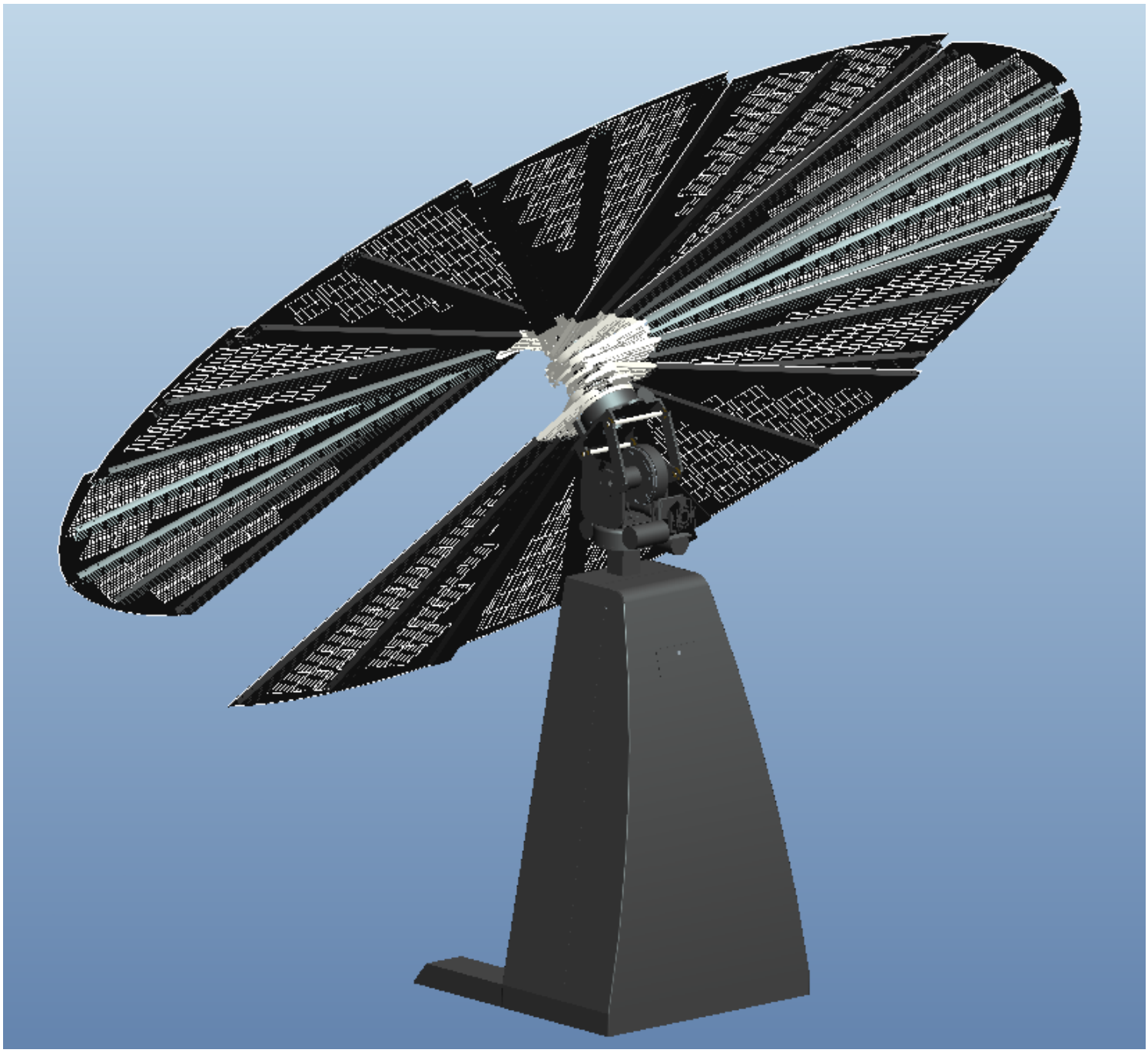
2.65kW Triple Axis Tracking Photovoltaic Sunflower Product Manuals

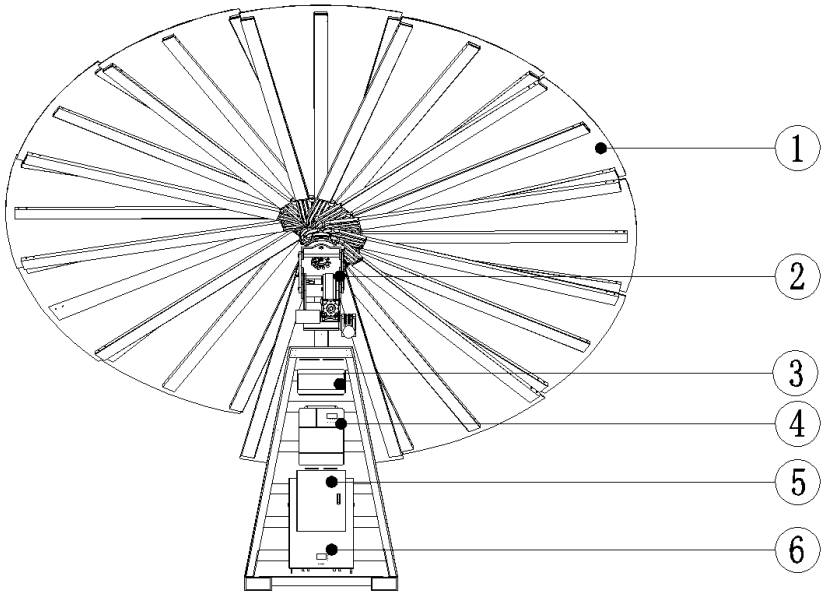


CATALOG 目录

1. Product Features

Triple axis tracking photovoltaic sunflower is a comprehensive power, inverter, storage "trinity" of solar power system, the system adopts the astronomical tracing algorithm, realize 24-hour automatic tracking of the sun's position, relative to the conventional solar power system efficiency increases by about 40%, energy storage systems, the device can run independently of the power grid, and meet the demand of the use of various occasions.

