

# **Hi-MIN<sup>®</sup>**

## *Catalogue*



As the leader in China solar industry, Himin solar Co., Ltd established in 1995 with more than 6000 employees. It insists on the mission of "For the blue sky of our children, realize micro-emission earth" and always focuses on solutions for the global energy substitution.

Himin owns 3 million square meters industry park – China Solar Valley. In which has built the first, most advanced and full automatic solar energy vacuum tube line with fully independent innovation in the word; the most advanced production line for solar water heater, photovoltaic products; workshop for solar collector, coated steel tube and solar lamp.

Himin's products have been exported to more than 100 countries including Germany, Austria, Italy, England, etc. and it will never stop pushing forward environment protection for human beings in the worldwide.

### Himin FVVM:

**Faith:** Appreciate the nature and revere the truth

**Vision:** Devote far ahead in global micro-emission

**Value:** Focus on sustainability

**Mission:** For the blue sky of our children, realize micro-emission earth



## Huang Ming

- Chairman of Himin Solar Co., Ltd.
- Chairman of Himin Clean Energy Holdings Co., Ltd
- Vice-Chairman of International Solar Energy Society (ISES)
- The First Chinese Entrepreneur took to United Nations Rostrum Twice
- Deputy of the 10th and 11th National People's Congress of People's Republic of China
- Main Motion Proposer of "Renewable Energy Law "
- The First Chinese Honored "Right Livelihood Award"

## Chairman Huang Ming With Foreign Dignitaries



- Chairman Huang Ming with Germany's Chancellor-Angela Merkel



- Prime Minister of Sweden-John Fredrik Reinfeldt was invited to visit China Solar Valley



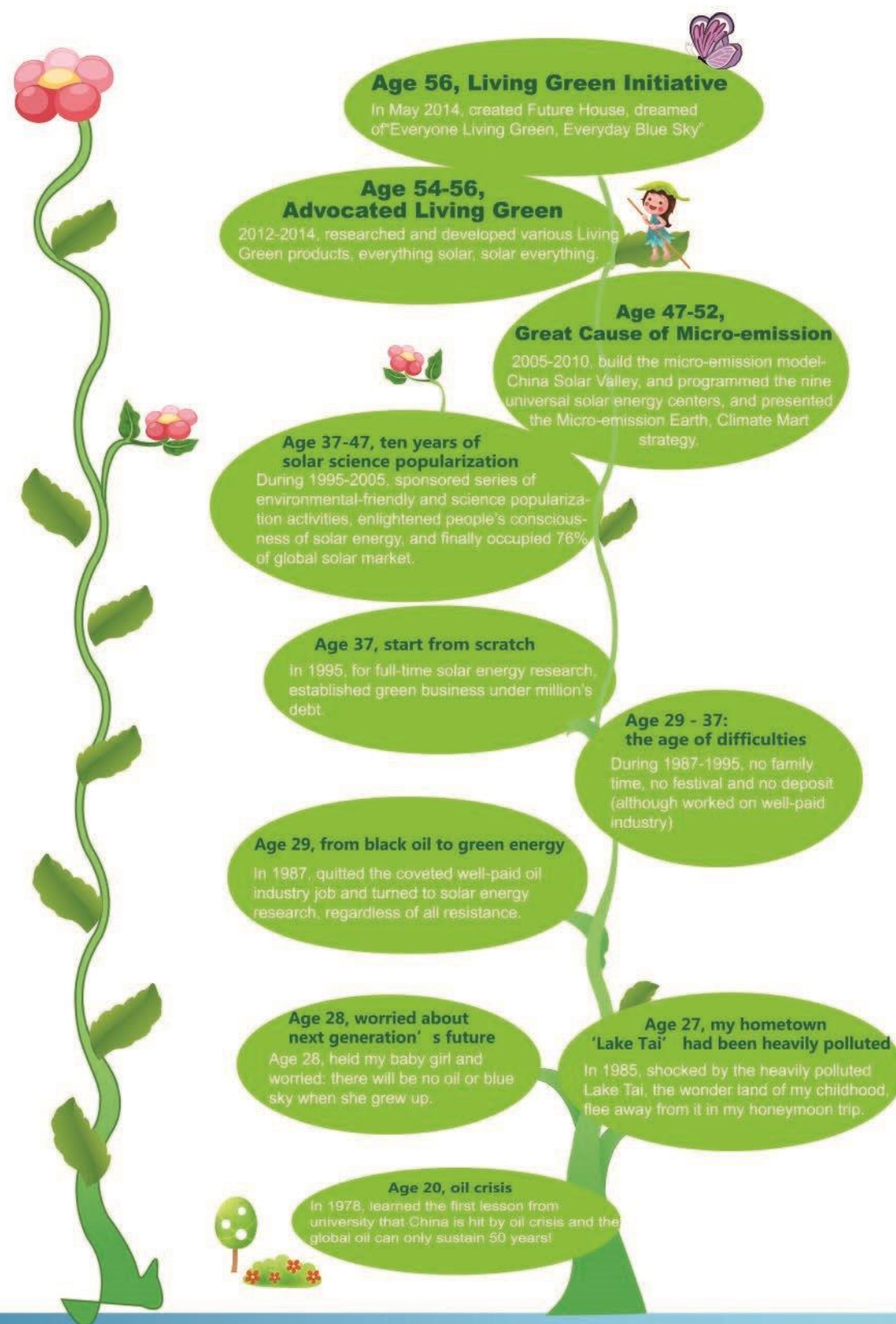
- 39<sup>th</sup> President of the United States and 2002 Nobel Peace Prize laureate-Jimmy Carter talked with Chairman Huang Ming



- Crown Princess of Sweden-Victoria Ingrid Alice Désirée met with Chairman Huang Ming in the Kingdom of Denmark

## Blue Sky Dream Changed One Man

Solar Crazy Man· Crazy Words· Crazy Deeds



## Blue Sky Dream Will Change the World

Solar Crazy Man· Crazy Words· Crazy Deeds

### Solar Crazy Man

#### ①Solar Chef Clothes VS Suit

In November 2013, I was invited to attend the World Innovative Conference held in Austria. According to the conference provision, both speakers and audiences must be dressed in suit. All speakers including the (Vice) president for science and technology from Google, Microsoft, Siemens and other companies were suited up. When it was my turn, I got on the stage pulling solar kitchen in hand, dressed in Himin green uniform with solar kitchen-carriable stickers, wearing chef hat and apron. This innovative wearing impressed all attendees.

#### ③Who dares to criticize his potential customer in public?

"Everybody here, if you and your family bought less than 10 pcs of technology products or electronic products within recent 10 years, please hands up!" I questioned all attendees present in the innovative conference.  
Nobody.  
"If you bought more than 2 pcs of green products within recent 10 years, please hands up!"  
Still nobody.  
"You, just you, only talk, talk, talk, no action at all! Every day you talk about environmental protection, but what have you done? You just talk but do nothing!" I criticized the innovative elites audiences.  
They are all potential or current customers of Himin. Such fierce criticism against customers was scarce in the world!

#### ②The world NO.1 solar crazy guy says hello

After standing on the stage, I didn't say the conventional prologue "Ladies and gentlemen", but directly greeted with "Hello, everybody! This hello is from the world NO.1 Solar crazy guy. This hello is also from this lovely girl—the boys and girls from this generation and later next generations."  
This prologue became the most innovative greeting in the world innovative conference.

#### ④No advertisement VS Excellent advertisement even excited the sponsor

The sponsor of the world innovative conference forbade live advertisement, but my chef clothing won me lots of fans. Even the sponsor also highly praised my speech had innovation spirit, truly conformed to the conference theme.

## Blue Sky Dream Changing China

Solar Crazy Man· Crazy Words· Crazy Deeds

### No-drinking story

One day, I inspected one distributor's shop; an old couple came in.  
"Can I drink the hot water from solar water heater?" The old couple asked.  
"Which do you prefer, truth or lie?" I answered.  
"Of course the truth" she answered immediately.  
"The truth is No", I answered.  
"Why?" They was surprised.  
"Will you drink the hot water which has stayed in thermos flask for 3 days?" I asked.  
"No!" They answered.  
"Same reason, because the hot water is stored inside the heater for many days and is boiled for many times, of course we can't drink it!" I explained.  
"You are so honest, others told me it can. With your honesty, your product must be perfect", they bought it without hesitation.  
Tips: The hot water from solar water heaters can be used for bathing and washing, but can't be drunk, nitrous acid is produced through repeatedly heating, so it is very harmful to our body, Himin suggest you drink fresh hot water.

### "Five-Not-Selling" Story

In 2008, Chinese government introduced subsidy policy for home appliance, including solar water heater. I protested: no standards and after-sale service will make subsidy policy to harmful policy.  
My words were not accepted, however, we can restrict ourselves at least.  
So we made Five-Not-Selling policy  
Not selling without knowing local water quality;  
Not selling where no after-sale network  
Not selling to families without fixed telephone  
Not selling to those who do not care heater's winter performance  
Not selling to those who cares price only  
Even if the sales volume decreases, we still insist on our policy.

### American Dream VS China Dream

Used to be crazy for American Dream and cracked hard for English.  
But finally, the love to my daughter and solar energy made me stay in China.  
Unexpectedly, my China dream had mysterious coincident connection with America.  
In 2000, at Washington Renewable Energy Forum, introduced Solar Science Popularization and shared our experience to let China own world largest solar water heater promotion area. The shocked Americans called me "Solar King".  
In 2005, introduced Himin's blue sky dream at the International Solar Energy Congress in Orlando, America, and was elected the Vice Chairman of the International Solar Energy Society.  
In 2006, I was invited to present Himin model in United Nation of New York, and became the first Chinese private entrepreneur on UN platform.  
In 2011, U.S. President Barack Obama expressed his surprise for China owning three "top of the world" in his state of the union address. One of them is the world's largest private solar research institution —China Solar Valley.  
Thanks to my unrealized American Dream that give me the chance to let American witness my green China Dream!

### Ten years' hard work, exposed the evil of the sunshine industry.

Though solar industry is renowned as sunrise industry, it's also filled with potential dangers; many manufacturers just want to earn money under the name of green industry, produce with low standard and cheat customer! Some unscrupulous producers manufactured fault products.  
All is for the low industry standards and no mandatory rules.  
During the Industry Conference, someone even said: "If improving the standard, we will lose millions every year". I angered: "If you continue doing this, I will expose to the society".  
For over ten years, I made great efforts to push the establishment of compulsory standards in domestic solar industry; but these solar manufactures are getting more unscrupulous, they are just money-oriented, doing bad things to ruin this sunrise industry and harming customers.  
Himin is exposing these unethical behaviors in solar industry, fighting against these immoral acts!

# Me Pad

## Micro-emission Packaged Design Solution Pioneer of the Fifth Global Revolution

Himin proposes that all the world should build a green and sustainable "Micro-emission Earth", which includes micro-emission city, micro-emission village, micro-emission community, micro-emission factory and micro-emission transport, etc..

MePad is "Micro Emission Packaged Design Solution by Himin" s clean energy technologies including solar energy, wind energy, and other energy saving technology. These solutions could reduce the disposal of the waste gas, waste water and pollution of water from people and organization in the life and production, finally realizing zero emission.

### Me Town Pad

Micro-emission Town Packaged Design Solution

Provides an intelligent micro-emission town solution—solutions for energy planning, agricultural/ industrial circular economy, design/renovation of energy-efficient buildings, renewable energy applications such as solar heating and cooling, photovoltaics, and wind energy in public buildings, schools, hospitals, hotels, tourism spots, etc.; micro-emission reduces pollution and improves quality of life.



### Me Home Pad

Micro-emission Home Packaged Design Solution

Core technologies and products: renewable energy technologies, like solar hot water system, solar heating/cooling system, are controlled by the central processing unit, visualized by large TV panel, which applies the technology of Cloud Computing and Internet of Things for Smart Home.



### Me hotel Pad

Micro-emission Plaza Packaged Design Solution

Case Study: Sun-Moon Mansion



Intelligent renewable energy technologies, like solar air-conditioning, heat storage, energy-efficient windows/doors, PV lighting, geothermal, are controlled by the central processing unit, visualized by large TV panel which applies the technology of Cloud Computing and Internet of Things.

### Me Campus Pad

Micro-emission Campus Packaged Design Solution

Case Study: Renewable Energy College Town



Design/construct low-carbon and micro-emission classroom buildings, library, laboratories, zero-energy consumption stadium, staff and student dormitories, low-carbon canteens and PV lightings in the campus.

### Me Port Pad

Micro-emission Port Packaged Design Solution

Case Study: Jinan International Airport



Provide low-carbon, micro-emission design and solutions for terminal buildings, zero-energy consumption navigation system, birds repellent system, zero-energy consumption square lighting and other solutions.

### Me Fac Pad

Micro-emission Factory Packaged Design Solution

Case Study: 30MW Fresnel Solar Thermal Power Generation Project in Spain



Provide design and planning of energy-saving and emission-reduction factories which supply energy on its own by heating and cooling, or large-scale heat for industrial use. In brief, comprehensive energy-saving and clean energy solution for industry is provided.



**Living Green (Living Green Organization) is an international environmental protection practicing NGO. It initiates development of sustainable industry motivating by commercial activities and lifestyle of human beings, aim in environmental protection.**

#### Organization Object:

Only if green industry is focused on as IT, automobile industry which is essential in life, green earth and blue sky will come true. The responsibility of International Green Living Organization is to persuade more enterprises to join in, R&D and devote on promoting green products which will improve the lifestyle, enlightening public environmental awareness, leading the correct, healthy and energy saving consumption concept, finally make all engage in environmental protection activities.

Meanwhile, Living Green will also rectify direction of green industry development which has been misled by western government with subsidy policy pushing forward to sustainable development.

#### Organized by:

International Solar Energy Society, China Renewable Energy Society, China Energy Conservation Association.

# Future House Zero-carbon Micro-emission House

## Living Green Science Enlightenment Pavilion

—For the blue sky of our children

**For the blue sky of our children, launch the campaign of worldwide living green activity, change the current generation, protect the later generations.**

The Future House is short of "Future house living green science enlightenment museum" focusing on spreading concept of "Zero-carbon, micro-emission, low energy consumption life style". "Living Green" means eco-life style; "zero carbon & micro-emission" means low emissions of CO<sub>2</sub>, PM2.5 and others; "science enlightenment museum" in order to point out the misconception of environment protection, spread the right philosophy of green life, initiate people to realize green lifestyle.

Birth of the Future House is the endless of theory for energy saving only, but beginning of feasible solution application in household electricity, hot water, window system, heating and even cooking. Additionally, also a new lifestyle in energy saving exhibited by family unit.

It covers five whole systems of zero-carbon micro-emission intelligent air conditioning system, zero-carbon micro-emission intelligent hot water/pure water system, zero energy intelligent integrated garden system, solar kitchen series and climate mart series.



