



# Server Rack LiFePO<sub>4</sub> Battery

## WY48150 Operation Manual (51.2V 100Ah)



This manual introduces WY48150 from WANROY. Please read this manual before you to install the battery and follow the instruction carefully during the installation process. If you are in any doubt, please contact WANROY.

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## 1. Safety Precautions

### 1.1 Before Connecting

- (1) After unpacking, please check product and packing list first, if product is damaged or lack of parts, please contact our official customer service within 24 hours.
- (2) Before installation, be sure to cut off the grid power and make sure the battery is in the turned-off mode.
- (3) Wiring must be correct, do not mistake the positive and negative cables, and ensure no short circuit with the external device.
- (4) It is prohibited to connect the battery and AC power directly.
- (5) Please DO NOT connect battery in series.
- (6) The battery must be grounded and the resistance must be less than  $0.1\Omega$ .
- (7) Please ensured the electrical parameters of battery system are compatible to related equipment.
- (8) Keep the battery away from water and fire.

### 1.2 In Using

- (1) It is important and necessary to carefully read the instructions before installing or using the battery. Failure to do so or to follow any of the instructions or warnings in this document can result in electrical shock, serious injury, or death, or can damage battery, potentially rendering it inoperable.
- (2) Do not immerse the battery in water or allow it to get wet.
- (3) Do not use or store the battery near sources of heat such as a fire or heater.
- (4) Do not use non professional chargers for charging.
- (5) Do not connect power terminal reversely.
- (6) Do not connect the battery directly to wall outlets or car cigarette-lighter sockets.
- (7) Do not pierce the battery casing with a nail or other sharp object, break it open with a hammer, or step on it.
- (8) Do not strike, throw or subject the battery to sever physical shock.
- (9) Do not directly solder the battery terminals.
- (10) Do not attempt to disassemble or modify the battery in any way.
- (11) Do not expose battery to flammable or harsh chemicals or vapors.
- (12) Do not use cleaning solvents to clean battery.
- (13) Do not combine batteries with batteries of different capacities, types, and brands.
- (14) Do not connect battery with PV solar wiring directly.
- (15) Any foreign object is prohibited to insert into any part of battery.
- (16) If any abnormalities are found in the battery, please stop using it immediately.
- (17) Do not expose cable outside.

- (18) All the battery terminals must be disconnected for maintenance.
- (19) Do not install the product in outdoor environment, or an environment out of the operation temperature or humidity range listed in manual.
- (20) The warranty claims are excluded for direct or indirect damage due to items above.

## 2. Technical Parameters

	No.	Item	General Parameter	
Cell	1	Rated Capacity	Typical	100Ah
			Minimum	100Ah
	2	Nominal Voltage	3.2V	
	3	Internal Impedance	$\leq 0.5\text{m}\Omega$	
	4	Dimension	Thickness: 50mm	
			Width: 160mm	
			Height: 118mm	
	5	Weight	$1.985\pm 0.10\text{kg}$	
	6	Standard Charge	Constant current: $0.2C_5A$ Constant voltage: 3.65V Cut-off: $0.02C_5A$	
	7	Rapid Charge	Constant current: $1C_5A$ Constant voltage: 3.65V Cut-off: $0.01C_5A$	
	8	Standard Discharge	Constant current: $0.2C_5A$ End voltage: 2.5 V	
	9	Maximum Discharge Current	Constant current: $1.0C_5A$ End voltage: 2.5 V	



	No.	Item	General Parameter	
Battery Pack	1	Combination Method	16S1P	
	2	Rated Capacity	Typical	100Ah
			Minimum	100Ah
	3	Factory Voltage	51.2V-53V(40-60%)	
	4	Voltage at End of Discharge	40-44.8V	
	5	Charging Voltage	58.4V	
	6	Internal Impedance	≤100mΩ	
	7	Standard Charge	Constant current: 50A Constant voltage: 58.4V Cut-off: 0.02CA	
	8	Standard Discharge	Constant current: 50A End voltage: 40-44.8V	
	9	Maximum Continuous Charge Current	65A	
	10	Maximum Continuous Discharge Current	85A	
	11	Temperature	Charge: 0~45℃	
			Discharge: -20~55℃	
	12	Storage Temperature Range	Less than 12 months : -10~35℃	
			less than 3 months: -10~45℃	
			Less than 7 day : -20~65℃	
	13	Dimension	480*442*155mm (Not include stand)	
			486*450*192mm (Include stand)	
	14	Weight	Net weight: about 46.16 kg	
			Gross weight: about 48.16 kg	

