

Hantile product handbook

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One Hantile One Tree



Hanergy



Hanergy Holding Group Ltd., the world's leading thin-film solar company

Hanergy Holding Group Ltd., established in 1994, is headquartered in Beijing, with branches in the Americas, Europe, the Middle East, Asia Pacific, Africa and other regions, employing more than 15000 people worldwide. Hanergy has created two legends in the course of more than 20 years of development: the first legend is that, from 2002 to 2011, it took eight years to build the largest private hydro-power station in the world—the Jin'anqiao Hydro-power Station with an installed gross capacity of 3 million kilowatts; second legend is that, in 2010, it strategically moved into thin-film solar power, and in another eight years it disruptively created a new "mobile energy" industry.

Hanergy insists on the main strategy to develop thin-film solar energy, based on the world's leading thin-film solar technology, integrating the full-industry chain including technology research and development, manufacturing of high-end equipment and components and development of application product and other industries. At present it has developed into the world's largest and the most advanced film solar energy enterprise.

Cutting-edge technology

Hanergy has successively acquired Solibro (Germany), Miasolé (US), Global Solar energy (US) and Alta Devices (US) and set up 8 research and development centers in the world. It maintains five world records for the efficiency of thin-film solar power generation through global technological integration and sustained independent innovation. Among the records, the Gallium Arsenide (GaAs) module is certified by the National Renewable Energy Laboratory (NREL) of the United States and its highest conversion efficiency is 31.6%, also Hanergy's conversion efficiency of thin-film solar energy is the highest in the world.

Cutting-edge equipment

Hanergy has determined to push forward the localization and scale of thin-film solar equipment and firstly completed, and now it can deliver super GW-level equipment, becoming the largest "turn-key provider" of the thin-film solar energy production line in the world. Through cooperation with multiple mobile-energy industry parks, it has actualized the sale of the solutions of thin-film solar energy production line and started a large-scale delivery.

Wide application

At present, Hanergy's thin-film solar products have been widely used in building roofs, building curtain walls, roads, cars, ships, shared bicycles, drones, satellites, portable outdoor charging, electronic equipment, special equipment and other fields. Aimed at reducing energy consumption in cities, Hanergy puts forward a comprehensive solution to make ecological cities, which helps the construction of "ecological city, low-carbon city and beautiful city".

Hanergy's Hantile



Glazes of tradition shine on Hantile Today

Hantile contains oriental ancient rhyme and Chinese culture
It not only compares with the glazed tile in China, but also manifests the wisdom of modern architecture
Hantile combines modern technology and traditional architectures, and uses thin - film solar energy to give new life to the roof
Hantile freed the building from its dependence on the external energy, making the buildings with zero-energy consumption possible



High conversion efficiency, developing new energy

Hanergy, using laminated packaging technology, encapsulates the thin, efficient, flexible CIGS thin-film solar chips in the inner layer of glass with a high transmittance over 91.5%, and maximizes solar chip's conversion rate.



Hantile change the roofs around the world

Hantile inherits the beauty of oriental architecture, integrating the aesthetic gene of Chinese traditional tile-glazed tile, and perfectly shows the beauty of tile crystal and the gentleness of arch surface with cutting-edge technology and exquisite craft. By ingenious design, the function of power generation and architectural appearance are integrated, in line with modern aesthetics. Hantile's fashion design is not only applicable to the domestic architectures, but also suit to the architectures all over the world. Perhaps in the near future, the roofs all over the world will be installed with Hantile.

Disruptive innovation of thin-film technology

Hantile is no longer simply a traditional building material of the roof tile, but combines the flexible thin-film solar chip and roof tile. The users can use the generated electricity themselves. The rest electricity can be used to surf the internet or sold to maximize the benefits.



Hantile's core technology

Miasolé, located in the heart of Silicon Valley, is a subsidiary wholly owned by Hanergy Holdings Group Limited. The unbreakable vacuum successive sputtering technology is deemed as the top flexible GIGS sputtering method globally. Such chips are widely adopted in Double-Glass Hantile and Single-Glass Hantile series.



