



Building Your Trust in Solar

STORAGE AND UNPACKING INSTRUCTION OF PHOTOVOLTAIC MODULES

This manual is for Jinko solar PV module storage and unpacking instructions. To ensure the safety of loading, unloading, unpacking and storage of PV modules, please read this manual carefully.

When you need to unpack and install the modules, you can search and download relevant content from Jinko's official website.

(www.jinkosolar.com)

HANDING INFORMATION

1.1 Forklift handling precautions

- In the process of loading and unloading, the forklift should be selected reasonably according to the size and weight of the goods. If the fork length is less than 3/4 of the size of the goods , extension sleeves should be fitted on the forks before the assembly is forked, in order to avoid the packing container dumping when moving the forklift ;
- When the forklift is loaded with modules, the spacing between the two forks should be adjusted as required. The load of the two forks should be balanced without deflection. One side of the assembly box should be close to the retainer (Figure1) ;



Figure 1

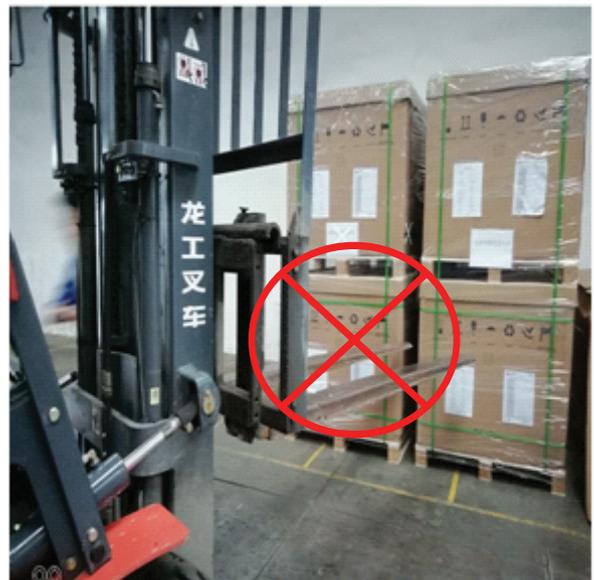


Figure 2

- Avoid sharp objects (such as forklift pallet fork) contact or collision with module box body parts, so as not to damage the internal modules(Figure 2);

HANDING INFORMATION

1.1 Forklift handling precautions

- Loading and unloading process, except forklift operator, others should be kept at a safe distance from range, ensure the safety of personnel ;
- During loading and unloading, special command is required to avoid failure and making modules down;
- When using a forklift to move palletized packing boxes to the operation area, the forklift shall be slowly and steadily lifted and put down gently during loading and unloading, and the modules shall avoid turbulence and violent vibration during transportation.

1.2 Notes for container handling

- In order to prevent the safety of placing and unpacking modules affected by tilt and uneven ground, please choose flat ground when unloading.
- When unloading on the platform or ground, steel plate pads or tooling shall be used to assist in moving the goods out of the container smoothly, to avoid module bumps caused by the gap between the platform and the container floor (Figure 3);
- It is recommended that the inclination angle between the fixture pad and the plane should be less than 5°, so as to avoid the forklift hit the top of the container due to too much inclination when it comes out of the container;
- When unloading cross-loading modules, special command is required to ensure that the forklift does not exceed the modules, and prevent damage to adjacent modules when fork is raised or placed due to excessive length of forklift arms (Figure 4);
- When unloading, the whole modules should be balanced as far as possible, the forklift arm should be kept relatively horizontal, and the forklift truck should fork the modules out of the container slowly and smoothly;



Figure 3



Figure 4

HANDLING INFORMATION

1.2 Notes for container handling

- During the fork out of the modules, it is allowed of 2~3cm spacing between modules and box walls or adjacent modules, and then move back slowly to prevent the carton from being damaged by friction between modules and box wall or adjacent pallets (Figure 5);
- When the goods go out of the container port, please slow down and lower the height of the forklift arm from the ground (it is recommended to close to the bottom plate to reserve enough space for the top), pay attention to the distance between the bottom of the goods and the top of the container, prevent the goods from colliding with the top of the container, and ensure that the whole pallet module is safely removed from the container (Figure 6);
- If the modules need to be temporarily stored after unloading, it is recommended to keep sufficient space between each pallet to avoid scratching the carton or pallet during the second transfer.



