GTAKE

PowerPard PCBS

Battery Pack/Module Test System

Think Without Boundary

System Introduction

System Overview

The PCBS battery pack performance testing system adopts advanced IGBT control technology. Its excellent performance and wide test ranges enable the system to simulate various operating conditions of batteries applied in electric vehicles, energy storage stations, and communication power supplies. In accordance with the international and domestic testing standards, the system comprehensively tests the electric performance of battery modules/battery packs in different specifications. The testing data allows for comprehensive evaluation and factory consistency inspection and selection of battery packs, providing a scientific basis for research and development, quality analysis/incoming material inspection, and production testing. Additionally, the modular design ensures flexibility and independent channels of the test system.

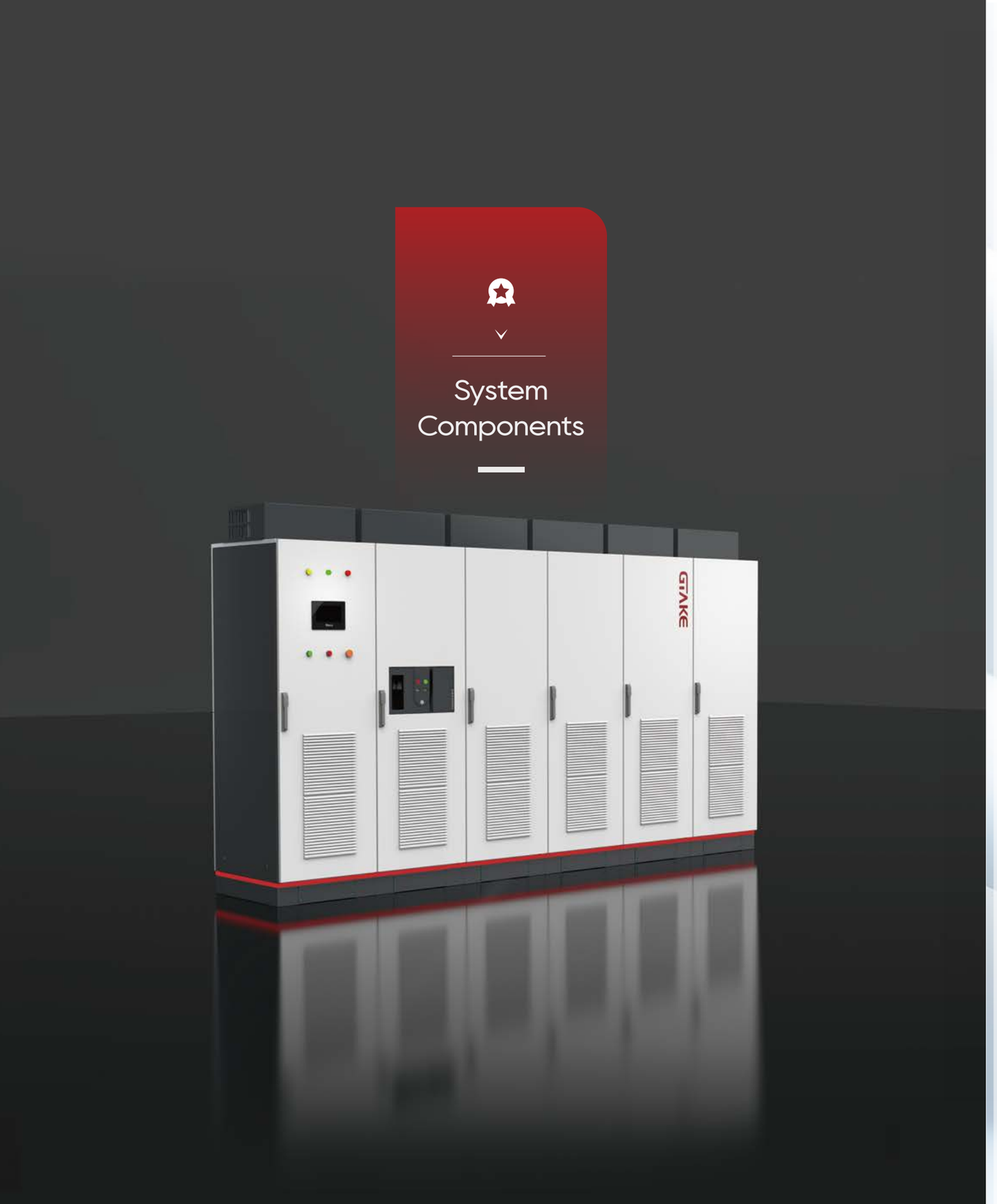
- HIGH PRECISION
- WIDE TESTING RANGE
- CUSTOMIZABLE MODULAR DESIGN

APPLICATIONS

Power Battery

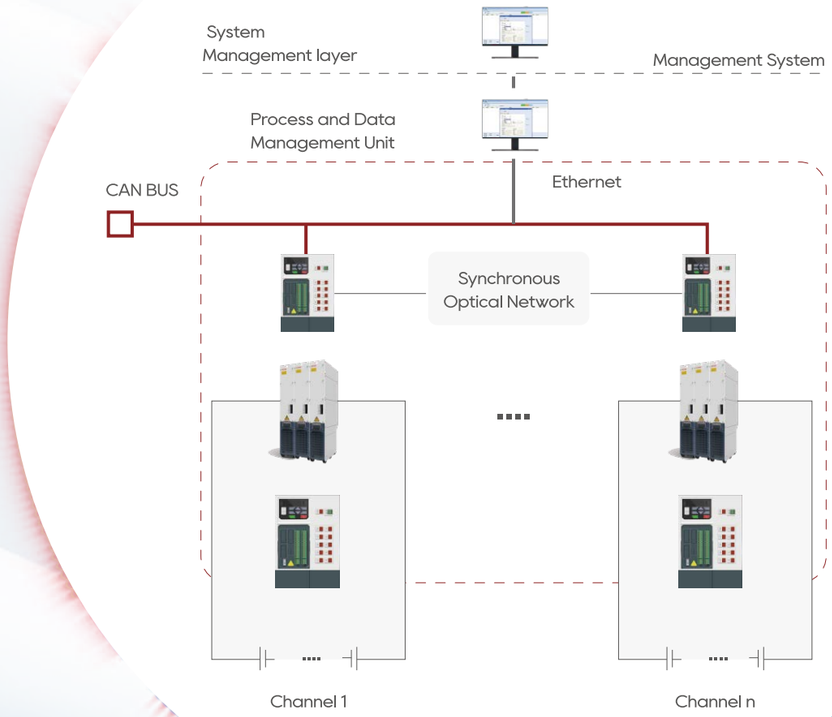
Energy Storage Battery

Communication Power Supply



System Components

System Topology



Field Measurement Control Layer

The field measurement control layer consists of DSP main control unit, IGBT power unit, detection unit, and process data management unit, etc.

System Management Layer

The system management layer consists of host computer, monitor and management software, and data communication unit, etc.

