

KE-5100

Smart Energy Storage System

product manuals

SMART BATTERY ENERGY
STORAGE SYSTEM

COMPANY PROFILE

— Company Profile



As the leader of smart electricity in China, SINO POWER SOLUTIONS (hereinafter referred to as "SPS") is committed to building a new business state for the development of global power industry and providing smart power system solutions for customers in power industry, public utilities and large industries.

Through diversified development strategy, multi-dimensional innovation concept, multi-means capital operation, integration of global resources, embrace intelligent manufacturing, and strive to build a high-tech, high-growth quality enterprise, SPS gradually formed a business development model of "one body and two wings", and successfully landed in the A-share main board market in 2017.

SPS has established a deep cooperative relationship with the world's top 500 enterprises by virtue of its strong overall strength. Its marketing network covers the world and is well received in Europe, America, Middle East, Africa, South America, Southeast Asia and other regions.

Science and technology lead, create and enjoy intelligent life. SPS will continue to take the self-confidence of the industry leader, the attitude of win-win cooperation, the ambition of the world, create well-being for employees, create value for customers, create wealth for shareholders, create prosperity for society, and strive to create a new situation of world-class electric enterprises!

ENERGY STORAGE PRODUCTS

— Electric energy storage products

Smart energy storage series solutions cover scheme design, system integration, core component production and construction maintenance services, applicable to user-side, grid-side and generation-side projects, providing comprehensive system support.

internally-developed products/in-house products include: battery management system, energy storage converter, energy storage system monitoring device, energy management system, air-cooled battery pack, liquid cooling battery pack.

Key products have covered the entire energy storage system and obtained national authority inspection reports to ensure the safe and reliable operation of the system.

LIQUID COOLING BATTERY CABIN

— Liquid cooling battery cabin



◎ System introduction:

The liquid-cooling battery cabin consists of a 20-foot custom container, which contains liquid-cooling PACK, BMS battery management system, liquid-cooling unit, fire protection, etc.

◎ System Features:

- High system integration, reliability and safety
- Compact system, high space utilization
- Advanced lithium iron phosphate battery, long cycle life, safe and stable
- Advanced liquid cooling technology effectively extends battery life cycle

◎ System parameters:

Battery cluster parameters		
Cell type	LFP	
Battery pack type	1P48S	1P52S
Cell specification	3.2V/280Ah	3.2V/314Ah
Rated energy	344kWh	417kWh
Cycle life	≥8000 times (25°C, 0.5C, 70%EOL)	
Cooling method	Liquid cooling	
Liquid-cooling battery cabin parameters		
Container parameters	20 feet	
Rated energy	3.44MWh	5.015MWh
Rated voltage	1228.8V	1331.2V
Level of protection	IP55	
Cooling method	Liquid cooling	
Size (W * D * H)	6058*2438*2896mm	

AIR COOLING BATTERY CABIN

—Air cooling battery cabin



◎ System introduction:

Air-cooling battery cabin consists of 20/40 feet custom container, which contains air-cooling PACK, BMS battery management system, air conditioning unit, fire protection, etc.

◎ System Features:

- High system integration, reliability and safety
- Advanced lithium iron phosphate battery, long cycle life, safe and stable
- Mature battery management strategy to improve battery capacity utilization
- Modular design, flexible scheme, easy maintenance

◎ System parameters:

Battery cluster parameters		
Cell type	LFP	
Battery pack type	1P16S	
Cell specification	3.2V/280Ah	
Rated energy	200kWh	
Cycle life	≥6000次 (25°C, 0.5C, 80%EOL)	
Cooling method	Forced air cooling	
Air-cooling battery cabin parameters		
Container parameters	20 feet walk-in	40 feet walk-in
Rated energy	MAX (2MWh)	MAX (4MWh)
Rated voltage	716.8V	
Level of protection	IP54	
Cooling method	Forced air cooling	
Size (W x D x H)	6500*3000*2896mm	12500*3000*2896mm

836KWH LIQUID COOLING OUTDOOR BESS

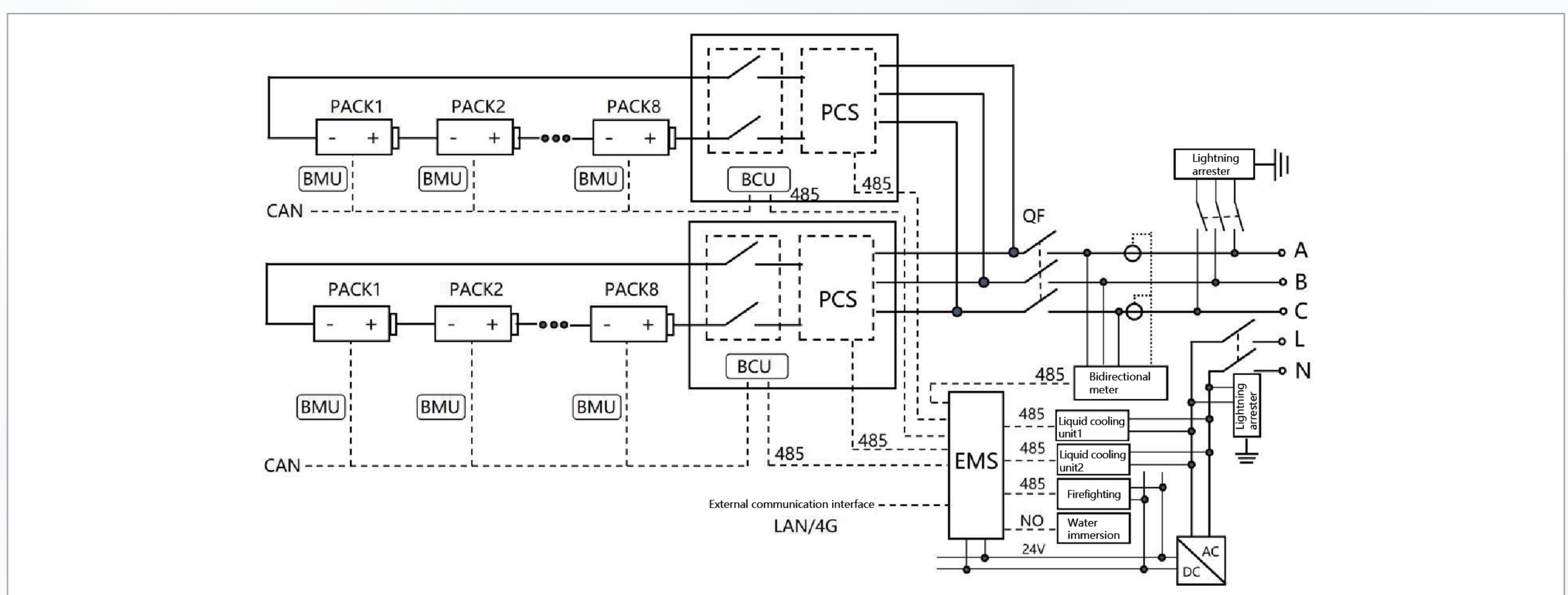
—863kWh liquid cooling outdoor BESS



◎Product features:

- High self-sufficiency rate, providing stable and reliable quality assurance.
- Compact and flexible, occupying a small area with high energy density.
- Rich in functions, supporting various operation modes such as peak shaving, valley filling, and off-grid operation.
- Safe and efficient, with multi-level fire protection linkage and intelligent liquid cooling technology.
- Intelligent expansion, supporting multi-unit parallel connection and cloud platform data monitoring functions.
- High integration, with an integrated design of energy storage converter and high-voltage control box.

◎Circuit block diagram:



◎ **System parameters:**

TYPE	KE-5100-430kW/836kWh
Cell selection	314Ah (Lithium iron phosphate square aluminum case)
Battery configuration capacity (kWh)	836
Battery grouping method	416S 2P
Max. voltage range (Vdc)	1050~1500
Depth of discharge	5%~95% DOD
Cycle life	≥8000次 (25°C, 0.5C, 70%EOL)
Grid-connected access method	3P+PE
Rated output voltage (Vac)	690
Rated output power (kW)	430
Max. output power (kVA)	473
Rated frequency (Hz)	50/60Hz±5Hz
Power factor	-1~+1
AC metering	Three-phase, three-wire, bi-directional metering; class 0.5S
Dimensions (W x H x D)	1868*2485*2668mm
Weight	8000kg
Working ambient temperature (°C)	-40°C~60°C (Derating above 45°C)
Working environment humidity (%RH)	0-90 (non-condensing)
Noise (dB)	≤75
Altitude (m)	≤4000; 3000~4000m derating
Thermal management forms	PCS intelligent air cooling、PACKLiquid cooling + dehumidification
Forms of firefighting	Cabinet grade aerosols + PACK grade aerosols (perfluorohexanone optional)
Communication interface	Ethernet
Human-computer interaction	Industrial Displays
Level of protection	IP66 (converters) /IP54(others)
Charge/discharge switching time (ms)	<100
Max. system efficiency	≥90%
Off-grid function	Optional