### 3. Storage, Maintenance and Expansion

- (1) It is required to charge the battery at least once every 3 months, for this charge maintenance make sure the SOC is charged to higher than 90%.
- (2) The connection of power connector, grounding point, power cable and screw are suggested to be checked every year after installation. Make sure there is no loose, no broken, no corrosion at connection point. Check the installation environment such as dust, water, insect etc. make sure it is suitable for IP20 battery system.
- (3) If the battery is stored for long time, it is required to charge them every 3 months, and the SOC should be higher than 90%.

### 4. Installation Location

Make sure that the installation location meets the following conditions:

- (1) The area is completely waterproof.
- (2) The floor is flat and level.
- (3) There are no flammable or explosive materials.
- (4) The storage environment temperature is recommended to be within the range of 15°C to 35°C.
- (5) The temperature and humidity is maintained at a constant level.
- (6) There is minimal dust and dirt in the area.
- (7) The distance from heat source is more than 2 meters.
- (8) The distance from air outlet of inverter is more than 0.5 meters.
- (9) The installation areas shall avoid of direct sunlight.
- (10) There is no mandatory ventilation requirements for battery module, but please avoid of installation in confined area. The aeration shall avoid of high salinity, humidity or temperature.

If the ambient temperature is out of the operating range, the battery stops operating to protect itself. The optimal operating temperature range of the battery pack: charging is 0°C to 45°C; discharging is -20°C to 55°C. Frequent exposure to harsh temperatures may deteriorate the performance and life of the battery.

## 5. Battery Management System

### 5.1 BMS Specification

(1) The BMS is designed for 16 series lithium battery.

(2) BMS has these functions:

- Overcharge detection function
- Over discharge detection function
- Over current detection function
- Short detection function
- Temperature detection function
- Balance function
- Communicate function
- Alarm function
- Total capacity function
- Storage history function
- Dry contact