System Features and Advantages

Features

- High-precision current measurement: ±0.03% F.S.
- High-precision voltage measurement: ±0.02% F.S.
- Charge/discharge switching time: ≤6ms (-90%-90%FS, overshoot ≤2%FS)
- Modular design, bidirectional energy flow
- Single channel power range: 30kW-800kW
- Equipment efficiency: ≥95% at full load
- High sampling rate: Max. 10 ms
- Voltage range: 0V-1700V
- Dual channel current range: -2400A ~ 2400A
- Current rise time: ≤3ms (10%-90% FS, overshoot ≤2% FS)
- Multiple safety protections
- Power factor: ≥0.99
- IP grade: IP21, IP32 optional

POWER RANGE
30kW-800kW

VOLTAGE RANGE
0V- 1700V

SINGLE CHANNEL CURRENT RANGE
± 1200A

PowerPard

SYSTEM FEATURES

- Total Harmonic Distortion of Current THD≤3% (Rated Power)
- Abundant communication interfaces: RS485, CAN, Ethernet
- Three-phase staggered buck-boost for the DC/DC side
- Independent air duct design-strong heat dissipation, compact size

System Functions

Testing functions

- Simulation test in standard operating condition
- Simulation test in actual operating condition
- Capacity test
- Cycle life test
- DC internal resistance test
- Charge/Discharge characteristic test
- SOC capacity test
- Charge/Discharge efficiency test
- Overcharge/Over discharge endurance test
- Single cell voltage consistency test
- Temperature characteristic test
- Standard dynamic characteristic test

PCBS system is equipped with powerful record, report analysis, and a variety of protection functions, etc.

