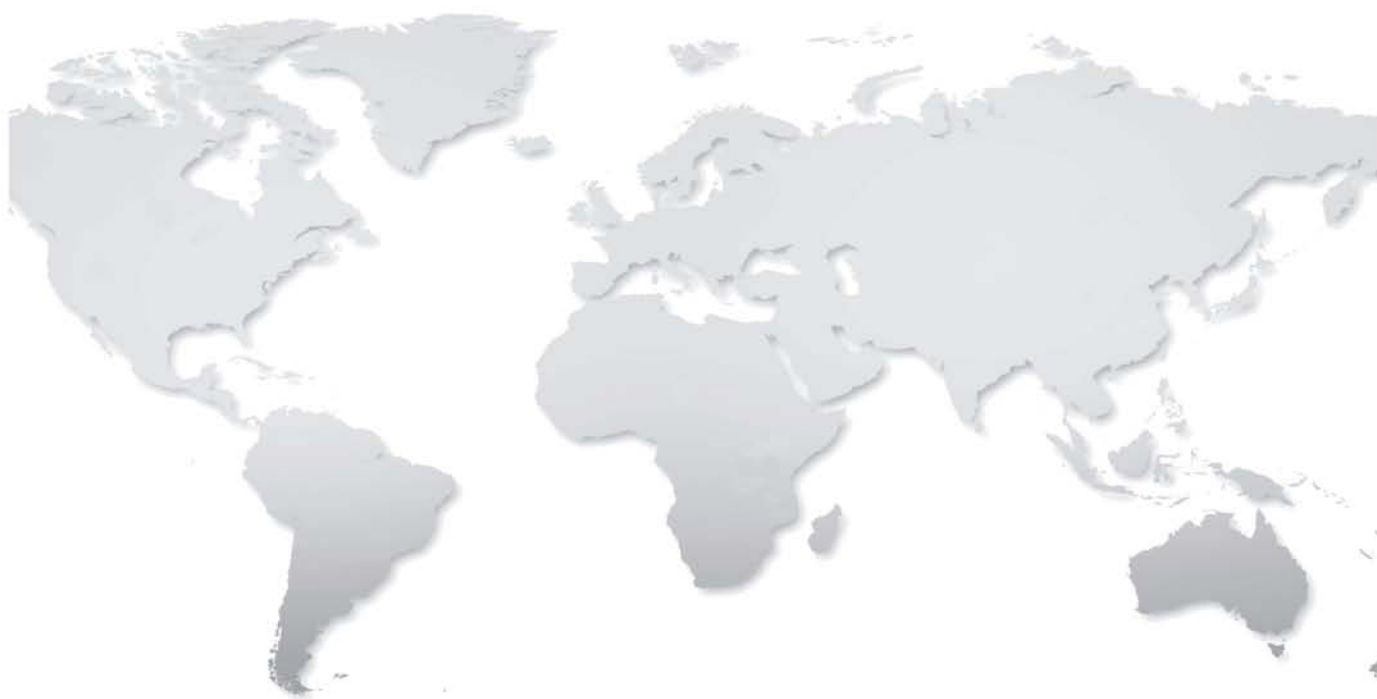


Installation instructions

solar grid tied system



Product description

Compendium for solar grid tied system
Solar grid tied system classification

Installation preparation

Checking components details
Preparing tools
Preparing safeguard

System installation

Sloping roof brackets installation
Installation of solar panels
Installation of grid tie inverter
Electrical connection

Daily Inspection and maintenance

Daily maintenance matters
Other matters need attention

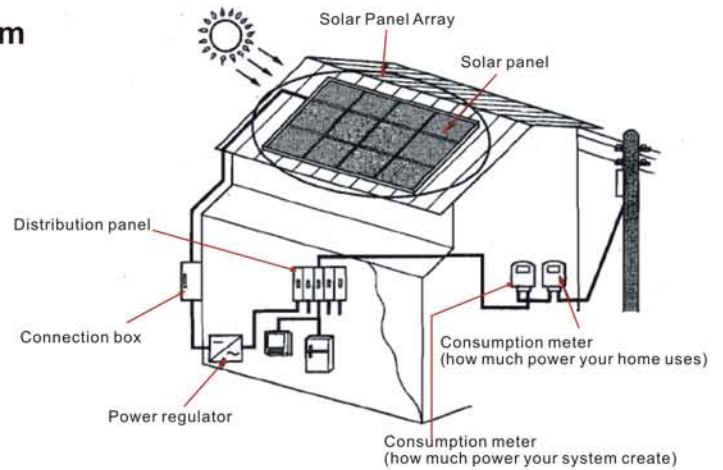
Product description

Solar grid tied system can apply in many fields, including grid tie solar power system and off-grid tie solar power system. This chapter tells user the principle, classification and structure of solar grid tied system.

