



Installation Manual

V.2506

List of Applicable Modules

	HY-NT10/54H HY-NT10/54BH
	HY-NT10/60H
	HY-NT10/72H
	HY-P10/54H HY-P10/54BH
	HY-P10/60H
	HY-P10/72H
	HY-NT11/48H HY-NT11/48BH
	HY-NT11/54H HY-NT11/54BH
	HY-NT11/60H
	HY-NT11/66H
	HY-NT12/60H
	HY-NT12/66H
	HY-P12/60H
	HY-P12/66H
	HY-NT10/54GDF HY-NT10/54BGDF
	HY-NT10/60GDF HY-NT10/60BGDF
	HY-NT10/72GDF
	HY-NT10/78GDF
	HY-P10/54GDF
	HY-P10/60GDF
	HY-P10/72GDF
	HY-NT11/48GDF HY-NT11/48BGDF
	HY-NT11/54GDF HY-NT11/54BGDF
	HY-NT11/60GDF
	HY-NT11/66GDF
	HY-NT11/78GDF
	HY-NT12/60GDF
	HY-NT12/66GDF
	HY-P12/60GDF
	HY-P12/66GDF



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- Prior to installation, please contact the relevant local authority to determine the installation license and installation inspection requirements that meet local requirements. The installation shall follow the safety rules applicable to all

etc.

age.

outer box from being got wet by rain.

- If PV modules are installed or operated on rainy days or in the morning with dew, appropriate protection is required to avoid moisture penetration into the connectors.
- Unauthorized access to the installation area or PV module storage area is prohibited.
- Installation or use of damaged PV modules is prohibited.

- The PV module is prohibited to be used in the environment containing or in contact with the following substances:

ules.

- It is forbidden to install the PV module in windy weather
- It is forbidden to irradiate the PV module with focused sunlight.

- Do not connect or disconnect PV module when there is current or external current in the PV module.

caused.

take other measures to prevent sand from entering the connector, otherwise it may cause plugging problems or electrical safety hazards.

- After the module is installed on the rack, it is recommended to interconnect the connector on the same day to pre-

section of not less than 4mm² shall be used as the PV connection line.

shall be in strict accordance with the stacking requirements.

damage, it is forbidden to apply excessive load on the PV module or twist the PV module.

plane, be careful and pay attention to the collision of edges and corners.

or please wear a safety belt if installing far above the ground.

- Please use insulated tools, wear rubber gloves and protective clothing when operating the PV module in the sun.

- Avoid direct exposure of cables and connectors to sunlight. Use UV resistant cables.
- Please do not disconnect the electrical connection under load.
- It is forbidden to attempt to disassemble the PV module, remove the nameplate of the PV module or other components on the PV module.

- It is forbidden to drill holes in the PV module frame.

- If the PV module glass or other encapsulated material is damaged, please wear personal protective equipment to

If the PV module is not used for the time being, please do not open the protected from light.

shall be installed within the same day. Since the PV modules are stacked on the ground after unpacked, the PV modules may be immersed in water for

the reliability of the product. In case of severe weather such as typhoon, the uninstalled PV modules may also be blown away.



protect the packing from damage.

The safety of the PV module shall be protected during unloading, especially during the hoisting of roof to avoid collision with the wall during hoisting.

Precautions for unloading by crane are as follows:

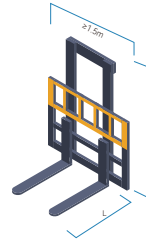
Precautions for forklift truck unloading are as follows:

2. Select the forklift truck with proper tonnage. The distance between the forklift truck and the pallet shall be close to the foot piers on both sides of the pallet as much as possible.

3. Put cushion materials such as EPE or rubber cushion in front of the forklift truck mast. It is strictly forbidden for the forklift to directly contact the module package to prevent the modules from being broken due to external force impact.

In addition, it is recommended to reverse the vehicle and arrange personnel to observe the unloading process.

Schematic Diagram of Forklift Unloading



Materials such as EPE or rubber cushion shall be placed in front of the forklift truck mast.

