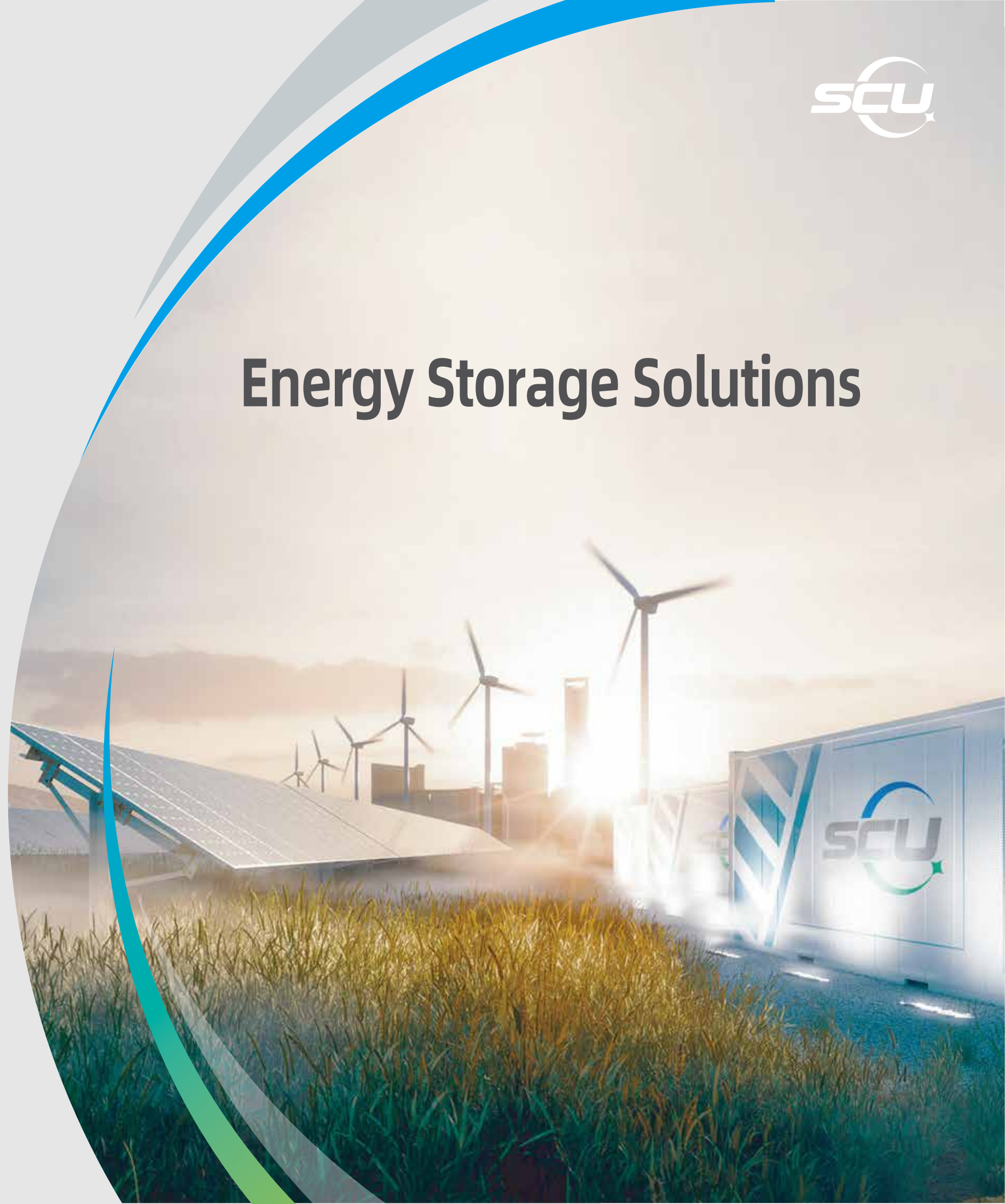




Energy Storage Solutions



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Energy storage SOLUTIONS

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Multifunctional Power Conversion System

The multi-functional bi-directional converter can realize the bi-directional conversion from DC to AC and from AC to DC. It can not only convert AC into DC to charge the battery, but also convert DC into AC to supply power to the load or feed back to the grid. The system adopts advanced digital control technology, which optimizes the control performance and improves the reliability of the system. It can realize seamless switching between grid-connected discharge, grid-connected charging and off grid operation modes.



Configuration



AC/DC Module

Bidirectional AC / DC converter can realize the bidirectional conversion from DC to AC and AC to DC. It can not only convert AC to DC to charge battery, but also convert DC to AC to supply power to load or feed back to power grid.



Static Transfer Switch (optional)

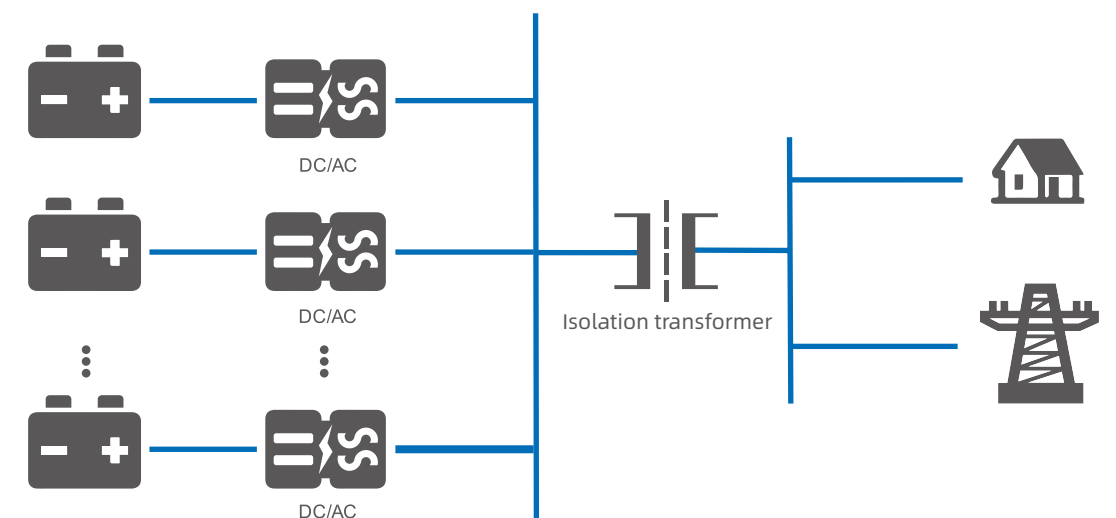
Under normal working condition, the static switch is closed. When the power supply is interrupted, the static switch is immediately disconnected. The system turns to off grid power supply, and the battery is discharged for the load.



