

PHOTOVOLTAIC GREEN BUILDING MATERIALS (FACADE)

INSTALLATION AND USER MANUAL



This manual applies to Photovoltaic green building materials (facade) ("Photovoltaic green building materials (facade)"), also commonly known as green building materials manufactured by BAODING JIASHENG PHOTOVOLTAIC TECHNOLOGY Co., LTD. (Hereby"GAIN SOLAR"), and is Explicitly written for qualified professionals ("Installer" or "Installers"), including without limitation licensed electricians and RAL certified PV



For your safety, do not attempt to work on a rooftop until safety precautions have been identified and taken, including without limitation fall protection measures, ladders or stairways, and personal protective equipment.

STATEMENT

Thank you for choosing Gain Solar as your green building materials provider. We appreciate your business! This manual contains important information pertaining to the electrical and mechanical installation and maintenance of green building materials, and contains safety information that you must read carefully and be familiar with before handling, installing, and/or maintaining Gain Solar green building materials.

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Gain Solar is not liable for any damages caused by inappropriate installation, use or maintenance of Gain Solar green building materials, including without limitation damages, losses and expenses caused by non observance of the instructions of this manual or caused by or in connection with products of other manufacturers.

Gain Solar green building materials are designed to pass the TUV Rheinland and CCC(CTC), it has also obtained the "Green Building Materials Evaluation" of solar photovoltaic laminated glass for building it is one of the first batch of enterprises applying for CTC green building materials evaluation and certification.

Failure to comply with the requirements listed in this manual will invalidate the Limited Warranty for green building materials as provided by Gain Solar at the time of sale to the direct customer. Additional recommendations are provided to enhance safety practices and performance results. Please provide a copy of this manual to the green building owner for their reference, and inform them of all relevant aspects of safety, operation and maintenance.

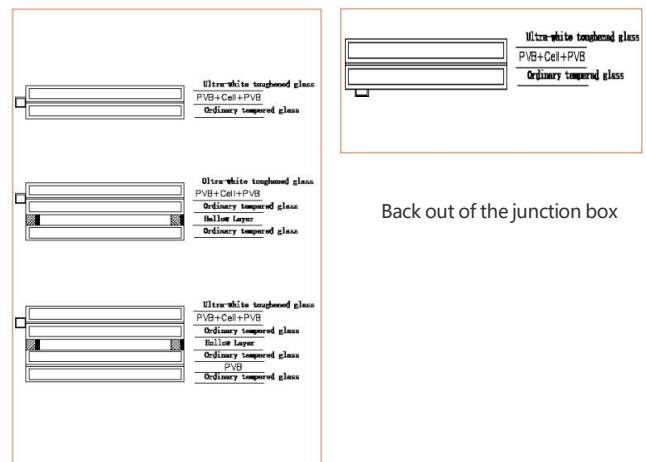
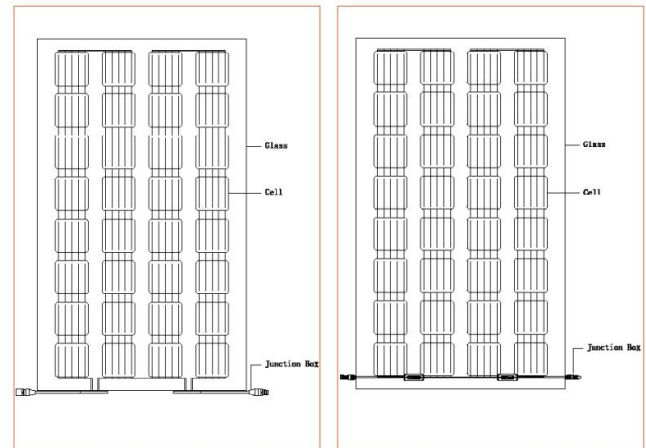
SAFETY

You must understand and follow all applicable local, state and federal regulations and standards for building construction, electrical design, fire and safety, and must check with local authorities to determine applicable permitting requirements before attempting to install or maintain green building materials. PV Green building System should only be installed on Houses that have been formally analyzed for structural integrity, and confirmed to be capable of handling the additional load of PV system components, including green building materials, by a certified building specialist or engineer.

or your safety, do not install or handle green building materials under adverse conditions, including without limitation strong or gusty winds, and wet or frosted roof surfaces. green building materials are photovoltaic products made of tempered glass, encapsulant, ribbon, cells and junction boxes. Figure 1 is an illustration of the green building materials.

GREEN BUILDING MATERIALS COMPONENTS

Green building materials are photovoltaic products made of tempered glass, encapsulant, cells and tempered glass. Figure 1 is an illustration of the green building materials



Side out the junction box

1 Sections of junction boxes in different positions

- Made in Baoding, Hebei, P.R. China

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ELECTRICAL

green building materials can produce current and voltage when exposed to light of any intensity. Electrical current increases with higher light intensity. DC voltage of 30 Volts or higher is potentially lethal.



Contacting live circuitry of a PV system operating under light can result in lethal electric shock. De-energize green building materials by removing them entirely from light or by covering their front and rear surfaces with an opaque material. Regard the safety regulations for live electrical equipment when working with green building materials that are exposed to any light. Use insulated tools and do not wear metallic jewelry while working with green building materials. In order to avoid arcing and electrical shock, do not disconnect electrical connections under load. Faulty connections can also result in arcing and electrical shock. Keep connectors dry and clean, and ensure that they are in proper working condition. Never insert metallic objects into the connectors, or modify them in any way in order to secure an electrical connection. Do not touch or handle green building materials with broken glass or separated frames, unless the green building materials are disconnected and you are wearing proper personal protective equipment. Avoid handling green building materials when they are wet unless cleaning the green building materials as directed in this manual. Never touch electrical connections that are wet without protecting yourself with insulated gloves.