⚠

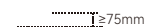
Due to the limitation of the container height, when the PV module is moved out of the container, the forklift truck shall be positioned in front of the container. When the PV module products are unloaded, the modules in the front row can be lifted and unloaded in turn.

!

Precautions for packaging turnover are as follows:

When the whole pallet of module leans against the mast, the mast shall not be deformed due to the pressure. Two safety devices shall be installed on both sides of the front end of the forklift.

Schematic Diagram of Forklift Turnover



Schematic Diagram for Height Requirement of Turnover Forks of Hydraulic Forklift Truck



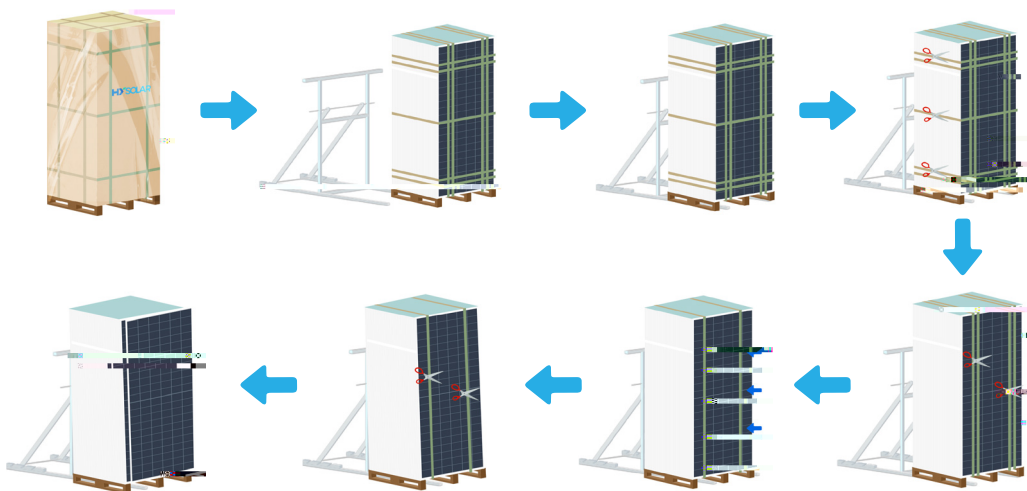
working, and insulating gloves shall be worn during handling.

more than 14 pieces of modules on a single pallet.

gloves, etc.



with module thickness at a time, and then take out the modules one by one in sequence.





steel tiles, or metal corrugations, etc.

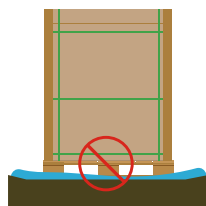
The PV modules shall be stacked on the horizontal plane in an orderly and stable manner. The piece of module at the bottom shall be stacked with the glass upside and the rest shall be stacked with the glass downside. At the same time, cardboard shall be laid under the PV modules. The stacking quantity is recommended to be no more than 14 pieces.

ments of system design, the same current grade is generally required in the same array during installation.

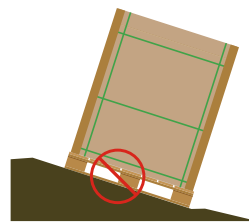
If the customer requires the PV modules to be distinguished by color, the outer packing box has been marked accordingly, and the PV modules shall be marked to avoid confusion when they are taken out of the packing box and stacked. According to the requirements of system design, the colors of PV modules in the same row or in the same matrix shall be consistent.

It is forbidden to store modules in soft geological conditions or where there is ponding, and it is forbidden to place modules on slopes $> 4^\circ$.

If the modules need to be stored for a long time, it is recommended to store them in a standard warehouse, check them regularly, and reinforce the abnormal inclined packages in the warehouse in time.



soft and there is ponding.