1、Compendium for solar grid tied system

This solar grid tied system is mainly used for solar home using system (less than 10kw). Solar grid tied system including the solar panels, grid tie inverter, Brackets etc.

Principle: PV module absorb the solar power, which is transferred into DC electricity, and then, collected by distribution box, these DC electricity will be transferred into AC electricity by inverter, it will be send to state grid at last. Of course, there is a meter measuring/Calculating how much power your solar system produces.

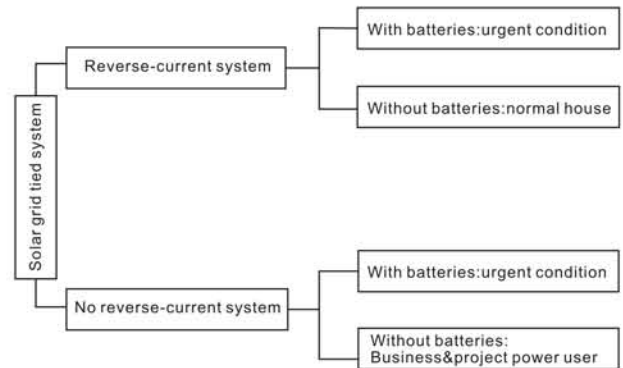


2、Solar grid tied system classification

Solar grid tied system can be classified into reverse-current system and no reverse-current system.

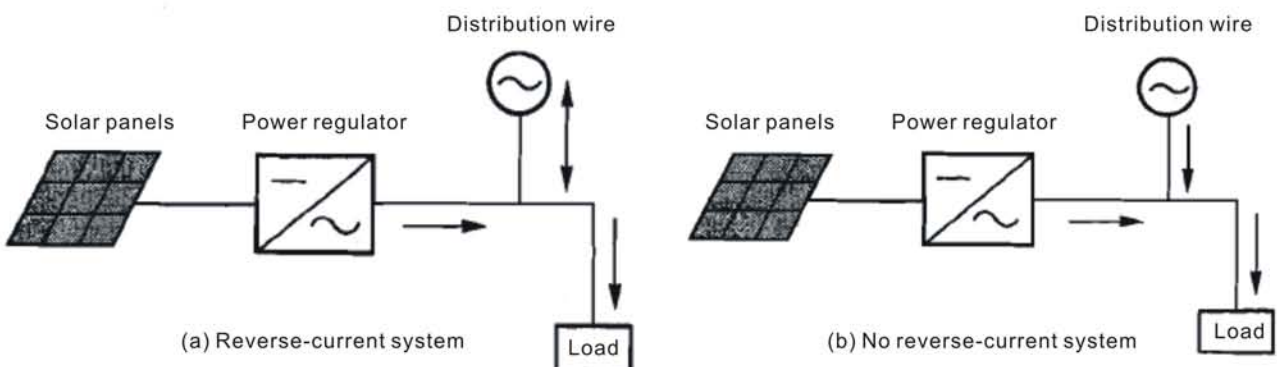
2.1 Reverse-current system

In this system, Spare power will be purchased by grid company. When sunshine is weak & power demand is strong, the state grid will provide power to your house. When sunshine is strong & power demand is weak, the spare power will be sold into the state grid, almost all grid tied system adopt reverse-current system.



2.2 No reverse-current system

In this system, the power demand is much higher than the power of system create. In this case, system can not send spare power into the state grid.



Installation preparation

1、 Checking components details

Please check the product according to the packing list, also carefully check if there is any damage on the package and appearance. If any damage, you can take a photo as evidence and send to us.

2、 Tools preparation

Before installation, please prepare the tools, such as pliers, hammers, screwdriver, hexagonal wrench, adjustable wrench, measuring tape, utility knife, adhesive tape, test pencil, multimeter, etc. The details as the right figure shown, in addition, we will recommend you to prepare a hand held electric drill before installation, which is used to drill holes and fasten the bolts and screws.