261KWH LIQUID COOLING OUTDOOR BESS

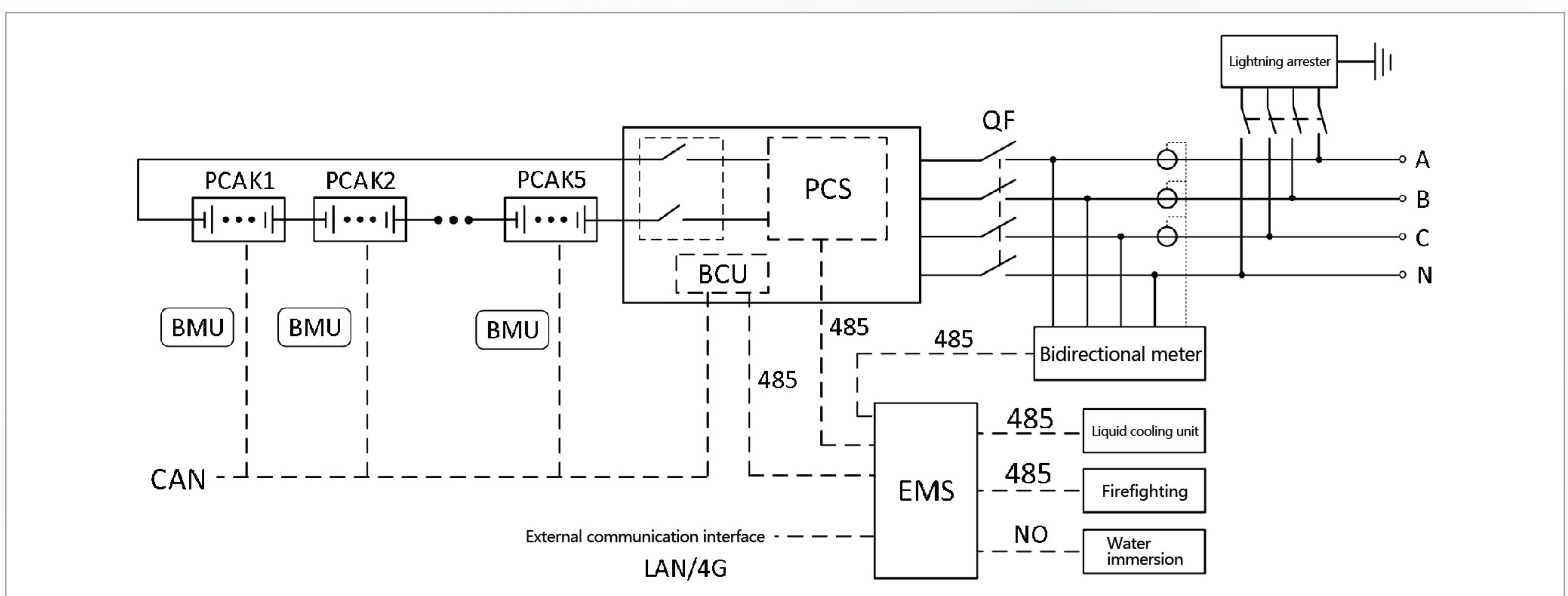
—261kWh liquid cooling outdoor BESS



◎Product Features:

- High self-production rate, stable and reliable quality assurance
- Compact and flexible, small footprint, high energy density
- Rich functions, support peak clipping, off-grid operation and other operation modes
- Safe and efficient, multi-level fire linkage, intelligent liquid cooling technology
- Intelligent expansion, support multi-machine parallel and cloud platform data monitoring function
- High integration, integrated design of energy storage converter and high voltage control box

◎Circuit block diagram:



©**System parameters:**

Product model	KE-5100-135kW/261kWh
Battery selection	314Ah (Lithium iron phosphate square aluminum shell)
Battery configuration capacity (kWh)	261
Battery pack mode	260S1P
Maxi. voltage range (Vdc)	650~1000
Depth of discharge	5%~95% DOD
Cycle life	≥8000 times (25°C, 0.5C, 70%EOL)
Grid-connected access mode	3W+N/3W
Rated output voltage (Vac)	400
Rated output power (kW)	135
Max. output power (kVA)	162
Rated frequency (Hz)	50
Power factor	-1~+1
AC metrology	Three-phase four-wire, two-way metering; class 0.5
Size (W x H x D)	1000*2385*1375mm
Weight	Approx. 2700kg
Working environment temperature (°C)	-20-55 (derating above 45°C)
Working environment humidity (%RH)	0-90(No condensation)
Noise (dB)	≤75
Elevation (m)	≤2000;2000~4000m derating
Thermal management form	Intelligent liquid cooling + dehumidification
Fire fighting form	Cabinet grade perfluorohexanone +PACK grade perfluorohexanone + combustible gas detection
Communication interface	RS-485/Ethernet
Man-machine interaction	Industrial display
Level of protection	IP54
Charge/discharge switching time (ms)	<100
Max. system efficiency	≥90%
Off-grid function	Optional

215KWH LIQUID COOLING OUTDOOR BESS

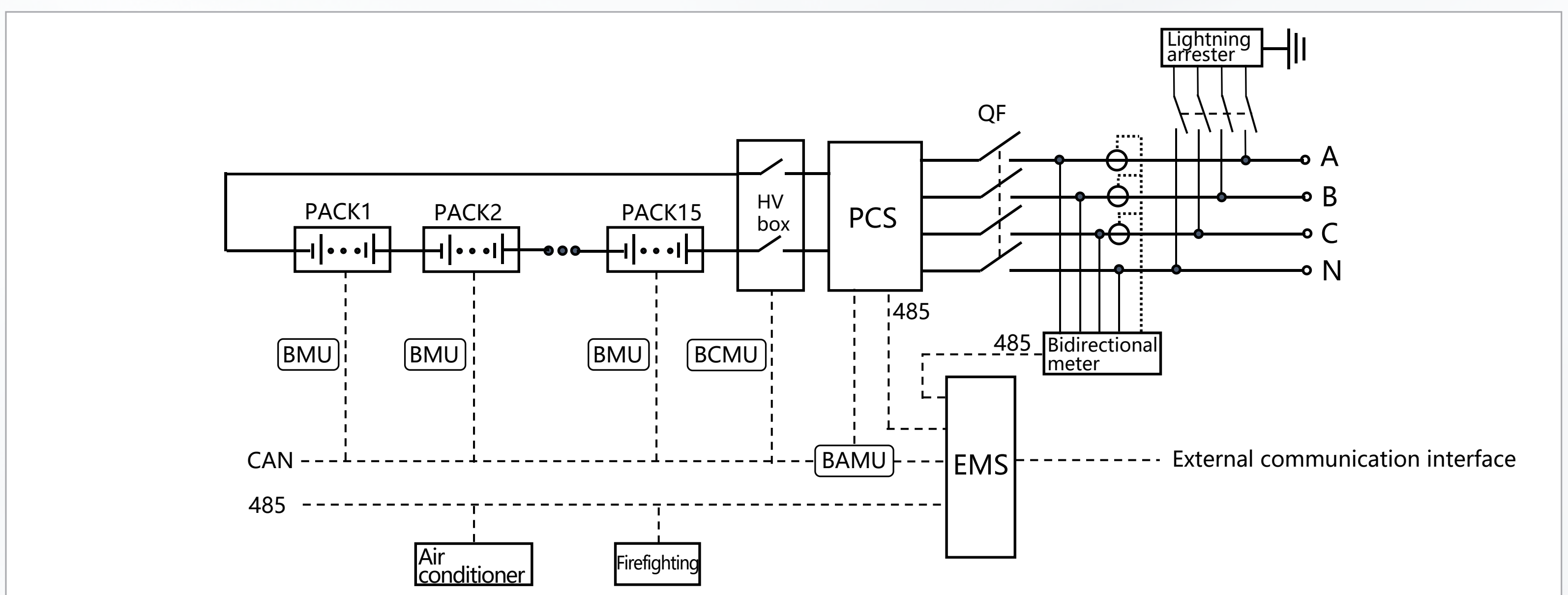
—215kWh liquid cooling outdoor BESS



◎ Product Features:

- Compact and flexible: integrated modular design, high energy density, small footprint, support for multi-machine parallel, fast installation and delivery.
- Rich functions: support peak clipping and valley filling, off-grid operation, anti-reverse flow, platform management and other operation modes, with network construction technology.
- Safety and efficiency: multi-level fire linkage, high reliability and safety; intelligent liquid cooling technology, improve operating efficiency, extend battery life cycle.
- Intelligent expansion: support cloud platform real-time monitoring and mobile APP operation and maintenance, AI data expansion services.

◎ Circuit block diagram:



◎ **System parameters:**

Product model	KE-5100-100kW/215kWh
Battery selection	280Ah (Lithium iron phosphate square aluminum shell)
Battery configuration capacity (kWh)	215
Battery pack mode	240S1P
Max. voltage range (Vdc)	650~950
Depth of discharge	5%~95% DOD
Cycle life	≥8000 times (25°C, 0.5C, 70%EOL)
Grid-connected access mode	3W+N/3W
Rated output voltage (Vac)	400
Rated output power (kW)	100
Maximum output power (kVA)	120
Rated frequency (Hz)	50
Power factor	-1~+1
AC metrology	Three-phase four-wire, two-way metering; class 0.5
Size (W x H x D)	1000*2385*1342mm
Weight	Approx. 2600kg
Working environment temperature (°C)	-20-55 (derating above 45°C)
Working environment humidity (%RH)	0-90(No condensation)
Noise (dB)	≤75
Elevation (m)	≤2000;2000~4000m derating
Thermal management form	Intelligent liquid cooling + dehumidification
Fire fighting form	Cabinet grade perfluorohexanone +PACK grade perfluorohexanone + combustible gas detection
Communication interface	RS-485/Ethernet
Man-machine interaction	Industrial display
Level of protection	IP54
Charge/discharge switching time (ms)	<100
Max. system efficiency	≥90%
Off-grid function	Optional