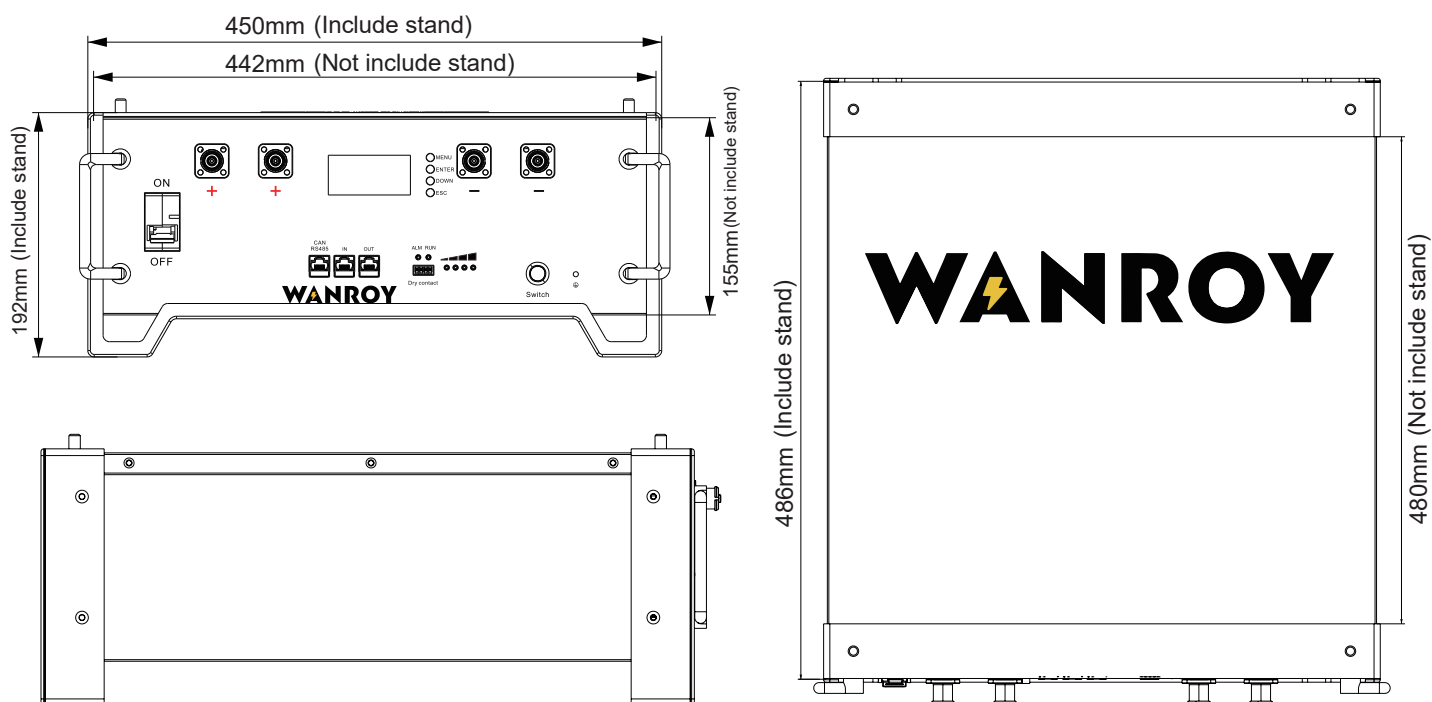
### 5.2 BMS Protect Parameter

Items	Details	Standard
Cell Overcharge Protection	Overcharge detection voltage	3.65±0.025V
	Overcharge detection delay time	Typical:1.0s
	Overcharge release voltage	3.34±0.02V
Cell Over-discharge Protection	Over-discharge detection voltage	2.7±0.02V
	Over-discharge detection delay time	Typical:1.0s
	Over-discharge release voltage	2.9±0.02V or charge release
Over-Current Protection	Discharge over-current protection current1	110A
	Discharge over-current detection delay time 1	1S
	Discharge over-current protection current2	150A
	Discharge over-current detection delay time2	300mS
Short Protection	Short protection current	300±10A
	Protection condition	Load short
	Detection delay time	≤300us
	Protection release condition	Charging release

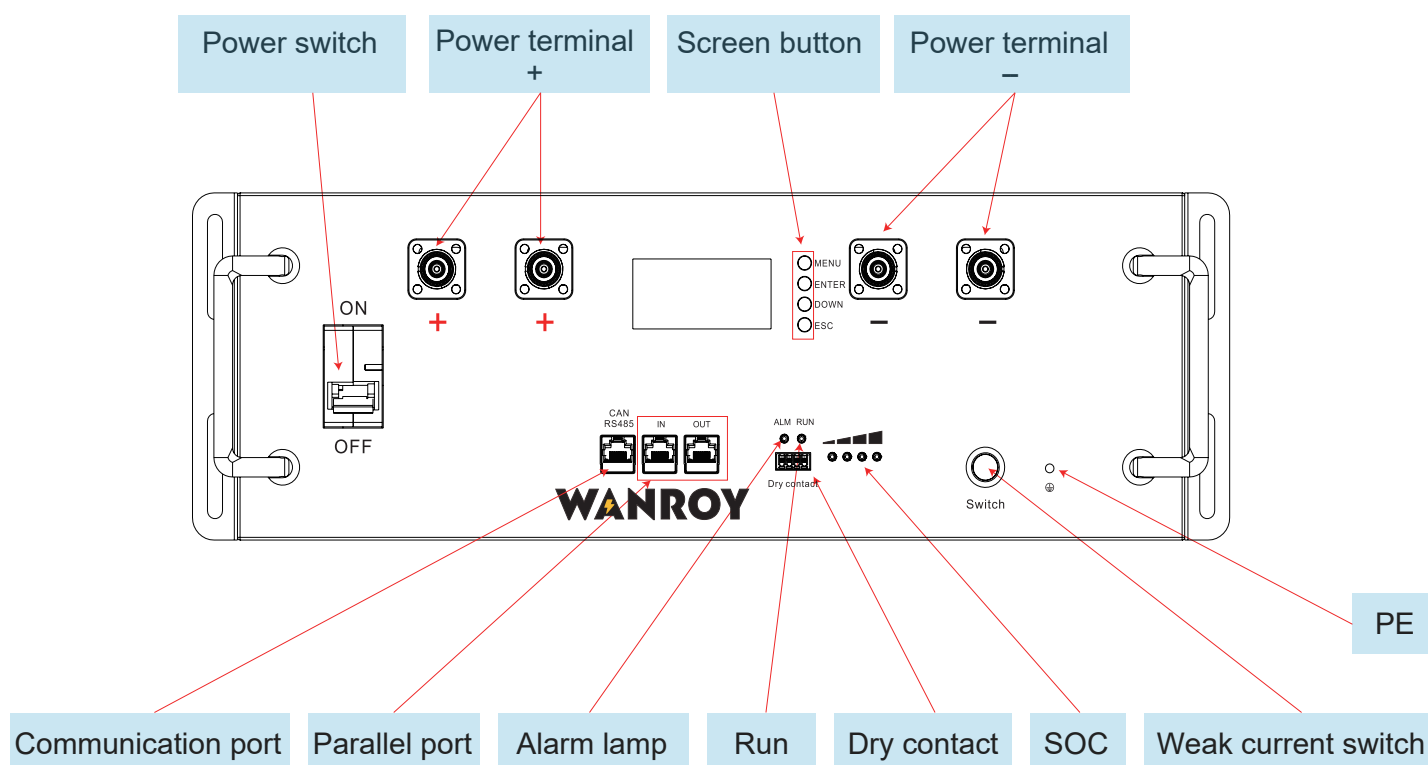
Items	Details	Standard
Cell Overcharge Protection	Charge high T protection	55±3℃
	Charge high T recover	50±5℃
	Discharge high T protection	65±5℃
	Discharge high T recover	60±5℃
	Charge low T protection	-5±5℃
	Charge low T recover	0±5℃
	Discharge low T protection	-20±5℃
	Discharge low T recover	-15±5℃
Balance	Balance threshold voltage	3.45V
Communication	It has CAN and RS485 standard communication interface, it can real-time monitoring the capacity of battery bank, the voltage, current, environment temperature, and charging/discharging current.	
Alarm	It has over-temperature, over charge, under-voltage, over-current, short cir cuit alarm Function.	

