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My Inovance

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INOVANCE

FORWARD, ALWAYS PROGRESSING

Energy Storage Industry Solution

from Inovance

Industrial Automation

New Energy Vehicle

Intelligent Elevator

Rail Transit

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Digital and Intelligent Integration of Generation, Grid, Load, and Storage Promoting Low-Carbon Industrial Transformation

As a leading enterprise in the field of industrial automation control in China and a listed company (stock code: SZ.300124), Inovance has been listed into the "First Batch of Key R&D Projects in Intelligent Robot in China". It has been selected as the "New Energy Vehicle Powertrain Engineering Center in Jiangsu", "National Enterprise Technology Center" in 2021, and "First Batch of Postdoctoral Workstation in Shenzhen". Additionally, Inovance has been recognized in the "2022 Forbes China Top 50 Sustainable Development Industrial Enterprises" and "2022 Hurun China 100".

With a track record of providing energy storage solutions exceeding 17 GW, Inovance caters to 12 kW to 10000 kW energy storage needs for stations, business, industry, and home. Leveraging expertise in power electronics, control technology, and digital energy management, Inovance offers a comprehensive energy solution spanning power generation, transmission, distribution, and utilization. Our offerings include the large-capacity power conversion systems (PCSs), grid-forming energy storage technology, PMS rapid co-control solutions, flywheel and liquid flow energy storage solutions, formation power solutions, DC distribution solutions, and hydrogen production power solutions.

Relying on robust power electronics, automation, and digital control technologies, Inovance has made breakthroughs in high-speed drive technologies, high-pressure compressor drive technologies, PCSs, and energy management control systems. Our products span from power electronic equipment to control equipment, providing comprehensive industry solutions.

Contents

Inovance Practice in the Energy Field

Pitch and yaw control system solutions for over **30,000** wind turbines

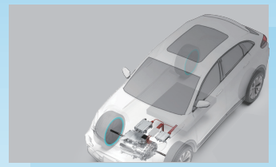
Comprehensive solutions for over **80%** of metallurgical enterprises

Solutions for electrochemical and physical energy storage systems totaling over **17 GW**

Integrated industrial chain solutions for **1,500 GW** photovoltaic projects

Industrial localized electronic control solutions and bottle-neck-breaking technologies for over **50** industries

Over **3.5** million electronic control products for new energy vehicles



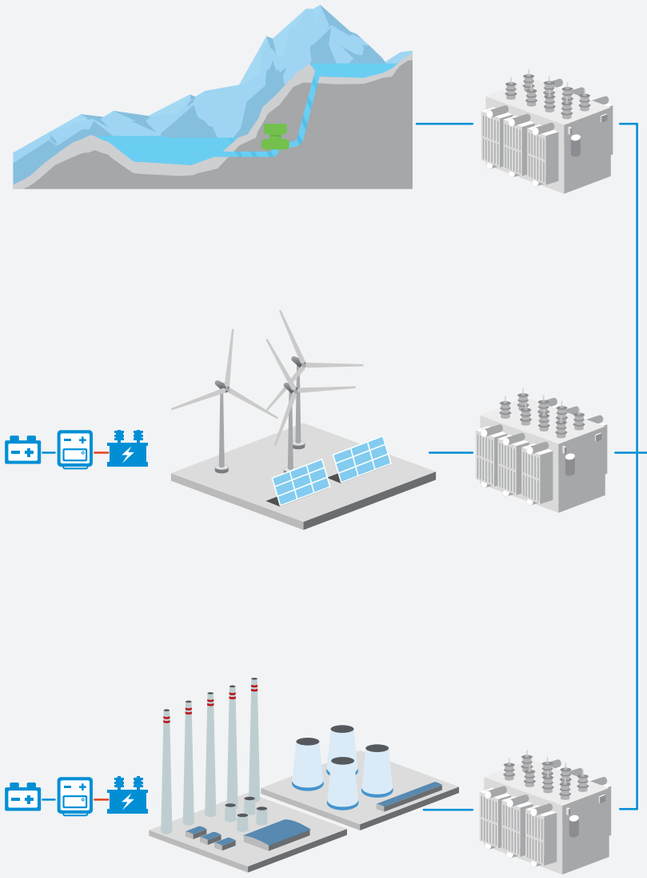
End-to-end solutions for **1,500 GWH** lithium battery production lines

Electric solutions for over **15** types of engineering machinery

Over **60%** of shore power and comprehensive digital energy solutions for ports

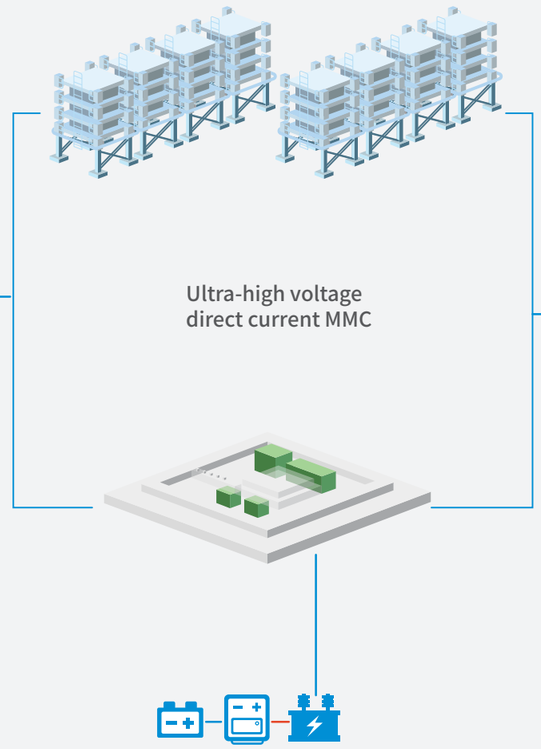
Overview of System Solution

Power generation



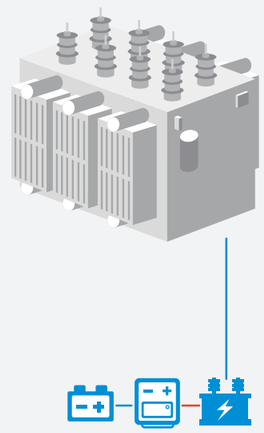
- Frequency modulation
- Facilitating grid connection of wind and solar new energy
- Peak-load regulation
- Smooth output
- Black start

Transmission



- Alleviating congestion in the AC grid
- Output optimization
- Smooth output

Distribution



- Quick peak adjustment
- Distribution transformer area expansion
- Load shifting
- Reactive support