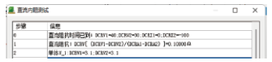
- Abundant data report
- Data curves display with arbitrary combination
- User-defined X and Y-axis, convenient for users to analyze the interrelationships between various parameters;
- Multi-channel parallel control technology
- Covering multiple battery specifications, reduce equipment investment
- Thorough protections effectively ensure the safety of equipment
- Able to exchange control data with BMS and other test platforms.
- Real-time display of battery module data, including voltage, current, etc.
- Able to display a variety of real-time data and curves.
- Automatic calibration of voltage and current (Optional)
- Pause and operation resuming
- Alarm and storage of equipment failure
- Query of history records

Low Harmonic Energy Feedback Solution > BMS Interaction > Temperature Chamber Extension > Auxiliary Channel Measurement

Special Features

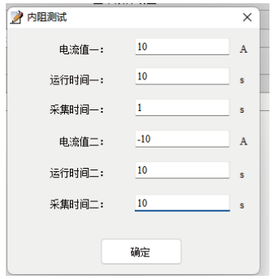
Advanced Charging and Discharging Test Platform

High control precision. Fast response.
Quick conversion time. High efficient and energy saving. Reliable operation. Low output ripple.



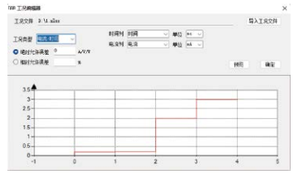
DC Internal Resistance Testing

While measuring the overall DC internal resistance of the module, the DC internal resistance values of each cell can also be automatically calculated through user-defined variables calculation.



Conditions Simulation Testing

Support condition simulation testing of EV and energy storage power stations. The measured working conditions can be automatically converted into testing programs.
Support the conversion of working condition data files in EXCEL and CSV into executable testing program files.

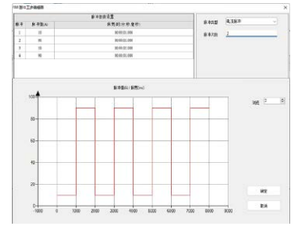


Multi-channel Parallel Technology

Support multi-channel or multi-machine parallel operation of the testing equipment.
Capable of output up to 2400A of current output.
Flexible equipment configuration to meet expansion needs.

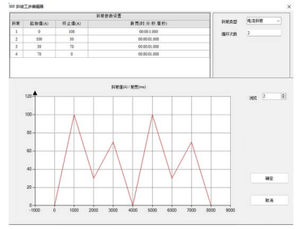
Pulse Current Testing

Customized pulse current testing can be implemented to meet the requirements of battery performance testing.



Ramp Current Testing

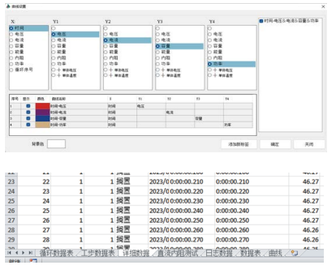
Customized current variation ramps can be implemented according to customer requirements.



Abundant testing control platforms

Meet the testing requirements of complex processes.