## 6. Battery System Pack

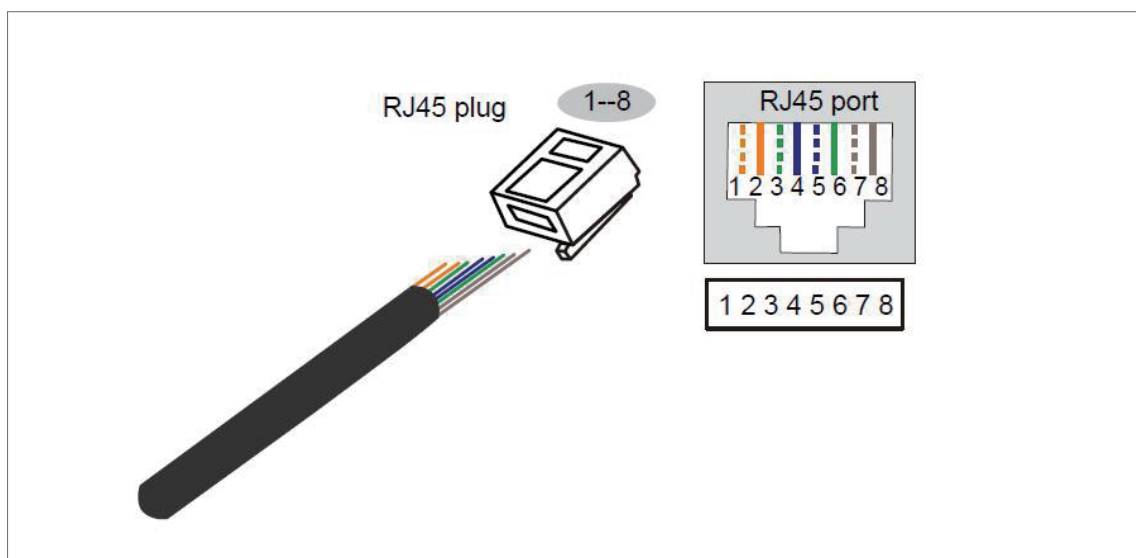
### 6.1 Battery Module



## 6.2 Equipment Interface Instruction



## 6.3 Communication Port Definition



RJ45 Port

### • CAN/RS485 Communication Port

Pin	Function Description	Describe
1	CAN2-H/inside	CAN2-H/inside
2	CAN2-L/inside	CAN2-L/inside
3	EXIT_12V-	The external dry contact assists in activating the negative terminal of the power interface
4	CAN1-H	PCS CANH
5	CAN1-L	PCS CANHL
6	EXIT_12V+	The external dry contact assists in activating the positive electrode of the power interface
7	RS485_B	PCS RS485 B
8	RS485_A	PCS RS485 A