Specification: 3X(6+7)  
Area: 39 m<sup>2</sup> (removable)  
Business model: city square science popularization model, government energy saving and emission reduction science popularization model, media publicity house model



Specification: 5x (6+6)  
Area: 60 m<sup>2</sup> (removable)  
Business model: villa/community science popularization interactive class, green building developer/firms cooperation model



Specification: 8x8  
Area: 64 m<sup>2</sup> (removable)  
Business model: city square science popularization model, government energy saving and emission reduction science popularization model, media publicity house model



Specification: 6x (7+9)  
Area: 96 m<sup>2</sup> (removable)  
Business model: villa/community science popularization interactive class, green building developer/firms cooperation model

Safe, Micro-emission, and distinctive~

# Zero-Energy Safe Garden



# GREEN GIFTS



## Solar Decorations



Solar windmill



Solar bird



Solar ogival windmill



Solar DIY toy-red Baron



## Solar Lights



Solar lantern



Solar flashlight



## Solar Chargers



Quadruple solar power bank  
(four times more power)



## Solar Clothes & Hats and Backpacks



Dim light solar Adults' hat (dim light)



Solar schoolbag



Solar backpack



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## Solar thermal heating

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SOLAR WATER HEATER

Why Himin

UTLE (Ultra Low Emission) vacuum tube is used in Himin solar water heater, which greatly reduces emissivity and heat loss, and ensures the solar hot water system to provide hot water even under the extremely cold conditions.

| Component      | Himin product material  | Industrial hidden troubles  |
|----------------|---|---|
| Electrical bar | The booster is made of Incoloy800, which is strongly anticorrosive in any kind of water. The processing is very advanced, while its safety reaches the international standard, dry-burning period is up to 72h, its lifespan is longer than the ones in the market. | Leakage of electric boosters<br>Electrochemical corrosion of electric boosters<br>Cavitation of electric boosters |
| Inner tank     | SUS304 stainless steel · high-nickel · high-chrome<br>Thickness: 0.5mm ~ 0.6mm;<br>comprehensive tests including materials, welding performance, pressure, salt spray testing, etc. leakage test for each tank after welding.                                       | Corrosion   |
| More...        | .....   | .....   |

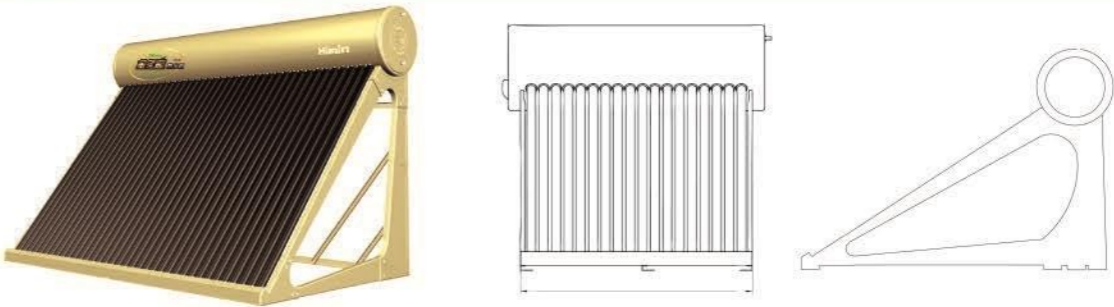


Material

- Inner tank material: SUS304 stainless steel, 0.5mm in thickness.
- Insulation material: polyurethane.
- Outer tank material: plastic coated galvanized steel plate, 0.5mm in thickness.
- Frame material: plastic coated galvanized steel plate, 2.0mm in thickness.
- Vacuum tube material: borosilicate glass 3.3

Products

HM210



Specifications of HM210

Type for hot-area

| Product model        | Outline dimension(mm) | Angle(°) | Aperture area (m²) | Length (mm) | Vacuum tube |  | Water tank capacity(L) | Weight(Kg) |
|----------------------|-----------------------|----------|--------------------|-------------|-------------|--|------------------------|------------|
|                      |                       |          |                    |             | Quantity    |  |                        |            |
| QBJ1-175/2.32/0.05-1 | 1425*2192*1585        | 33       | 2.32               | 2100        | 16          |  | 175                    | 325        |
| QBJ1-195/2.61/0.05-2 | 1575*2192*1585        |          | 2.61               |             | 18          |  | 195                    | 360        |
| QBJ1-215/2.91/0.05-2 | 1725*2192*1585        |          | 2.91               |             | 20          |  | 215                    | 400        |
| QBJ1-255/3.50/0.05-1 | 2025*2192*1585        |          | 3.5                |             | 24          |  | 255                    | 465        |
| QBJ1-295/4.08/0.05-1 | 2325*2192*1585        |          | 4.08               |             | 28          |  | 295                    | 535        |
| QBJ1-380/5.26/0.05-1 | 2925*2192*1585        |          | 5.26               |             | 36          |  | 380                    | 680        |

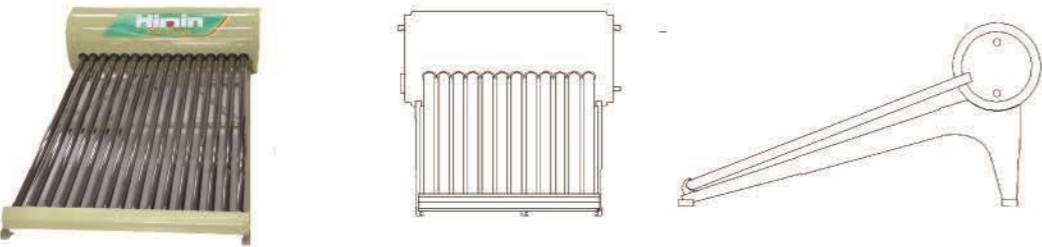
Type for cold-area

|                   | Product model        | Outline dimension(mm) | Angle(°) | Aperture area (m²) | Vacuum tube |          | Water tank capacity(L) | Weight(Kg) |
|-------------------|----------------------|-----------------------|----------|--------------------|-------------|----------|------------------------|------------|
|                   |                      |                       |          |                    | Length (mm) | Quantity |                        |            |
| Pitched roof type | QBJ1-155/2.32/0.05-2 | 1425*1712*2166        | 50       | 2.32               | 2100        | 16       | 155                    | 295        |
|                   | QBJ1-175/2.61/0.05-2 | 1575*1712*2166        |          | 2.61               |             | 18       | 175                    | 330        |
|                   | QBJ1-190/2.91/0.05-2 | 1725*1712*2166        |          | 2.91               |             | 20       | 190                    | 365        |
|                   | QBJ1-230/3.50/0.05-2 | 2025*1712*2166        |          | 3.5                |             | 24       | 230                    | 435        |
|                   | QBJ1-265/4.08/0.05-1 | 2325*1712*2166        |          | 4.08               |             | 28       | 265                    | 500        |
|                   | QBJ1-340/5.26/0.05-2 | 2925*1712*2166        |          | 5.26               |             | 36       | 340                    | 630        |
| Flat type         | QBJ1-155/2.32/0.05-2 | 1425*1720*2090        | 50       | 2.32               | 2100        | 16       | 155                    | 305        |
|                   | QBJ1-175/2.61/0.05-2 | 1575*1720*2090        |          | 2.61               |             | 18       | 175                    | 340        |
|                   | QBJ1-190/2.91/0.05-2 | 1725*1720*2090        |          | 2.91               |             | 20       | 190                    | 375        |
|                   | QBJ1-230/3.50/0.05-2 | 2025*1720*2090        |          | 3.5                |             | 24       | 230                    | 445        |
|                   | QBJ1-265/4.08/0.05-1 | 2325*1720*2090        |          | 4.08               |             | 28       | 265                    | 505        |
|                   | QBJ1-340/5.26/0.05-2 | 2925*1720*2090        |          | 5.26               |             | 36       | 340                    | 640        |

Type for warm-area

|                   | Product model        | Outline dimension(mm) | Angle(°) | Aperture area (m²) | Vacuum tube |          | Water tank capacity(L) | Weight(Kg) |
|-------------------|----------------------|-----------------------|----------|--------------------|-------------|----------|------------------------|------------|
|                   |                      |                       |          |                    | Length (mm) | Quantity |                        |            |
| Pitched roof type | QBJ1-170/2.32/0.05-2 | 1460*2170*1275        | 45       | 2.32               | 2100        | 16       | 170                    | 315        |
|                   | QBJ1-190/2.61/0.05-2 | 1620*2170*1275        |          | 2.61               |             | 18       | 190                    | 350        |
|                   | QBJ1-210/2.91/0.05-2 | 1780*2170*1275        |          | 2.91               |             | 20       | 210                    | 390        |
|                   | QBJ1-250/3.50/0.05-2 | 2100*2170*1275        |          | 3.5                |             | 24       | 250                    | 460        |
|                   | QBJ1-290/4.08/0.05-1 | 2420*2170*1275        |          | 4.08               |             | 28       | 290                    | 530        |
|                   | QBJ1-370/5.26/0.05-2 | 3060*2170*1275        |          | 5.26               |             | 36       | 370                    | 670        |
| Flat type         | QBJ1-170/2.32/0.05-2 | 1460*2170*1275        | 50       | 2.32               | 2100        | 16       | 170                    | 320        |
|                   | QBJ1-190/2.61/0.05-2 | 1620*2170*1275        |          | 2.61               |             | 18       | 190                    | 355        |
|                   | QBJ1-210/2.91/0.05-2 | 1780*2170*1275        |          | 2.91               |             | 20       | 210                    | 395        |
|                   | QBJ1-250/3.50/0.05-2 | 2100*2170*1275        |          | 3.5                |             | 24       | 250                    | 465        |
|                   | QBJ1-290/4.08/0.05-1 | 2420*2170*1275        |          | 4.08               |             | 28       | 290                    | 535        |
|                   | QBJ1-370/5.26/0.05-2 | 3060*2170*1275        |          | 5.26               |             | 36       | 370                    | 670        |

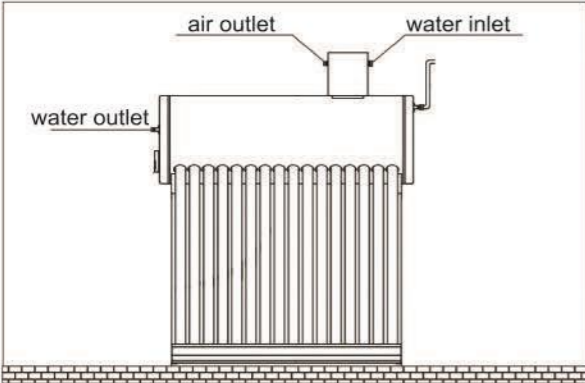
HM180



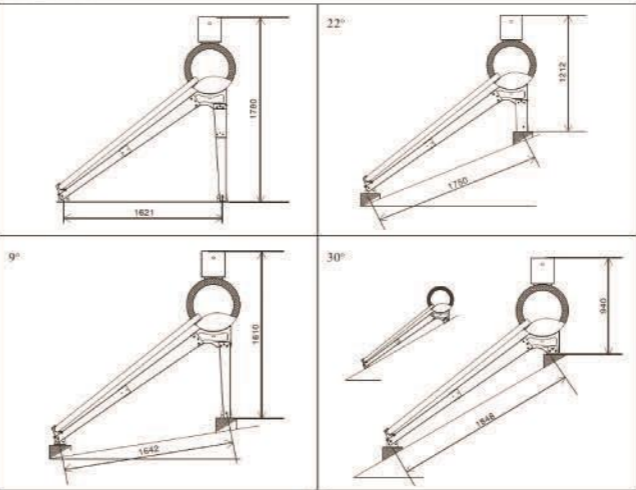
| Specifications of HM180 |                       |          |                   |             |          |                        |            |
|-------------------------|-----------------------|----------|-------------------|-------------|----------|------------------------|------------|
| Product model           | Outline dimension(mm) | Angle(°) | Aperture area(m²) | Vacuum Tube |          | Water tank capacity(L) | Weight(Kg) |
|                         |                       |          |                   | Length(mm)  | Quantity |                        |            |
| QBJ1-120/1.55/0-B21°    | 1116*2010*1082        | 21       | 1.55              | 1800        | 12       | 120                    | 220        |
| QBJ1-140/1.82/0-B21°    | 1276*2010*1082        |          | 1.82              |             | 14       | 140                    | 255        |
| QBJ1-160/2.09/0-B21°    | 1436*2010*1082        |          | 2.09              |             | 16       | 160                    | 290        |
| QBJ1-180/2.36/0-B21°    | 1596*2010*1082        |          | 2.36              |             | 18       | 180                    | 320        |
| QBJ1-200/2.62/0-B21°    | 1756*2010*1082        |          | 2.62              |             | 20       | 200                    | 350        |
| QBJ1-240/3.16/0-B21°    | 2076*2010*1082        |          | 3.16              |             | 24       | 240                    | 420        |
| QBJ1-280/3.68/0-B21°    | 2396*2010*1082        |          | 3.68              |             | 28       | 280                    | 490        |

Floater tank solar water heater

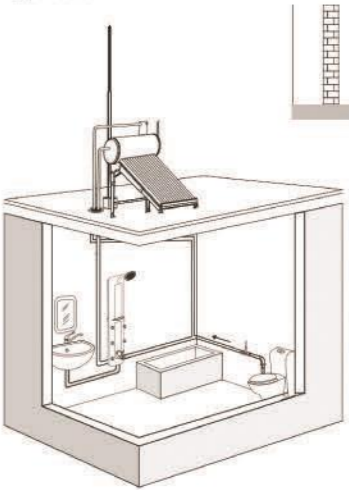
- It can be flexibly installed on the roof in different angles, which integrates perfectly with building.
- With the floater tank, the water tank can be filled by the tap water or other storage water tanks, which keeps it in a full water state all the time, more convenient to use.



Installation



Application



| Specifications of floater tank solar water heater |                       |          |                   |             |          |                        |            |
|---|-----------------------|----------|-------------------|-------------|----------|------------------------|------------|
| Product model                                     | Outline dimension(mm) | Angle(°) | Aperture area(m²) | Vacuum Tube |          | Water tank capacity(L) | Weight(Kg) |
|   |                       |          |                   | Length(mm)  | Quantity |                        |            |
| Q-B-J-1-125/1.47/0.05-1                           | 1105*1621*1870        | 38       | 1.47              | 1800        | 12       | 125                    | 205        |
| Q-B-J-1-145/1.72/0.05-1                           | 1255*1621*1870        |          | 1.72              |             | 14       | 145                    | 235        |
| Q-B-J-1-165/1.97/0.05-1                           | 1405*1621*1870        |          | 1.97              |             | 16       | 165                    | 265        |
| Q-B-J-1-185/2.22/0.05-1                           | 1555*1621*1870        |          | 2.22              |             | 18       | 185                    | 295        |
| Q-B-J-1-205/2.48/0.05-1                           | 1705*1621*1870        |          | 2.48              |             | 20       | 205                    | 335        |
| Q-B-J-1-245/2.98/0.05-1                           | 2005*1621*1870        |          | 2.98              |             | 24       | 245                    | 390        |
| Q-B-J-1-285/3.48/0.05-1                           | 2305*1621*1870        |          | 3.48              |             | 28       | 285                    | 450        |

Pressurized flat solar water heater

The solar water system circulates naturally, collector and water tank is separated. The collector absorbs the heat, then transfers it into the water tank through natural circulation.

- Features:**
- pressurized operation
  - enamel inner tank
  - excellent anticorrosion performance
  - anticorrosive protection of magnesium rod
  - blue film flat plate collector



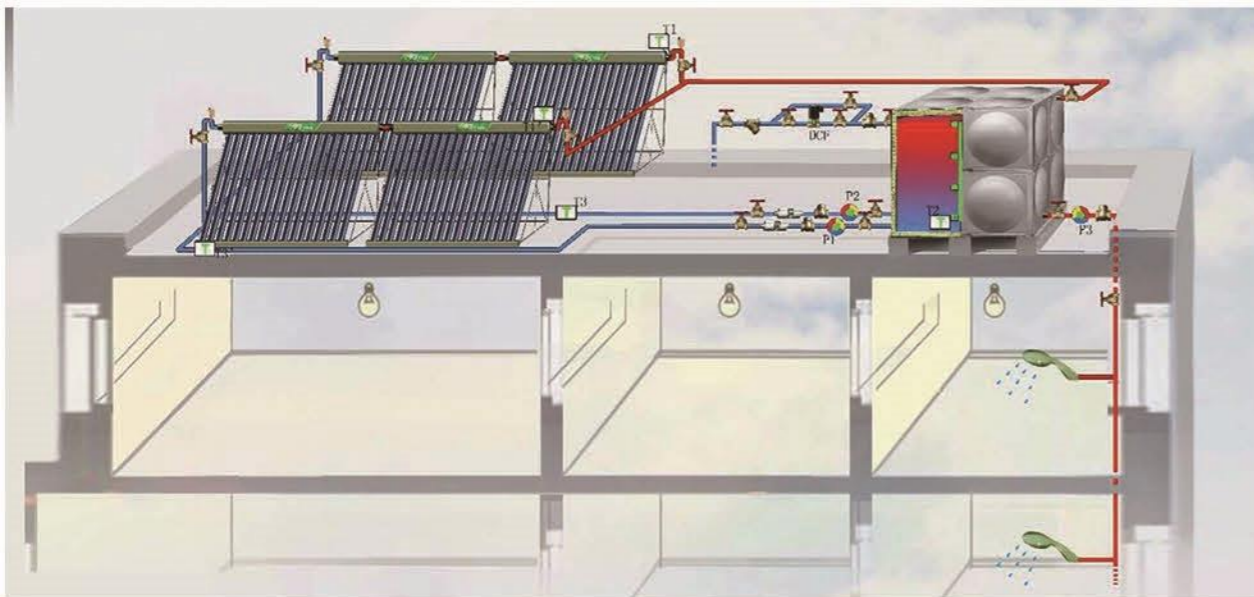
| Specifications of pressurized flat solar water heater |          |                   |                       |          |                        |            |
|---|----------|-------------------|-----------------------|----------|------------------------|------------|
| Product model   | Angle(°) | Aperture area(m²) | Flat plate collector  |          | Water tank capacity(L) | Weight(Kg) |
|   |          |                   | Outline dimension(mm) | Quantity |                        |            |
| PJF2-150/1.98/0.6                                     | 25       | 1.98              | 2050*1050*80          | 1        | 150                    | 255        |
| PJF2-200/3.64/0.6                                     |          | 3.64              | 2000*1000*80          | 2        | 200                    | 325        |
| PJF2-300/3.64/0.6                                     |          | 3.64              | 2000*1000*80          | 2        | 300                    | 450        |

## INDUSTRIAL SOLAR PROCESS HEATING SYSTEM

Depending on its infinity, efficiency, environmental protection and economy, the proportion of solar heat utilization in the range of global heat utilization is increasing. It has beyond electricity and fuel and has been widely used in household, hotels, hospitals, schools, factories, dormitories, venues and other large engineering systems. With the high cost performance, convenient installation, high efficiency and good safety, Himin solar hot water system has been widely used in various fields around the world.

