

Beijing

- Group HQ

Wuxi, Jiangsu

- Wuxi Sun.King Power Capacitor Co., Ltd.

Switzerland

- Astrol Electronic AG
- SwissSEM Technologies AG

Jiashan, Zhejiang

- Jiashan Sun.King Electrical Equipment &Technology Co., Ltd.
- Sun.King Asia-Pacific SemiconductorTechnology (Zhejiang) Co., Ltd.
- Zhejiang Jiashan Keneng Power Equipment Co., Ltd.
- Zhejiang Sine Power Technology Co., Ltd.
- Jiashan Sun.King Capacitor Co., Ltd.
- Sun.King NE Technology Co., Ltd

Wuhan, Hubei

- Wuhan LandPower Co., Ltd.

Germany

- morEnergy GmbH

Ningbo, Zhejiang

- Ningbo Hairong Electric Appliance Co., Ltd.

Netherlands

- Astrolkwx B.V.



Laminated busbar, CCS

Zhejiang Sine Power Technology Co., Ltd.



Sun.King Technology Group Limited

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Drive green energy development with scientific innovation

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GROUP INTRODUCTION

Sun.King Technology Group Limited ("Sun.King Technology" for short below) is a top supplier of power electronics devices and system integrator renowned for our leading technologies and significant influence in the industry. Incorporated in 2002, Sun.King Technology was listed on the main board of Hong Kong Stock Exchange in 2010 (stock code: 0580.HK). Up to now, Sun.King Technology has evolved into a group company with a total of nearly 1100 employees and annual sales surpassing CNY 2 billion. The company now operates more than 10 subsidiaries in Beijing, Jiashan, Zhejiang, Wuxi, Jiangsu, Wuhan, Hubei, and Switzerland and Germany in Europe.

Adhering to the business philosophy of "driving corporate development primarily by technological innovation", we focus on two major high-end technical fields. Our first focus falls on power semiconductors and their supporting device technologies.

In this field, we have developed China's first self-developed anode saturable reactors, China's first DC support capacitors for Flexible DC transmission and also domestically leading laminated busbars, etc.

Among our cutting-edge power electronics technologies, the distinctive ones include the world's most advanced solid-state switches and pulse power supply, impedance measurement technology granted with international invention patents, and domestically leading online monitoring systems.

Now, we run with the support of our three domestic R&D centers in Jiashan, Wuxi and Wuhan respectively, and also three overseas R&D teams in Switzerland and Germany. Our ten dedicated R&D teams are staffed with 300-plus technical research and development personnel, accounting for over one third of all our employees. We have passed nine national energy technology achievement certifications, and been

granted 20-plus provincial and municipal technology innovation honors, and 200-plus patent certificates.

Our innovative technological achievements have been extensively applied in various links of power systems of new energy generation, DC transmission, smart grids, electric vehicles, rail transportation, ships, communication, scientific research, and industrial control, etc.

Sun.King Technology has always practiced the business philosophy of "pursuing excellence for win-win future" and upheld the corporate mission of "fueling green energy development through scientific and technological innovations".

With this ethos in mind, we, leveraging future-oriented innovative technologies, make every endeavor to make contributions to the development of the whole industrial chain of green energy and the construction of a new power system.

Our Vision: A world-class supplier of power semiconductor devices and system solutions

Our Mission: Fueling green energy development through scientific and technological innovations

Our Values: Respect, innovate, and surpass.

Our Business Philosophy: Pursuing excellence for win-win future.

Global Footprint

GROUP DISTRIBUTION

Othmarsingen, Switzerland

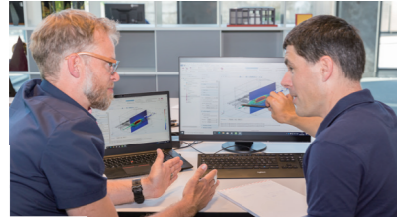
Incorporated in 1996, Astrol is a renowned European power electronics technology research and development company with 20 years of technology accumulation and the world class solid-state switch and pulsed power technology. Main products: all-solid-state DC breakers, solid-state AC switches, pulsed power supply devices, digital IGBT drivers



• SwissSEM Technologies AG

Incorporated in 2019, SwissSEM has become a power semiconductor device technology research and development center with a world-class team of power semiconductor technology experts, specializing in the research and development of power semiconductor chips and modules.

Main products: IGBT, FRD, SiC and other power semiconductor chips, ED, ST and EVD-type modules, IGBT modules, HEEV modules, SiC modules, and other power semiconductor modules



Hamburg, Germany

Incorporated in 2019, morEnergy specializes in the research and development of power grid and new energy impedance measurement technology, has one professor-level and two doctoral-level experts, has published more than 40 academic papers, and obtained international invention patents.

Main products: online impedance real-time measurement devices



Rotterdam, the Netherlands

Astrolkwx has extensive technical and market experience in the field of power electronics, and provides technical consultancy services and solutions to clients in multiple fields such as ship DC electrical systems and rail transportation traction converter systems.

Main products: power electronics devices and equipment of different specifications, power electronics technology solutions



Wuxi, Jiangsu

Covering an area of 60 mu

• Wuxi Sun.King Power Capacitor Co., Ltd.

Incorporated in 2008, Wuxi Sun.King specializes in researching, developing and manufacturing high-voltage power capacitors and their complete equipment, and attains recognition as a National High-tech Enterprise. Wuxi Sun.King has obtained national energy technology achievement certifications and owns an industry-leading fully automatic intelligent production assembly line with a designed production capacity of 18 million kvar/year.

Main products: Power capacitors



• Wuxi Astrol Power Electronics Limited

Incorporated in 2016, Wuxi Astrol specializes in introducing frontier technologies from Astrol, morEnergy and other foreign subsidiaries of Sun.King Group into China and conducts production and manufacturing, market promotion, sales and services, etc. in China. Main products: all-solid-state DC breakers, solid-state AC switches, pulsed power supply devices, digital IGBT drivers, online impedance real-time measurement devices



Ningbo

• Ningbo Harong Electric Co., Ltd

Foundation: 2008

Location: Binwan Road No.50, Binhai New Area, Fenghua Economic Development Zone, Ningbo, Zhejiang Province, China
Product Scope: capacitors
Area: 1,3000 m²



Wuhan, Hubei

• Wuhan LandPower Co., Ltd.