TRANSPORT AND HANDLING

Gain Solar green building materials must be transported in the supplied packaging only, and kept in the packaging until they are ready to be installed. Protect pallets against movement and exposure to damage during transportation. Do not exceed the maximum allowable height of pallets to be stacked, as indicated on the pallet packaging. Secure pallets from falling over. If pallets are stored temporarily outside please place a protective covering over the pallet to protect it from direct weathering and do not stack pallets. It is recommended that you choose A frame for domestic transportation for transportation (safe and low price), wooden box transportation is selected internationally, see Figure 2 and Figure 3 for details.



Figure 2:A Frame Packaging

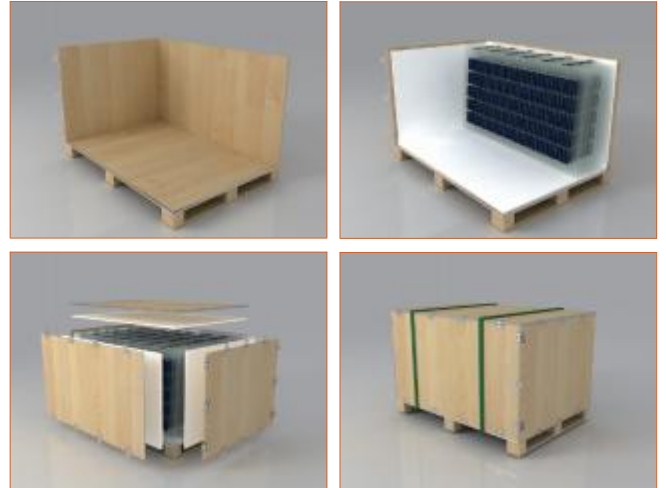


Figure 3: wooden box Packaging

Gain Solar green building materials products are heavy and should be handled carefully with both hands. It is forbidden to grab the junction box or wire to pick up the entire green building material product under any circumstances and stand or walk on the module, also forbidden to drop a green building material product on another on the outer piece, in order to avoid glass damage, do not put any heavy objects on the green building materials. When placing green building materials on the surface of the product, be careful to prevent it from falling. The green building materials with broken glass can not be used. Broken or damaged green building materials must be handled carefully and treated specially.

When taking out the green building materials products from the packaging provided by Gain Solar, firstly remove the box Cover (after removing the fixing strap), take it out one piece at a time (figure 4). When taking out the green building materials products from the packaging box, you should pay attention to the leftovers in the box. The remaining green building materials products prevent them from dumping to one side.



Figure 4: Cutting cardboard and pull out green building materials

Check green building materials for damage due to transportation before installation. Do not install damaged green building materials. Please contact the company you have purchased the Gain Solar green building materials for information or complaints. green building materials

Surfaces are susceptible to damage that could affect the performance or safety of the module. Do not damage or scratch the green building materials surfaces, and do not apply paint or adhesive to any of the surfaces, including the frame. For your safety, do not disassemble or modify the green building materials in any way. Doing so may degrade performance or cause irreparable damage and will void any applicable warranties.

If it is necessary to store green building materials prior to installation, the green building materials should remain inside the packaging and protected from exposure that could compromise the durability of the packaging.

Fire

Gain Solar green building materials have a fire resistance rating in accordance with the IEC 61730-2 certification, while the materials of green building materials please refer to the test report and CDF document. When green building materials are mounted on the rooftops, the roof must have a fire resistant covering suitable for application, green building materials are electrical generating devices that may affect the fire safety of a building.

The use of improper installation methods and/or defective parts may result in the Unexpected occurrence of an electrical arc during operation. In order to mitigate the risk of Fire in this event, green building materials should not be installed near flammable liquids, gases or locations with hazardous materials .In the event of a fire, green building materials may continue to produce a dangerous voltage, even if they have been disconnected from the inverter, partly or entirely destroyed, or the system wiring has been compromised or destroyed.

In the event of fire, inform the fire crew about the particular hazards from the PV system, And stay away from all elements of the PV system during and after a fire until the necessary steps have been taken to make the PV system safe.

APPLICATION INFORMATION

Application Restrictions

Gain Solar green building materials must be mounted on appropriate structures, positioned on buildings, the ground, or other places suitable for green building materials (e.g. carports, building facades or PV trackers). green building materials must not be mounted on moving vehicles of any kind. Gain Solar green building materials must not be installed in locations where they could be submerged in water. Gain Solar green building materials must not be sited in locations where aggressive substances, such as salt or salt-water, or any other type of corrosive agent, could affect the safety and / or performance of the green building materials .Artificially concentrated light must not be directed on the front and rear surfaces of green building materials.

Design Recommendations

Gain Solar recommends that green building materials shall be mounted at a minimum tilt angle of 0-90 degrees to allow for proper self-cleaning from normal rain showers. green building materials are recommended to be installed at an optimized tilt angle to maximize the energy output. It is roughly equal to the latitude of the project site as a rule of thumb, facing the equator. But always to design based on local situations to find out the optimum one. Partial or Complete shading of a green building materials or modules can significantly reduce system performance. Gain Solar recommends minimizing the amount of shade throughout the year to increase the amount of energy produced by the green building materials. Lightning protection is recommended for PV systems that are to be installed in locations with high probability of lightning strikes.