Power Management System

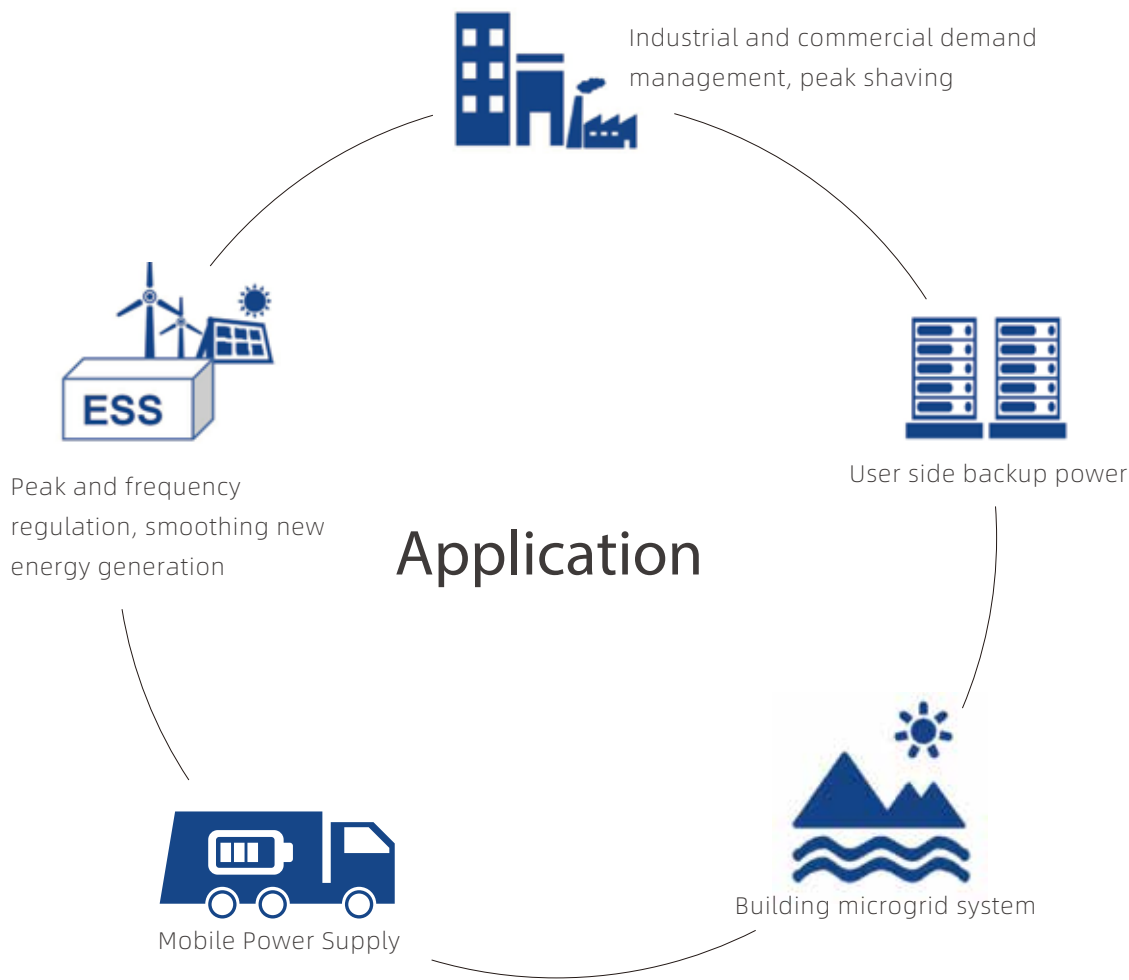
System operation data monitoring, operation strategy management, historical data record, system status record, etc.

System topology



Key product features and benefits

- Multiple working modes.
- Seamless switching between on-grid and off grid modes,<10ms.
- 3P3W and 3P4W optional.
- RS485 , CAN , Ethernet communication modes.
- Functions of low voltage ride through and reactive power compensation.
- 100% unbalanced load capacity in off grid operation.
- Continuous 105% rated output power.
- AC and DC dual input redundant power supply.
- Modular design and flexible product.
- High efficiency, high reliability.
- Battery technology independence.
- PV direct access.



High efficiency integrated PCS systems based on 50kW module



Model: **EPCS50,EPCS100**
Max. Capacity of system: **50kW,100kW**
Power module model: **PCM50**
Power module capacity: **50kW**
Dimension: **600*1000*2000**(W*D*H)mm



Model: **EPCS150,EPCS200,EPCS250**
Max. Capacity of system: **150kW,200kW, 250kW**
Power module model: **PCM50**
Power module capacity: **50kW**
Dimension: **1200*1000*2000**(W*D*H)mm

Model	EPCS50	EPCS100	EPCS150	EPCS200	EPCS250
DC Parameter					
Voltage range	DC580V ~ DC900V				
DC channel Qty	1	2	3	4	5
Max current per channel	85A				
AC parameters (On-grid)					
Output	3W+N+PE/3W+PE				
Rated power	50KW	100KW	150KW	200KW	250KW
Rated voltage	AC 380V/400V				
Rated Current	75A	151A	227A	303A	379A
Voltage range	-15% ~ +10%				
Rated frequency	50Hz/60Hz				
Frequency range	±2Hz				
Power factor	-0.9~+0.9				
Output current harmonics	≤ 3% (Rated power)				
On-off-grid switching time	<100ms				
AC parameters (Off-grid)					
Output	3W+N+PE/3W+PE				
Rated power	50KW	100KW	150KW	200KW	250KW
Rated voltage	AC 380V/400V				
Rated frequency	50Hz/60Hz				
Output voltage harmonics	≤3% (linear full load)				
Unbalanced load capacity	100%				
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min;120%); stop operation				
Environment					
Working temperature	-20℃ ~ 55℃ (>45℃ derating)				
Relative humidity	0% RH ~ 95% RH, No condensation				
Working altitude	< 45℃, 2000m; 2000m ~ 4000m Derating				
Noise	< 75dB				
Others					
Communication	CAN/RS485				
Isolation	Isolation transformer				
Protection	IP20				
Cooling	Air cooling, intelligent fan regulation				
Maximum efficiency	97.50%				
Dimension W*D*H	600*1000*2000mm		1200*1000*2000mm		
Weight	300Kg	330Kg	500Kg	530Kg	560Kg
Certificate	EN50549/G99/IEC62477-1/EN61000/IEC61727/IEC62116/VDE4105				

High efficiency integrated PCS systems based on 100kW module



Model: **EPCS300,EPCS400,EPCS500,EPCS600**
Max. Capacity of system: **300kW,400kW,500kW,600kW**
Power module model: **PCM100**
Power module capacity: **100kW**
Dimension:**1400*1000*2000** (W*D*H)mm