Incorporated in 2007, this subsidiary specializes in researching, developing and manufacturing in the field of smart grid state perception and assessment, and has been recognized as a National High-tech Enterprise. Main products: online smart grid monitoring systems



• Sun.King NE Technology Co., Ltd

Which is a high-tech company integrating new energy development, investment, construction, operation and maintenance. As a one-stop provider of clean energy system solutions, its main business includes new energy project design and optimization, EPC engineering management, and AI operation and maintenance service system solutions, etc.

• Jiashan Sun.King Power Electronic Capacitor Co., Ltd.

Incorporated in 2017, this subsidiary specializes in researching, developing and manufacturing metallized polypropylene film DC support capacitors and pulse capacitors, and has successfully developed the first flexible DC support capacitors for Flexible DC transmission in China.

Main products: DC support capacitors, pulse capacitors



• Zhejiang Sine Power Technology Co., Ltd.

Incorporated in 2011, this subsidiary specializes in researching, developing and manufacturing laminated busbars with industry-leading design strength and manufacturing process, and automatic production assembly lines and testing lines.



• Zhejiang Jiashan Keneng Power Equipment Co., Ltd.

Incorporated in 2011, this subsidiary specializes in providing comprehensive solutions for power quality issues in various industries, and the research and development and engineering application of flexible AC transmission technologies (FACTS). Main products: SVC, SVG and other power.



Beijing

• Sun.King Technology Group Limited Headquarters

Jiashan, Zhejiang

Covering an area of 151 mu

• Jiashan Sun.King Electrical Equipment & Technology Co., Ltd.

Incorporated in 2004, this subsidiary specializes in researching, developing, and manufacturing anode saturable reactors. It has earned national energy technology achievement certifications, and been recognized as a National High-tech Enterprise and the sole supplier of anode saturable reactors with proprietary technology in China. Main products: anode saturable reactors



• Sun.King Pacific Semiconductor Technology (Zhejiang) Co., Ltd.

Incorporated in 2020, this subsidiary specializes in researching, developing and manufacturing power semiconductor devices. As the parent company of SwissSEM, it is staffed with a world-class technical specialist team and experienced management team in the industry, and runs with world-class fully automatic intelligent production assembly lines. Main products: IGBT, FRD, SiC and other power semiconductor chips, ED, ST and EVD-type modules, IGBT modules, HEEV modules, SiC modules, and other power semiconductor modules



About Sine Power

Zhejiang Sine Power Technology Co.,Ltd. is the core subsidiary of Sun.King Technology Group Limited(Sun.King Tech).



Founded in 2011, Sine Power has been dedicated to the R&D and manufacturing of laminated bus bar and CCS(cells contacting system). With the development over ten years, an experienced team of over 200 has been established. The total production area is 14,800m²



Main Customer



Laminated Bus Bar

The laminated busbar primarily utilizes copper/aluminum as the conductor, PET/PI as the insulation layer, and undergoes hot pressing/assembly for integrated molding, allowing for flexible design of current paths. It is mainly used in high-power power electronics equipment such as new energy vehicles and rail transit traction systems, connecting core components such as batteries and inverters.

Characteristics



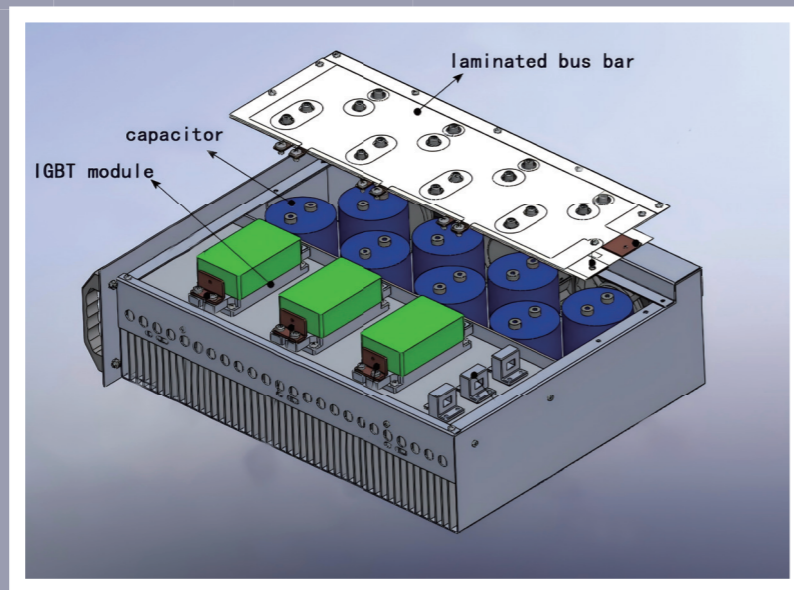
Low stray inductance

(40%+ lower than traditional copper bus bars)

High current carrying capacity

Good heat dissipation, shock resistance

Save installation space



Application-Laminated Bus Bar

- Rail Transit
- New Energy Vehicles
- Wind Power/Photovoltaic
- Communication
- Power Grid
- Industrial Frequency Converter



Rail Transit

Feature

- High current carrying capacity, low loss
- High temperature resistance and shock resistance
- Compact structure
- High reliability

Application

- High-speed multiple unit (EMU)
- Electric locomotive
- Diesel locomotive
- Urban rail transit



Example Data

Parameters	Value
Dimension	562*280*109.6
Number of Conductor Layers	5
Voltage	2000V
Current	400A(for positive and negative poles), 650A(UVW poles)
Insulation Withstand Voltage	6.0KV-AC-60S, no breakdown, no flicker
Partial Discharge	< 10pC@ 1.8KV
Package Form	Hot press and edge sealing
Material	Red copper, GPO-3, PET film