The unique shape design makes pv sunflowers the most eye-catching presence anywhere.



①	Solar blade module	④	All in one optical storage machine
②	Triple axis slewing tracking support	⑤	Control System
③	Switch Box	⑥	Energy Storage Battery

2. Basic system introduction

The following figure shows the system application scenario of this product. A complete system includes the following parts:

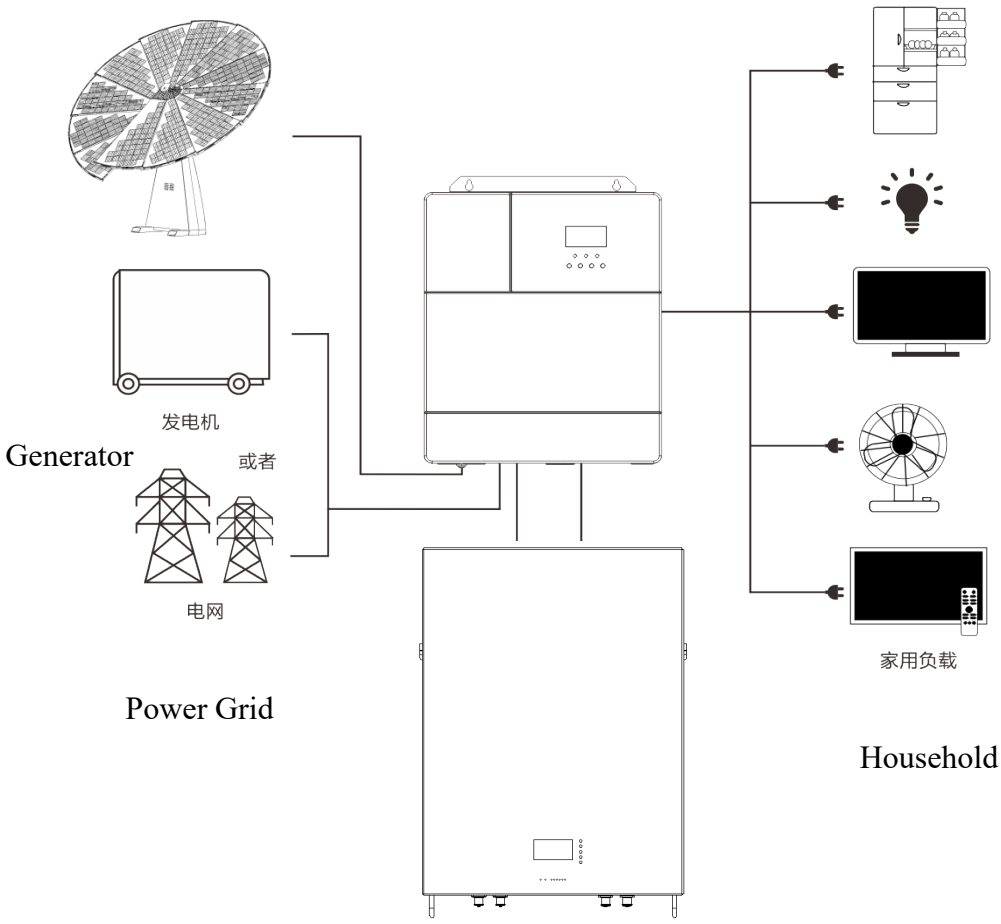
1. Solar modules: convert light energy into direct current energy, charge the battery through the integrated machine, or directly invert into ac power to power the load.

2. Mains or generator: Connect to the AC input terminal to power the load and charge the battery.
If there is no power supply or generator, the system can run normally, and the load power is provided by batteries and photovoltaic modules.

3. Energy storage battery: The role of energy storage battery is to ensure the normal power consumption of the system load when the solar energy is insufficient and there is no electricity supply.

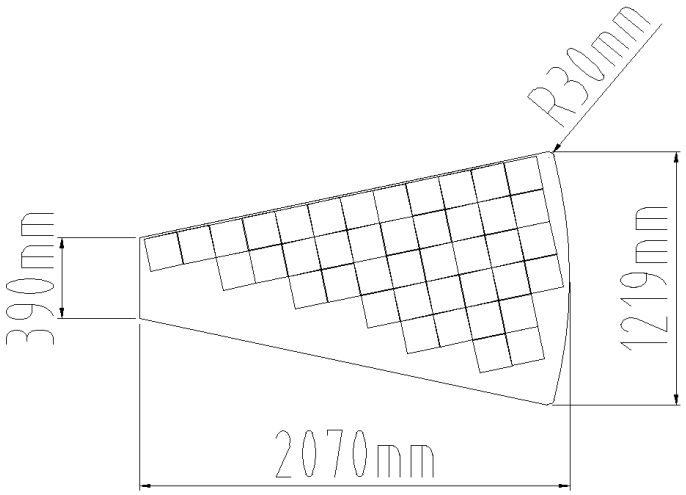
4. Household load: it can be connected to various household and office loads, including refrigerators, lamps, TV sets, fans, air conditioners and other AC loads.

