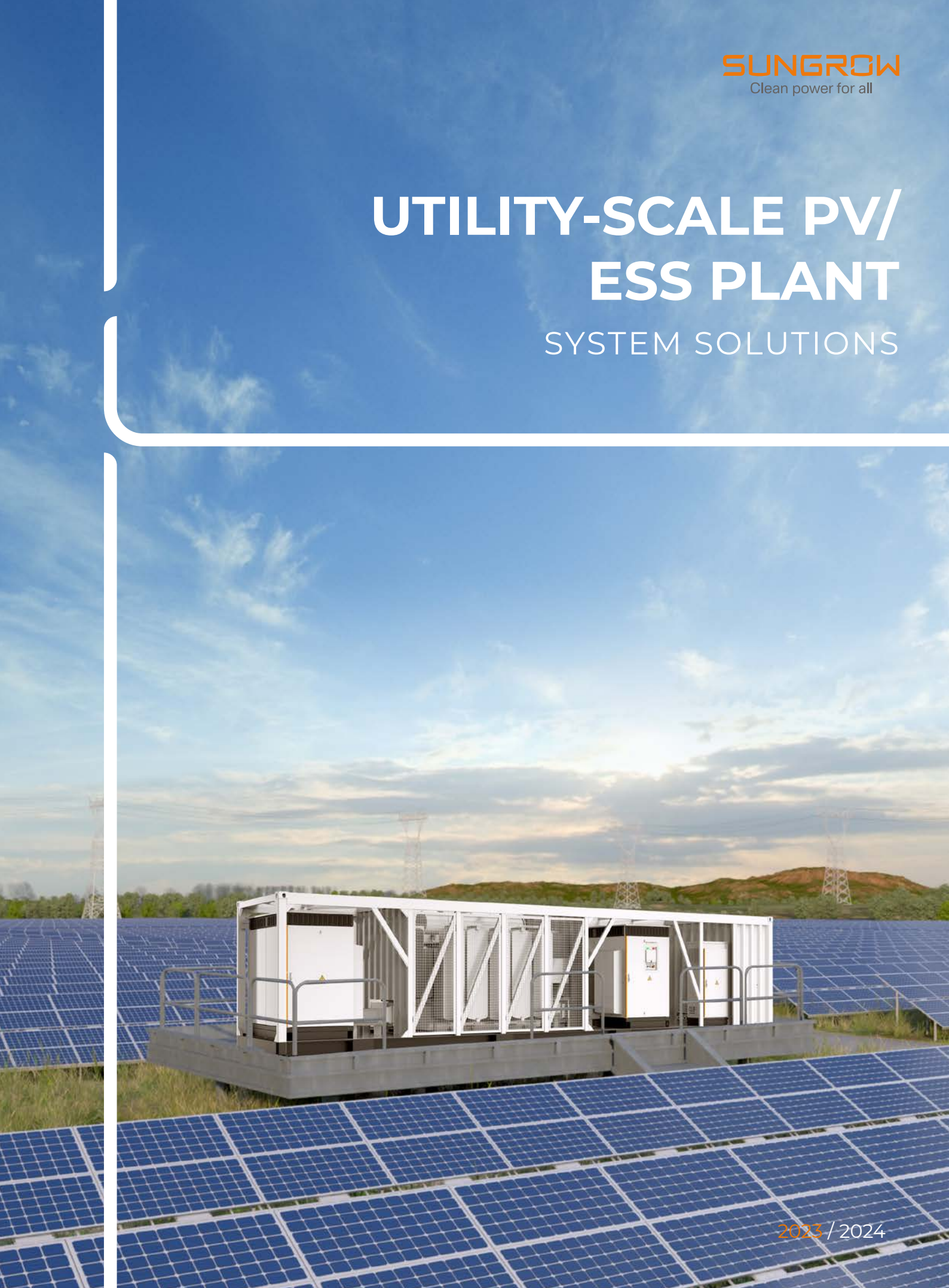
SUNGROW
Clean power for all

UTILITY-SCALE PV/ ESS PLANT

SYSTEM SOLUTIONS



2023 / 2024

ABOUT SUNGROW

Sungrow Power Supply Co., Ltd. (“Sungrow”) is the world’s most bankable inverter brand with over 405 GW installed worldwide as of June 2023. Founded in 1997 by University Professor Cao Renxian, Sungrow is a leader in the research and development of solar inverters with the largest dedicated R&D team in the industry and a broad product portfolio offering PV inverter solutions and energy storage systems for utility-scale, commercial & industrial, and residential applications, as well as internationally recognized floating PV plant solutions, NEV driving solutions, EV charging solutions and renewable hydrogen production systems. With a strong 26-year track record in the PV space, Sungrow products power over 150 countries worldwide.

As a leader in innovation in the solar industry, Sungrow possesses a dynamic technical R&D team which consists of over 3600 employees. The Company has also invested in its own in-house testing center approved by SGS, CSA, and TÜV Rheinland. Sungrow has the world’s largest inverter factory, with a global annual production capacity of 305 GW, including 25 GW outside China.

Offering a wide range of solutions and services, Sungrow is committed to providing clean power for all and is steadfast in its efforts to become the global leader in clean power conversion technology. Learn more about Sungrow by visiting www.sungrowpower.com.



The World's Most Bankable Inverter Brand

No.1 bankable for 4 consecutive years
The only inverter supplier ranked 100% bankable

Source: BloombergNEF

26	6000	150+	NO.1
Years in the Solar Industry	Patent applications	Countries with Sungrow Installations	Largest PV Inverter R&D Team