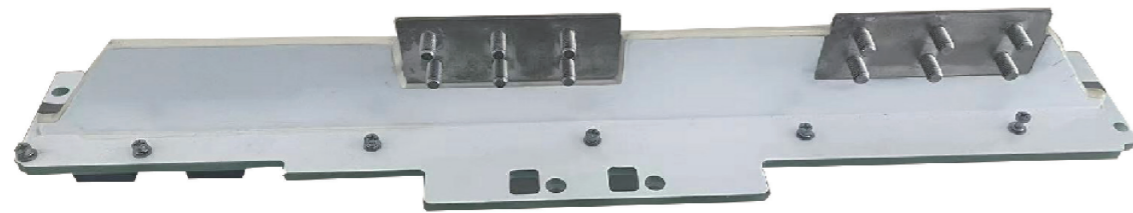
Communication

Feature

- Low impedance, high signal integrity
- Excellent anti-interference and insulation performance
- Lightweight and easy to integrate and install

Application

- Communication server



Example Data

Parameters	Value
Dimension	427*80*74
Number of Conductor Layers	2
Voltage	52V
Current	Total input current: 10*77A Total output current: 1*690A Maximum Current : 690A
Insulation Withstand Voltage	DC 1.5KV 60S, leakage current \leq 1mA, no breakdown, no flicker
Package Form	Hot press first and then fill with insulation glue at edge area
Material	Red copper, FR4, PET film

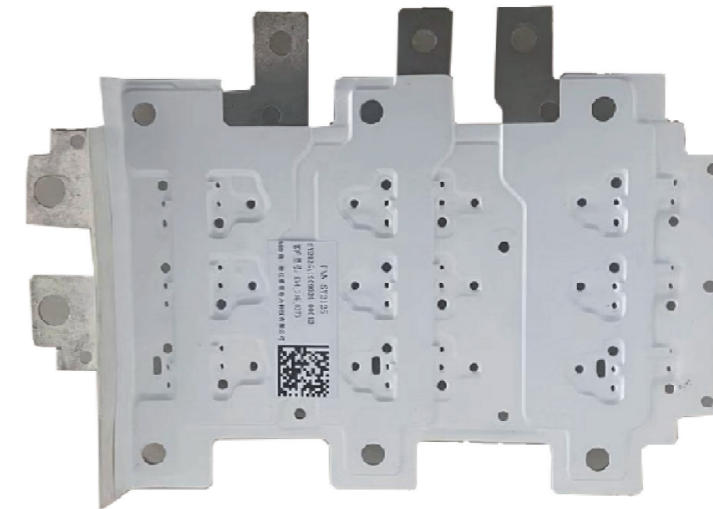
New Energy Vehicle

Feature

- High current density, low impedance loss
- Resistant to high and low temperatures, and vibration-resistant
- Excellent insulation performance, safe and flame retardant
- Compact structure, suitable for in-vehicle space

Application

- High-voltage power distribution system



Example Data

Parameters	Value
Dimension	193*139.6*31.7
Number of Conductor Layers	3
Insulation Withstand Voltage	2.0KV-AC-60S, No breakdown, No flicker
Partial Discharge	< 10pC@ AC500V
Package Form	Hot press edge banding
Material	Red copper FR4, PET film

Wind Power/Photovoltaic

Feature

- High weather resistance and UV aging resistance
- Low impedance loss, improved power generation efficiency
- Excellent insulation performance, safe and leak-proof
- Suitable for outdoor installation

Application

- PV inverter



Example Data

Parameters	Value
Dimension	381*320*99.3
Number of Conductor Layers	5
Voltage	+/- 1.5KV; +/N and -/N 1.0KV
Current	900A
Insulation Withstand Voltage	3.0KV-AC-60S, no breakdown, flicker (leakage current <10mA)
Partial Discharge	+/- AC1.5KV (≤ 10pC), AC1.0KV between other electrode plates (≤ 10pC)
Package Form	Hot-press edge banding
Material	Red copper FR4, PET film

Power Grid

Feature

- High current-carrying capacity, low impedance loss
- Resistant to high voltage impact, with strong insulation performance
- Resistant to environmental corrosion and structurally stable
- Adapt to grid expansion and facilitate maintenance

Application

- Power grid - flexible DC transmission



Example Data

Parameters	Value
Dimension	405*254*102
Number of Conductor Layers	2
Insulation Withstand Voltage	7KV-AC-60S, no breakdown, no flicker
Partial Discharge	< 10pC@ AC3000V
Package Form	Hot-press edge banding
Material	Red Copper, FR4, PET film

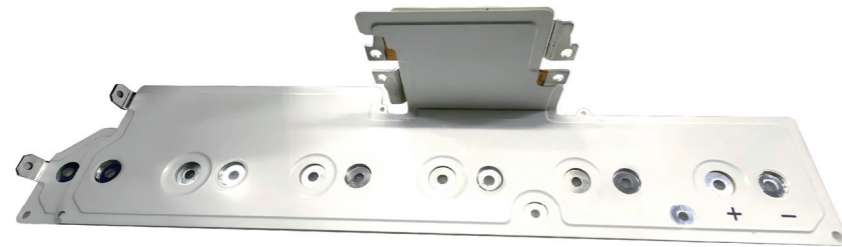
Industrial Frequency Converter

Feature

- Low stray inductance, resistant to high-frequency interference
- Resistant to current surge, with excellent temperature rise control
- Adapt to variable frequency operating conditions, with stable insulation performance
- Compact structure, easy to integrate with frequency conversion module

Application

- Industrial power supply



Example Data

Parameters	Value
Dimension	351*148*95
Number of Conductor Layers	2
Current	500A
Insulation Withstand Voltage	AC 4000V/min, no breakdown or flashover
Partial Discharge	AC1000V ≤ 10pC
Package Form	Hot-press and edge sealing
Material	Aluminum(1060), PET film