High system voltages could be induced in the event of an indirect lightning strike, which could cause damage to PV system components. The open area of wire loops should be minimized (see Figure 5), in order to reduce the risk of lightning induced voltage

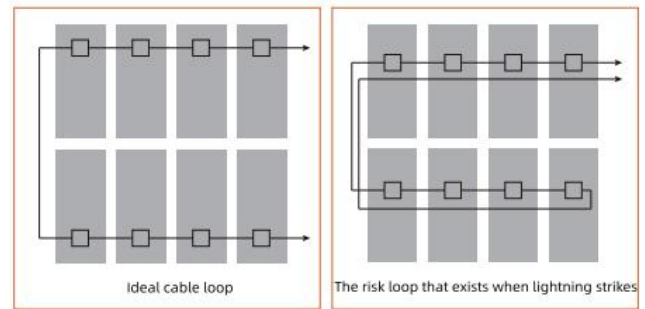


Figure 5: Wire loop design recommendation
Storage environment

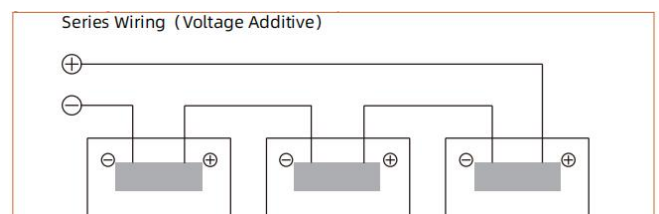
Strict attention must be paid to the storage environment and other conditions of the green building materials before installation, especially in the following area:

- High sea salt environment and near the ocean;
- Areas with high winds or typhoons, hurricanes, tropical storms, tornado zones;
- High earthquake-prone areas;
- Areas with frequent lightning strikes;
- Areas prone to fire;
- Vibration (such as high-speed railway, near railway road) area.

ELECTRICAL INSTALLATION

Electrical Configuration

Under normal conditions, a green building materials is likely to experience conditions that produce more current and/or voltage than reported at Standard Test Conditions (Irradiance: 1000 W/m² , 25° C cell temperature and AM 1.5). The short-circuit current (ISC) should be multiplied by a factor of 1.25 based on the highest ambient temperature recorded, and the open-circuit voltage (VOC) should be multiplied by a factor of up to 1.25 based on the lowest ambient temperature recorded for the installation location when determining component voltage ratings, conductor current ratings, fuse sizes, and size of controls connected to the PV output. This maximum voltage should not be exceeded at any time and, as the voltage of the module increases, above datasheet values, at operating temperatures below 25 ° C, then these need to be taken into account when designing a PV system. Voltages are additive when green building materials are connected directly in series, and module currents are additive



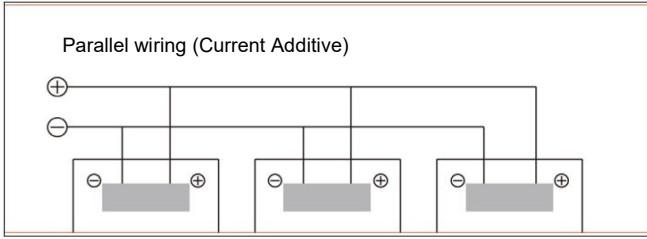


Figure 6: Electrical diagrams of series and parallel wiring

The maximum voltage of the system must be less than the maximum certified voltage and the maximum input voltage of the inverter and the other electrical devices installed in the system. To ensure that this is the case, the open circuit voltage of the array string needs to be calculated at the lowest expected ambient temperature for the location.

An appropriately rated overcurrent protection device must be used when the reverse current could exceed the value of the maximum fuse rating of the module. An overcurrent protection device is required for each series string if more than two series strings are connected in parallel.

Cables and Wiring

Gain Solar green building materials are provided with two (2) stranded, sunlight resistant output cables that are terminated with PV connectors ready for most installations. The positive (+) terminal has a female connector while the negative (-) terminal has a male connector. The module wiring is intended for series connections [i.e. female (+) to male (-) interconnections, see Figure 7], but can also be used to connect suitable third-party electrical devices that may have alternative wiring configurations so long as the manufacturer's instructions are followed. Use field wiring with suitable cross-sectional areas that are approved for use at the maximum short-circuit current of the green building materials. Gain Solar recommends to use only sunlight Resistant waterproof cables qualified for direct current (DC) wiring in PV systems. The minimum wire size should be 4 mm².

Table 1: Required minimum field wiring specifications

Testing standard	Required minimum field wiring	Wire size (mm ²)	Temperature rating (°C)
	EN 50618	4mm ²	-40°C至90°C

Cables should be fixed to the mounting structure in such a way that mechanical damage of the cable and/or the module is avoided. Do not apply stress to the cables, the minimum cable being radius should be 40 mm. For fixing, use appropriate means, such as sunlight resistant cable ties and/ or wire management clips specifically designed to attach to the mounting structure. While the cables are sunlight resistant and waterproof, where possible, avoid direct sunlight exposure and water.

Connectors

Keep connectors dry and clean, and ensure that connector caps are hand tight before connecting the modules. Do not attempt making an electrical connection with wet, soiled or otherwise faulty connectors. Avoid sunlight exposure and water immersion of



the connectors. Avoid connectors resting on the ground or roof surface. Faulty connection can result in arcs and electrical shock. Check that all electrical connections are securely fastened.