Model	EPCS300		EPCS400	EPCS500	EPCS600
DC Parameter					
Voltage range	DC680V - DC900V				
DC channel Qty	3	4	5	6	
Max current per channel	170A				
AC parameters (On-grid)					
Output	3W+N+PE/3W+PE				
Rated power	300KW	400KW	500KW	600KW	
Rated voltage	AC 380V/400V				
Rated Current	454A	606A	758A	909A	
Voltage range	-15% ~ +10%				
Rated frequency	50Hz/60Hz				
Frequency range	±2Hz				
Power factor	-0.9~+0.9				
Output current harmonics	≤ 3% (Rated power)				
On-off-grid switching time	<100ms				
AC parameters (Off-grid)					
Output	3W+N+PE/3W+PE				
Rated power	300KW	400KW	500KW	600KW	
Rated voltage	AC 380V/400V				
Rated frequency	50Hz/60Hz				
Output voltage harmonics	≤3% (linear full load)				
Unbalanced load capacity	100%				
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min;120%); stop operation				
Environment					
Working temperature	-20℃ ~ 55℃ (> 45℃derating)				
Relative humidity	0% RH ~ 95% RH, No condensation				
Working altitude	<45℃, 2000m; 2000m ~ 4000m Derating				
Noise	< 75dB				
Others					
Communication	CAN/RS485				
Isolation	NO				
Protection	IP20				
Cooling	Air cooling, intelligent fan regulation				
Maximum efficiency	98.5% (No Isolatin transformer)				
Dimension W*D*H	1400*1000*2000mm				
Weight	600Kg	650Kg	700Kg	750Kg	
Certificate	EN50549/G99/IEC62477-1/EN61000/IEC61727/IEC62116/VDE4105				

Integrated PCS systems with wide voltage range




Model: **EHPCS50,EHPCS100**
Max. Capacity of system: **50kW,100kW**
Power module model: **PCMZ50**
Power module capacity: **50kW**
Dimension:**600*1000*2000** (W*D*H)mm



Model: **EHPCS150,EHPCS200,EHPCS250**
Max. Capacity of system: **150kW,200kW, 250kW**
Power module model: **PCMZ50**
Power module capacity: **50kW**
Dimension:**1200*1000*2000** (W*D*H)mm

Model	EHPCS50	EHPCS100	EHPCS150	EHPCS200	EHPCS250
DC Parameter					
Voltage range	DC200V - DC800V				
DC channel Qty	1	2	3	4	5
Max current per channel	135A				
AC parameters (On-grid)					
Output	3W+N+PE/3W+PE				
Rated power	50KW	100KW	150KW	200KW	250KW
Rated voltage	AC 380V/400V				
Rated Current	75A	151A	227A	303A	379A
Voltage range	-15% ~ +10%				
Rated frequency	50Hz/60Hz				
Frequency range	±2Hz				
Power factor	-0.9~+0.9				
Output current harmonics	≤ 3% (Rated power)				
On-off-grid switching time	<100ms				
AC parameters (Off-grid)					
Output	3W+N+PE/3W+PE				
Rated power	50KW	100KW	150KW	200KW	250KW
Rated voltage	AC 380V/400V				
Rated frequency	50Hz/60Hz				
Output voltage harmonics	≤3% (linear full load)				
Unbalanced load capacity	100%				
Overload capacity	105%]: continuous operation; (105% ~ 110%]: 10min;110%); stop operation				
Environment					
Working temperature	-20℃ ~ 55℃ (>45℃derating)				
Relative humidity	0%RH ~ 95%RH, No condensation				
Working altitude	<45℃, 2000m; 2000m ~ 4000m Derating				
Noise	< 75dB				
Others					
Communication	CAN/RS485				
Isolation	Isolation Transformer				
Protection	IP20				
Cooling	Air cooling, intelligent fan regulation				
Maximum efficiency	95.50%				
Dimension W*D*H	600*1000*2000mm		1200*1000*2000mm		
Weight	320Kg	350Kg	530Kg	560Kg	580Kg
Certificate	EN50549/G99/IEC62477-1/EN61000/IEC61727/IEC62116/VDE4105				


Hybrid PCS system with solar access



Model:**SPCS50**
MPPT: **50kW**
PCS: **50kW**
Dimension:
600*1000*2000(W*D*H)mm



Model:**SPCS100**
MPPT: **100kW**
PCS: **100kW**
Dimension:
1200*1000*2000(W*D*H)mm




Model:**SPCS150**
MPPT: **150kW**
PCS: **150kW**
Dimension:
1200*1000*2000(W*D*H)mm

Model	SPCS50		SPCS100	SPCS150
PV Parameter				
MPPT voltage range	DC200V ~ DC700V			
MPPT full power Volt range	DC370V ~ DC700V			
MPPT channel Qty	1	2	3	
Max current per channel	135A			
DC Parameter				
Voltage range	DC580V ~ DC900V			
Max current per channel	85A	170A	255A	
AC parameters (On-grid)				
Output	3W+N+PE /3W+PE			
Rated power	50KW	100KW	150KW	
Rated voltage	AC 380V/400V			
Rated Current	75A	151A	227A	
Voltage range	-15% ~ +10%			
Rated frequency	50Hz/60Hz			
Frequency range	±2Hz			
Power factor	-0.9~+0.9			
Output current harmonics	≤ 3% （Rated Power）			
AC parameters (Off-grid)				
Output	3W+N+PE /3W+PE			
Rated power	50KW	100KW	150KW	
Rated voltage	AC 380V/400V			
Rated frequency	50Hz/60Hz			
Output voltage harmonics	≤ 3% (linear full load)			
Unbalanced load capacity	100%			
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min;120%); stop operation			
Environment				
Working temperature	-20℃ ~ 55℃（>45℃derating）			
Relative humidity	0%RH ~ 95%RH, No condensation			
Working altitude	<45℃, 2000m; 2000m ~ 4000m Derating			
Noise	< 75dB			
Others				
Communication	CAN/RS485			
Isolation	Isolation transformer			
Protection	IP20			
Function	Solar Energy Self-use			
Cooling	Air cooling, intelligent fan regulation			
Dimension W*D*H	600*1000*2000mm	1200*1000*2000mm	1200*1000*2000mm	
Weight	550kg	750kg	850kg	