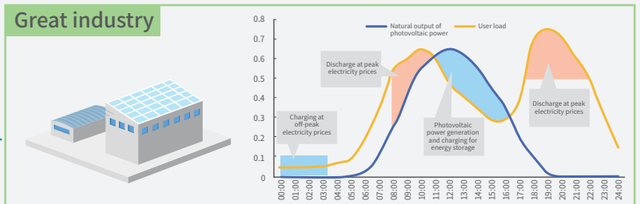
Overview of Energy Storage

Consumption

Industry and business

Zero-carbon park for storage | Data center | Communication base station

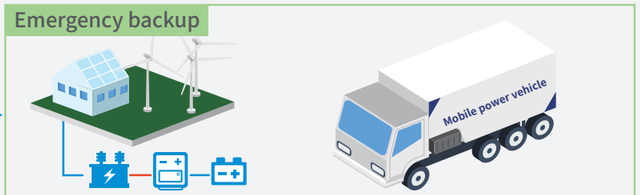
Great industry



Rooftop photovoltaics, DC energy storage, and DC consumption

Peak-to-off-peak price difference

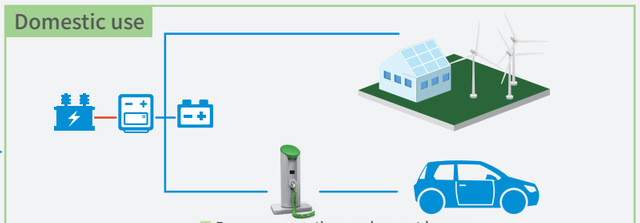
Emergency backup



Distributed photovoltaic/wind power generation

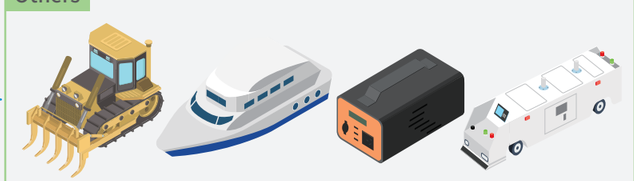
Mobile energy storage

Domestic use



Power generation and use at home; PV+ESS+Charging for local consumption

Others



Engineering machinery, electric boat, portable energy storage, AGV, and others

1725 kW Centralized PCS

IES900 Series

Product Features

Intelligent and efficient

- Tri-level topology; maximum efficiency of 99%
- Off-grid V/f output, GFL/GFM VSG, and black start functions
- Quick power response, allowing for full-load charge/discharge switchover within 30 ms

Smartly interconnected

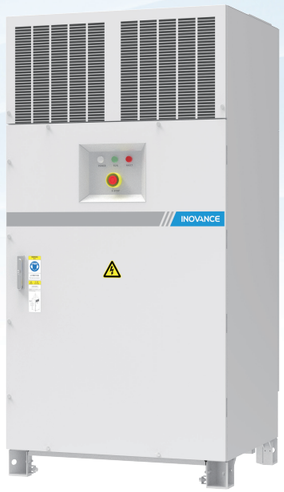
- Establishes communication link fast with diverse options
- Integrates RS485, Ethernet, and CAN communication ports
- Supports Modbus-RTU, Modbus-TCP, CAN 2.0B, IEC 61850 GOOSE, and IEC 61850 MMS protocols

Safe and reliable

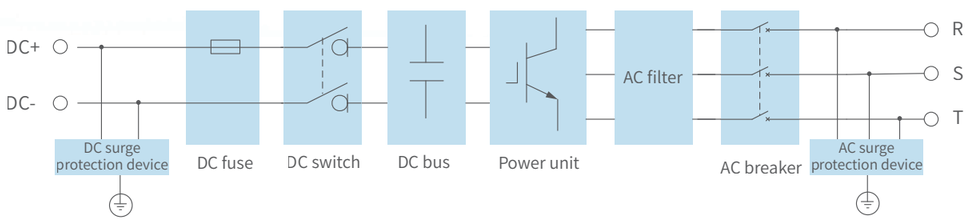
- Supports LVRT/HVRT with great grid adaptability
- Active and passive islanding detection
- Comprehensive protection measures and automatic self-diagnosis upon fault

Cost-effective

- Air-water cooling, enabling high power density with a small footprint
- Parallel connection of multiple systems for flexible expansion



Topology



Parameters

Model	IES900-07-1200-C-S-EU	IES900-07-1375-C-S-EU	IES900-07-1575-C-S-EU	IES900-07-1725-C-S-EU
DC side				
Maximum DC voltage	1500 V			
DC voltage range	700 V to 1500 V	800 V to 1500 V	915 V to 1500 V	1000 V to 1500 V
Maximum DC current	1807 A			
Number of DC input channels	1			
AC side (grid-connected)				
Rated output power	1200 kW	1375 kW	1575 kW	1725 kW
Maximum output power	1320 kW (@35° C)	1512 kW (@35° C)	1732 kW (@35° C)	1898 kW (@35° C)
Rated grid voltage	480 V	550 V	630 V	690 V
Rated grid frequency	50 Hz/60 Hz *			
Total harmonic distortion of the current (THD)	< 3% (rated power)			
Reactive power range	-1.05 (lead) to +1.05 (lag)			
Power factor	-1 (lead) to +1 (lag)			
AC connection method	Three-phase three-wire			
AC side (off-grid)				
Rated output voltage	480 V	550 V	630 V	690 V
Rated frequency	50 Hz/60 Hz *			
Voltage variation	< 1% U_N (linear load)			
Total harmonic distortion of the voltage	< 3% (linear load)			
Voltage unbalance degree	PCS output voltage unbalance: < 2% or ≤ 4% (short time)			
System				
Maximum efficiency	99%			
Cooling method	Air-water cooling			
Allowable ambient temperature	-40° C to +60° C (derating required for temperatures above +45° C)			
Allowable relative humidity	0% to 100% (non-condensing)			
Cable inlet mode	Front-bottom-in for the DC cable; rear-bottom-out for the AC cable			
Dimensions (W x D x H)	1080 mm x 870 mm x 2175 mm			
Mass	< 1200 kg			
Maximum operating altitude	3000 m (derating required for altitudes above 2000 m)			
Ingress protection	IP65			
Compliance	EN 62477-1, EN 50549-2/10, EN IEC 61000-6-2/4, and EN 55011			
Communication				
Communication interface	RS485, CAN, Ethernet, and CAN 2.0B			
Communication protocol	Modbus-RTU and CAN 2.0B Modbus-TCP, IEC 61850, and EtherCAT (optional)			

* Customized based on requirements.

