

LFP 614.4V 100Ah LiFePO4 Battery System Specification

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Revision Record

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1. Overview

Faran provides safe and reliable lithium iron phosphate battery energy storage system solutions for UPS and photovoltaic power generation systems. The energy storage power system consists of inverters, lithium iron phosphate batteries, BMU, cabinets and other auxiliary components. device combination.

The lithium iron phosphate photovoltaic energy storage power system has good compatibility and safe long cycle life. The system consists of a three-level structure. The battery module integrates a module-level management system BMU, which is responsible for collecting the voltage of the single cell and the temperature of the module. , battery balancing and communication with the upper-level management system; the cabinet-level management system is CBMS, which is responsible for battery current detection, data collection and analysis, alarm and protection control, and protection control, and communication with the upper and lower levels; the general control GBMS is responsible for data analysis and communication with the lower-level system Communication, communication with UPS, inverter and other equipment.

2. Product Features

- The communication interface includes multi-channel RS485, CAN, Ethernet, dry contact input and output and other interfaces, supporting communication with PCS and UPS
- Internal cell balance function, the maximum balance current can reach 300mA.
- High precision battery voltage and temperature acquisition: $\pm 3\text{mv}$, $\pm 1^\circ\text{C}$
- Automatic circulation control and automatic parallel and offline control can easily realize the parallel use of lithium battery systems.
- Perfect self-inspection and running status detection functions, combined with HMI display, the system operation information is clear at a glance.
- When used in parallel, each system only needs to configure one HMI display (optional).

3. Application



Application:

- ✓ Industrial Park
- ✓ Public Park
- ✓ Commercial Building
- ✓ Isolated Islands
- ✓ Large Port
- ✓ Subway/Railway Station
- ✓ Military Zone(camp)
- ✓ Telecom Station

As backup power supply to deliver electricity to the areas without mains power.

4. LiFePO4 Battery Parameters

4.1. Battery Cell

No	Item	General Parameter		Remark
1	Rated Capacity	Typical	100Ah	Standard discharge (0.5C) after Standard charge
		Minimum	100Ah	
2	Nominal Voltage	3.2V		Mean Operation Voltage
3	Voltage at end of Discharge	2.5V		Discharge Cut-off Voltage
4	Charging Voltage	3.65V		Charge Cut-off Voltage
5	Internal Impedance	≤0.5mΩ		Internal resistance measured at AC 1KHZ after 50% charge The battery is new that is within one week after shipment and cycled less than 3 times
6	Standard charge	Constant Current 0.5C Constant Voltage 3.65V 0.05 C cut-off		25℃ Charge time: < 150min
7	Standard discharge	Constant current 0.5C End voltage 2.5V		
8	Maximum Continuous Charge Current	100A		25℃ Charge time: Approx 80min
9	Maximum Continuous Discharge Current	100A		25℃ Discharge Capacity: >90%
10	0.5C/0.5C cycle life, 100% DOD	4000 times @ 25℃ Ambient		Cycle life will be about 4000 times @25℃,0.5C/0.5C,100%DOD
11	Recommend Operation Temperature Range	Charge: -20~0℃		Recommended current: ≤ 0.1c
		Charge: 10~45℃		60±25%R.H. Bare Cell
		Discharge) : -20~60℃		
12	Recommend Storage Temperature Range	less than 6 months: 20~30℃		60±25%R.H. at the shipment state
13	Cell Dimension	Length:148±0.5mm		Initial Dimension
		Width :52±0.5mm		
		Height: 115±0.5mm		
14	Cell Weight	2.0±0.12kg		