3、 Protective equipment

3.1 Preparation

To ensure safety and prevent accidents, please wear and prepare the following protective gear before installation.

- Safety helmet、 sunglasses
- Safety belt
- non-slip shoes
- tool bag



3.2 Electric-shock safeguard

The output voltage for PV modules is about 35V, after series connection, the total voltage will over human safety voltage. The the following effective countermeasure for protection against electric shock:

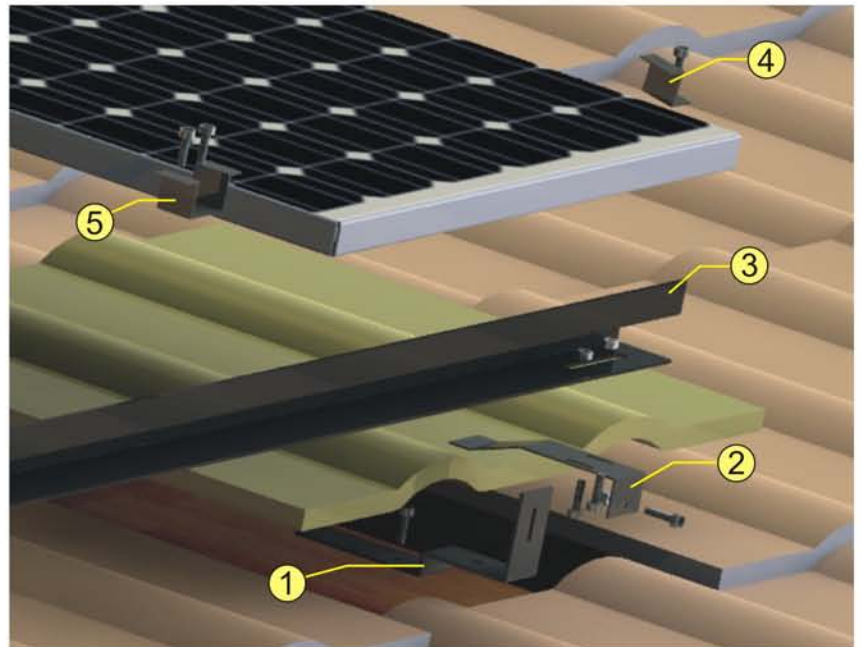
- Please cover the visor on the PV modules surface to keep out the sunlight.
- No operating in rainy day.



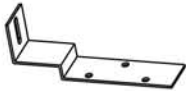
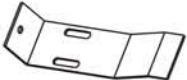


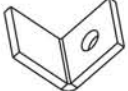
System installation

1、 Installation for sloping roof bracket

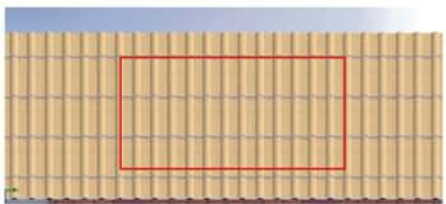
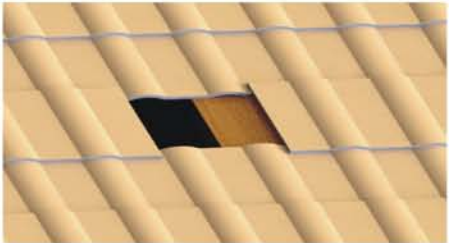
- ① Embedded fittings
- ② Adjusting block
- ③ Fixed beam
- ④ Side beam
- ⑤ Middle beam



1.1 Accessory for bracket

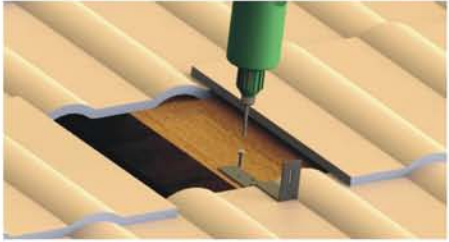
Item	① Embedded fittings	② Adjusting block	③ Fixed beam	④ Side beam	⑤ Middle beam
					
Description	Before installation and fixing the embedded fittings, please confirm the embedded position, then take off the tile and fix the embedded fitting on the beak of the roof with expansion bolt.	It is used for adjust the tile height and position for beam.	It is used for installing PV modules.	It is used to fix the bottom of beam and the side of the last PV module.	It is used to fix the PV module on the beam.