5. Inverter: energy conversion device of the whole system.
The specific system cable connection mode depends on actual application scenarios.

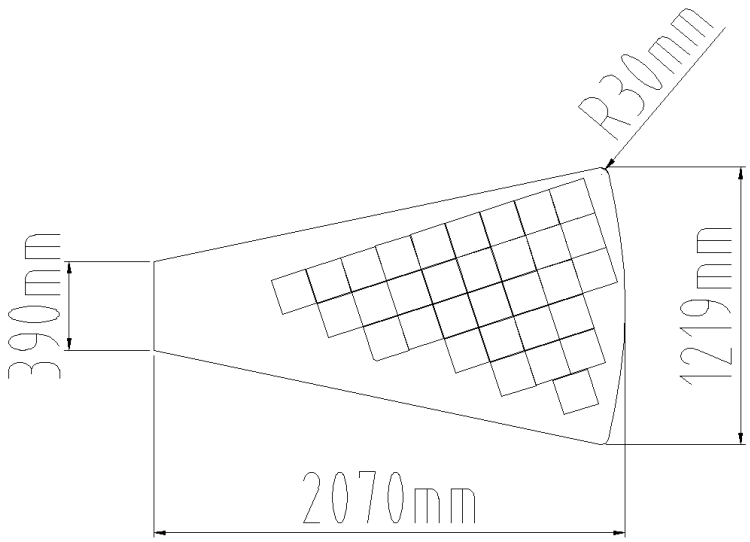


3. Technical Parameters 技术参数

3.1 Solar blade module 太阳能叶片组件



Specification Parameter			
Model	CD-225M-42	Rated Power	225W±5%
Operating Voltage	22.5V	Working Current	10A
Efficiency	≥21.6%	Max Size	2070*1228*5mm
Max System Voltage	1000V DC	Operating Temperature	-40~+85℃
Power Temperature compensation coefficient	-0.43%/℃	Current Temperature Compensation Coefficient	0.08%/℃
Voltage Temperature Compensation Coefficient	-0.37%/℃	Service Life	≥20years
Power Warranty	Not less than 90% in ten years	Max Hail Impact Required	25mm；23m/s
STC(standard test conditions) : irradiance 1000W/㎡, battery temperature 25℃, spectrum AM1.5			



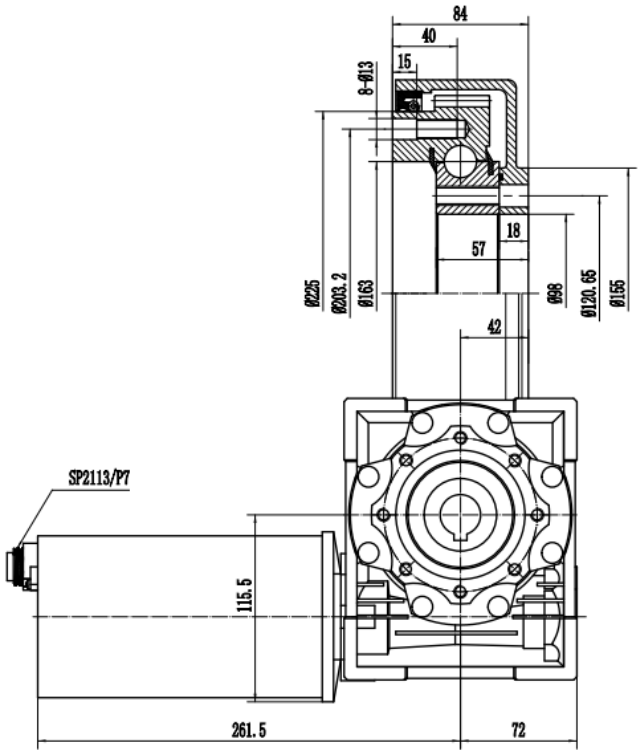
Specification Parameter			
Model	CD-170M-30	Rated Power	170W±5%
Operating Voltage	17V	Working Current	10A
Efficiency	≥21.6%	Max Size	2070*1228*5mm
Max System Voltage	1000V DC	Operating Temperature	-40~+85℃
Power Temperature compensation coefficient	-0.43%/℃	Current Temperature Compensation Coefficient	0.08%/℃
Voltage Temperature Compensation Coefficient	-0.37%/℃	Service Life	≥20years ≥20年
Power Warranty	Not less than 90% in ten years	Max Hail Impact Required	25mm；23m/s
STC(standard test conditions) : irradiance 1000W/㎡, battery temperature 25℃, spectrum AM1.5			

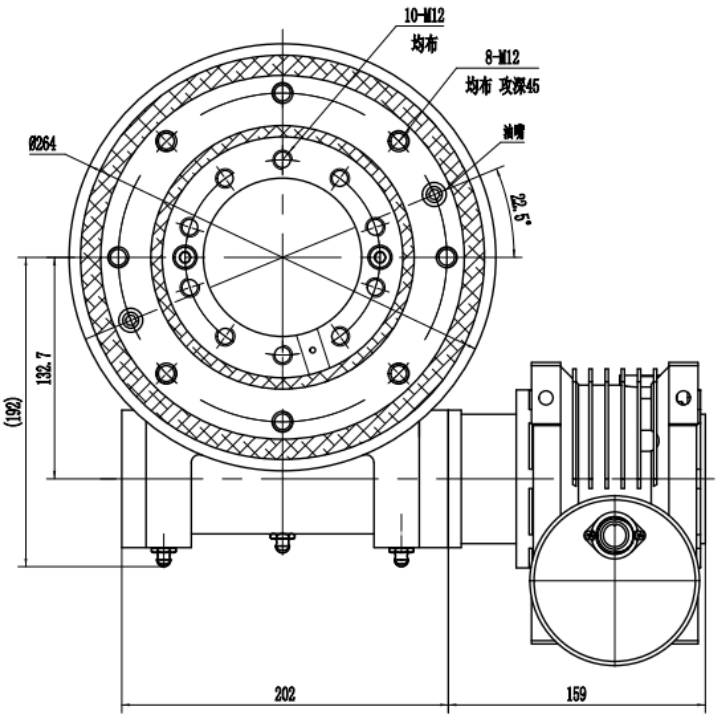
Overall System Specification Parameters		
Model	CD-225M-42	CD-170M-30
Quantity	11pcs	1pcs
Connection Method	12pcs Series	
System Operation Voltage	265V DC	
System Operation Current	10A DC	
System Power	2645W	
Max System Voltage	1000V DC	
STC(standard test conditions) : irradiance 1000W/㎡, battery temperature 25℃, spectrum AM1.5		

