Off-grid Inverter

<Integrated inverter, MPPT controller, and mains charger>

(A6 High-Frequency Series)

Product specification

Precautions:

1. The installation of the power supply should be carried out by personnel who understand electrical knowledge or with the assistance of local dealers. Non-professionals should not disassemble any casing or components of the power supply. The internal parts of the equipment carry high voltage or store high energy, posing a danger!
2. Confirm whether the input DC voltage range meets the requirements and whether the power supply polarity is correct.
3. Confirm the voltage level of the load equipment, and ensure that the load power is not greater than the maximum output power of the power supply.
4. Do not allow liquids to flow into the power supply or use a wet cloth to wipe the machine casing. When the machine is operating, avoid direct contact with the input and output terminals, especially with wet hands, as it may cause electric shock injury.
5. If the working environment of a normally operating power supply needs to be changed, it should not be operated while live. It should be confirmed and operated by professional personnel or dealers.
6. The power supply should be operated in a well-ventilated environment with a temperature range of -40 to 50 degrees Celsius. It should be kept away from open flame sources and direct sunlight. It should not be operated in an environment with condensation or heavy dust, as this may cause internal components to short circuit. It is normal for the power supply to generate some heat during use, but it is important to maintain good ventilation and heat dissipation in the installation environment, and ensure that it is clean and tidy, especially do not block the ventilation holes.
7. Minors are not allowed to use this product due to the risk of electric shock.
8. Confirm that the power grounding wire is reliably connected. The mains input (AC INPUT) and AC output (AC OUTPUT) must not be connected reversely. The live wire and neutral wire must not be connected reversely. The wire diameter should comply with safety usage specifications, and the connecting wire should be shortened as much as possible.
9. Please keep this manual for future reference.

I. Model Description

Example: A6-1048+48V100A
A6: High-frequency inverter control integrated machine series;
1048: 10 refers to 1KW; 48 refers to DC48V;
48V100A: refers to the specification of the MPPT photovoltaic controller;
AC voltage 220V/110V, rack-mounted/wall-mounted models, please specify when placing the order;

II. Product Introduction

product overview

This series of charging and inverter all-in-one machines (inverter-controller all-in-one machines) integrates an inverter, MPPT controller, and AC charger. After careful design and optimization, it can meet the high standard requirements of different fields and electrical equipment for photovoltaic off-grid energy storage power generation. Whether in a domestic, commercial, or industrial environment, it can provide stable and reliable sine wave AC power, ensuring the safe and efficient operation of electrical equipment. It is suitable for inverter or charging or emergency power supply backup applications with battery rated voltages of DC12V, DC24V, DC36V, DC48V, DC60V, DC72V, DC96, DC110V, DC192V, DC220V, and DC240V. The ultra-wide MPPT range of photovoltaic input allows for more flexibility in selecting photovoltaic panels.

application area

Photovoltaic power generation: Photovoltaic off-grid energy storage power generation scenario
Household energy storage: household photovoltaic power generation and energy storage scenario
Small-scale energy storage: small-scale energy storage backup scenario
Battery-free type: standalone photovoltaic power generation scenario without battery
On-board backup power: On-board charging and energy storage backup power scenario

Main purpose

Household appliances: lighting, air conditioning, TV, refrigerator, washing machine, etc.
Office equipment: computers, printers, photocopiers, etc.
Commercial equipment: cash registers, POS machines, advertising displays, etc.
Electric tools: various electric tools and mechanical equipment.
Power system: power grid, power station control equipment, etc.
Industrial equipment: production lines, mechanical equipment, etc.
Telecommunications equipment: communication base stations, network equipment, etc.

Core Features:

1. High-quality power output

Pure sine wave output: ensures a waveform superior to that of mains power, providing a stable power supply.
No clutter interference: Ensure the safety of the load equipment and avoid damage caused by power issues.
Quick UPS transfer: In UPS mode, the transfer time is less than 5ms, ensuring power continuity and stability.

2. Intelligent management and maintenance

Intelligent DSP chip control: PCB integrated modular design simplifies maintenance processes.
Reduce maintenance costs: Easy maintenance, improve equipment stability, reduce maintenance frequency and costs.

3. Intuitive user interface

LED and LCD displays: Display operating parameters and status in real time, with convenient operation.
Fault information display: Faults are directly displayed, facilitating rapid identification and problem resolution.

4. High-efficiency energy conversion

High conversion efficiency: up to 95% in half-load inverter environment, and up to 99% or more in mains supply environment.

Low power consumption: The power consumption is extremely low in no-load mode, achieving high efficiency and energy saving.

5. Multi-functional charging support

Photovoltaic or grid-powered auxiliary charging: Three-stage intelligent charging, compatible with various battery types such as lead-acid, lithium-ion, and solid-state batteries.

6. Intelligent temperature control system

Energy-saving and durable fan: Speed-adjustable high-speed fan, extending equipment lifespan and ensuring stable product operation.

7. Strong load capacity

Inverter performance: With powerful load driving capability, it can handle inductive loads as long as the peak power of the power supply is not exceeded.

Advantages: Capable of handling various load demands, fully designed for full power output, and capable of operating at 100% load for extended periods.

8. Long-life circuit design

Isolation circuit design: DC-DC isolation, DC-AC isolation, ensuring product stability.

Selection of high-quality components: Utilizing premium electronic materials, these components exhibit high stability and a long lifespan, with a typical operational lifespan exceeding ten years.

9. Comprehensive protection mechanism

Multiple protection functions: including protection against low voltage, high voltage, high temperature, short circuit, overcurrent, overload, etc., to ensure equipment safety.

10. Anti-interference design

With its exceptional anti-interference capability, it ensures stable operation even in complex electromagnetic environments, delivering pure sine wave AC power.

11. Flexible configuration options

Settings available: charging priority mode selection, 50HZ/60HZ selectable, AC/DC power consumption priority mode adjustable, battery type selectable, charging current adjustable, Chinese/English selectable, energy-saving option, etc.