AIR COOLING OUTDOOR BESS

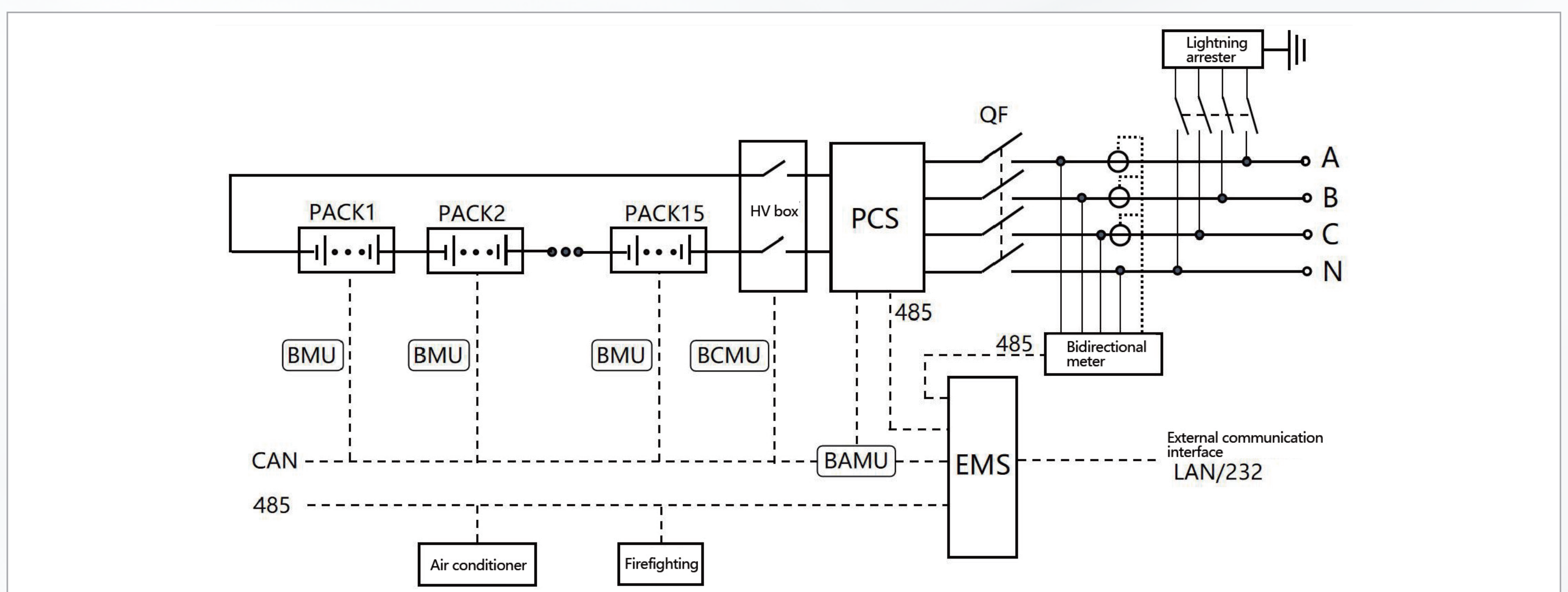
—Air-cooling outdoor BESS



◎Product Features:

- Safe and reliable: single cluster fine management, no battery parallel, no circulating current loss, not only ensure system safety, but also improve system cycle life
- Compact and flexible: cabinet integrated design, high energy density, small footprint, flexible installation mode
- Rich functions: support peak clipping, off-grid support, emergency power backup and other functions, load tracking, off-grid switching and anti-reverse flow
- Intelligent operation and maintenance: modular design to improve the convenience of operation and maintenance;
- cloud-edge collaborative technology to realize remote intelligent monitoring to improve the life cycle benefits of the power station
- Efficient integration: cold and hot independent space design, reduce cold and hot losses, improve operating efficiency
- High degree of protection, outdoor direct installation

◎Circuit block diagram:



© **System parameters:**

Product model	KE-5100-100kW/215kWh	KE-5100-200kW/430kWh
Battery selection	280Ah (Lithium iron phosphate square aluminum shell)	
Battery configuration capacity (kWh)	215	430
Battery pack mode	240S1P	240S1P*2
Max. voltage range (Vdc)	650~900	
Depth of discharge	5%~95% DOD	
Cycle life	≥6000 times (25°C, 0.5C, 80%EOL)	
BMS configuration	Three-level management	
Grid-connected access mode	3W+N	
Rated output voltage (Vac)	400	
Rated output power (kW)	100	200
Max. output power (kVA)	120	240
Rated frequency (Hz)	50	
Power factor	-1~+1	
AC metrology	Three-phase four-wire, two-way metering; class 0.5	
Size (W x H x D)	1720*2400*1200mm	3100*2400*1150mm
Weight	Approx 2600kg	Approx 5000kg
Working environment temperature (°C)	-20-55 (derating above 45°C)	
Working environment humidity (%RH)	0-90(No condensation)	
Noise (dB)	≤75	
Elevation (m)	≤2000;2000~4000m derating	
Thermal management form	Intelligent air cooling + dehumidification	
Fire fighting form	Cabinet grade perfluorohexanone + combustible gas detection	
Communication interface	RS-485/Ethernet	
Man-machine interaction	industrial display	
Level of protection	IP54	
Charge/discharge switching time (ms)	<100	
Max. system efficiency	≥90%	
Off-grid function	Optional	

1.725 MW INTEGRATED ENERGY STORAGE PCS

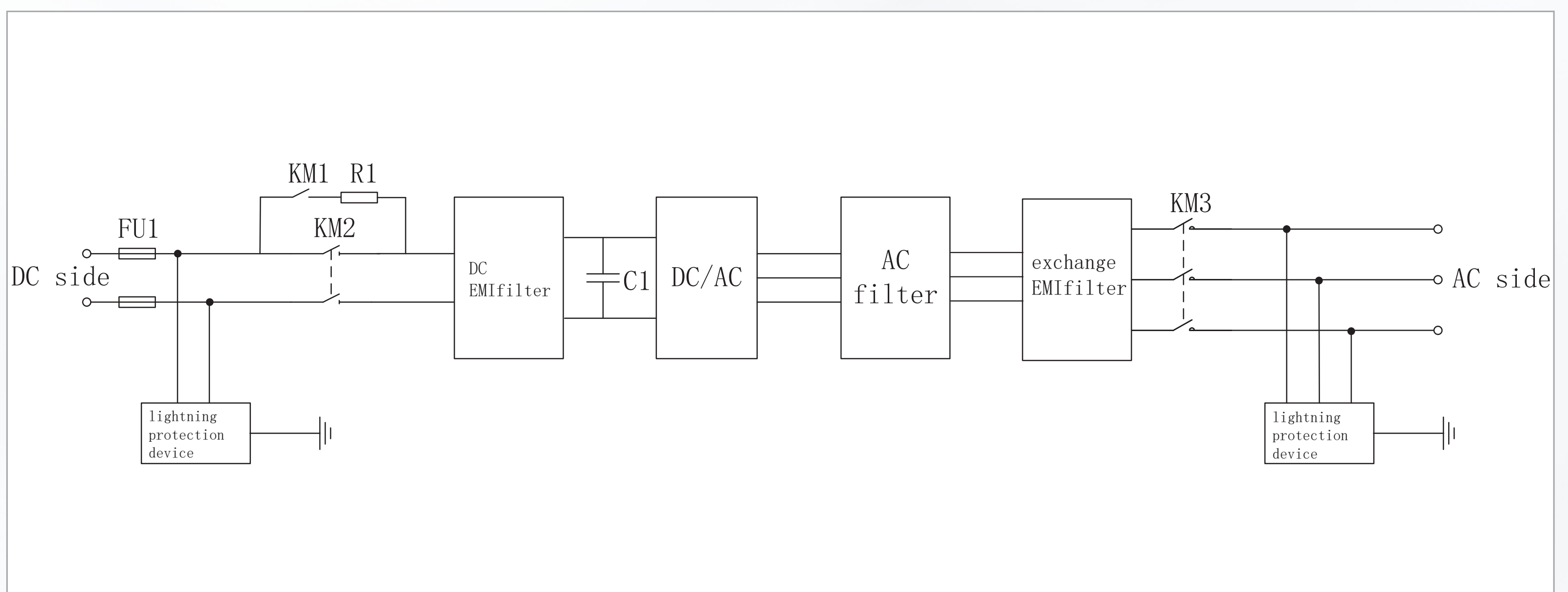
—1.725 MW Integrated Energy Storage PCS



©Product Features:

- Three-level ANPC topology with maximum efficiency of 99%
- Intelligent air cooling, 45°C ring temperature does not derate
- Wide operating voltage range, 1500V without derating
- Reactive power regulation range-1~+1v
- With island operation, primary frequency modulation, black start, automatic and off-grid switching functions
- Support high and low voltage ride-through
- High protection rating (IP55)
- Support multi-machine parallel connection, easy to expand

©Circuit block diagram:



©System parameters:

Product model	KE-5120-1.250MW/0.69kV	KE-5120-1.725MW/0.69kV
DC side parameters		
Max. DC voltage	1500V	
DC voltage range	1000-1500V	
Max. DC current	1403A	1936A
Number of DC input channels	1	
AC side parameters (grid-connected)		
AC output power	1250kVA@45°C / 1375kVA@30°C	1725kVA@45°C / 1897kVA@30°C
Max. AC current	1046A@45°C / 1151A@30°C	1443A@45°C / 1587A@30°C
Rated A.C. voltages	690V	
AC voltage range	586.5-759V	
Rated grid frequency	50Hz/60Hz	
AC current harmonics	<3%(linear load)	
Power factor	>0.99(> 20% load)	
Adjustable range of reactive power	-1~+1	
AC side parameters (off-grid)		
Rated A.C. Voltages	690V	
AC voltage range	586.5-759V	
AC voltage harmonics	<3% (线性负载)	
Unbalanced load capacity	100%	
Rated output frequency	50Hz/60Hz	
System parameter		
Isolation type	Transformerless isolation	
Max. efficiency	99%	
Level of protection	IP55	
Operating temperature range	-35~+60°C(derating operation>45°C)	
Permissible humidity range	0~100%(no condensation)	
Altitude	5000m(derating>2000m)	
Cooling method	Intelligent forced air cooling	
Cooling method	RS485、CAN、Ethernet	
Size (W x H x D)	1000x2400x1500mm	
Weight	Approx. 1500kg	