3.45 MW Centralized Turnkey Station With Transformer Integrated

IPS900 Series

Product Features

Intelligent and efficient

- Tri-level topology for the PCS; maximum conversion efficiency of 99%
- Quick power response, allowing for ±100% charge/discharge switchover within 30 ms
- High-speed communication for parallel PCS operation, effectively reducing circulating current

Flexible and compatible

- Streamlined system that supports various wire gauge changes
- Supports multiple charge/discharge modes: constant voltage, constant current, and constant power
- Supports Modbus-RTU, Modbus-TCP, CAN 2.0B, IEC 61850 GOOSE, and IEC 61850 MMS protocols

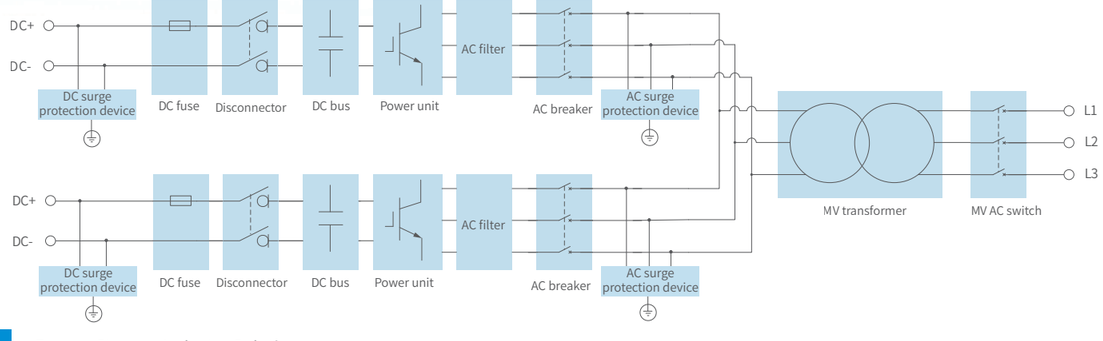
Safe and reliable

- IP54 for the whole device and IP65 for the PCS
- Fault recording for rapid fault localization
- Reliable operation in the wide range of -40° C to +60° C

Cost-effective

- Integrated in a 20-foot standard container, enabling efficient transportation
- Low loss due to air-water cooling for the PCS

Topology



Parameters

Model	IPS900-07P-3450-U-EU
DC side	
Maximum DC voltage	1500 V
DC voltage for full performance	1050 V to 1500 V
Maximum DC current	1807 A x 2
Number of DC input channels	2
AC side (grid-connected)	
Rated power	3450 kVA
Rated grid voltage	20 kV to 35 kV
Rated grid frequency	50 Hz / 60 Hz *
Total harmonic distortion of the current (THD)	< 3% (rated power)
Reactive power range	-1.05 (lead) to +1.05 (lag)
Power factor	-1 (lead) to +1 (lag)
AC connection method	Three-phase three-wire
AC side (off-grid)	
Rated output frequency	50 Hz / 60 Hz *
Voltage variation	< 2% U_N (linear balanced load)
Total harmonic distortion of the voltage	< 3% (linear load)
Voltage unbalance degree	PCS output voltage unbalance: < 2% or ≤ 4% (short time)
System	
Cooling method	Natural air cooling (transformer)/Air-water cooling (PCS)
Allowable ambient temperature	-40° C to +60° C (derating required for temperatures above +45° C)
Allowable relative humidity	0% to 100% (non-condensing)
Cable inlet mode	Bottom-in and bottom-out
Dimensions (W x D x H)	6058 mm x 2438 mm x 2896 mm (oil-immersed transformer)
Mass	15,000 kg
Maximum operating altitude	3000 m (derating required for altitudes above 2000 m)
Ingress protection	IP54 (whole device)/IP65 (PCS)
Communication	
Communication interface	With EMS: MMS dual network and GOOSE dual network With BMS: RS485 / CAN
Communication protocol	IEC 61850, Modbus-RTU, Modbus-TCP, EtherCAT, and CAN 2.0B

* Customized based on requirements.

2.5 MW Centralized PCS

IES920 Series

Product Features

Intelligent and efficient

- Tri-level topology; maximum efficiency of 99%
- Off-grid V/f output, GFL/GFM VSG, and black start functions
- Quick power response, allowing for full-load charge/discharge switchover within 30 ms

Safe and reliable

- Top-rear exhaust, reducing heat island effect and duct blockage risks
- Third-generation enclosed air-water cooling design, offering exceptional environmental adaptability
- Dual protection with pressure relief and ventilation devices

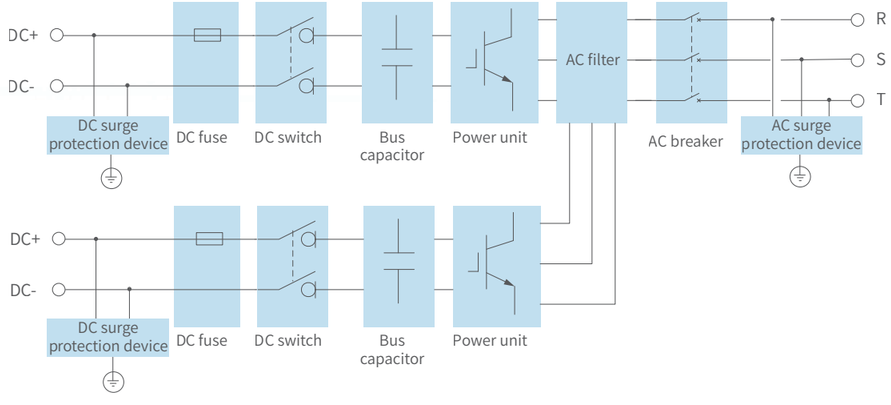
Flexible and compatible

- Supports multiple charge/discharge modes: constant voltage, constant current, and constant power
- Supports Modbus-RTU, CAN 2.0B, Modbus-TCP, IEC 61850, and EtherCAT protocols

Cost-effective

- 30% increase in power density, improving site connection ratio
- Parallel connection of multiple systems for flexible expansion