It is forbidden to stack on the slope $> 4^\circ$.



installation method and mechanical load value of PV module, please refer to 5.3 Detailed Installation Instructions for

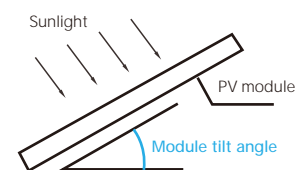
- It is forbidden to install and use PV modules in extreme environments such as hail, snow, hurricane, sandstorm, smoke, air pollution and soot. It is forbidden to install and use the PV module in the environment with strong corro-



shown in the Figure. The maximum power output is obtained when the PV module is directly facing the sun.

PV module.

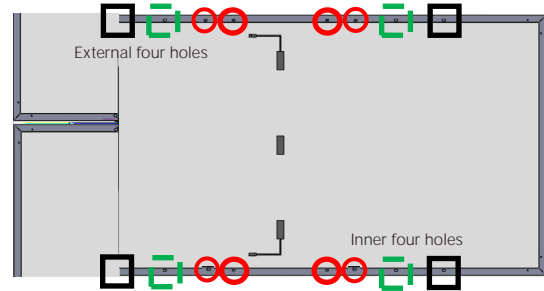
- The PV modules connected in series shall be installed in the same orientation and
tion received by each module, resulting in a loss of power.



- Schematic Diagram of Installation



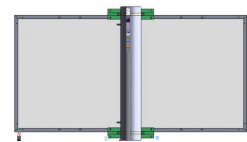
- The PV module mounting rack must be made of durable, corrosion-resistant and ultraviolet-resistant materials, and
- The PV module must be securely fastened to the mounting rack. If the PV module is installed in snowy areas, the height of the rack shall ensure that the lowest point of the PV module will not be covered by snow. In addition, ensure that the lowest point of the PV module is not shadowed by surrounding trees or other vegetation.



with a minimum thickness of 2mm and an outer diameter

Installation of single-axis tracking system:

ers, one spring washer and nut are usually adopted to

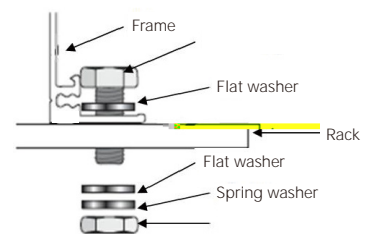


Schematic Diagram of Installation of

tion of accessories and installation of modules shall be completed by professional installer. The load of the material and design of rack manufacturer.

For maximum safety protection against wind and snow loads, it is recommended that all available mounting

installation steps are as follows:



and is screwed on a stainless steel spring washer or toothed lock washer. Finally, lock with stainless steel nut, square nut is recommended

<p>Installation mode A: installation of single-axis tracking system</p>	<p>the beam perpendicular to the long frame</p>

Product type	A		Inner four holes	External four holes
HY-NT1 54H	---	---	36 16	---
HY-NT1 54	---	---	36 16	---
HY-P1 54H	---	---	36 16	---
HY-P1 54	---	---	36 16	---
HY-NT1 6 H	---	---	36 16	---
HY-P1 6 H	---	---	36 16	---
HY-NT1 7	16 1266	---	---	36 16
HY-NT1 7	---	16 16	---	36 16
HY-P1 72H	16 1266	---	---	36 16
HY-P1 72H	---	16 16	---	36 16
HY-NT12 H	1266	16 16	---	36 16
HY-NT12 66H	1266	16 16	---	36 16
HY-NT11 4 H	---	---	---	36 16
HY-NT11 4 H	---	---	---	36 16
HY-NT11 54H	---	---	---	36 16
HY-NT11 54	---	---	---	36 16
HY-NT11 6 H	---	16 16	---	36 16
HY-NT11 66H	---	16 16	---	36 16