NO.1 in the world among the technological route of flexible CIGS sputtering

Global solar, located at the Tucson, Arizona of USA, is a subsidiary wholly owned by Hanergy Holding Group Limited. The roll-to-roll flexible CIGS co-evaporation manufacturing technique is adopted. This corporation stands top at the technical route of flexible CIGS co-evaporation. Such chips are widely adopted in Double-Glass Hantile series.



NO.1 in the world among the technical route of flexible CIGS co-evaporation



Hantile's power-generation benefit

Take an example of Double-Glass Triple-Arch Hantile whose power is 85W/m², in the Beijing area, it can generate by full-power for 1200 hours in a year, and 1 square meter of Hantile can generate 102 degrees of electricity in a year. To calculate according to the national-standard price of 0.5 yuan / h (excluding stepwise power tariff) and subsidies price of 0.37 yuan / h (excluding local subsidies), the power generation income of Hantile in 30 years is $0.085 \text{ kW} \times 1200 \text{ hours} \times (0.37 \text{ yuan} - 0.5 \text{ yuan}) \times 30 \text{ years} = 2662 \text{ yuan}$, which is more than 2 times of the initial investment.

Hantile's lifespan is 2 to 3 times as much as traditional roofing materials' lifespan of 20 years. Hantile provides a life-long warranty, which means you do not need to change the tiles in the lifespan of the house, so Hantile has high use-value. Take an example of traditional pottery tile: to ensure the proper function of the roof, a replacement of the pottery tile is required in 20 years, which means another investment.

Once Hantile is installed, you can not only recover the cost in its lifespan, but also gain extra profit of 1574 yuan from per square metre of Hantile.

Hantile Series



Double-Glass Hantile series

It is gleaming and with graceful curve, inheriting the beauty of glaze. Thin-film solar core technology will lead the fashion.



Double-Glass Triple-Arch Hantile Standard Edition

30W

It suits to small architecture's roof, satisfying your aesthetic sense. For example: Villas, houses, special-feature towns, etc.



gray

black

Physical parameters

product model: HW-MQSB-V1、HW-MQSG-V1
length: 500mm
width: 718mm
arch height: 41mm
weight: 10KG
color: black, gray
junction box: 39*46*16.6 (mm) IP67
cable type: 2.5mm solar cable 450 (+10/-0) mm
cable connector: MC4

Electrical parameters

chip type: CIGS
power: 30W
short-circuit current: 4A
open-circuit voltage: 10.6V
current at PMPP: 3.5A
voltage at PMPP: 8.6V

Function grade

loading grade: 2400Pa
waterproof grade: IP67
fire-proof grade: A
hail-proof grade: level 4 (ANSI FM 4473)
working temperature: -40°C to +85°C

The standard edition of double-glass triple-arch Hantile's (30W) effect drawing





Double-Glass Hantile series

It is elegant, and perfectly combines the dynamics and statics, leading the fashion.



Double-Glass Triple-Arch Hantile Extended Edition 44W

The medium-sized building roof with Hantile shows the best visual effect of proportion. For example: school, library, museum, etc.

Physical parameters

product model: HW-MQSB-V2
length: 676mm
width: 718mm
arch height: 41mm
weight: 10KG
color: black
junction box: 39*46*16.6 (mm) IP67
cable type: 2.5mm solar cable 450 (+10/-0) mm
cable connector: MC4

Electrical parameters

chip type: CIGS
power: 44W
short-circuit current: 4.35A
open-circuit voltage: 15.56V
current at PMPP: 3.62A
voltage at PMPP: 12.19V

Function grade

loading grade: 2400Pa
waterproof grade: IP67
fire-proof grade: A
hail-proof grade: level 4 (ANSI FM 4473)
working temperature: -40°C to +85°C

The extended edition of double-glass triple-arch Hantile's (44W) effect drawing





Double-Glass Triple-Arch Hantile series

It is elegant and noble, and its modern fashion appearance shows unique and magnificent beauty.



Double-Glass Triple-Arch Hantile Super Edition 93W

It suits for the large building's roof, showing its brilliance and luxury. For example, government buildings, public institutions, large industrial and commercial buildings.