NO.1

2022 Inverter Shipments

Source: IHS Market now a part of S&P Global estimates

405GW+

Deployed Worldwide

As of June 2023

305GW

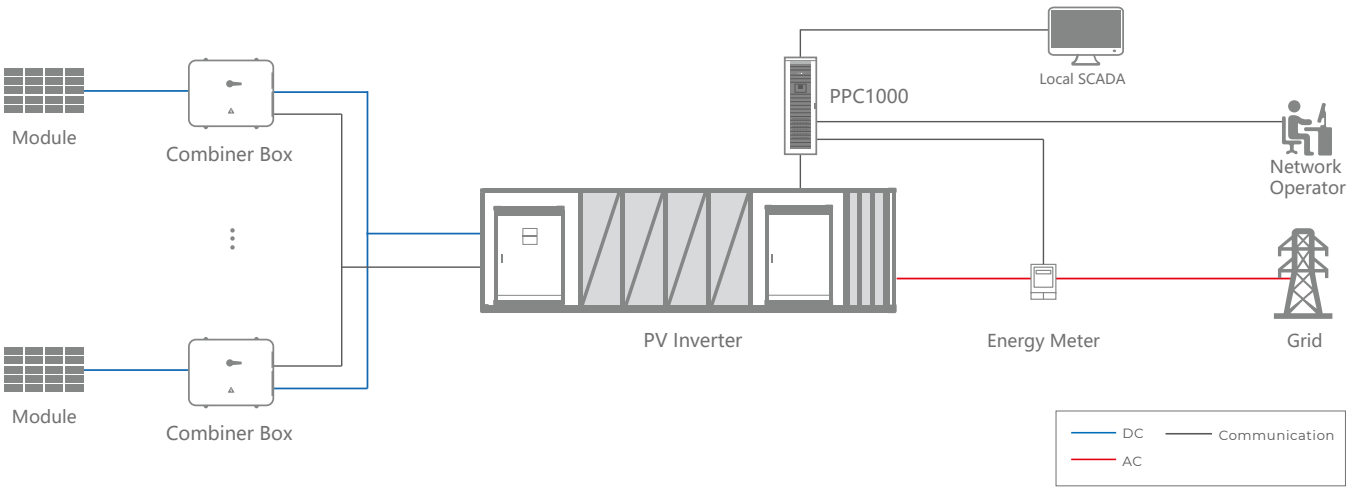
Inverter & converter Annual Capacity

30GWh

Annual Capacity of ESS & Energy Storage Battery Pack

UTILITY-SCALE PV PLANT SYSTEM SOLUTIONS





Recommend Products



SG6800/4950HV-MV



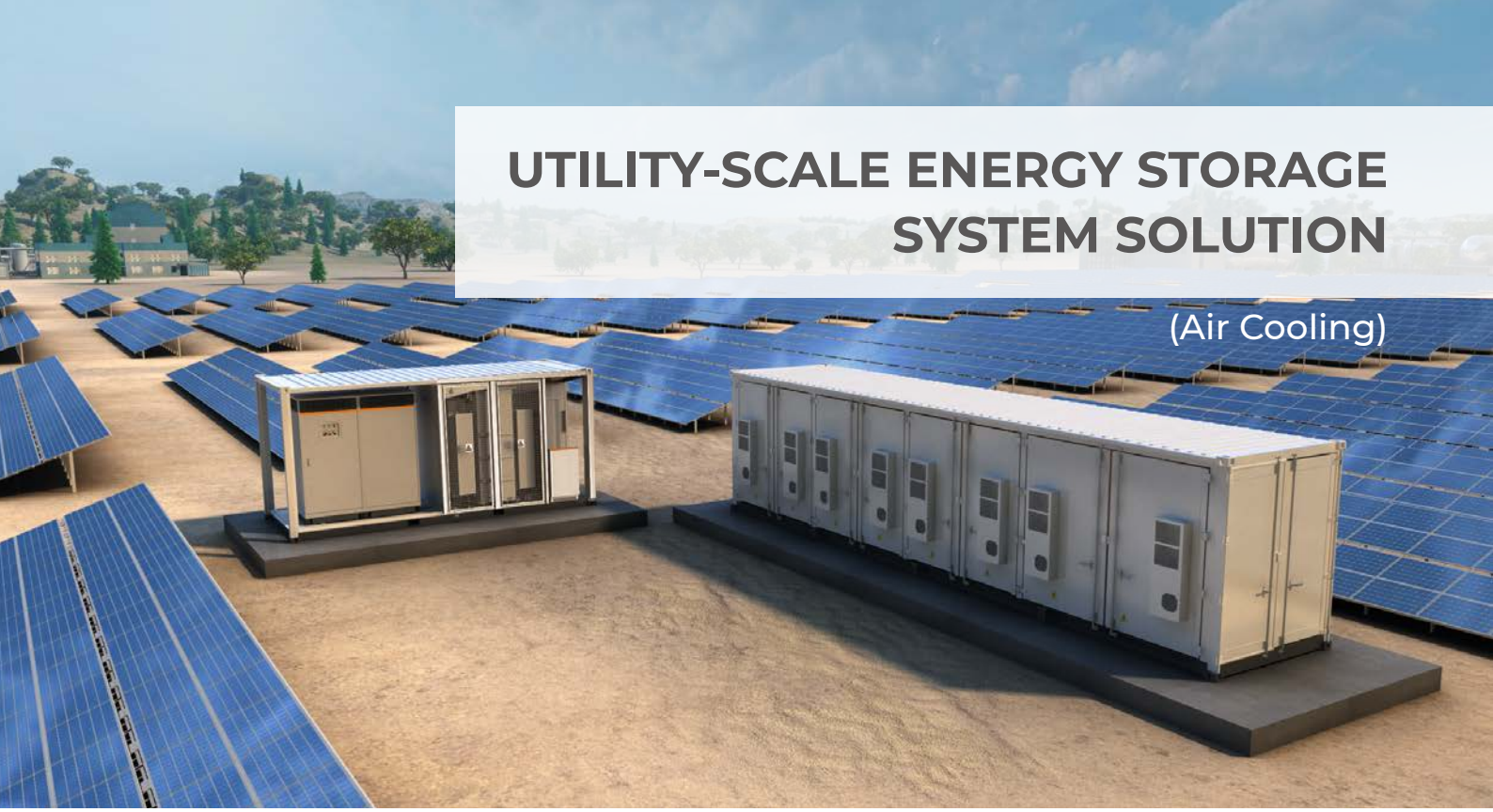
SG3400HV-MV-30



Combiner Box

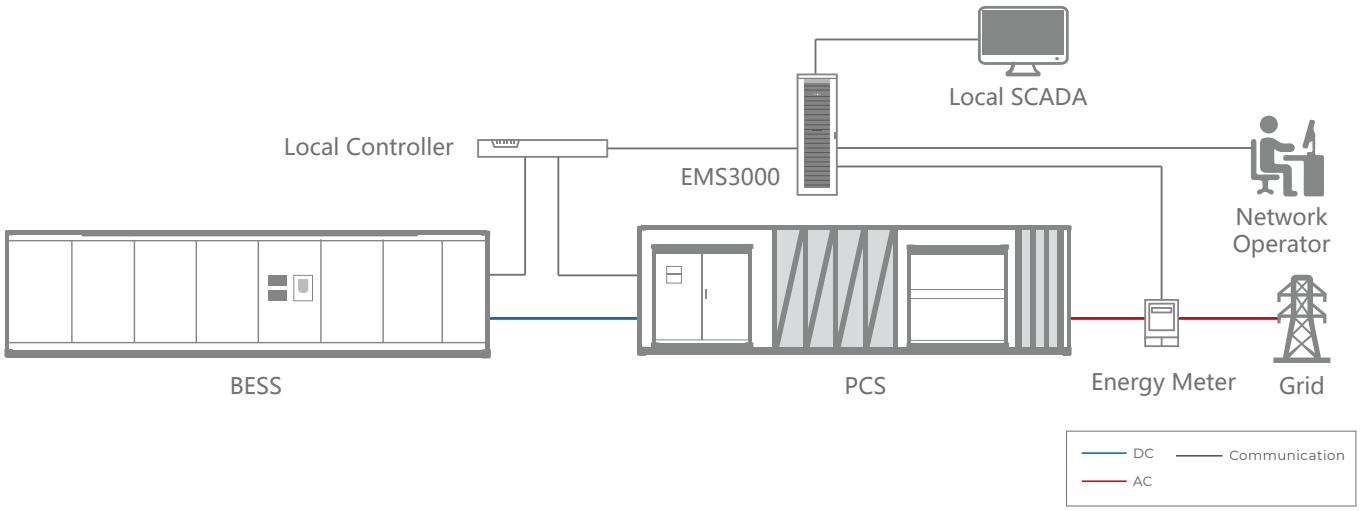


PPC1000



UTILITY-SCALE ENERGY STORAGE SYSTEM SOLUTION

(Air Cooling)



Recommend Products



SC6900UD-MV



SC3450/4000UD-MV



ST3727KWH(L)

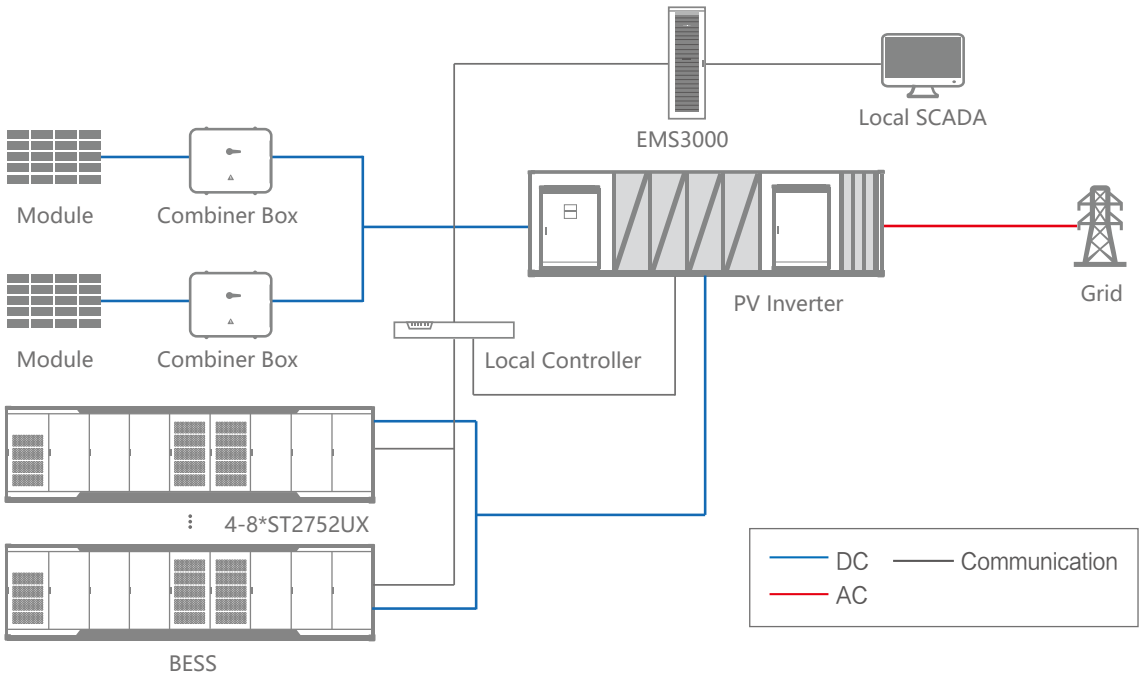


EMS3000

UTILITY-SCALE ENERGY STORAGE LIQUID COOLING SYSTEM SOLUTION

(DC Coupling)