12. High-quality components

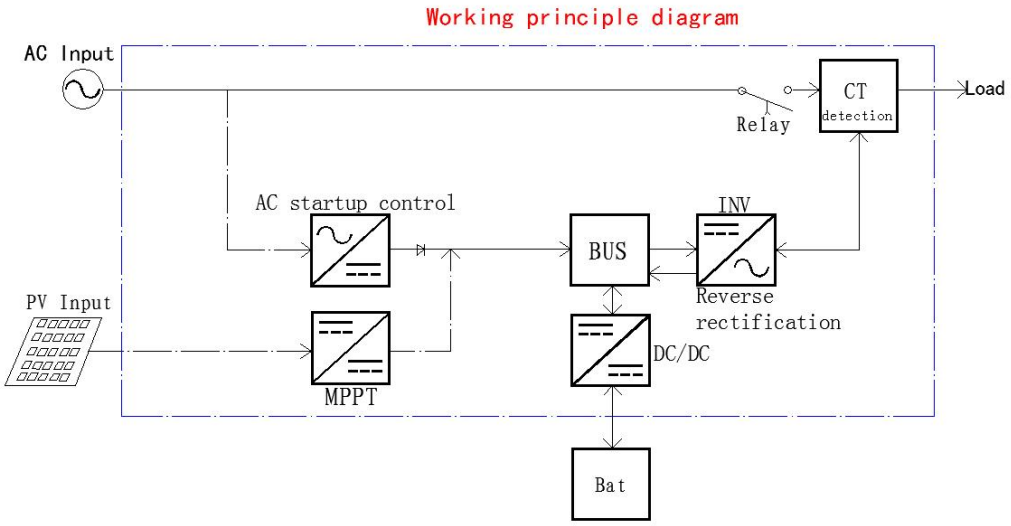
High-quality electronic components: including fully rated transformers, copper wiring terminals, and all-copper branded cables, ensuring efficient, safe, and stable power supply.

13. The circuit design is comprehensive and fully functional

It can be powered on by either mains electricity or photovoltaic power alone, and comes with built-in activation functions for both mains electricity and photovoltaic lithium batteries.

Product function introduction

1: Product schematic diagram



2: Product principle description

A. Output: There is mains power, and an AC main supply has been set up (mains power priority mode)

Method 1: When there is mains power, the mains bypass directly outputs;

Method 2: In the event of a sudden power outage or abnormality in the grid power, the system automatically switches to inverter power supply within 5ms. At this time, both photovoltaic and battery power are supplied simultaneously to ensure continuous operation of the load;

Method 3: When the utility power returns to normal, the system automatically switches to utility power supply;

B. Output: Mains power available, with DC main supply set (inverter priority mode)

Method 1: When the grid power is available, as long as the battery is charged or the photovoltaic system can support a load, the power supply will invert and output;

Method 2: When the battery is discharged and the photovoltaic power is insufficient, the power supply will automatically switch to mains power output; (the battery low-voltage switching point can be set)

Method 3: When the battery is detected as fully charged or the photovoltaic power can support the load, the inverter power supply will automatically switch to the battery inverter mode for output. (The battery recovery switching point can be set)

Method 4: When the grid power fails, the battery voltage is too low, and there is no photovoltaic power generation, the inverter will shut down its output.

If the mains power returns to normal at this time, the inverter power supply will automatically power on and achieve bypass output.

If the battery is charged to a level capable of supporting a load, the inverter will automatically power on and output in inverter mode. (The battery restart voltage point can be set)

If the photovoltaic power recovery is sufficient, the inverter will automatically power on and output in inverter mode.

C. Charging instructions:

The photovoltaic charging adopts the MPPT (Maximum Power Point Tracking) charging method;

You can set up a system for photovoltaic-only charging: the charging is performed solely by photovoltaic power. When photovoltaic power generation is available for charging, the charging will automatically start;

Photovoltaic priority charging can be set: when photovoltaic power generation is available, charging will be done by photovoltaic power; when there is no photovoltaic charging, charging will be done by grid power;

It is possible to set up simultaneous charging with both photovoltaic power and grid power: photovoltaic power takes priority, with grid power supplementing to fully charge the battery with the maximum current and in the fastest manner;

D. Description of direct photovoltaic loading:

When the photovoltaic power exceeds the load power, this product can operate with direct photovoltaic

inverter alone. If the photovoltaic power is insufficient and the direct load operation is interrupted, it will automatically recognize and continue the load operation after 2 minutes.

3. Description of intelligent charging function:

A. It can charge different types of batteries; the charging current of mains power is adjustable and can be canceled; photovoltaic charging adopts MPPT (Maximum Power Point Tracking) method;

B. Both grid-connected charging and photovoltaic charging are intelligent charging methods:

Scenario I: When low battery voltage is detected: constant current charging - constant voltage charging (equalizing charge) - float charging (three-stage)

Scenario II: When a high battery voltage is detected: constant current charging - float charging (two-stage)

Comparison of advantages:

Compare projects	like products	Our advantages
Product power	Some of them have false labeling, and they can only operate for a short period of time when fully loaded	100% full power, capable of continuous operation at full load
Product power	As the battery voltage decreases, the output power will be derated	The output power is not derated, and it is fully capable of delivering full power
Output waveform	The battery is clipped below its rated voltage	Output pure sine wave without clipping at full voltage range
Battery protection	The battery shuts down directly due to low voltage	The battery does not shut down directly when the voltage is low, and there is a buffer period
Remote power on/off	No remote power-on/off function	Standard remote power-on/off function
Setting functions	The battery voltage range cannot be set	The battery voltage range can be set
Setting functions	High and low voltage protection points and recovery points cannot be set	High and low voltage protection points and recovery points can be set
conversion time	Generally, it is 10-20ms	4ms high-speed conversion ensures uninterrupted power supply
Product specifications	Generally, manufacturers have fewer specifications and models	The entire series offers a wide range of specifications and models for selection
Power on with single AC connection	Without connecting the battery, the device cannot be turned on when only using AC power	It can be turned on during single communication, and the battery can be charged when it is low
Lithium battery activation function	Single AC cannot activate lithium battery	When using a single AC input, the lithium battery can be activated
Single photovoltaic startup	When only photovoltaic power is available, the device cannot be powered on	Only when there is photovoltaic power, can the device be powered on
Lithium battery activation function	When only relying on photovoltaic power, it is impossible to activate a lithium battery	Only when there is photovoltaic power, can the lithium battery be activated
PV voltage range	The range of ordinary photovoltaic controllers is relatively narrow	Ultra-wide PV input, voltage range 75-503V
Photovoltaic	A single photovoltaic system cannot directly	It can be powered on by photovoltaic energy

load	support a load	alone and directly carry a load
Photovoltaic charging	The device can only be turned on when the battery is connected	It can be powered on and charged solely through photovoltaic energy