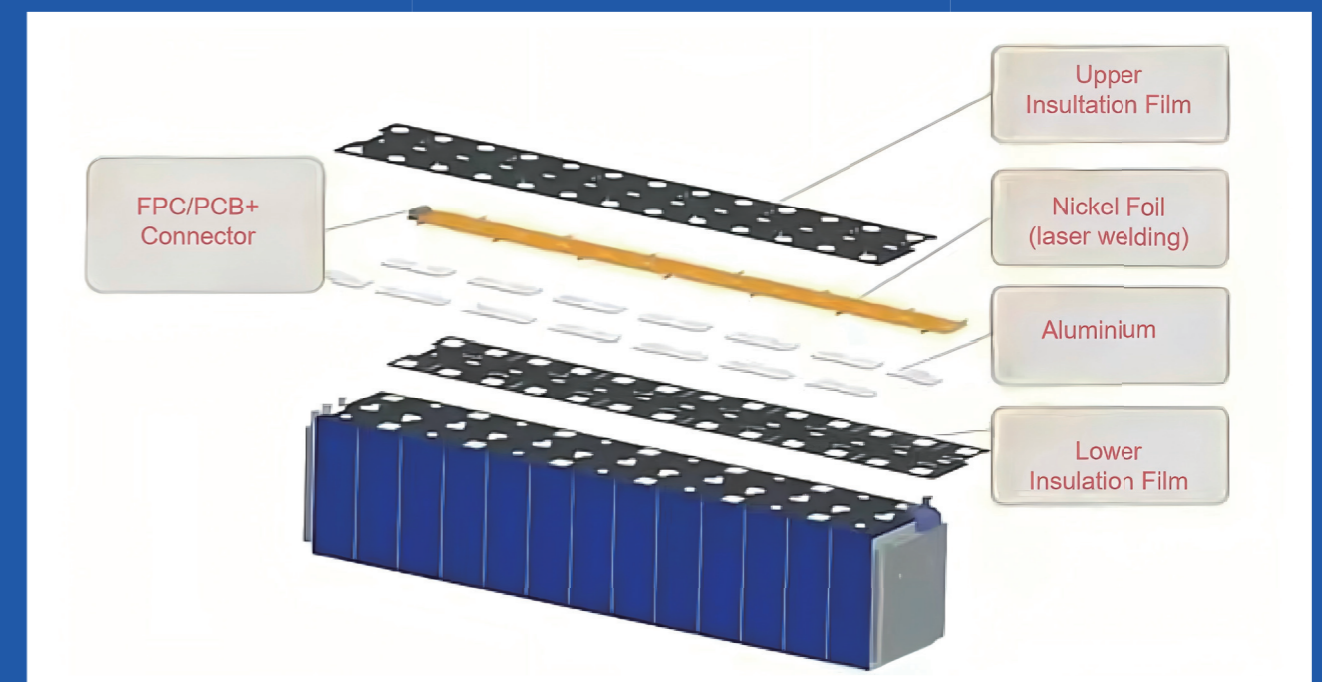
CCS Cells Contacting System

CCS is a core component of energy storage battery modules. Based on a high-conductivity copper/aluminum busbar, it integrates sampling circuits and other components to realize high-voltage series and parallel connection of battery cells and current transmission, while collecting voltage and temperature data to the BMS. It is mainly used in PACK modules in large-scale energy storage (air-cooled, liquid-cooled), residential energy storage, and power batteries.

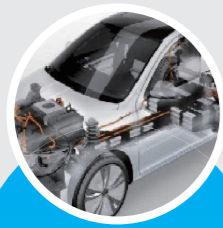
Characteristics



- ▶ Battery series and parallel connection
- ▶ Signal acquisition voltage monitoring, temperature monitoring
- ▶ Light weight
- ▶ Small installation space
- ▶ Automatic production



Application



Power Battery

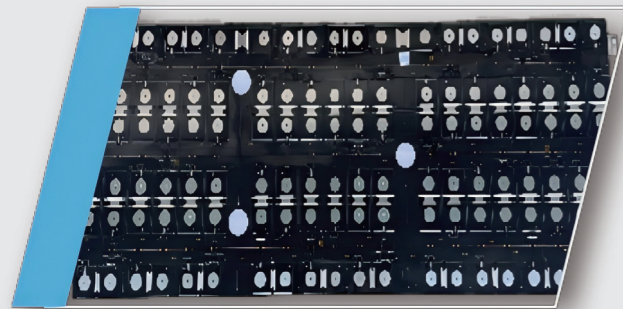


Stackable Energy Storage

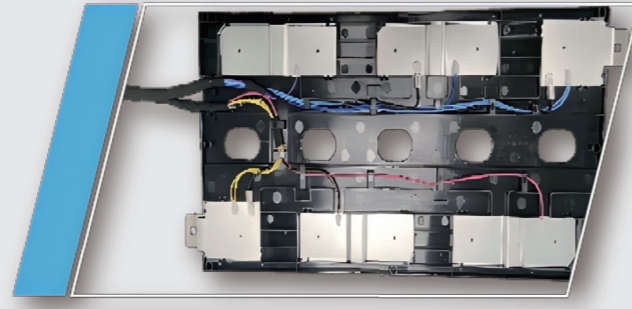


Containerized Energy Storage

CCS Type



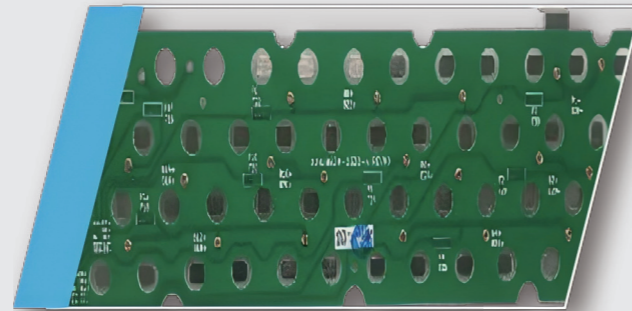
PET Integration



Wire Harness Integration



Blister Integration



Riveting Integration

Power Battery

FPC sampling (cylindrical cell)

The power battery energy storage system is primarily utilized in electric vehicles, heavy-duty trucks, forklifts, and other projects. In this system, the power battery busbar plays a crucial role as an internal connecting component of the battery pack. Its primary function is to collect and distribute current, ensuring safe and efficient transmission of current within the battery pack.