1.2 Installation Steps for bracket

① Confirm the installation position according to the size of PV modules and bracket.		② Take off the tile to install the bracket	
<p>Note:</p> <p>At first please confirm the installation position, and install the modules facing south. And the tiling can bear the weight of the PV modules.</p>		<p>Installation steps:</p> <p>To be careful when installing on the roof. And take off the tile lightly.</p>	


③ The installation of embedded fittings

Installation steps:
Place the bracket in right location;
Prepare M8×30 self-drilling screws;
Prepare an electric drill. Push the screw vertically and then fasten it.



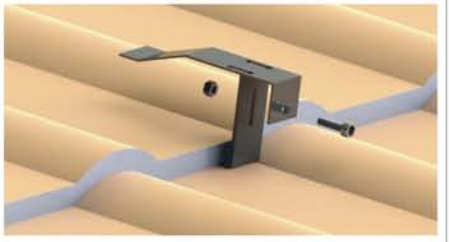
Cover the tile after finishing the installation

Installation steps:
Cover the tile;
Check the gap between the tile.
Make sure that the roof won't leaking.




④ The installation of the adjusting block

Installation steps:
Put the adjusting block on the embedded fittings
Connect the M8×30 hexagon socket screw with the M8 nut;
Fasten the bolt with wrench.



Install the embedded fittings block and adjusting block in order

Installation steps:
Confirm the how many sets that need to be installed and the installation location;
Install it as the steps mentioned above.



⑤ The installation of Fixed beam

Installation steps:
Differentiate the upper fixed beam and under fixed beam before installation;
Connect the fixed beam with M8×30 bolt and M8 nuts;
Fasten the bolt with wrench.



Then fasten other fixed beams in the same way

Installation steps:
Fix the fixed beam and adjustable sheet with the bolt.








2、 The installation of solar panel

2.1 Precautions

As the solar panel is glass-surfaced, please note the caution tips below when installing it.

Do not install it in rainy days	Do not use fire during the installation process	Never step or sit on the glass surface of the solar modular.	Do not strike it	Do not fix it with nail
				

2.2 Installation step

<p>① the placement of the PV modular</p> <p>Installation steps: Please handle with care so as to avoid the damage of the PV modular; Make sure the PV modular face the same direction; Place the PV modular on the top of the fixed beam.</p> 	<p>③ The installation of middle beam</p> <p>Installation steps: Fix the first piece of modular and the second one with a middle bracketting; Installation steps are same with step b; Connect the M8×30 hexagon socket screw with the M8 nut.</p> 
<p>② The installation of the side beam</p> <p>Installation steps: Fix the downside of the PV modular with side beam; Fasten the fixed beam with side beam with bolt; Connect the M8×30 hexagon socket screw with the M8 nut; Fasten the bolt with wrench.</p> 	<p>④ finish the installation of other modulars in the row using the same procedure</p> <p>Installation steps: Connect other modulars in order; Fix adjacent modulars with middle beam; Fix the modulars at both sides of the bracket with side beam.</p> 
Fasten the upper side of the PV modular	
<p>Installation step: Firm both sides with bracketting in the same method mentioned in step b.</p> 	

3、 Installation of grid tie inverter

3.1 installation location

- Install it in airy indoors
- No magnetic field interference nearby
- The wall should be solid and flat
- Install it to the height above 1.5 meter which is out the reach of children

3.2 installation steps

① Marking and boring

- Map out the installation position and measure the distance between each hole. Mark them out with marking pen.
- Boring the mark with an electric drill. The diameter of the hole is 10mm and the depth of it is about 50mm
(as it is shown in the picture below):
- Drill the four marked holes on the wall in order. Then drive the M8×30 expansion bolt into the hole.
(as it is shown in the picture below):



② **“Wall-hook” Installation**

Fasten the “Wall-hook” in the wall by bolt or Anchoring
(as below image):



③ **Grid tied inverter installation**

Please note the four back holes are locked well with “Wall-hook”
(as below image):



4、Cables installation

Cables installation include: output of solar panel&grid tied inverter, grid tied inverter&AC electricity, Meters Etc.