Rack-mounted PCS module—easy for integration



Model:**PCM50 II HC**
Capacity: **50kW**
Dimension:
560*530*133(W*D*H)mm



Model:**PCM100 II HC**
Capacity: **100kW**
Dimension:
560*530*177(W*D*H)mm

Model	PCM50 II HC		PCM100 II HC
DC Parameter			
Voltage range	DC680V ~ DC900V		
Rated Power	50KW	100KW	
DC channel Qty	1	1	
Max current	85A	170A	
AC parameters (On-grid)			
Output	3W+N+PE/3W+PE		
Rated power	50KW	100KW	
Rated voltage	AC 380V/400V		
Rated Current	75A	151A	
Voltage range	-15% ~ +10%		
Rated frequency	50Hz/60Hz		
Frequency range	±2Hz		
Power factor	-0.9~+0.9		
Output current harmonics	≤ 3% (Rated power)		
On-off-grid switching time	<100ms		
AC parameters (Off-grid)			
Output	3W+N+PE/3W+PE		
Rated power	50KW	100KW	
Rated voltage	AC 380V/400V		
Rated frequency	50Hz/60Hz		
Voltage accuracy	1%		
Frequency accuracy	±0.2Hz		
Output voltage harmonics	≤3% (linear full load)		
Unbalanced load capacity	100%		
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min;120%); stop operation		
Environment			
Working temperature	-20℃ ~ 55℃ (>45℃ derating)		
Relative humidity	0%RH ~ 95%RH, No condensation		
Working altitude	<45℃, 2000m; 2000m ~ 4000m Derating		
Noise	< 75dB		
Others			
Communication	CAN/RS485		
Isolation	NO		
Protection	IP20		
Cooling	Air cooling, intelligent fan regulation		
Maximum efficiency	98.5%		
Dimension W*D*H	560*530*133mm	560*530*177mm	
Weight	30Kg	40Kg	

Innovative Lithium Battery System

The lithium battery system consists of rack, battery modules, battery management system (BMS), display control system and protection system. 2 level BMS design, hierarchical linkage and multiple monitoring of system status. Relay, fuse, circuit breaker and BMS constitute a comprehensive protection system integrating electrical safety and functional safety.

Configuration



Battery System

The system mainly consists of safe, efficient and long-life lithium iron phosphate cells, which are connected in series to form battery modules, and multiple modules are connected in series to form battery clusters.



Battery Management System

The core components of the system can effectively protect the battery from overcharge, overdischarge and over-current. At the same time, the balanced management of the cells can ensure the safe, reliable and efficient operation of the whole system.



Power Management System

System operation data monitoring, operation strategy management, historical data record, system status record, etc.

Key product features and benefits

Safe and reliable

- High quality iron phosphate lithium battery.
- Intelligent air cooling design, long service life, stable operation.
- Three level BMS design of module, cabinet and system, multiple state monitoring, hierarchical linkage, comprehensive guarantee of battery system safety.
- Battery module is designed with PC bracket and reinforce steel structure to guarantee the the highest safety of the system, in transportation, installation and operation.

Efficient and convenient

- Energy system, high energy density, high integration.
- Outstanding high rate performance, maximum 2C charging and 6C discharging.
- Modular design, convenient for maintenance, management and expansion.

Active equalization

- Three level BMS design, energy transferring active equalization, to overcome the impact of single cell capacity on system capacity.
- The equalization accuracy is less than 2%, and the equalization capacity can reaches 10% of the rated output.

Cost optimization

- Small size, light weight, less space and installation cost.
- Long cycle life, low failure rate, reduce operation and maintenance investment.

High C-rate system



- EBC480/40**

Battery capacity : **40Ah**

Rated voltage: **480Vdc**

Dimension: **600*550*2000** (W*D*H)mm
- EBC480/80**

Battery capacity : **80Ah**

Rated voltage: **480Vdc**

Dimension: **600*800*2000**(W*D*H)mm
- EBC480/120**

Battery capacity : **120Ah**

Rated voltage: **480Vdc**

Dimension: **600*950*2000** (W*D*H)mm
- EBC480/160**

Battery capacity : **160Ah**

Rated voltage: **480Vdc**

Dimension: **600*1150*2000** (W*D*H)mm

Model	EBC480/40	EBC480/80	EBC480/120	EBC480/160
Battery capacity	40Ah	80Ah	120 Ah	160 Ah
Rated voltage	480V	480V	480V	480V
Rated capacity	19.2kWh	38.4kWh	57.6kWh	76.8kWh
Battery voltage range	420V ~ 547.5V (cell2.8~3.55)			
Max. Continuous charging current	80A (2C)	160A (2C)	240A (2C)	320A (2C)
Max. Continuous discharging current	240A (6C)	400A (5C)	480A (4C)	480A (3C)
Working Temperature	Charging: 0°C~ 50°C ; Discharging -20°C~ 55°C			
Best Working Temperature	15°C~ 35°C			
Storage temperature	-40°C~ 60°C ; (System 20°C~40°C)			
Working environment	Altitude: < 2500m; Relative humidity:< 95% (no condensation)			
Cooling	Intelligent air cooling			
Insulation resistance	> 500MΩ@1500VDC			
Isolation and withstand voltage	2500VDC/1min			
Internal power supply mode	24VDC(Built-in DC/DC)			
Static power consumption	35W			
Data display	7" TN true color LCD screen			
IP rating	IP21			
Dimension				
W(mm)	600	600	600	600
D(mm)	550	800	950	1150
H(mm)	2000	2000	2000	2000
Weight	400kg	600kg	800kg	1000kg
Life cycle	3000 times (1C@25°C charging&discharging @100%DOD EOL80%)			
Battery Management System (BMS)				
Cell voltage acquisition range	1-5V			
Cell voltage acquisition accuracy	≤ 10mV			
Total voltage acquisition accuracy	± (0.5%FS+0.1%RD) mv			
Current acquisition range	0~±375ADC	0~±500ADC	0~±600ADC	0~±600ADC
Current acquisition accuracy	≤ ±1%			
Temperature acquisition range	-20 ~ 125°C			
Temperature acquisition accuracy	≤ ±1°C			
Charging over current protection	> 2C , 10s; > 2.2C , 5s; > 2.5C , 1s			
Discharging over current protection	> 6.2C,10s; > 6.5C,1s	> 5.2C,10s; > 5.5C,1s	> 4.2C,10s; > 4.5C,1s	> 3.2C,10s; > 3.5C,1s
Over temperature protection	Discharging > 55°C (20s) ; Charging > 50°C (20s)			
Low temperature protection	Discharging < -20°C (1s) ; Charging < 0°C (1s)			
Communication mode	Can, RS485, dry contact			
Certification	IEC62619/IEC62620/EN61000/UN38.3			

High energy system



EBC512/100
Battery capacity : **100Ah**
Rated voltage: **512 Vdc**
Dimension: **1360*650*1400** (W*D*H)mm

EBC480/150
Battery capacity : **150Ah**
Rated voltage: **480 Vdc**
Dimension: **1360*650*1400**(W*D*H)mm