III. Parameter Table

DC12V series									
rated power	1KW	2KW							
PV voltage range	75-503Vdc (MPPT range 85-500Vdc)								
PV starting voltage	75Vdc (above 75V to light up the display and power on)								
PV low-voltage shutoff	PV low voltage protection, self-recovery within 2 minutes								
PV open-circuit voltage	503Vdc								
PV high-voltage shutoff	PV high-voltage protection, self-recovery within 30 seconds								
PV maximum power	1010W	2010W							
Photovoltaic charging current Max	80A	120A							
Photovoltaic control method	MPPT, capable of single photovoltaic load and single photovoltaic charging								
conversion efficiency	MPPT peak conversion efficiency is 98%								
Rated battery voltage	DC12V								
Battery voltage range	DC10-16V		Low voltage warning	11V (follows low voltage power-off, with a high voltage of 0.5V)					
			Low voltage power outage	10.5V (adjustable from 10-12V)					
			Low voltage recovery	13.5V (follows float voltage, adjustable)					
			High voltage power outage	15.7V (adjustable from 15.3-16V)					
			High voltage recovery	15.5V (0.25V below the high voltage cutoff)					
			Low voltage shutdown	9.5Vdc (If the voltage falls below this level, the device will shut down to protect the battery, requiring a manual restart)					
DC priority type	Switch to mains voltage point when battery voltage is low			11V (can be set between 10.5-12.7V)					
	Switch back to battery power supply voltage point after sufficient power			13V (can be set between 12-14.5V)					
Maximum combined current	80A	120A							
Mains charging current MAX	40A	80A							

DC24V series									
rated power	1KW	2KW	3KW	4KW					
PV voltage range	75-503Vdc (MPPT range 85-500Vdc)								
PV starting voltage	75Vdc (above 75V to light up the display and power on)								
PV low-voltage shutdown	PV low voltage protection, self-recovery within 2 minutes								
PV open-circuit voltage	503Vdc								
PV high-voltage shutoff	PV high-voltage protection, self-recovery within 30 seconds								
Maximum power of PV	1010W	2010W	3010W	4010W					
Photovoltaic charging current max	40A	60A	100A	120A					

Photovoltaic control method	MPPT, capable of single photovoltaic load and charging								
conversion efficiency	MPPT peak conversion efficiency is 98%								
Rated battery voltage	DC24V								
Battery voltage range	DC20-32V		Low voltage warning	22V (follows low voltage power-off, with a 1V increase)					
			Low voltage power outage	21V (adjustable from 20-24V)					
			Low voltage recovery	27V (follows the float charging voltage, adjustable)					
			High voltage power outage	31.5V (adjustable from 30.5-32V)					
			High voltage recovery	31V (0.5V below the high voltage cutoff)					
			Low voltage shutdown	19Vdc (If the voltage falls below this level, the entire device will shut down to protect the battery, requiring a manual restart)					
DC priority type	Switch from battery low voltage to mains voltage point			22V (adjustable from 21-25.5V)					
	Switch back to battery power supply voltage point after sufficient power			26V (can be set between 24-29V)					
Maximum combined current	40A	60A	100A	120A					
Mains charging current Max	20A	40A	60A	80A					

DC36V series									
rated power	1KW	2KW	3KW	4KW	5KW				
PV voltage range	75-503Vdc (MPPT range 85-500Vdc)								
PV starting voltage	75Vdc (above 75V to light up the display and power on)								
PV low-voltage shutoff	PV low voltage protection, self-recovery within 2 minutes								
PV open-circuit voltage	503Vdc								
PV high-voltage shutoff	PV high voltage protection, self-recovery within 30 seconds								
Maximum power of PV	1010W	2010W	3010W	4010W	5010W				
Photovoltaic charging current Max	25A	40A	65A	80A	100A				
Photovoltaic control method	MPPT, capable of single photovoltaic load and single photovoltaic charging								
conversion efficiency	MPPT peak conversion efficiency is 98%								
Rated battery voltage	DC36V								
Battery voltage range	DC30-48V		Low voltage warning	33V (follows low voltage power-off, with a high voltage of 1.5V)					
			Low voltage power outage	31.5V (adjustable from 30-36V)					
			Low voltage recovery	40.5V (follows the float charging voltage, adjustable)					
			High voltage power outage	47.2V (adjustable from 45.8 to 48V)					
			High voltage recovery	46.5V (0.75V below the high-voltage power-off threshold)					
			Low voltage shutdown	28.5Vdc (if the voltage falls below this level, the entire device will shut down to protect the battery, requiring a manual restart)					

DC priority type	Switch from battery low voltage to mains voltage point				33V (adjustable from 31.5-38.2V)				
	Switch back to battery power supply voltage point after sufficient power				39V (adjustable from 36-43.5V)				
Maximum combined current	25A	40A	65A	80A	100A				
Mains charging current Max	13A	26A	39A	52A	65A				

DC48V series									
rated power	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
PV voltage range	75-503Vdc (MPPT range 85-500Vdc)								
PV starting voltage	75Vdc (above 75V to light up the display and power on)								
PV low-voltage shutdown	PV low voltage protection, self-recovery within 2 minutes								
PV open-circuit voltage	503Vdc								
PV high-voltage shutdown	PV high-voltage protection, self-recovery within 30 seconds								
Maximum power of PV	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
Photovoltaic charging current Max	20A	30A	50A	60A	80A	100A	120A	140A	160A
Photovoltaic control method	MPPT, capable of single photovoltaic load and single photovoltaic charging								
conversion efficiency	MPPT peak conversion efficiency is 98%								
Rated battery voltage	DC48V								
Battery voltage range	DC40-64V		Low voltage warning		44V (follows low voltage power-off, with a high voltage of 2V)				
			Low voltage power outage		42V (adjustable from 40-48V)				
			Low voltage recovery		54V (follows the float charging voltage, adjustable)				
			High voltage power outage		63V (adjustable from 61-64V)				
			High voltage recovery		62V (1V below the high voltage cutoff)				
			Low voltage shutdown		38Vdc (if the voltage falls below this level, the entire device will shut down to protect the battery; manual restart is required)				
DC priority type	Switch from battery low voltage to mains voltage point				44V (can be set between 42-51V)				
	Switch back to battery power supply voltage point after sufficient power				52V (adjustable from 48-58V)				
Maximum combined current	20A	30A	50A	60A	80A	100A	120A	140A	160A
Mains charging current Max	10A	20A	30A	40A	50A	60A	80A	100A	120A

DC60V series									
rated power	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
PV voltage range	75-503Vdc (MPPT range 85-500Vdc)								
PV starting voltage	75Vdc (above 75V to light up the display and power on)								
PV low voltage shutdown	PV low voltage protection, self-recovery within 2 minutes								
PV open-circuit voltage	503Vdc								
PV high-voltage shutoff	PV high-voltage protection, self-recovery within 30 seconds								
Maximum power of PV	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW

Photovoltaic charging current Max	16A	24A	40A	48A	64A	80A	96A	112A	128A
Photovoltaic control method	MPPT, capable of single photovoltaic load and single photovoltaic charging								
conversion efficiency	MPPT peak conversion efficiency is 98%								
Rated battery voltage	DC60V								
Battery voltage range	DC50-80V		Low voltage warning	55V (follows low voltage power-off, with a high voltage of 2.5V)					
			Low voltage power outage	52.5V (adjustable from 50-60V)					
			Low voltage recovery	67.5V (follows the float charging voltage, adjustable)					
			High voltage power outage	78.7V (adjustable from 76.3 to 80V)					
			High voltage recovery	77.5V (1.25V below high voltage cutoff)					
			Low voltage shutdown	47.5Vdc (if the voltage falls below this level, the entire device will shut down to protect the battery, requiring a manual restart)					
DC priority type	Switch from battery low voltage to mains voltage point			55V (adjustable from 52.5-63.7V)					
	Switch back to battery power supply voltage point after sufficient power			65V (adjustable from 60-72.5V)					
Maximum combined current	16A	24A	40A	48A	64A	80A	96A	112A	128A
Mains charging current Max	8A	16A	24A	32A	40A	48A	64A	80A	96A

DC72V series									
rated power	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
PV voltage range	75-503Vdc (MPPT range 85-500Vdc)								
PV starting voltage	75Vdc (above 75V to light up the display and power on)								
PV low-voltage shutdown	PV low voltage protection, self-recovery within 2 minutes								
PV open-circuit voltage	503Vdc								
PV high-voltage shutoff	PV high-voltage protection, self-recovery within 30 seconds								
Maximum power of PV	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
Photovoltaic charging current Max	13A	20A	33A	40A	53A	66A	80A	93A	106A
Photovoltaic control method	MPPT, capable of single photovoltaic load and single photovoltaic charging								
conversion efficiency	MPPT peak conversion efficiency is 98%								
Rated battery voltage	DC72V								
Battery voltage range	DC60-96V		Low voltage warning	66V (follows low voltage power-off, high 3V)					
			Low voltage power outage	63V (adjustable from 60-72V)					
			Low voltage recovery	81V (follows the float charging voltage, adjustable)					
			High voltage power outage	94.5V (adjustable from 91.5-96V)					
			High voltage recovery	93V (1.5V below high voltage power-off threshold)					
			Low voltage shutdown	57Vdc (if the voltage falls below this level, the entire device will shut down to protect the					

				battery, requiring a manual restart)					
DC priority type	Switch from battery low voltage to mains voltage point			66V (adjustable from 63-76.5V)					
	Switch back to battery power supply voltage point after sufficient power			78V (adjustable from 72-87V)					
Maximum combined current	13A	20A	33A	40A	53A	66A	80A	93A	106A
Mains charging current Max	7A	13A	20A	26A	33A	40A	52A	67A	80A

DC96V series									
rated power	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
PV voltage range	75-503Vdc (MPPT range 85-500Vdc)								
PV starting voltage	75Vdc (above 75V to light up the display and power on)								
PV low-voltage shutdown	PV low voltage protection, self-recovery within 2 minutes								
PV open-circuit voltage	503Vdc								
PV high-voltage shutdown	PV high voltage protection, self-recovery within 30 seconds								
Maximum power of PV	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
Photovoltaic charging current Max	10A	15A	25A	30A	40A	50A	60A	70A	80A
Photovoltaic control method	MPPT, capable of single photovoltaic load and single photovoltaic charging								
conversion efficiency	MPPT peak conversion efficiency is 98%								
Rated battery voltage	DC96V								
Battery voltage range	DC80-128V		Low voltage warning	88V (follows low voltage power-off, with a high voltage of 4V)					
			Low voltage power outage	84V (adjustable from 80-96V)					
			Low voltage recovery	108V (follows float voltage, adjustable)					
			High voltage power outage	126V (adjustable from 122-128V)					
			High voltage recovery	124V (2V below high voltage cutoff)					
			Low voltage shutdown	76Vdc (if the voltage falls below this level, the entire machine will shut down to protect the battery, requiring a manual restart)					
DC priority type	Switch to mains voltage point when battery voltage is low			88V (adjustable from 84-102V)					
	Switch back to battery power supply voltage point after sufficient power			104V (adjustable from 96-116V)					
Maximum combined current	10A	15A	25A	30A	40A	50A	60A	70A	80A
Mains charging current Max	5A	10A	15A	20A	25A	30A	40A	50A	60A

DC110V series									
rated power	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
PV voltage range	75-503Vdc (MPPT range 85-500Vdc)								
PV starting voltage	75Vdc (above 75V to light up the display and power on)								
PV low-voltage shutdown	PV low voltage protection, self-recovery within 2 minutes								
PV open-circuit voltage	503Vdc								
PV high-voltage shutdown	PV high-voltage protection, self-recovery within 30 seconds								

PV maximum power	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
Photovoltaic charging current Max	9A	13A	22A	26A	35A	44A	53A	62A	70A
Photovoltaic control method	MPPT, capable of single photovoltaic load and single photovoltaic charging								
conversion efficiency	MPPT peak conversion efficiency is 98%								
Rated battery voltage	DC108V								
Battery voltage range	DC90-144V		Low voltage warning	99V (follows low voltage power-off, with a high voltage of 4.5V)					
			Low voltage power outage	94.5V (adjustable from 90-108V)					
			Low voltage recovery	121.5V (follows float charging voltage, adjustable)					
			High voltage power outage	141V (adjustable from 137.3-144V)					
			High voltage recovery	139.5V (2.25V below the high-voltage power-off threshold)					
			Low voltage shutdown	85.5Vdc (if the voltage falls below this level, the entire device will shut down to protect the battery, requiring a manual restart)					
DC priority type	Switch from battery low voltage to mains voltage point			99V (adjustable from 94.5-114.5V)					
	After being fully charged, switch back to the battery power supply voltage point			117V (adjustable from 108-130.5V)					
Maximum combined current	9A	13A	22A	26A	35A	44A	53A	62A	70A
Mains charging current Max	4A	9A	13A	18A	22A	26A	35A	44A	53A

DC192V series									
rated power	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
PV voltage range	75-503Vdc (MPPT range 85-500Vdc)								
PV startup voltage	75Vdc (above 75V to light up the display and power on)								
PV low voltage shutdown	PV low voltage protection, self-recovery within 2 minutes								
PV open-circuit voltage	503Vdc								
PV high voltage shutoff	PV high-voltage protection, self-recovery within 30 seconds								
Maximum power of PV	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
Photovoltaic charging current Max	5A	8A	13A	15A	20A	25A	30A	35A	40A
Photovoltaic control method	MPPT, capable of single photovoltaic load and single photovoltaic charging								
conversion efficiency	MPPT peak conversion efficiency is 98%								
Rated battery voltage	DC192V								
Battery voltage range	DC160-256V		Low voltage warning	176V (follows low voltage power-off, with a high voltage of 8V)					
			Low voltage power outage	168V (adjustable from 160-196V)					
			Low voltage recovery	216V (follows the float charging voltage, adjustable)					
			High voltage power outage	252V (adjustable from 244-256V)					
			High voltage recovery	248V (4V below high voltage cutoff)					

