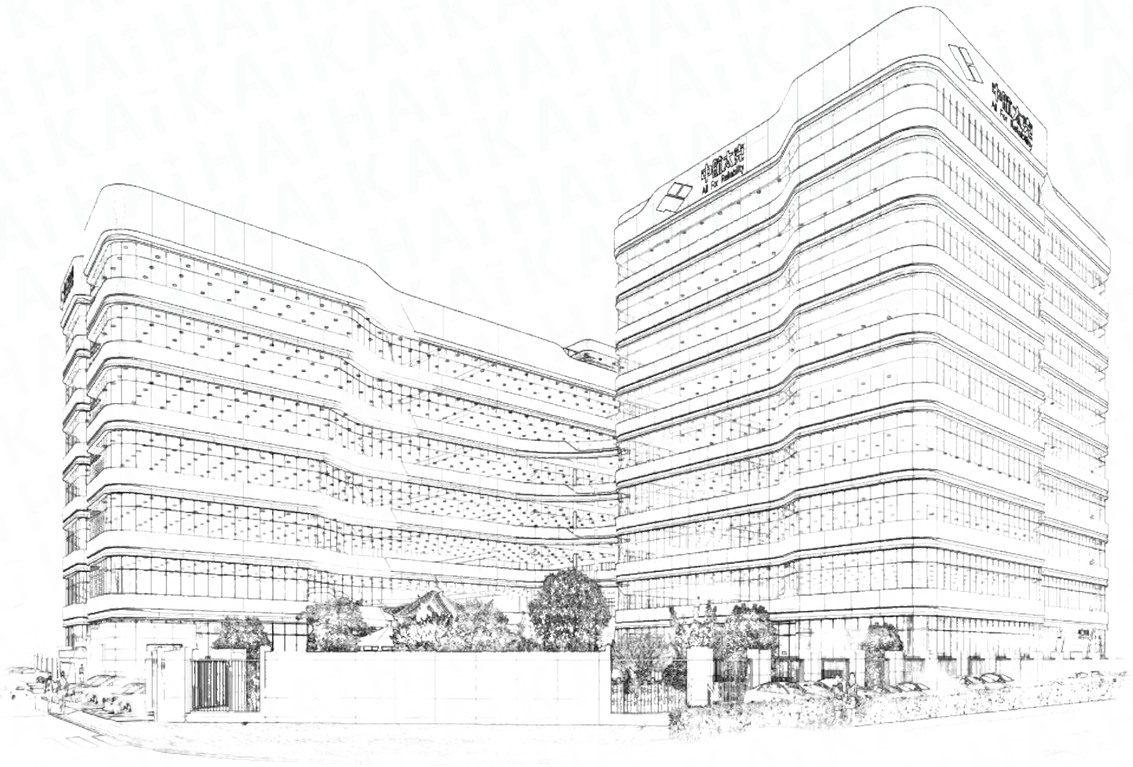
LEADING EXPERT FOR POWER SUPPLY & ENERGY STORAGE SOLUTIONS



AVIC-TECH (Xiamen) Electric Power Technology Co., Ltd.
www.haikai-energy.com
info@haikai-energy.com

HAi KAi

Industrial Commercial Residential Energy Storage Systems

Lithium Battery Systems | Customized Battery Pack

About HAiKAi

HAIKAI is a brand of AVIC-TECH (Xiamen) Electric Power Technology co.,ltd. We are a specialist manufacturer of energy storage systems and backup power solutions for industrial (behind-the-meter), commercial, and residential scenarios. We are capable of design and manufacturing BMS, Pack, integrated energy storage solutions, and customized production.

Based in China, we have more than 20 years of experience in the back-up power industry. With strong R&D, reliable quality, and effective supply chain management, we excel at tackling complex technology challenges and delivering high-quality solutions at scale to help our customers realize greater value.

Our Strengths

HAIKAI has been awarded over 120 patents for our innovation, utility models, software, and more. Our cutting-edge R&D team is led by Ph. D. researchers and globally educated experts from world-class institutions to provide the most professional support for your projects. We have complete equipment such as automatic vision positioning laser welding, programmable temperature & humidity test chamber to support PACK production, cabinet assembly, and comprehensive machine testing. Our manufacturing line follows the standard of ISO 9001 and Six Sigma under fully implemented ERP and MES process control.

We follow rigorous and standardized production management to guarantee the best lead time and product quality, from order generation, production to delivery. We also accept customization to provide flexibility for your projects. Having partnered with multiple well-known companies, we source the most suitable and trusted materials for your projects at the best cost.