Recommend Products



SG6800/4950HV-MV



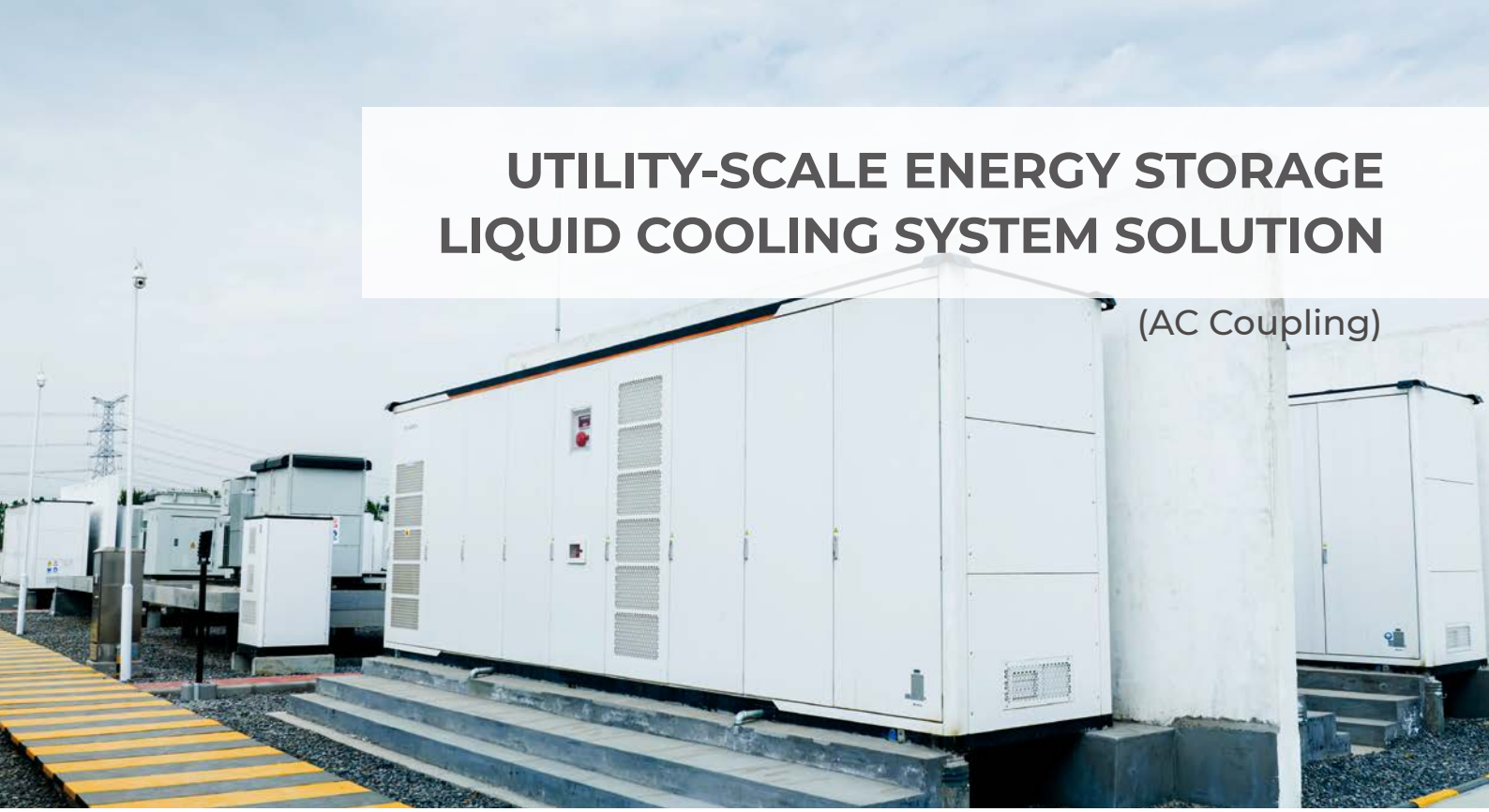
ST2752UX

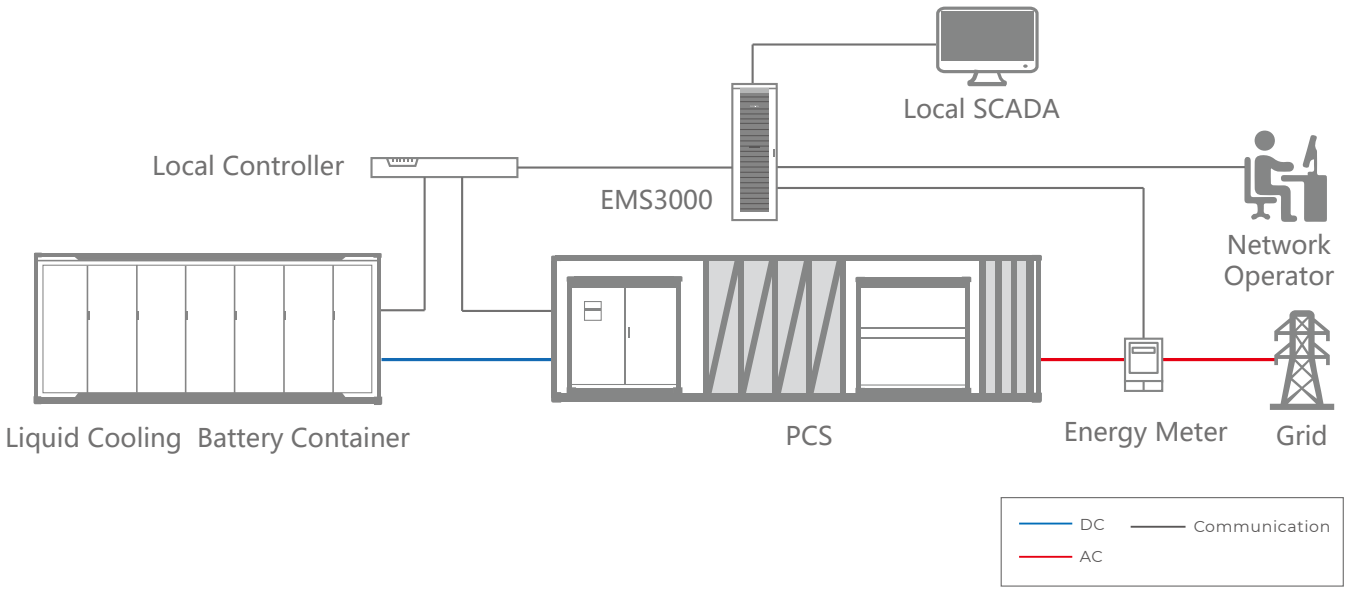


EMS3000

UTILITY-SCALE ENERGY STORAGE LIQUID COOLING SYSTEM SOLUTION

(AC Coupling)





Recommend Products



SC6900/SC4980UD-MV



SC3450/4000UD-MV



ST5015UX



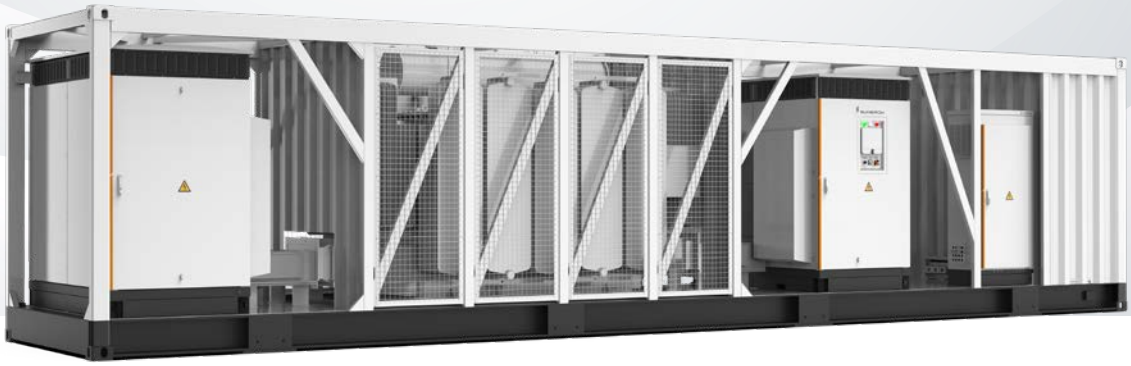
ST2236/2752UX



EMS3000

SG4950/6800HV-MV

Turnkey Station for 1500 Vdc System MV Transformer Integrated



HIGH YIELD

- Advanced three-level technology, max. inverter efficiency 99%
- Effective cooling, full power operation at 45 ℃
- BESS DC coupling optional

SMART O&M

- Integrated zone monitoring and MV parameters monitoring function for online analysis and trouble shooting
- Modular design, easy for maintenance
- Convenient external touch screen