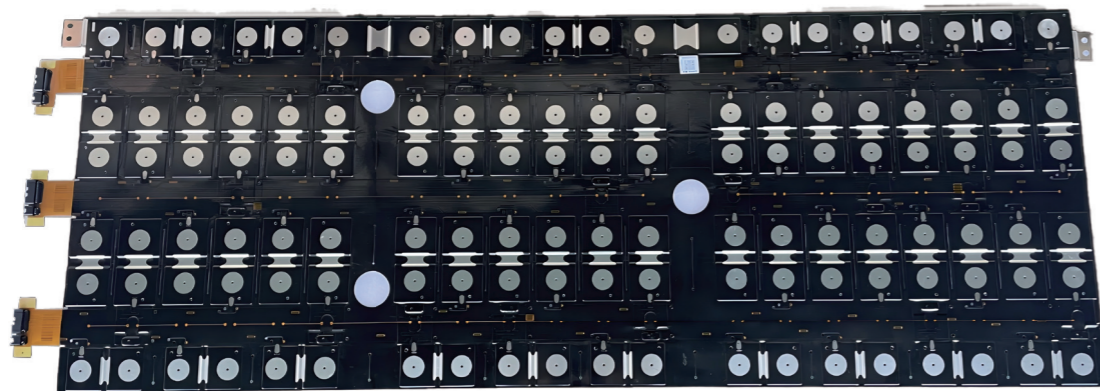


Example Data

Parameters	Value
Dimension	1750*286*4
Configuration	5P48S
Collection Subject	PET film + FPC + aluminum busbar
Current(sampling)	1A
Current(aluminum bus bar)	60A
Insulation Withstand Voltage	Between pins, there is no breakdown or flashover under DC1000V for 2 seconds, with leakage current $\leq 1\text{mA}$
Insulation Resistance	DC1000V between pins for 2 seconds, with insulation value not lower than $100\text{M}\Omega$

Power Battery

FPC sampling (prismatic cell)



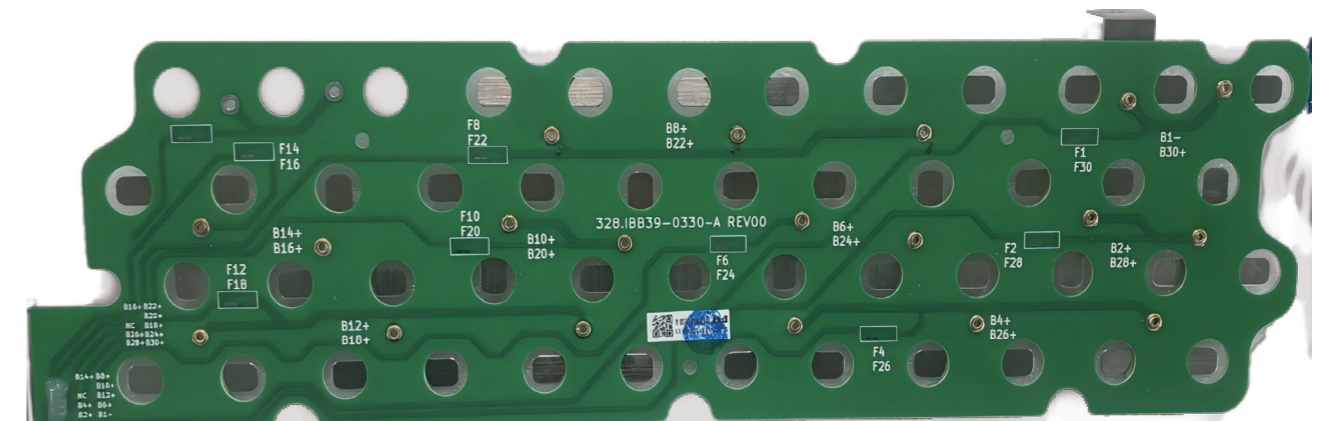
Example Data

Parameters	Value
Dimension	1665*600*4
Configuration	1P60S
Collection Subject	PET film + FPC + aluminum busbar
Current(sampling)	1A
Current(aluminum bus bar)	200A
Insulation Withstand Voltage	Between pins, there is no breakdown or flashover under DC1000V for 2 seconds, with leakage current $\leq 1\text{mA}$
Insulation Resistance	DC1000V between pins for 2S, with insulation value not lower than 100M Ω

Power Battery

PCB sampling (cylindrical cell)

Small two-wheeled electric vehicles



Example Data

Parameters	Value
Dimension	1750*286*4
Configuration	3P16S
Collection Subject	PET film + FPC + aluminum busbar
Current(sampling)	1A
Current(aluminum bus bar)	50A
Insulation Withstand Voltage	Between pins, there is no breakdown or flashover under DC1000V for 2 seconds, with a leakage current of $\leq 1\text{mA}$
Insulation Resistance	DC1000V between pins, lasting for 2S, with insulation value not lower than 100M Ω

Power Battery

FPC sampling (cylindrical cell)

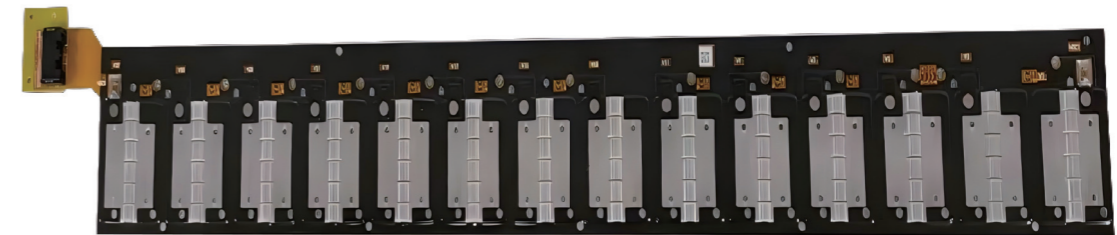


Example Data

Parameters	Value
Dimension	243.5*169*28.5
Configuration	2P15S
Collection Subject	Injection molded shell + FPC + aluminum busbar
Current(sampling)	1A
Current(aluminum bus bar)	50A
Insulation Withstand Voltage	Between pins, there is no breakdown or flashover under DC1000V for 2 seconds, with a leakage current of $\leq 1\text{mA}$
Insulation Resistance	DC500V between pins, lasting for 2S, with insulation value not lower than 100M Ω