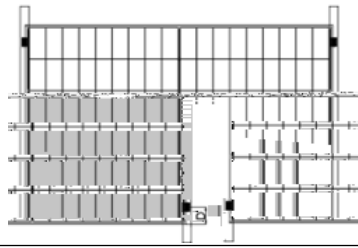
Product type			Inner four holes	External four holes
HY-NT10/54GDF	---	---	3600/1600	---
HY-NT10/54BGDF	---	---	3600/1600	---
HY-P10/54GDF	---	---	3600/1600	---
HY-NT10/60GDF	---	---	3600/1600	---
HY-P10/60GDF	---	---	3600/1600	---
HY-NT10/72GDF	1200/1200	1600/1600*	---	3600/1600
HY-P10/72GDF	1200/1200	1600/1600*	---	3600/1600
HY-NT10/78GDF(35H)	---	---	---	3600/1600
HY-NT10/78GDF(30H)	---	1600/1600*	3600/1600	2400/1600
HY-NT12/60GDF(35H)	1466/1466	---	---	3600/1600
HY-NT12/60GDF(33H)	1333/1333	1866/1600*	---	3600/1600
HY-NT12/66GDF (35H)	1466/1466	---	---	3600/1600
HY-NT12/66GDF(33H)	1333/1333	1866/1600*	---	3600/1600
HY-NT11/48GDF	---	---	---	3600/1600
HY-NT11/48BGDF	---	---	---	3600/1600
HY-NT11/54GDF	---	---	---	3600/1600
HY-NT11/54BGDF	---	---	---	3600/1600
HY-NT11/60GDF	* 1066	1600/1600*	---	3600/1600
HY-NT11/66GDF	* 1066	1600/1600*	---	3600/1600
HY-NT11/78GDF	---	---	3600/1600	3600/1600
HY-NT10/54GDF (188)	---	---	3600/1600	
HY-NT10/54BGDF (188)	---	---	3600/1600	
HY-NT10/60GDF (188)	---	---	3600/1600	
HY-NT10/60BGDF (188)	---	---	3600/1600	

the allowable installation range.

Product type		
HY-P1 54H	316 D 416	36 16
HY-P1 54 H	316 D 416	36 16
HY-NT1 54H	316 D 416	36 16
HY-NT1 54	316 D 416	36 16
HY-P1 6 H	335 D 435	36 16
HY-NT1 6 H	335 D 435	36 16
HY-P1 72H	D 5	36 16
HY-NT1 72H	D 5	36 16
HY-NT12 H	5 D 4 5	36 16
HY-NT12 66H	45 D 55	36 16
HY-NT11 4 H	316 D 416	36 16
HY-NT11 4 H	316 D 416	36 16
HY-NT11 54H	345 D 445	36 16
HY-NT11 54	345 D 445	36 16
HY-NT11 6 H	5 D 4 5	36 16
HY-NT11 66H	475 D 525	36 16

Product type		
HY-P10/54GDF	$316 \leq D \leq 416$	3600/1600
HY-P10/54BGDF	$316 \leq D \leq 416$	3600/1600
HY-NT10/54GDF	$316 \leq D \leq 416$	3600/1600
HY-NT10/54BGDF	$316 \leq D \leq 416$	3600/1600
HY-P10/60GDF	$335 \leq D \leq 435$	3600/1600
HY-NT10/60GDF	$335 \leq D \leq 435$	3600/1600
HY-P10/72GDF	$440 \leq D \leq 490$	3600/1600
HY-NT10/72GDF	$440 \leq D \leq 490$	3600/1600
HY-NT10/78GDF	$480 \leq D \leq 580$	3600/1600
HY-NT12/60GDF	$450 \leq D \leq 530$	3600/1600
HY-NT12/66GDF	$440 \leq D \leq 540$	3600/1600
HY-NT11/48GDF	$316 \leq D \leq 416$	3600/1600
HY- NT11/48BGDF	$316 \leq D \leq 416$	3600/1600
HY-NT11/54GDF	$345 \leq D \leq 445$	3600/1600
HY-NT11/54BGDF	$345 \leq D \leq 445$	3600/1600
HY-NT11/60GDF	$385 \leq D \leq 485$	3600/1600
HY-NT11/66GDF	$440 \leq D \leq 540$	3600/1600
HY-NT11/78GDF	$480 \leq D \leq 580$	3600/1600
HY-NT10/54GDF (188)	$316 \leq D \leq 416$	3600/1600
HY-NT10/54BGDF (188)	$316 \leq D \leq 416$	3600/1600
HY-NT10/60GDF (188)	$335 \leq D \leq 435$	3600/1600
HY-NT10/60BGDF (188)	$335 \leq D \leq 435$	3600/1600

a non-slip and anti-detachment design.