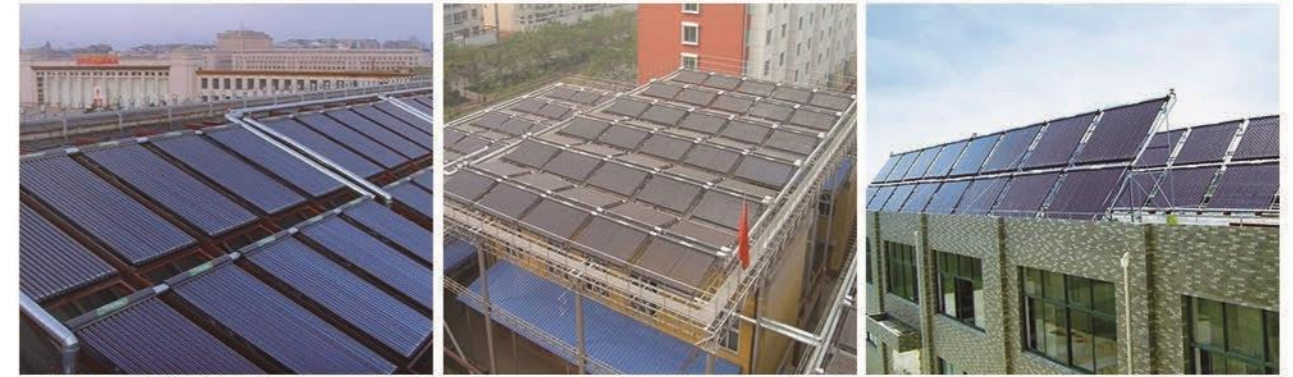
### Commercial solar water heating

In Hotel, factory, dormitory, hospital, school and venue, the water consumption is large, the water using time is concentrated and the comfort requirement is high, so we can install centralized hot water system for them.



#### Main Advantages

- ① Its installation is convenient, the controlling is simple and hidden dangerous are less;
- ② The frequency conversion pressured design can supply comfortable water all the time;
- ③ Eight -anti: Anti-scald, anti-electricity leakage, anti-water leakage, anti-freezing, anti- potential danger from blocking and patching, anti-scaling, anti-system lead over standard, anti-overheating;
- ④ Three- strong: It will supply hot water at any weather, constant temperature hot water will come out at any time when you open the switch. It will controlled remotely by big data platform;
- ⑤ High efficiency, safety, and high cost performance.



### Direct solar water heating

For household and office building projects, the water consumption is small and the water using time is not concentrated, so we can install single solar water heater or connected single solar water heaters for them.



#### Main Advantages

- ① One large: large amount hot water for shower, bath ,Surf bath and many other types to meet hot water requirements.
- ② Two intelligence: Full - automatic operation of the system to provide constant temperature hot water; Intelligent control of outlet pressure, allowing users to enjoy massage bath.
- ③ Enjoy at any time: All day hot water in 24 hours it will let you enjoy hot water at any time.
- ④ Eight protective: Eight -anti: Anti-scald, anti-electricity leakage, anti-water leakage, anti-freezing, anti- potential danger from blocking and patching, anti-scaling, anti-system lead over standard, anti-overheating.
- ⑤ High cost performance.



Project references

▼ For hotels



▼ For schools



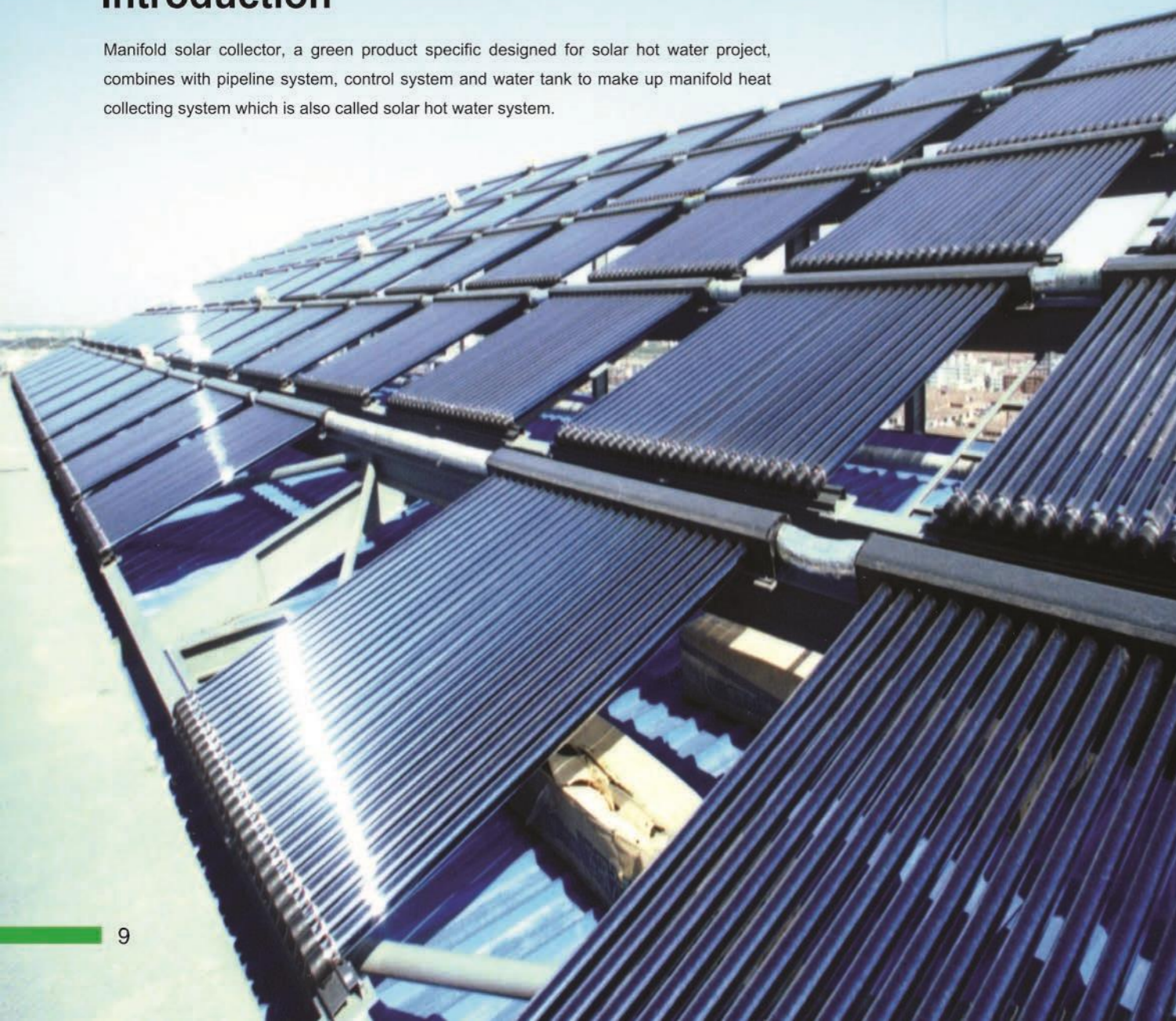
▼ For hospitals



## MANIFOLD SOLAR COLLECTOR

### Introduction

Manifold solar collector, a green product specific designed for solar hot water project, combines with pipeline system, control system and water tank to make up manifold heat collecting system which is also called solar hot water system.



### Components

- 1 **Thickened insulation layer:** once foamed technology adopted at full automatic constant temperature and high pressure and processed by high temperature to achieve good insulation effect.  
Anti-corrosion inner tank: anti-corrosion property is greatly improved by adopting SUS304 stainless steel and technology of plasma argon welding.
- 2 **Anti-corrosion bracket:** Hot dipped galvanized angle steel is connected by bolts; fixed bracket is anti-corrosion with wind resistance.
- 3 **UTLE vacuum tube:** high absorption, high-temperature resistance and high cold resistance can meet the demand for hot water in all aspects.
- 4 **Tailstock:** Fix and protect the tail end of vacuum tubes effectively by use of nylon tailstock.



### Advantages

- **Anti-corrosion and durable:** the shell is made of galvanized steel sheet and surface is sprayed, which also features of beauty, anti-corrosion and durability.  
Inner tank is made of SUS304 with good anti-corrosion effect and long lifespan.
- **Power saving and energy conservation:** combination of solar energy which is the main energy and power electricity as the auxiliary energy.
- **Convenient to use:** Full automatic operation by adoption of large engineering control cabinet. When turns switch on, hot water flows out.

### Technical Specifications



- **Horizontal type non-pressured solar collector**  
Why choose horizontal type solar collector?
- **Highly efficient heat collection:** Use of UTLE vacuum tubes with horizontal arrangement, excellent sunlight absorption in any angle and higher energy transformation.
- **Arbitrary Combination:** Combines solar collector according to demands and provides more energy to solar heating system.

| Product Model                | JPH-50TT18-00°         | JPH-50TX18-20°             | JPH-50TX18-33° | JPH-64TT18-00°         | JPH-100TX18-20°            | JPH-100TX18-33° |
|------------------------------|------------------------|----------------------------|----------------|------------------------|----------------------------|-----------------|
| Length of vacuum tube ( m )  | 1.8                    |                            |                |                        |                            |                 |
| Installation angle ( ° )     | 0                      | 20                         | 33             | 0                      | 20                         | 33              |
| Aperture area ( m² )         | 4.85                   | 4.85                       | 4.85           | 6.2                    | 9.7                        | 9.7             |
| Gross area ( m² )            | 8.5                    | 8.5                        | 8.5            | 9.8                    | 17                         | 17              |
| Contour aperture area ( m² ) | 7.6                    | 7.6                        | 7.6            | 8.5                    | 15.2                       | 15.2            |
| Outline dimension ( mm )     | 3672*2445              | 3672*2298*1072             | 3672*2099*1511 | 3672*2765              | 3680*4799*1972             | 3680*4307*2949  |
| Material of shell            | Galvanized steel sheet |                            |                |                        |                            |                 |
| Support material             | Galvanized steel sheet | Hot galvanized steel angle |                | Galvanized steel sheet | Hot galvanized steel angle |                 |
| Weight ( full water ) ( Kg ) | 337                    | 375                        | 389            | 425                    | 750                        | 770             |
| Insulation material          | Polyurethane           |                            |                |                        |                            |                 |






**Vertical type non-pressured solar collector**  
 Why choose vertical solar collector?

- Highly efficient heat collection:**  
 UTLE vacuum tubes with more aperture area and higher heat collection efficiency.

**Easy to assemble and disassemble:**  
 one-to-one correspondence between nylon tailstock and vacuum tube makes it easy to be assembled or disassembled.

| Product Model                  | JPS-20TT18             | JPS-25TT18 | JPS-30TT18 | JPS-20TT21 | JPS-25TT21 | JPS-30TT21 |
|--------------------------------|------------------------|------------|------------|------------|------------|------------|
| Length of vacuum tube ( m )    | 1.8                    | 1.8        | 1.8        | 1.8        | 1.8        | 1.8        |
| Installation angle             | 0-50°                  | 0-50°      | 0-50°      | 0-50°      | 0-50°      | 0-50°      |
| Gross Length ( mm )            | 1915                   | 1915       | 1915       | 2270       | 2270       | 2270       |
| Gross width ( mm )             | 1730                   | 2130       | 2500       | 1730       | 2130       | 2500       |
| Gross height ( mm )            | 136                    | 136        | 136        | 136        | 136        | 136        |
| Gross area ( m² )              | 3.31                   | 4.08       | 4.84       | 3.93       | 4.84       | 5.68       |
| Weight with water ( kg )       | 145                    | 175        | 210        | 160        | 195        | 230        |
| Collector heat transfer medium | Water                  |            |            |            |            |            |
| Material of shell              | Galvanized steel sheet |            |            |            |            |            |
| Insulation material            | polyurethane           |            |            |            |            |            |

| Power output per collector unit |  |      |      |      |      |      |
|---------------------------------|--|------|------|------|------|------|
| Collector name                  | Power output per collector<br>Gb=850W/㎡;Gd=150W/㎡<br>θm - θa |      |      |      |      |      |
|                                 | 0 K  | 10 K | 30 K | 50 K | 70 K | 64 K |
|                                 | W  | W    | W    | W    | W    | W    |
| JPS-20TT18                      | 1436   | 1393 | 1307 | 1222 | 1136 | 1162 |
| JPS-25TT18                      | 1767   | 1715 | 1609 | 1504 | 1399 | 1430 |
| JPS-30TT18                      | 2099   | 2037 | 1912 | 1787 | 1661 | 1699 |
| JPS-20TT21                      | 1702   | 1651 | 1550 | 1448 | 1347 | 1377 |
| JPS-25TT21                      | 2095   | 2033 | 1908 | 1783 | 1658 | 1696 |
| JPS-30TT21                      | 2459   | 2386 | 2239 | 2093 | 1946 | 1990 |

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| <div> <div>SP</div> <div>                     CERTIFICATE<br/>                     Solar Keymark Certificate<br/>                     No. SP SC0239-17                 </div> </div> <div>                     Holder/Issued to/Manufacturer:<br/>                     Company: Hsien Solar Co., Ltd.<br/>                     Address: Sun Moon Mansion, Solar Valley Road, Economic Development Zone, Dushu City, Hunan, China<br/>                     Product name and description:<br/>                     Vacuum tube solar thermal collectors for water heating<br/>                     For technical information see Appendix (2 pages)<br/>                     Models: JPS-20TT18 JPS-20TT21 JPS-25TT18 JPS-25TT21 JPS-30TT18 JPS-30TT21                 </div> <div> <b>Certificate</b><br/>                     The product is found to comply with the requirements in EN 12975-1:2008+A1:2010 Solar collectors Part 1: General requirements and the Specific CEH Keymark Scheme Rules for Solar Thermal Products, and are based on test results according to EN ISO 9806:2013 Solar thermal collectors - Test methods<br/> <b>Marking</b><br/>                     Products conforming to this certificate shall be marked in accordance with the requirements in the Specific CEH Keymark Scheme Rules for Solar Thermal Products. The marking shall, together with the Keymark logo, show the identification code of the empowered certification body (SP Technical Research Institute of Sweden, No. 012), also see CEH-GENEUC Internal Regulations Part 4 Certification Annex A.<br/> <b>Validity</b><br/>                     This certificate is valid until 2022-04-12 provided that the conditions in the Solar Keymark Rules are fulfilled and the standard or rules are not modified significantly. The validity of the certificate can be checked in the database, see Solar Keymark website <a href="http://www.solarkeymark.org">http://www.solarkeymark.org</a>.<br/> <b>Miscellaneous</b><br/>                     The manufacturer's factory production control procedures are under surveillance by the responsibility of SP. This is the first version of this certificate.<br/>                     Borås, Sweden 2017-04-12<br/>                     SP Technical Research Institute of Sweden<br/>                     Certification<br/> <br/>                     Magnus Stenlund<br/>                     Certification Officer<br/> <div>   </div> </div> |  |
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Projects



2008 Beijing Olympic Game Shooting Gymnasium



Vietnam - Ho chi minh airport palza



Emperor Hotel & Casino (North Korea)