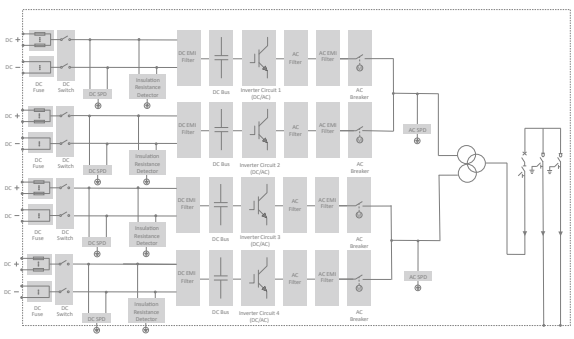
SAVED INVESTMENT

- Low transportation and installation cost due to 40-foot container design
- DC 1500V system, low system cost
- Integrated MV transformer, switchgear, and LV auxiliary power supply
- Q at night function optional
- FCAS support capability

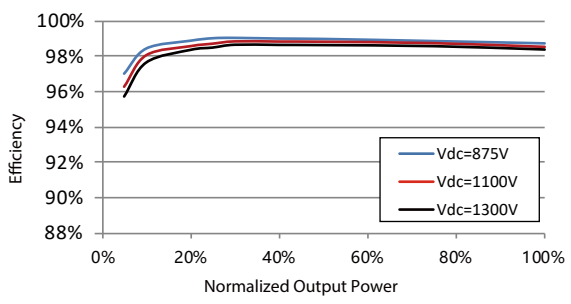
GRID SUPPORT

- Proven Generator Performance Standards and received multple 5.3.4 letters across the NEM (and WEM)
- DC-Couple configuration available to accommodate adding BESS on DC side
- Fully in-house PSSE/PSCAD/AS4777.2/DigSilent model development and maintenance, with dedicated strong local grid modelling team

CIRCUIT DIAGRAM



EFFICIENCY CURVE



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Type designation	SG4950HV-MV	SG6800HV-MV
Input (DC)		
Max. PV input voltage	1500 V	
Min. PV input voltage / Startup input voltage	800 V / 840 V	875 V / 915 V
MPP voltage range	800 – 1300 V	875 – 1300 V
No. of independent MPP inputs	4	
No. of DC inputs	32 / 36 / 44 / 4 8 / 56 (Max. 4 8 for floating system)	
Max. PV input current	2 * 3508 A	2 * 3997 A
Max. DC short-circuit current	2 * 10000 A	
PV array configuration	Negative grounding or floating	
Output (AC)		
AC output power	4950 kVA @ 50 ℃	2 * 3437 kVA @ 45 ℃
Max. inverter output current	2 * 2887 A	2 * 3308 A
AC voltage range	11 kV / 22 kV / 33 kV	
Nominal grid frequency / Grid frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz	
Harmonic (THD)	< 3 % (at nominal power)	
Power factor at nominal power / Adjustable power factor	> 0.99 / 0.8 leading – 0.8 lagging	
Feed-in phases / AC connection	3 / 3-PE	
Efficiency		
Inverter max. efficiency	99.0%	
Inverter European efficiency	98.7%	
Transformer		
Transformer rated power	4950 kVA	6874 kVA
Transformer max. power	4950 kVA	6874 kVA
LV / MV voltage	11 kV / 22 kV / 33 kV	
Transformer vector	Dy11y11	
Transformer cooling type	ONAN (Oil-natural, air-natural)	
Oil type	Mineral oil (PCB free) or degradable oil on request	
Protection & Function		
DC input protection	Load break switch + fuse	
Inverter output protection	Circuit breaker	
AC MV output protection	Circuit breaker	
Surge protection	DC Type I + II / AC Type II	
Grid monitoring / Ground fault monitoring	Yes / Yes	
Insulation monitoring	Yes	
Overheat protection	Yes	
Q at night function	Optional	
General Data		
Dimensions (W*H*D)	12192*2896*2438 mm	
Weight	27 T	29 T
Degree of protection	Inverter: IP55 (optional: IP65) / Others: IP54	
Auxiliary power supply	5 kVA (optional: max. 40 kVA)	
Operating ambient temperature range	-35 to 60 ℃ (> 50 ℃ derating)	
Allowable relative humidity range	0 – 100 % (non condensing)	
Cooling method	Temperature controlled forced air cooling	
Max. operating altitude	1000 m (standard) / > 1000 m (optional)	
Display	Touch screen	
Communication	Standard: RS485, Ethernet; Optional: optical fiber	
Compliance	CE, IEC 62109, IEC 61727, IEC 62116, IEC 62271-202, IEC 62271-200, IEC 60076	
Grid support	Q at night (Optional), L/HVRT, active & reactive power control and power ramp rate control	

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SG3400HV-MV

Turnkey Station for 1500 Vdc System MV Transformer Integrated



HIGH YIELD

- Advanced three-level technology, max. inverter efficiency 99%
- Effective cooling, full power operation at 45 ℃
- BESS DC coupling optional

SMART O&M

- Integrated zone monitoring and MV parameters monitoring function for online analysis and trouble shooting
- Modular design, easy for maintenance
- Convenient external touch screen

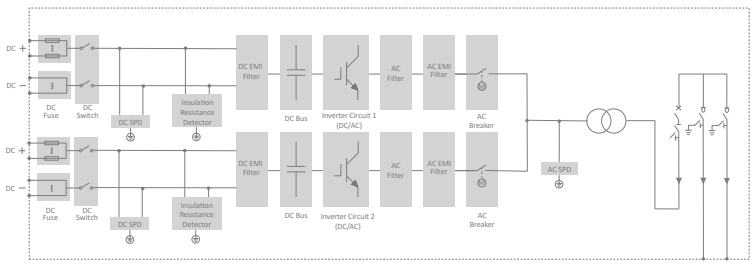
SAVED INVESTMENT

- Low transportation and installation cost due to 20-foot container design
- DC 1500V system, low system cost
- Integrated MV transformer, switchgear, and LV auxiliary power supply
- Q at night function optional
- FCAS support capability

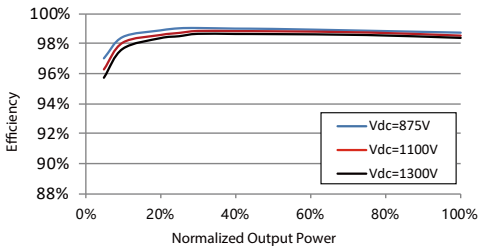
GRID SUPPORT

- Proven Generator Performance Standards and received multple 5.3.4 letters across the NEM (and WEM)
- DC-Couple configuration available to accommodate adding BESS on DC side
- Fully in-house PSSE/PSCAD/AS4777.2/DigSilent model development and maintenance, with dedicated strong local grid modelling team

CIRCUIT DIAGRAM



EFFICIENCY CURVE



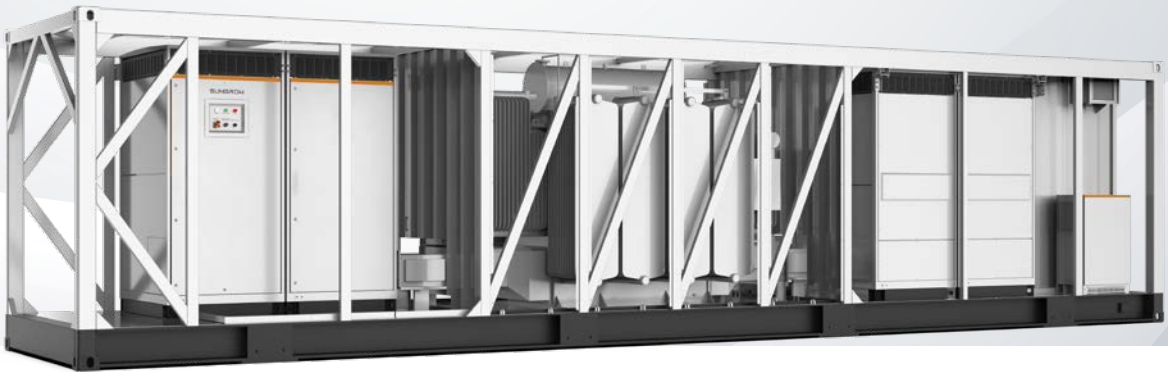
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Type designation	SG3400HV-MV
Input (DC)	
Max. PV input voltage	1500 V
Min. PV input voltage / Startup input voltage	875 V / 915 V
MPP voltage range	875 – 1300 V
No. of independent MPP inputs	2
No. of DC inputs	16 / 18 / 22 / 24 / 28 (max. 24 for floating system)
Max. PV input current	3997 A
Max. DC short-circuit current	10000 A
PV array configuration	Negative grounding or floating
Output (AC)	
AC output power	3437 kVA @ 45 ℃
Max. inverter output current	3308 A
AC voltage range	11 kV / 22 kV / 33 kV
Nominal grid frequency / Grid frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz
Harmonic (THD)	< 3 % (at nominal power)
Power factor at nominal power / Adjustable power factor	> 0.99 / 0.8 leading – 0.8 lagging
Feed-in phases / AC connection	3 / 3-PE
Efficiency	
Inverter max. efficiency	99.0%
Inverter European efficiency	98.7%
Transformer	
Transformer rated power	3437 kVA
Transformer max. power	3437 kVA
LV / MV volatage	11 kV / 22 kV / 33 kV
Trnsformer vector	Dy11
Transformer cooling type	ONAN (Oil-natural, air-natural)
Oil type	Mineral oil (PCB free) or degradable oil on request
Protection & Function	
DC input protection	Load break switch + fuse
Inverter output protection	Circuit breaker
AC MV output protection	Circuit breaker
Surge protection	DC Type I + II / AC Type II
Grid monitoring / Ground fault monitoring	Yes / Yes
Insulation monitoring	Yes
Overheat protection	Yes
Q at night function	Optional
General Data	
Dimensions (W*H*D)	6058 * 2896 * 2438 mm
Weight	15 T
Degree of protection	Inverter: IP55 (optional: IP65) / Others: IP54
Auxiliary power supply	5 kVA (optional: max. 40 kVA)
Operating ambient temperature range	-35 to 60 ℃ (> 45 ℃ derating)
Allowable relative humidity range	0 – 100 % (non condensing)
Cooling method	Temperature controlled forced air cooling
Max. operating altitude	1000 m (standard) / > 1000 m (optional)
Display	Touch screen
Communication	Standard: RS485, Ethernet; Optional: optical fiber
Compliance	CE, IEC 62109, IEC 61727, IEC 62116, IEC 62271-202, IEC 62271-200, IEC 60076
Grid support	Q at night (Optional), L/HVRT, active & reactive power control and power ramp rate control