4.2. Battery Pack

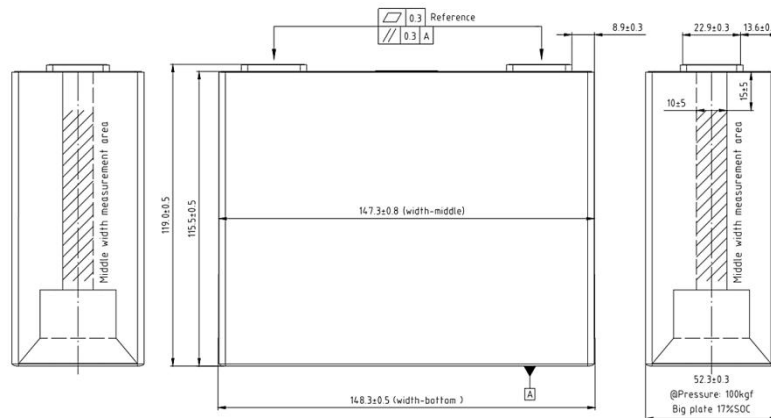
NO.	Item	Parameters	Remark
1	Model	LFP51.2-200	
2	Casing material	SPCC	
3	Color	Black	
4	Assembly	16S	16 pieces of 3.2V 100Ah are connected in series
5	Rated voltage	51.2V	
6	Rated capacity	100Ah	1Cdischarge to 44.8V@25℃
7	Standard Charging voltage rang	54.4~55.2V	
8	Cut-off voltage	44.8V	
9	Maximum continuous discharge current	100A	
10	Maximum charge current	100A	Recommended ≤0.2C charge
11	Operating temperature	Ambient Temp: -20℃~55℃ Charge : 0℃~55℃ Discharge:-20℃~55℃	
12	Storage temperature	0℃~35℃	
13	Transportation temperature	-20℃~45℃	
14	Operating humidity	5%~95%	
15	Storage humidity	5%~95%	
16	Transportation humidity	5%~95%	
17	Battery module dimension (Length*Width*Height)	442mm*560mm*134.5mm±2mm	
18	Recommended charge type	CC-CV-floating charge	CC: 0.2C to 55.2V CV: 55.2V Floating: 54.4V
19	Protection Class	IP20	

4.3. Battery Energy Storage System

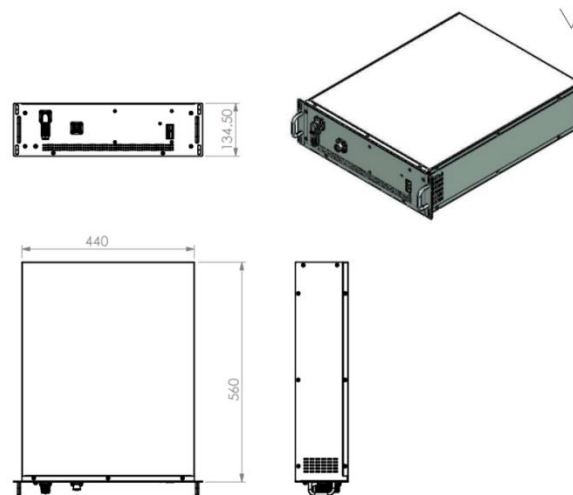
NO.	Item	Parameters	Remark
1	Model	LFP614.4V100Ah	
2	Casing material	Cold rolled steel plate	
3	Color	Black	
4	Assembly	12S	12pieces of 51.2V100Ah are connected in series
5	Rated voltage	614.4V	
6	Rated capacity	100Ah	1C discharge to 518.4V@25℃
7	Standard Charging voltage rang	662.4V~691.2V	
8	Cut-off voltage	518.4V	
9	Maximum continuous discharge current	100A	
10	Maximum charge current	100A	Recommended≤0.2C charge
11	Operating temperature	Ambient Temp-20℃~55℃ Charge0℃~55℃ Discharge-20℃~55℃	
12	Storage temperature	0℃~35℃	
13	Transportation temperature	-20℃~45℃	
14	Operating humidity	5%~95%	
15	Storage humidity	5%~95%	
16	Transportation humidity	5%~95%	
17	Battery module dimension (Length*Width* Height)	1200mm*800mm*1600mm±5mm	
18	Recommended charge type	CC-CV-floating charge	CC: 0.2C to 662.4V CV:662.4V Floating: 662.4V
19	Protection Class	IP20	

5. Drawing & Dimension

5.1. Battery Cell



5.2. Battery Pack



Item	Description	Dimension
W	Width	442±2.0mm
L	Length	560±2.0mm
H	Height (total)	134.5±2.0mm