# U PIPE COLLECTOR



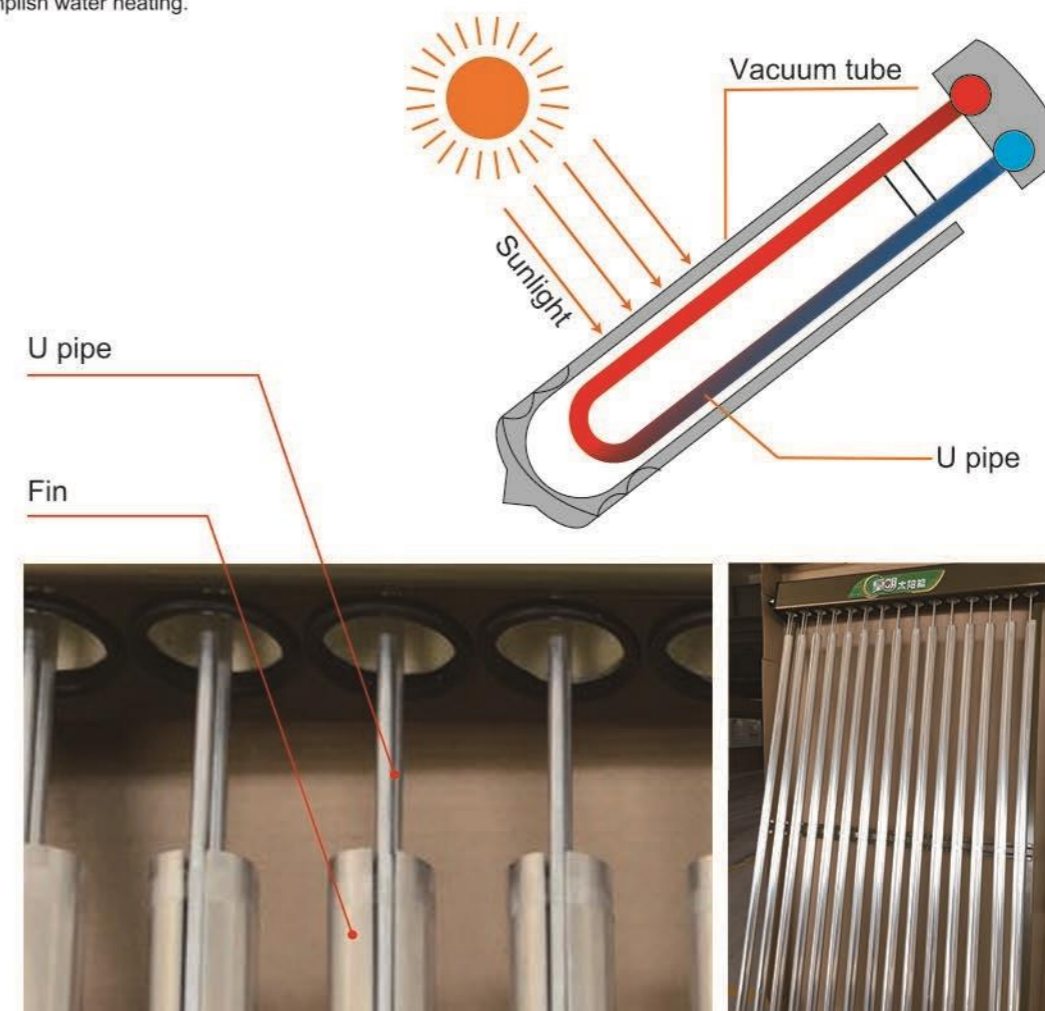
## Introduction

### withstand any stagnation condition

Himin HUJ3 U pipe solar collector has resolved the big problem of dry stagnation corrosion in solar collectors. The efficiency is the top range in the industry. The collector includes a header, vacuum tubes, U pipes, mounting frames and a tube bottom rack. It is typically used to collect heat for space heating or domestic hot water. The collector can be installed solely or connected together.

## Working principle

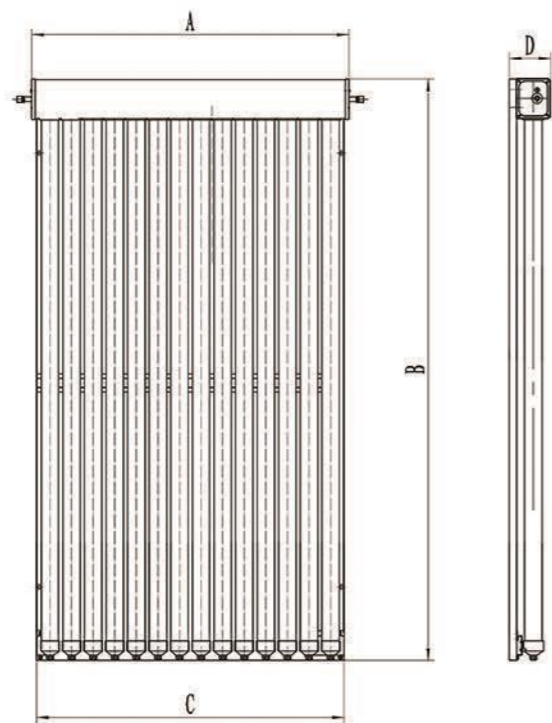
Sunlight is absorbed by all-glass vacuum tube and converted to heat energy which then is transferred to U pipe by fin, aiming to heat the heat-transmission medium that exists in the U pipe. Finally heat energy is conveyed to water in the water tank through a coil pipe to accomplish water heating.



## Why Himin

- ▣ The parameters are tested by German Fraunhofer research institute.
- ▣ Max transient efficiency:  $\eta_{0a}=0.779$
- ▣ Heat loss coefficient:  $\alpha_{1a}=2.103W/m^2K$   $\alpha_{2a}=0.0107W/m^2K^2$
- ▣ High starting-up speed with high efficiency.
- ▣ Diversified installation angles upon roof, balcony, wall space and so on; diversity in vacuum tube arrangement.

Technical Specification



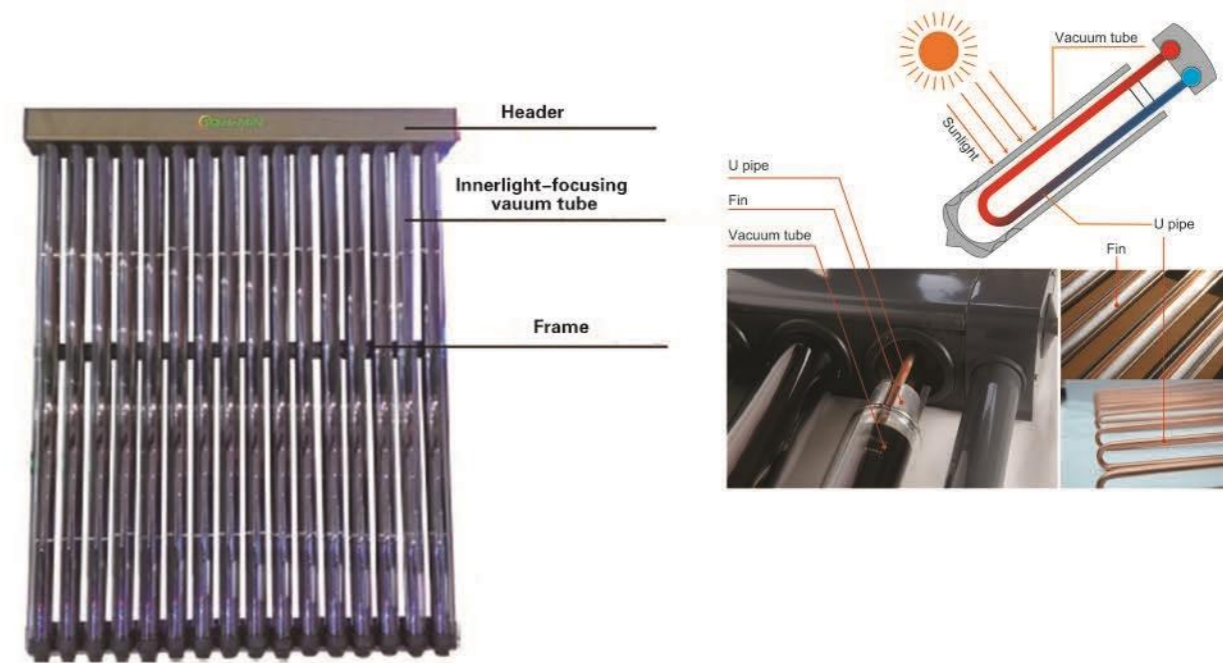
| Model                                   | HUJ3-12/1.8          | HUJ3-15/1.8     | HUJ3-16/1.8     | HUJ3-18/1.8     | HUJ3-20/1.8     |
|---|----------------------|-----------------|-----------------|-----------------|-----------------|
| Vacuum tube dimension                   | Φ58×1800×12          | Φ58×1800×15     | Φ58×1800×16     | Φ58×1800×18     | Φ58×1800×20     |
| Thickness of U-pipe (mm)                | 0.6                  | 0.6             | 0.6             | 0.6             | 0.6             |
| Number of tube                          | 12                   | 15              | 16              | 18              | 20              |
| Length of tube (mm)                     | 1800                 | 1800            | 1800            | 1800            | 1800            |
| Gross area (㎡)                          | 1.95                 | 2.37            | 2.51            | 2.60            | 3.07            |
| Aperture area (㎡)                       | 1.47                 | 1.85            | 1.97            | 2.05            | 2.47            |
| Dimension (mm)                          | 1012×1931×137.5      | 1228×1931×137.5 | 1300×1931×137.5 | 1344×1931×137.5 | 1588×1931×137.5 |
| Weight empty (Kg)                       | 36.63                | 44.60           | 47.26           | 53.09           | 60.10           |
| Effective absorber area (㎡)             | 1.20                 | 1.50            | 1.60            | 1.81            | 2.01            |
| Aperture area efficiency (%)            | 77.9                 |                 |                 |                 |                 |
| Effective heating capacity(kj/K ㎡)      | 19.63                |                 |                 |                 |                 |
| Connections                             | 15mm aluminum U pipe |                 |                 |                 |                 |
| Aperture area average performance/㎡ (W) | 759                  |                 |                 |                 |                 |
| Heat resistance (mm)                    | 25mm                 |                 |                 |                 |                 |
| Stagnation temperature (℃)              | 270-300              |                 |                 |                 |                 |
| Collector angle of inclination          | 15-90                |                 |                 |                 |                 |
| Working fluid volume (L)                | 1.43                 | 1.79            | 1.91            | 2.13            | 2.38            |
| Max. heat performance per collector (W) | 857                  | 1072            | 1143            | 1286            | 1429            |
| Capacity(Liter/Day/ΔT=30℃ )             | 150-180              | 180-230         | 200-250         | 220-280         | 240-310         |
| Size (mm)                               | A                    | 1012            | 1228            | 1300            | 1344            |
|   | B                    | 1931            | 1931            | 1931            | 1931            |
|   | C                    | 1005            | 1221            | 1293            | 1337            |
|   | D                    | 137.5           | 137.5           | 137.5           | 137.5           |
| Loading capacity (Pkg)                  | 20GP                 | 60              | 48              | 46              | 40              |
|   | 40GP                 | 120             | 96              | 96              | 80              |

★More pieces can be loaded by changing the package type

Inner light- focusing U pipe solar collector

Application

Himin HUJ3 U pipe solar collector has resolved the big problem of dry stagnation corrosion in solar collectors. The efficiency is the top range in the industry. The collector includes a header, vacuum tubes, U pipes, mounting frames and a tube bottom rack. It is typically used to collect heat for space heating or domestic hot water. The collector can be installed solely or connected together.



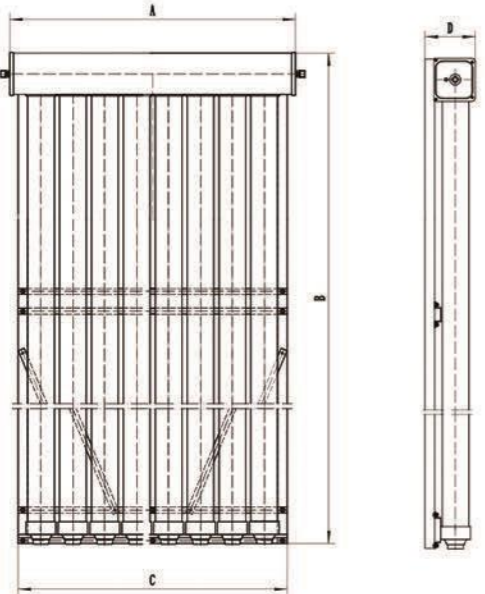


Product introduction

The Himin inner light-focusing U pipe collector includes a header, vacuum tubes, U pipes, mounting frames and a tube bottom rack. It is typically used to collect heat for space heating or domestic hot water. The collector can be installed solely or connected together.

Features

1. Use vacuum tube with **built-in reflector technology** and the heat transfer way through u pipes which can reduce heat loss and ensure a higher collector temperature.
2. There is no water in the vacuum tubes, so there is no fouling , no breaking .U pipe heating technology is adopted, the temperature rise is very fast. It is high efficiency and reliable.
3. There is no restriction for the installation height, Pressurized operation and large flow make you enjoy a pleasant bath experience.
4. The optimal design of the collector makes it visually less obstructive and compatible with existing architectural design perfectly.

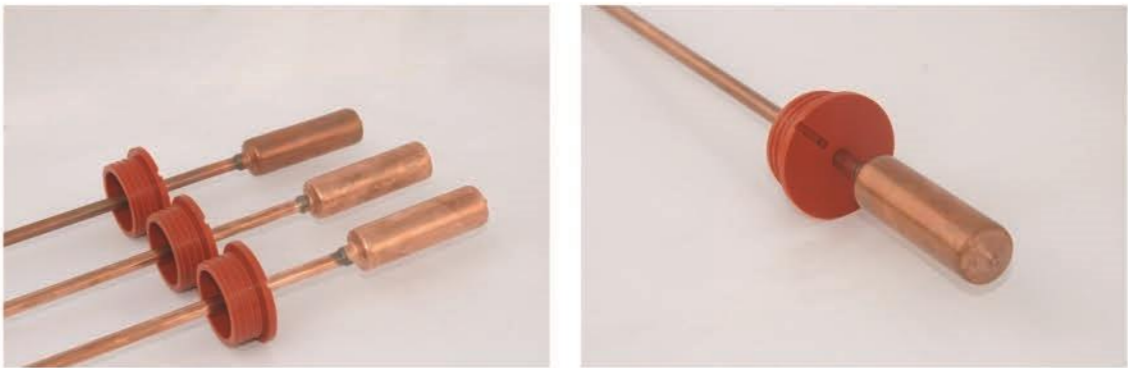
Structure and working principle

|   |                      |               |               |               |               |               |
|---|----------------------|---------------|---------------|---------------|---------------|---------------|
| <div>  <div> <div> <div>CERTIFICATE</div> <div>Solar Keymark Certificate</div> <div>No. SP 5C0239-17</div> </div> <div> <div>Holder/Issued to/Manufacturer</div> <div>Company: Himo Solar Co., Ltd.</div> <div>Address: Sun Moon Mountain, Solar Valley Road, Economic Development Zone, Dushu City, Wenzhou, China</div> </div> <div> <div>Product name and description</div> <div>Vacuum tube solar thermal collectors for water heating</div> </div> <div> <div>For technical information see Appendix 2 (page)</div> <div> <div>Model: JPS-201718 JPS-201721</div> <div>JPS-201718 JPS-201721</div> <div>JPS-201718 JPS-201721</div> </div> </div> <div> <div>Certificate</div> <div>The product is found to comply with the requirements in EN 12759-1:2006+A1:2010 Solar collectors Part 1: General requirements and the Specific EN Keymark Scheme Rules for Solar Thermal Products, and are based on test results according to EN ISO 9805:2013 Solar thermal collectors - Test methods.</div> </div> <div> <div>Marking</div> <div>Products conforming to this certificate shall be marked in accordance with the requirements in the Specific EN Keymark Scheme Rules for Solar Thermal Products. The marking shall, together with the Keymark logo, show the identification code of the engaged certification body (SP Technical Research Institute of Sweden, No. 012), also see EN CEN/LEC Internal Regulations Part 4 Certification, Annex A.</div> </div> <div> <div>Validity</div> <div>This certificate is valid until 2022-06-12 provided that the conditions in the Solar Keymark Rules are fulfilled and the product or data are not modified significantly. The validity of the certificate can be checked in the database, see Solar Keymark website: <a href="http://www.solarkeymark.org">http://www.solarkeymark.org</a>.</div> </div> <div> <div>Miscellaneous</div> <div>The manufacturer's factory production control procedures are under surveillance by the responsibility of SP. This is the first version of this certificate.</div> </div> <div> <div>Issue: Sweden 2017-06-12</div> <div>SP Technical Research Institute of Sweden</div> <div>Certification</div> <div> <div>  <div>Magnus Stenlund</div> <div>Chief Executive Officer</div> </div> <div>  <div>Bengt Arvidsson</div> <div>Chief Executive Officer</div> </div> </div> <div> <div>SP Technical Research Institute of Sweden</div> <div>Box 8011, SE-201 13 Borås, Sweden</div> <div>Phone: +46 30 524 5000</div> <div>Email: info@sp.se</div> </div> </div> </div> </div> |                      |               |               |               |               |               |
| Model   | JUS 10-84/47         | JUS 12-84/47  | JUS 14-84/47  | JUS 16-84/47  | JUS 18-84/47  | JUS 20-84/47  |
| Vacuum tube dimension   | Φ84×2100×10          | Φ84×2100×12   | Φ84×2100×14   | Φ84×2100×16   | Φ84×2100×18   | Φ84×2100×20   |
| Thickness of U-pipe (mm)  | 1.0                  | 1.0           | 1.0           | 1.0           | 1.0           | 1.0           |
| Number of tube  | 10                   | 12            | 14            | 16            | 18            | 20            |
| Length of tube (mm)   | 2100                 | 2100          | 2100          | 2100          | 2100          | 2100          |
| Gross area (m²)   | 2.44                 | 2.88          | 3.33          | 3.77          | 4.22          | 4.66          |
| Aperture area (m²)  | 1.60                 | 1.92          | 2.25          | 2.57          | 2.89          | 3.21          |
| Dimension (mm)  | 1164×2225×178        | 1364×2225×178 | 1564×2225×178 | 1764×2225×178 | 1964×2225×178 | 2164×2225×178 |
| Weight empty (Kg)   | 58.00                | 69.00         | 80.00         | 91.00         | 102.00        | 113.00        |
| Effective absorber area (m²)  | 2.96                 | 3.55          | 4.14          | 4.73          | 5.33          | 5.92          |
| Aperture area efficiency (%)  | 77.9                 |               |               |               |               |               |
| Effective heating capacity(kj/K m²)   | 19.6                 |               |               |               |               |               |
| Connections   | 15mm aluminum U pipe |               |               |               |               |               |
| Aperture area average performance/m² (W)  | 759.0                |               |               |               |               |               |
| Hail resistance (mm)  | 33.4mm               |               |               |               |               |               |
| Stagnation temperature (°C)   | 270-300              |               |               |               |               |               |
| Collector angle of inclination  | 15-90                |               |               |               |               |               |
| Working fluid volume (L)  | 1.42                 | 1.65          | 1.88          | 2.10          | 2.32          | 2.55          |
| Max. heat performance per collector (W)   | 1214                 | 1457          | 1707          | 1950          | 2193          | 2436          |
| Capacity(Liter/Day/ΔT=30℃)  | 170-210              | 190-230       | 210-270       | 260-325       | 300-390       | 310-400       |
| Size (mm)   | A                    | 1164          | 1364          | 1564          | 1764          | 1964          |
|   | B                    | 2225          | 2225          | 2225          | 2225          | 2225          |
|   | C                    | 1144          | 1344          | 1544          | 1744          | 1944          |
|   | D                    | 178           | 178           | 178           | 178           | 178           |
| Loading capacity (PCS)  | 20GP                 | 36            | 32            | 30            | 27            | 24            |
|   | 40GP                 | 81            | 72            | 64            | 57            | 47            |