Make sure that all locking connectors are fully engaged and locked. Modules must not be interconnected using connectors from different manufacturers and/or of different types. If Modules having such different connectors need to be interconnected, a qualified professional may replace connectors according to the manufacturer's specified in instructions such that an interconnection can be made with connectors from the same manufacturer and the same type.

• Please refer to Attachment 1 for details.

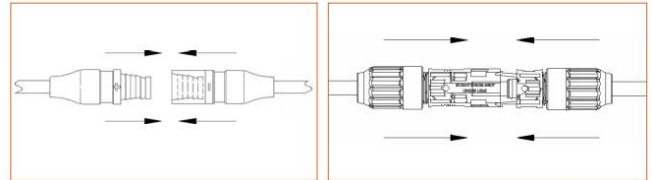


Figure 7: Connector of the plugs

Bypass Diodes

The junction boxes used with Gain Solar green building materials contain bypass diodes wired in parallel with the PV cell strings. In the case of partial shading, the diodes bypass the current generated by the non-shaded cells, thereby limiting module heating and performance losses. Bypass diodes are not overcurrent protection devices.

Bypass diodes divert current from the cell strings in the event of partial shading. See Figure 8 for a diagram showing how the cell strings are electrically connected with the diodes.

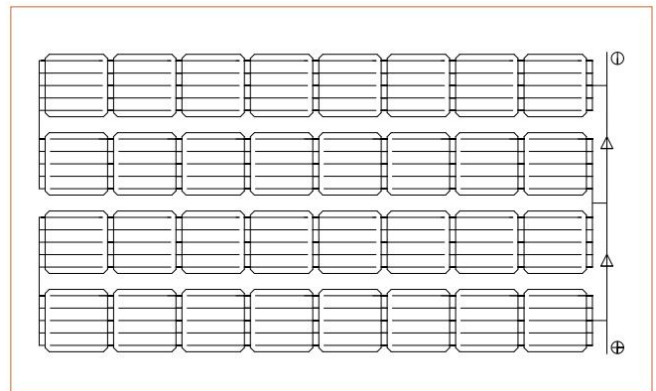


Figure 8: Electrical circuitry of cells and bypass diodes

In the event of a known or suspected diode failure, installers or maintenance providers should contact the company which the GG modules were purchased from. Never attempt to open the junction box of a Gain Solar green building materials yourself.

EQUIPMENT GROUNDING AND LIGHTNING PROTECTION

Equipment grounding and lightning protection. The green building materials product frame should be reliably grounded. The frame and supporting structure should be well combined, and the contact resistance between should not be greater than 4Ω. The connection between the photovoltaic grounding system and the building grounding device should be reliable. The

connection of green building materials, supporting structures, cable metal armor and roof metal grounding grid should be reliable. The grounding resistance value of the grounding device shared by the green building material square array and the lightning protection system should be within the range specified in the design. The function of overvoltage protection device between the monitoring, control system, power conditioning equipment grounding wire and lightning protection system of the square array of green building materials should be Effective and the grounding resistance should be within the range specified in the design. The green building materials phalanx lightning protection device should be effective and should be inspected in time before the arrival of the thunderstorm and after the thunderstorm.

MECHANICAL INSTALLATION

Never steps on the green building materials or puts heavy objects on it to avoid microcracks of the cells.

Mounting structures and other mechanical parts must be designed and approved to withstand the design wind and snow loads apply for a particular site.

For the Australian Market, Building Integrated PV Module installations must comply with the requirements of the National Construction Code and AS/NZS 5033.

INSTALLATION

• Product for Mounting method

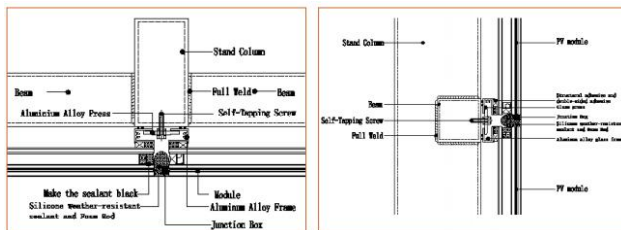
Product	Size/type	Quantity
Stainless steel bolt	M6X80/M6X24	24
clamp	length≥50mm, thickness≥3mm	14

Design load /Safety factors: 3600pa/1.5(downward) ,1600pa/1.5(upward)

Fully hidden frame installation



After the green building materials are installed using the fully hidden frame installation method, weather-resistant glue is applied to the glue seam to cover the junction box, and the surface of the glue layer is flat. The hidden frame installation method is widely used in buildings and curtain walls.