EBC460/200
Battery capacity : **200Ah**
Rated voltage: **460 Vdc**
Dimension: **1360*650*1400** (W*D*H)mm

EBC768/100
Battery capacity : **100Ah**
Rated voltage: **768 Vdc**
Dimension: **1360*650*2000**(W*D*H) mm

EBC768/150
Battery capacity : **150Ah**
Rated voltage: **768 Vdc**
Dimension: **1360*650*2000**(W*D*H)mm

EBC768/200
Battery capacity : **200Ah**
Rated voltage: **768 Vdc**
Dimension: **1360*650*2000**(W*D*H)mm



Model	EBC512/100	EBC480/150	EBC460/200	EBC768/100	EBC768/150	EBC768/200
Battery capacity	100Ah	150Ah	200Ah	100Ah	150Ah	200Ah
Rated voltage	512V	480V	460V	768V		
Rated capacity	51.2kWh	72kWh	92kWh	76.8kWh	115.2kWh	153.6kWh
Battery voltage range	448V ~ 568V	420V ~ 532.5V	403.2V ~ 511.2V	672V ~ 852V		
Max. Continuous charging current	100A (1C)	150A (1C)	200A (1C)	100A (1C)	150A (1C)	200A (1C)
Max. Continuous discharging current	100A (1C)	150A (1C)	200A (1C)	100A (1C)	150A (1C)	200A (1C)
Working Temperature	Charging: 0°C ~ 50°C; Discharging: -20°C ~ 55°C					
Best Working Temperature	15°C ~ 35°C					
Storage temperature	-40°C ~ 60°C (System SOC: 20%~40%)					
Working environment	Altitude: < 2500m					
	Relative humidity: <95% (no condensation)					
Cooling	Intelligent air cooling					
Insulation resistance	> 500MΩ@1500VDC					
Isolation and withstand voltage	2500VDC/1min					
Internal power supply mode	24VDC (Built-in DC/DC)					
Static power consumption	35W					
Data display	7" TN true color LCD screen					
IP rating	IP21					
Dimension (W*D*H)	1360*650*1400mm			1360*650*2000mm		
Weight	650Kg	850Kg	1050Kg	1000Kg	1350Kg	1650Kg
Life cycle	4000 cycles (1C@25°Ccharging&discharging@100%DOD, EOL80%)					
Battery Management System (BMS)						
Cell voltage acquisition range	1-5V					
Cell voltage acquisition accuracy	≤10mV					
Total voltage acquisition accuracy	± (0.5%FS+0.1%RD) mv					
Current acquisition range	0 ~ ±200ADC	0 ~ ±250ADC	0 ~ ±375ADC	0 ~ ±200ADC	0 ~ ±250ADC	0 ~ ±375ADC
Current acquisition accuracy	≤±1%					
Temperature acquisition range	-20 ~ 125°C					
Temperature acquisition accuracy	≤±1°C					
Charging over current protection	> 1C, 10s; > 1.2C, 5s; > 1.5C, 1s					
Discharging over current protection	> 1C, 10s; > 1.2C, 5s; > 1.5C, 1s					
Over temperature protection	Discharging > 55°C (20s)					
	Charging > 50°C (20s)					
Low temperature protection	Discharging < -20°C (1s)					
	Charging < 0°C (1s)					
Communication mode	CAN, RS485, dry contact					
Certification	IEC62619/IEC62620/EN61000/UN38.3					

High energy system



EBC768/280
Battery capacity: **280Ah**
Rated voltage: **768Vdc**
Dimension: **1330*667.5*1870**(W*D*H)mm



Model	EBC768/280
Battery capacity	280Ah
Rated voltage	768V
Rated capacity	215.04kWh
Battery voltage range	672V ~ 852V (Cell 2.8~3.55)
Max. Continuous charging current	140A (0.5C)
Max. Continuous discharging current	140A (0.5C)
Working Temperature	Charging: 0°C~ 50°C ; Discharging -20°C~ 55°C
Best Working Temperature	15°C~ 35°C
Storage temperature	-40°C~ 60°C ; (System SOC:20°C~40°C)
Working environment	Altitude: < 2500m; Relative humidity:< 95% (no condensation)
Cooling	Intelligent air cooling
Insulation resistance	> 500MΩ@1500VDC
Isolation and withstand voltage	2500VDC/1min
Internal power supply mode	24VDC(Built-in DC/DC)
Static power consumption	35W
Data display	7" TN true color LCD screen
IP rating	IP21
Dimension (W*D*H)	1330*667.5*1870mm
Weight	2000Kg
Life cycle	6000 cycles (0.5C@25°C charging&discharging @100%DOD, EOL80%)
Battery Management System (BMS)	
Cell voltage acquisition range	1-5V
Cell voltage acquisition accuracy	≤ 10mV
Total voltage acquisition accuracy	± (0.5%FS+0.1%RD) mv
Current acquisition range	0 ~ ±250ADC
Current acquisition accuracy	≤ ±1%
Temperature acquisition range	-20 ~ 125°C
Temperature acquisition accuracy	≤ ±1°C
Charging over current protection	> 0.5C, 10s
Discharging over current protection	> 0.5C, 10s
Over temperature protection	Discharging > 55°C (20s)
	Charging > 50°C (20s)
Low temperature protection	Discharging < -20°C (1s)
	Charging < 0°C (1s)
Communication mode	Can, RS485, dry contact
Certification	IEC62619/IEC62620/EN61000/UN38.3

Grid Renewable Energy Storage Power Supply(GRES system)

GRES is an intelligent and modular power supply equipment integrating lithium battery and MPCs. According to different application scenarios, lithium battery, bidirectional DC / AC converter, bidirectional DC / DC converter, Static switch and Power management system can be flexibly combined to realize grid connected power supply, off grid power supply and off grid uninterrupted power supply, static reactive power compensation, harmonic suppression and other function etc.. It can access to new energy, power grid, diesel generator to realize multi-energy reasonable configuration, scientific utilization, to provide users with green, environmental protection, noise free, high reliability and high security power services. With selected LFP batteries for mobile use, it is a robust energy storage solution which could realize ultra mobile, zero-emission, adaptable to different terrains.



Configuration



PCS

Bidirectional AC / DC converter can realize the bidirectional conversion from DC to AC and AC to DC. It can not only convert AC to DC to charge battery, but also convert DC to AC to supply power to load or feed back to power grid.



Battery System

The system mainly consists of safe, efficient and long-life lithium iron phosphate cells, which are connected in series to form battery modules, and multiple modules are connected in series to form battery clusters.



Battery Management System

The core components of the system can effectively protect the battery from overcharge, overdischarge and over-current. At the same time, the balanced management of the cells can ensure the safe, reliable and efficient operation of the whole system.