			Low voltage shutdown		152Vdc (if the voltage falls below this level, the entire device will shut down to protect the battery, requiring a manual restart)				
DC priority type	Switch to mains voltage point when battery voltage is low				176V (adjustable from 168-204V)				
	After sufficient power, switch back to battery power supply voltage point				208V (adjustable from 192-232V)				
Maximum combined current	5A	8A	13A	15A	20A	25A	30A	35A	40A
Mains charging current Max	3A	5A	8A	10A	13A	15A	20A	25A	30A

DC220V series									
rated power	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
PV voltage range	75-503Vdc (MPPT range 85-500Vdc)								
PV start-up voltage	75Vdc (above 75V to light up the display and power on)								
PV low-voltage shutdown	PV low voltage protection, self-recovery within 2 minutes								
PV open-circuit voltage	503Vdc								
PV high-voltage shutoff	PV high-voltage protection, self-recovery within 30 seconds								
Maximum power of PV	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
Photovoltaic charging current Max	4A	7A	11A	13A	18A	22A	27A	31A	36A
Photovoltaic control method	MPPT, capable of single photovoltaic load and single photovoltaic charging								
conversion efficiency	MPPT peak conversion efficiency is 98%								
Rated battery voltage	DC216V								
Battery voltage range	DC180-288V		Low voltage warning		198V (follows low voltage power-off, with a high voltage of 9V)				
			Low voltage power outage		189V (adjustable from 180-216V)				
			Low voltage recovery		243V (follows the float charging voltage, adjustable)				
			High voltage power outage		283.5V (adjustable from 274.5-288V)				
			High voltage recovery		279V (lower than the high-voltage cutoff voltage of 4.5V)				
			Low voltage shutdown		171Vdc (if the voltage falls below this level, the entire device will shut down to protect the battery; manual restart is required)				
DC priority type	Switch from battery low voltage to mains voltage point				198V (adjustable from 189-229.5V)				
	Switch back to battery power supply voltage point after sufficient power				234V (adjustable from 216-261V)				
Maximum combined current	4A	7A	11A	13A	18A	22A	27A	31A	36A
Mains charging current Max	2A	4A	7A	9A	11A	13A	18A	22A	26A

DC240V series									
rated power	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
PV voltage range	75-503Vdc (MPPT range 85-500Vdc)								
PV starting voltage	75Vdc (above 75V to light up the display and power on)								
PV low-voltage shutdown	PV low voltage protection, self-recovery within 2 minutes								
PV open-circuit voltage	503Vdc								

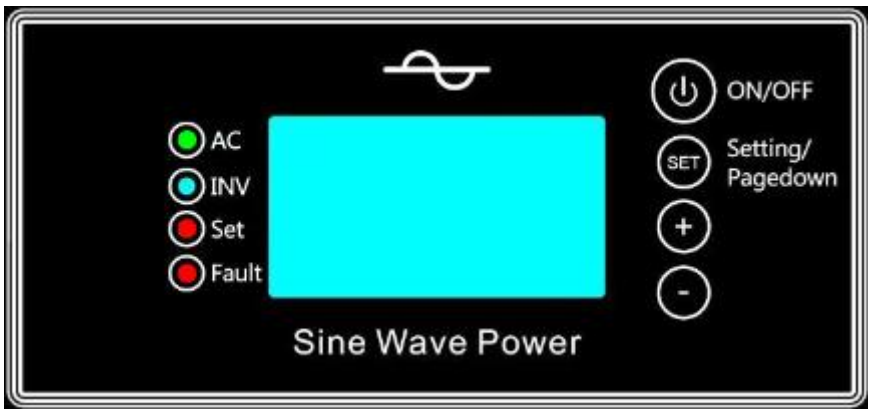
PV high-voltage shutdown	PV high-voltage protection, self-recovery within 30 seconds								
Maximum power of PV	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
Photovoltaic charging current Max	4A	6A	10A	12A	16A	20A	24A	28A	32A
Photovoltaic control method	MPPT, capable of single photovoltaic load and single photovoltaic charging								
conversion efficiency	MPPT peak conversion efficiency is 98%								
Rated battery voltage	DC240V								
Battery voltage range	DC200-320V		Low voltage warning	220V (follows low voltage power off, with a 10V increase)					
			Low voltage power outage	210V (adjustable from 200-240V)					
			Low voltage recovery	270V (follows float voltage, adjustable)					
			High voltage power outage	315V (adjustable from 305-320V)					
			High voltage recovery	310V (lower than the high-voltage power-off voltage of 5V)					
			Low voltage shutdown	190Vdc (if the voltage falls below this level, the entire machine will shut down to protect the battery; manual restart is required)					
DC priority type	Switch from battery low voltage to mains voltage point			220V (adjustable from 210-255V)					
	Switch back to battery power supply voltage point after sufficient power			260V (adjustable from 240-290V)					
Maximum combined current	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
Mains charging current Max	2A	4A	6A	8A	10A	12A	16A	20A	24A

Communication input	Rated AC input voltage	AC220V (mains power/generator)	AC110V (mains power/generator)
	AC input range	170-280Vac (UPS mode) factory default 90-280Vac (APL electrical mode)	
	Mains under-voltage and power-off voltage point	170Vac±5V (UPS mode) factory default 90Vac±5V (APL electrical mode)	
	Utility grid undervoltage recovery voltage point	180Vac±5V (UPS mode) factory default 100Vac±5V (APL electrical mode)	
	Mains overvoltage and power-down voltage points	280Vac±5V	
	Mains overvoltage recovery voltage point	270Vac±5V	
	AC input frequency	50HZ/60HZ (optional in the background)	
	Frequency range	40-65HZ (recovery points: 42HZ, 63HZ)	
	Rechargeable voltage range	180-270Vac	
	Single mains power on function	have	
UPS conversion time		<5ms (UPS mode) factory default; <13ms (electrical appliance mode)	
	AC output voltage	220/230/240Vac±3% optional	
	AC output frequency	50±1HZ/60±1HZ (optional in the background)	
	Output waveform	Pure sine wave (full voltage range)	