Corss section view

Side section view

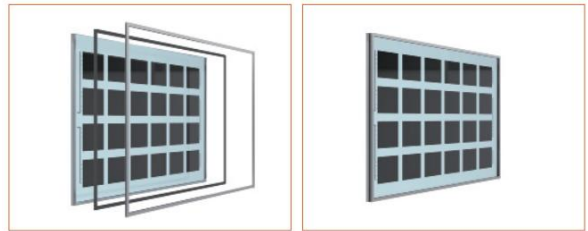
1.Installation accessories

Type	Material
Chemical bolt	Vinyl resin
Hot dip galvanized buried plate	Galvanized steel
Main keel	Galvanized steel/aluminum alloy 6063 T5
Secondary keel	Galvanized steel/aluminum alloy 6063 T5
Aluminum alloy with frame	Aluminum alloy 6063 T5
Aluminum alloy briquette	Aluminum alloy 6063 T5
Self-tapping steel nails	stainless steel
Double-sided tape	Polyurethane
Silicone structural adhesive	Hydroxyl-terminated polydimethylsiloxane

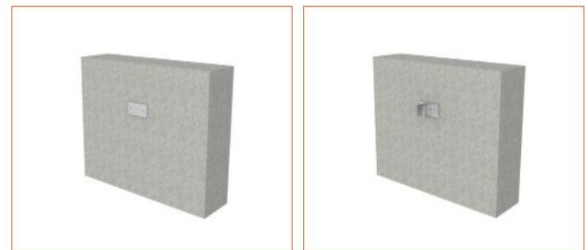
2.Installation steps

(1) Wipe clean the surface of the green building material product with alcohol according to the requirements, cut the aluminum alloy sub-frame and double-sided tape to

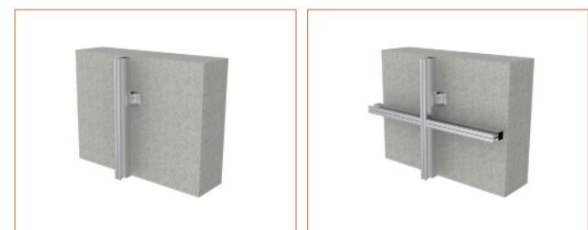
Fit it on the inside of the green building material product as required and evenly fill the space between the sub-frame and the glass with structural glue, Placed in suitable temperature and humidity conditions for curing to meet the minimum curing time requirements.



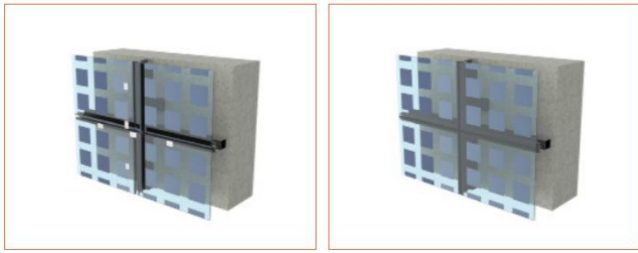
(2) Measure the line to determine the position, embed chemical bolts, and install hot-dip galvanized buried plates.



(3) Fix the upright column and the buried plate with the adapter, and then connect the beam and upright column.



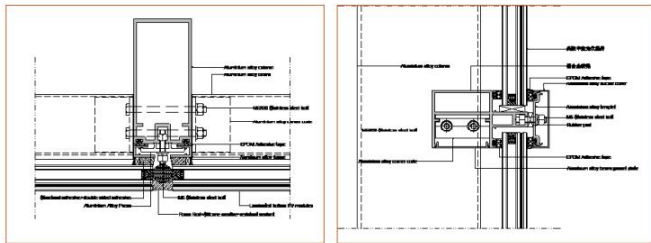
(4) Place the green building materials on the keel and fasten the connection with pressure blocks. Fix adjacent green building materials in turn, and finally clean and glue.



semi-concealed frame



The installation methods of the semi-concealed frame of green building materials products are divided into two installation methods: horizontally exposed and vertical hidden and vertical exposed and horizontally hidden. Here, the horizontally exposed and vertical hidden installation methods are used as an example for illustration. The vertical and horizontally hidden installation steps are the same as those for horizontally exposed and vertical hidden. Only change the installation direction of the sealant and buckle cover.



Corss section view

Side section view

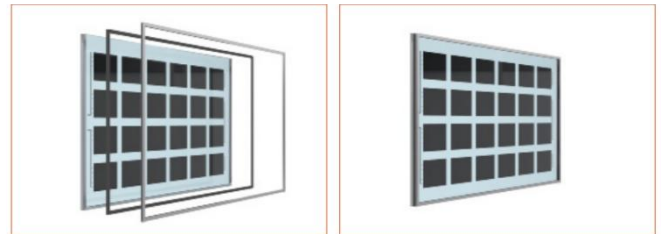
1.Installation accessories

Type	Material
Chemical bolt	Vinyl resin
Hot dip galvanized buried plate	Galvanized steel
Main keel	Galvanized steel/aluminum alloy 6063 T5
Secondary keel	Galvanized steel/aluminum alloy 6063 T5
Aluminum alloy with frame	Aluminum alloy 6063 T5
Aluminum alloy briquette	Aluminum alloy 6063 T5

Type	Material
Aluminum alloy buckle cover	Aluminum alloy 6063 T5
Aluminum alloy plate	Aluminum alloy 6063 T5
Self-tapping steel nails	stainless steel
Double-sided tape	Polyurethane
Silicone structural adhesive	Hydroxyl-terminated polydimethyl siloxane

2.Installation steps

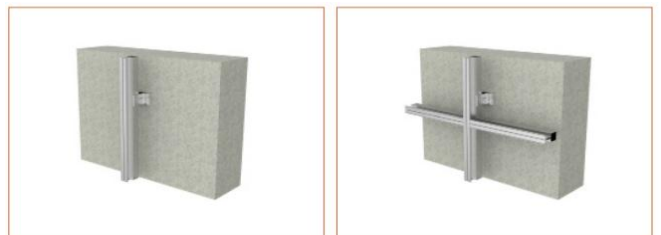
(1) Wipe clean the surface of the green building material product with alcohol according to the requirements, cut the aluminum alloy sub-frame and double-sided tape to Fix it on the inside of the green building material produce as required, and evently fill the space between the sub-frame and the glass with structural glue , Placed in suitable temperature and humidity conditions for curing to meet the minimum curing time requirements.