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SC4980/6900UD-MV

Power Conversion System



HIGH YIELD

- Advanced three-level technology, max. efficiency 99%
- Effective forced air cooling, no derating up to 45°C
- Wide DC voltage operation window, full power operation at 1500V

SMART O&M

- Modular design, easy for maintenance
- IP65 protection degree, easy for outdoor installation
- Optional C5 anti-corrosion degree, adjust to applications close to the sea

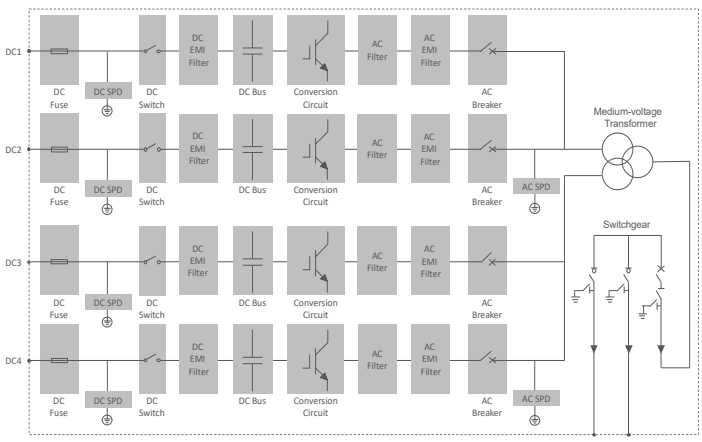
FLEXIBLE APPLICATION

- Bidirectional power conversion system with full four-quadrant operation
- Compatible with high voltage battery system, low system cost
- Battery charge & dis-charge management and black start function integrated
- FCAS support capability

GRID SUPPORT

- Proven Generator Performance Standards and compliance with DMAT 2.0, received multple 5.3.4 letters across the NEM
- Virtual Synchronous Generator mode available for both on-grid and off-grid grid forming operations
- Fully in-house PSSE/PSCAD/AS4777.2/DigSilent model development and maintenance, with dedicated strong local grid modelling team

CIRCUIT DIAGRAM



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System Type	SC4980UD-MV	SC6900UD-MV
DC side		
Max. DC voltage	1500 V	
Min. DC voltage	800 V	1000 V
DC voltage range	800 – 1500 V	1000 – 1500 V
Max. DC current	1588 A *4	1935 A * 4
No. of DC inputs	4	
AC side (Grid)		
AC output power	4980 kVA @ 50 ℃	6900 kVA @ 45 ℃ 7590 kVA @ 30 ℃
Converter port max. AC output current	1307 A*4	1587 A * 4
Converter port nominal AC voltage	550 V	690 V
Converter port AC voltage range	484 – 605 V	607 – 759 V
Nominal grid frequency / Grid frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz	
Harmonic (THD)	< 3 % (at nominal power)	
Power factor at nominal power / Adjustable power factor	>0.99 / 1 leading – 1 lagging	
Adjustable reactive power range	-100 % – 100 %	
Feed-in phases / AC connection	3 / 3	
AC side (Off-Grid)		
Inverter port nominal AC voltage	550 V	690 V
Converter port AC voltage range	484 – 605 V	607 – 759 V
AC voltage distortion	< 3 % (Linear load)	
DC voltage component	< 0.5 % Un (Linear balance load)	
Unbalance load capacity	100 %	
Nominal frequency / Frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz	
Efficiency		
Converter Max. efficiency	99 %	
Transformer		
Transformer rated power	5000 kVA	6900 kVA
LV / MV voltage	11 kV / 22 kV / 33 kV	
Transformer vector	Dy11y11	
Transformer cooling type	ONAN	
Oil type	Mineral oil(PCB free) or degradable oil on request	
Protection		
DC input protection	Load break switch + fuse	
Converter output protection	Circuit breaker	
AC output protection	Circuit breaker	
Surge protection	DC Type II / AC Type II	
Grid monitoring / Ground fault monitoring	Yes / Yes	
Insulation monitoring	Yes	
Overheat protection	Yes	
General Data		
Dimensions (W*H*D)	12192*2896*2438 mm	
Weight	28000 kg	29000 kg
Degree of protection	IP54 (Converter: IP65)	
Operating ambient temperature range	-35 to 60 ℃ (> 45 ℃ derating)	
Allowable relative humidity range	0 – 100 % (non condensing)	
Cooling method	Temperature controlled forced air cooling	
Max. operating altitude	4000 m (> 2000 m derating)	
Display	LED, WEB HMI	
Communication	RS485, CAN, Ethernet	
Compliance	CE, IEC 62477-1, IEC 61000-6-2, IEC 61000-6-4	
Grid support	L/HVRT, FRT, active & reactive power control and power ramp rate control, Volt-var, Volt-watt, Frequency-watt	

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SC3450/4000UD-MV

Power Conversion System



HIGH YIELD

- Advanced three-level technology, max. efficiency 99 %
- Effective forced air cooling, no derating up to 45 °C
- Wide DC voltage operation window, full power operation at 1500 V

SMART O&M

- Modular design,easy for maintenance
- IP65 protection degree, easy for outdoor installation
- C5 anti-corrosion degree, adjust to applications close to the sea

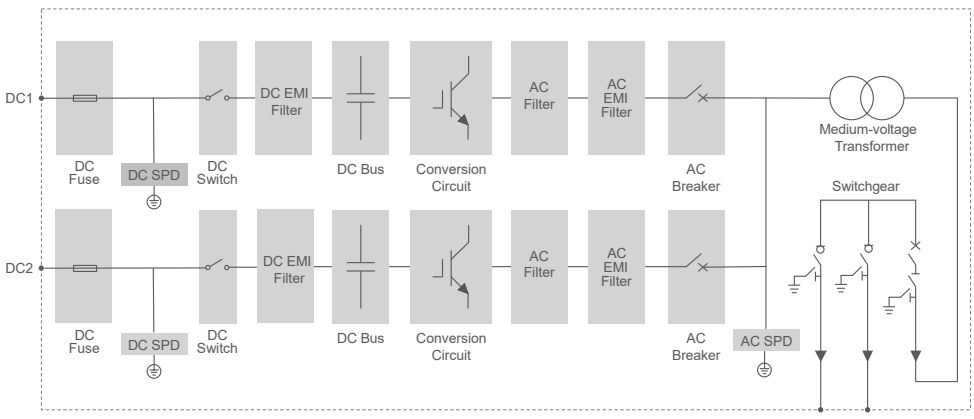
FLEXIBLE APPLICATION

- Bidirectional power conversion system with full four-quadrant operation
- Compatible with high voltage battery system, low system cost
- Battery charge & dis-charge management and black start function integrated
- FCAS support capability

GRID SUPPORT

- Proven Generator Performance Standards and compliance with DMAT 2.0, received multple 5.3.4 letters across the NEM
- Virtual Synchronous Generator mode available for both on-grid and off-grid grid forming operations
- Fully in-house PSSE/PSCAD/AS4777.2/DigSilent model development and maintenance, with dedicated strong local grid modelling team