Product type		
HY-NT11/48GDF	$50 \leq D \leq 150$	1066/1066
HY-NT11/48BGDF	$50 \leq D \leq 150$	1066/1066
HY-NT10/54GDF (188)	$50 \leq D \leq 150$	1066/1066
HY-NT10/54BGDF (188)	$50 \leq D \leq 150$	1066/1066
HY-NT10/60GDF (188)	$50 \leq D \leq 150$	866/666
HY-NT10/60BGDF (188)	$50 \leq D \leq 150$	866/666



During installation, please do not let the clamp directly contact the glass and deform the frame, otherwise it will result in PV module damaged.

Figure 1 shows the middle mounting clamp , and Figure 2 shows the edge mounting clamp and its cross

Figure 2.

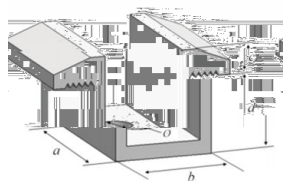


Figure 1
Schematic Diagram of Intermediate Clamp

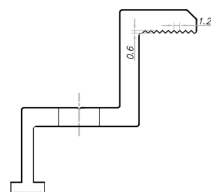


Figure 2 Schematic Diagram of
Cross Section of Edge Clamp

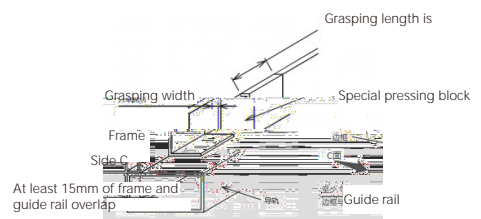


Figure 3 Requirements for Installation of Clamp



6.1 Electrical performance

formula:

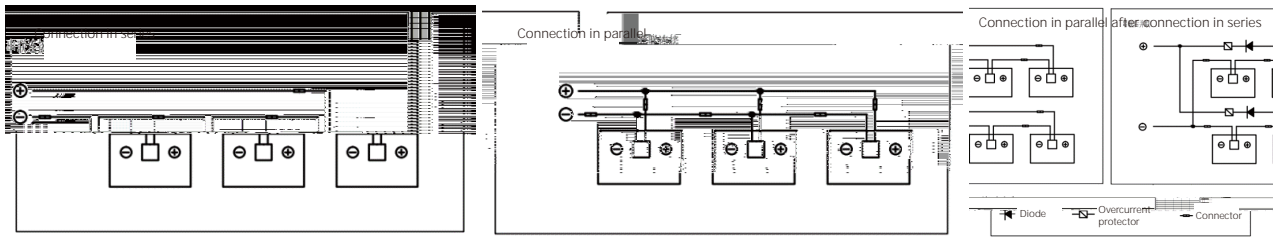
ent temperature where the system is installed.

The voltage of the string shall not be higher than the maximum voltage that the system can withstand as well as the string open-circuit voltage can be calculated by using the following formula:



According to the maximum rated fuse current of the PV module and local electrical installation standards, suitable fuses or anti-reverse diodes are required for the parallel connection of the PV module based on circuit protection principles.

ed correctly. If the PV module is not connected correctly, the bypass diode may be damaged. The Figure shows the connection of PV modules in series and in parallel. The PV module can be wired in series to increase voltage by connecting the wiring from the positive terminal of one PV module to the negative terminal of the next PV module. The PV module can be connected in parallel to increase current by connecting the wiring from the positive terminal of one PV module to the positive terminal of the next PV module.



Schematic Diagram of Electric Connection



If one group of arrays is connected to another with opposite polarity, irreparable damage to the product can

The number of PV modules connected in series and in parallel shall be reasonably designed according to the string.