HAIKAI's Energy Storage Speciaties.

- All-in-One Energy Storage System for EV Charging Station
- Industrial Energy Storage System
  (ESS for UPS, DC cabinet, standalone customized systems)
- Residential and Commercial Energy Storage System
- Customized Battery Pack

HAiKAi LiHub All-In-One Distributed Energy Storage System

Energy Storage | PCS | EMS Cloud | Fire Protection | Outdoor/ Indoor

Safe & Efficient

Independent cabinet and modular battery design for increased safety. Higher efficiency and longer life cycle. Double layer fire protection system with intelligent temperature control.

Easy to Operate & Maintain

All-in-one modular solution allows for quick installation time and minimizes maintenance required for local failures. Cloud EMS allows easy remote monitoring and control of all LiHub units.

Versatile Functions

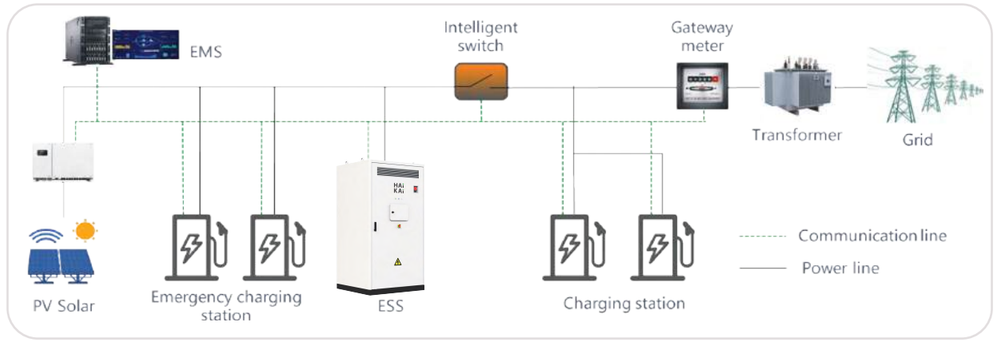
Built-in functionalities such as peak shaving, demand management, demand response, power expansion, emergency backup power, etc.

Easy to Expand

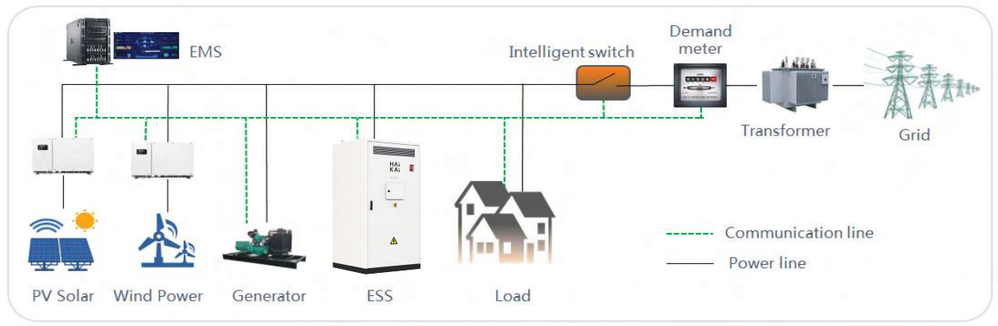
Each independent working cabinet can be connected in parallel to expand the total capacity of the energy storage system.