Physical parameters

product model: HW-MQSB-V3
length: 850mm
width: 988mm
arch height: 61mm
weight: 17KG
color: black
junction box: 39*46*16.6 (mm) IP67
cable type: 2.5mm solar cable 750 (+10/-0) mm
cable connector: MC4

Electrical parameters

chip type: CIGS
power: 93W
short-circuit current: 4.35A
open-circuit voltage: 31.31V
current at PMPP: 3.80A
voltage at PMPP: 24.53V

Function grade

loading grade: 2400Pa
waterproof grade: IP67
fire-proof grade: A
hail-proof grade: level 4 (ANSI FM 4473)
working temperature: -40°C to +85°C

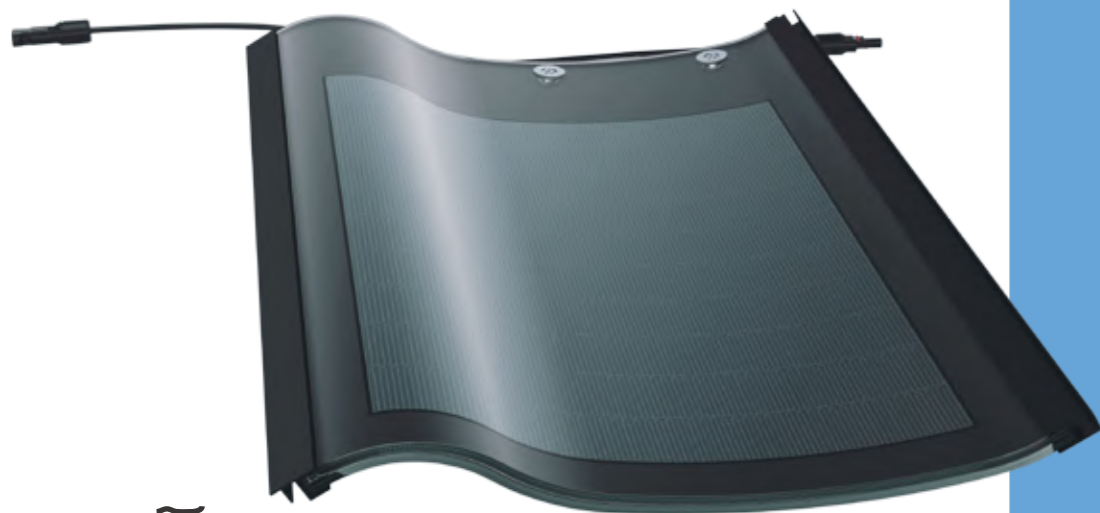
The super edition of double-glass triple-arch Hantile's (93W) effect drawing





Double-Glass series

It inherits the culture of Han and Tang dynasties, combines softness and solidness, elegant and noble.



Double-Glass Plain Hantile (Han and Tang style Hantile)

18W

It suits for the architecture of Tang and Han style, elegant and comfortable. For example: Han and Tang-style architecture, Japanese architecture, landscape architecture, new Chinese architecture, etc.

Physical parameters

product model: HW-MDSB-V2
 length: 588mm
 width: 410mm
 arch height: 58mm
 weight: 5KG
 color: black
 junction box: 39*46*16.6 (mm) IP67
 cable type: 2.5mm solar cable 450 (+10/-0) mm
 cable connector: MC4

Electrical parameters

chip type: CIGS
 power: 18W
 short-circuit current: 4.32A
 open-circuit voltage: 6.1V
 current at PMPP: 3.87A
 voltage at PMPP: 4.68V

Function grade

loading grade: 2400Pa
 waterproof grade: IP67
 fire-proof grade: A
 hail-proof grade: level 4 (ANSI FM 4473)
 working temperature: -40°C to +85°C

Double-Glass Plain Hantile's (Han and Tang style Hantile) (18W) effect drawing





Double-Glass Hantile series

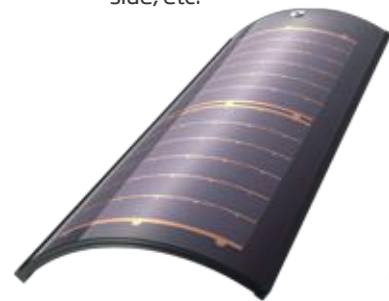
Its technological texture expresses the power of details, with originality and ancient rhythm, showing the beauty of new classical architecture.



