

Product Specification

Model: 112KWH BESS

Part No.: CUR50KW112KWH

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1. Specifications

No.	Item	General Parameter	Remark
1	Model	CUR50KW112KWH	
2	Battery Type	LiFePO4	
3	Battery Module	51.2V314Ah/16.08kWh	16S1P
4	Number of Battery Module	7 packs	
5	System Configuration	112S1P	
6	Nominal Voltage	358.4V	
7	Rated Capacity	314Ah	0.5C, 100%DOD, 25°C
8	Energy	112kWh	
9	Discharge Cut-off Voltage	280.0V	2.5/cell
10	Charge Cut-off Voltage	408.8V	3.65/cell
11	Discharge Rate	0.5C	0.5C, 100%DOD, 25°C
12	Recommend Inverter Rated Power	50kW	
13	Insulation Resistance	$\geq 20\text{M}\Omega$	25°C, 40%RH
14	IP Grade	IP55	
15	Communication	CAN/RS485	
16	Operation Temperature	Charge: 0~55°C	Output power limit below 0°C
		Discharge: -20~55°C	
		Storage: -10~35°C	
17	Weight	Approx.: 1100Kg	
18	Dimension (L*H*W)	700*1250*2180mm($\pm 2\text{m}$)	
19	Noise	$\leq 70\text{dB}$	
20	Humidity	5%~95%	
21	Cycle Time	≥ 8000 cycles	≥ 15 years
22	Cooling Method	Air cooling	Built-in internal 2kW air-conditioner
23	Parallel Connection	Yes	Max. 10pcs, up to 1.12MWh

2. Product Structure Design

Product appearance (for reference only)



3. Battery Management System(BMS)

BMS real-time monitoring of battery voltage, current, temperature, to collect the current battery environment, the use of energy and battery health status(SOH), to ensure battery energy storage system safety and reliability by accurate monitoring system and effective balance means.

Features:

Analog measurement: real-time measurement of battery voltage, charge and discharge current, temperature and each series voltage, leakage monitoring and other parameters, and by calculating the SOC value given in real-time. To ensure the battery safe, reliable and stable operation, meantime to ensure the battery life requirements and the single cell battery, battery operation optimization control to determine the battery management system for the specific measurement, acquisition period and accuracy;

Balance: The battery management system have a balanced function to ensure the battery system life and available capacity; This ESS adopts passive balance to realize the charge and discharge balance of the battery working voltage and the static balance of the open circuit voltage. Adopting the synchronous rectification control mode and the current optimal multi-winding planar isolation transformer to realize the energy transfer and improve battery consistency. Finally the energy difference of all the single cells is within a certain range by the balance of the charging and discharge phase preventing overcharging and over-discharging of the single cells.

Alarm Function: It can display and report alarm information, and send these information to PCS and backstage monitoring system, notify the operator changes the system operation strategy in time when there is over-voltage, under-voltage, over-current, high temperature, low temperature, leakage, communication abnormality and battery management system abnormality.

The battery system protection: When the battery system is running, if the battery voltage, current, temperature and other analog exceeds the safety threshold, the battery management system can isolate the faulty and let the problem battery out of operation, While report the protection information;

Multi-level protection battery management system: Level 1 management unit. In addition to the BMU installed in the battery box, the bus outlet part also has a primary protection device such as a fuse and a contactor. The execution strategy of the direct protection cutoff is determined by the response speed of each subsystem and the severity of the alarm condition of the battery. When any series of battery voltage and temperature in the battery box and the temperature of the power connector exceed the limit protection parameter and the cutting command of the upper system is not received, the acquisition module(BMU) as the primary subsystem can quickly cut off the power contactor, stop it and actively upload fault information.

Multi-level protection battery management system: Level 2 management unit. The system is mainly responsible for receiving the battery information of each BMU module, calculating the current state of charge (SOC) of the entire battery pack, monitoring the working current and temperature of the entire battery while operating, and accepting the scheduling of the superior system, and accurately determining, It also responds quickly to protection strategies between the battery pack itself, subsystems inside, and different subsystems

Multi-level protection battery management system: Optional level 3 management unit when several containers are used in parallel. This system supports flexible capacity expansion, and there needs a level 3 management for cluster monitoring and controlling.

Self-diagnosis function: When battery management system internal communication is abnormal and analog acquisition is abnormal and other faults etc., the battery management system have a self-diagnostic function, which will interrupt the communication between BMS and outside. external communication interruption, battery management system internal communication anomalies, analog acquisition abnormalities such as self-diagnosis, according to real-time measurement of battery module voltage, charge Discharge current, temperature and cell voltage, the calculated battery internal resistance and other parameters, through the analysis of the diagnostic model, the current cell capacity or residual capacity (SOC) of the battery cell diagnosis, battery status assessment, and in the discharge The estimation of the sustainable discharge time in the current state and report to the monitoring system;

Fault diagnosis: In case of abnormal, BMS fault diagnosis alarm signal sent to the upper control system through the monitoring network. Each battery of the battery pack is monitored in real time. Through the monitoring and analysis of parameters such as voltage and current, the rate of change of internal resistance and voltage as well as the relative methods such as relative temperature rise are used to check whether there are some Bad can not reuse or may soon be bad battery, determine the faulty battery and positioning, give the alarm signal, and take appropriate measures for these batteries. When the fault accumulated to a certain extent, and may appear or start a vicious accident, the alarm signal is given an important output, and cut off the charge and discharge circuit bus or battery pack, thus avoiding the occurrence of a vicious accident. Management system on the system own hardware and software with self-test function, even if the device is damaged, it will not affect the battery safety. Ensure that the storage system will not fail due to management system failure, and even lead to battery damage or serious accidents.



4. Fire-extinguish System

The fire-extinguish system adopts battery module primary internal temperature fire extinguishing device and battery cluster secondary thermal aerosol fire extinguishing device. Based on the thermal runaway automatic fire extinguishing scheme, it is not affected by whether the whole cabinet power supply is normal. The fire-extinguishing medium uses strontium nitrate.

Each energy storage cabinet is 1 battery cluster, a cluster of battery is a separate fire partition, composed of 7 battery modules. Each cluster of batteries is equipped with a set of fire extinguishing device in the cabinet, and 7 battery modules are equipped with a separate fire extinguishing device.

5. Thermal Management System

This battery energy system adopts air conditioning and forced air cooling method. The system thermal management logic is by detecting the temperature of the cell, the refrigeration is started when the temperature exceeds the set value, the refrigeration is stopped when the temperature is lower than the set value, and the same operation for heating when the environment temperature is lower than set value.