Flexible curve display with the capability to combine arbitrary curvess



SPECIFICATION

ITEM	PARAMETERS
Equipment specifications	Maximum constant power of the dual-channel parallel connection is 800 kW
Number of equipment channels	Single channel / Dual channels
Channel control mode	Each channel independently controls, current and voltage are measured in four-wire system
Channel characteristics	Discharge energy feed back to the power grid, adjacent channels can be arbitrarily paralleled
Protection	Data protection on power failure
	Equipment offline operation
	Continuous start-up
	Overvoltage protection, undervoltage protection, capacity protection, overcurrent protection, undercurrent protection, temperature protection
	Reverse connection protection
Grid requirements	AC380V ± 10%/ frequency 50Hz ± 2Hz
Dust-proof / heat dissipation	Yes
Unintended power loss protection	Equipped with power loss protection, resume the test step when power is restored after an interruption.
Safety Stop1	Yes
Working environment	Temperature: 0°C ~ 40°C. Humidity: 0% ~ 85% RH (non-condense)
Cooling method	Air cooling
Equipment noise	≤75dB
Equipment efficiency	≥95% (at equipment side) (low voltage models ≥90%)
Power factor	Efficiency: ≥0.99
THD	THD: ≤3% (at full power)
IP grade	IP21, IP32 optional

ITEM	PARAMETERS
Constant current discharge Pulse current Pulse power	Voltage cut-off, current cut-off, time cut-off, capacity cut-off, temperature cut-off
Ramp current discharge Ramp power discharge Ramp current charge Ramp power charge	Ramp termination value, step time
Constant current and constant voltage discharge Constant current and constant voltage charge Constant voltage charge Constant voltage discharge	Current cut-off, time cut-off, capacity cut-off, temperature cut-off, energy cut-off, SOC limit
Constant current charge Fast charging Constant current discharge	Voltage cut-off, current cut-off, time cut-off, capacity cut-off, temperature cut-off, energy cut-off, power limit, SOC limit, capacity percentage limit, energy percentage limit
Constant power charge	Voltage cut-off, current cut-off, time cut-off, capacity cut-off, temperature cut-off, energy cut-off, power limit, SOC limit, capacity percentage limit, energy percentage limit
Constant resistance charge	Voltage cut-off, current cut-off, time cut-off, capacity cut-off, temperature cut-off
Standby	Time cut-off, voltage cut-off

Model Selection

SPECIFICATION ▼	ITEM	PARAMERE
100V/150V Single channel Dual channels	Voltage Range — Charge	0V~100V/0V~150V（System terminal）
	Voltage Range — Discharge	5V~100V/5V~150V （System terminal）
	Rated current（Single channel）	300A/400A/500A
	Rated Power	30kW/60kW/80kW/100kW/120kW
200V Single channel Dual channels	Voltage Range — Charge	0V~200V（System terminal）
	Voltage Range — Discharge	7.5V~200V （System terminal）
	Rated current（Single channel）	100A/300A/400A/500A/600A
	Rated Power	40kW/60kW/80kW/100kW/120kW/160kW/180kW/200kW/250kW
300V/400V/500V Single channel Dual channels	Voltage Range — Charge	0V~300V/0V~400V/0V~500V（System terminal）
	Voltage Range — Discharge	10V~300V/10V~400V/10V~500V （System terminal）
	Rated current（Single channel）	200A/300A/400A/500A
	Rated Power	120kW/160kW/180kW/200kW/250kW/300kW/350kW/400kW/500kW

SPECIFICATION	ITEM	PARAMERE
700V/750V Single channel Dual channels	Voltage Range — Charge	0V~700V/0V~750V（System terminal）
	Voltage Range — Discharge	10V~700V/10V~750V（System terminal）
	Rated current（Single channel）	300A/400A
	Rated Power	250kW/300kW/400kW/450kW
900V/1000V Single channel Dual channels	Voltage Range — Charge	0V~900V/0V~1000V
	Voltage Range — Discharge	15V~900V/15V~1000V （System terminal）
	Rated current（Single channel）	200A/300A/500A/800A/1000A
	Rated Power	400kW/500kW/600kW/800kW
1200V Single channel Dual channels	Voltage Range — Charge	0V~1200V（System terminal）
	Voltage Range — Discharge	20V~1200V （System terminal）
	Rated current（Single channel）	200A/300A/500A/800A/1000A
	Rated Power	240kW/360kW/500kW
1500V Single channel Dual channels	Voltage Range — Charge	75V~1500V（System terminal）
	Voltage Range — Discharge	75V~1500V（System terminal）
	Rated current（Single channel）	200A/300A/400A/500A
	Rated Power	300kW/450kW/600kW

GTAKE

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