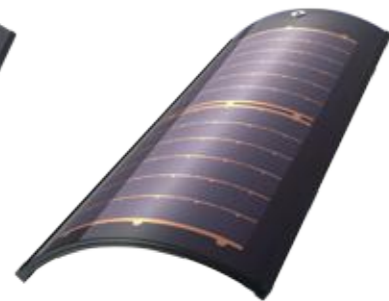
Double-Glass Spool Hantile (with GSE chip)

13.4W

It suits for the Chinese architecture and ancient building, expresses the beauty of art. For example: the temple architecture, garden architecture, Chinese villa, special-feature town, beautiful countryside, etc.



gray



black

Double-glass spool Hantile's (13.4W) effect drawing



Physical parameters

product model: HW-GQSB-V1、HW-GQSG-V1
 length: 715mm
 width: (263,293) mm
 arch height: (68,75) mm
 weight: 5.8KG
 color: black,gray
 junction box: 39*46*16.6 (mm) IP67
 cable type: 2.5mm solar cable 450 (+10/-0) mm
 cable connector: MC4

Electrical parameters

chip type: CIGS
 power: 13.4W
 short-circuit current: 2.7A
 open-circuit voltage: 7.8V
 current at PMPP: 2.5A
 voltage at PMPP: 5.4V

Function grade

loading grade: 2400Pa
 waterproof grade: IP67
 fire-proof grade: A
 hail-proof grade: level 4 (ANSI FM 4473)
 working temperature: -40°C to +85°C

 Double-Glass Hantile series

It has the unique Chinese architectural style, inheriting the culture of ancient Chinese architecture.



 Double-Glass Spool Hantile (with MiaSolé chip)
11.5W

It suits for the Chinese architecture and ancient building, expressing the beauty of art. For example, the temple architecture, garden architecture, Chinese villa, special-feature town, beautiful countryside, etc.

Double-glass spool Hantile's (11.5W) effect drawing



| Physical parameters


product model: HW-MDSB-V1
length: 720mm
width: (187,224) mm
arch height: (57,66) mm
weight: 4.5KG
color: black
junction box: 39*46*16.6 (mm) IP67
cable type: 2.5mm solar cable 450 (+10/-0) mm
cable connector: MC4

| Electrical parameters

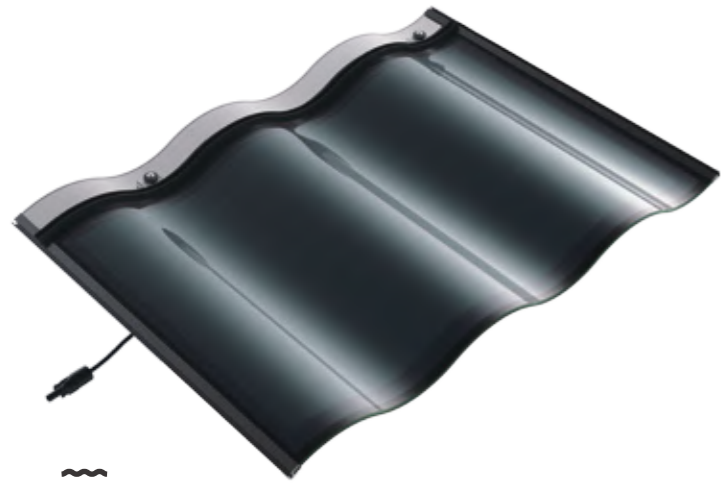
chip type: CIGS
power: 11.5W
short-circuit current: 2.17A
open-circuit voltage: 8.47V
current at PMPP: 1.66A
voltage at PMPP: 7.02V

| Function grade

loading grade: 2400Pa
waterproof grade: IP67
fire-proof grade: A
hail-proof grade: level 4 (ANSI FM 4473)
working temperature: -40°C to +85°C

 Single-Glass Hantile series

With innovative single-glass structure, light and beautiful, it can be widely used in load-bearing; made from toughened glass, it is firm and tenacious, showing the dynamic architectural aesthetics with great fashion.



Single-Glass Triple-Arch Hantile Standard Edition
30W

It suits for the High-end commercial buildings, with gleaming appearance, combining aesthetics and environment-protection.