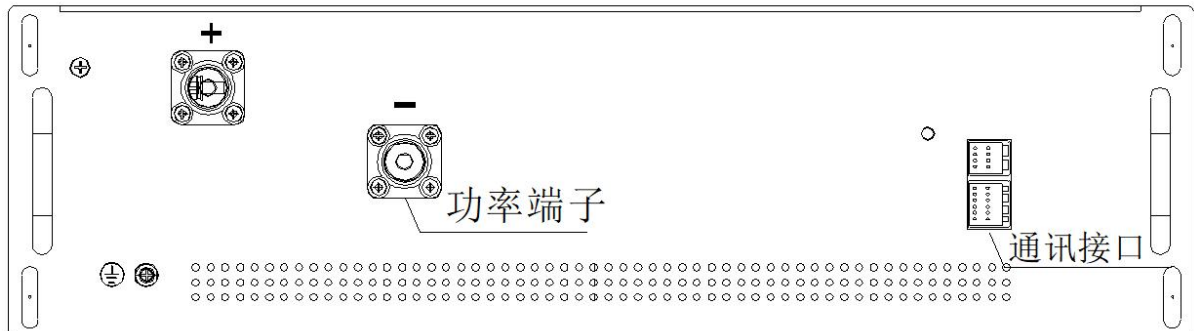
5.3. Battery Energy Storage Cabinet



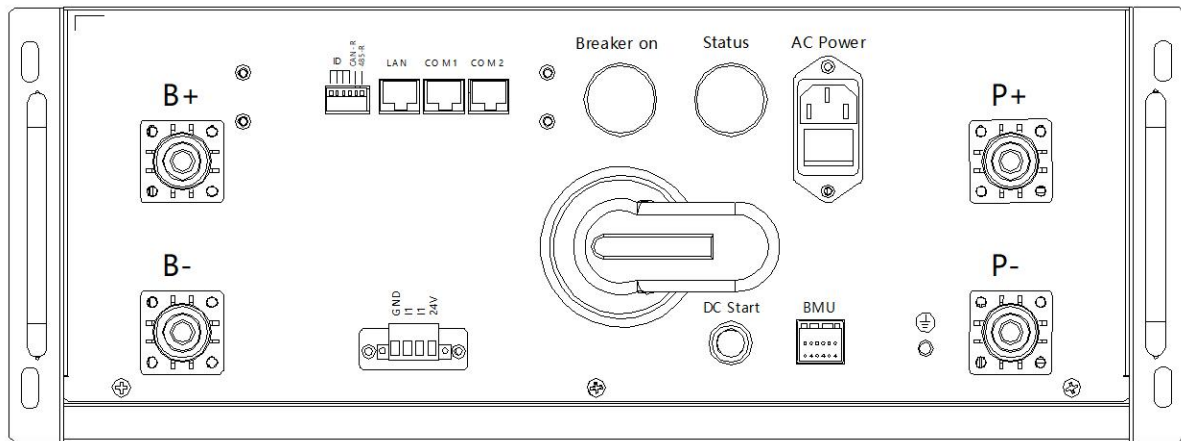
Item	Description	Dimension
W	Width	1200±5.0mm
L	Length	800±5.0mm
H	Height (total)	1600±5.0mm

6. Interface Definition & Installation

6.1. Battery Pack Front Panel Interface



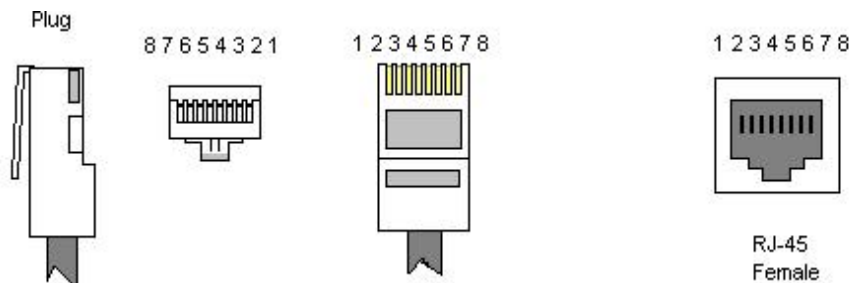
6.2. BMS interface



Interface	Description	Remark
GBMS/UPS	The interface of COM1 COM2 shown in Figure 2.0 communicates with GBMS (when used in parallel)/UPS (when used in non-parallel connection)	RS485/CAN communication
LAN	Interfaces of the LAN shown in Figure 2.0	update the BMS program and view the data through this interface
BMU	Interface of BMU shown in Figure 2.0	Communicate with the battery module BMU through the CAN interface
ID	Set the communication ID of CBMS (when used in parallel) Pin 1 dial to ON ID+1 Pin 2 dial to ON ID+2 Pin 3 dial to ON ID+4 Pin 4 dial to ON ID+8	1 to 4 digits of the DIP switch
CAN_R	whether the CAN communication terminal resistance of CBMS is valid (120R) when it is set	DIP switch
485_R	whether the RS485 communication terminal resistance of CBMS is valid (120R)when it is set	DIP switch
Switch on	Circuit breaker opening and closing indicator light	Red color
Status	System Status Indicator	red and green color
AC Power	AC start input, voltage range 85~264VAC	AC power supply use
DC Start	DC start button, voltage range 254~780VDC	Used during DC start
DC24V-Out	DC 24V output	Power the GBMS
I1/I2	NC	NC