HEAT PIPE COLLECTOR

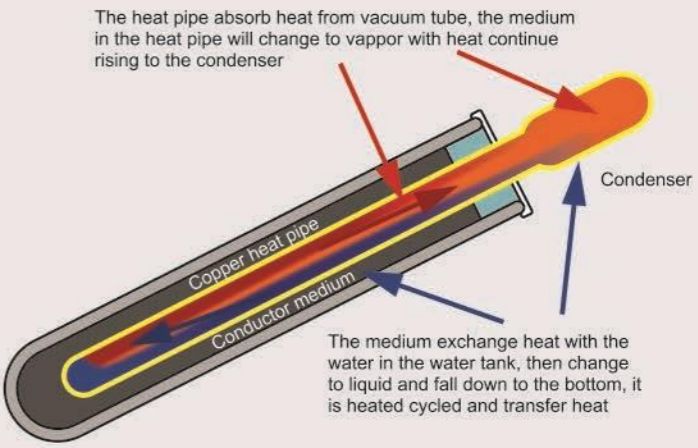
Introduction of heat pipe

Heat pipe is a vacuum heat transmission device filled with heat conduction fluid. It is the most efficient thermal conductivity device so far which is 1000 times of silver and with characters of excellent isothermal performance and thermal flux flow reversible.



Working principle

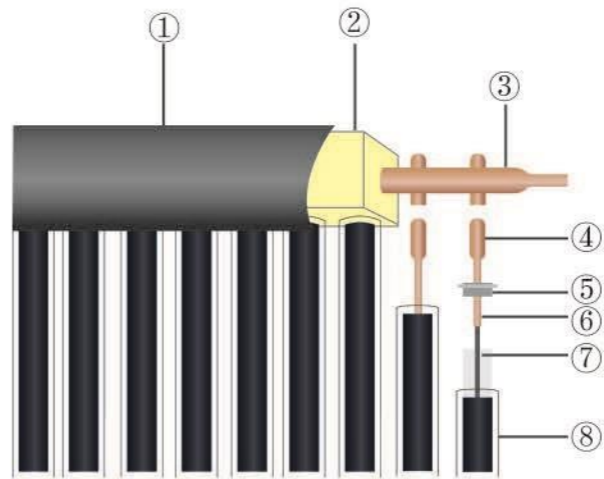
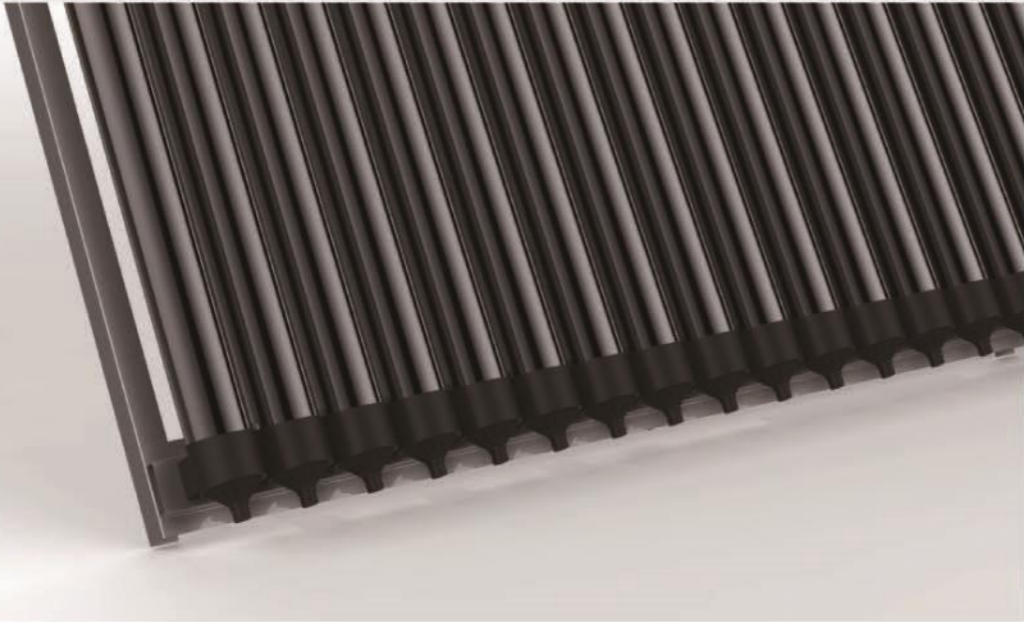
Heat conduction fluid filled in the heat pipe is vaped after heat absorption. Vapor flows to the condensation section under the inner pipe pressure, and meanwhile turns liquefy and release heat. Conduction fluid condensed at the condensation section back to evaporator section caused by gravity. Finally, heat transmission process is accomplished by conduction fluid phase transformation.



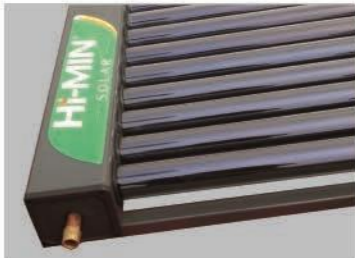


Introduction of heat pipe collector

Heat pipe solar collector consists of thermal superconductive heat pipes and evacuated glass tubes. The Himin tube adopts the interferential coating technology. The high-efficiency absorbing layers have features of high and low temperature resistance and high-efficiency energy absorption. No water inside glass tubes extends the lifetime and avoids breakage.



- ①manifold ②insulation
- ③header pipe
- ④header pipe condenser
- ⑤seal
- ⑥heat pipe
- ⑦aluminum fin
- ⑧vacuum tube



Technical specifications of heat pipe collector

Heat pipe collector HRJ7



| Specification                  | HRJ7-10/1.8                | HRJ7-15/1.8                | HRJ7-20/1.8                | HRJ7-25/1.8                | HRJ7-30/1.8                |
|--------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Condenser size(mm)             | φ 24                       | φ 24                       | φ 24                       | φ 24                       | φ 24                       |
| Vacuum tubes model             | φ 58 ×1800                 | φ 58 ×1800                 | φ 58 ×1800                 | φ 58 ×1800                 | φ 58 ×1800                 |
| No. of vacuum tubes            | 10                         | 15                         | 20                         | 25                         | 30                         |
| Weight(KG)                     | 41                         | 59                         | 76                         | 94                         | 110                        |
| Outline dimension(mm)          | 840×1945×143               | 1200×1945×143              | 1560×1945×143              | 1920×1945×143              | 2280×1945×143              |
| Volume of fluid(L)             | 0.55                       | 0.83                       | 1.1                        | 1.37                       | 1.64                       |
| Flow L/(min · m <sup>2</sup> ) | 0.6~1.2                    | 0.6~1.2                    | 0.6~1.2                    | 0.6~1.2                    | 0.6~1.2                    |
| Collector types                | Heat pipe                  | Heat pipe                  | Heat pipe                  | Heat pipe                  | Heat pipe                  |
| Material of inner tank         | Copper                     | Copper                     | Copper                     | Copper                     | Copper                     |
| Material of insulation         | Glass wool                 | Glass wool                 | Glass wool                 | Glass wool                 | Glass wool                 |
| Heat-transmission fluid        | Propylene glycol, water    | Propylene glycol, water    | Propylene glycol, water    | Propylene glycol, water    | Propylene glycol, water    |
| Rated pressure (MPa)           | 0.6                        | 0.6                        | 0.6                        | 0.6                        | 0.6                        |
| Gross area(m <sup>2</sup> )    | 1.52                       | 2.22                       | 2.92                       | 3.73                       | 4.32                       |
| Aperture area(m <sup>2</sup> ) | 0.94                       | 1.41                       | 1.88                       | 2.5                        | 2.82                       |
| Absorber area(m <sup>2</sup> ) | 0.81                       | 1.22                       | 1.62                       | 2.03                       | 2.44                       |
| Material of shell              | Aluminum alloy             | Aluminum alloy             | Aluminum alloy             | Aluminum alloy             | Aluminum alloy             |
| Material of frame              | Hot-galvanized steel plate | Hot-galvanized steel plate | Hot-galvanized steel plate | Hot-galvanized steel plate | Hot-galvanized steel plate |
| Material of tailstock          | Nylon                      | Nylon                      | Nylon                      | Nylon                      | Nylon                      |
| Nipple size                    | 3/4"                       | 3/4"                       | 3/4"                       | 3/4"                       | 3/4"                       |
| Stagnation temperature (℃)     | 240                        | 240                        | 240                        | 240                        | 240                        |
| Loading capacity (Pkg)         | 20Ft                       | 164                        | 104                        | 70                         | 61                         |
|                                | 40Hq                       | 329                        | 216                        | 164                        | 130                        |

Heat pipe collector HRJ

| Specification              | HRJ-12/1.8                 | HRJ-16/1.8                 | HRJ-20/1.8                 | HRJ-24/1.8                 | HRJ-28/1.8                 | HRJ-32/1.8                 | HRJ-36/1.8                 |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Condenser size(mm)         | φ 14                       | φ 14                       | φ 14                       | φ 14                       | φ 14                       | φ 14                       | φ 14                       |
| Vacuum tubes model         | φ 58 × 1800                | φ 58 × 1800                | φ 58 × 1800                | φ 58 × 1800                | φ 58 × 1800                | φ 58 × 1800                | φ 58 × 1800                |
| No. of vacuum tubes        | 12                         | 16                         | 20                         | 24                         | 28                         | 32                         | 36                         |
| Weight(KG)                 | 48                         | 62                         | 76                         | 90                         | 104                        | 118                        | 132                        |
| Outline dimension (mm)     | 1030 × 1977 × 150          | 1318 × 1977 × 150          | 1606 × 1977 × 150          | 1894 × 1977 × 150          | 2182 × 1977 × 150          | 2470 × 1977 × 150          | 2758 × 1977 × 150          |
| Volume of fluid(L)         | 0.66                       | 0.88                       | 1.32                       | 1.54                       | 1.10                       | 1.77                       | 1.98                       |
| Flow [L/(min · m²)]        | 0.6 ~ 1.2                  | 0.6 ~ 1.2                  | 0.6 ~ 1.2                  | 0.6 ~ 1.2                  | 0.6 ~ 1.2                  | 0.6 ~ 1.2                  | 0.6 ~ 1.2                  |
| Collector types            | Heat pipe                  | Heat pipe                  | Heat pipe                  | Heat pipe                  | Heat pipe                  | Heat pipe                  | Heat pipe                  |
| Material of inner tank     | Copper                     | Copper                     | Copper                     | Copper                     | Copper                     | Copper                     | Copper                     |
| Material of insulation     | Glass wool                 | Glass wool                 | Glass wool                 | Glass wool                 | Glass wool                 | Glass wool                 | Glass wool                 |
| Heat-transmission fluid    | Propylene glycol, water    | Propylene glycol, water    | Propylene glycol, water    | Propylene glycol, water    | Propylene glycol, water    | Propylene glycol, water    | Propylene glycol, water    |
| Rated pressure (Mpa)       | 0.6                        | 0.6                        | 0.6                        | 0.6                        | 0.6                        | 0.6                        | 0.6                        |
| Gross area(m²)             | 2.04                       | 2.61                       | 3.18                       | 3.74                       | 4.31                       | 4.88                       | 5.45                       |
| Aperture area(m²)          | 1.20                       | 1.61                       | 2.00                       | 2.41                       | 2.81                       | 3.21                       | 3.61                       |
| Absorber area(m²)          | 0.97                       | 1.30                       | 1.62                       | 1.95                       | 2.27                       | 2.59                       | 2.92                       |
| Material of shell          | Aluminum alloy             | Aluminum alloy             | Aluminum alloy             | Aluminum alloy             | Aluminum alloy             | Aluminum alloy             | Aluminum alloy             |
| Material of frame          | Hot-galvanized steel plate | Hot-galvanized steel plate | Hot-galvanized steel plate | Hot-galvanized steel plate | Hot-galvanized steel plate | Hot-galvanized steel plate | Hot-galvanized steel plate |
| Material of tailstock      | Nylon                      | Nylon                      | Nylon                      | Nylon                      | Nylon                      | Nylon                      | Nylon                      |
| Nipple size                | 3/4"                       | 3/4"                       | 3/4"                       | 3/4"                       | 3/4"                       | 3/4"                       | 3/4"                       |
| Stagnation temperature (℃) | 240                        | 240                        | 240                        | 240                        | 240                        | 240                        | 240                        |
| Loading capacity (Pkg)     | 20Ft                       | 96                         | 90                         | 67                         | 52                         | 41                         | 33                         |
|                            | 40HQ                       | 198                        | 186                        | 139                        | 108                        | 99                         | 82                         |

Why Himin

Heat pipe material property:

- Materials selection: use of oxygen-free copper TU1 which is the most pure copper with copper content up to 99.97%.
- Aging quality resistance: Attenuation of product property ≤5% for 5000H aging performance under 250℃, Lifespan is more than 15 years.
- Anti-freezing technology: Performance consistency when it's freezing for 48 hours under the experiment environment of -30℃.
- Starting performance: the starting temperature ≤ 30℃, starting speed ≤ 60 seconds.
- Isothermal performance: the temperature difference of axial direction wall ≤1℃.

Heat pipe collector property:

Diameter of heat pipe  
 condensation end is 24mm. The  
 overall efficiency is up to 73.5%  
 with stability and durability based  
 on the aperture area transient  
 efficiency.

Advanced production line

- The first automatic gravity heat pipe production line in China with annual capacity of more than 2 million pcs.**
- Automatic cleaning line:**  
High cleansing ability. Products undertake eight procedures such as pre-cleaning, cleaning, passivation, spray washing, bake etc. ensure cleaning quality. Oil, impurities, beryllia on tube wall is cleaned up by Chemical cleaning method. And then protective film is formed by polishing and passivation processing to increase compatibility between tube wall and working medium to prolong lifespan.
- Independently developed high temperature annealing line:** vacuum annealing can eliminate the air adhere to the heat pipe surface and realize the elimination of stress on the welding point, make sure no permeation of non-condensable gases and long life-span of the product.