The standard edition of single-glass triple-arch Hantile's (30W) effect drawing



| Physical parameters

product model: HW-M036AB1C
length: 700mm
width: 500mm
arch height: 35mm
weight: 5.2KG
color: black
junction box: 68*68*19.7(mm)IP67
cable type: 2.5mm solar cable 450 (+10/-0) mm
cable connector: MC4

| Electrical parameters

hip type: CIGS
power: 30W
short-circuit current: 4.45A
open-circuit voltage: 10.16V
current at PMPP: 3.87A
voltage at PMPP: 7.79V

| Function grade

loading grade: 2400Pa
waterproof grade: IP67
fire-proof grade: B1
hail-proof grade: level 4 (ANSI FM 4473)
working temperature: -40°C to +85°C

Single-Glass Hantile series

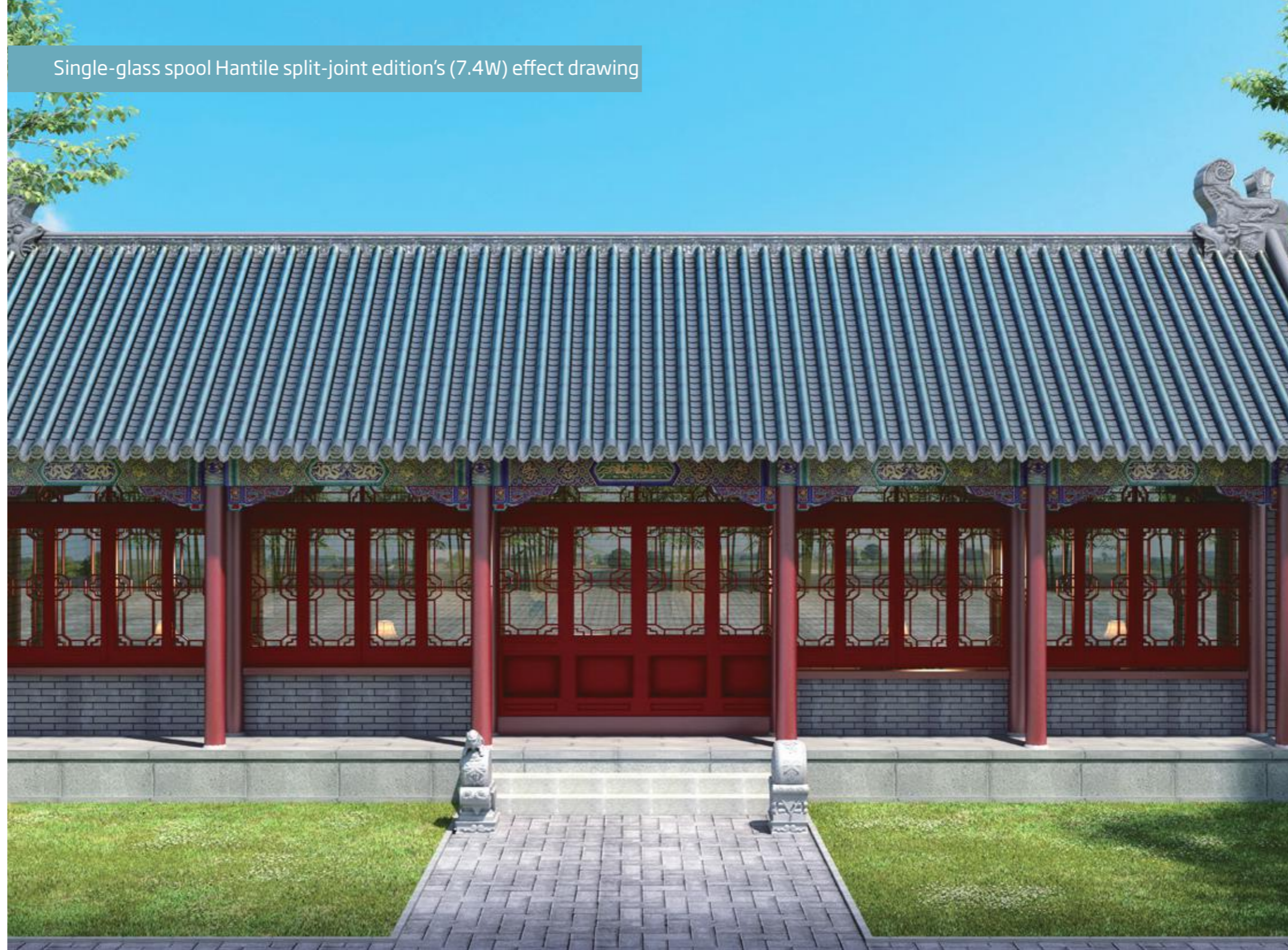
Inheriting the culture of ancient Chinese architecture, with unique cultural deposition and cutting-edge technology.