Topology



Parameters

Model	IES920-07-2500-C-S-EU	IES920-07-2500-C-D-EU
DC side		
Maximum DC voltage	1500 V	
Operating DC voltage range	1000 V to 1500 V	
Maximum DC current	2806 A	1403 A x 2
Number of DC input channels	1	2
AC side (grid-connected)		
Rated power	2500 kW @ 45° C	
Maximum output power	2750 kW @ 35° C	
Rated grid voltage	690 V	
Rated grid frequency	50 Hz / 60 Hz *	
Total harmonic distortion of the current (THD)	< 3% (rated power)	
Reactive power range	-1.05 (lead) to +1.05 (lag)	
Power factor	-1 (lead) to +1 (lag)	
AC connection method	Three-phase three-wire	
AC side (off-grid)		
Rated AC voltage	690 V	
Rated output frequency	50 Hz / 60 Hz *	
Voltage variation	< 1% U_N (linear balanced load)	
Total harmonic distortion of the voltage	< 3% (linear load)	
Voltage unbalance degree	PCS output voltage unbalance: < 2% or ≤ 4% (short time)	
System		
Maximum efficiency	99%	
Cooling method	Air-water cooling	
Allowable ambient temperature	-40° C to +60° C (derating required for temperatures above +45° C)	
Allowable relative humidity	0% to 100% (non-condensing)	
Cable inlet mode	Bottom-in for the DC cable; rear-out for the AC cable	
Dimensions (W x D x H)	1200 mm x 1250 mm x 2370 mm	
Mass	< 1800 kg	
Maximum operating altitude	3000 m (derating required for altitudes above 2000 m)	
Ingress protection	IP65	
Communication		
Communication interface	RS485, CAN, Ethernet, and DI/DO	
Communication protocol	Standard: Modbus-RTU / CAN 2.0B Optional: Modbus-TCP, IEC 61850, and EtherCAT	

* Customized based on requirements.

5 MW Centralized Turnkey Station With Transformer Integrated

IPS920 Series

Product Features

Intelligent and efficient

- Tri-level topology for the PCS; maximum conversion efficiency of 99%
- High-speed communication for parallel PCS operation, effectively reducing circulating current
- Suitable for various grid environments with strong connectivity to complex grids

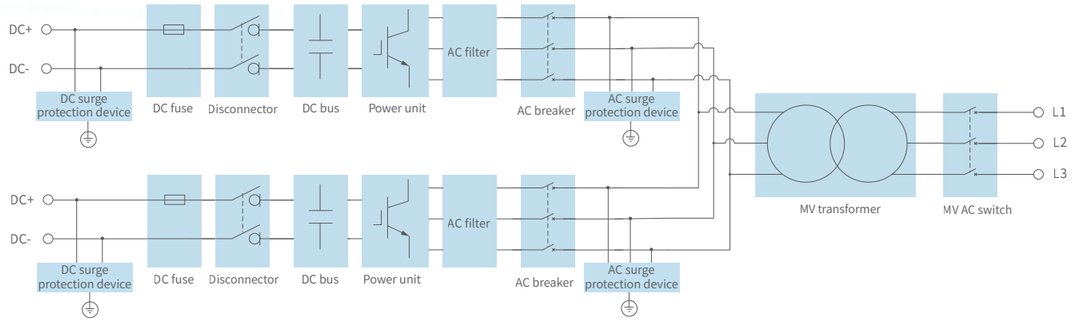
Cost-effective

- Integrated in a 20-foot standard container, enabling efficient transportation
- Reduced internal redundant components; low noise

Safe and reliable

- 50% improved cooling efficiency, immune to heat island effect
- Third-generation enclosed air-water cooling design, offering exceptional environmental adaptability

Topology



Parameters

Model	IPS920-07P-5000-U-EU
DC side	
Maximum DC voltage	1500 V
DC voltage for full performance	1050 V to 1500 V
Maximum DC current	2806 A x 2 (single branch)/1403 A x 4 (dual branch)
Number of DC input channels	2/4
AC side (grid-connected)	
Rated power	5000 kVA
Rated grid voltage	20 kV to 35 kV
Rated grid frequency	50 Hz /60 Hz *
Total harmonic distortion of the current (THD)	< 3% (rated power)
Reactive power range	-1.05 (lead) to +1.05 (lag)
Power factor	-1 (lead) to +1 (lag)
AC connection method	Three-phase three-wire
AC side (off-grid)	
Rated output frequency	50 Hz /60 Hz *
Voltage variation	< 2% U_N (linear balanced load)
Total harmonic distortion of the voltage	< 3% (linear load)
Voltage unbalance degree	PCS output voltage unbalance: < 2% or ≤ 4% (short time)
System	
Cooling method	Natural air cooling (transformer)/Air-water cooling (PCS)
Allowable ambient temperature	-40° C to +60° C (derating required for temperatures above +45° C)
Allowable relative humidity	0% to 100% (non-condensing)
Cable inlet mode	Bottom-in and bottom-out
Dimensions (W x D x H)	6058 mm x 2438 mm x 2896 mm (oil-immersed transformer)
Mass	< 30,000 kg
Maximum operating altitude	3000 m (derating required for altitudes above 2000 m)
Ingress protection	IP54 (whole device)/IP65 (PCS)
Communication	
Communication interface	With EMS: MMS dual network and GOOSE dual network With BMS: RS485 / CAN
Communication protocol	IEC 61850, Modbus-RTU, Modbus-TCP, EtherCAT, and CAN 2.0B

* Customized based on requirements.

3.5 MW Centralized PCS

IES920 Series

Product Features

Intelligent and efficient

- Tri-level topology, highest efficiency of 99%
- Functions like offline V/f output, GFL/GFM VSG, and black start
- Quick power response, full-load charge and discharge switchover time < 30 ms

Safe and reliable

- Rear outlet ejected, reducing the heat island effect and lowering the air filter blockage risk
- Third-generation sealed air-water cooling design, with exceptional environmental adaptability
- Dual protection with explosion-relief ventilation device