Following below steps to install:

- Connect PV array output bus to "DC+" and "DC-";
- Connect Household AC bus to "AC+";
- Start grid tied inverter working, activate household AC. And then, system runs

⚠ Note: Ensure Switch off when installing cables.



[Operate as below] :

4.1 Cable installation of PV array&inverter

① Prepare for solar panel

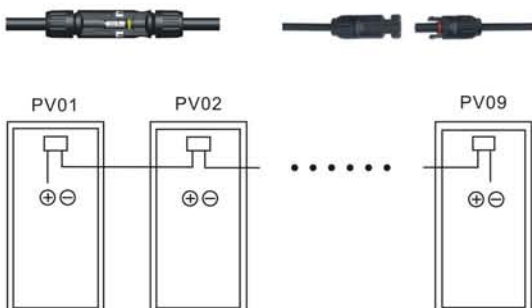
Arrange positive and negative pole of each solar panel ,make sure they will be easy connected.



② Prepare for PV array

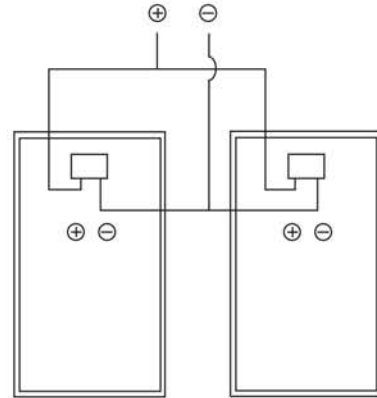
- String solar panels one by one
- Tidy and tie the cables to make them smoothly
- Leave the positive pole of first panel and the negative pole of last panel alone, and connect them to "DC+"&"DC-" by MC4 connector.

⚠ Note: For our 1-6kw grid tied system, we suggest string 6 pcs solar panels in each group.(35V working voltage)



After string solar panels, It will have several groups.parallel groups by distribution box:

Method: Positive pole connect positive pole
Negative pole connect negative pole



③ Prepare for PV cable bus

- Adjust the length of PV cable bus according to the distance between PV array and grid tied inverter.(the manufacturer default is 15M, user can lengthen cables by themself)
- Connect PV cable bus to "DC+"&"DC-" by MC4 connector.

⚠ Note: pay attention to the positive&negative poles marked on the cable.

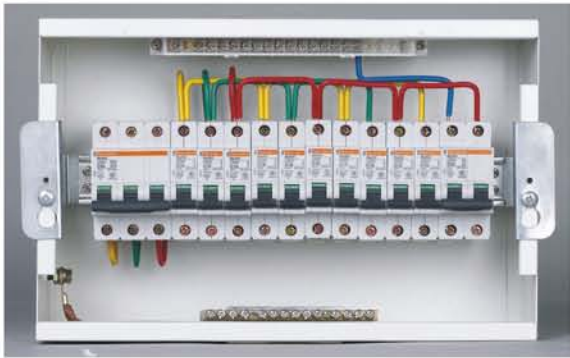


4.2 Connection between grid tied inverter&Distribution box(AC)

① prepare an AC distribution box

Equip an AC distribution box at the AC output of inverter. The box acts as a switch that control the connection of the inverter with the grid. Generally , each house has a distribution cabinet that connected with the grid. The user can add a current breaker into it.

The electric switch installation and electric wiring work must be performed by a qualified electrician.



② Prepare an AC output bus

Insert strands of 3*2.5mm² BVVB into the aviation plug and peel a 10~15mm slit at the end of the aviation plug.

The user can decide the length of the wire according to the distance between AC distribution box and grid tied inverter.



③ The connection of grid tied inverter

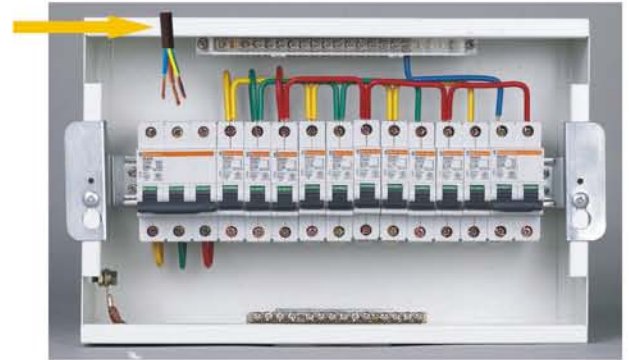
Plug the aviation plug into the aviation socket of the inverter.