Power Battery

FPC sampling (blade cell)



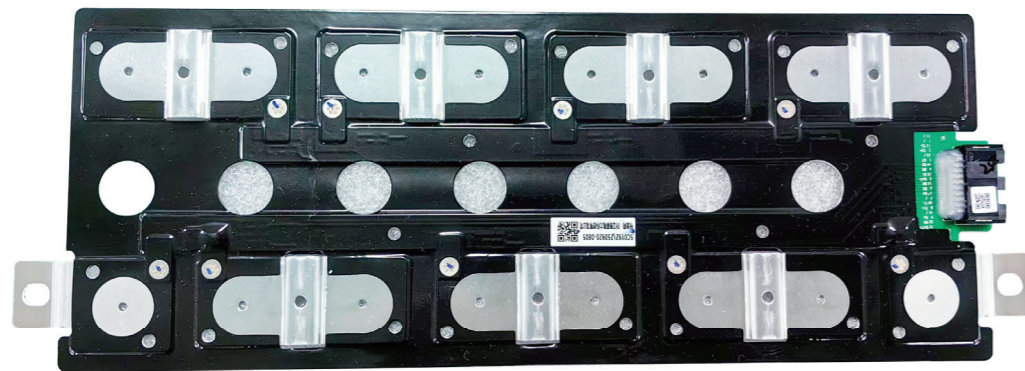
Example Data

Parameters	Value
Dimension	707*92*1.7
Configuration	1P28S
Collection Subject	PET film+FPC + aluminum busbar
Current(sampling)	1A
Current(aluminum bus bar)	100A
Insulation Withstand Voltage	Between pins, there is no breakdown or flashover under DC500V for 60 seconds, with leakage current $\leq 1\text{mA}$
Insulation Resistance	DC500V between pins for 60 seconds, with an insulation value of not less than 500M Ω

Stackable Energy Storage

PCB sampling (prismatic cell)

Stacked energy storage systems are primarily utilized in various settings such as households, campsites, and motorhomes. In this system, the busbar is referred to as a laminated busbar, which is a multi-layer composite structure connecting bar.

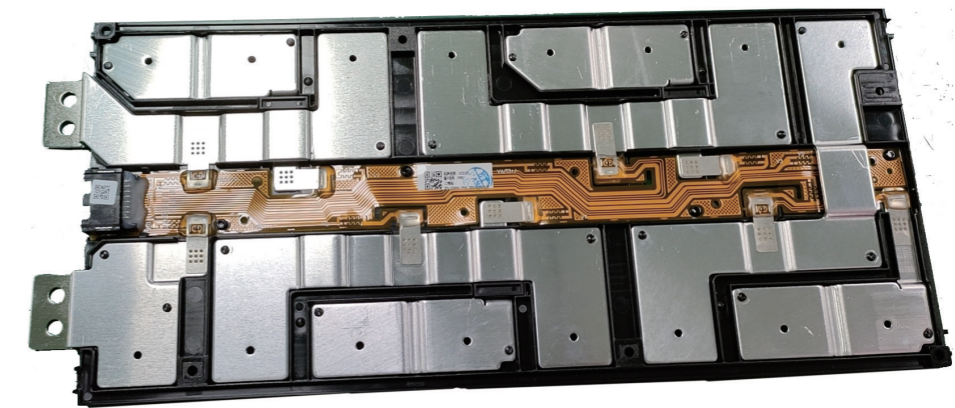


Example Data

Parameters	Value
Dimension	325*125*15
Configuration	1P8S
Collection Subject	PET film + PCB + aluminum bar (output on both sides)
Current(sampling)	1A
Current(aluminum bus bar)	100A
Insulation Withstand Voltage	Between pins, there is no breakdown or flashover under DC1000V for 2 seconds, with leakage current $\leq 1\text{mA}$;
Insulation Resistance	The insulation value between pins under DC1000V for 5 seconds is not less than 500M Ω ;

Stackable Energy Storage

FPC sampling (prismatic cell)



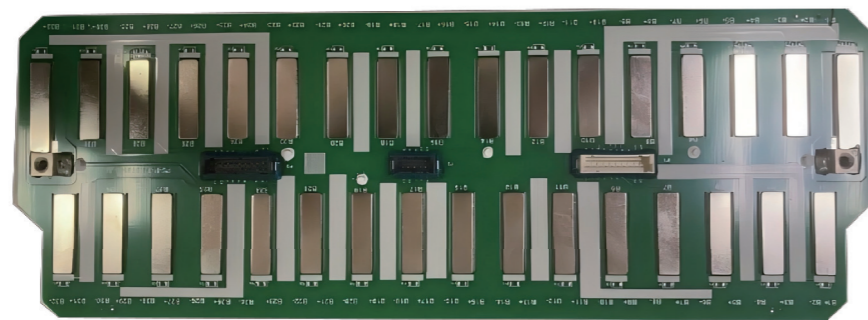
Example Data

Parameters	Value
Dimension	350*150*15
Configuration	1P8S
Collection Subject	Injection molding + FPC + aluminum busbar (output on the same side)
Current(sampling)	1A
Current(aluminum bus bar)	100A
Insulation Withstand Voltage	Between pins, there is no breakdown or flashover under DC1000V for 2 seconds, with leakage current $\leq 1\text{mA}$;
Insulation Resistance	The insulation value between pins under DC1000V for 2 seconds is not less than 100M Ω ;

Stackable Energy Storage

PCB sampling (pouch cell)

- Lightweight and compact
- Safe and controllable,
- strong adaptability



Example Data

Parameters	Value
Dimension	1665*600*4
Configuration	1P33S
Collection Subject	PCB + aluminum busbar
Current(sampling)	300mA
Current(aluminum bus bar)	50A
Insulation Withstand Voltage	Between pins, there is no breakdown or flashover under DC500V for 60 seconds, with leakage current $\leq 1\text{mA}$
Insulation Resistance	DC500V between pins for 60 seconds, with an insulation value of not less than $500\text{M}\Omega$

Containerized Energy Storage

FPC sampling (cylindrical cell)

Containerized energy storage systems are primarily utilized in various scenarios such as microgrids and mobile power stations. They integrate battery modules, battery management systems (BMS), energy management systems (EMS), power conversion systems (PCS), and other control hardware. Within this system, the busbar facilitates high-voltage series and parallel connections of battery cells, as well as temperature and cell voltage sampling of the batteries.