MODULAR PCS

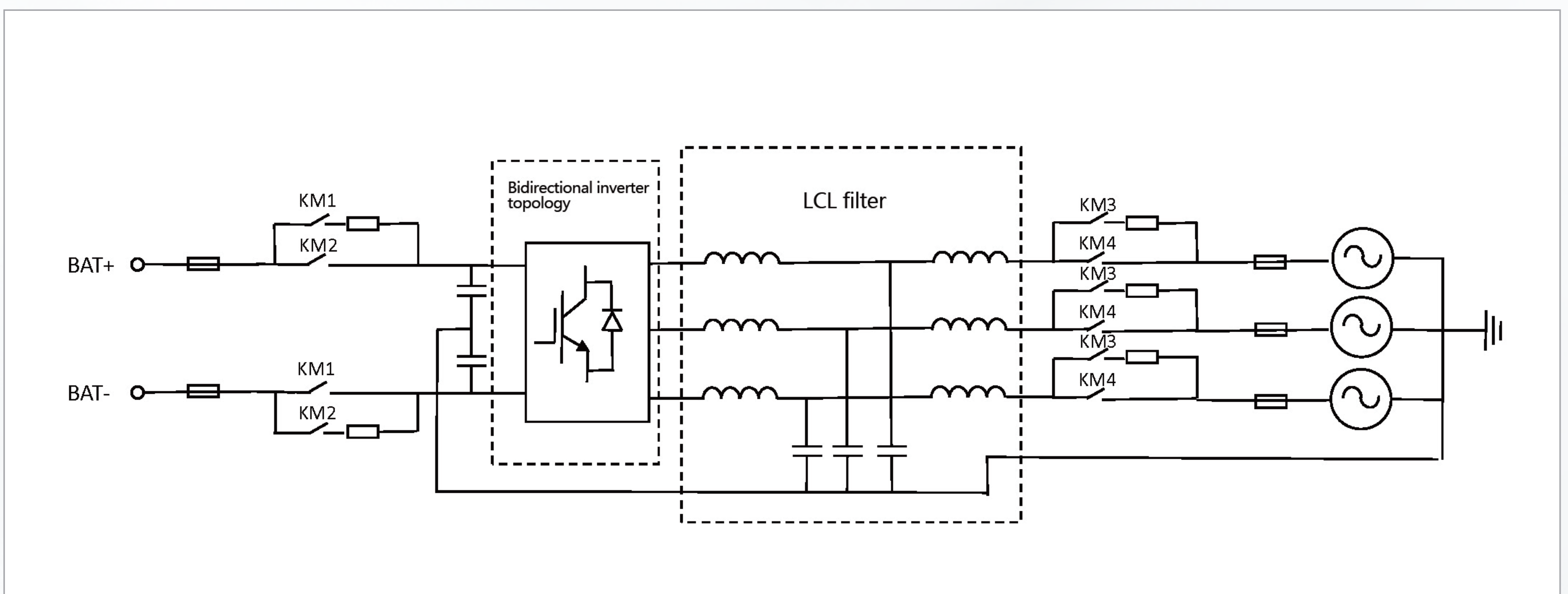
— Modular PCS



◎ Product Features:

- Maximum 16 units
- With black start function
- Harmonic suppression and reactive power compensation
- With high and low voltage ride through function, weak power grid adaptability
- It has primary frequency modulation function and has multiple working modes such as VSG, P/F, and Q/U.

◎ Circuit block diagram:



©System parameters:

Product model	KE-5122-100K
DC parameters	
DC voltage range	650-900V
DC max. voltage	900V
DC max. current	175A
DC max. power	120kW
AC grid-connected parameters	
AC rated power	100kW
AC max. power	120kVA
Overload capacity	1.1 times (long-term) 1.2 times (1min)
AC rated current	145A
THDi	≤3%(rated power)
Rated network voltage	230/400Vac(-20%~15%)
Frequency domain	50Hz/60Hz -3.5Hz/+2.5Hz
Power factor	-1 ~ +1
DC component	<0.5%I _{pn}
Charge-discharge switching time	<100ms
AC off-grid parameters	
AC off-grid voltage	230/400Vac
Output frequency	50/60Hz
THDu	≤2%(linear load)
Unbalanced load capacity	100%
Switch-over time	10ms (with STS)
System parameter	
Maximum efficiency	98.5%
Connection mode	3+N+PE
Communication interface	RS485/CAN/DI/DO interface
Level of protection	IP20
Cooling method	Smart Air Cooling
Operating temperature	-30-60°C(derating>45°C)
Relative humidity	0-95%(no condensation)
Altitude	33000m (derating> 2000m)
Noise	<75dB
Size (W x H x D)	663×440×220mm
Weight	Approximately 48kg

MODULAR PCS

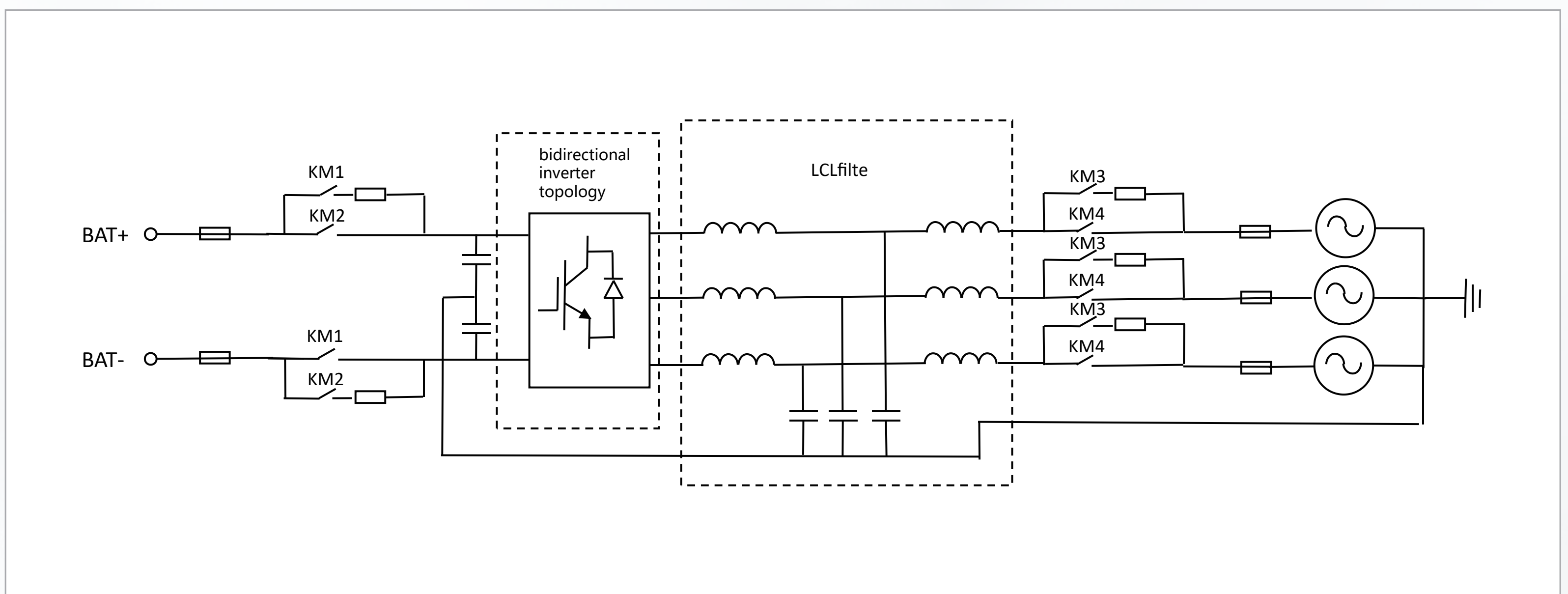
— Modular PCS



◎ Product Features:

- Kelin BMS+PCS+ HV box combination, built-in circuit breaker, can be connected to other manufacturers BMS
- Support multi-machine parallel connection and multiple parallel and off-grid switching modes
- Support 100% unbalanced load
- It has the application conditions of station area electric energy management and energy router scenario.
- Support network control strategy, network switching online
- Support high and low voltage crossing, black start
- Comtrade format fault recording

◎ Circuit block diagram:



©System parameters:

KE-5122-135K-P Technical Data		
DC parameters	DC voltage range	650-1000V
	DC max. current	228A
	DC max. power	148.5kW
	Accuracy of steady voltage and steady current	<1%
AC grid-connected parameters	AC rated power	135kW
	AC maximum power	148.5kVA
	AC rated current	195A
	AC maximum current	215A
	AC current distortion rate	<3%
	Rated network voltage	400V(-20%~15%)
	Frequency domain	50Hz/60Hz±5Hz
	power factor	-1 ~ +1
	DC component	<0.5%I _{pn}
	Charge-discharge switching time	Default <100ms, fastest <20ms
AC off-grid parameters	AC off-grid voltage	230/400Vac
	output frequency	50/60Hz
	THDu	≤3%(linear load)
	Unbalanced load capacity	100%
System parameter	Maximum efficiency	≥98.5%
	Connection mode	3+N+PE/3+PE
	Level of protection	IP65
	Cooling method	Smart Air Cooling
	Operating temperature	-30-60°C (derating>45°C)
	Noise	<75dB
	Elevation	4000m (derating> 3000m)
	DI/DO Quantity	5/4
	Relative humidity	0-100%(no condensation)
	Communication interface	RS485/CAN/ETH (optional)
	Agreement	Modbus /Goose (optional)
	Size	910X700X280mm
Weight	<80kg	

MODULAR PCS

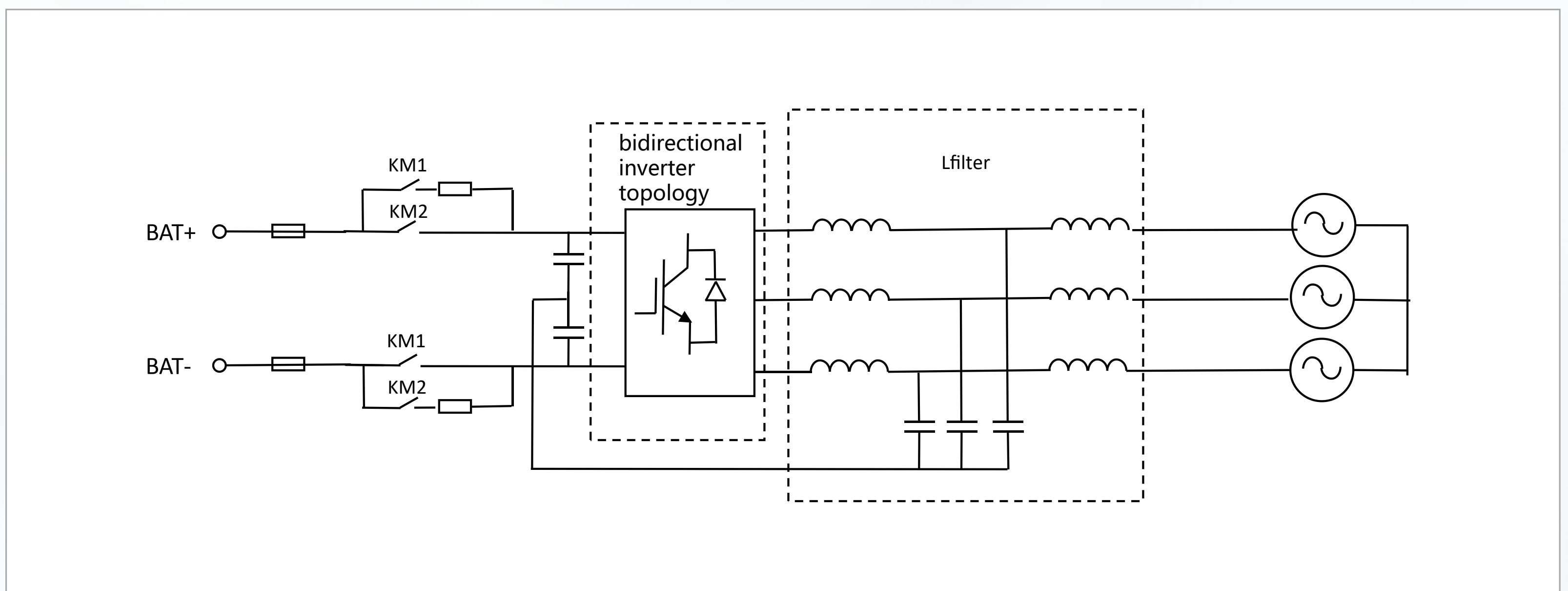
— Modular PCS



◎ Product Features:

- Support network control strategy, network switching online
- Standard GOOSE function, responding to the rapid regulation of the whole station
- High protection level, outdoor independent operation
- Wide operating voltage range, 1500V without derating
- Support multi-machine parallel connection, MW class expansion
- Support high and low voltage crossing, black start
- Comtrade format fault recording
- High protection class (IP55 converter/IP54others)

◎ Circuit block diagram:



©System parameters:

KE-5122-215K-H Technical Data		
DC parameters	DC voltage range	1000-1500V
	DC max. current	236.5A
	DC max. power	236.5kW
	Accuracy of steady voltage and steady current	<1%
AC grid-connected parameters	AC rated power	215kVA
	AC max. power	236.5kVA
	AC rated current	180A
	AC max. current	198A
	AC current distortion rate	<3%
	Rated network voltage	690V(-15%~10%)
	Frequency domain	50Hz/60Hz±5Hz
	Power factor	-1 ~ +1
	DC component	<0.5%I _{pn}
	Charge-discharge switching time	Default <100ms, fastest <20ms
AC off-grid parameters	Max. efficiency	99%
	Connection mode	3+N+PE/3+PE
	Level of protection	IP66
	Cooling method	Smart Air Cooling
System parameter	Operating temperature	-40°C~60°C (45°C without derating)
	Relative humidity	0-100%(no condensation)
	Noise	75dB
	Elevation	4000m (derating>3000m)
	DI/DO Quantity	5/3
	Communication interface	RS485/CAN/ETH
	Agreement	Modbus/GOOSE
	Size	910X820X275mm
Weight	<100kg	

1500V STEP-UP CSS INTEGRATED WITH PCS

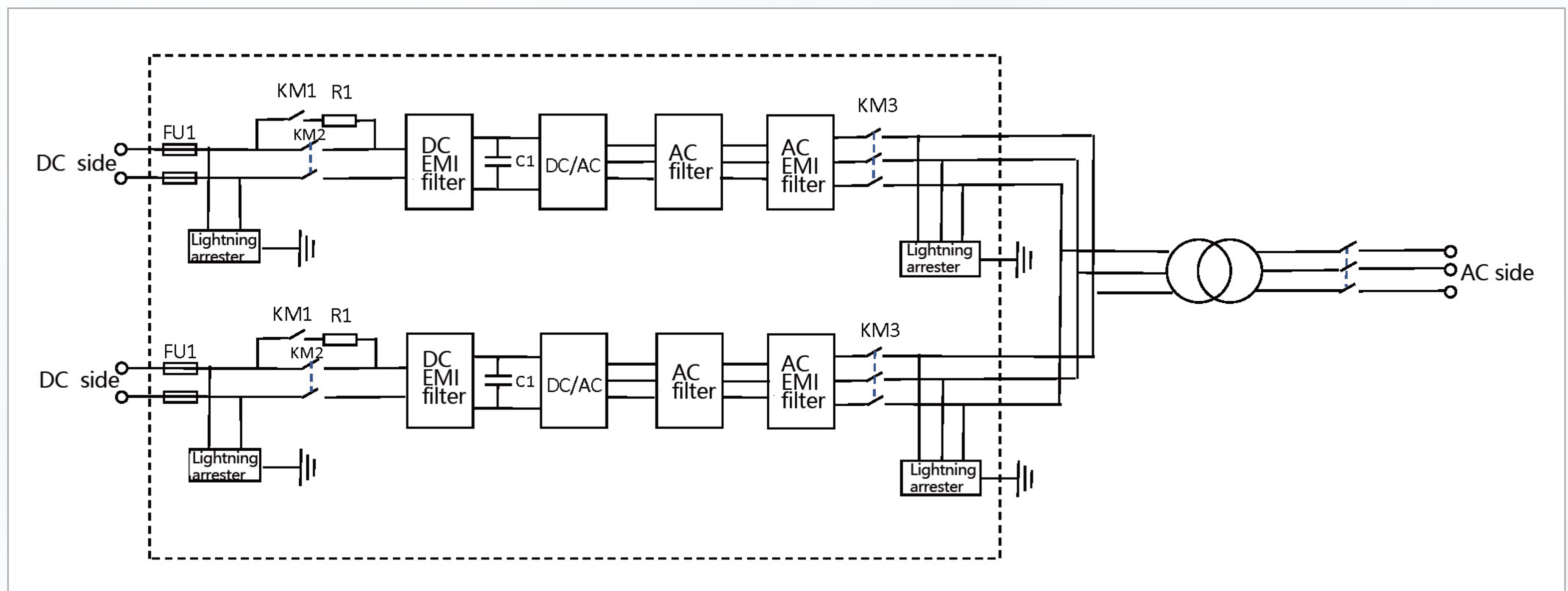
—1500V step-up CSS integrated with PCS



◎Product Features:

- Strong adaptability of power grid, meeting voltage level of 35kV and below
- Three-level ANPC topology for high efficiency
- Intelligent air cooling, 45°C ring temperature without derating
- Wide operating voltage range, 1500V without derating
- Reactive power regulation range-1~+1
- With island operation, primary frequency modulation, VSG, black start, automatic and off-grid switching functions
- Support high and low voltage ride-through
- High protection class (IP55 converter/IP54 others)

◎Circuit block diagram:



©System parameters:

Product model	KE-5120-2.5MW/35kV	KE-5120-3.45MW/35kV
DC side parameters		
Max. DC voltage	1500V	
DC voltage range	1000-1500V	
Max. DC current	1403A*2	1936A*2
Number of DC input channels	2	
AC side parameters (grid-connected)		
AC output power	2500kVA@45°C/2750kVA@30°C	3450kVA@45°C/3795kVA@30°C
Max. AC current	2092A@45°C/2302A@30°C	2886A@45°C/3175A@30°C
Rated A.C. voltages	690V	
AC voltage range	586.5-759V	
Rated grid frequency	50Hz/60Hz	
AC current harmonics	<1.5%(rated power)	
Power factor	>0.99(> 20% load)	
Adjustable range of reactive power	-1~+1	
AC side parameters (off-grid)		
Rated AC voltages	690V	
AC voltage range	586.5-759V	
AC voltage harmonics	<3%(linear load)	
Unbalanced load capacity	100%	
Rated output frequency	50Hz/60Hz	
Transformer parameters		
Isolation mode	dry-type transformer	
Transformer rating	2500kVA	3450kVA
Transformer maximum power	2750kVA	3795kVA
LV/MV voltage	0.69/35kV	
System parameter		
Max. efficiency	99%	
Level of protection	IP55 (converter)/IP54(others)	
Operating temperature range	-35~+60°C(derating operation>45°C)	
Permissible humidity range	0~100%(no condensation)	
Altitude	5000m(derating>2000m)	
Cooling method	Intelligent forced air cooling	
Communication interface	RS485、CAN、Ethernet	
Size (W x H x D)	7200*3000*3000mm	
Weight	Approx. 15000kg	

BATTERY MANAGEMENT SYSTEM

— Battery Management System



KE-5111 Battery Array Management Unit (BAMU)

◎ Product Features:

- Receiving, displaying and setting information collected by the battery cluster management unit
- Charge and discharge statistics
- Control of system emergency stop and bus breaker
- TF card data export for data backup and data analysis
- Support USB flash drive program upgrade
- Local storage of system operational data
- 10.2 inch touch screen



KE-5112 Battery Cluster Management Unit (BCMU)

◎ Product Features:

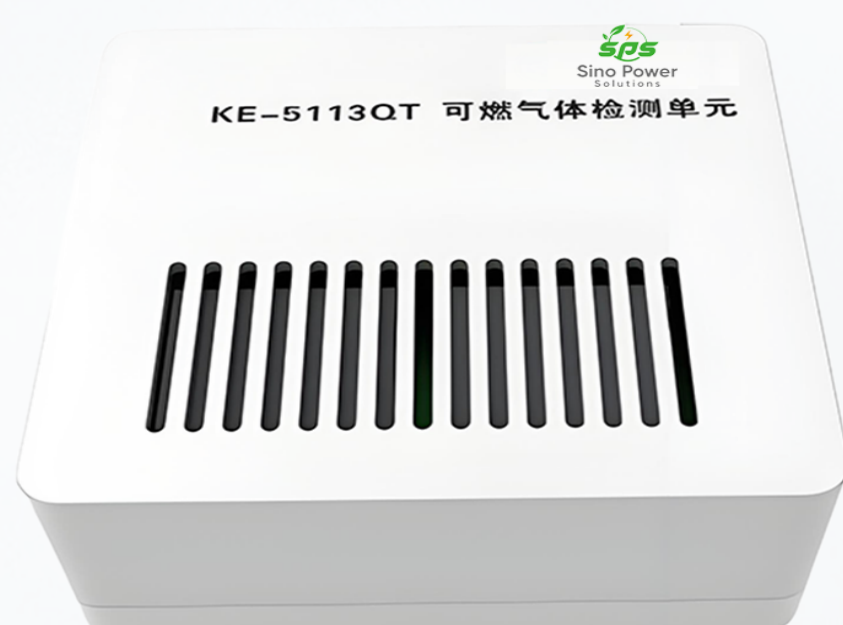
- Total voltage/total current, temperature acquisition, insulation resistance
- Total positive/negative, pre-charge relay control
- DC contactor, fuse status acquisition
- Support onboard clock power RTC, save runtime