Power Management System

System operation data monitoring, operation strategy management, historical data record, system status record, etc.



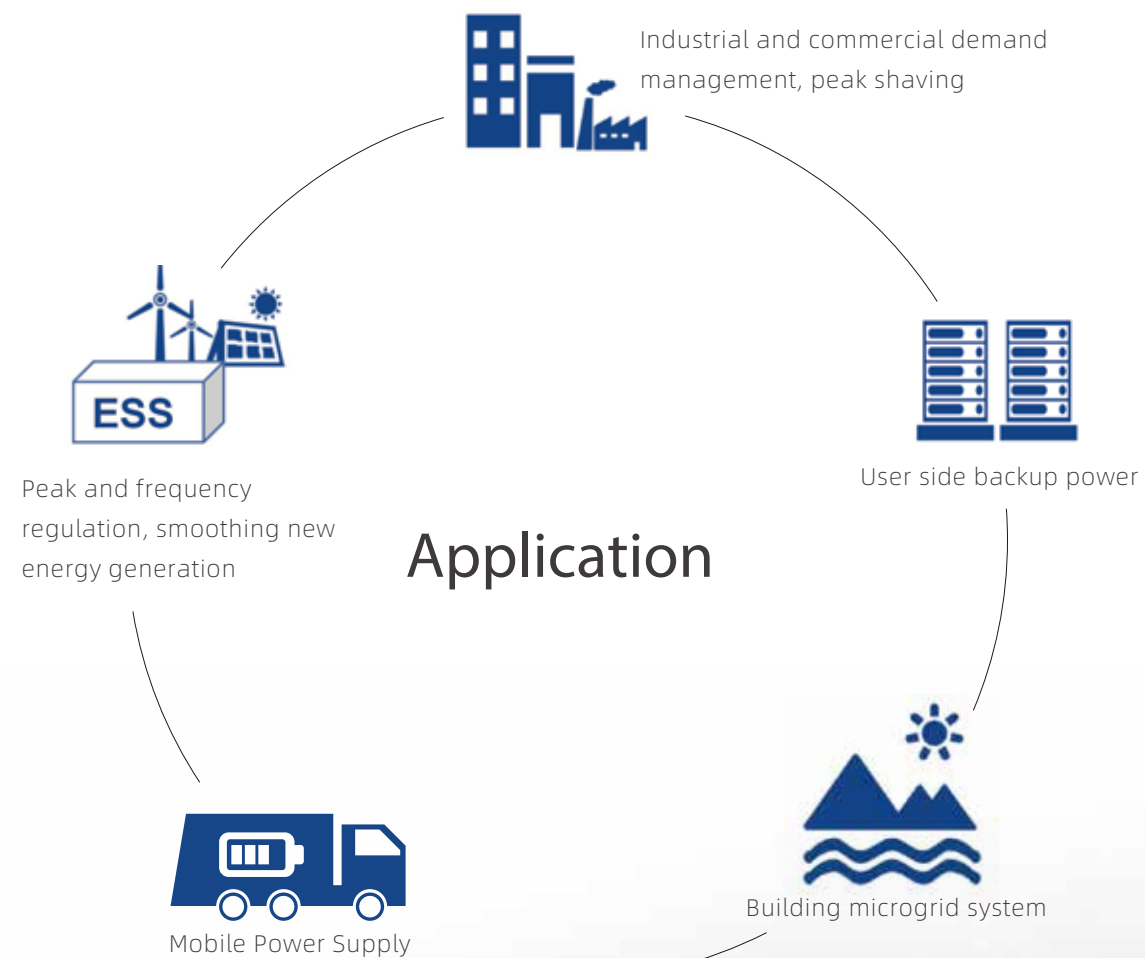
Enclosure

Protection degree IP54.



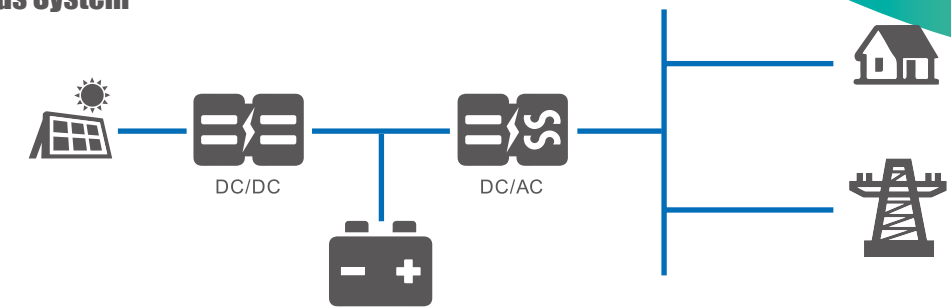
Air Conditioning

Air Conditioning (HVAC) system is configured to maintained an optimal temperature to maximize energy system operational life and efficiency.



System topology

GRES DC Bus System



Applicable model: GRES-75-50/GRES-150-100/GRES-225-150/GRES-300-200

GRES AC Bus System



Applicable model: GRES-1075-500/GRES-645-300

Key product features and benefits

Safe and reliable

- Damping pad design for Battery installation to Improve the impact resistance of the system.
- IP54 , safe and reliable operation in outdoor environment.
- Serially designed PCS and battery pack eliminates circulating current and improve system reliability.
- Integrated BMS,DC, AC multi-layer protection, maximum safety performance design.

Efficient and convenient

- Integrated system, standard modular power module and battery module, easy for installation, maintenance and capacity expansion.
- Easy access to PV and diesel generator, intelligent multi-energy management.
- Fixed on the ground or mounted on vehicle, can be loaded and unloaded by forklift and hoisted by lifting ring.
- One-button starting, more convenient operation.

Cost optimization

- One investment, multiple benefits:Peak shaving, backup power supply, microgrid building,power quality improving and energy storage,etc.
- Small size, light weight, less space and installation cost.
- Long cycle life, low failure rate, reduce operation and maintenance investment.