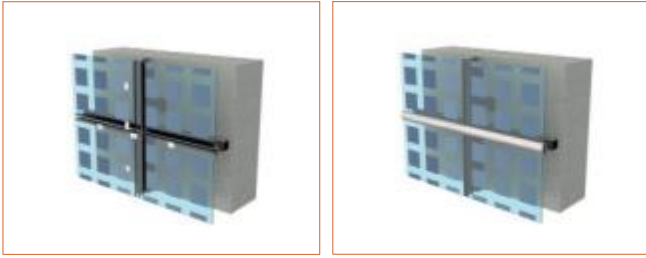
(2) Measure the line to determine the position, embed chemical bolts, and install hot-dip galvanized buried plates.



(3) Fix the upright column and the buried plate with the adapter, and then connect the beam and upright column.



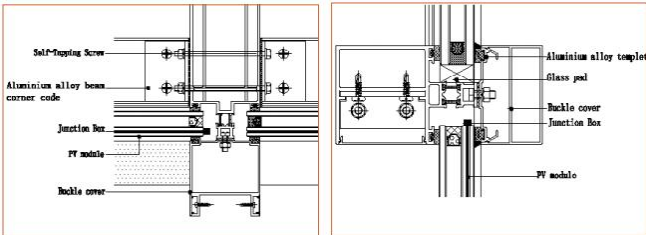
(4) Place the green building materials on the keel and fasten the connection with pressure blocks. Fix the adjacent green building materials, products in turn ,and finally complete the vertical sealing of the sealant, install the buckle cover with bolts horizontally and fasten it (vertical and horizontal are opposite, horizontally glue, and vertically install the buckle cover).



Frame installation



After the green building materials are installed using the open frame installation method, from the indoor view, the four-sided aluminum frame and the green building materials can be seen in size and the outline is clear.



Corss section view

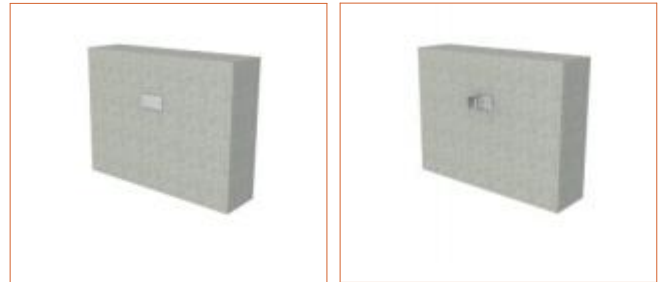
Side section view

1.Installation accessories

Type	Material
Chemical bolt	Vinyl resin
Hot dip galvanized buried plate	Galvanized steel
Structural support	Galvanized steel/aluminum alloy 6063 T5/T6
Substructure bracket	Galvanized steel/aluminum alloy 6063 T5/T6
Aluminum alloy buckle cover	Aluminum alloy 6063 T5
Aluminum alloy plate	Aluminum alloy 6063 T5
Stainless steel bolt	304/316
Silicone structural adhesive	Hydroxyl-terminated polydimethylsiloxane
Rubber pad	EPDM

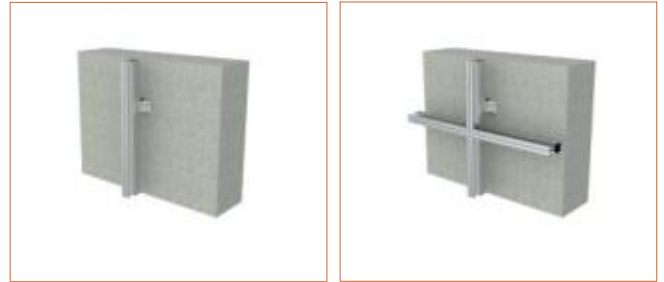
2. Installation steps

Measure and set the line to determine the position, embed chemical bolts, and install hot-dip galvanized buried plates.



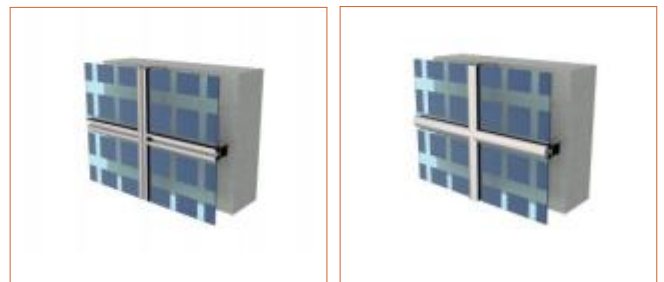
(2) Fix the upright column and the buried plate with the adapter, and then

connect the beam and the upright column.



(3) Install green building materials, fasten the aluminum alloy pressing

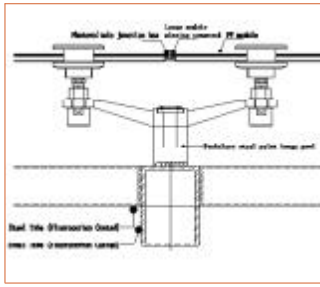
plate with stainless steel bolts, and install the aluminum alloy decorative buckle cover.