B+ B-	Cables terminal	B+: battery positive terminal B-: battery negative terminal
P+ P-	Output terminal	P+: power output positive P-: power output negative

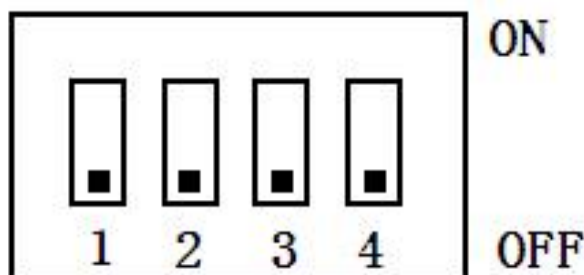
6.3. Communication Interface



Pin No	Functions	Description
1	NC	No connection
2	CAN_GND	CAN_GND
3	NC	No connection
4	CAN_H	CAN H signal(with isolation)
5	CAN_L	CAN L signal(with isolation)
6	RS485_GND	RS485_GND
7	RS485_A	RS485 A signal(with isolation)
8	RS85_B	RS485 B signal(with isolation)

6.4. Introduction of Battery Pack Dial

When the battery packs are used in parallel, different packs can be distinguished by setting the address through the DIP switch on the BMS. It is necessary to avoid setting the same address. For the definition of the BMS DIP switch, refer to the table below.



Address	DIP Switch Position			
	#1	#2	#3	#4
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

7. Instructions

7.1. Charging Instructions

- When charging the battery pack, firstly, confirm the positive and negative polarities. It is strictly forbidden to reverse the positive and negative polarities, and it is strictly forbidden to short-circuit the positive and negative poles of the battery to avoid damage to the battery and casualties.
- Set the battery charging current at the rectifier end to avoid the rectifier overload protection caused by charging the battery with a large current.
- Set the equalizing charge voltage and floating charge voltage strictly according to the charging voltage range of the battery to avoid overcharging or undercharging of the battery.
- After the battery leaves the factory, the battery needs to be recharged with 0.2C current every three months.

7.2. Discharging Instructions

Discharge the battery strictly according to the specified current. When using a single battery, the maximum discharge current is 1C. When multiple batteries are used in parallel, set the maximum discharge current according to the following coefficients.

Qty. in Parallel	Coefficient	System Maximum Discharge Current	Remark
2 Pieces	0.8	160A	
3 Pieces	0.7	210A	
4 Pieces	0.6	180A	
N Pieces	0.6	$100A * n * 0.6$	

8. Precautions & Warnings

- The battery pack must be maintained by professionals, and it is strictly forbidden for non-professionals to disassemble it; during use or maintenance operations, it is strictly forbidden to wear or damage the battery pack connection to avoid danger.
- Before using the battery module, make sure that the positive and negative poles are connected correctly and reliably. The battery pack case is well grounded.
- It is strictly forbidden to disassemble the battery pack without the presence of technicians who are familiar with the battery pack; even if a professional technician disassembles the battery pack, he must operate carefully, and two or more people are present at the same time to avoid danger.
- Ensure that the heat dissipation air duct of the charger is unobstructed when charging.
- Do not use the battery to discharge during charging.
- Do not exceed the environment range of the battery module when using it, otherwise it may cause abnormal conditions such as insufficient battery power and reduced lifespan.
- It is strictly forbidden to expose the power module to the sun for a long time.
- It is forbidden to step on the battery module artificially, and it is forbidden to immerse the battery module in water. When not in use, it should be placed in a cool and dry environment, and it is best to store it half-charged.
- Before connecting cables, make sure that the cables and cable identifications are consistent with the actual installation conditions before connecting.
- When performing high-voltage and alternating current operations, special tools must be used, and ordinary or non-special tools brought by oneself are not allowed.
- The installation of power supply equipment must comply with the local safety regulations, and the personnel who install the equipment must have relevant operating qualifications.
- It is strictly forbidden to wear conductive objects such as watches, bracelets, bracelets, and rings during operation.
- When operating in a humid environment, prevent water from entering the battery module.