3.2 Slewing Support 回转支承

Rotary speed reducer performance parameters 回转式减速机性能参数	
Rated output speed 额定输出转速	0.21 rpm
Rated output torque 额定输出转矩	1500 N.m
Max output torque 最大输出转矩	3000 N.m
Overturning moment 倾覆力矩（Max.）	13.6 kN.m
Keep the moment 保持力矩	10 kN.m
Axial load 轴向载荷（Max.）	32 kN
Radial load 径向载荷（Max.）	28 kN
Reduction ratio 减速比	71:1
Precision grade 精度等级	≤0.1°
Applicable ambient temperature 适用环境温度	-30－+80°C

Dc brush RV reduction motor 直流有刷RV减速电机	
Rated voltage 额定电压	24VDC
Rated current 额定电流	≤9A
Rated output speed 额定输出转速	15 rpm
Protection grade 防护等级	IP65





Important parts of the product have been lubricated before leaving the factory, we recommend that the installation according to the actual situation to decide whether to add lubricating esters.

Grease used under normal conditions			
Lubrication parts	Tapered bearing\slewing bearing raceway\worm shaft and slewing bearing engagement.	Recommended grease name	Great Wall 7029D-1.5 Grease
Applicable Temperature Range	-40 ~ +180	Color	Milky White
Viscosity(-30℃) Pas < 600	≤500	Drip Point ℃	269
Working taper penetration 0.1 mm (60 times)	362		
Grease addition amount (unit: g)			
Slewing bearing raceway	20-25	Meshing between worm and slewing bearing	60-70 95-105
Tapered roller bearings	12±0.5	Lubrication interval	Once Every 2000 hours of operation
While rotating the rotary drive, continuously inject grease into the grease injection port and lubricate the interval again. Do not clean the rotary drive with a steam jet or high-pressure cleaner.			

3.3 Inverter

3.3.1 Basic Parameter

Model HF4830S60-H			
Mains Mode			
Rated Input Voltage	220/230Vac	Input Voltage Range	(170Vac~280Vac) ±2% (90Vac-280Vac)±2%
Frequency	50Hz/ 60Hz	Frequency Range	47±0.3Hz ~ 55±0.3Hz (50Hz); 57±0.3Hz ~ 65±0.3Hz (60Hz);
Overload/Short Circuit Protection	Breaker	Efficiency 效率	>95%
Conversion Time (bypass and inverter)	10ms (typical value)	Max Bypass Overload Current	60A
Inverter mode			
Output Voltage Waveform	Pure sine wave	Rated Output Power	3000
Rated Output Voltage	230Vac	Output Voltage Error	±5%
Output Frequency Range	50Hz ± 0.3Hz 60Hz ± 0.3Hz	Efficiency	>90%
Overload Protection	(102%<Load<125%) ±10%: Error reported and output turned off after 5 minutes; (125%<load<150%) ±10%: error reported and output turned off after 10 seconds. Load > 150% ±10%: error reported and output turned off after 5 seconds.	Peak Power	5000VA
Bypass Breaker Specification	40A	Rated Battery Input Voltage	48V(Minimum starting voltage 44V)
Mains Charging			
Battery Type	Lead-acid battery or Lithium battery	Maximum Charging Current	60A
Charging Current Error	± 5Adc	Charging Voltage Range	40 −60Vdc
Breaker Specification	40A	Overcharge Protection	Alarm and charge off after one minute.

Solar Charging			
最大PV开路电压	500Vdc	PV Operating Voltage Range	120-500Vdc
Max Solar Power	3000W	Battery Voltage Range	40-60Vdc
Max Output Power	4200W	Solar Charging Current Rang	0-60A
Charging Short Circuit Protection	Blown Fuse	Wiring Protection	Reverse Connection Protection
Certification Specifications 认证规格			
Certification Specifications	CE(IEC62109)、RoHs	EMC Certification Level	EN61000
Operation Temperature Range 工作温度范围	-15°C to 55°C	Storage Temperature Range	-20°C ~ 60°C
Humidity Range	5% to 95%（Three protection）	Noise	≤60dB
Heat Dissipation	Forced air cooling,adjustable air speed.	Communication Interface	USB/RS485(Bluetooth/Wi Fi/GPRS)/Dry Node Control
Size（L*W*D）	426mm*332mm*123mm	Weight（kg）	9.7
Protection Level	IP 20		

3.3.2 Charging mode

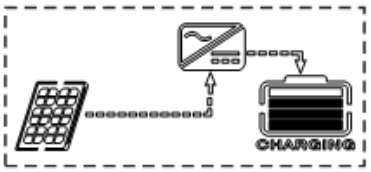
1. 1. Photovoltaic priority: PV priority charging, only when the PV fails to start utility charging. Make full use of solar power generation during the day and switch to utility charging at night, which can maintain battery power and is used in areas where the grid is relatively stable and electricity prices are more expensive.

