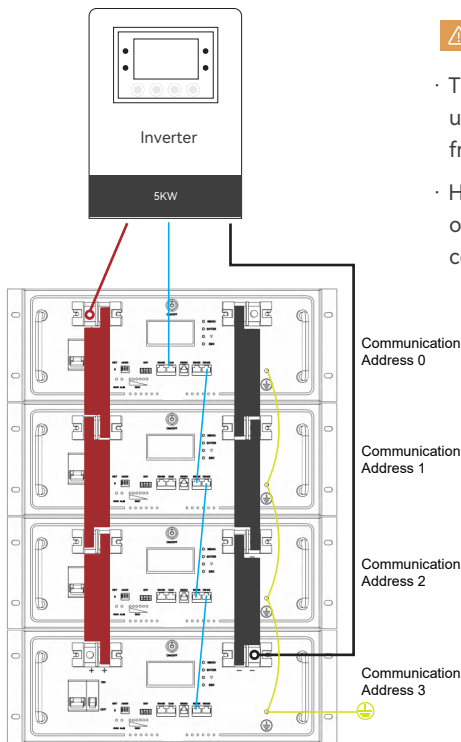
One Unit Usage



Two Units in Parallel



Four units in parallel



More Battery Packs in Parallel



- The battery product system supports up to 16 units in a parallel combination, i.e., addresses from 0 to 15 for different parallel combinations.
- However, more importantly, the current capacity of the connection cables need to match the combined charge and discharge current.

7. Routine Maintenance

Routine Maintenance Guidelines

WARNING

To maintain optimal and long-term performance, it is recommended to perform the following checks twice a year:

- ① Ensure that airflow around the unit is not obstructed, and remove any dirt and debris from cooling vents.
- ② Inspect all exposed wires for damage and repair or replace them if necessary.
- ③ If the battery is not in use for an extended period, it is advisable to charge it every three months.
- ④ Store the product in a dry, well-ventilated area.
- ⑤ Electrical Hazard Warning! Ensure the power is disconnected before performing any of the above operations.

8. Additional Precautions and Notices

WARNING

- We will not be held responsible for any unintended consequences resulting from improper or non-standard use of the battery by customers.
- To ensure optimal performance, batteries should be used and stored according to the instructions provided in this manual.
- Do not disassemble, drop, expose to heat, burn, soak, crush, shock, or short-circuit the batteries.
- Ensure sufficient internal insulation in the final product to prevent short circuits.
- Install batteries in well-ventilated areas or within cabinets designed to ensure good heat dissipation.
- Batteries should be securely installed in the customer's end products to withstand mechanical stress and prevent any movement or shaking during final use.
- Ensure that the positive (+) and negative (-) terminals are not reversed.
- Do not mix batteries of different capacities, chemical properties, types, or brands.
- If a battery fails to charge or discharge, overheats, deforms, smells of electrolyte, or leaks, stop using it immediately. Keep such batteries away from fire sources as the electrolyte is harmful to humans. If the electrolyte contacts skin or eyes, rinse with clean water and consult a doctor.
- Do not throw batteries into fire.
- Do not use damaged batteries.

9. Packing List

No.	Material	specification	Quantity	Description
1	Battery	W440*D457*H165	1PCS	Complete accessories included
2	User manual	A5	1PCS	/

10. Application Scenarios



Villa



Farm



Communication base station



Backup Power



Nomadic area



Field power supply