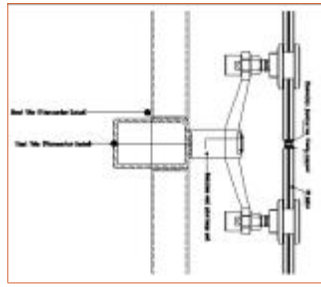
Point installation



Green building materials products adopt the claw installation method, and the installation structure is simple, which ensures the aesthetics of the building.



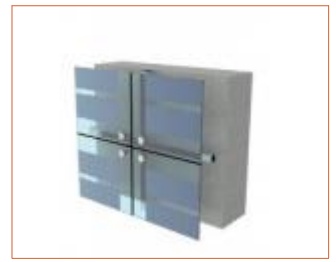
Corss section view



Side section view



Installation effect drawing of connecting parts



PV Module installation renderings

1. Material list

Type	Material
Chemical bolt	Vinyl resin
Hot dip galvanized buried plate	Galvanized steel
Structural support	Fluorocarbon sprayed steel
Adapter	304 stainless steel/316
Silicone structural adhesive	Hydroxyl-terminated polydimethylsiloxane

2. Installation steps

(1) Measure the line to determine the position, prefabricate the foundation, and install the main column.



(2) Connect and fix the main keel and secondary keel with the structural parts as required.



(3) Weld the adapter to the keel, then install the connection claw, adjust the position, and install the connection and panel.

MAINTENANCE

Gain Solar recommends that green building materials systems be periodically inspected by the installer or other qualified person.

The purpose of the PV system inspection is to ensure that all system components are functioning properly. At a minimum, this inspection should confirm the following:

- All cables and connector attachments are undamaged and properly secured ;
- No sharp objects are in contact with the green building materials surfaces ;
- green building materials are not shaded by unwanted obstacles and/or foreign material ;
- Mounting and grounding components are tightly secured with no corrosion Defects should be addressed immediately.

CLEANING

Over time, dirt and dust can accumulate on the glass surface of the module, reducing its power output. Gain Solar recommends periodic cleaning of GG modules to ensure maximum power output, especially in regions with low precipitation.

In order to reduce the potential for electrical and thermal shock, Gain Solar recommends cleaning green building materials during early morning or late afternoon hours when solar radiation is low and the modules are cooler, especially in regions with hotter temperatures.

Never attempts to clean a green building materials with broken glass or other signs of exposed wiring, as this presents a shock hazard.

Clean the glass surface of the green building materials with a soft brush using soft, clean water with a recommended pressure less than 690 kPa, which is typical of most municipal water systems. Water with high mineral content may leave deposits on the glass surface and is not recommended. Gain Solar green building materials may contain a hydrophilic antireflective coating on the glass surface to enhance power output and reduce dirt and dust buildup. In order to avoid module damage, do not clean green building materials with a power washer or pressure washer. Do not use steam or corrosive chemicals to facilitate the cleaning of modules. Do not use aggressive tools or abrasive materials that could scratch or damage the glass surface. Failure to comply with these requirements may adversely affect the green building materials performance. Gain Solar green building materials are designed to withstand high snow loads. However, if removing snow is desired to enhance production, use a brush to gently remove snow. Do not try to remove frozen snow or ice from green building materials.

Australian Certification - Component Certification and Lightning Protection Practice Notes

PV module string description

Considering the influence of the temperature coefficient of the solar cell module, as the temperature of the solar cell module increases, the open circuit voltage decreases; on the contrary, the open circuit voltage increases with the decrease of the module temperature. In order to ensure the normal and continuous operation of the inverter under local extreme low temperature conditions, the lowest local ambient temperature should be considered when calculating the series voltage of battery panels, and the number of batteries connected in series and the DC series voltage should be obtained. (Ensure the tracking range of the inverter to the maximum power point MPPT of the solar cell.)

Calculation formula: $INT(V_{dcm}/V_{mp}) \leq N \leq INT(V_{dcm}/V_{oc})$

V_{dcm} -Inverter input DC side maximum voltage ; V_{dcm} -Inverter input DC side minimum voltage; V_o -Battery pack open circuit voltage; V_{mp} -Best working voltage of battery pack ; N -Number of battery packs in series. Considering the influence of the correction coefficient of the operating temperature of the solar cell components, the calculation results of the maximum output voltage (V_{max}) and the minimum output voltage (V_{min}) of the square array solar cell string are as follows: $V_{max} = \text{Number of components} \times (\text{Component open circuit voltage} + \text{Component open circuit voltage} \times \text{Open circuit voltage temperature coefficient} \times (25 + 10)) = \text{open circuit voltage} (\text{Conditions: irradiance intensity } 1000\text{W/m}^2, \text{ component operating temperature } -10^\circ\text{C})$ $V_{min} = \text{Number of components} \times (\text{Component open circuit voltage} + \text{Component open circuit voltage} \times 0.0032 \times (25 - 50)) = \text{open circuit voltage} (\text{Conditions: irradiance intensity } 1000\text{W/m}^2, \text{ component operating temperature } 50^\circ\text{C})$.

Component Specifications	power (W)	String quantity(piece)	Recommended number of strings(piece)	Protection Class
JS35DG-5e-2 1/2	35	95~125	105	Class II
JS60DG-9e-2 1/2	60	52~68	58	
JS90DG-13e-2 1/2	90	36~47	40	
JS380DG-30e 1/2	380	17~23	19	

Description of Lightning Protection for Photovoltaic Group Curtain Wall

The lightning protection design of the photovoltaic curtain wall module system should be a part of the electrical lightning protection design of the building, and its lightning protection level should be consistent with the lightning protection level of the building. The lightning protection design shall comply with the provisions of the current national standard "Code for Lightning Protection Design of Buildings" GB50057.