3. Mains priority:Mains power charges the battery first, and PV charging is activated only when utility power is not effective.

4. Hybrid charging: PV and utility power are mixed, with priority PV MPPT charging, and utility power replenishment when PV energy is insufficient. When the PV energy is sufficient, the utility power stops charging. This way of charging is the fastest, suitable for areas with unstable power grid, and can provide sufficient backup power supply at any time.

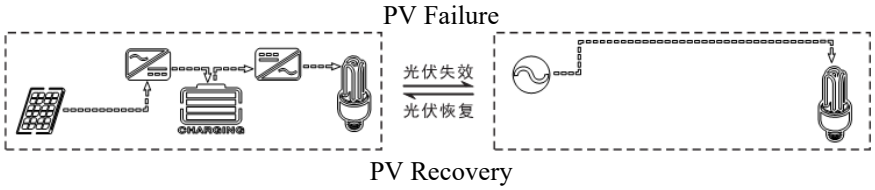
5. Photovoltaic charging only (Only Solar): photovoltaic charging only, without starting utility charging. This way is the most energy-saving way, battery power are from solar energy, usually used in areas with good lighting conditions.

6.



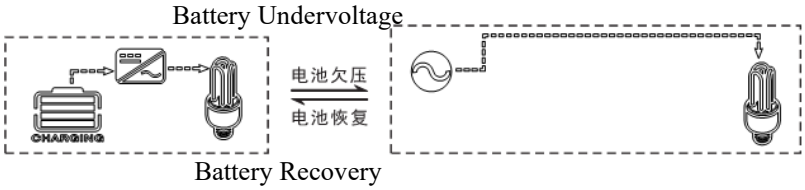
3.3.3 Output Mode

1. PV priority mode: PV and battery supply power to the load, diversified charging mode and output mode can be selected. When PV priority mode is selected, it can maximize the use of green solar energy and realize energy saving and emission reduction. Switch to utility power supply when PV is not effective. This mode maximizes the use of solar energy, while maintaining battery power, and is suitable for areas with relatively stable power grids.



2. The utility priority mode: switch to inverter power supply only when utility power is invalid, equivalent to backup UPS, used in areas with unstable power grid.

3. Inverter priority mode: Switch to utility power only when the battery is under-voltage. This mode makes maximum use of DC power and is used in areas with stable power grids.



3.3.4 System Maintenance

- **To maintain optimal long-term performance, two audits of the following items are recommended annually.**

1. Ensure that the air flow around the all-in-one is not blocked, and remove any dirt or debris from the radiator.

2. Check that all exposed wires are not damaged due to the sun, friction with other objects around, dry rot, insects or rodents. Repair or replace the wires if necessary.

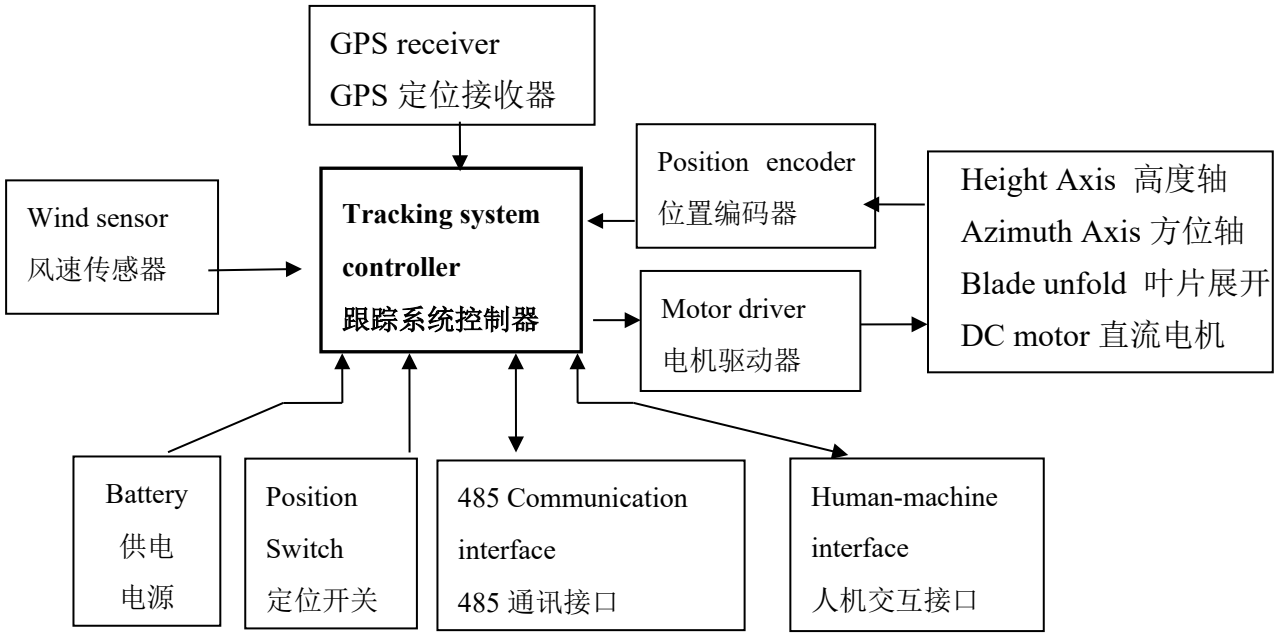
3. Verify that the instruction and display are consistent with the operation of the device. Take corrective action if necessary for any failure or incorrect display.