Example Applications

EV Charging Station



Microgrid Solution



HAiKAi

HAIKAI Energy Storage Solutions

Website: www.haikai-energy.com

LiHub's Specifications

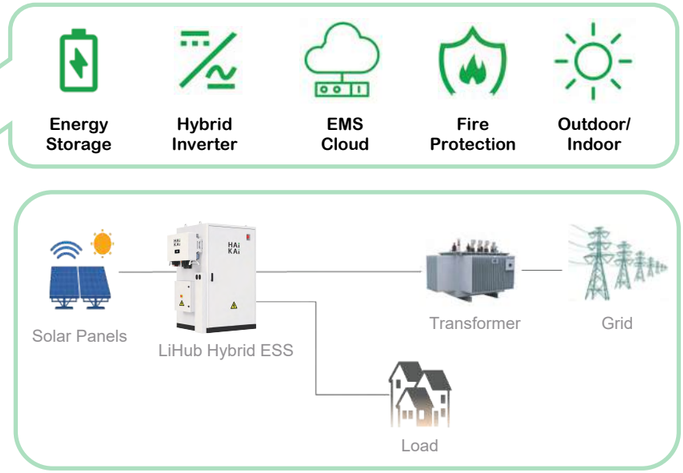
Model		LiHub 120kW/225kWh	LiHub 60kW/225kWh	LiHub 30kW/102kWh
Battery Parameters	Cell Parameters	LFP 3.2V/280Ah	LFP 3.2V/280Ah	LFP 3.2V/100Ah
	Module Configuration	1P18S	1P18S	1P16S
	Module Voltage Rating	57.6Vdc	57.6Vdc	51.2Vdc
	Module Capacity	16.128kWh	16.128kWh	5.12kWh
	Module Size (W*H*D)	440*216*798mm	440*216*798mm	440*131*440mm
	Module Weight	117kg	117kg	43kg
	Cabinet Configuration	14 Modules + HVB Box	15 Modules + HVB Box	20 Modules + 2 HVB Box
	Cabinet Capacity	**225kWh**	**225kWh**	**102kWh**
	Cabinet Voltage Rating	806.4Vdc	806.4Vdc	512Vdc
	Cabinet voltage range	706Vdc ~ 907Vdc	706Vdc ~ 907Vdc	448Vdc ~ 560Vdc
	Max. Charging/Discharging Power	120kW	60kW	30kW
	Max. Charge/Discharge Current	176A	88A	100A
On-Grid Parameters	**Power Rating**	**120kW**	**60kW**	**30kW**
	Rated Grid Voltage	400V	400V	400V
	Grid Voltage Range	-15% ~ +10%	-15% ~ +10%	-15% ~ +10%
	Rated Grid Frequency	50Hz/60Hz	50Hz/60Hz	50Hz/60Hz
	Power Factor	-0.8 ~ +0.8 (Default 1)	-0.8 ~ +0.8 (Default 1)	-0.8 ~ +0.8 (Default 1)
	Current Distortion Rate	< 3%	< 3%	< 3%
	DC Component	< 0.5%Ipn	< 0.5%Ipn	< 0.5%Ipn
	AC System	3P+N+PE	3P+N+PE	3P+N+PE
General Data	Maximum Efficiency	≥90%	≥90%	≥90%
	Charge/Discharge Rate	0.53C	0.5C	0.3C
	Discharge Depth (Max.)	95%DOD	95%DOD	95%DOD
	Battery Cycle Life	8000 Cycles	8000 Cycles	8000 Cycles
	Fire Protection System	Aerosols	Aerosols	Aerosols
	Dimensions (mm) (W*D*H)	1250*1150*2360	1250*1150*2360	1100*1150*2100
	Weight	2500kg	2450kg	1500kg
	Protection Class	IP55	IP55	IP55
	Cooling Method	Industrial Air Conditioning	Industrial Air Conditioning	Industrial Air Conditioning
	Operating Temperature	-25 ~ 55	-25 ~ 55	-25 ~ 55
Display and Communication	Communication Interface	LAN	LAN	LAN
	Communication Protocol	ModBus-TCP	ModBus-TCP	ModBus-TCP
	Human Machine Interface	10" Touch Screen	10" Touch Screen	10" Touch Screen