The lightning protection and grounding of the photovoltaic curtain wall system of a new building should be designed in a unified manner with the lightning protection and grounding system of the building. When adding photovoltaic glass curtain walls to existing buildings, the original lightning protection and grounding design of the building should be verified, and construction should be carried out if the design requirements are not met.

Photovoltaic curtain wall systems should be installed with overvoltage protection, and should meet the following requirements:

1. A DC surge protector should be installed at the output end of the photovoltaic combiner box, including the positive pole to ground, the negative pole to ground, and the positive and negative poles;

2. When the length of the DC cable between the photovoltaic combiner box and the inverter is greater than 50m, a second-stage DC surge protector should be installed at the output end of the DC power distribution cabinet or the DC input end of the inverter; the cable should be installed in a metal slot box Or in metal conduits or when metal armored cables are used, the second-level DC surge protector may not be installed;

3. The effective protection level of the DC surge protector should be lower than the surge voltage rating of the protected equipment;

4. The maximum continuous working voltage of the DC surge protector should be greater than 1.2 times the open circuit voltage under the standard test conditions of the photovoltaic string.

The grounding design of the photovoltaic curtain wall system should comply with the current industry standard "Code for Electrical Design of Civil Buildings" JGJ16, and should meet the following requirements:

1. The exposed conductive parts of the photovoltaic curtain wall system and the metal casing of the equipment should be reliably equipotentially bonded, and should share the same grounding grid with the grounding system of the building where they are located;

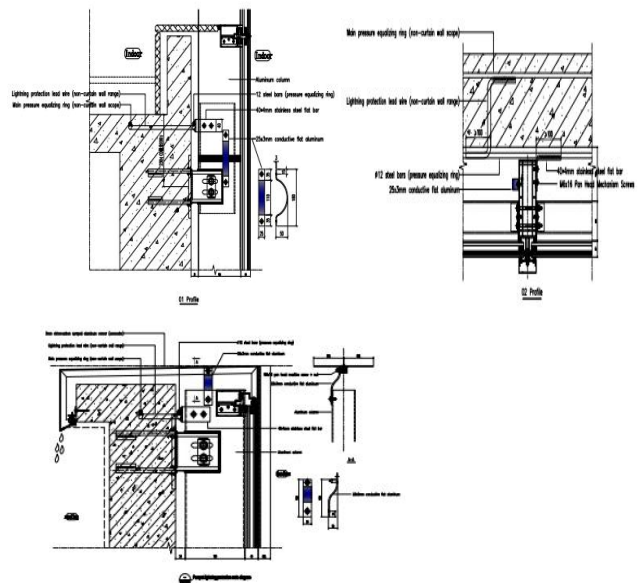
2. The metal frame of the photovoltaic glass curtain wall component should be reliably connected to the grounding of the main structure at multiple points through the metal frame of the photovoltaic glass curtain wall, and the non-conductive protective layer should be removed at the connection part;

3. When removing any photovoltaic glass curtain wall components, the continuity of the grounding should be ensured;

4. When the lightning protection grounding, working grounding, and safety protection grounding of the photovoltaic curtain wall system share a set of grounding devices, the grounding resistance value of the grounding device should be determined according to the minimum value required in the access equipment;

5. When there are multiple inverters at the same grid connection point, the protective grounding conductors of all inverters should be connected to the same grounding busbar;


The grounding form of the AC power distribution of the photovoltaic curtain wall system should be consistent with the grounding form of the building power distribution system.



Annex 1 : Connector Information

Connectors1	Type1	YT08-1A
	Type2	18-01
	Production	Baoding Yitong PV Science & Technology Co., Ltd.
Connectors2	Type1	PV-KST4-EVO 2/xy UR (male)
	Type2	PV-KBT4-EVO 2/xy UR (female)
	Production	Staubli Electrical ConnectorsAG

Annex 2 : Product Electrical Data

Module type	JS35DG-5e-2 1/2	JS60DG-9e-2 1/2	JS90DG-13e-2 1/2	JS380DG-30e 1/2
rated power[W]	35	60	90	380
rated voltage[V]	5.77	10.38	14.9	31.8
rated current[A]	6.07	5.78	6	11.94
open-circuit voltage[V]	7.83	14.1	20.37	40.49
short-circuit current[A]	6.54	6.23	6.47	12.97
max.system voltage[V]	1500	1500	1500	1500
Design load [Pa]	3600(downward) / 1600 (upward)			
Safety factors	1.5 (downward) / 1.5 (upward)			
fire resistance class	ClassA			
Protection Class	Class II			
HAIL	Φ25mm/23m/s			
NOCT(°C)	45±2			
α [%/°C]	0.05			
β [%/°C]	-0.3			
Γ [%/°C]	-0.36			
Maximum.series Fuse[A]	20A			
Test report no.	50127977-005			
Certificate No.	PV 50589594			
IEC 61215-1:2016, IEC 61215-1-1:2016, IEC 61215-2:2016, IEC 61730-1:2016, IEC 61730-2:2016				
 <div style="display: inline-block; vertical-align: middle; font-size: 8px;"> IEC 61215 IEC 61730 Regular Production Surveillance www.tuv.com ID 1419058381 </div>				

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