KE-5113 Battery Management Unit (BMU)

◎ Product Features:

- 20 temperature channels, 24 battery channels
- Collect cell voltage
- Collect battery temperature
- Cooling fan control
- SOC, SOE, SOH calculation
- Passive equilibrium execution
- Hardware watchdog



KE-5113QT combustible gas detection unit

◎ Product Features:

- Methane detection
- Hydrogen detection
- Carbon monoxide detection

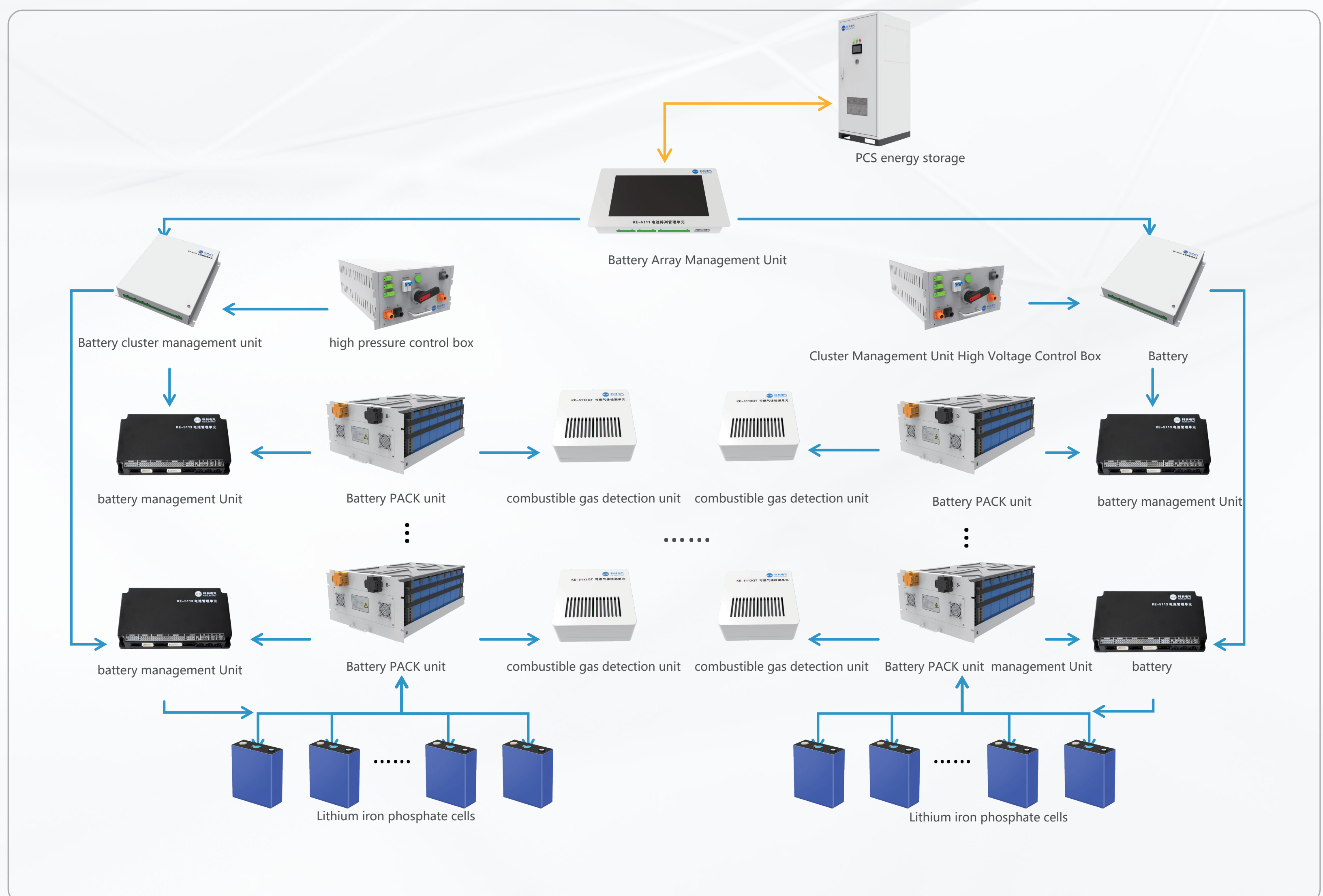


HV Control Box

Product Features:

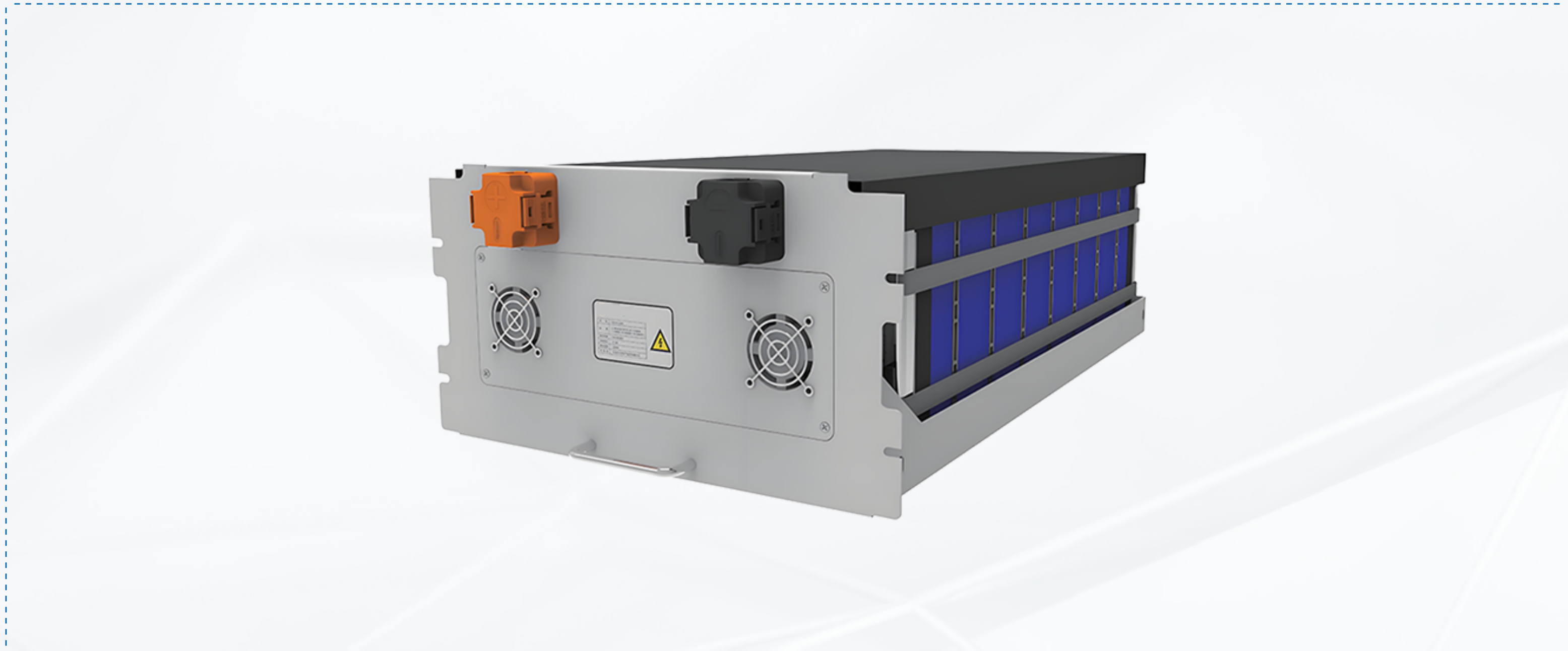
- Battery cluster voltage and current acquisition
- Battery Cluster Loop Relay Control and Protection
- Supply power to battery management unit and battery pack fan
- Data collection and charge/discharge management control of battery pack in cluster
- Support inter-cluster breaker control, single cluster manual exit

Battery compartment system diagram



AIR-COOLED PACK

—Air-cooled PACK



◎Product Features:

- Simple and efficient: The design of the air-cooled PACK is relatively simple, no additional cooling medium, and the system is efficient and reliable.
- Energy saving: can use the surrounding environment to dissipate heat, no additional energy consumption. Fan support speed regulation function, intelligent to make the best temperature.
- Low maintenance cost: Air-cooled PACK has simple structure and low maintenance cost.

◎System parameters:

Project	Parameters/configurations	
Product model	16S1P-L280	14S1P-L280
Compound mode	16S1P	14S1P
Use batteries	Square aluminum shell LFP-280Ah	
Charge-discharge ratio	0.5C	
Rated energy	14.336kWh	12.544kWh
Nominal voltage	51.2V	44.8V
Operating voltage range	44.8~57.6V	39.2~50.4V
Size (W X H X D)	455X239X821.5mm	455X239X739.6mm
Weight	110kg	98 kg
Cooling method	Smart Air Cooled	

LIQUID-COOLED PACK

—Liquid-cooled PACK



◎Product Features:

- Efficient heat dissipation: liquid-cooled efficient heat dissipation system, can more quickly transfer heat out.
- Accurate temperature control: By adjusting the flow rate and temperature of the cooling medium, accurate control of the battery temperature can be achieved, effectively ensuring the performance and life of the battery.
- Noise reduction: liquid-cooled PACK uses liquid circulation for cooling and low noise.
- High reliability: liquid-cooled PACK liquid circulation flow, can evenly cool each battery, improve the reliability of the system.
- Energy saving and environmental protection: the system has high cooling efficiency, which can reduce energy waste and use environmentally friendly cooling medium at the same time.