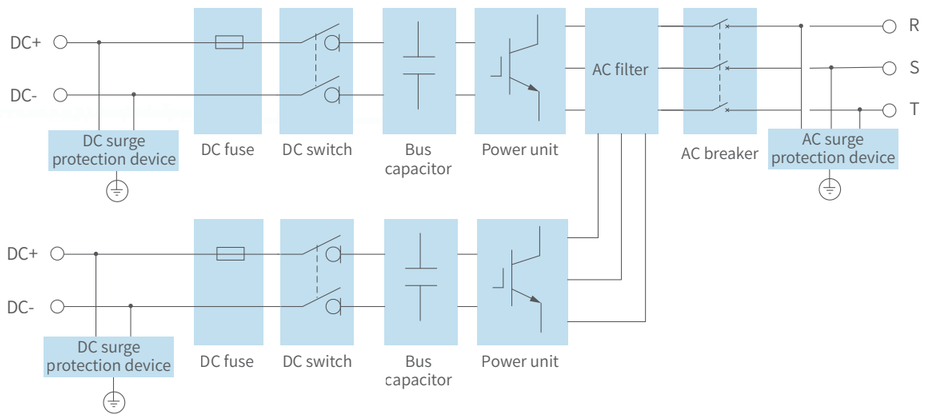
Flexible and compatible

- Compatible with large cells ranging from 587 Ah to 688 Ah
- Support for multiple charging and discharging modes: constant voltage, constant current, and constant power
- Support for the Modbus-RTU, CAN2.0B, Modbus-TCP, IEC61850, and EtherCAT protocols

Cost-effective

- Power density increased by 30%, higher site connection ratio
- Parallel connection of multiple systems for flexible expansion

Topology



Parameters

Model	IES920-07-3150-C-D-EU	IES920-07-3500-C-D-EU
DC side data		
Maximum DC voltage	1500 V	
DC bus voltage range	1000 V to 1500 V	
Maximum DC current	1767 A x 2	1964 A x 2
Number of DC input channels	2	
AC side data (grid-connected)		
Rated power	3150 kW@45° C	3500 kW@45° C
Maximum output power	3465 kW@35° C	3850 kW@35° C
Rated grid voltage	690 V	
Rated grid frequency	50 Hz / 60 Hz *	
Reactive power range	-1.05 (lead) to +1.05 (lag)	
Power factor	-1 (lead) to +1 (lag)	
AC connection method	Three-phase three-wire	
AC side data (off-grid)		
Rated output frequency	50 Hz / 60 Hz *	
Voltage variation	< 1% U_N (linear balanced load)	
Total harmonic distortion of the voltage	< 3% (linear load)	
Voltage unbalance degree	Output voltage unbalance: < 2% or ≤ 4% (short time)	
System		
Maximum efficiency	99%	
Cooling method	Air-water cooling	
Allowable ambient temperature	-40° C to +60° C (derating required for temperatures above +45° C)	
Allowable relative humidity	0% to 100% (non-condensing)	
Inlet mode	Bottom-in on the DC side, and rear-out on the AC side	
Dimensions (W x D x H)	1200 mm x 1300 mm x 2370 mm	
Weight	< 1800 kg	
Maximum altitude	3000 m (derating required for altitudes higher than 2000 m)	
Ingress protection	IP65	
Display and communication		
Communication interface	RS485, CAN, Ethernet, and DI/DO	
HMI	HMI	
Communication protocol	Standard: Modbus-RTU/CAN2.0B Optional: Modbus-TCP, IEC61850 and EtherCAT	

* Customized based on requirements.

10 MW Centralized Turnkey Station With Transformer Integrated

IPS920 Series

Product Features

Intelligent and efficient

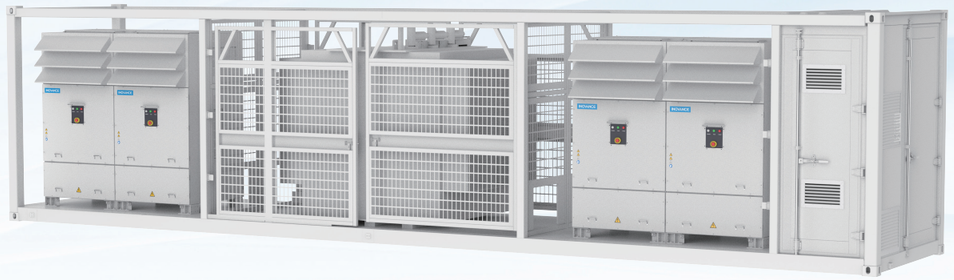
- Tri-level topology for the PCS; maximum conversion efficiency of 99%
- High-speed communication for parallel PCS operation, effectively reducing circulating current
- Suitable for various grid environments with strong connectivity to complex grids

Cost-effective

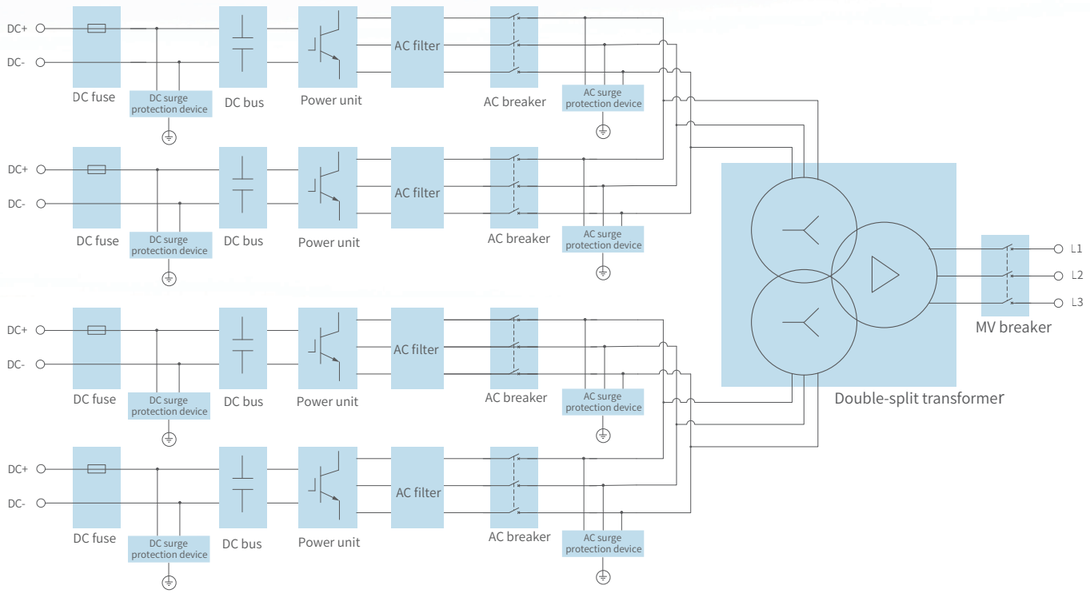
- Integrated in a 40-foot standard container, enabling efficient transportation
- Reduced internal redundant components; low noise

Safe and reliable

- 50% improved cooling efficiency, immune to heat island effect
- Third-generation enclosed air-water cooling design, offering exceptional environmental adaptability



