

SOC Battery Equalizer

Overview

The LNBE series SOC battery equalizer is a high-power-factor, high-precision programmable IGBT-type switching power supply device used in flow battery energy storage power stations and flow battery energy storage testing systems.

Designed for three-phase power grids, the SOC battery equalizer is adaptive to 50/60Hz grid frequencies, employs DC-AC bidirectional conversion, and four-quadrant SVPWM/SPWM technology, ensuring bidirectional energy flow and a power factor exceeding 0.99. It also features low grid harmonic pollution and high power quality.

The SOC battery equalizer's output power factor is adjustable (-0.8 leading to 1.0 to +0.8 lagging) to meet different grid requirements. A touchscreen serves as the human-machine interface, integrating display and control, providing real-time display of operating data, status information, and fault information, and offering a historical fault information query function (storing up to 200,000 records). An optional AC/DC energy meter is available, providing accurate AC/DC energy statistics (accuracy class 0.2).

The SOC battery equalizer can accommodate various energy storage methods, including lead-acid batteries, flithium batteries, flow batteries, and supercapacitors. Multiple communication interfaces are available, including RS485, TCP/IP, and CAN, using the standard Modbus communication protocol for remote monitoring. Optional Wi-Fi and GPRS communication modules are also available. By downloading a smart terminal app to a mobile phone or computer, users can monitor equipment operation data and alarm information 24/7 without leaving home.

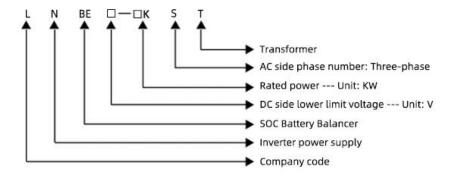
Typical applications: SOC balancing between battery clusters, etc.



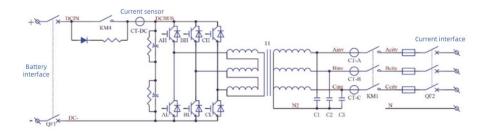
Technical Features

- 1. Four-quadrant operation, bidirectional energy flow, adaptive to 50/60Hz grid.
- 2. Adjustable output power factor (-0.8 leading to 1.0 to +0.8 lagging), customizable reactive power compensation.
- 3. DC reverse connection protection, over/under voltage protection, overcurrent protection, and overheat protection.
- 4. Color touchscreen with Chinese/English switching, integrated display and control, providing clear and concise operational data.

Model and meaning

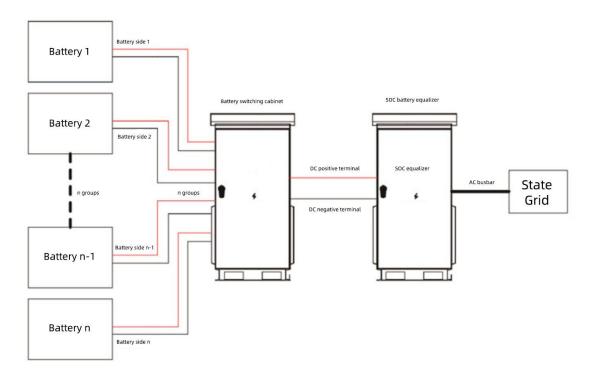


SOC battery equalizer schematic diagram



▲ SOC Battery Balancer (without off-grid mode)

Topology diagram of SOC battery equalizer application in flow energy storage power station



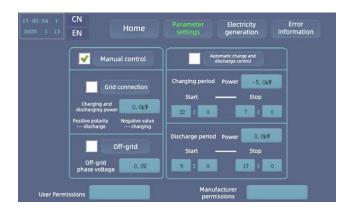


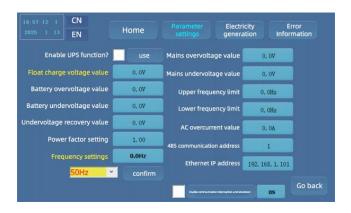
When N clusters of batteries are connected to the battery switching cabinet, after the host computer makes a judgment, one battery is connected to the SOC battery equalizer (only one battery is connected to the SOC battery equalizer at a time). The host computer sends charging and discharging commands to the equalizer according to the power status of this battery cluster, so that the target battery cluster can charge and discharge to the grid.