Single-Glass Spool Hantile split-joint Edition **7.4W**

It suits for ancient buildings and pseudo-classic architecture and embodies the classical beauty of China.

Single-glass spool Hantile split-joint edition's (7.4W) effect drawing



Physical parameters

- product model: HW-M007PB1C
- length: 340mm
- width: 160mm
- arch height: 70mm
- weight: 1.08KG
- color: black
- junction box: 66.3*65.8*25.2 (mm) IP67
- cable type: 2.5mm solar cable 450 (+10/-0) mm
- cable connector: MC4

Electrical parameters

- chip type: CIGS
- power: 7.4W
- short-circuit current: 2.115A
- open-circuit voltage: 4.82V
- current at PMPP: 1.89A
- voltage at PMPP: 3.91V

Function grade

- loading grade: 2400Pa
- waterproof grade: IP67
- fire-proof grade: B1
- hail-proof grade: level 4 (ANSI FM 4473)
- working temperature: -40°C to +85°C

Single-Glass Hantile series

It inherits the culture of Chinese ancient architecture and expresses the unique beauty of the roof.



Single-Glass Spool Hantile Lap-Joint Edition **7.4W**

It suits for ancient architecture and pseudo-classic architecture, classical and beautiful, and its structure is well arranged.

Single-glass spool Hantile lap-joint edition's (7.4W) effect drawing



Physical parameters

- product model: HW-M007DB1C
- length: 400mm
- width: (160,185) mm
- arch height: (80,92.5) mm
- weight: 1.08KG
- color: black
- junction box: 66.3*65.8*25.2(mm)IP67
- cable type: 2.5mm solar cable 450 (+10/-0) mm
- cable connector: MC4

Electrical parameters

- chip type: CIGS
- power: 7.4W
- short-circuit current: 2.115A
- open-circuit voltage: 4.82V
- current at PMPP: 1.89A
- voltage at PMPP: 3.91V

Function grade

- loading grade: 2400Pa
- waterproof grade: IP67
- fire-proof grade: B1
- hail-proof grade: level 4 (ANSI FM 4473)
- working temperature: -40°C to +85°C



 The installation instruction of Hantile

Easy installation and good durability

Hantile has fine sealing performance as being waterproof, fire-proof and wind-proof. It has superior performance and long durability.



 Hanergy promises a lifetime warranty

Tile


If Hantile has quality problems, Hanergy will offer a lifelong maintenance and replacement.

Inverter

For the inverter, Hanergy provides a 5-year quality-maintenance service. During this period, Hanergy is responsible for the free maintenance of the inverter. If a same fault of the inverter is repeated three times or more, Hanergy will provide a free replacement.

Other accessories and auxiliary materials

Hanergy provides a maintenance service for the accessories and auxiliary materials by manufacturer's standard.

 With 5 certifications and 1 insurance, the security and reliability is guaranteed



Hantile whole series's Product Liability Insurance is underwritten by PICC.



Hantile has passed the China Compulsory Certification of building product.



Hantile has passed the Product Quality Certification of security and function.



Hantile has passed the TÜV Certification of security and function in Germany.



Hantile has met the security requirements of the Canadian and American markets at the same time, and has passed the UL Certification of fire-proof in the US.



Hantile has passed the CE Certification.