HAi KAi LiHub

All-In-One Hybrid Energy Storage System

Model		LiHub Hybrid-50kW/102kWh	LiHub Hybrid-50kW/193kWh
PV Parameters	Recommend Max. Input Power	75kW	75kW
	Max. Input Voltage	1000V	1000V
	MPPT Voltage Range	200-850V（Rated 620V）	200-850V（Rated 620V）
	Starting Voltage	135V	135V
	Max. Input Current	30A/30A/30A/30A	30A/30A/30A/30A
	Max. Short-Circuit Current	40A/40A/40A/40A	40A/40A/40A/40A
	Number of MPPTs	4	4
Battery Parameters	Cell Parameters	LFP 3.2V/100Ah	LFP 3.2V/280Ah
	Module Configuration	1P16S	1P18S
	Module Voltage Rating	51.2Vdc	57.6Vdc
	Module Capacity	5.12kWh	16.128kWh
	Module Size (W*H*D)	440*131*440mm	440*216*798mm
	Module Weight	43kg	117kg
	Cabinet Configuration	20 modules + HVB	12 modules + HVB
	Cabinet Capacity	**102kWh**	**193kWh**
	Cabinet Voltage Rating	512Vdc	806.4Vdc
	Cabinet Voltage Range	448Vdc～560Vdc	706Vdc～907Vdc
	Max. Charging/Discharging Power	50kW	50kW
	Max. Charge/Discharge Current	100A	100A
On-Grid Parameters	**Power rating**	**50kW**	**50kW**
	Rated Grid Voltage	230V/400V	230V/400V
	Grid Voltage Range	-15%～+10%	-15%～+10%
	Rated Grid Frequency	50Hz/60Hz	50Hz/60Hz
	Power Factor	-0.8～+0.8（Default 1）	-0.8～+0.8（Default 1）
	Current Distortion Rate	< 3%	< 3%
	AC System	3P+N+PE	3P+N+PE
Off-Grid Parameters	Apparent Power	50kVA	50kVA
	Power Factor	1	1
	Rated Voltage	230V/400V	230V/400V
	Rated Frequency	50Hz/60Hz	50Hz/60Hz
	Voltage Distortion Rate	< 3%（Linear Load）	< 3%（Linear Load）
	Unbalanced Load Capacity	100%	100%
	Overload Capacity	60kW/60S	60kW/60S
	Off-Grid Switching Time	<20ms	<20ms
General Parameters	Maximum Efficiency	≥90%	≥90%
	Charge/Discharge Rate	0.5C	0.26C
	Discharge Depth (Max.)	95%DOD	95%DOD
	Battery Cycle Life	8000 Cycles	8000 Cycles
	Dimensions (mm) (W*D*H)	800*1150*2100+800*600*620mm	1250*1150*2100+800*300*620mm
	Weight	1800kg	2500kg
	Protection Level	IP55	IP55
	Fire Protection System	Aerosols	Aerosols
	Cooling Method	Industrial Air Conditioning	Industrial Air Conditioning
	Operating Temperature	-25 ～55	-25 ～55
	Communication Interface	RS485（WiFi/4G/GPRS Optional）	RS485（WiFi/4G/GPRS Optional）

All-In-One Commercial & Industrial Hybrid Inverter + ESS Solution



Harmony Plus

Residential Energy Storage

All-in-One Hybrid Inverter & Battery Module

All-in-One Design

IP65 design with integrated hybrid inverter, switch box, and battery modules. All wire connections are hidden elegantly and include automatic fire suppression system for higher safety.

Strong Performance

- Includes SiC component, higher efficiency
- 100% three phase unbalance，output voltage difference is kept within 5%
- < 10ms UPS switching time
- Integrate VPP DRED interface (AU)
- APP monitor and support OTA

Modular Setting

Each inverter supports up to 8 modules of battery (max. 40kWh in increments of 5kWh). Supports up to 15 inverters in parallel.

Elegant Design

The elegant and modern design is suitable to any home styles. Set up directly on the floor or mount it on a wall.

HAIKAI Harmony Plus

Inverter Side

Rated output power	6000W
Rated output voltage	220V/230V/240V
Rated output current	27.2A
Rated frequency	50Hz/60Hz

Grid-tie Side

Input maximum current	27.5A
Input voltage range	184V ~ 246V
Frequency range	45Hz ~ 65Hz
Rated output power	6000W
Rated grid voltage	230V
Power grid output current	27.2A

PV Side

Photovoltaic input parameters	9000Wp
Starting voltage	75V
Maximum input voltage	600V
MPPT voltage operating range	80V ~ 550V
Full load MPPT voltage operating range	300V ~ 500V
Number of MPPT	2
Rated voltage	360V
Maximum input current	13A/13A

