LITHIUM-ION BATTERY PRODUCT SPECIFICATION

ZRLVESS5KW-ECO (IP20)

V1.0

Battery Pack Specification

1. Overview

ZRLVESS5KW-ECO is 51.2V100Ah Lithium iron phosphate battery module which designed for energy storage power supply system application. This battery module integrated with intelligent BMS inside, has big advantages on safety, cycle life, energy density, temperature range and environmental protection. This product specification describes the type, size, structure, electrochemistry performance, service life, and BMS characteristics. This specification only applies to the battery module supplied.

2. Advantages

The battery module consists of single LFP cells, wire, BMS and container.

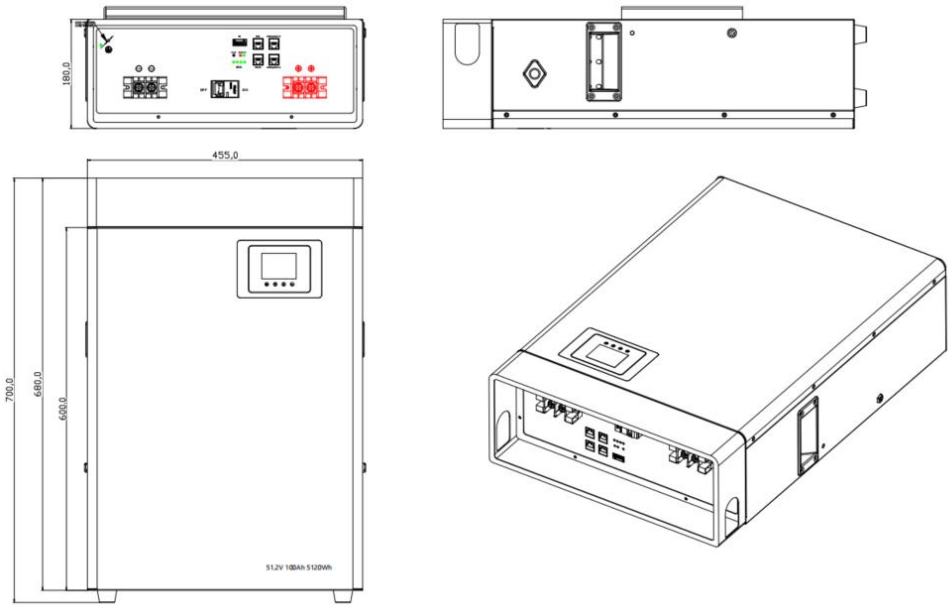
- Packed with high performance LFP single cell, long life, safety and wide temperature range
- High energy density, small size, light weight, no pollution
- Packing with single cell container, fire retardant wire and laser welding, stable and safe
- Built-in BMS, with battery voltage, current, temperature and health management
- LED indicate the battery SOC and operating status
- Support communicate with solar inverter bu CAN or RS485
- Update software by CAN port
- 19 inches metal module container rack, simple installation and expand capacity by parallel
- More than 15 years design life
- Stable performance, maintenance-free