◎System parameters:

Project	Parameters/configurations	
Product model	48S1P-L280	52S1P-L314
Compound mode	48S1P	52S1P
Use batteries	Square aluminum shell LFP-280Ah	Square aluminum shell LFP-314Ah
Nominal charge-discharge ratio	0.5C	
Rated energy	43.008kWh	52.2496kWh
Nominal voltage	153.6V	166.4V
Operating voltage range	134.4~172.8V	145.6~187.2V
Size (W X H X D)	810*255*1157mm	830*255*1207mm
Weight	320kg	340kg
Cooling method	Intelligent liquid cooling	

DC-DC MODULAR

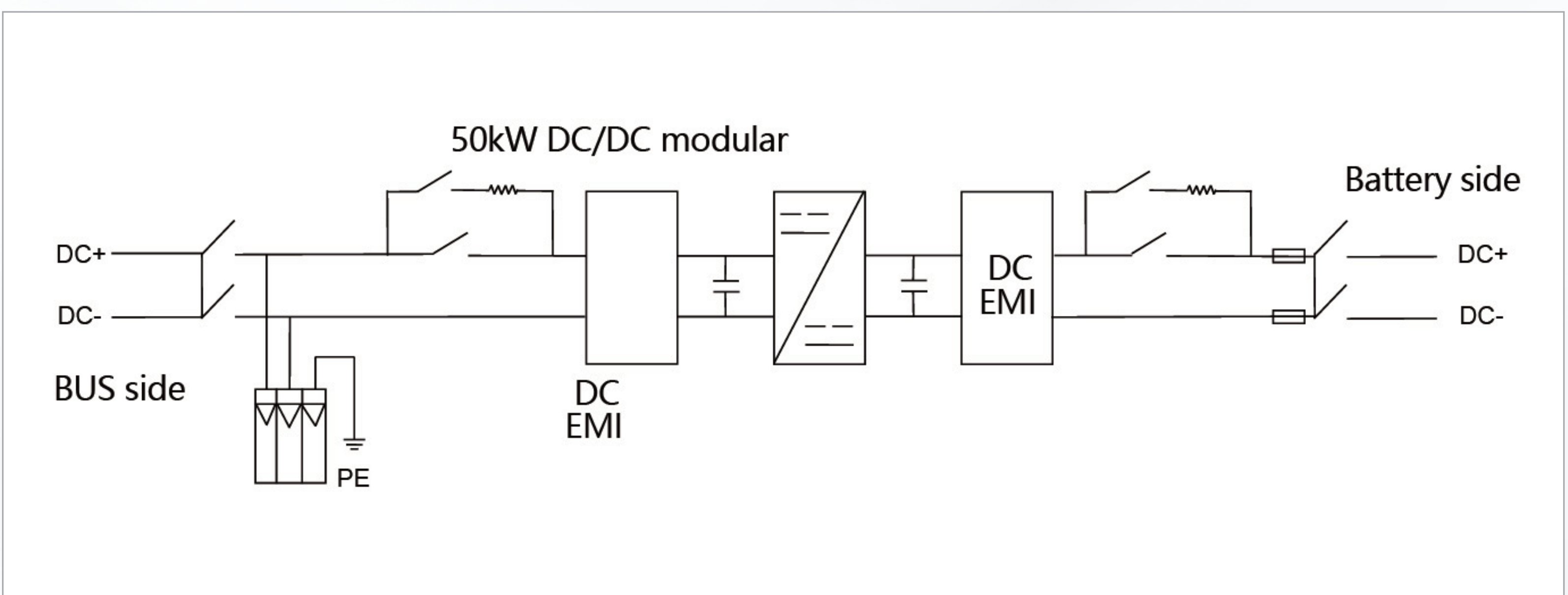
—DC- DC modular



©Product Features:

- Three-level interleaved parallel technology
- Suitable for optical storage and charging system, support MPPT boost, battery bidirectional constant voltage, constant current, constant power rate and other application modes
- Modular design, compact size, easy to install and transport
- Support up to 16 parallel machines, convenient for customers to configure various power requirements

©Circuit block diagram:



©System parameters:

KE-5123-50K Technical Data		
LV side parameters	Voltage range on the LV side	0-900V
	Max. voltage on the LV side	900V
	Rated voltage on the LV side	600V
	Max. current on the LV side	100A
HV side parameter	Voltage range on the HV side	300-1000V
	Rated voltage on the HV side	750V
	Max. current on the HV side	80A
Stabilized voltage precision	Static	$\leq \pm 1\%$
	Dynamic	$\leq \pm 3\%$
Stabilized current precision	Static	$\leq \pm 1\%$
	Dynamic	$\leq \pm 3\%$
System parameter	Power	50kW
	Overload capacity	1.1 times (long-term), 1.2 times (1 minute)
	Charge-discharge switching time	<100ms
	Max,efficiency	98.5%
	Communication interface	RS485/CAN/DI/DO interface
	Level of protection	IP20
	Cooling type	Intelligent air cooling
	Working temperature	30-60°C(>45°C derating)
	Relative humidity	0-95%(No condensation)
	Height	3000m(>2000m derating)
	Noise	<75dB
	Size(Width,height,depth)	440mm×88mm×498mm
	Weight	18kg

KE-5102 ENERGY STORAGE SYSTEM MONITORING DEVICE

—KE-5102 Energy storage system monitoring device



◎Product introduction:

It can be widely used in various occasions of electric power and new energy generation, and can communicate with various equipment, sensors, instruments, SCADA systems, etc. to realize data acquisition, data transmission, protocol conversion and other functions.

◎System specifications:

- PCS device interface: RS485, MODBUS protocol
- BMS equipment interface: RS485, Colin MODBUS protocol
- Fire protection equipment interface: RS485, fire protection protocol
- Combustible Gas Equipment Interface: RS485, Combustible Gas Protocol
- Air conditioning system: RS485, MODBUS protocol
- Transformer LV side total meter: HPLC/RF dual mode, 645 protocol
- Smart circuit breaker: HPLC/RF dual mode, 645 protocol
- Remote signaling (three-way): flooding system, fire fighting system, combustible gas system
- Remote control (one way): outlet control AC side electric operation
- Interface: 4G/5G, Ethernet

◎Scope of application:

Commercial, distributed and household energy storage

◎Features:

- Support data cache, support break point resume
- Supports transmission across physically isolated devices.
- Support remote configuration and maintenance.
- Support CDT, DLT 645, IEC61850/GOOSE, EC101~104, MODBUS, OPC, DNP3.0, MOTT and other protocols
- Configuration management tools are fully functional, convenient and practical.
- Docking with Collin Cloud Platform, you can realize one-click cloud, convenient project implementation and maintenance

ENERGY MANAGEMENT SYSTEM IEMS-S8000

—Energy Management System iEMS-S8000

◎System introduction:

Energy storage monitoring and management system (EMS) is the core of coordinated control of the whole energy storage system. EMS coordinates and controls all equipment in the energy storage system, manages and statistics the charging and discharging capacity of the energy storage system and the operating status of each component equipment of the energy storage system, regulates and controls the energy storage system and collects relevant operating parameters.

EMS is an important tool and guarantee for energy storage system to realize efficient, stable, safe and reliable operation and maximum utilization of renewable energy.

◎EMS characteristics:

- Support domestic system:

EMS system support includes home-made server, home-made operating system, home-made database, home-made time series database.

- big data

EMS supports 10 million points of data acquisition and storage in seconds.

- Holographic Recall and Holographic Inversion

The system supports the ability to recall all collected data, and completely and accurately record and store the accident state of the power grid.

- Edge computing technologies:

Function sinking solves mass data upload blocking, and realizes fine management through AI intelligent analysis.

- Rich algorithms:

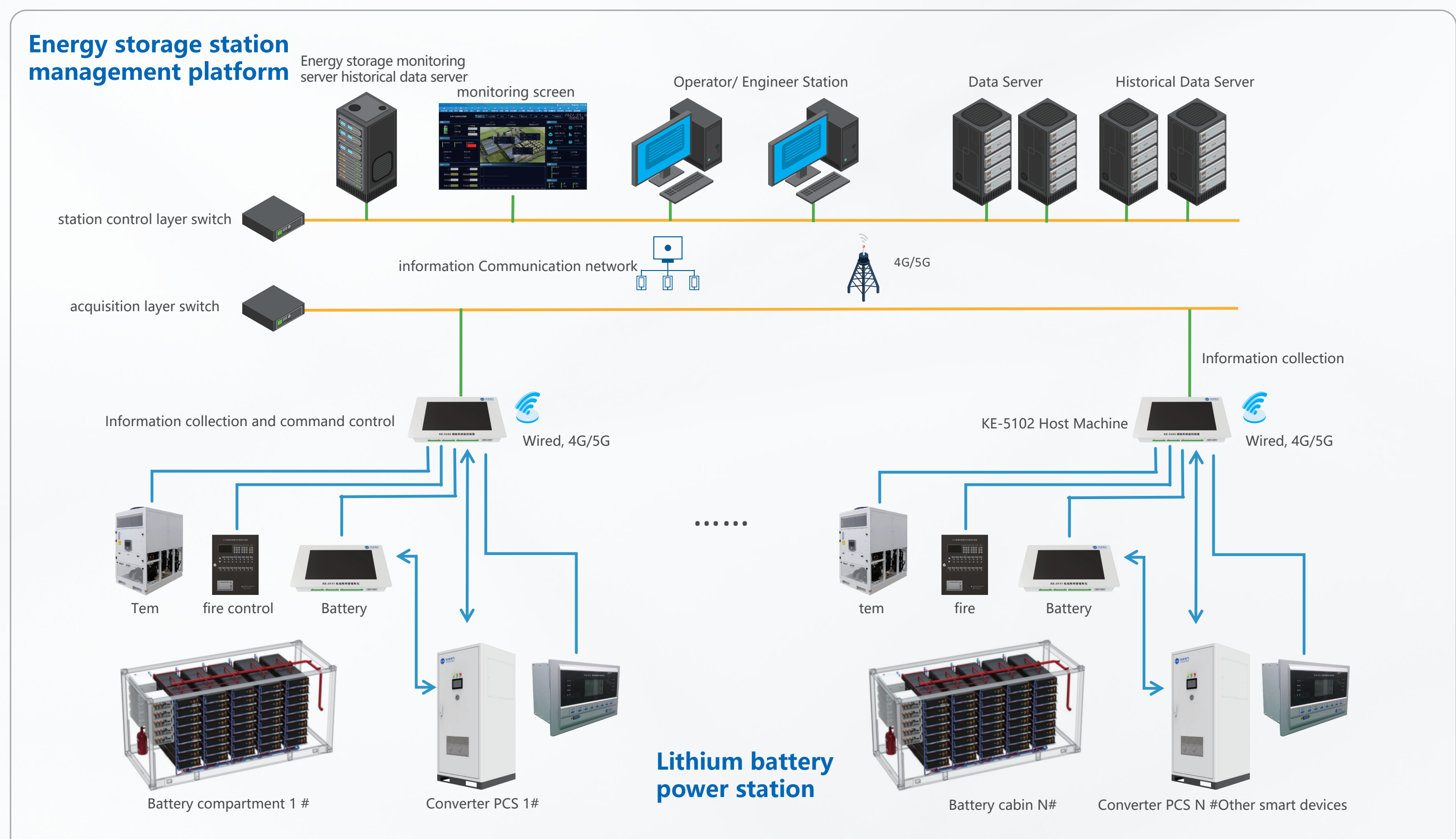
Zoning, time-sharing control, multi-branch fine control, realize peak shaving, frequency modulation, voltage regulation, new energy consumption and smoothing, tracking plan, standby power, voltage support, black start and other functions, Meet the requirements of power supply side, power grid side and user side.