Battery Side

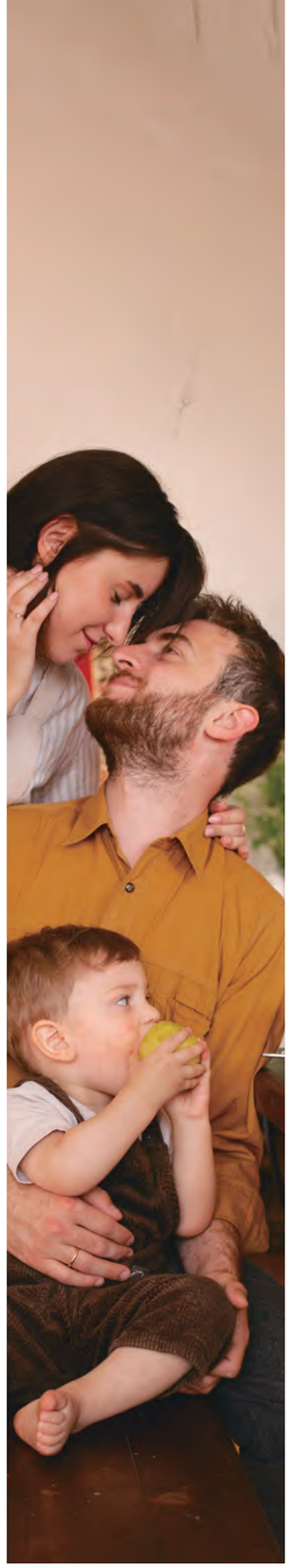
Battery capacity	5120Wh
Available capacity	4600Wh
Discharge depth	90%
Rated voltage	51.20 V
Operating voltage range	48V ~ 57 V (90% DoD)
Battery internal resistance	≤ 30 mΩ (100 Ah)
Cycle life	6000 Cycles (80% DoD)
Maximum charging current	50 A (0.5 C)
Maximum discharge current	100 A (1 C)
Short-circuit current	300 A

Efficiency

Maximum efficiency	98%
Maximum battery charging efficiency	94.60%
Maximum discharge efficiency of the battery	94.60%

General Data

Dimension	1190H*660W*185D
Weight	65KG
Working temperature	-10℃-50℃
Cooling method	Natural Cooling
Fire protection	Aerosol module
IP level	IP65
BMS communication method	RS485、CAN
Electricity meter communication method	RS485
Monitoring communication	WiFi
Human-computer interaction mode	H5/LED/APP



Harmony

Residential Energy Storage

H: 500mm
W: 660mm
D: 180mm

Weight: 50kg

Simple.
Compact.
Safe.

- Modular design
  easily expandable
  up to 8 modules (41 kWh)
- Automatic fire
  protection system
- Works at -15°C
- Seamless connection
  between modules

HAIKAI Harmony

Technical Specifications

Models:	100 Ah
Battery Capacity:	5.12 kWh
Usable Capcity:	4.60 kWh
Depth of Discharge:	90%
Rated Voltage:	51.20 V
Operating Voltage Range:	48 V ~ 57 V (90% DoD)
Internal Resistance:	≤ 30 mΩ (100 Ah)
Cycle Life:	6000 Cycles (80% DoD)
Warranty:	10 Years Product Warranty
Protection Level:	IP65

Operating Mode	
Max. Charging:	50 A (0.5 C)
Max. Discharge:	100 A (1 C)
Max. Short Circuit:	200 A
Working Temp.:	- 10 ℃ - 50 ℃
Humidity:	≤ 90 % ROH, No Condensation

Battery Management System	
Module Connection:	1 - 8 Parallel
Capacity:	5.12 - 40.96 kWh Increments of 5.12 kWh
Usable Capacity:	4.61 - 36.86 kWh Increments of 4.61 kWh
Energy Consumption:	< 2 W (Work mode) , < 50 mW (Sleep mode)
Monitoring Paramenters:	System voltage, Cell voltage and temperature, Current, PCBA temperature
Comm. Interface:	Compatible with CAN and RS-485

Certifications	
Battery:	UL1642, IEC62619, IEC62133, UN38.3
System:	CE, UN38.3

AES – 051100

Commercial Battery Pack System

Module Size:
W: 440 mm
D: 440 mm
H: 131 mm

Module Weight: 44 kg

Available set ups:
Rack, Frame, Cabinet

Modular design, easily expandable.
Connect as series or parallel.