Operating Interface

Color touch screen, integrated display and control, supports Chinese and English language switching.











Technical parameters and selection criteria

		Equipme	nt parameters		
Rated equipment power	30KW	40KW	50KW	100KW	150KW
Maximum equipment power	33KW	44KW	55KW	110KW	165KW
		DC side	parameters		
DC voltage range	130-400VDC				
Voltage regulation/current accuracy	±1%FS				
DC current ripple	< 3%lmms				
		AC side	parameters		
AC Wiring Method	3-phase 3-wire/3-phase 4-wire (please specify in order notes)				
Rated Mains Voltage	380/440/550/630VAC (other voltages can be customized)				
Mains Voltage Range	±15%				
Rated Mains Frequency	50/60Hz				
Mains Frequency Range	±10%				
Total Current Distortion	THD < 3% (standard power grid)				
Power Factor	-0.8 Leading ~ 1.0 ~ +0.8 Lagging, adjustable				
		System	parameters		
Operating modes	Manual mode, automatic mode				
Charging and discharging modes	Constant current → constant voltage, constant power → constant voltage				
Maximum conversion efficiency	96% (including transformers)				
Noise	<65dB				
Protection level	IP20 (customizable to IP54)				
Permissible ambient temperature	-15°C to 50°C (Other temperatures can be customized)				
Permissible relative temperature	0-95% (no condensation)				
Permitted altitude	For depths ≤6000m and above 2000m, capacity must be reduced (1% reduction for every 100m increase).				
Cooling method	Intelligent air cooling				
Emergency shutdown	There is an emergency stop button.				
Display	Touchscreen				
Insulation monitoring	Insulation tester				
Temperature monitoring	Temperature monitoring instrument				
Communication interface	RS48 , Ethemet , WIFI , GPRS , CAN				
Communication protocol	Modbus RTU/ Modbus TCP				

This indicates optional features. The above technical parameters are standard parameters and are for reference only; they can be customized according to the user's actual needs.



Optional features

Input Dry Contacts: Start/Stop dry contact, BMS fault dry contact, Charge/Discharge direction dry contact, Reset control dry contact, etc.

Output Dry Contacts; Running status dry contact, Fault status dry contact, Power-on status dry contact, Charging status dry contact, Discharging status dry contact, etc.

Dry Contact Definitions:

- a) Start/Stop Dry Contact: Input type, dry contact closed, equipment runs; dry contact open, equipment stops.
- b) BMS Fault Dry Contact: Input type, dry contact closed, equipment is allowed to run; dry contact open, equipment stops and alarms.
- c) Charge/Discharge Direction Dry Contact: Input type, dry contact closed, equipment operates in charging mode; dry contact open, equipment operates in discharging mode.
- d) Reset Control Dry Contact: Input type, dry contact changes from open to closed (rising edge signal), equipment performs fault reset, dry contact remains closed for at least 1 second.
- e) Running Status Dry Contact: Output type, dry contact activates when the equipment is running or stopped, 1NO+1NC
- f) Fault Status Dry Contact: Output type, dry contact activates when the equipment malfunctions, 1NO+1NC
- g) Power-on Status Dry Contact: Output type, dry contact activates when the equipment is powered on and the screen is lit, 1NO+1NC
- h) Charging Status Dry Contact: Output type, dry contact activates when the equipment is charging the battery from the power grid, 1NO+1NC
- i) Discharging Status Dry Contact: Output type, dry contact activates when the equipment is discharging from the battery to the power grid, 1NO+1NC

Note: For the selection of the number of dry contacts and definitions of other functional dry contacts, please consult our company's technical department.

Standard dimensions and net weight

• W --- Width, L --- Depth, H --- Height

Due to continuous equipment upgrades and adjustments, the dimensions and weight are for reference only; the actual product shall prevail.

Ordering Instructions

Users need to provide parameters such as AC/DC voltage and capacity of the product.

Users need to provide some usage characteristics of the application site. For some places with special requirements (specific technical parameters, dimensions, shape, fixing method, etc.), we can customize it.

 ${\bf Guangzhou\ IDEALPLUSING\ information\ technology\ co.,\ LTD}$

Website: www.idealplusing.com www.idealpowersupply.com

www.jmhvpower.com www.ybyps.com www.azyps.com