GRES DC Bus System



GRES-75-50
Battery capacity: **75kWh**
PCS capacity : **50kW**
Dimension:**1680*1502*1700** (W*D*H)mm



GRES-150-100
Battery capacity: **150kWh**
PCS capacity : **100kW**
Dimension:**1680*2264*1700** (W*D*H)mm



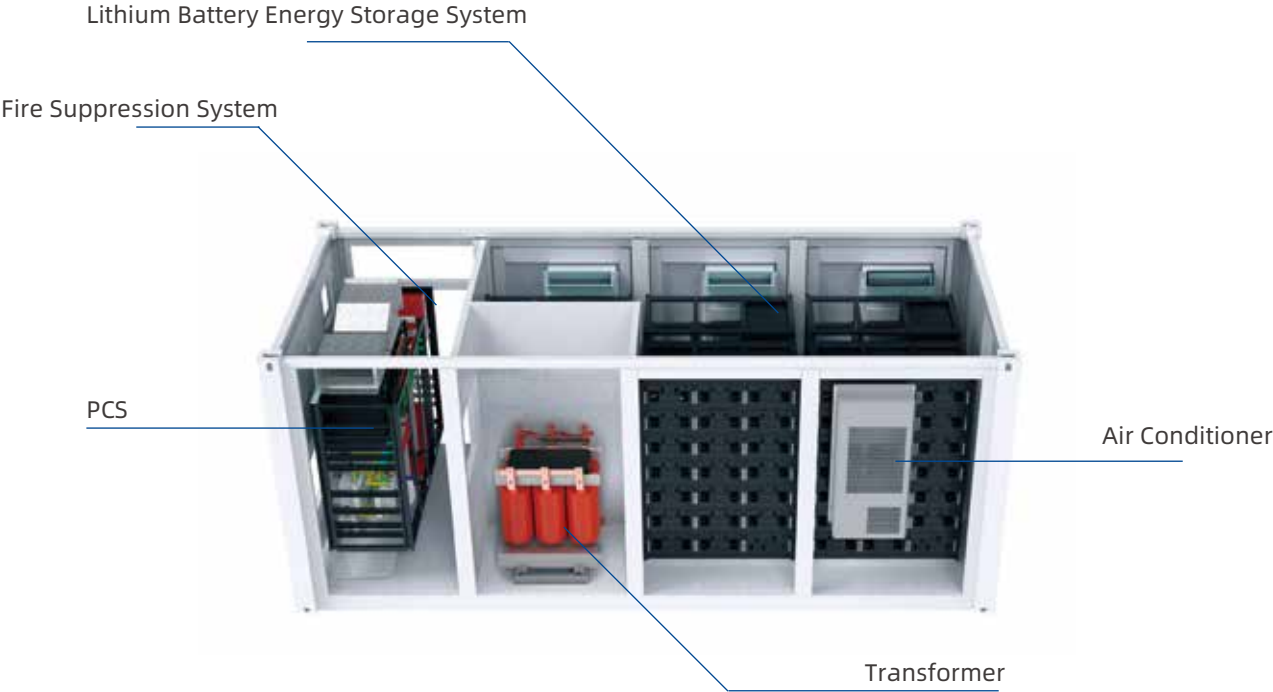
GRES-225-150
Battery capacity: **225kWh**
PCS capacity : **150kW**
Dimension:**1680*3026*1700**(W*D*H)mm



GRES-300-200
Battery capacity: **300kWh**
PCS capacity: **200kW**
Diemnsion:**1680*3788*1700** (W*D*H) mm

Model	GRES-75-50		GRES-150-100		GRES-225-150		GRES-300-200	
PV Parameters								
MPPT voltage range			DC200V ~ DC700V					
MPPT full power Volt range			DC370V ~ DC700V					
MPPT channel Qty			0~2 (optional)					
Max current per channel			135A					
AC parameters (On-grid)								
Rated output power	50KW		100KW		150KW		200KW	
Rated grid voltage	3W+N+PE, 380V/400V							
Voltage range	-15%~+10%							
Rated frequency	50Hz/60Hz							
Frequency range	±2Hz							
Output current harmonic	≤3%(Rated Power)							
Power factor	-0.9~+0.9							
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min; 120%); stop operation							
AC parameters (Off-grid)								
Rated output power	50KW		100KW		150KW		200KW	
Rated voltage	3W+N+PE, 380V/400V							
Output voltage harmonics	≤3%(Linear full load)							
Rated frequency	50Hz/60Hz							
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min; 120%);stop operation							
Battery								
Battery type	LFP							
Energy of each module	5.12kwh							
Module qty	15		30		45		60	
Total power	76.8kwh		153.6kWh		230.4kwh		307.2kwh	
Running Time	1.5 (Optional by Changing module qty)							
Life cycle	4000 cycles (0.5C@25°C charging&discharging @100%DOD, EOL80%)							
Protection								
DC switch	YES							
AC switch	YES							
Grid monitoring	YES							
Surge protection	YES							
Basic Parameters								
Dimension W*D*H	1680*1502*1700mm		1680*2264*1700mm		1680*3026*1700mm		1680*3788*1700mm	
Weight	1395Kg		2470Kg		3545Kg		4620Kg	
Isolation	No							
On-off-grid switching	STS							
Protection	Outdoor IP54							
Working temperature	-20 ~ 55°C(>45°Cderating)							
Relative humidity	0%RH ~ 95%RH, No condensation							
Cooling	Electrical cabin: intelligent air cooling; Battery cabin: air conditioner							
Max working altitude	4000m(>2000m derating)							
Display	Touch screen							
Communication	RS485、CAN、LAN							
Communication Protocol	Modbus-RTU、Modbus-TCP、CAN2.0B							

GRES AC Bus System



GRES-645-300
Battery capacity: **645kWh**
PCS capacity: **300kW**
Dimension: **3000*2438*2591(W*D*H)mm**



GRES-1075-500
Battery capacity: **1075kWh**
PCS capacity: **500kW**
Dimension: **6058*2438*2591(W*D*H)mm**

Parameter	GRES-1075-500	GRES-645-300
PV parameters		
Max input power	400KW	200KW
Rated Current	606A	303A
Rated input voltage	3W+N+PE, 380/400V	
Rated frequency	50Hz/60Hz	
AC parameters (On-grid)		
Rated output power	500KW	300KW
Rated grid voltage	3W+N+PE, 380V/400V	
Voltage range	-15%~+10%	
Rated frequency	50Hz/60Hz	
Frequency range	±2Hz	
Output current harmonics	≤3%(Rated Power)	
Power factor	-0.9~+0.9	
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min; 120%); stop operation	
AC parameters (Off-grid)		
Rated output power	500KW	300kW
Rated voltage	3W+N+PE, 380V/400V	
Output voltage harmonics	≤3%(Linear full load)	
Rated frequency	50Hz/60Hz	
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min; 120%); stop operation	
Battery		
Battery type	LFP	
Energy of each rack	215.04kWh	
Rack qty	5	3
Total power	1075.2kWh	645.12kWh
Running Time	2h (Optional by Changing module qty)	
Life cycle	6000 cycles (0.5C@25°C charging&discharging @100%DOD, EOL80%)	
Protection		
DC Switch	YES	
AC switch	YES	
Grid monitoring	YES	
Surge protection	YES	
Basic Parameters		
Dimension (W*D*H)	6058*2438*2591mm	3000*2438*2591mm
Weight	16000Kg	10000Kg
Isolation	Isolation transformer(built-in)	
On-off-grid switching	STS	
Protection	Outdoor IP54	
Working temperature	-20 ~ 55°C(>45°Cderating)	
Relative humidity	0%RH ~ 95%RH, No condensation	
Cooling	Electrical cabin: intelligent air cooling; Battery cabin: air conditioner;	
Max working altitude	4000m(>2000m derating)	
Display	Touch screen	
Communication	RS485、CAN、LAN	
Communication Protocol	Modbus-RTU、Modbus-TCP、CAN2.0B	

BESS System

SCU uses standard battery modules, PCS modules, BMS, EMS and other systems to form standard containers to build large-scale grid-side energy storage projects. The standardized and prefabricated design reduces user customization time and construction costs, and reduces safety hazards caused by local installation differences and management risks. It meets the application needs of regional power grid peak shaving, frequency regulation, voltage regulation, emergency response, new energy consumption, etc., and ensures the normal operation of the power system.