AC output	Waveform distortion rate	≤3% (linear load)	
	Inverter peak efficiency	95%	
	Dynamic response	（0～100%）≤5%	
	Power factor	>0.9	
	Peak power (surge capability)	3 seconds at 2 times rated power	
	Wasted power (standby power consumption)	30W (measured on model 6048, actual results may vary for different models)	
	power derating	Non-derating (output power does not decrease as battery voltage drops)	
work environment	Noise (1 meter)	≤40dB	
	Operating ambient temperature	-40℃~+50℃	
	Storage environment temperature	-40℃~+70℃	
	humidity	0~90%, no condensation	
	Altitude (m)	≤5000 (If it is higher than 1000, it should be derated for use. For every 1000 units above 1000, the usage rate should be reduced by 10%)	
	Continuous running time	It can operate continuously for a long time	
	Cooling method	Temperature-controlled variable-speed fan for heat dissipation (under ventilation conditions)	
	Mean time between failures	No less than 50,000 hours	
Protection function	Insulation strength (input and output)	1500Vac, no breakdown for 1 minute	
	insulation resistance	Not less than 2MΩ	
	overload protection	With a load of ≥101%, the AC output will be shut off after 60 seconds, and the buzzer will sound a long alarm When the load is ≥120%, the AC output will be shut off after 10 seconds, and the buzzer will sound a long alarm When the load is ≥140%, the AC output will be shut off after 3 seconds, and the buzzer will sound a long alarm (The output is not shut down in case of overload, and it can recover automatically within 30 seconds after the load drops below 100%)	
	Short circuit protection	Yes, turn off the output (check for recovery every 30 seconds)	
	Over Temperature Protection	Yes, turn off the output (check for recovery every 160 seconds)	
	Fan fault protection	have	
	AC input overvoltage protection	Yes (with self-recovery)	
	AC input undervoltage protection	Yes (with self-recovery)	
	Input frequency overrun protection	Yes (with self-recovery)	
	Battery overvoltage protection	Yes (with self-recovery)	
	Battery Low Voltage Protection	Yes (with self-recovery)	
	Photovoltaic overvoltage protection	Self-recovery after protection for less than 500V for 30 seconds	
	Photovoltaic low-voltage protection	After protection, it will self-recover within 2 minutes if the voltage is higher than 85V	
	Photovoltaic overcurrent protection	With (self-recovery function), calculated based on the maximum power of PV	
	Alarm method	Buzzer sounds an alarm + display screen shows a fault	
size	1-3KW	4-6KW	8-12KW
	Standard rack-mountable 2U	Standard rack-mount 2U	Standard rack-mounted 3U
	The dimensions of the body are	The dimensions of the machine	The dimensions of the body are

	417*414*88mm (width * depth * height)			body are 420mm in width, 445mm in depth, and 88mm in height			436*445*132mm (width x depth x height)		
power	1KW	2KW	3KW	4KW	5KW	6KW	8KW	10KW	12KW
net weight	10	10	10	12	12	12	14	15	16
gross weight	11	11	11	13	13	13	15	16	17
Packaging method	Thickened cardboard box + thickened pearl wool								
Product Color	Rack-mounted complete set with RAL7035 fine sand texture/wall-mounted body with RAL7035 fine sand texture, and panel with fine orange texture white (conventional color)								
safety certification	CE-EMC certification, CE-LVD certification, FCC certification, UL inspection report, type inspection report								
Communication method	Standard configuration: RS485 (communication modes such as RS232/WIFI/GPRS/CAN can be customized)								
protection grade	IP20 / Customizable								
Standard configuration instructions	1 PV input, 1 AC input, 1 DC input, 1 AC output, RS485 interface								
Optional Unit	1: Fault dry contact; 2: External switch box; 3: External display box; 4: RS232; 5: WIFI module; 6: GPRS module; 7: Ethernet module; 8: CAN communication;								
others	DC24V/48V/110V/220V models are standard products, while DC12/36/60/72/96/192/240V models are customized products; available in bulk colors for customization, with customizable appearance, and PCBs can be purchased separately for self-assembly;								

IV. Display, Settings, and Fault Description



ON/OFF	Tap to turn on, then tap to turn off
Setting/Pagedown	Tap to light up the display screen, tap to press one page; Long press for 3 seconds to enter the settings page
+、-	After entering the settings page, click on "+, -" to select the settings value
AC	The first green light is on, indicating that it is in grid power supply
INV	The second blue light is on, indicating that it is in inverter power supply
Set	The third red light on, indicates entering the setting state
Fault	The fourth red light on, indicates a malfunction of the device. Please refer to the homepage to check the cause of the fault

Home page display	Home page display instructions (working status diagram or direct display of faults)
BAT INV Power Supply:	System normal: indicates that the system is operating normally

	No output, only display information when charging	GridCharge &SolarCharge: indicates that both mains power and photovoltaic power are simultaneously charging the battery GridCharge: indicates that only mains power is being used to charge the battery SolarCharge: indicates that only photovoltaic energy is being used to charge the battery Not Charge: indicates that there is no charging status at this time
	Display information when there is mains power input	Grid & 2-Charge: This indicates that the mains power is bypassing the load and both the mains power and photovoltaic power are simultaneously charging the battery Grid & GridCharge: Indicates that the mains power is bypassing the load and charging the battery Grid &Solar &S-Charge: This indicates that the photovoltaic power alone is insufficient to supply power. Both the grid power and the solar inverter supply power to the load simultaneously, and the solar energy is charging the battery (this item must be set to "Output Priority: Photovoltaic") Grid &Solar: indicates that no battery is connected, and both mains power and solar energy supply power to the load simultaneously (this item must be set to "Output Priority: Photovoltaic") Only Grid: indicates that only the mains bypass supplies power to the load
	Display information when there is no mains power input	BAT &Solar: Both the battery and photovoltaic system are simultaneously inverting and supplying power to the load Solar &SolarCharge: indicates that photovoltaic power is being directly supplied to the load through inverter and the photovoltaic system is charging the battery Only BAT: indicates that only the battery is supplying power to the load through the inverter Only Solar: This indicates that only photovoltaics are supplying power to the load through an inverter, and the battery is not connected
	Fault description: For details, see the "Fault Status Correspondence Table"	

Display the page 2	Display the page 3	Display the page 4	Display the page 5
BAT-Vol : 052.7V BAT-Soc: 100% Out-Vol : 229.1V Out-Freq: 49.9Hz	In-AC: 000.0V In-Freq:00.0Hz Out-Power:000% Out-Status: INV	Charg-Cur:000ASol Solar-Vol:000.0V Solar-Cur:000.0A Out-Pri:Grid	Dev-Mode:BAT

Long press the "Setting/Pagedown" button to enter the background settings page, press the "+, -" buttons to select, and the current displayed value is the confirmed value. Long press the "Setting/Pagedown" button to exit and save the settings, or press the last option to automatically exit and save the settings.