Topology



Parameters

Model	IPS920-07P-10000-U-EU
DC side	
Maximum DC voltage	1500 V
DC voltage range	1000 V to 1500 V
Maximum DC current	1403 A x 8
Number of DC input channels	8
AC side (grid-connected)	
Rated power	10000 kVA@45℃
Maximum output power	11000 kVA@35℃
Rated grid voltage	20 kV to 35 kV
Rated grid frequency	50 Hz /60 Hz *
Total harmonic distortion of the current (THD)	< 3% (rated power)
Reactive power range	-1.05 (lead) to +1.05 (lag)
Power factor	-1 (lead) to +1 (lag)
AC connection method	Three-phase three-wire
AC side (off-grid)	
Rated output frequency	50 Hz /60 Hz *
Voltage variation	< 1% U_N (linear balanced load)
Total harmonic distortion of the voltage	< 3% (linear load)
Voltage unbalance degree	PCS output voltage unbalance: < 2% or ≤ 4% (short time)
System	
Cooling method	Natural air cooling ON (transformer)/Air-water cooling (PCS)
Allowable ambient temperature	-40° C to +60° C (derating required for temperatures above +45° C)
Allowable relative humidity	0% to 100% (non-condensing)
Cable inlet mode	Bottom-in and bottom-out
Dimensions (W x D x H)	12192 mm x 2438 mm x 2896 mm (oil-immersed transformer)
Mass	< 40,000 kg
Maximum operating altitude	3000 m (derating required for altitudes above 2000 m)
Ingress protection	IP54 (whole device)/IP65 (PCS)
Communication	
Communication interface	Ethernet, RS485, CAN, and DI/DO
Communication protocol	Standard: Modbus-RTU / CAN2.0B Optional: Modbus-TCP, IEC61850, and EtherCAT

* Customized based on requirements.

400 kW String PCS

IES600 Series

Product Features

Efficient and flexible

- Integrated design compatible with AC/DC configurations and various battery types
- Independent control for each battery cluster to prevent inter-cluster circulation, enhancing system energy capacity

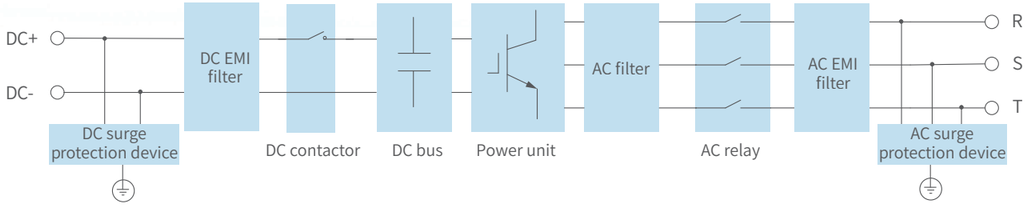
Convenient Maintenance

- 225 mm ultra-thin design, easily fitting into a 20-foot container, enabling efficient transportation
- Liquid cooling for each module, enabling easy and quick maintenance
- One-click upgrade for the entire system with visualized operating status

Safe and reliable

- High-speed EtherCAT communication, supporting 16 parallel machines
- High protection rating (IP65) for reliable performance in extreme environments
- Single-module switchover upon fault, minimizing system capacity loss

Topology



Parameters

Model	IES600-07-0400-C-EU
DC side	
Maximum DC voltage	1500 V
Operating DC voltage range	1000 V to 1500 V
Maximum DC current	381.5 A
Number of DC input channels	1
AC side (grid-connected)	
Rated power	400 kW
Maximum output power	440 kW
Rated grid voltage	690 V
Rated grid frequency	50 Hz / 60 Hz*
Total harmonic distortion of the current (THD)	< 3% (rated power)
Reactive power range	-1.05 (lead) to +1.05 (lag)
Power factor	-1 (lead) to +1 (lag)
AC connection method	Three-phase three-wire
AC side (off-grid)	
Rated AC voltage	690 V
Rated output frequency	50 Hz / 60 Hz*
Voltage variation	< 1% U_N (linear balanced load)
Total harmonic distortion of the voltage	< 3% (linear load)
Voltage unbalance degree	PCS output voltage unbalance: < 2% or ≤ 4% (short time)
System	
Maximum conversion efficiency	99%
Cooling method	Air-water cooling
Allowable ambient temperature	-40° C to +60° C (derating required for temperatures above +50° C)
Allowable relative humidity	0% to 100% (non-condensing)
Cable inlet mode	Bottom-in and bottom-out
Dimensions (W x D x H)	225 mm x 1015 mm x 1515 mm
Mass	< 300 kg
Maximum operating altitude	3000 m (derating required for altitudes above 2000 m)
Ingress protection	IP65
Compliance	EN 62477-1, EN 50549-2/10, EN IEC 61000-6-2/4, and EN 55011
Communication	
Communication interface	RS485, CAN, Ethernet, and DI/DO
Communication protocol	IEC 61850, Modbus-RTU, EtherCAT, and CAN 2.0B

* Customized based on requirements.

6 MW String Turnkey Station With Transformer Integrated

IPS600 Series

Product Features

Intelligent and efficient

- PCS plug-and-play functionality, enabling online maintenance
- Independent thermal management per module with thermosiphon and internal circulation technologies for cooling
- PCS maximum conversion efficiency of 99%; transformer peak conversion efficiency of up to 99.57%

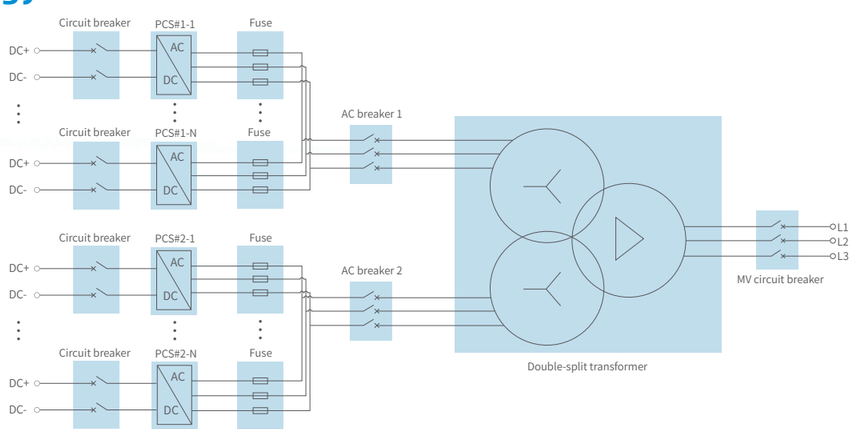
Cost-effective

- Modular design for flexible configuration per customer needs
- Integrated in a 20-foot standard container, enabling efficient transportation
- Customized solution for 6 MW multi-unit parallel operation