4. Check all wiring terminals for corrosion, insulation damage, high temperature, or burning or discoloration, and tighten the screws on the terminals.

5. Check for dirt, nesting insects and corrosion, and clean up as required.

3.4 Control System

The solar tracking controller is part of a concentrated photovoltaic (CPV) power generation system and is designed to meet the requirement that the modules in a CPV system must be precisely aligned with the sun.



The functions of each part are described as follows:

(1) Controller: is the core component of the system, responsible for the realization of the control function.

(2) Positioning switch: to provide Angle reference for the controller.

(3) GPS receiver: obtain accurate longitude, latitude, date and time of bracket installation location from GPS system.

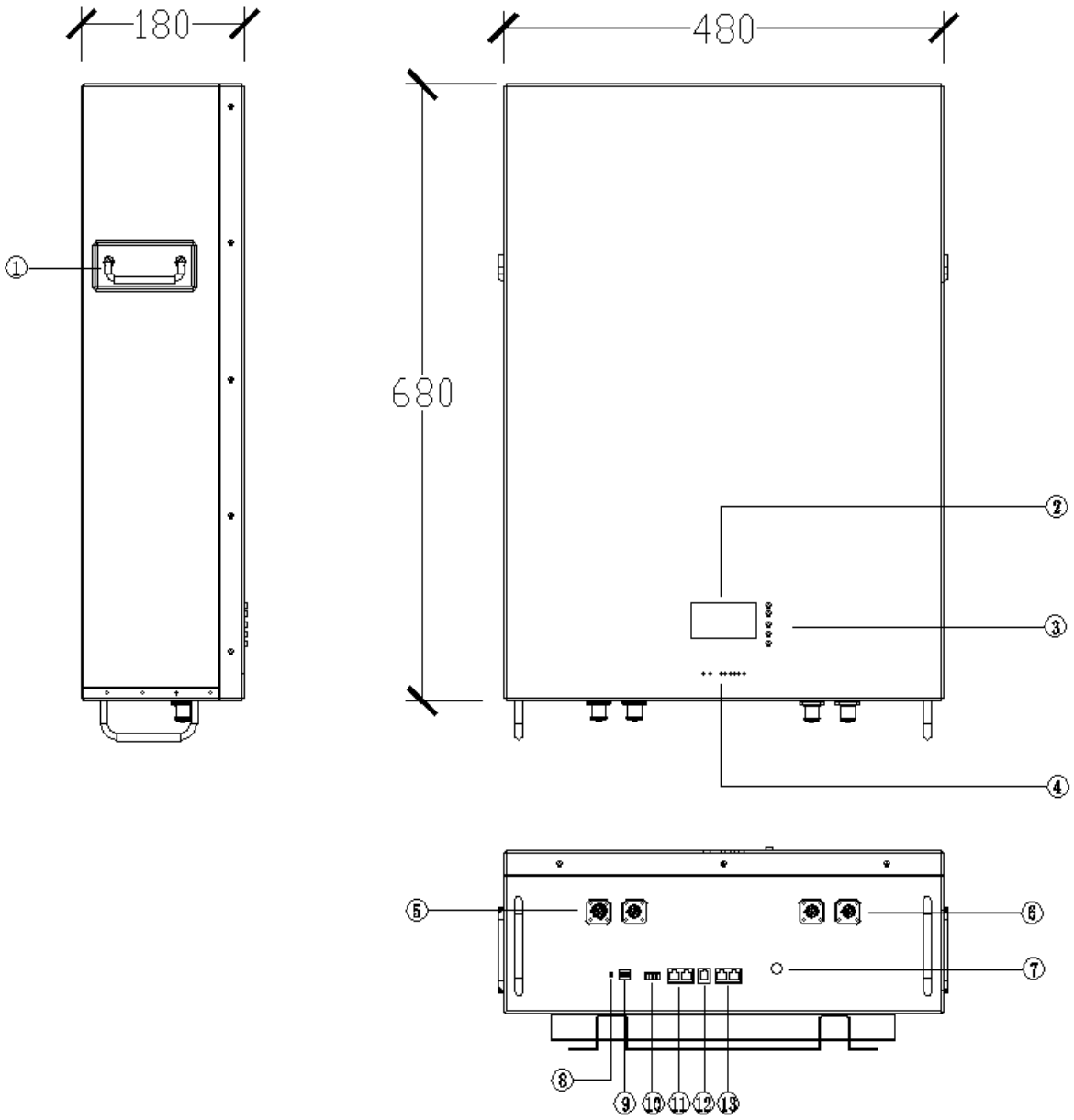
(4) Position encoder: feedback the position Angle of the bracket to the controller, and coordinate with the motor driver to achieve accurate position servo.

(5) 485 communication: communication interface, hardware layer is 485 network, application layer is Modbus protocol.

(6) Motor driver: drives 24V DC motor.

(7) Human-machine interface: through the external LCD screen to achieve the interaction between the operator and the machine, including control mode selection, manual control operation, data monitoring and other functions.