Key product features and benefits

Safe and reliable

- High quality LFP batteries for mobile use.
- From cell to container, hierarchical temperature control strategy with industrial grade temperature control system.
- Full electrical protection: high and low voltage separation, insulation detection, grounding protection, lightning protection design.
- Battery module is designed with PC bracket and reinforce steel structure to guarantee the the highest safety of the system, in transportation, installation and operation.
- A 7mm gap between cells is reserve for thermal isolation and insulation.
- Module built-in fire suppression measures, intelligent container level fire suppression system, hierarchical linkage, multi-layer protection.
- Serially designed PCS and battery pack eliminates circulating current and improve system reliability.

Intelligent and efficient

- Efficient, digital and intelligent energy management system (EMS) architecture design.
- 0.5C charging and discharging rate.
- Fault prediction, identification and rapid location.

Highly integrated

- Convenient transportation, installation, operation and maintenance;
- Modular design, easy for expansion.



Model	ZESS614K-250	ZESS1840K-600
Battery Parameter		
Rated power	614KWh	1.84MWh
Configuration	4 Sets 768V200AH BESS	12 Sets 768V200AH BESS
System voltage	768V	
Working voltage range	DC672V ~ DC852V （2.8V ~ 3.55V）	
Battery type	LFP	
DC parameters		
Voltage range	DC580V ~ DC900V	DC680V ~ DC900V
DC channel Qty	5（maximum）	6（maximum）
Max current per channel	85A	170A
AC parameters（On-Grid）		
Output line	3W+N+PE/3W+PE	
Rated power	250KW	600KW
Rated voltage	AC 380V/400V	
Rated Current	379A	909A
Voltage range	-15% ~ +10%	
Rated frequency	50Hz/60Hz	
Frequency range	±2Hz	
Power factor	-0.9~+0.9	
Output current harmonic	≤3%（Rated power）	
AC parameters（Off-Grid）		
Output line	3W+N+PE/3W+PE	
Rated power	250KW	600KW
Rated voltage	AC 380V/400V	
Rated frequency	50Hz/60Hz	
Rated Current	379A	909A
Voltage accuracy	1%	
Frequency accuracy	±0.2Hz	
Output voltage harmonics	3%（linear full load）	
Unbalanced load capacity	100%	
Overload capacity	105%]：continuous operation；（105%~120%]: 10min；120%): stop operation；	
Environment		
Working temperature	-20℃ ~ 55℃（>45℃derating）	
Storage temperature	-20℃ ~ 60℃	
Relative humidity	0%RH ~ 95%RH，No condensation	
Working altitude	@45℃，2000m；2000m ~ 4000m Derating	
Noise	< 75dB	
Other		
Comminication	CAN/RS485	
Isolation	Isolation Tranformer(built-in)	Isolation Tranformer（external）
Protection	IP54	
Cooling	Air conditioner	
Fire control	Heptafluoropropane	
Demension W*D*H	6096mm*2438mm*2591mm	12196mm*2438mm*2591mm

Energy Management System (EMS)

EMS provides integrated control and monitoring functions for the whole scheme, collects and analyzes the real-time data of various equipment in the ESS system, and monitors various key data parameters in real time. It is composed of server, user interface, controller, measuring unit, sensor and cloud platform. According to its application type, it can realize the functions of equipment information collection, control, data summary, chart analysis and so on, and form a set of scientific and energy-saving energy management scheme according to the electricity price, time period, battery BMS data, load rate and so on.



Main Function

■ Power station monitoring:

7 * 24-hour second level real-time monitoring and equipment control; Intelligent alarm, multiple notification methods.

■ Energy storage management:

Demand management, power factor regulation, SOC display, charge discharge cycle display, load monitoring, electricity cost optimization.

■ Energy efficiency management:

Year on year and month on month analysis: Energy consumption tracking; Quickly identify major energy consumers and consumption increasing points.

■ Equipment management:

Equipment life cycle management; Electronic archives.

■ Efficient O&M

Unified online and offline operation and maintenance; Automatic tracking record of the whole process of operation and maintenance.

■ Power quality optimization:

Active power automatic control, reactive power control, three-phase imbalance regulation; Visual monitoring of harmonics; Intelligent alarm.

SCU BESS REFERENCES



Mobile BESS
Country :Dubai
Configuration :
GRES-150-100
GRES-75-50



New Energy Charging Station
Hybrid storage electric vehicle charging
Country : Ethiopia
Configuration :
GRES-150-150
150kW/150kWh +100kW MPPT



PV&BESS
Country : Bulgaria
Configuration :
PCS 600 KW
Battery storage system 1.84MWh



UPS&Battery system
Country :Russia
Configuration :
UPS 2MW
High rate lithium battery system 2.58MWh



New Energy Charging Station
Country :China
Configuration :
PV 26.68KWp
PCS 250KW
Battery storage system 550kWh
EV charger 300KW



PV&BESS
Country :China
Configuration :
PV 2.85MWp
PCS 100KW
Battery storage system 460kWh



BESS
Country :Oman
Configuration :
PCS 100KW
Battery storage system 150 kWh



BESS
Country :Thailand
Configuration :
PCS 300KW
Battery storage system 460kWh



Mobile BESS
Country :Bulgaria
Configuration :
PCS 400KW
Battery storage system 600kWh



About US

Sicon Chat Union Electric Co., Ltd. (Stock code: 833426, referred to as: SCU Electric), is industry leading electrical and power electronic product designer and manufacturer since 2003.

SCU provides complete solutions for data center infrastructure, electric vehicle charging and green energy storage sectors.

The ESS products cover four main application: Industrial and commercial energy storage system, renewable integration, uninterrupted power lithium battery system and residential energy storage system. In recent years, the ESS projects have spread to key overseas markets such as South Korea, Russia, Netherlands, Germany, Middle East, etc.