Safe and reliable

- Active balancing BMS and individual pack charge/discharge to avoid capacity loss and circulating current risks
- 16-unit parallel circulating current being less than 5% of average parallel current
- IP54 for the whole device; IP65 for the PCS

Topology



Parameters

Model	IPS600-07P-6000-U-EU
DC side	
Maximum DC voltage	1500 V
DC voltage for full performance	1070 V to 1500 V
Maximum DC current	358 A x 16
Number of battery clusters	16
AC side (grid-connected)	
Rated power	6000 kVA (including the capacity of battery compartment and auxiliary transformer)
Rated grid voltage	20 kV to 35 kV
Rated grid frequency	50 Hz / 60 Hz *
Total harmonic distortion of the current (THD)	< 3% (rated power)
Reactive power range	-1.05 (lead) to +1.05 (lag)
Power factor	-1 (lead) to +1 (lag)
AC connection method	Three-phase three-wire
AC side (off-grid)	
Rated output frequency	50 Hz / 60 Hz *
Voltage variation	< 1% U_N (linear balanced load)
Total harmonic distortion of the voltage	< 3% (linear load)
Voltage unbalance degree	PCS output voltage unbalance: < 2% or ≤ 4% (short time)
System	
Cooling method	Naturally ventilated (transformer)/Intelligent air cooling (PCS)
Allowable ambient temperature	-40° C to +60° C (derating required for temperatures above +50° C)
Allowable relative humidity	0% to 100% (non-condensing)
Cable inlet mode	Bottom-in and bottom-out
Dimensions (W x D x H)	6058 mm x 2438 mm x 2896 mm (oil-immersed transformer)
Mass	Approx. 30,000 kg
Maximum operating altitude	3000 m (derating required for altitudes above 2000 m)
Ingress protection	IP54 (whole device)/IP65 (PCS)
Communication	
Communication interface	RS485, CAN, Ethernet, and CAN 2.0B
Communication protocol	Standard: Modbus-RTU / CAN 2.0B Optional: Modbus-TCP, IEC 61850, and EtherCAT

* Customized based on requirements.

Hybrid Inverter

IES320 Series

The IES320 series hybrid inverter is used in energy storage for home and small-scale industry and business. The single-unit power is 12 kW, 15 kW, or 20 kW. It supports various modes, such as self-consumption, surplus electricity grid connection, off-grid power supply, and Time of Use (TOU). It allows off-grid connection with all types of loads. The efficient thermosiphon technology is applied to significantly improve the heat dissipation efficiency. The inverter has IP66 and C5 protection and stringent EMC design comparable to household appliances.

Flexible Application

- Compatible with components and cells of different specifications
- Five devices connected in parallel for flexible expansion
- Supports on-grid and off-grid and 100% three-phase unbalanced output

Maximizing Yields

- 200% over-dimensioning on the DC side to maximize power generation
- Available in advanced self consumption, peak shaving, and TOU modes
- Power control accuracy lower than or equal to 100 W for accurate anti-reverse current prevention

Enhanced Experience

- Features ultra-thin structure and low noise with thermalsiphon for high-efficient heat dissipation
- Full home power for linear, non-linear, and half-wave loads
- Easy installation with pre-manufactured connectors and sorted accessory package

Safe and Reliable

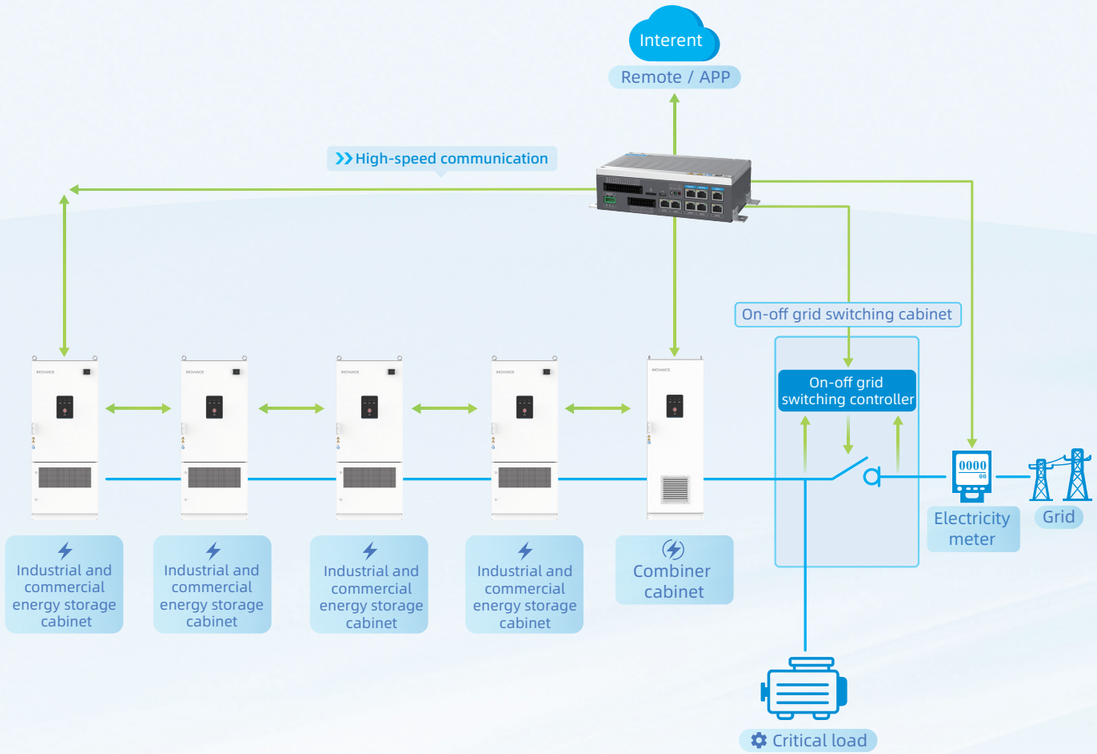
- Meets rigorous EMC requirements to ensure strong anti-interference ability and low emission
- Time for on-grid/off-grid switchover shorter than or equal to 10 ms to provide uninterrupted power
- Rated at IP66 and C5 to protect the product against humidity, heat, and salt spray