**Vacuum exhaust line:** the first and largest automatic production line integrated by collector vacuum exhaust, medium filling, cold welding and sealing technology. Automatic process exhausts the gases adhered to the inner side surface to make sure vacuum rate of the tube. Automatic medium filling makes sure vacuum rate of the tube. Automatic cold welding assures the welding accuracy. Meanwhile, realizes large scale production and remote monitoring. By adopting the vacuum exhaust technology, it improves vacuum rate of the heat pipe and startup speed, which realize low attenuation and long life span of heat pipes.



**Himin's other advantage in solar heat pipe is its patented secondary exhaust process.** It eliminates the non-condensable gas thoroughly which improve the isothermal performance, and also solve the fluid filling uncontrollable problem caused by the second exhaust, increase heat-transmission efficiency.

**Special product order.** Himin can make specific products according to customers' demands

## Certificate



## Heat Pipe Projects



Himin's solar heating & cooling project for high-end residence property

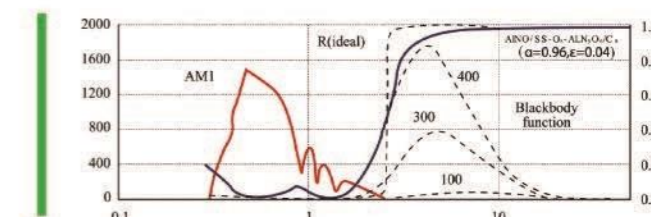
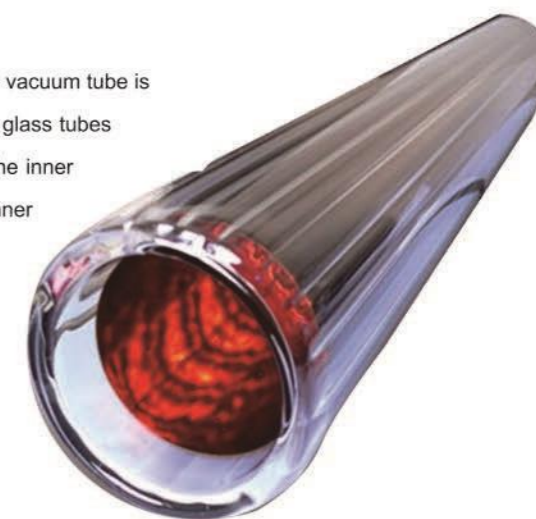


Himin's solar heating program for the first Tibetan hydropower plant

# VACUUM TUBE

## Introduction

All glass vacuum tubes are the key component of solar collectors. The vacuum tube is similar to a conventional Dewar flask and consists of two borosilicate glass tubes with high chemical and thermal shock resistance. The outer side of the inner tube is coated with a sputtered solar selective surface. This coated inner tube is closed at one end and sealed at the other end to the outer tube. The annular space between the outer tube and inner tube is evacuated to virtually eliminate heat loss by conduction and convection.



## Leading Technology

All-Glass Evacuated SS-ALN Cermet Solar Collector Tubes are manufactured by using the interference absorption type of solar absorption layer, and the technology of "metallic-membrane plating", such as SS and Al duplex metallic target sputter manufactured Cermet absorption layer etc. It also adopts new interference absorption type of super low emission ratio and selective absorption membrane layer with absorptance ratio  $\alpha=0.94$ , emission ratio:  $\epsilon \leq 0.06$ . Absorption layer possesses special stainless steel aluminum nitride with high temperature resistant. It will not shed even the glass has melted; also with characters of anti-damping, ageing-resistance and dry collection resistance, low emission ratio, small thermal losses. It can still produce hot water when it is below 300 °C, and with longer life.

Why Himin

- Full automatic vacuum tube production line and advanced & strict testing processing guarantee the entire quality stability.
- Vacuum degree can reach to  $10^{-4}$  Pa which effectively reduces the heat loss rate of 0.03-0.06.
- Apply metallic copper as bottom metal layer, which is super strong in absorbing and possessing extra low heat loss. The heat loss rate is 50% lower than ordinary vacuum tubes which  $U_{LT} \leq 0.5W/(W/(m^2 \cdot ^\circ C))$ .
- Excellent insulation. The stagnation temperature higher than  $270^\circ C$ .
- Patent technology developed by Himin breaks the limitation of graded coating ,and enable its working temperature from  $-40^\circ C$  to  $40^\circ C$ .
- Huge production capacity. 5 full automatic production lines accompany with production capacity of 100000 pcs per day.

Full automatic vacuum tube production line



Material Tube Transmission Line



Edging Line



Automatic Evacuating Line



Automatic Coating Line 1



Cleaning Line



End Sealing Line



Automatic Getter Producing Line



Automatic Packaging Line

Technical specifications

|   |       | UTLE(Ultra low emission evacuated tube) |      |        |      |        |      | Inner focusing film vacuum tube |      |
|---|-------|---|------|--------|------|--------|------|---------------------------------|------|
| Length (m)  |       | 1.6                                     | 1.8  | 1.6    | 1.8  | 1.92   | 2.1  | 2                               | 2.1  |
| Structure   |       | Three Target                            |      |        |      |        |      |                                 |      |
| Material of glass                                   |       | Borosilicate Glass 3.3                  |      |        |      |        |      |                                 |      |
| Selective coating type                              |       | ALNO/ALNOSS/Cu                          |      |        |      |        |      |                                 |      |
| Outer tube diameter (mm)                            |       | φ47                                     |      | φ58    |      |        |      | φ84                             |      |
| Thickness of outer tube (mm)                        |       | 1.6                                     |      | 1.8    |      |        |      | 2.0                             |      |
| Inner tube diameter (mm)                            |       | φ37                                     |      | φ47    |      |        |      | φ37                             |      |
| Thickness of inner tube (mm)                        |       | 1.6                                     |      | 1.6    |      |        |      | 1.6                             |      |
| Absorptance ratio                                   |       | ≥ 0.94                                  |      |        |      |        |      |                                 |      |
| Emission ratio                                      |       | ≤ 0.06                                  |      |        |      |        |      |                                 |      |
| Solar transmission rate                             |       | ≥ 92%                                   |      |        |      |        |      |                                 |      |
| Vacuum rate (Pa)                                    |       | ≤ 5.2×10 <sup>-4</sup>                  |      |        |      |        |      |                                 |      |
| Max. Temperature (℃)                                |       | 300                                     |      |        |      |        |      |                                 |      |
| Average heat loss (W/(m²·℃))                        |       | ≤ 0.60                                  |      | ≤ 0.60 |      | ≤ 0.50 |      | ≤ 0.65                          |      |
| Rated Pressure (Mpa)                                |       | 1.0                                     |      |        |      |        |      | 0.6                             |      |
| Stagnation parameter (m²·℃ /kW)                     |       | 241                                     | 256  | 265    | 284  | 289    | 290  | 314                             | 309  |
| Coefficient of Thermal Expansion (K <sup>-1</sup> ) |       | 3.3×10 <sup>-6</sup>                    |      |        |      |        |      |                                 |      |
| Solar Radiance Exposure (MJ/m²)                     |       | ≤ 3.6                                   |      | ≤ 4.6  |      |        |      | ≤ 3.0                           |      |
| Life time(yrs)                                      |       | 15                                      |      |        |      |        |      |                                 |      |
| Loading capacity (Pkg)                              | 20'GP | 3240                                    | 2916 | 2496   | 2304 | 2112   | 1920 | 728                             | 728  |
|   | 40'GP | 6804                                    | 5832 | 5376   | 4608 | 4440   | 3960 | 1512                            | 1512 |

New Product - Inner focusing film vacuum tube

The inner tube absorbs sunlight first and converts to heat energy, and then conveys heat energy to the liquid in inner tubes.

The coated reflector inside outer tube can reflect the sunshine to heat inner tube which concentrate the heat and sunshine to inner tube to improve the heat efficiency..





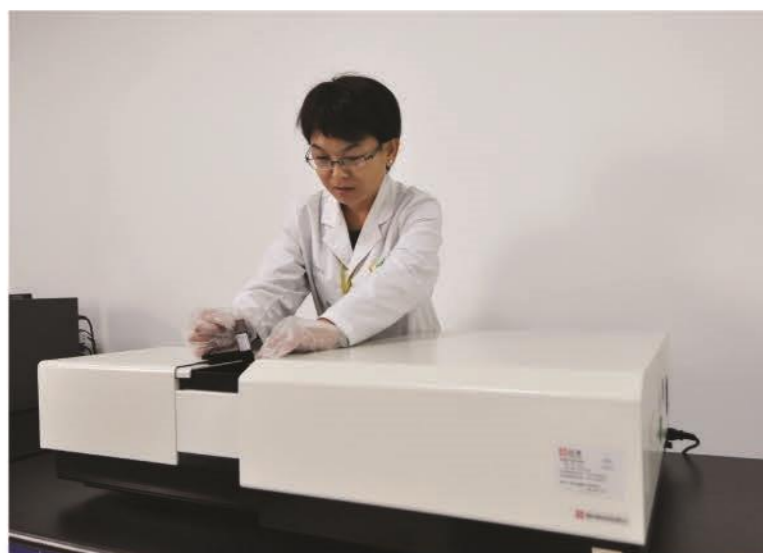
QA Center

### QA and Test Center

Himin persists on product quality and customer oriented principle all the time and never stagnates in quality improvement. It creates the first and largest quality assurance system and test center in China beyond China Nation Standard to guarantee output quality of products. Because of which, Himin is granted the ISO 9000 Quality Control Certification and CNAS certification and gets outstanding reputation and solid brand recognition in global solar market.



Coating Composition Test



Absorptance Ratio Test



Steel Ball Impact Test



Coefficient of Thermal Expansion Test

## CONCENTRATED SOLAR POWER

### Introduction

#### Himin-Supplier of Core Equipment for Solar Thermal Power Generation

In cooperation with CAS (Chinese Academy of Science)

institute of Electronic Engineering, Himin is dedicated

to research and development of solar thermal power generation

technology and becoming supplier of power generation

equipment, light concentration and heat-absorbing devices

and other core equipment.



Fresnel receiver

Working principle

Working principle of Fresnel collector is similar with parabolic trough collector. But Fresnel collectors use of several parallel flat mirrors instead of parabolic bent mirrors to concentrate the sunlight onto the receiver tube which is located several meters above the mirror field.

Coated steel tube

Himin independently developed solar selective absorbing coating is able to be adopted in medium and high-temperature air with independent intellectual property rights and relevant preparation technology in early 2006, and has applied research results into product named solar receiver (coated steel tube) which is the core component of Fresnel solar thermal power collector field.

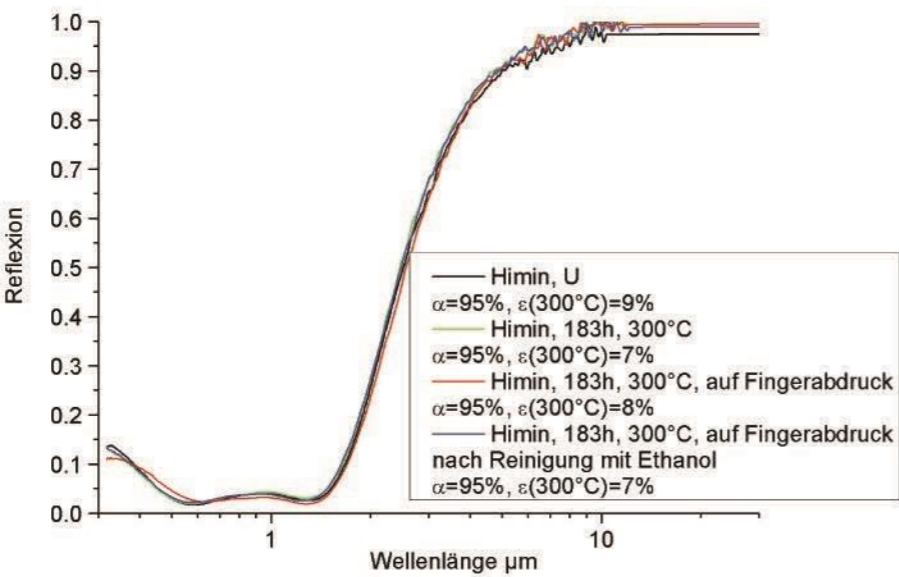
The Himin solar receiver-coated steel tube has passed the inspection respectively by China National Solar Energy Center and German Fraunhofer Institute. The absorption ratio of such tube is greater than 94% and the emission ratio is lower than 8% under 300℃. Moreover, the absorption ratio



attenuation is lower than 3% and the emission ratio increases less than 10% in 15,000 hours' aging test performance. The greatest advantage is that the film layer is stable and the performance is almost not attenuated in the medium and high-temperature (300℃-350℃) air.

Specification of coated steel tube

|           |                       |                   |  |
|-----------|-----------------------|-------------------|--|
| Diameter  | 70±0.5mm              | Absorption        | ≥94% (AM1.5)   |
| Thickness | 4.0±0.3mm             | Emission          | ≤8% ( 300℃ )   |
| Length    | 2000 ± 5mm/2200 ± 5mm | Coating stability | At 350℃, the coating performance degradation≤2% after 2000 hours' test |



In 2008, the test data of Himin in German Frauchhofer ISC: at 300℃) in the air, after nearly 1500 hours, the absorption and emission properties had no change; the abdorption ratio was 95% (AM1.5) and the emission ratio 8% (300℃)



Spain Fresnel Thermal Power Station (1.4MW)



China Solar Valley Roof Fresnel Thermal Power Station (2.5MW)

Trough power

Parabolic trough collector

Parabolic trough collector is a device collecting line-focus sunlight. It focuses and reflects sunlight onto the receiver tubes primarily by tracking the sunlight and also reflects the sunlight relied on the trough shaped parabolic mirrors, and then vapors water by heat carrier. It also can provide thermal energy to conventional thermal power stations or directly drives turbines to produce power.

Parabolic trough receiver

Parabolic trough receiver (straight-through high-temperature vacuum heat receiver tube) is the most essential component of trough solar thermal power generation. It is mainly made up of outer glass tube, inner metal tube, corrugated pipe, sealing metal ring, getter, sunlight hood, selective absorption coating, anti-reflection film and other components.



Specifications of Himin PTR 2010 Parabolic Trough Receiver

|                                      |  |  |                         |
|--------------------------------------|--|--|-------------------------|
| Receiver tube length(mm)             | 4060   | Effective length for heat collection(mm) | >3860(room temperature) |
| Outer diameter of collector tube(mm) | 70   | Outer diameter of glass tube(mm)         | 120                     |
| Vacuum degree(Pa)                    | <0.01  | Glass tube transmittance(%)              | 95%(AM1.5)              |
| Emission                             | <12%(400℃)                                     | Absorbtion                               | ≥95%(AM1.5)             |
| Operating temperature(℃)             | 400℃ (oil medium)<br>500℃ (molten salt medium) | Heat loss(w/m)                           | ≤280                    |

Tower thermal power station

The principle as follows: a large number of heliostats are used to reflect the sunlight onto the surface of the high-temperature heat absorber placed on the top of the central tower to heat the fluid working media (water, molten salt or air, etc.), and then generate superheated steam or hot air directly or indirectly aims at driving the generators to achieve the conversion from solar energy to electrical energy.

The tower thermal power station usually contains five subsystems: the concentrator system, the heat concentrating system, the heat storage system, the power generation system and the power plant control system.

Product Performance

- 1.The overall accuracy of the heliostat is higher than 3.5mrad;
- 2.Reflectivity of reflective mirrors is greater than 90%;
- 3.The strong wind resistance capacity ensures normal work in the wind at Class 6, and also features good impact resistance which is able to be applied in harsh climate areas;
- 4.The supporting part adopts the modularized structure featuring rapid site construction;
- 5.High quality spot. 90% of the energy can be concentrated in the absorber bull's-eye area and is better than competitive products.