CIRCUIT DIAGRAM



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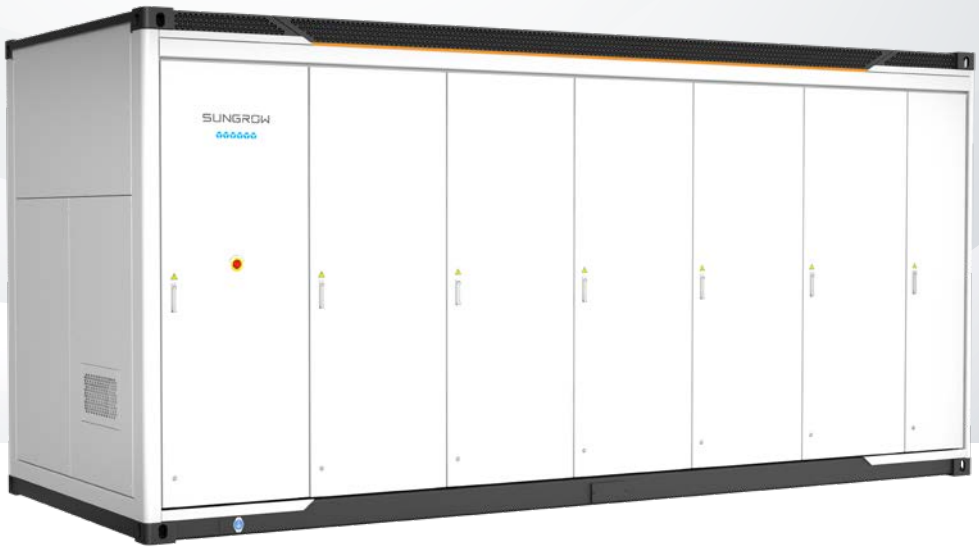
System Type	SC3450UD-MV	SC4000UD-MV
DC side		
Max. DC voltage	1500 V	
Min. DC voltage	1000 V	1150 V
DC voltage range	1000 – 1500 V	1150 – 1500 V
Max. DC current	1935 A * 2	1952 A * 2
No. of DC inputs	2	
AC side (Grid)		
AC output power	3450 kVA @ 45 ℃ 3795 kVA @ 30 ℃	4000 kVA @ 45 ℃ 4400 kVA @ 30 ℃
Converter port max. AC output current	1587 A * 2	2886 A @ 45 ℃ / 3174 A @ 30 ℃
Converter port nominal AC voltage	690 V	800 V
Converter port AC voltage range	607 – 759 V	704 – 880 V
Nominal grid frequency / Grid frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz	
Harmonic (THD)	< 3 % (at nominal power)	
Power factor at nominal power / Adjustable power factor	>0.99 / 1 leading – 1 lagging	
Adjustable reactive power range	-100 % – 100 %	
Feed-in phases / AC connection	3 / 3	
AC side (Off-Grid)		
Inverter port nominal AC voltage	690 V	800 V
Converter port AC voltage range	607 – 759 V	704 – 880 V
AC voltage distortion	< 3 % (Linear load)	
DC voltage component	< 0.5 % Un (Linear balance load)	
Unbalance load Capacity	100 %	
Nominal frequency / Frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz	
Efficiency		
Converter Max. efficiency	99 %	
Transformer		
Transformer rated power	3450 kVA	4000 kVA
Transformer max. power	3795 kVA	4400 kVA
LV / MV voltage	11 kV / 22 kV / 33 kV	
Transformer vector	Dy11	
Transformer cooling type	ONAN	
Oil type	Mineral oil (PCB free) or degradable oil on request	
Protection		
DC input protection	Load break switch + fuse	
Converter output protection	Circuit breaker	
AC output protection	Circuit breaker	
Surge protection	DC Type II / AC Type II	
Grid monitoring / Ground fault monitoring	Yes / Yes	
Insulation monitoring	Yes	
Overheat protection	Yes	
General Data		
Dimensions (W*H*D)	6058*2896*2438 mm	
Weight	16000 kg	17000 kg
Degree of protection	IP54 (Converter: IP65)	
Operating ambient temperature range	-35 to 60 ℃ (> 45 ℃ derating)	
Allowable relative humidity range	0 – 100 % (non condensing)	
Cooling method	Temperature controlled forced air cooling	
Max. operating altitude	4000 m (> 2000m derating)	
Display	LED, WEB HMI	
Communication	RS485, CAN, Ethernet	
Compliance	CE, IEC 62477-1, IEC 61000-6-2, IEC 61000-6-4	
Grid support	L/HVRT, FRT, active & reactive power control and power ramp rate control, Volt-var, Volt-watt, Frequency-watt	

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ST5015UX

PowerTitan2.0 Liquid Cooling Energy Storage System

Preliminary



OPTIMAL COST

- Intelligent liquid-cooling temperature control system to optimize the auxiliary power consumption
- Pre-assembled, no battery module handling on site,transportation of complete system

SAFETY AND RELIABLE

- AI monitoring for cell health, with early warning
- Electrical safety management, overcurrent fast breaking and arc extinguishing protection
- The electrical cabinet and battery cabinet are separated to prevent thermal runaway

EFFICIENT AND FLEXIBLE

- High-efficiency heat dissipation, increase battery life and system discharge capacity
- Front single-door-open design, supporting back to back & side by side layout drawing
- System commissioning in advance, reduce commissioning work on site, accelerate COD process

CONVENIENT O&M

- One-click system upgrade
- Intelligent automatic rehydration reduces manual rehydration
- Online intelligent monitoring to reduce manual inspections frequency

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Product Name	ST5015UX
DC side	
Cell Type	3.2 V / 314 Ah
Battery Configuration	416S12P
Nominal Capacity	5015 kWh
Nominal Voltage Range	1123.2 V – 1497.6 V
System Parameter	
Battery Container Size(W * H * D)	6058*2896*2438 mm
Battery Container Weight	42,500 kg
Degree of Protection	IP55
Operation Temperature Range	-30 to 50 ℃
Operation Humdity Range	0 – 100 % (Non-condensing)
Highest Altitude	4000m
Temperature Control Method	Intelligent Liquid Cooling
Fire Suppression System	Gas extinguishing system+smoke and temperature detection+FACP+emergency ventilation+audible and visual alarm+combustible gas detection(Default) Fused sprinkler heads+Water Dryer pipe+NFPA 68 compliance deflagration panel (Optional)
Communication Interface	RS485, Ethernet
Communication protocol	Modbus TCP
Standard	IEC61000, IEC62619, AS3000, UN38.3/UN3536, IEC62477

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ST2752UX

PowerTitan Liquid Cooling Energy Storage System



LOW COSTS

- Highly integrated ESS for easy transportation and O&M
- All pre-assembled, no battery module handling on site
- 8 hour installation to commission, drop on a pad and make electrical connections

SAFE AND RELIABLE

- Integrated DC/DC converters actively limit fault current
- DC electric circuit safety management includes fast breaking and anti-arc protection
- Multi level battery protection layers formed by discreet standalone systems offer impeccable safety

EFFICIENT AND FLEXIBLE

- Intelligent liquid cooling ensures higher efficiency and longer battery cycle life
- Modular design supports parallel connection and easy system expansion
- IP54 outdoor cabinet and optional C5 anti-corrosion

SMART AND ROBUST

- Fast state monitoring and faults record enables pre-alarm and faults location
- Integrated battery performance monitoring and logging

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Type designation	ST2752UX-AU
Battery Data	
Cell type	LFP
Battery capacity (BOL)	2752 kWh
System output voltage range	1036.8 – 1401.6 V
General Data	
Dimensions of battery unit (W * H * D)	9340*2600*1730 mm
Weight of battery unit	26,400 kg
Degree of protection	IP54
Operating temperature range	-30 to 50 ℃ (> 45 ℃ derating)
Relative humidity	0 – 100 % (Non-condensing)
Max. working altitude	3000 m
Cooling concept of battery chamber	Liquid cooling
Fire safety standard / Optional	Fused sprinkler heads, NFPA 69 explosion prevention and ventillation IDLH gases
Communication interfaces	RS485, Ethernet
Communication protocols	Modbus RTU, Modbus TCP
Compliance	CE, IEC 62477-1, IEC 61000-6-2, IEC61000-6-4, IEC62619
2 HOURS APPLICATION-ST2752UX*4-6900UD-MV	
BOL kWh (DC LV Side)	11,008 kWh DC
ST2752UX Quantity	4
PCS Model	SC6900UD-MV
4 HOURS APPLICATION-ST2752UX*8-6900UD-MV	
BOL kWh (DC)	22,016 kWh DC
ST2752UX Quantity	8
PCS Model	SC6900UD-MV