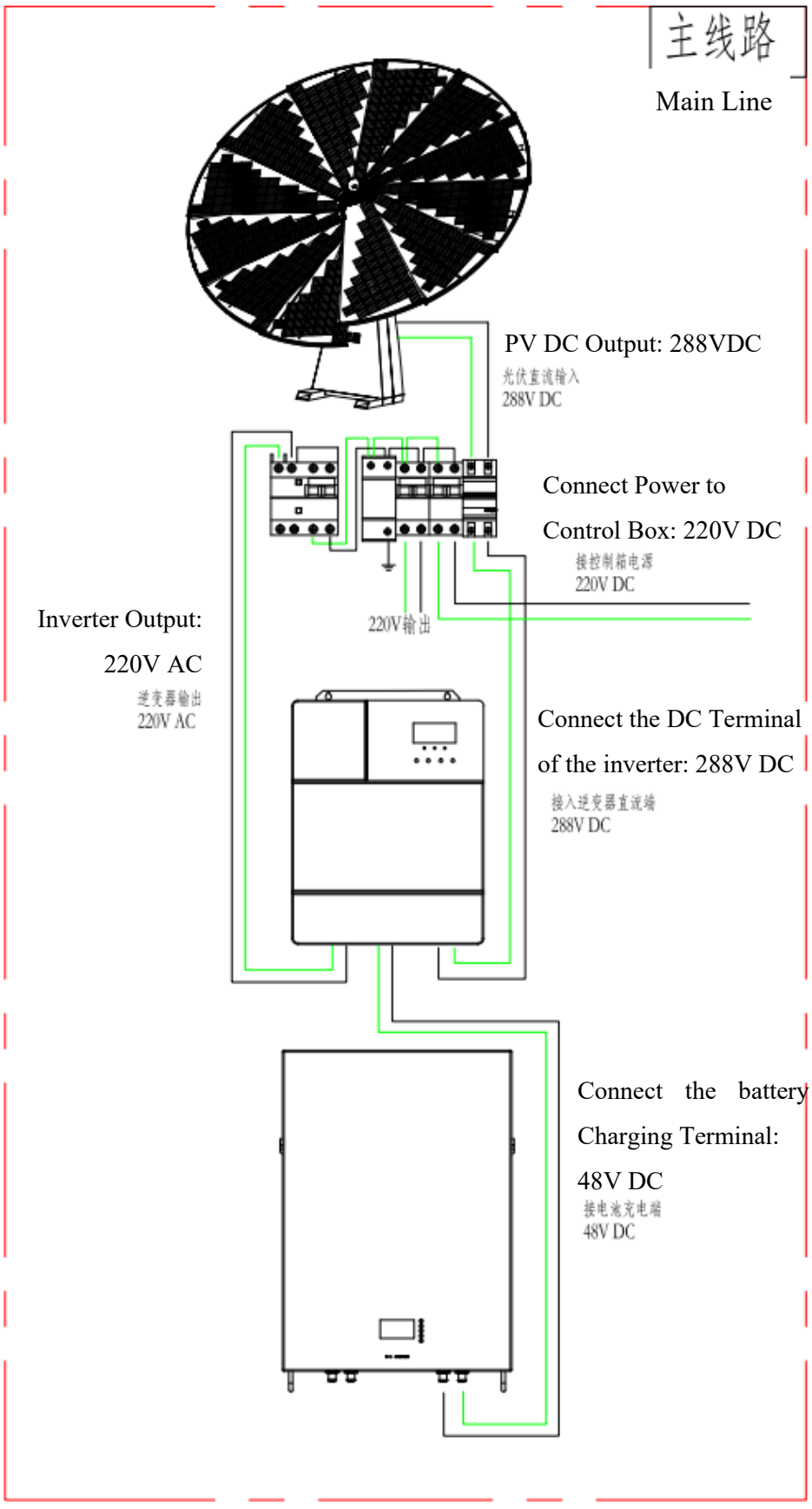
3.5 Energy Storage Battery



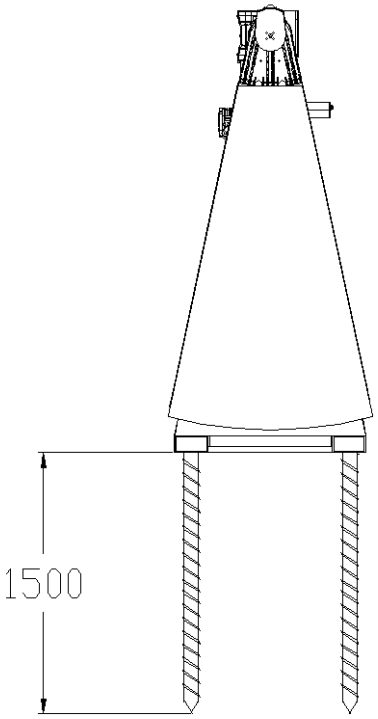
①	Handle	⑧	Reset Button
②	LCD Screen LCD	⑨	Position Selection Switch
③	Button	⑩	Digital Output Cards
④	LED Indicator Light	⑪	CANbus
⑤	Positive Battery Output（USC0600）	⑫	RS485
⑥	Negative Battery Output（USC0600）	⑬	RS232
⑦	Battery Master Switch		

Specification Parameter			
Model	CD-10000U/15S	Rated Voltage	48V
Battery Capacity	200Ah	Capacity	9.6Kwh
Size	680*480*180mm	Weight	96.5kg
Service Life（25℃）	10year	Cycle Index（80%DOD）	6000
Operating Voltage	48V	Max Charging Voltage	54V
Minimum Protection Voltage	42V	Max Charging Current	120A
Energy Storage Time	5months@25℃；3months@35℃；1months@45℃；		
Operating Temperature Range	-20℃~+60℃		
Protection Grade	IP21		