3. Product Drawing

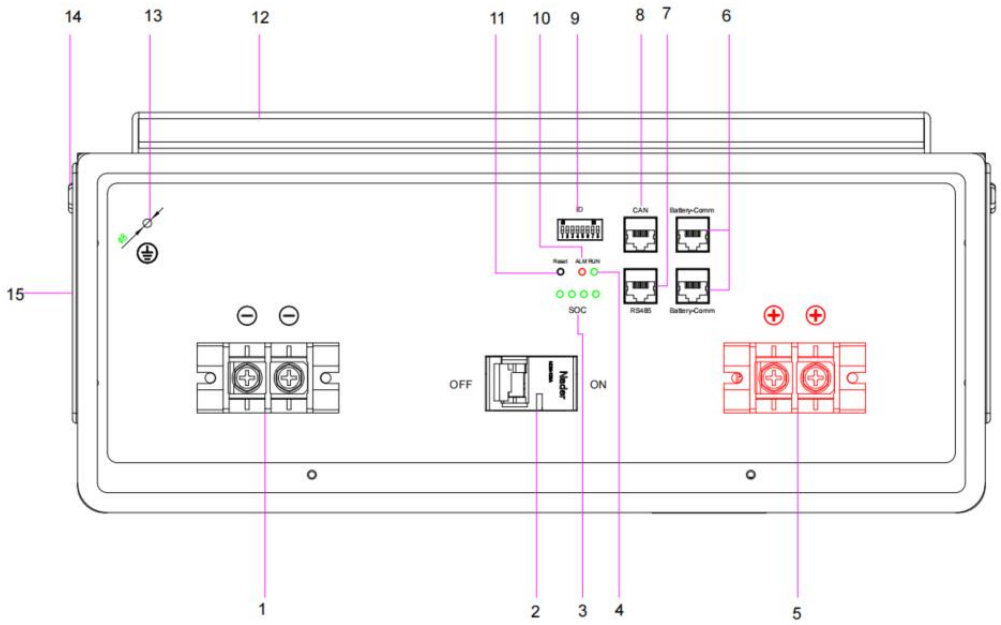
4. Battery module specification

Item		Specification	Conditions
Nominal	Voltage	51.2V	25℃,0.2C
	Capacity	100Ah	
Module weight		51.6kg	±0.5kg
Dimensions(W*D*H), mm		455*680*180	±2mm
Operating parameters	Charging Voltage	56.0V~57.0V	
	Discharging Voltage	44.8V	
	Charging current	Max constant charge: 100A	Recommended 50A
	Discharging current	Max constant discharge: 100A	
Temperature	Charge range	0℃~50℃	
	Discharge range	-20℃~55℃	
	Storage range	-20℃~55℃	
BMS	Built-in BMS	Voltage, current, temperature management & cell balance	RS485,CAN communication
Service life	Design life	>15years	25℃
	Cycle life	>6000 times, 0.5C, 80%DOD	
IP Rated		IP20	
Cell certificate		IEC62619/UL1973/UL9540A	

5. View Drawing



6. Panel Description



No.	Item	Function Description	Remarks
1	Terminals	Negative	
2	Breaker	Output switch	Breaker
3	SOC	The state of charge	
4	RUN	Operating indicates LED	

5	Terminals	Positive	
6	Battery-Comm	Connect inverter communication port	Parallel communication
7	RS485	RS485 Communication interface	
8	CAN	CAN Communication interface	
9	ID	Assign address of every model	
10	ALM	Alarming indicates LED	
11	RESET	Emergency restart button	RESET
12	pylons	For suspension	
13	GND	GND point	GND
14	Handle	For carrying handling	Handle
15	ON/OFF	Button Switch on/off the BMS	On the side

7. BMS specification

BMS provides complete management and protection for the battery.

- Voltage warning and protection for module and each single cell.
- Current warning and protection, and the maximum operating current can be customized.
- Temperature warning and protection, 4 sensors for battery pack and 1 sensor for BMS.
- Battery module SOC and SOH calculation, display the accurate battery status.
- Communicate with inverter or PC monitor, report the battery data.
- Pre-charge and pre-discharge logic, make sure safety use in whole process.
- Switch-off mode, sleep mode, and operating mode, different mode for different condition.

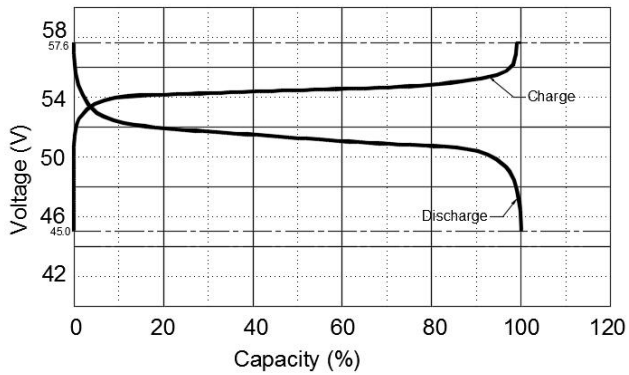
▶ BMS parameters.