⚠ Note: Make sure the AC output switch is off before the connection.



④ The connection of AC distribution Box

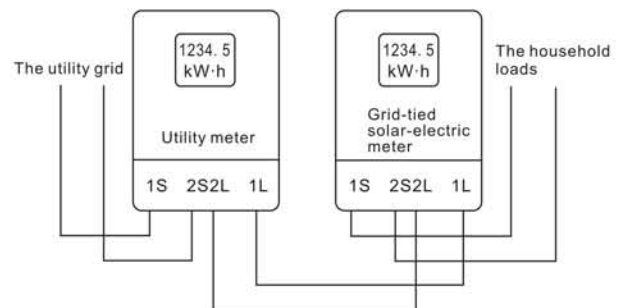
- Connect the peeled aviation plug to the air-breaker.
- Please discriminated the live wire, zero line and ground wire.
- Please shut all switches off before the operation.



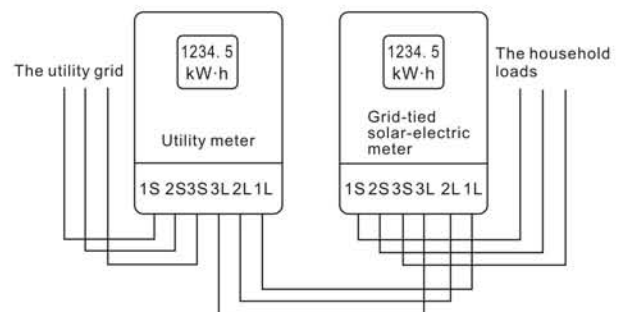
4.3 The wiring of electric meter

Grid-tied solar-electric meter is used to track how much electricity flows into the utility grid. Based on this data, the utility can credits a homeowner's account for excess solar electricity produced. Purchasing the Grid-tied solar-electric meter from your local electricity provider or state regulatory agency.

It is recommended to install the grid-tied solar-electric meter beside the utility meter.



(1) Single-phase and two-wire system



(2) Single-phase and three-wire system or three-phase and three-wire system

⚠ Note:

- Both the kilowatt-hour meter and the utility meter are under the electricity provider's regulation;
- Consult your local electricity provider or state regulatory agency for inspection and net billing.
- The electric wiring work must be performed by a qualified electrician.

To this moment, the system installation has finished. Check the installation carefully before operation. The boot sequence is the same with the wiring sequence.

Routine inspection and maintenance

It is necessary for the user to carry routine inspection to ensure the proper operation of the household low-power(<20KW) PV solar power generation system. This chapter will explain the items that need to be checked and specific implementation methods.

1、Daily maintenance

The user can arrange time for system inspection flexibly. It is recommended to check the system once a month. Please refer the checking list below and contact us or local agent for help if disfunction arise.

Item	Visual inspection	Test
PV array	Check if there is dirt or damage on the surface Check if the outside wiring is damaged Check if the bracket is corroded, rust or loosen Check if the ground wire is damaged or loosen	Insulation resistance measurement Open-circuit measurement
Distribution box	Check if the surface is corroded or rust Check if the outside wiring is damaged or loosen Check if the ground wire is damaged or loosen	Insulation resistance measurement
Grid tie inverter	Check if the surface is corroded or rust Check if the outside wiring is damaged or loosen Check if the ground wire is damaged or loosen Check if there are strange noise or smell during the operation and if the filter net of the air-vent is obstructed. Check if there the installation environment is wet, high-temperature, intense magnetic field	Eye measurement Insulation resistance measurement Protection function test
Grounding	Check if the wire is damaged or loosen	Grounding resistance measurement

2、Other attention matters

- Connect the ground wire well to ensure the proper operation of the inverter.
- It is common that the power source would get hot in its operation.
- Keep the installation environment clean and ventilated. Make sure the ventilation hole is unblocked.
- It is normal that the cooling fan of the inverter did not run at the starting moment or when the load is light as the cooling fan is temp-controlled.
- The cooling fan would run only when the temperature exceeds 50°C.
- Contact our head office directly if any other problems arise.



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