4. Electrical Wiring

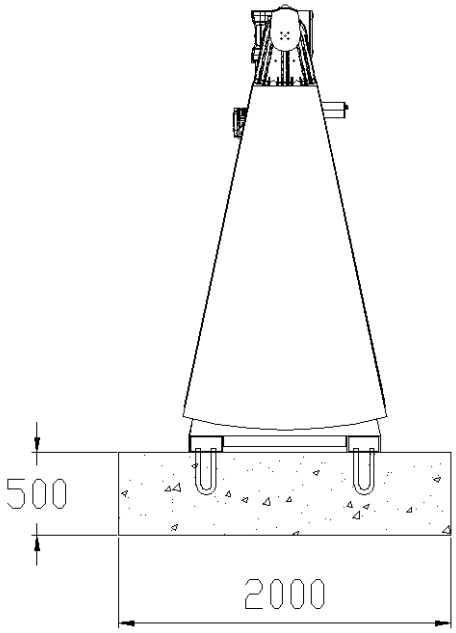


5. Use and Installation



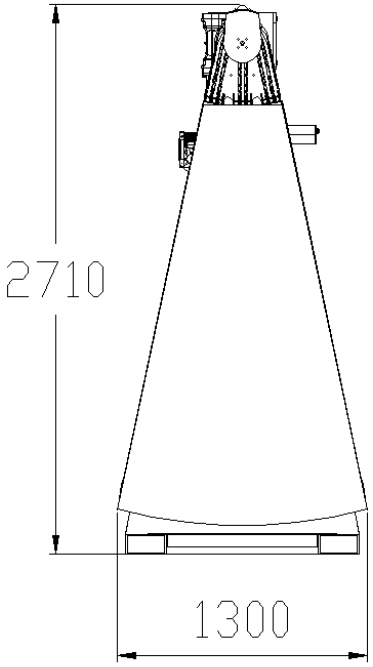
地脚螺栓

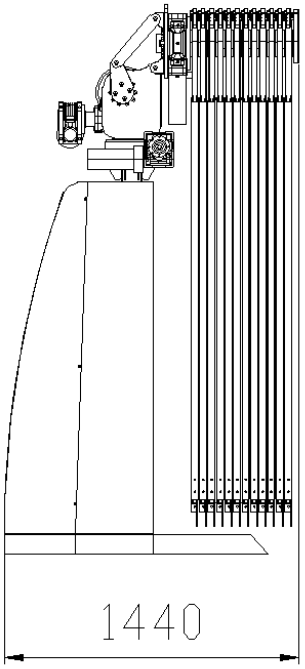
Foundation Bolt



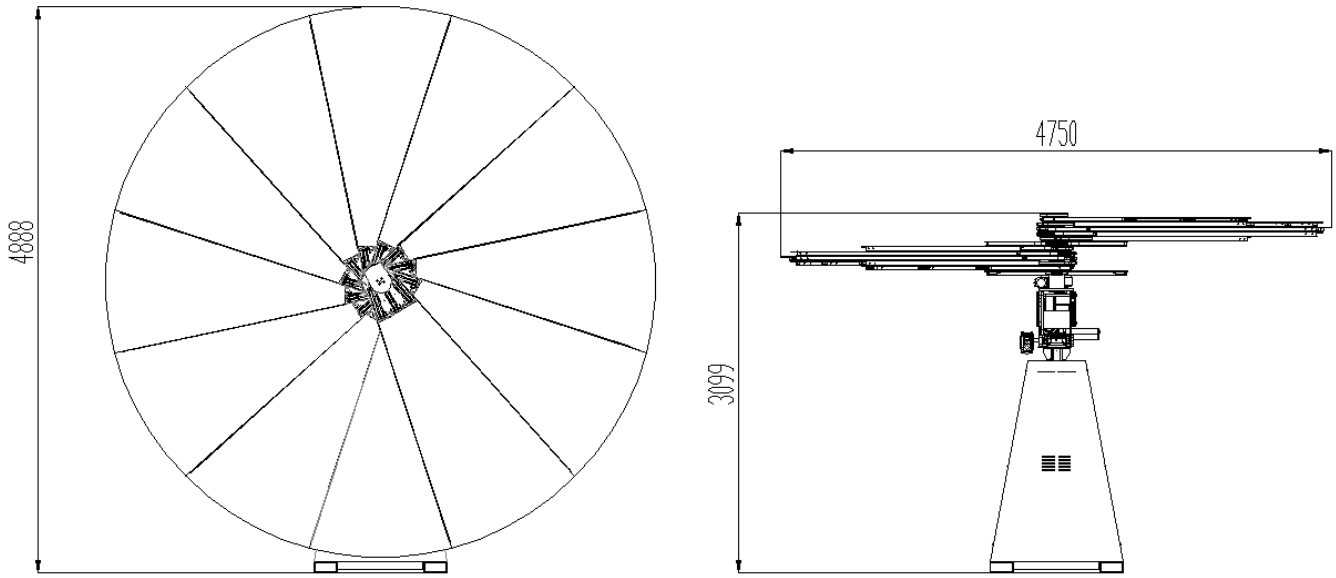
混凝土基础

Concrete Foundation





收藏尺寸 Fold Size



安装空间尺寸

Installation Space Size

6. Packing

Net Size of Goods：1440*1300*2710mm (L*W*H)

Naked Weight：约 950kg

Weight (include inverter and battery)：about 1080kg 约 1080kg

Packing Size：1550*1500*2900（Placed on a load-bearing pallet,surrounded by template and wrapped with plastic film, the wooden box cannot be lifted directly.