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ST2236UX

PowerTitan Liquid Cooling Energy Storage System



LOW COSTS

- Highly integrated ESS for easy transportation and O&M
- All pre-assembled, no battery module handling on site
- 8 hour installation to commission, drop on a pad and make electrical connections

SAFE AND RELIABLE

- DC electric circuit safety management includes fast breaking and anti-arc protection
- Multi level battery protection layers formed by discreet standalone systems offer impeccable safety

EFFICIENT AND FLEXIBLE

- Intelligent liquid cooling ensures higher efficiency and longer battery cycle life
- Modular design supports parallel connection and easy system expansion
- IP54 outdoor cablinet and optional C5 anti-corrosion

SMART AND ROBUST

- Fast state monitoring and faults record enables pre-alarm and faults location
- Integrated battery performance monitoring and logging

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Type designation	ST2236UX
Battery Data	
Cell type	LFP
Battery capacity (BOL)	2236 kWh
Battery voltage range	1123 – 1500 V
General Data	
Dimensions of battery unit (W * H * D)	9340*2600*1730 mm
Weight of battery unit	24,000 kg
Degree of protection	IP 54
Operating temperature range	-30 to 50 ℃ (> 45 ℃ derating)
Relative humidity	0 – 100 % (Non-condensing)
Max. working altitude	3000 m
Cooling concept of battery chamber	Liquid cooling
Fire safety standard / Optional	Fused sprinkler heads, NFPA 69 explosion prevention and ventillation IDLH gases
Communication interfaces	RS485, Ethernet
Communication protocols	Modbus RTU, Modbus TCP
Compliance	CE, IEC 62477-1, IEC 61000-6-2, IEC 61000-6-4, IEC 62619
1 HOURS APPLICATION-ST2236UX*2-4000UD-MV	
BOL kWh (DC)	4,472 kWh
ST2236UX Quantity	2
PCS Model	SC3450UD-MV, SC4000UD-MV

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ST7454KWH(L)-3450UD-MV

Energy Storage System



HIGH INTEGRATION

- Highly integrated energy storage system for easy transportation and O&M
- Advanced integration technology ensures optimal system performance and lower cost

SAFE AND RELIABLE

- DC electric circuit safety management includes fast breaking and anti-arc protection
- Multi-state monitoring and linkage actions ensure battery system safety

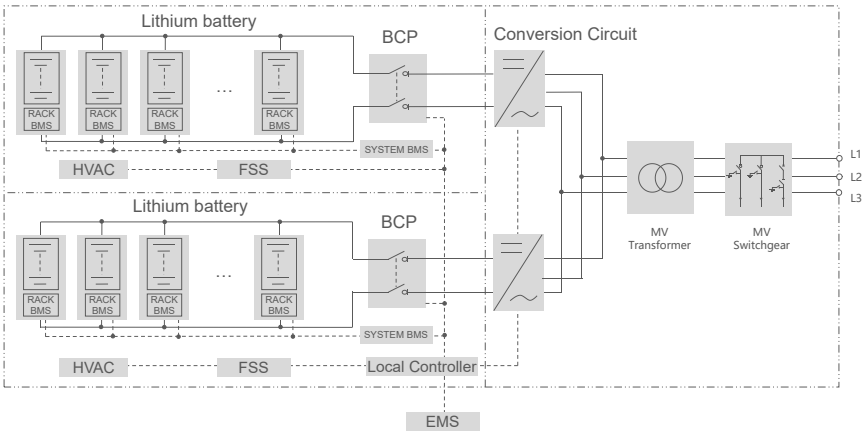
EFFICIENT AND FLEXIBLE

- Intelligent cell-level temperature control ensures higher efficiency and longer battery cycle life
- Modular design supports parallel connection and easy system expansion

SMART AND FRIENDLY

- Integrated local controller enables single point of communication interface
- Fast state monitoring and faults record enables pre-alarm and faults location

CIRCUIT DIAGRAM



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System Type	ST7454KWH(L)-3450UD-MV
Battery Data	
Cell type	LFP 280Ah
Configuration of system	416S10P*2 (Max. 416S12P*2)
Battery capacity (BOL)	3,727 kWh*2 (Max. 4473kWh*2)
Battery voltage range	1,123.2 – 1,497.6 V
BMS communication interfaces	RS485, Ethernet
BMS communication protocols	Modbus RTU, Modbus TCP
AC Data	
Nominal AC power	3,450 kVA
Max. THD of current	< 3 % (at nominal power)
DC component	< 0.5 % (at nominal power)
Grid voltage range	10 – 35 kV
Power factor	> 0.99 (at nominal power)
Adjustable power factor	1.0 leading – 1.0 lagging
Nominal grid frequency	50 / 60 Hz
Grid frequency range	45 – 55 Hz / 55 – 65 Hz
Isolation method	Transformer
Transformer	
Transformer rated power	3,450 kVA
LV/MV voltage	0.69 kV / 10 – 35 kV
Transformer vector	Dy11
Transformer cooling type	ONAN (Oil Natural Air Natural)
Oil type	Mineral oil (PCB free) or degradable oil on request
General Data	
Dimensions of PCS unit (W * H * D)	6,058 * 2,896 * 2,438 mm / 238.5" * 114.0" * 96.0"
Dimensions of battery unit (W * H * D)	2 * (12,192 * 2,896 * 2,438 mm / 480.0" * 114.0" * 96.0")
Weight of PCS unit (with MV transformer)	16.0 T / 35274 lbs
Weight of battery unit (with / without battery)	2* (45.5T 100,310.3 lbs / 15.5 T 34,171.7 lbs)
Degree of protection	IP54
Operating temperature range	-30 to 50 ℃ / -22 to 122 ℉ (> 45 ℃ / 113 ℉ derating)
Relative humidity	0 – 95 % (non-condensing)
Max. working altitude	1,000 m (standard) > 1,000 m (optional)
Cooling concept of battery chamber	Heating, Ventilation and Air Conditioning
Cooling concept of PCS chamber	Temperature controlled forced air cooling
Fire suppression system of battery unit	Novec1230 extinguishment system
Communication interfaces	RS485, Ethernet
Compliance	CE, IEC 62477-1, IEC 61000-6-2, IEC 61000-6-4, IEC 62619

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ST3727KWH(L)-3450UD-MV

Energy Storage System



HIGH INTEGRATION

- Highly integrated energy storage system for easy transportation and O&M
- Advanced integration technology ensures optimal system performance and lower cost

SAFE AND RELIABLE

- DC electric circuit safety management includes fast breaking and anti-arc protection
- Multi-state monitoring and linkage actions ensure battery system safety

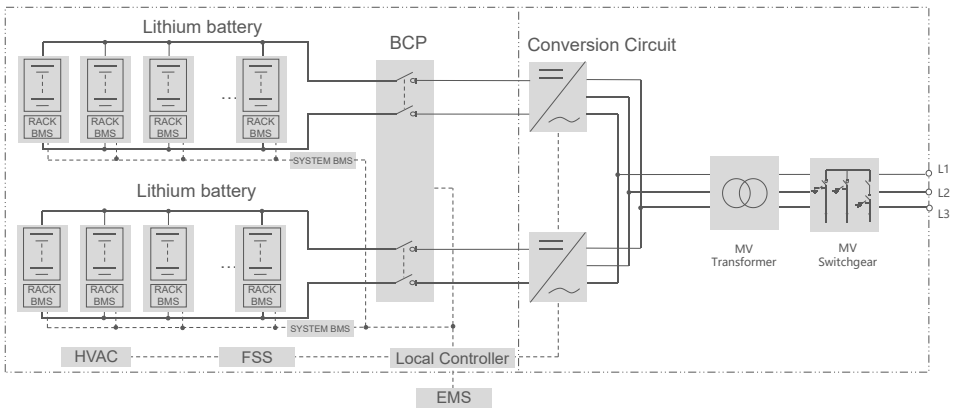
EFFICIENT AND FLEXIBLE

- Intelligent cell-level temperature control ensures higher efficiency and longer battery cycle life
- Modular design supports parallel connection and easy system expansion

SMART AND FRIENDLY

- Integrated local controller enables single point of communication interface
- Fast state monitoring and faults record enables pre-alarm and faults location