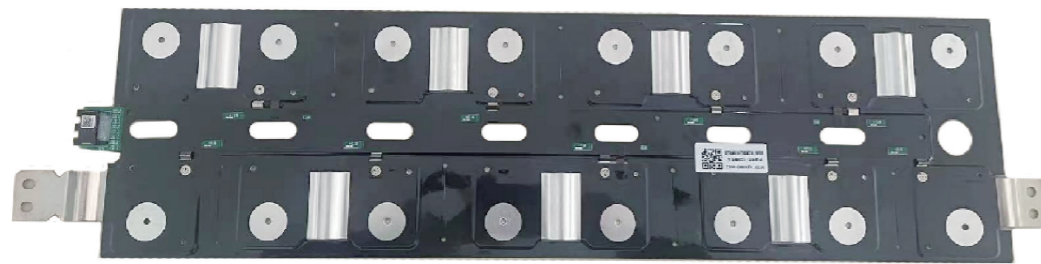
Example Data

Parameters	Value
Dimension	390*335*17
Configuration	5P9S
Collection Subject	PET film + FPC + aluminum busbar (super capacitor CCS)
Current(sampling)	1A
Current(aluminum bus bar)	200A
Insulation Withstand Voltage	Between pins, there is no breakdown or flashover at DC1000V for 2 seconds, with a leakage current of $\leq 1\text{mA}$
Insulation Resistance	DC1000V between pins, lasting for 5S, with insulation value not lower than $100\text{M}\Omega$

Containerized Energy Storage

PCB sampling (prismatic cell)

Air-cooled battery module



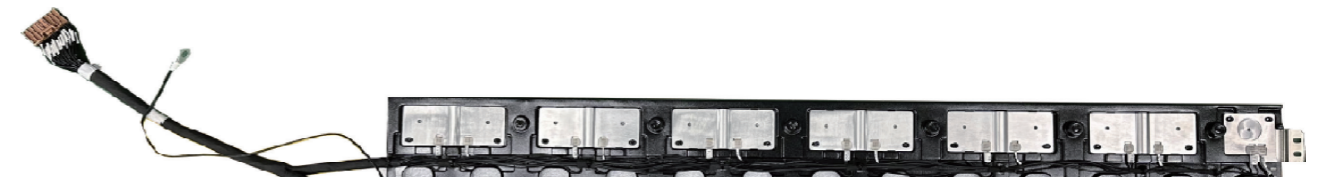
Example Data

Parameters	Value
Dimension	390*335*17
Configuration	5P9S
Collection Subject	PET film + FPC + aluminum busbar (super capacitor CCS)
Current(sampling)	1A
Current(aluminum bus bar)	200A
Insulation Withstand Voltage	Between pins, there is no breakdown or flashover at DC1000V for 2 seconds, with a leakage current of $\leq 1\text{mA}$
Insulation Resistance	DC1000V between pins, lasting for 5S, with insulation value not lower than 100M Ω

Containerized Energy Storage

Wire harness sampling(prismatic cell)

liquid-cooled battery module

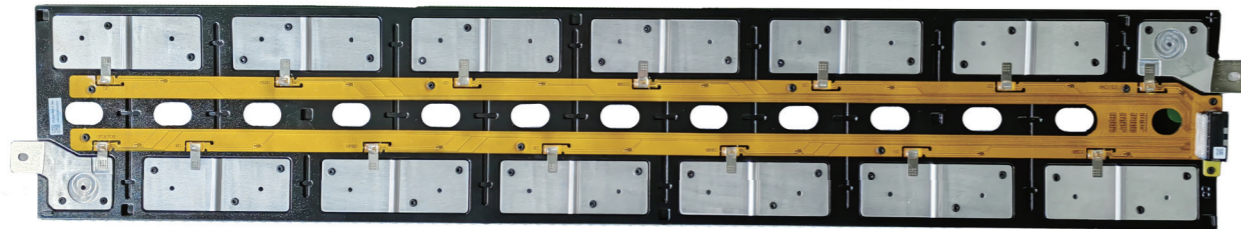


Example Data

Parameters	Value
Dimension	1100*174*10
Configuration	1P16S
Collection Subject	Plastic blistering + wiring harness + aluminum busbar
Current(sampling)	3A
Current(aluminum bus bar)	200A
Insulation Withstand Voltage	Between pins, there is no breakdown or flashover under DC1000V for 2 seconds, with a leakage current of $\leq 1\text{mA}$;
Insulation Resistance	The insulation value between pins under DC1000V for 2 seconds is not less than 100M Ω ;

Containerized Energy Storage

FPC sampling(prismatic cell)



Example Data

Parameters	Value
Dimension	1000*180*15
Configuration	1P13S
Collection Subject	Plastic blistering + FPC + Aluminum busbar
Current(sampling)	500mA
Current(aluminum bus bar)	200A
Insulation Withstand Voltage	Between pins, there is no breakdown or flashover under DC 1000V for 2 seconds, with leakage current $\leq 1\text{mA}$;
Insulation Resistance	The insulation value between pins under DC1000V for 2 seconds is not less than 100M Ω ;

Product Type Contrast

Product Type	Common Integration Processes	Characteristics	
		Strengths	Weakness
Wire harness sampling	Injection-molded bracket plastic blistering and hot riveting process	Stable signal transmission and high reliability	Low degree of automation Limited production capacity for large quantities
PCB sampling	hot pressing process plastic blistering and hot riveting process	Stable signal transmission, high reliability, lightweight and neat structure, and high degree of automation	/
FPC sampling	hot pressing process plastic blistering and hot riveting process	Stable signal transmission, high reliability, lightweight and neat structure, and high degree of automation	/
FFC sampling	hot pressing process plastic blistering and hot riveting process	High integration and strong signal acquisition capability	Inaccurate positioning Low degree of automation
FDC sampling	hot pressing process plastic blistering and hot riveting process	Fewer processes and lower process costs comparing to FPC	High initial development cost