Item		Parameters		Condition
Charge	Cell voltage protection	3.8V	Delay 1s	Recovery at 3.45V
	Module voltage protection	59.2V	Delay 1s	Recovery at 55.2V
	Over charging current 1	>102A	Delay 20s	
	Over charging current 2	≥120A	Delay 3s	
	Temperature protection	<-5°C or >70°C	Delay 1s	Recover when >0°C or <60°C
Discharge	Cell voltage protection	2.3V	Delay 1s	Recovery at 3.1V

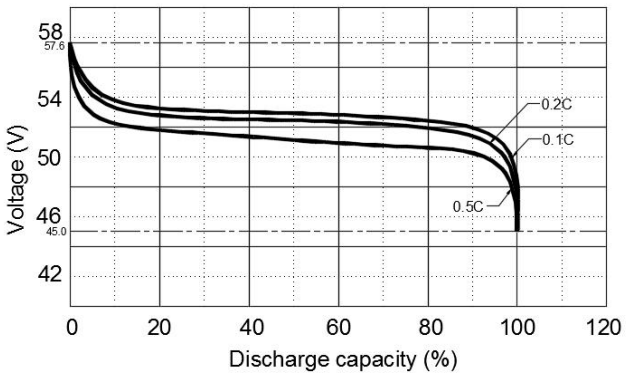
	Module voltage protection	45V	Delay 1s	Recovery at 48.0V
	Over discharging current 1	> 102A	Delay 20s	Recovery in 60s
	Over discharging current 2	> 120A	Delay 3s	Recovery in 60s
	Short circuit	>350A	< 0.1mS	
	Temperature protection	<-20℃ or >75℃	Delay 1s	Recover when >-10℃ or <65℃
BMS	PCB Temp protection	>105℃	Delay 1s	Recover when <80℃
	Cell balance	120mA	Passive balance	Cell voltage difference > 40mV
	Temperature accuracy	3%	Cycle measurement	Measuring range -40~100℃
	Voltage accuracy	0.5%	Cycle measurement	For cells and module
	Current accuracy	3%	Cycle measurement	Measuring range -200~+200
	SOC	5%		Integral calculation
	Power consumption with different condition	<300uA	Switch-off mode	Storage & transportation
		<14mA	Operating mode	Charging &discharging
	Communication ports	RS485/CAN		Can be customized

8. Battery module performance Curve

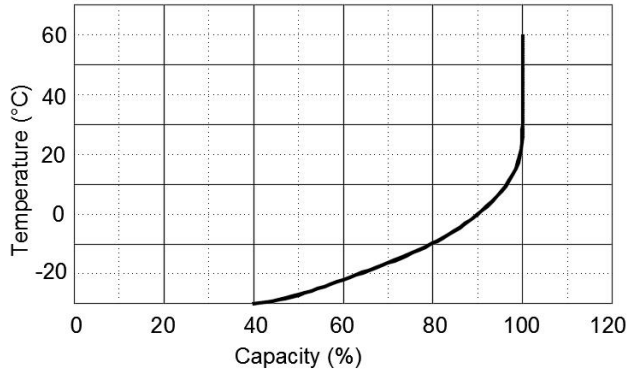
Charge & Discharge curve with 0.5C @ 25°C



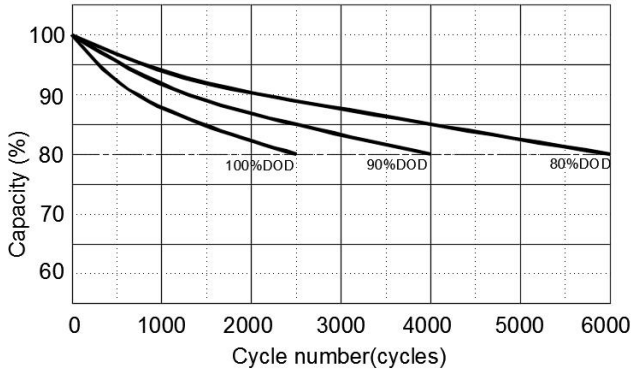
Discharge perfomance with different rate @ 25°C



Discharge capacity with different temperature @ 0.5C



Cycle life with DOD @ 0.5C，25°C



Self-discharge @ different temperature