Series - 12 modules per tower. Max.
8 towers per system

Parallel - 4 modules per tower, Max.
2 towers per system

Automatic Fire Protetion System

AES – 051100

Technical Specifications

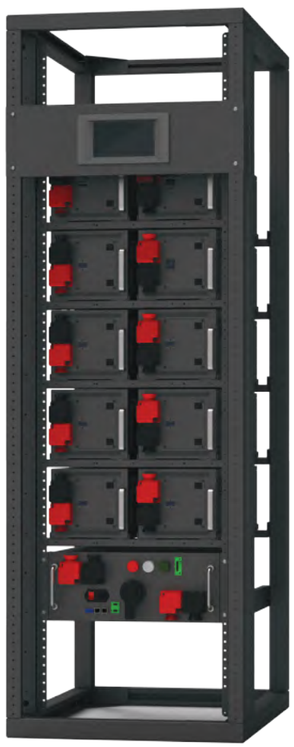
Model:	HAIKAI AES - 051100
Nominal Voltage:	51.2 V
Nominal Capacity:	100 Ah (25±2 ℃, 0.5 C discharge, new cell)
Internal Resistance:	≤45 mΩ (At 1 KHz after standard Charging)
Charging Voltage:	56-57 V
Discharge End Off Voltage:	43.2 V
Standard Continuous Charging Current	20 A (0.2 C)
Max. Continuous Charging Current	50 A (0.5 C)
Standard Continuous Discharge Current:	50 A (0.5 C)
Max. Continuous Discharge Current:	100 A (1 C)
Operating Temperature:	0-60 ℃ (Discharging), -20-50 ℃ (Charging)
Cycle Life:	6000 Cycles (80% DoD)
Dimensions (WxDxH):	440 mm, 440 mm, 131 mm
Weight:	44 kg
BMS Monitor:	Pack Voltage, Single Cell Voltage, Charging Current, Discharging Current, Temperature, Working Mode, SOC, Alarm Information
Certificate:	IEC62619, UL1642, CE, UN38.3

Lithium Battery Energy Storage Systems
Industrial Lithium Battery

HAIKAI's Industrial Energy Storage System is specially designed for various industrial applications and UPS. It can be used to directly replace existing lead-acid battery. The application and wiring are no different to conventional lead-acid batteries. The built-in BMS system greatly improves the system reliability. The lithium battery BMS data can be accessed at the UPS terminal according to user's requirements. Multiple pack configurations and cabinet types are available to meet different project requirements.

MAIN FEATURES

- Greatly reduce floor area and weight.
- Supports customization of DC voltage and system capacity.
- Direct replacement of lead-acid battery, seamless implementation to the original system.
- The built-in BMS system effectively improves the predictability and manageability of the system.
- Equipped with excellent quality Lithium iron phosphate battery which has longer service life, higher safety standards and simpler maintenance.



Standard Lithium Battery System

Product Features:

- 51.2V standard battery module.
- 50Ah module supports 4C, 100Ah module supports 2C continuous discharge.
- Suitable for applications with backup time more than 15 min.
- Can directly replace lead-acid batteries with rated voltages of 192V, 240V, 384V (± 192V) and 480V (± 240V)

Standard Lithium Battery							
Module	Cell Type	Lithium Iron Phosphate Battery					
	Cell Composition	27Ah , 2P16S			105Ah , 1P16S		
	Rated Voltage	51.2V					
	Operating Voltage	41.6 ~ 57.6V					
	Rated Capacity	50Ah			100Ah		
	Rated Power	2.56kWh			5.12kWh		
	Discharge Current	200A Continuous Discharge(4C)			200A Continuous Discharge(2C)		
	Output Power	10.24kW			10.24kW		
	Standard Standby Time	15min			30min		
	Charging Current	50A Continuous Charging(1C)			50A Continuous Charging(0.5C)		
	Dimension W × D × H	200×645×175(4U)mm			200×645×241.8(5.5U)mm		
	Weight	32kg			45kg		
System	Optional Specifications and Capacities	204.8V	50Ah	10.24kWh	204.8V	100Ah	20.48kWh
		256V	50Ah	12.8kWh	256V	100Ah	25.6kWh
		409.6V	50Ah	20.48kWh	409.6V	100Ah	40.96kWh
		±204.8V	50Ah	20.48kWh	±204.8V	100Ah	40.96kWh
		512V	50Ah	25.6kWh	512V	100Ah	51.2kWh
		±256V	50Ah	25.6kWh	±256V	100Ah	51.2kWh
	Discharge Current	200A Continuous Discharge(4C)			200A Continuous Discharge(2C)		
	Charging Current	50A Continuous Charging(1C)			50A Continuous Charging(0.5C)		
	Cycle Life	4000 Cycles					
	Communication Interface	CAN/RS485/Dry Contact					
	Protection Function	Overcharge, Over Discharge, Over Temperature, Over Current, Short Circuit, etc					
	Cabinet Type	Frame					
	Dimension W × D × H	600×800×1800mm					
	Weight	Module Weight × N + Cabinet Weight 200kg					
	Storage Temperature	0℃ ~ 40℃					
	Transport Temperature	-20℃ ~ 60℃					
	Operating Temperature	0℃ ~ 40℃ (Recommend 20 ~ 25℃)					
	Relative Humidity	5% ~ 95% (No Condensation)					
	Altitude	≤2000 m					

The above parameters are at 25 ℃. The current product specifications are subject to change without further notice.