Production Capability

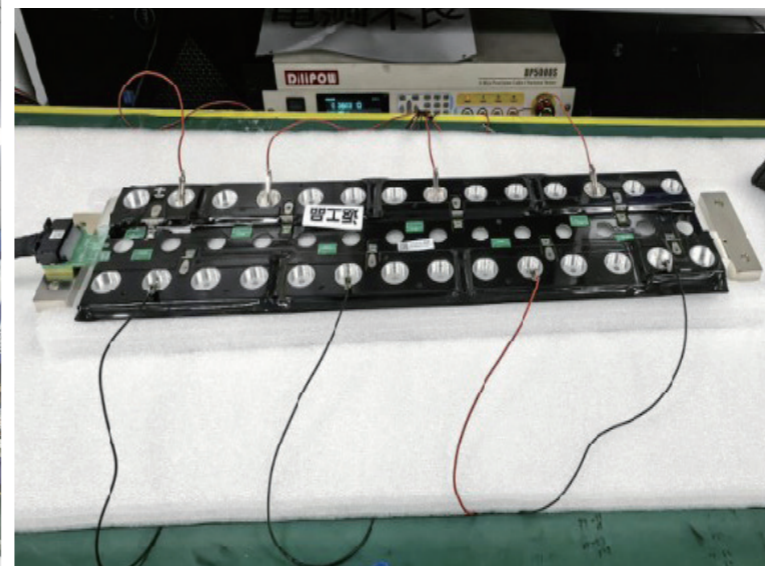
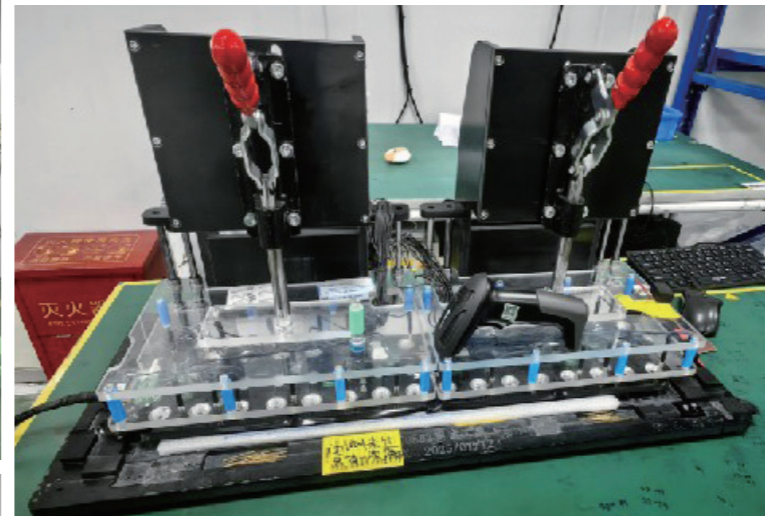
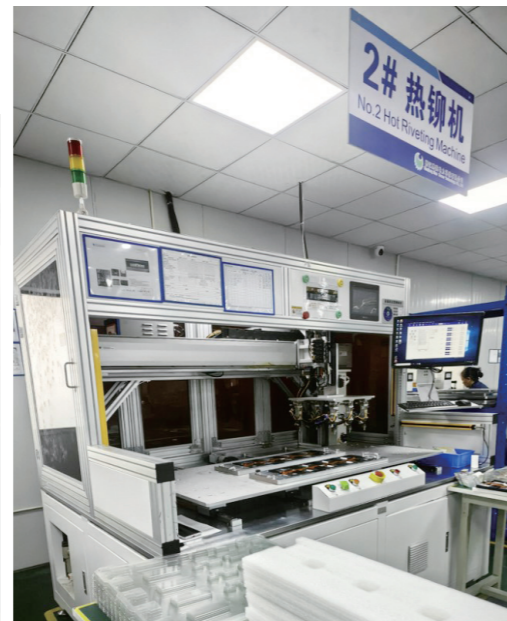
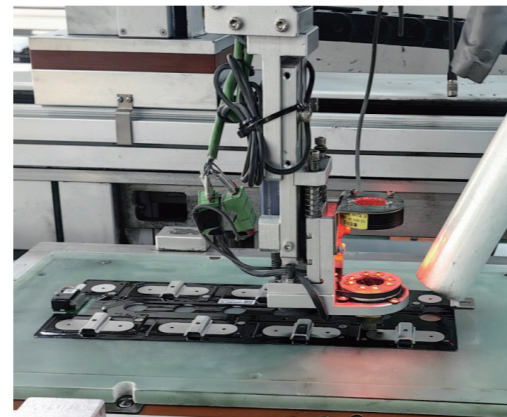
A comprehensive range of welding capabilities: polymer diffusion welding, brazing, and soldering. Suitable for different customer needs, taking into account trial production, small batch production, and mass production.

Integrated function of automated assembly line:

- UV dispensing and curing (NTC and connector);
- Laser welding (nickel sheet and aluminum bar);
- Electrical performance testing (on-off detection, resistance value detection);
- CCD visual recognition;

Advanced automatic assembly lines System Certification

- ISO9001-2016 Quality Management System
- ISO14001-2015 environmental management system
- IATF16949-2016 quality management system
- ISO45001-2018 Occupational Health and Safety Management System Certification.



Test Capability

The factory has established its own test room with advanced equipment from both China and abroad. Common tests can be done in house. Also, MES system is available to track each single process.

Main Tests List

- salt spray test
- high and low temperature test
- hardness
- plating layer thickness
- electrical performance
- mechanical performance
- partial discharge
- inductance
- NTC resistance
- insulation withstand voltage
- insulation resistance
- CCD visual recognition
- cleanliness
- vibration