MONOCRYSTALLINE & POLYCRYSTALLINE SILICON PHOTOVOLTAIC MODULE

Himin products

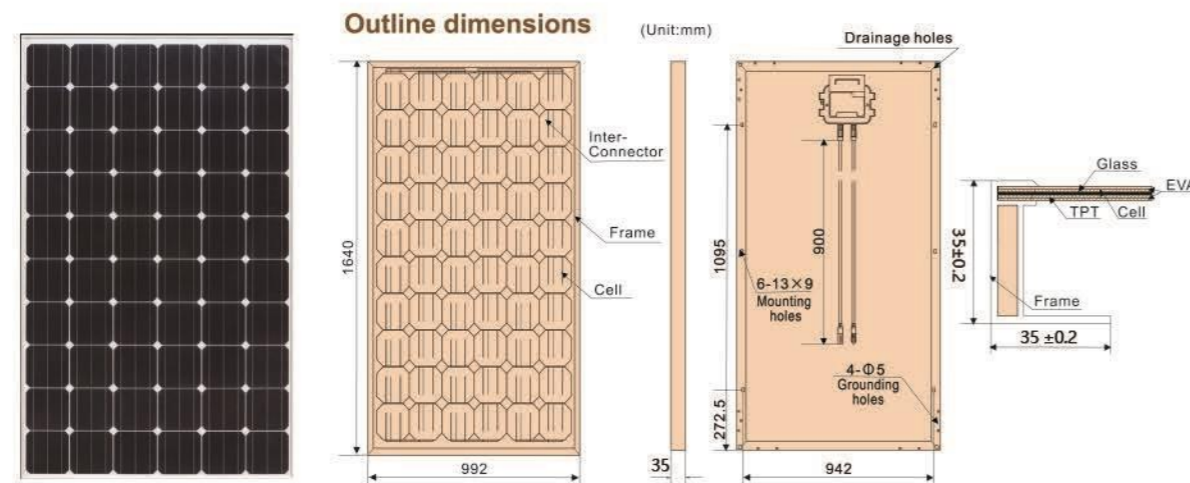
Himin's photovoltaic module is designed for large electronic power requirement with character of super durability to withstand rigorous operating conditions and is suitable for grid connecting systems.



Guarantee and Certification

|                            |  |
|----------------------------|--|
| Product warranty           | 10 years   |
| Performance guarantee      | Guaranteed output of 90% for 10 years and 80% for 25 years |
| Approvals and certificates | TUV; CEC; IEC 61215, IEC 61730                             |

Module power with 285-315w



Specifications

|                                 |  |
|---------------------------------|--|
| Cell                            | Monocrystalline silicon solar cells 156mm square |
| Number of cells and connections | 60 in series                                     |
| Application                     | DC 24V system                                    |
| Maximum system voltage(V)       | DC 1,000   |
| Series fuse rating(A)           | 15   |
| Nominal power(W)                | 285-315  |
| Dimension(mm)                   | 1640×992×35                                      |
| Weight(Kg)                      | 18.2   |
| Type of output terminal         | Lead wire with connectors                        |
| Junction box                    | 3 bypass diodes                                  |

Electro-optical characteristics

| Parameters             | Symbol          | HG-285S/Da | HG-290S/Da | HG-295S/Da | HG-300S/Da | HG-305S/Da | HG-310S/Da | HG-315S/Da |
|------------------------|-----------------|------------|------------|------------|------------|------------|------------|------------|
| Open circuit voltage   | V <sub>oc</sub> | 38.6V      | 38.8V      | 38.9V      | 39.0V      | 39.6V      | 40.2V      | 40.5V      |
| Maximum power voltage  | V <sub>mp</sub> | 32.5V      | 32.5V      | 32.6V      | 32.8V      | 32.9V      | 33.1V      | 33.3V      |
| Short circuit current  | I <sub>sc</sub> | 9.38A      | 9.50A      | 9.64A      | 9.78A      | 9.85A      | 9.94A      | 10.0A      |
| Maximum power current  | I <sub>mp</sub> | 8.77A      | 8.93A      | 9.05A      | 9.15A      | 9.28A      | 9.37A      | 9.46A      |
| Maximum power          | P <sub>m</sub>  | 285W       | 290W       | 295W       | 300W       | 305W       | 310W       | 315W       |
| Module efficiency      | η               | 17.5%      | 17.8%      | 18.1%      | 18.4%      | 18.7%      | 19%        | 19.4%      |
| Power output tolerance |                 | 0 ~ +3%    | 0 ~ +3%    | 0 ~ +3%    | 0 ~ +3%    | 0 ~ +3%    | 0 ~ +3%    | 0 ~ +3%    |

Packaging specifications

|   |                    |
|---|--------------------|
| Number of modules per pallet            | 65                 |
| Number of pallets per 40' container     | 14                 |
| Packaging box dimensions(L / W / H)(mm) | 1690 × 1130 × 2450 |
| Box weight(Kg)                          | 1225               |

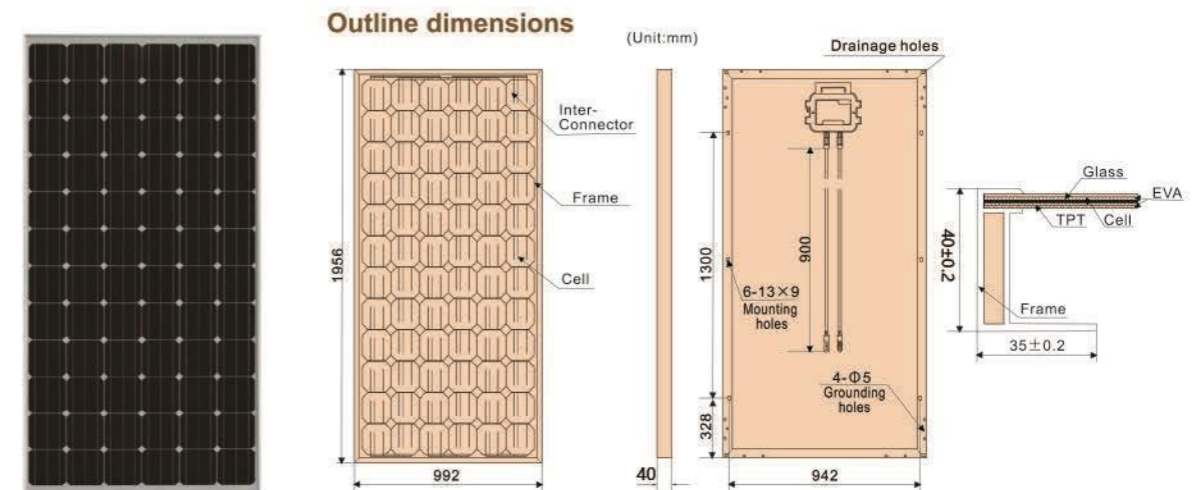
Temperature coefficients

| Parameters            | Rating      |
|-----------------------|-------------|
| Operating temperature | -40 to +85℃ |
| Storage temperature   | -40 to +85℃ |
| αP <sub>m</sub>       | -0.452%/K   |
| αI <sub>sc</sub>      | +0.060%/K   |
| αV <sub>oc</sub>      | -0.336%/K   |
| NOCT                  | 46 ± 2/℃    |

Mechanical specifications

|                      |   |
|----------------------|---|
| Cable                | Solar cable, 900mm length, 4m <sup>2</sup> prefabricated with plugs (male/female)                                 |
| Front glass          | Transparent toughened safety glass 3.2mm  |
| Cell encapsulation   | EVA(Ethylene-Vinyl-Acetate), 0.5mm  |
| Backside             | Composite film  |
| Frame                | Anodised aluminium cavity frame   |
| Maximum surface load | (Screwless) with drainage holes. Entire module certified to withstand high wind loads(2400Pa), snow loads(5400Pa) |
| Hail resistance      | Maximum diameter of 25mm with impact speed 83km/h   |

Module power with 350-375w



Specifications

|                                 |   |
|---------------------------------|---|
| Cell                            | Monocrystalline silicon solar cells, 156mm square |
| Number of cells and connections | 72 in series                                      |
| Application                     | DC 24V system                                     |
| Maximum system voltage(V)       | DC 1,000  |
| Series fuse rating(A)           | 15  |
| Nominal power(W)                | 350-375   |
| Dimension(mm)                   | 1956×992×40                                       |
| Weight(Kg)                      | 23.5  |
| Type of output terminal         | Lead wire with connectors                         |
| Junction box                    | 3 bypass diodes                                   |

Electro-optical characteristics

| Parameters             | Symbol          | HG-350S/Ea | HG-355S/Ea | HG-360S/Ea | HG-365S/Ea | HG-370S/Ea | HG-375S/Ea |
|------------------------|-----------------|------------|------------|------------|------------|------------|------------|
| Open circuit voltage   | V <sub>oc</sub> | 47.0V      | 47.4V      | 47.7V      | 48.0V      | 48.3V      | 48.5V      |
| Maximum power voltage  | V <sub>mp</sub> | 38.7V      | 38.8V      | 39.0V      | 39.3V      | 39.7V      | 40.0V      |
| Short circuit current  | I <sub>sc</sub> | 9.60A      | 9.65A      | 9.70A      | 9.77A      | 9.83A      | 9.88A      |
| Maximum power current  | I <sub>mp</sub> | 9.04A      | 9.14A      | 9.24A      | 9.30A      | 9.33A      | 9.37A      |
| Maximum power          | P <sub>m</sub>  | 350W       | 355W       | 360W       | 365W       | 370W       | 375W       |
| Module efficiency      | η               | 18%        | 18.3%      | 18.6%      | 18.8%      | 19.1%      | 19.3%      |
| Power output tolerance |                 | 0 ~ +3%    | 0 ~ +3%    | 0 ~ +3%    | 0 ~ +3%    | 0 ~ +3%    | 0 ~ +3%    |

Packaging specifications

|   |                |
|---|----------------|
| Number of modules per pallet            | 56             |
| Number of pallets per 40' container     | 11             |
| Packaging box dimensions(L / W / H)(mm) | 2000×1110×2500 |
| Box weight(Kg)                          | 1290           |

Temperature coefficients

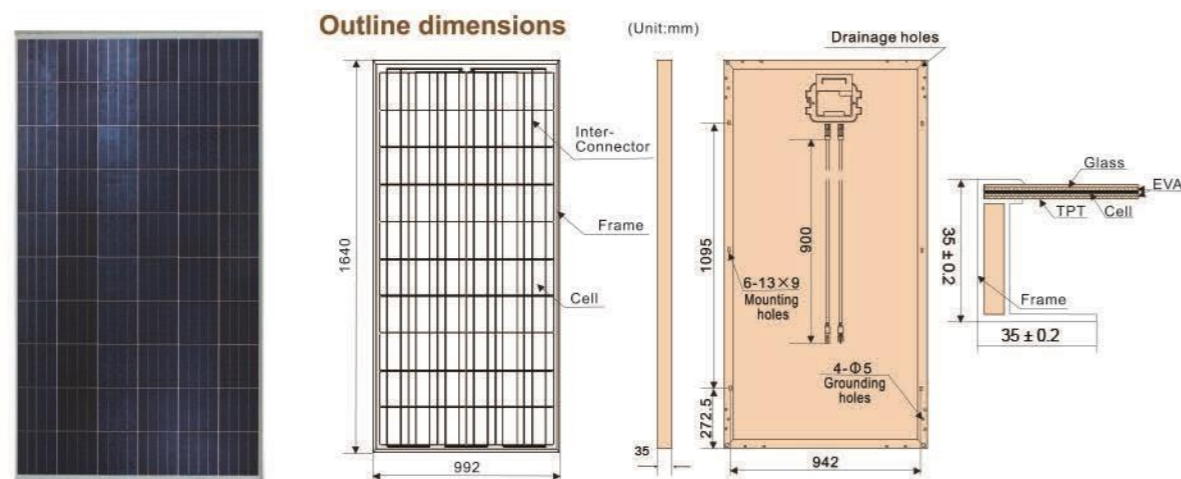
| Parameters            | Rating      |
|-----------------------|-------------|
| Operating temperature | -40 to +85℃ |
| Storage temperature   | -40 to +85℃ |
| αP <sub>m</sub>       | -0.452%/K   |
| αI <sub>sc</sub>      | +0.060%/K   |
| αV <sub>oc</sub>      | -0.336%/K   |
| NOCT                  | 46 ± 2/℃    |

Mechanical specifications

|                      |   |
|----------------------|---|
| Cable                | Solar cable, 900mm length, 4m <sup>2</sup> prefabricated with plugs (male/female)                                 |
| Front glass          | Transparent toughened safety glass 3.2mm  |
| Cell encapsulation   | EVA(Ethylene-Vinyl-Acetate), 0.5mm  |
| Backside             | Composite film  |
| Frame                | Anodised aluminium cavity frame   |
| Maximum surface load | (Screwless) with drainage holes. Entire module certified to withstand high wind loads(2400Pa), snow loads(5400Pa) |
| Hail resistance      | Maximum diameter of 25mm with impact speed 83km/h   |

## Polycrystalline silicon photovoltaic series

### Module power with 270-290w



#### Specifications

|                                 |  |
|---------------------------------|--|
| Cell                            | Polycrystalline silicon solar cells 156mm square |
| Number of cells and connections | 60 in series                                     |
| Application                     | DC 24V system                                    |
| Maximum system voltage(V)       | DC 1,000   |
| Series fuse rating(A)           | 15   |
| Nominal power(W)                | 270-290  |
| Dimension(mm)                   | 1640×992×35                                      |
| Weight(Kg)                      | 18.2 ± 3%  |
| Type of output terminal         | Lead wire with connectors                        |
| Junction box                    | 3 bypass diodes                                  |

#### Electro-optical characteristics

| Parameters             | Symbol | HG-270P | HG-275P | HG-280P | HG-285P | HG-290P |
|------------------------|--------|---------|---------|---------|---------|---------|
| Open circuit voltage   | Voc    | 38.6V   | 38.7V   | 38.8V   | 38.9V   | 39.1V   |
| Maximum power voltage  | Vmp    | 32.4V   | 32.5V   | 32.6V   | 32.7V   | 32.8V   |
| Short circuit current  | Isc    | 8.82A   | 9.13A   | 9.28A   | 9.39A   | 9.49A   |
| Maximum power current  | Imp    | 8.34A   | 8.46A   | 8.59A   | 8.72A   | 8.84A   |
| Maximum power          | Pm     | 270W    | 275W    | 280W    | 285W    | 290W    |
| Module efficiency      | η      | 16.60%  | 16.90%  | 17.20%  | 17.50%  | 17.80%  |
| Power output tolerance |        | 0 ~ +3% | 0 ~ +3% | 0 ~ +3% | 0 ~ +3% | 0 ~ +3% |

#### Packaging specifications

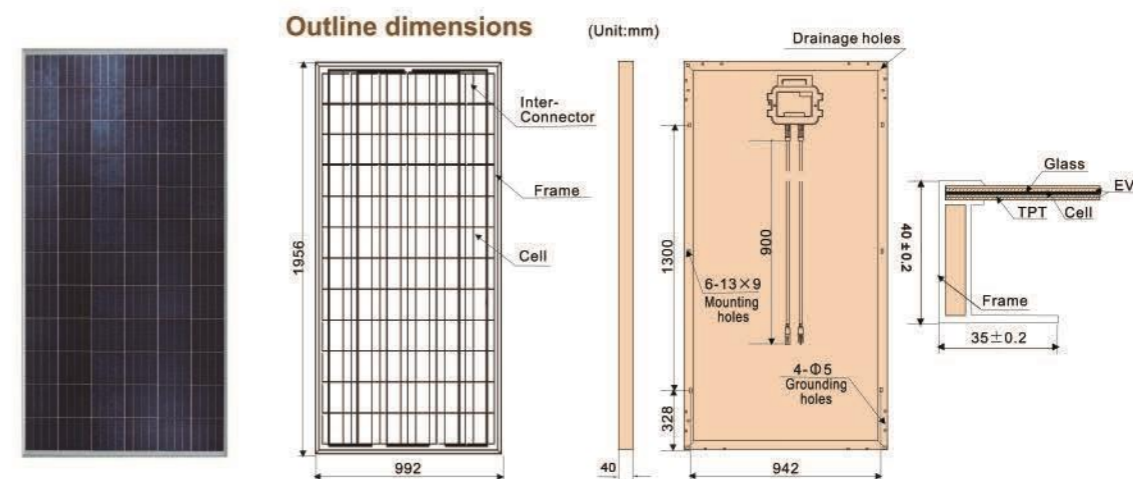
|   |                |
|---|----------------|
| Number of modules per pallet            | 65             |
| Number of pallets per 40' container     | 14             |
| Packaging box dimensions(L / W / H)(mm) | 1690×1130×2450 |
| Box weight(Kg)                          | 1225           |

| Parameters            | Rating        |
|-----------------------|---------------|
| Operating temperature | -40 to +85 °C |
| Storage temperature   | -40 to +85 °C |
| αPm                   | -0.461%/K     |
| αIsc                  | +0.072%/K     |
| αVoc                  | -0.335%/K     |
| NOCT                  | 46 ± 2/ °C    |

#### Mechanical specifications

|                      |   |
|----------------------|---|
| Cable                | Solar cable, 900mm length, 4mm <sup>2</sup> prefabricated with plugs (male/female)                                |
| Front glass          | Transparent toughened safety glass 3.2mm  |
| Cell encapsulation   | EVA(Ethylene-Vinyl-Acetate), 0.5mm  |
| Backside             | Composite film  |
| Frame                | Anodised aluminium cavity frame   |
| Maximum surface load | (Screwless) with drainage holes. Entire module certified to withstand high wind loads(2400Pa), snow loads(5400Pa) |
| Hail resistance      | Maximum diameter of 25mm with impact speed 83km/h   |