Hantile has nationwide after-sales service system, online 24 hours everyday to provide our service

Hantile's nationwide layout

300

300 city-level service agents

1500

1500 county-level service networks

90%

covering 90% areas above the county-level nationwide

We promise

7*24

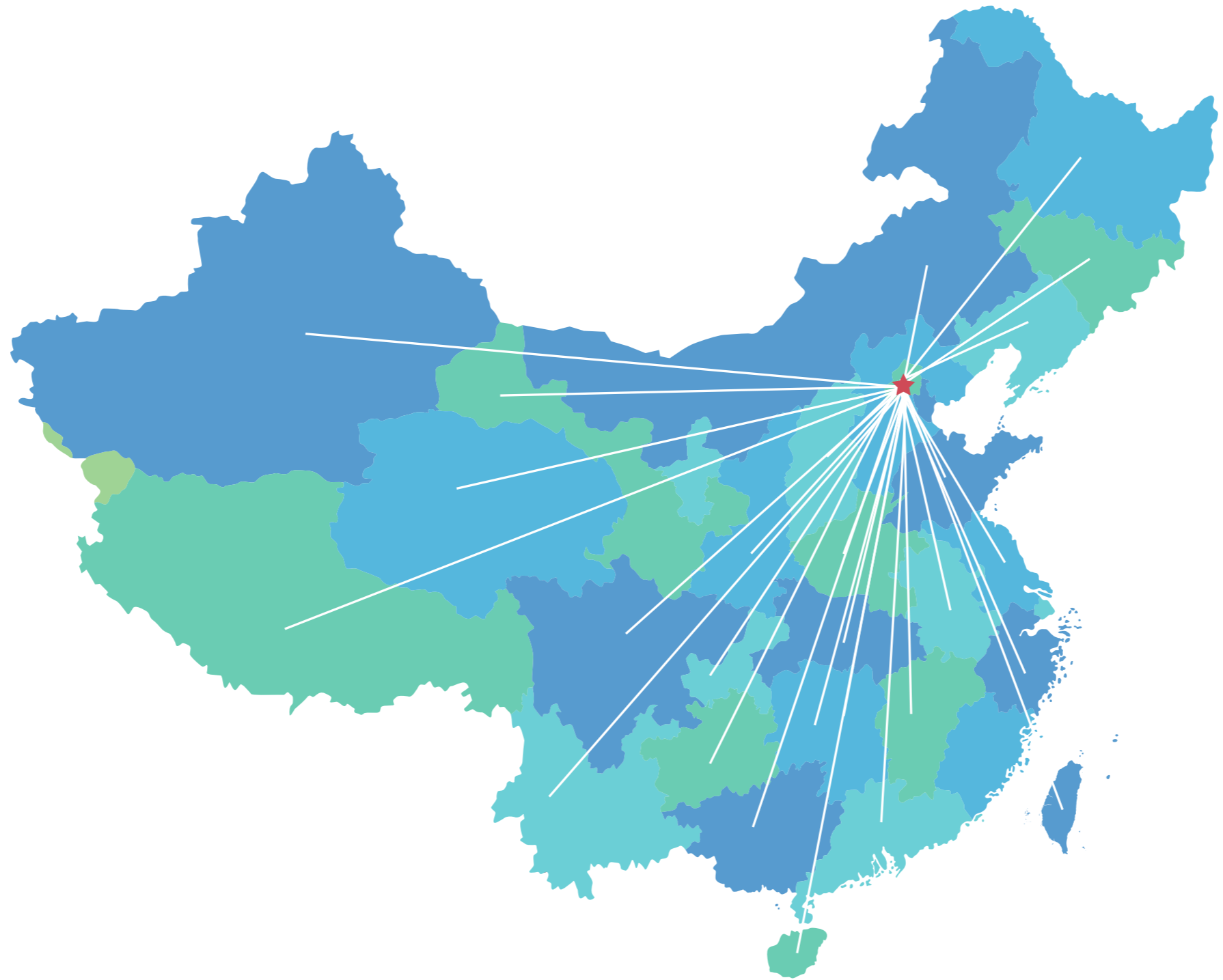
a 7-day weekly, 24-hour daily hotline

4

a response in 4 hours

24

an on-site maintenance in 24 hours



Hantile's whole system comes standard with Data Acquisitions, which is based on the Cloud Big Data Platform, and Hanergy's service system provides users with active operation and maintenance for system-operation deviation.

National Service Hotline: **400-688-1566**