Solar dedicated cables and connectors shall be used in the system, and all connections shall be securely fastened. The cable size shall be not less than 4mm age of the PV system.

cially designed binding coils and wire clamps that are resistant to ultraviolet light. Avoid direct sunlight and water soaking of cables.

connectors from direct sunlight and immersion in water. Avoid landing the connector on the ground or on the roof.

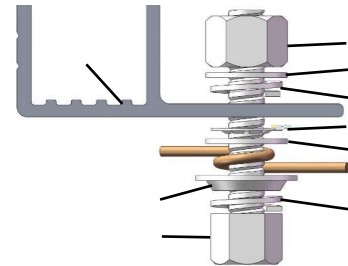
disconnect the connector, it is required to ensure that the PV module is in load condition and professional unlocking tools and safety protection measures must be used. It is forbidden to pull or damage the locking structure.

self.

In order to ensure the safety in use and avoid the PV module from being damaged by lightning and static electricity,



not drill holes in the module frame or modify the standard holes, otherwise the warranty will be invalid.



hole for installation diagram.

Modules are grounded to each other:

4mm²

modules for mutual connection to complete the safety grounding between modules.

Connection mode		Schematic diagram
<p>Place the washer and the grounding wire in sequence, use the bolt to pass through the grounding hole of the</p> <p>wire to complete the grounding of the</p>		

modules.

additional grounding holes in the frame of the PV module.

Holes marked with grounding marking on the frame can only be used for grounding, and cannot be used for PV module installation.

Do not do electrical connections between modules before grounding.

The PV modules must be checked and maintained regularly, especially during the warranty period. This is the liability
-
tive operation of the PV system.

Regularly check must be conducted to see whether the PV modules in the PV array are damaged, such as broken
functional and safety failures of PV modules. In case of the above problems, the supplier shall be informed to replace
the PV module of the same type in time.
-

Appendix A: Installation Guidelines for Offshore Photovoltaic Modules

this installation guide.

areas, including but not limited to the anti-corrosion principles for modules and related installation systems.

relevant guidelines. Failure to comply with these guidelines and other general anti-corrosion principles may result in

ment for more information.

		Requirements
	waterproof cables.	Anti-corrosion
Nearshore	Recommendation: Dual protection for connectors.	Anti-corrosion
Tidal Flat	Recommendation: Dual protection for connectors.	Anti-corrosion
Distance from Sea:	Standard double-glass product.	Standard
Distance from Sea:	Standard double-glass or conventional single-glass product.	Standard

modules must not come into contact with the highest water level during high tide.

photovoltaic system.






photovoltaic modules, strings and the coastline.

7. Do not alter the module structure, such as drilling holes in the module frame.

sulfur, strong acids, strong alkalis, and other substances that pose a corrosion risk to the products. They are also prohib-

mance is required, add cold shrink tubes to protect the connectors after installation. The connectors and cold shrink

Guidelines and Recommendations for Cold Shrink Tube Installation		
Step		Example
1	After disconnecting the photovoltaic connector, take either end and slide the cold shrink tube onto the connector in the direction shown in	

Guidelines and Recommendations for Cold Shrink Tube Installation		
Step		Example
2	Slide the cold shrink tube over the head of the connector, leaving the head exposed.	
3	Connect the positive and negative poles of the connector in the correct manner.	
4	of the cold shrink tube.	
5	Pull the inner ring strip exposed in the cold shrink tube by hand, rotating it while pulling outward until the inner ring is completely removed.	
6	The cold shrink tube has completely shrunk and sealed the connector.	
<p>Installation and Precautions for Cold Shrink Tubes:</p> <p>wrinkles or bulges allowed.</p>		

followed.

13.2 To avoid torque attenuation of module mounting bolts caused by eddy currents, wind vibration, etc., it is recommended to use anti-loosening bolts.

13.3 The coating thickness of hot-dip galvanized and anodized components must meet the minimum requirements



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