Parameters

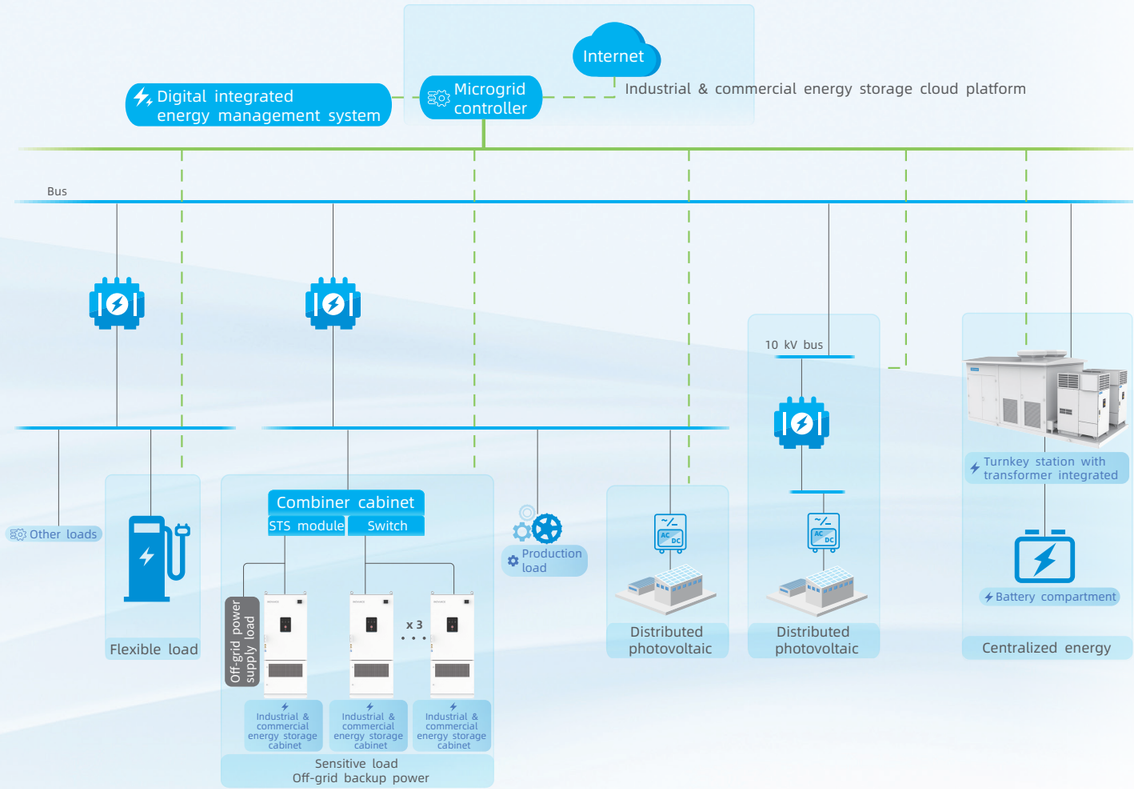
Model	IES320-12K	IES320-15K	IES320-20K
PV input parameters			
Maximum PV power	24 kW	30 kW	40 kW
Maximum PV open circuit voltage	1000 V		
Rated PV voltage	600 V		
MPPT range	180 V to 850 V		
MPPT range at full load	350 V to 850 V		
Start voltage	200 V		
Number of MPPT channels	2	2	2
Number of inputs per MPPT channel	2	2	2
Maximum input current	32 A	32 A	32 A
Maximum short circuit current	40 A	40 A	40 A
Battery input			
Battery type	Lithium battery		
Voltage range	160 V to 700 V		
Maximum charging/discharging current	50 A		
Charging and discharging power	12 kW	15 kW	20 kW
Power grid			
Rated output power	12 kW	15 kW	20 kW
Rated output current	17.4 A	21.7 A	29 A
Rated output voltage	3/N/PE, 220 V/380 V, 230 V/400 V; 180 V to 270 V		
Rated output frequency	50 Hz		
Rated power factor	-0.8 to +0.8		
Current harmonic distortion rate	< 3%		
Off-grid			
Rated output power	12 kW	15 kW	20 kW
Rated output voltage	3/N/PE, 220 V/380 V, 230 V/400 V		
On-grid/Off-grid switching time	≤ 10 ms		
Current harmonic distortion	< 3% (linear resistive load)		
General parameters			
Maximum efficiency	98%		
European efficiency	97.50%		
Degree of protection	IP66		
Topology	Non-isolated		
Cooling mode	Intelligent air cooling		
Dimensions (W x H x D)	610 mm x 480 mm x 190 mm		
Altitude	4000 m (derating required for altitudes above 2000 m)		
Operating temperature:	-25° C to +60° C		
Noise	< 45 dB		
Display	LED		
Communication	RS485, CAN, DI/DO, Ethernet, and Wi-Fi		
Standard	IEC/EN 62109-1, IEC/EN61000, IEC/EN 50549-1, VDEAR-N-4105, and NRS 097-2-1		

Energy Storage Industry Solution

Safe power supply solution



Zero-carbon zone solution



Quick switchover, stable power supply

System switchover time ≤20 ms to ensure the stable operation

Flexible application, safe and efficient

Supports selecting parallel units and on-off grid switching cabinet flexibly

Smart detection and quick adjustment

Active/Passive on-off grid switchover to ensure safe operation

Generation, grid, load, storage integrated design

Configuration for multiple scenarios and find the optical configuration

Cloud-edge-device integrated architecture

Tailored for typical commercial and industrial scenarios and enables flexible access for all types of equipment

AI scheduling

On-site renewable-energy consumption, easing grid impact, and delivering stronger investment returns.

Achievement

Large-scale energy storage cases

450 MW/900 MWh, power station, in Inner Mongolia

50 MW/50 MWh, photovoltaics, with **high-altitude** of 4500 m in Yajiang, Sichuan

100MW/200MWh **grid-forming project** in Mulipo, Yunnan

Sodium-ion battery- 150 MW project in Penglai, Shandong

Energy storage cases for industry and commerce

37 x 125 kW/261 kWh energy storage system project in the factory in Suzhou, Jiangsu

42 x 100 kW/232 kWh energy storage system project in the factory of Shanghai

Energy storage solutions

1MW/2.08MWh integrated optical storage and charging project in the factory of Nanjing, Jiangsu

NOTES

REMARKS