Settings on page 1	Settings on page 2	Settings on page 3	Settings on page 4
SETUP Languag:English Auto-Page:YEs Auto-AOD:YES	SETUP Out-Pri:Grid Merge-Cur:020A AC-Range:UPS	SETUP Charg-Adi:ON DC-Over:063.0V Low-Vol:042.0V	SETUP Out-Freq:50Hz Out-Vol :230V Charg-Cur:060A
Settings on page 5	**Settings on page 6**	**Settings on page 7**	**Settings on page 8**
SETUP Cut-Grid:046.0V Ret-Bat:054.0V Float-Pri:Solar	SETUP DC Grade:048V AC Grade:220V Beep-Ctr:ON	SETUP OL-bypass:OFF Addr :185 Const-Vol :058.4V	Right:Gropeway Float-Vol :057.4V

Parameter setting instructions	
Languag	Chinese and English are optional
Auto-Page	Set whether the display screen automatically flips pages
Auto-AOD	Set whether the display screen automatically turns off, with the automatic turn-off time being 80 seconds after no key operation
Out-Pri	Mains power: Mains power is preferentially bypassed to supply power to the load, and only when mains power is unavailable, solar energy or battery inverter power supply is used Solar: Solar energy is given priority to supply power to the load. If the solar power generation is insufficient to supply power to the output load, the grid power will supplement this part of the power to ensure the normal operation of the load. If the solar power generation is insufficient and the inverter is not connected to the grid, the solar energy and battery will jointly invert and supply power to the load. In sequence: solar energy is given priority to supply power to the load. If solar energy is insufficient to supply power to the load, both solar energy and batteries will supply power to the load. Only when the battery voltage drops to the low-voltage conversion point will it switch to mains power supply
Merge-Cur	Set the total current of the photovoltaic charging current and the grid charging current, which is also the maximum charging current of the standalone photovoltaic system
AC-Range	UPS: The available voltage range of the mains supply is 170-280Vac, and the conversion time in this mode is 5ms APL: The available voltage range of the mains supply is 90-280Vac, and the conversion time in this mode is 12ms
Charg-Adi	Default is "ON", and the equalizing and floating charge voltage cannot be set when it is turned off

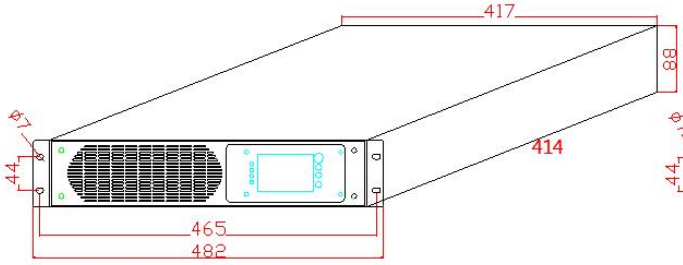
DC-Over	Set DC high voltage cutoff point
Low-Vol	Set DC low voltage shutdown point
OutFreq	Select AC output frequency of 50HZ or 60HZ
Out-vol	Choose AC output voltage of 220V, 230V, or 240V
Charg-Cur	Set the maximum charging current for the mains power supply to 0, so that it will not charge and there will be no voltage difference
Cut-Grid	When setting the priority in sequence, switch to mains bypass power supply when the battery voltage is lower than this value
Ret-Bat	When setting the priority in sequence, switch to battery power supply when the battery voltage reaches this value
Float-Pri	Set which one has priority to charge the battery, the grid power or solar energy Photovoltaic: Solar energy is used to charge the battery first. When solar energy is not available, the battery is charged by mains electricity Photovoltaic only: Regardless of whether the grid power is available, only photovoltaic energy can be used to charge the battery At the same time: Both solar energy and utility power charge the battery simultaneously with the maximum combined current
DC Grade	Select battery voltage level: DC12/24/36/48/60/72/96/108/192/216/240V This item should not be changed by the user, otherwise the displayed data will be disordered;
AC Grade	AC220V/AC110V selection, users should not change this setting, otherwise the displayed data may become chaotic;
Beep-Ctr	The default setting is "ON", which determines whether the buzzer sounds or not when the device alarms
OL-bypass	Set whether to switch to bypass power supply when the load is overloaded in inverter mode
Addr	Set the RS485 device communication address to 185~255 (default is 185, configurable)
Const-Vol	Set the equalizing charge voltage, which is the maximum charging voltage
Float-Vol	Set the float charging voltage (the battery will automatically recover and follow this voltage point after low voltage protection)

Display screen home page fault display and troubleshooting methods		
Display fault information	**Possible reasons**	**Handling suggestions**
Fan Failure	The fan is damaged or stuck	Check whether the fan is damaged or something is stuck
Temp Over	The internal temperature is too high	Reduce load usage or allow it to dissipate heat without load before use
BAT VOL High	The battery voltage is too high	Discharge the battery voltage to within the rated range before use
BAT VOL Low	The battery voltage is too low	Charge the battery voltage to within the rated range before use
Output Short	The load of the connection has a short circuit	Check whether there is a short circuit in the connected load. If not, please contact the manufacturer
Out VOL High	Internal damage or external interference	Disconnect the load, restart the device. If the issue persists, please contact the manufacturer

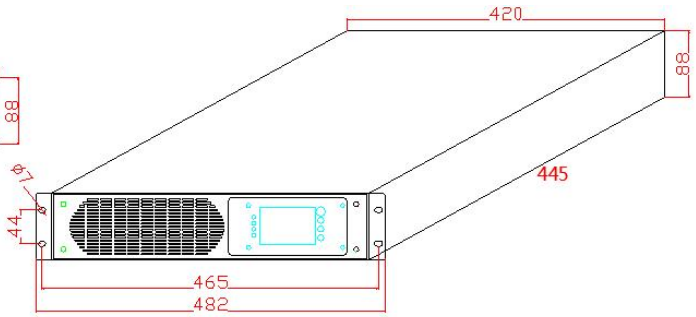
Out VOL Low	Internal damage or external interference	Disconnect the load, restart the device. If the issue persists, please contact the manufacturer
Load Over	The load of the output connection is too heavy	Reduce the usage of the connected load
BUS VOL High	Internal damage	Restart the device. If the issue persists, please contact the manufacturer
BUS VOL Low	Internal damage	Restart the device. If the issue persists, please contact the manufacturer
INV Soft Fail	Internal damage	Restart the device. If the issue persists, please contact the manufacturer
Cur Over	Internal damage	Restart the device. If the issue persists, please contact the manufacturer
INV Soft Fail	Internal damage	Restart the device. If the issue persists, please contact the manufacturer
Out DC VOL Over	Internal damage	Restart the device. If the issue persists, please contact the manufacturer
BAT Open	Battery or DC not connected	Connect the battery or DC
BAT Shutdown	Battery or DC disconnected	Connect the battery or DC
Cur Sensor Fail	Internal damage or external short circuit	Disconnect the load, restart the device. If the issue persists, please contact the manufacturer
PV VOL Over	Input PV voltage is too high	Check whether the input PV voltage is higher than 503V
PV VOL Low	Input PV voltage is too low	Check whether the input PV voltage is lower than 90V