CIRCUIT DIAGRAM



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System Type	ST3727KWH(L)-3450UD-MV
Battery Data	
Cell type	LFP 280Ah
Configuration of system	416S10P
Battery capacity (BOL)	3,727 kWh
Battery voltage range	1123.2 – 1,497.6 V
BMS communication interfaces	RS485, Ethernet
BMS communication protocols	Modbus RTU, Modbus TCP
AC Data	
Nominal AC power	3,450 kVA
Max. THD of current	< 3 % (at nominal power)
DC component	< 0.5 % (at nominal power)
Grid voltage range	10 – 35 kV
Power factor	> 0.99 (at nominal power)
Adjustable power factor	1.0 leading – 1.0 lagging
Nominal grid frequency	50 / 60 Hz
Grid frequency range	45 – 55 Hz / 55 – 65 Hz
Isolation method	Transformer
Transformer	
Transformer rated power	3,450 kVA
LV/MV voltage	0.69 kV / 10 – 35 kV
Transformer vector	Dy11
Transformer cooling type	ONAN (Oil Natural Air Natural)
Oil type	Mineral oil (PCB free) or degradable oil on request
General Data	
Dimensions of PCS unit (W * H * D)	6,058 * 2,896 * 2,438 mm / 238.5" * 114.0" * 96.0"
Dimensions of battery unit (W * H * D)	12,192 * 2,896 * 2,438 mm / 480.0'' * 114.0'' * 96.0''
Weight of PCS unit (with MV transformer)	16.0 T / 35274 lbs
Weight of battery unit (with / without battery)	45.5T 100,310.3 lbs / 15.5 T 34,171.7 lbs
Degree of protection	IP54
Operating temperature range	-30 to 50 ℃ / -22 to 122 ℉ (> 45 ℃ / 113 ℉ derating)
Relative humidity	0 – 95 % (non-condensing)
Max. working altitude	1,000 m (standard) > 1,000 m (optional)
Cooling concept of battery chamber	Heating, Ventilation and Air Conditioning
Cooling concept of PCS chamber	Temperature controlled forced air cooling
Fire suppression system of battery unit	Novec1230 extinguishment system
Communication interfaces	RS485, Ethernet
Compliance	CE, IEC 62477-1, IEC 61000-6-2, IEC 61000-6-4, IEC 62619

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PVS-16/20/24MH-AU

PV combiner box for 1500 Vdc system

EFICIENT AND SAFE

- 1500V-Specific PV fuse, both positive and negative terminal
- 1500V-Specific PV SPD with fault alarm
- String current and voltage monitoring
- Main load switch state monitoring (optional)

QUALIFIED

- Highly optimize the system wiring
- Modular design, easy and quick maintenance
- CE

FLEXIBLE

- IP65 protection, meet the outdoor installation and usage requirements
- Self-powered power supply with lightning protection
- Output cable sectional area 120 – 400 mm² (max.
- 400 mm² Al cable)
  MC4 terminal connector



Type designation	PVS-16MH-AU	PVS-20MH-AU	PVS-24MH-AU
Paramerters			
Max. PV string voltage		1500 V	
Max. PV string parallel inputs	16	20	24
Rated fuse current for each string (replaceable)	20 A / 25 A / 3 0 A / 32 A / 35 A	20 A / 25 A / 30 A	20 A / 25 A
Rated current for switch disconnector		400 A	
SPD		1500 Vdc Type II	
Input terminal type		MC4 terminal	
Output terminal type		120 – 400 mm²	
Protection class		IP65	
Environment temperature		-40 to 60 ℃	
Environment humidity		0 – 95%	
Dimensions (W*H*D)		950*730*275 mm	
Weight	40 kg	42 kg	44 kg
Switch disconnector handle		External handle	
Material		SMC Plastic	
Standard Accessories			
DC output load switch		Yes	
PV specific application SPD		Yes	
PV SPD failure monitoring		Yes	
PV self power supply for internal loads		Yes	
RS485 communication port		Yes	
String current and bus voltage monitoring		Yes	
Optional Accessories			
Negative grounding		Optional	
Monitoring for load switch state		Optional	

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PPC1000

This product is applied to utility PV plants or PV blocks in hybrid plant

GRID FRIENDLY, IMPROVE THE EFFICIENCY OF GRID AUXILIARY SERVICES

- Strong access capability: Support IEC 61850, DNP3.0 protocol
- Power grid auxiliary service: 200ms fast primary frequency response, support fast reactive power response
- Grid access standard: Comply with multinational grid code, passed the Australian GPS certification

INTELLIGENT ANALYSIS, COST REDUCTION AND EFFICIENCY INCREASE

- IV curve online analysis: Cluster health evaluation, quantification of failure loss, improve power plant revenue
- Dispersion rate intelligent diagnosis: 1 minute dispersion rate analysis of 15 root causes for 600MW power station



Type designation	PPC1000
System configuration	
Server	Rack server
Controller	PPC100
Workstation	Desktop computer
Software	PPC, Insight
Firewall	Firewall
Ports	
RS485 interface	7
DI / DO	16 / 4
Fiber port	8 * 100 Mbps
Ethernet port	20 * 10 / 100 Mbps
AI	2 * (4 – 20 mA), 2 * (0 – 10 Vdc)
CAN	1
PT100 / PT1000	2
Time Code Format B	1
Power supply	
Power supply	100 – 240 Vac, 50 / 60 Hz, 1700 W
Ambient parameters	
Operating temperature	10 ℃ to 35 ℃
Operating humidity	10 % – 80 %
Elevation	≤ 4000 m
Protection class	IP20
Communication	
Communication medium	Optical fiber, Ethernet, and WLAN for local maintenance
Networking method	Bus / fiber ring, single or dual networking
Communication protocol	IEC 61850 GOOSE, DNP3 serial, DNP3 LAN/WAN, IEC 104, Modbus TCP
Certificate	
Certificate	IEC62443 / CE / FCC
Cabinet	800 * 2260 * 1000 mm
Dimensions (W*H*D)	

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EMS3000

This product is applied to utility plants with energy storage systems



PROLONG BATTERY LIFE AND REDUCE BATTERY CAPACITY LOSS

- Prolong battery life: SOC 4-level balance to improve system efficiency
- Intelligent Battery Diagnosis: Battery warning , provides a health warning 48 hours in advance

Integrated management of PV & BESS

- Integrated management of PV & BESS Integration: ALL IN ONE, reduce CAPEX , reduce O&M cost
- 3D HMI: 3D visualization is more intuitive

GRID FRIENDLY, IMPROVE THE EFFICIENCY OF GRID AUXILIARY SERVICES

- Strong access capability: Support IEC 61850, DNP3.0 protocol
- Power grid auxiliary service: 200ms fast primary frequency response, support fast reactive power response
- Black Start: Support complex scenarios (thermal power, gas turbine, PV & BESS etc.) black start
- Grid access standard: Meet the requirements of multi-national power grid certification, Passed the Australian GPS certification

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Type designation	EMS3000
System configuration	
Server	Rack server
Controller	EMS300
Workstation	Desktop computer
Software	EMS, Insight
Firewall	Next generation firewall
Ports	
RS485 interface	7
DI / DO	16 / 4
Fiber port	8 * 100 Mbps
Ethernet port	20 * 10 / 100 / 1000 Mbps
AI	2 * (4 – 20 mA), 2 * (0 – 10 Vdc)
CAN	1
PT100 / PT1000	2
Time Code Format B	1
Power supply	
Power supply	100 – 240 Vac, 50 / 60 Hz, 1700 W
Ambient parameters	
Operating temperature	10 ℃ to 35 ℃
Operating humidity	10 % – 80 %
Elevation	≤ 4000 m
Protection class	IP20
Communication	
Communication medium	Optical fiber, Ethernet, and WLAN for local maintenance
Networking method	Bus / fiber ring, single or dual networking
Communication protocol	Modbus RTU, Modbus TCP IEC 61850 GOOSE, IEC 61850 MMS, DNP 3.0, IEC60870-5-104
Certificate	
Certificate	IEC62443 / CE / FCC / CMA / CNAS
Cabinet	
Dimensions (W*H*D)	800 * 2260 * 1000 mm

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Global Reference



205 MW PV Plant Fresno, California, USA



100 MW PV Plant Vietnam



40 MW PV Plant Thailand

150MW Floating PV Plant China



43MW PV Plant in Philippines



50 MW PV Plant India



250MW PV Plant in Ninh Thuan, Vietnam



5MW / 4.6MWh DC-coupled Project, SA, Australia



470MW / 900MWh Standalone Energy Storage Project, USA



90MW / 136MWh PV+ESS project, Thailand



16MW / 8.5MWh Frequency Regulation, Germany



27.5MW / 30.14MWh PV+ESS Yorkshire, England



5.99 MW / 21 MWh Energy Storage, Hokkaido Japan



1 MW / 2.2 MWh Peak Shaving, Missouri, USA



100 MW / 100 MWh Energy Storage, Minety, the UK



500 kW / 1.37 MWh C&I,Sampson Cay,Bahamas



1.5MW / 3.836MWh DC-coupled Energy Storage Project in Florida, USA

SUNGROW

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