- Panoramic analysis function

Panoramic comprehensive advanced analysis function, according to the battery data sent up, analyzes and evaluates the operation status of the energy storage power station, gives operation warning and alarm, and realizes the full life cycle management of the energy storage power station.

◎Scope of application

Medium and large eberg storage power station




INSPECTION REPORT

— Inspection report

 <p>22002034941</p> <p>检</p> <p>样品名称</p> <p>样品型号</p> <p>委托单位</p> <p>申请单位</p> <p>制造商</p> <p>生产厂</p> <p>检验类别</p> <p>签发日期</p> <p>许昌开普 (国家智能微电网)</p>	№: JW231245		
	<p>样品名称: 储能变流器</p> <p>样品型号: KE-5120-1.725MW/0.69kV</p> <p>样品规格: 3P3W AC690V 1725kW</p> <p>样品数量: 1</p> <p>样品编号/生产编号: YPJW231245-1/LP34E14</p> <p>样品接收日期: 2023年04月26日</p> <p>样品接收状态: 外观完好, 性能待查</p>	<p>委托单位: 石家庄科林电气股份有限公司</p> <p>委托单位地址: 河北省石家庄市鹿泉区红旗大街南降壁路</p> <p>申请单位: /</p> <p>申请单位地址: /</p> <p>制造商: 石家庄科林电气股份有限公司</p> <p>制造商地址: 河北省石家庄市鹿泉区红旗大街南降壁路</p> <p>生产厂: /</p> <p>生产厂地址: /</p> <p>检验地点: 许昌开普检测研究院股份有限公司</p>	<p>检验日期: 2023年05月04日-2023年06月02日</p> <p>检验目的: <input checked="" type="checkbox"/>委托检验 <input type="checkbox"/>认证检验 <input type="checkbox"/>许可证检验 <input type="checkbox"/>监督检验 <input type="checkbox"/>其它</p> <p>检验类别: <input checked="" type="checkbox"/>型式检验 <input type="checkbox"/>性能检验 <input type="checkbox"/>其它</p> <p>检验依据: GB/T 34120-2017 电化学储能系统储能变流器技术规范 GB/T 34133-2017 储能变流器检测技术规范 GB/T 36547-2018 电化学储能系统接入电网技术规范 GB/T 36548-2018 电化学储能系统接入电网技术规范 Q/KE 327-2022 KE-5120 系列储能变流器型式检验规范</p> <p>检验结论: 根据本报告描述的检验结果, 本次型式检验项目满足上述检验依据的要求。</p> <p>签发人: 李亚萍 李亚萍 签发日期: 2023年06月06日</p> <p>备注: /</p>
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 <p>220020349</p> <p>检</p> <p>样品名称</p> <p>样品型号</p> <p>委托单位</p> <p>申请单位</p> <p>制造商</p> <p>生产厂</p> <p>检验类别</p> <p>签发日期</p> <p>许昌开普 (国家智能微电网)</p>	№: JW230373		
	<p>样品名称: 电池管理系统</p> <p>样品型号: KE-5111; KE-5112; KE-5113</p> <p>样品规格: 供电电压: Un=24VDC 最大检测电压: 总电压: 1000V 单体电压: 5V 电流检测范围: -300A~+300A</p> <p>样品数量: 2</p> <p>样品编号: YPJW230373-1, YPJW230373-2</p> <p>样品接收日期: 2023年02月28日</p> <p>样品接收状态: 外观完好, 性能待查</p>	<p>委托单位: 石家庄科林电气股份有限公司</p> <p>委托单位地址: 河北省石家庄市鹿泉区红旗大街南降壁路</p> <p>申请单位: 石家庄科林电气股份有限公司</p> <p>申请单位地址: 河北省石家庄市鹿泉区红旗大街南降壁路</p> <p>制造商: 石家庄科林电气股份有限公司</p> <p>制造商地址: 河北省石家庄市鹿泉区红旗大街南降壁路</p> <p>生产厂: /</p> <p>生产厂地址: /</p> <p>检验地点: 许昌开普检测研究院股份有限公司</p>	<p>检验日期: 2023年02月28日-2023年03月14日</p> <p>检验目的: <input checked="" type="checkbox"/>委托检验 <input type="checkbox"/>认证检验 <input type="checkbox"/>许可证检验 <input type="checkbox"/>监督检验 <input type="checkbox"/>其它</p> <p>检验类别: <input checked="" type="checkbox"/>型式检验 <input type="checkbox"/>性能检验 <input type="checkbox"/>其它</p> <p>检验依据: GB/T 34131-2017 电化学储能电站用锂离子电池管理系统技术规范 Q/KE 325-2022 KE-511X 电池管理系统 (判定依据)</p> <p>检验结论: 根据本报告描述的检验结果, 本次型式检验项目满足上述检验依据的要求。</p> <p>签发人: 李亚萍 李亚萍 签发日期: 2023年03月30日</p> <p>备注: /</p>
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 <p>2200203494</p> <p>检</p> <p>样品名称</p> <p>样品型号</p> <p>委托单位</p> <p>申请单位</p> <p>制造商</p> <p>生产厂</p> <p>检验类别</p> <p>签发日期</p> <p>许昌开普 (国家智能微电网)</p>	№: JW232177		
	<p>样品名称: 能量管理系统</p> <p>样品型号: EMS-S8000</p> <p>样品规格: 电源回路: AC220V 50Hz</p> <p>样品数量: 1</p> <p>样品编号: YPJW232177-1</p> <p>样品接收日期: 2023年07月10日</p> <p>样品接收状态: 外观完好, 性能待查</p>	<p>委托单位: 石家庄科林电气股份有限公司</p> <p>委托单位地址: 河北省石家庄市鹿泉区红旗大街南降壁路</p> <p>申请单位: 石家庄科林电气股份有限公司</p> <p>申请单位地址: 河北省石家庄市鹿泉区红旗大街南降壁路</p> <p>制造商: 石家庄科林电气股份有限公司</p> <p>制造商地址: 河北省石家庄市鹿泉区红旗大街南降壁路</p> <p>生产厂: /</p> <p>生产厂地址: /</p> <p>检验地点: 许昌开普检测研究院股份有限公司</p>	<p>检验日期: 2023年07月11日-2023年07月20日</p> <p>检验目的: <input checked="" type="checkbox"/>委托检验 <input type="checkbox"/>认证检验 <input type="checkbox"/>许可证检验 <input type="checkbox"/>监督检验 <input type="checkbox"/>其它</p> <p>检验类别: <input type="checkbox"/>型式检验 <input type="checkbox"/>性能检验 <input checked="" type="checkbox"/>其它: 系统检验</p> <p>检验依据: GB/T 13730-2002 配电网调度自动化系统 DL/T 634.5104-2009 远动设备及系统 第 5-104 部分: 传输规约 应用层协议 IEC 60870-5-101 网络访问 NB/T 42080-2016 电化学储能电站接入电网技术规范 (判定依据) Q/KE 918-2023 EMS-S8000 能量管理系统 (判定依据)</p> <p>检验结论: 根据本报告描述的检验结果, 本次型式检验项目满足上述检验依据的要求。</p> <p>签发人: 李亚萍 李亚萍 签发日期: 2023年07月24日</p> <p>备注: /</p>
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 <p>220020</p> <p>检</p> <p>样品名称</p> <p>样品型号</p> <p>委托单位</p> <p>申请单位</p> <p>制造商</p> <p>生产厂</p> <p>检验类别</p> <p>签发日期</p> <p>许昌开普 (国家智能微电网)</p>	№: JW233135		
	<p>样品名称: 储能变流器</p> <p>样品型号: KE-5120-500K</p> <p>样品规格: 3P3W AC400V 500kW</p> <p>样品数量: 1</p> <p>样品编号/生产编号: YPJW23135-1/</p> <p>样品接收日期: 2023年09月18日</p> <p>样品接收状态: 外观完好, 性能待查</p>	<p>委托单位: 石家庄科林电气股份有限公司</p> <p>委托单位地址: 河北省石家庄市鹿泉区红旗大街南降壁路</p> <p>申请单位: 石家庄科林电气股份有限公司</p> <p>申请单位地址: 河北省石家庄市鹿泉区红旗大街南降壁路</p> <p>制造商: 石家庄科林电气股份有限公司</p> <p>制造商地址: 河北省石家庄市鹿泉区红旗大街南降壁路</p> <p>生产厂: /</p> <p>生产厂地址: /</p> <p>检验地点: 许昌开普检测研究院股份有限公司</p>	<p>检验日期: 2023年09月20日-2023年12月15日</p> <p>检验目的: <input checked="" type="checkbox"/>委托检验 <input type="checkbox"/>认证检验 <input type="checkbox"/>许可证检验 <input type="checkbox"/>监督检验 <input type="checkbox"/>其它</p> <p>检验类别: <input checked="" type="checkbox"/>型式检验 <input type="checkbox"/>性能检验 <input type="checkbox"/>其它</p> <p>检验依据: GB/T 34120-2017 电化学储能系统储能变流器技术规范 GB/T 34133-2017 储能变流器检测技术规范 Q/KE 327-2022 KE-5120 系列储能变流器型式检验规范 (判定依据)</p> <p>检验结论: 根据本报告描述的检验结果, 本次型式检验项目满足上述检验依据的要求。</p> <p>签发人: 李亚萍 李亚萍 签发日期: 2023年12月18日</p> <p>备注: /</p>
	KETOPBGG5027 V7.2 第 1 页 共 6 页		