V. Appearance description

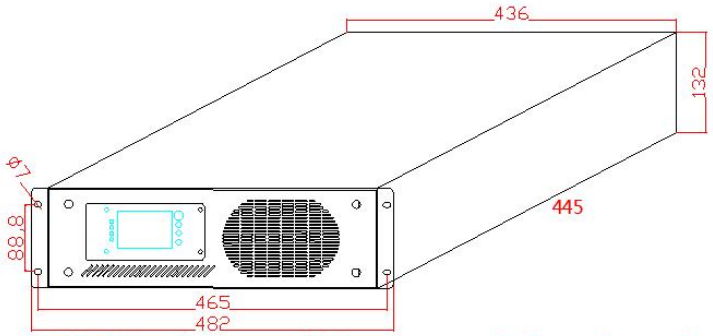
1: Hole size



1-3KW rack mounted 2U, recommended panel opening of 423 * 90mm,Due to the 2mm thickness of the rack ears



4-6KW rack mounted 2U, recommended panel opening of 426 * 90mm,Due to the 2mm thickness of the rack ears



8-12 KW rack mounted 3U, recommended panel opening of 442 * 134mm,Due to the 2mm thickness of the rack ears

2: Product image (Note: Dry contact and RJ45 network port are optional units)

External display screen image↓ (optional unit, cable length 2/5/8 meters)	External pull switch image↓ (optional unit, cable length 2/5/8 meters)
	

VI. Wiring Instructions

① "DC+" positive terminal (connected to the positive terminal of the battery) red wiring terminal
② "DC-" negative pole (connected to the battery's negative pole) black terminal
③ AC input (mains power): Connect to AC mains power, with IL connected to the live wire, IN connected to the neutral wire, and IE connected to the grounding wire;
④ AC output (load): Connect to the output load, with OL connected to the live wire, ON connected to the neutral wire, and OE connected to the grounding wire;
⑤ Ground wire: spare ground wire connection port
⑥ Dry contact (optional unit, not installed for regular products)

	DRY CONTACT			
	Communication input	Inverter output	AC output	Battery input
When have signal	No AC input	No inverter output	No AC output	No battery input
When no signal	AC input	With inverter output	With AC output	With battery input

⑦ DB-9 communication interface: RS232/RS485
⑧ RJ45 connector: Can be used for WIFI communication/external display (optional unit, not installed on regular products)
It can also be used for GPRS communication, CAN communication, and Ethernet communication (optional, customization required)
⑨ Photovoltaic input: PV+ (connected to the positive terminal of the photovoltaic panel) PV- (connected to the negative terminal of the photovoltaic panel)

Instructions for using the WIFI module or GPRS module (optional unit)

Insert the WIFI module into the power RJ-45 crystal head socket

Before use, you need to scan the QR code on your phone to download the APP. For specific usage instructions, please contact our business personnel. Here are some simple instructions for use:

Appendix 1: Guide for the Use of Wire and Switches (The switch current must be greater than the maximum current. For copper core wire, 1mm² is rated for 5A. If charging and power consumption are carried out simultaneously, the AC input line is calculated at 1.5 times the rated power. For photovoltaic wire, 1mm² is rated for 5A.).

AC 220V model							**AC 110V model**						
PRODUCT MODEL	AC input wire mm²	AC output wire mm²	Battery wire mm²	**AC input switch A**	**AC output switch A**	**Battery switch A**	**PRODUCT MODEL**	AC input wire mm²	AC output wire mm²	Battery wire mm²	**AC input switch A**	**AC output switch A**	**Battery switch A**
1012	1.5	1	25	10	5	100	1012	4	2.5	25	16	10	100
1024	1.5	1	16	10	5	50	1024	4	2.5	16	16	10	50
1048	1.5	1	10	10	5	25	1048	4	2.5	10	16	10	25
10110	1.5	1	2.5	10	5	10	10110	4	2.5	2.5	16	10	10
10220	1.5	1	1.5	10	5	10	10220	4	2.5	1.5	16	10	10
2012	4	2.5	50	16	10	200	2012	6	4	50	32	20	200
2024	4	2.5	25	16	10	100	2024	6	4	25	32	20	100
2048	4	2.5	16	16	10	50	2048	6	4	16	32	20	50
20110	4	2.5	4	16	10	20	20110	6	4	4	32	20	20
20220	4	2.5	2.5	16	10	10	20220	6	4	2.5	32	20	10
3012	4	4	70	25	16	300	3012	10	6	70	40	32	300
3024	4	4	35	25	16	160	3024	10	6	35	40	32	160
3048	4	4	25	25	16	80	3048	10	6	25	40	32	80
30110	4	4	6	25	16	32	30110	10	6	6	40	32	32
30220	4	4	4	25	16	20	30220	10	6	4	40	32	20
4024	6	4	50	35	25	200	4024	10	10	50	63	40	200
4048	6	4	25	35	25	100	4048	10	10	25	63	40	100
40110	6	4	10	35	25	40	40110	10	10	10	63	40	40
40220	6	4	4	35	25	20	40220	10	10	4	63	40	20
5048	10	6	25	35	25	125	5048	16	10	25	80	50	125
50110	10	6	10	35	25	50	50110	16	10	10	80	50	50
50220	10	6	6	35	25	32	50220	16	10	6	80	50	32
6048	10	6	35	50	35	160	6048	16	16	35	80	63	160
60110	10	6	16	50	35	63	60110	16	16	16	80	63	63
60220	10	6	10	50	35	32	60220	16	16	10	80	63	32
8048	16	10	50	63	50	200	8048	25	16	50	125	80	200
80110	16	10	16	63	50	80	80110	25	16	16	125	80	80
80220	16	10	10	63	50	40	80220	25	16	10	125	80	40
10048	25	10	50	80	50	250	10048	35	25	50	160	100	250
100110	25	10	25	80	50	100	100110	35	25	25	160	100	100
100220	25	10	10	80	50	50	100220	35	25	10	160	100	50
12048	25	16	70	100	63	300	12048	35	25	70	160	125	300

120110	25	16	25	100	63	125	120110	35	25	25	160	125	125
120220	25	16	16	100	63	63	120220	35	25	16	160	125	63

When selecting lithium batteries, the discharge current of the lithium battery BMS protection board should be greater than or equal to the battery switch current;

Appendix 2: Warranty Card

Product Warranty Card			
product name		product number	
PRODUCT MODEL		purchasing date	
Warranty period			
Purchase units			
contacts		phone	
Distributor Unit			
Maintenance Record Time:			