### • “OUT” Parallel Port

Pin	Function Description	Describe
1	CAN2_H	CAN2-H/inside
2	CAN2_L	CAN2-L/inside
3	GND_ISO	ISO_GND
4	Slave IN	Slave pack select
5	ISO_GND	SO_GND
6	GND_ISO	ISO_GND
7	Encode_IN	Program address function ,input
8	SW_wakeout	synchronization power on

### • Dry Contact

Connector : SCED,TP381H-20-4P-GN,4P

Signal definition:



1 2 3 4

Pin No	Name	Function Description	Electric Specification
1	Dry1+	K1 Dry Point+ contact	Max600V , Max 80mA
2	Dry1-	K1 Dry Point- contact	
3	Dry2+	K2 Dry Point+ contact	Max24V , Max 80mA
4	Dry2-	K2 Dry Point- contact	

## 7. Package Items

### 7.1 List of Accessories

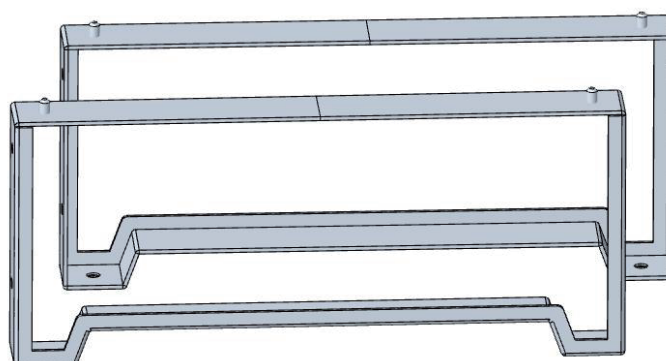
1. (Connection wire 1-2/1 PCS) 1500mm.



2. (Connection wire 3-4/1 PCS) 75 mm

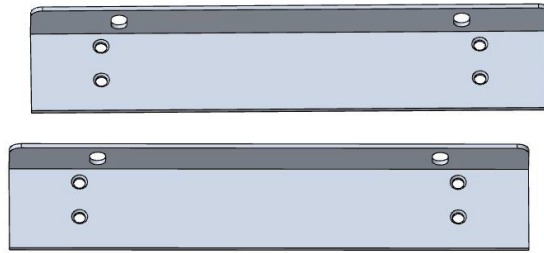


3. Support fitting (2PCS)

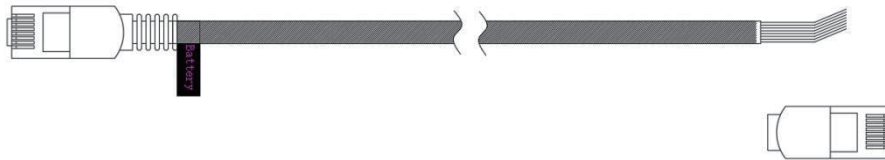




4. Hanging plate (2PCS)



5. RJ45 Network wire



6. Manual



## 8. Emergency Situations

### (1) Leaking Batteries

If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If one is exposed to the leaked substance, immediately perform the actions described below.

- Inhalation: Evacuate the contaminated area and seek medical attention.
- Contact with eyes: Rinse eyes with flowing water for 15 minutes and seek medical attention.
- Contact with skin: Wash the affected area thoroughly with soap and water and seek medical attention.  
Ingestion: Induce vomiting and seek medical attention.

### (2) Fire

NO WATER! Only dry powder fire or carbon dioxide extinguisher can be used; if possible, move the battery pack to a safe area before it catches fire.

### (3) Wet Batteries

If the battery pack is wet or submerged in water, do not let people access it, and then contact WANROY or an authorized dealer for technical support. Cut off all power switch on inverter side.

### (4) Damaged Batteries

Damaged batteries are dangerous and must be handled with the utmost care. They are not fit for use and may pose a danger to people or property. If the battery pack seems to be damaged, pack it in its original container, and then return it to WANROY or an authorized dealer.



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