### Module power with 325-350w



#### Specifications

|                                 |  |
|---------------------------------|--|
| Cell                            | Polycrystalline silicon solar cells 156mm square |
| Number of cells and connections | 72 in series                                     |
| Application                     | DC 24V system                                    |
| Maximum system voltage(V)       | DC 1,000   |
| Series fuse rating(A)           | 15   |
| Nominal power(W)                | 325-350  |
| Dimension(mm)                   | 1956×992×40                                      |
| Weight(Kg)                      | 22 ± 3%  |
| Type of output terminal         | Lead wire with connectors                        |
| Junction box                    | 3 bypass diodes                                  |

#### Electro-optical characteristics

| Parameters             | Symbol | HG-325P | HG-330P | HG-335P | HG-340P | HG-345P | HG-350P |
|------------------------|--------|---------|---------|---------|---------|---------|---------|
| Open circuit voltage   | Voc    | 46.5V   | 46.8V   | 47.1V   | 47.3V   | 47.5V   | 47.7V   |
| Maximum power voltage  | Vmp    | 38.8V   | 38.9V   | 38.9V   | 39.0V   | 39.2V   | 39.4V   |
| Short circuit current  | Isc    | 8.96A   | 9.04A   | 9.12A   | 9.21A   | 9.30A   | 9.39A   |
| Maximum power current  | Imp    | 8.38A   | 8.49A   | 8.62A   | 8.72A   | 8.80A   | 8.88A   |
| Maximum power          | Pm     | 325W    | 330W    | 335W    | 340W    | 345W    | 350W    |
| Module efficiency      | η      | 16.70%  | 17.0%   | 17.30%  | 17.50%  | 17.80%  | 18.0%   |
| Power output tolerance |        | 0 ~ +3% | 0 ~ +3% | 0 ~ +3% | 0 ~ +3% | 0 ~ +3% | 0 ~ +3% |

#### Packaging specifications

|   |                |
|---|----------------|
| Number of modules per pallet            | 56             |
| Number of pallets per 40' container     | 11             |
| Packaging box dimensions(L / W / H)(mm) | 2000×1110×2500 |
| Box weight(Kg)                          | 1290           |

#### Temperature coefficients

| Parameters            | Rating         |
|-----------------------|----------------|
| Operating temperature | -40 to + 85 °C |
| Storage temperature   | -40 to + 85 °C |
| αPm                   | -0.461%/K      |
| αIsc                  | +0.072%/K      |
| αVoc                  | -0.335%/K      |
| NOCT                  | 46 ± 2/ °C     |

#### Mechanical specifications

|                      |   |
|----------------------|---|
| Cable                | Solar cable, 900mm length, 4mm <sup>2</sup> prefabricated with plugs (male/female)                                |
| Front glass          | Transparent toughened safety glass 3.2mm  |
| Cell encapsulation   | EVA(Ethylene-Vinyl-Acetate), 0.5mm  |
| Backside             | Composite film  |
| Frame                | Anodised aluminium cavity frame   |
| Maximum surface load | (Screwless) with drainage holes. Entire module certified to withstand high wind loads(2400Pa), snow loads(5400Pa) |
| Hail resistance      | Maximum diameter of 25mm with impact speed 83km/h   |

## '3-Hi' Solar power system

For residential application, PV falls into two main categories. First is grid-tied, where the home generates its own electricity but can also draw power from the utility company at night. The second is off-grid, where the home is located too far from an electrical utility cable and the home must generate its own power, storing energy in batteries for use at night.

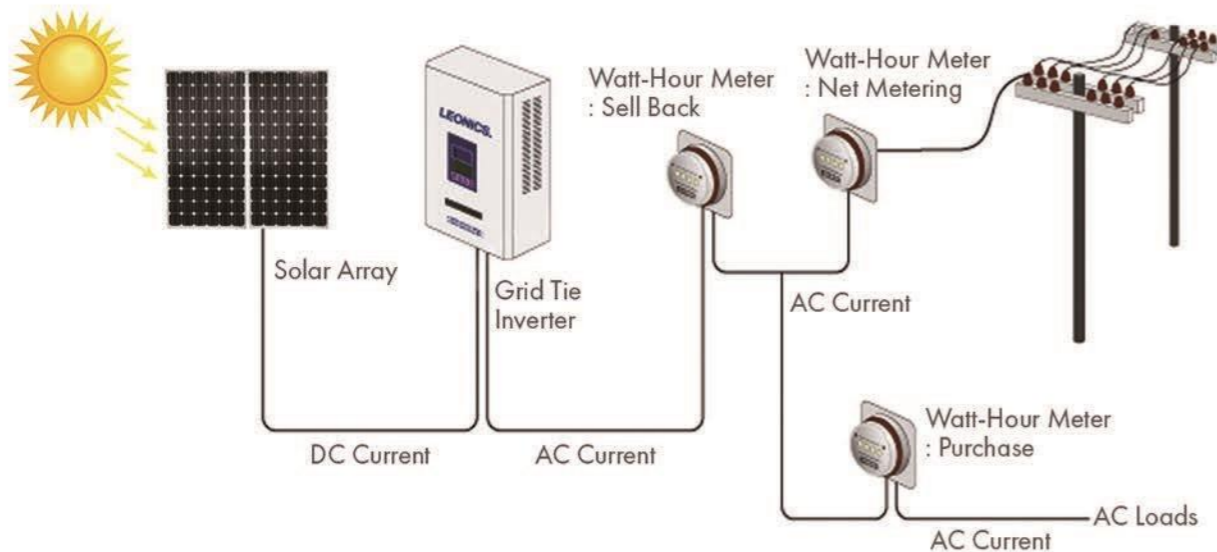
### Why Himin?

#### 3-Hi

High stability, high efficiency and high durability

- With a focus on solar industry for 30 years-Everyone is touched by the solar story
- With the experience of 300,000 small solar power stations-No one can break this record in the world
- Serving as Vice-president for three sessions in the International Solar Energy Society (ISES)-Himin is leading the international standard

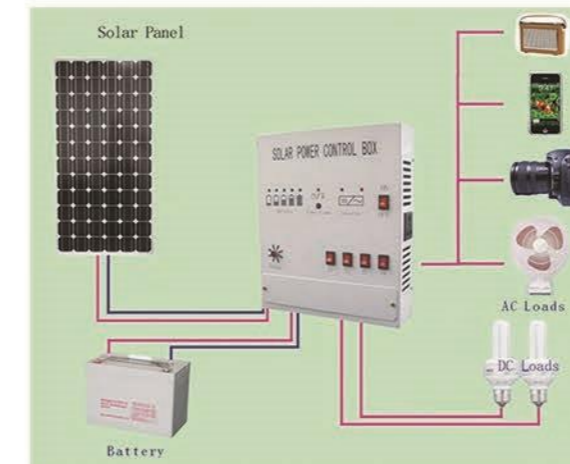
### Grid-ties solar power system



### Projects



### Off-grid solar power system



Off-grid solar systems operate from the stored energy in a battery bank. Solar panels are used to keep the battery bank charged. Himin off-grid solar kits contain everything you need to set up a standalone solar energy system with battery storage for round-the-clock off-grid solar power: PV modules, deep-cycle solar batteries, inverter(s) with battery charging, charge control, and all necessary cables, wiring, breakers, and junction boxes (unless otherwise stated).



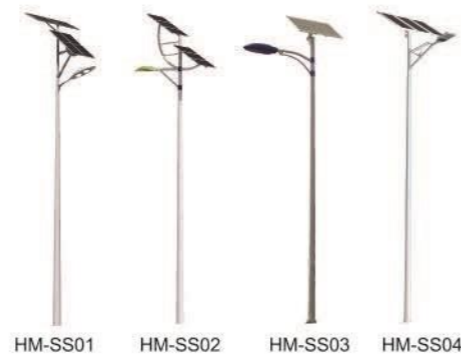
# SOLAR LIGHTS

## Solar street lights series

Himin solar street light has attractive appearance. Whether the use of new materials, or bold and innovative structures and styles, lamp capacity matching, design and selection of system modules, project organization and management, engineering construction and installation, as well as the whole process of quality control, all ensure the long-term and reliable operation of lamps. It is perfectly mixed with the city through tailored design.

### Features

- The switch is on-grid optional, with on-contact control technology, the integrated system has the function of anti-reverse charging or mistake connection. It actually solved the photovoltaic lighting problems, and is also perfectly suitable for the renovation of existing road lighting projects.
- Light source can adopt high-power LED light source, energy saving lamps, ceramic metal halide, high pressure sodium or low pressure sodium lamp, to meet the different needs of road-lighting.



## Solar lawn light series

Solar lawn light integrated the green energy landscape lighting, energy saving and environmental protection together. It is used in the landscape dotting and lighting of park lawn, garden villas, square greenbelt tourist attractions and all kinds of green belt of factories and enterprises.

### Features

- Light source adopts LED, which can achieve circular color changes, giving dynamic and life.
- Automatic control. The switch of the lights can be controlled by light sensor, or by time-shared automatic control, or sound and light double control to save electricity.
- Easy installation and independent power supply, without erecting or pre-burying transmission lines. Low construction costs.



## Solar lights projects



## Solar garden lights series

With attractive appearance and colorful lighting design, Himin solar garden lights can elegantly decorate cities, courtyards, communities, parks, squares, tourist attractions with poetic and picturesque. It can also be designed in accordance with the specific requirements of users.

### Features

- With intelligent infrared induction control technology, it makes light on when someone in and off when someone out, under either full-time or time-shared control.
- LED light source gives light from light-emitting semiconductor chip. No filament, no glass bulb, vibration free, non-friable, and the service life is up 50,000 hours.
- The light is healthy without harmful elements such as mercury or xenon. There is no ultraviolet or infrared light to avoid electromagnetic interference or radiation.
- Light source can adopt high-efficient LED light source, energy-saving lamps, ceramic metal halide, high pressure sodium or low pressure sodium lamp to meet the different needs of road lighting.



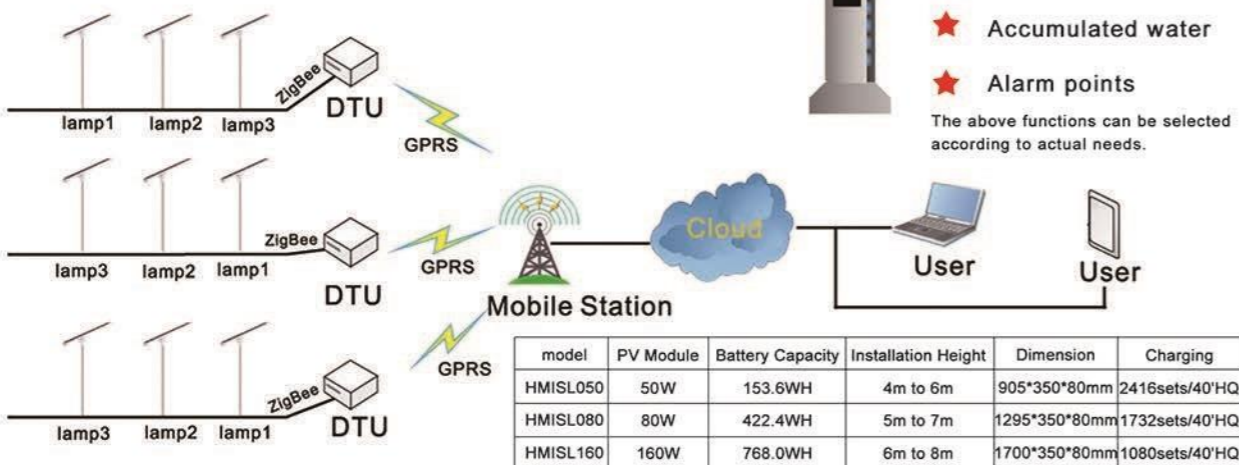
## Low-power intelligent solar street light

Low-power intelligent solar street light refers to the remote centralized control and management of street lamp through solar photovoltaic application and Zigbee wireless communication technology, 4G communication, cloud computing, Internet of Things and mobile Internet technology. It has the functions of adjusting brightness, active fault alarm, anti-theft of lamps and cables, visual remote control, and so on. It has the functions of sensing, expanding application and so on.

Intelligent solar street light can greatly improve the level of public lighting management, save power resources, reduce operation and maintenance costs, and increase additional benefits.



### PRODUCT INTRODUCTION-controlling system



## SOLAR KITCHEN-CARRIABLE

### Solar kitchen series



Carriable



Courtyard-style



Vehicle-carrying



Super thermal insulation solar kitchen for three meals

**Hi-min®** My climate, My change!  
**Climate Mart Solar Kitchen-Carriable**

*Kitchen of Wonderland!*

*So much fun!*

*Easily Packed*

*Coolly Taken*

*Healthy*

*Fresh*

*Clean*

*Safe*

*Unique flavor*

*Multi-function*

**Redefine Family Camping!**

- No smoke
- No hazard
- No harm
- No burning charcoal
- No open flame

**BBQ** 10 - 30 mins

**Coffee&Tea** 15 - 25 mins

**San&Ham** 5-20 mins

**Soup** 20 mins~

**Popcorn & Nuts** 3 - 6 mins  
8 - 15 mins

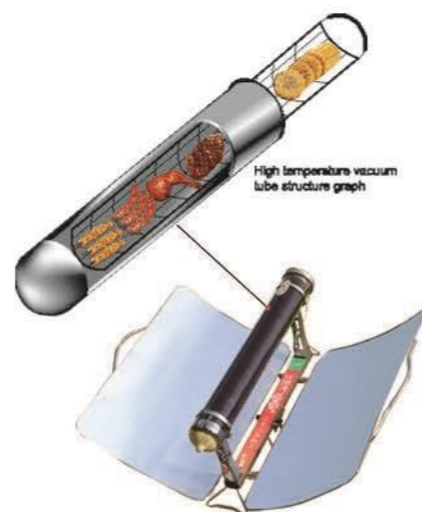
**Camping** Even in cloudy days

World multi-patents and copyright reserved

## Solar Kitchen-Carriable

— This creation may be greater than Steve Jobs's Iphone

- Dreamed and persisted on** by world No.1 Solar Crazy Guy - Huang Ming
- Created and refined** by a group of devotees
- Manufactured** in world green miracle - Solar Valley
- Driven** by the life-dedicated passion of Himin for RE
- Disciplined** by highest food standard and sophisticate process.



## Specification

| Specification        | Serving people | Type of vacuum tube                               |             |               | Type of reflector                          |                  | Reflector area (㎡) |
|----------------------|----------------|---|-------------|---------------|--|------------------|--------------------|
|                      |                | Material  | Length (mm) | Diameter (mm) | Material                                   | Reflection ratio |                    |
| Pico Solar BBQ 6832  | 2~3            | Borosilicate glass (with metal protection barrel) | 730         | 90            | Reflective aluminium board                 | Medium           | 0.61               |
| Nano Solar BBQ 7347  | 2~4            | Borosilicate glass (with metal protection barrel) | 730         | 102           | Reflective aluminium board                 | Medium           | 0.67               |
| Micro Solar BBQ B555 | 3~5            | Borosilicate glass (with metal protection barrel) | 850         | 120           | Reflective aluminium board                 | High             | 0.92               |
| Mini Solar BBQ B556  | 3~5            | Coated steel tube                                 | 850         | 102           | High efficiency reflective aluminium board | High             | 0.92               |

Please choose the BBQ that fits your family on capacity and functions

## Cooking time

| Solar irradiance (W/㎡) | Weather Descriptions | Vegetable  | Meat cubes | Seafood    | Water boiling<br>Coffee making |
|------------------------|----------------------|------------|------------|------------|--------------------------------|
| 800 - 900              |                      | 18-25 mins | 10-20 mins | 12-17 mins | 20-30 mins                     |
| 600 - 700              |                      | 25-35 mins | 20-30 mins | 16-20 mins | 25-35 mins                     |
| 400 - 500              |                      | 35-53 mins | 25-40 mins | 25-40 mins | 30-40 mins                     |



## Enjoy healthy BBQ

Say goodbye to smoked, unhealthy food!

Yummy bread, crispy chips, tender skewers, and tasty chicken wings, free and fresh air outdoor... BBQ leaves you full of fantastic, happy and super wonderful memory, as well as smoked diet, unhealthy, and polluted lifestyle! Solar BBQ on the opposite, Leave you nothing but healthy and tasty food and green life!