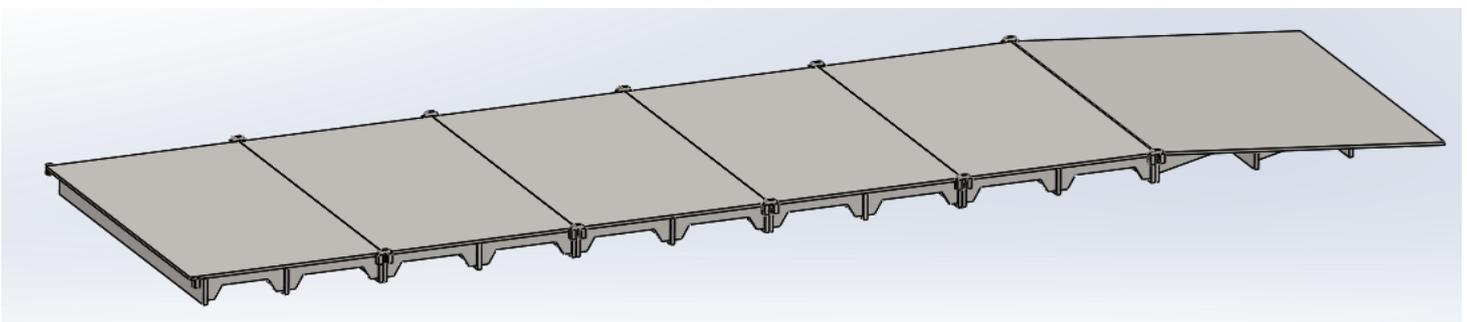
Figure 5



Figure 6

1.3 Tiger Pro container handling requirements and precautions

- Unloading Tools: Forklift/Unloading platform/Unloading pad tooling
If the container is unloaded on the unloading platform, it is required to be used with the unloading platform or tooling.



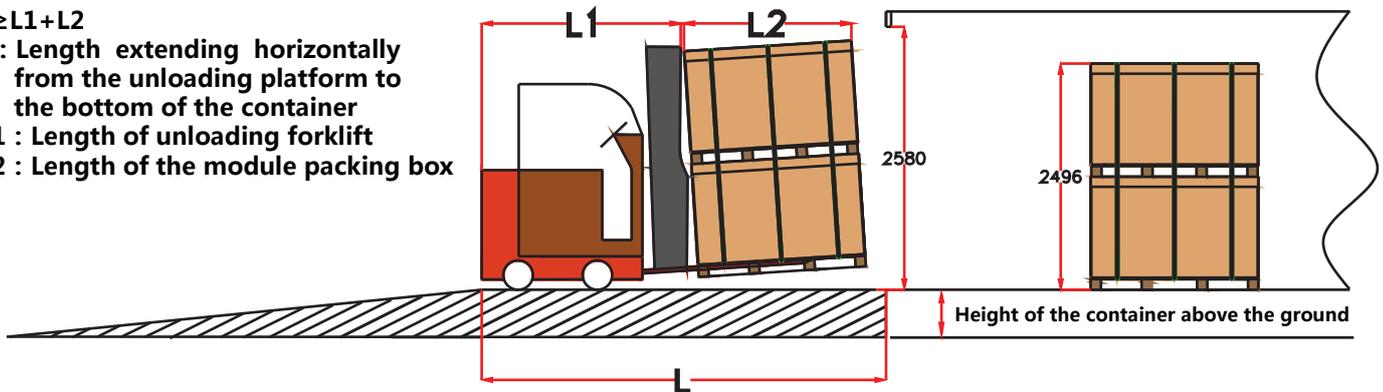
HANDING INFORMATION

1.3 Tiger Pro container handling requirements and precautions

- The height of the unloading platform and the height of the unloading tooling should be kept at the basic level with the bottom of the container (loading bottom plate), and the height tolerance should be controlled within $\pm 10\text{mm}$.
The length of the horizontal extension of the unloading platform or unloading tooling $L \geq$ the total length of the unloading forklift and the length of the module packing box.

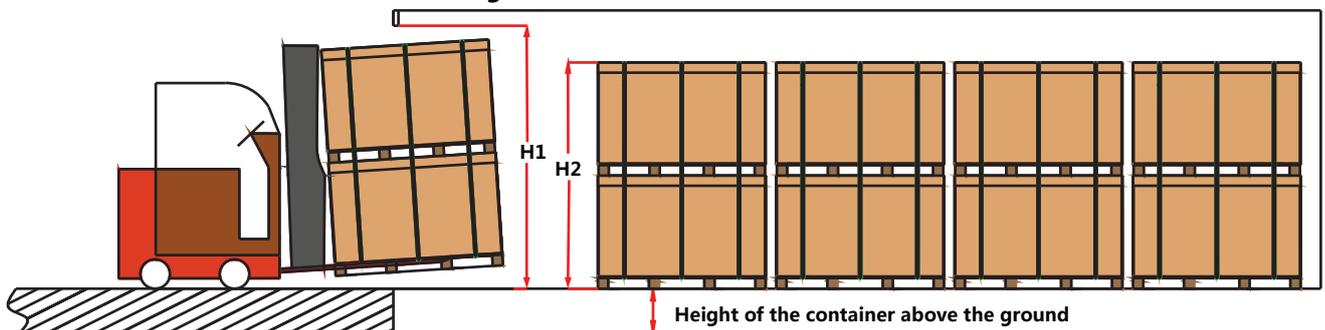
$L \geq L1 + L2$

- L** : Length extending horizontally from the unloading platform to the bottom of the container
- L1** : Length of unloading forklift
- L2** : Length of the module packing box



- When the container is unloaded :
When using the fuel forklift, adjust the height of the forks from the ground, the forks into the short side of the pallet, after the forks into the bottom, lift the modules at an appropriate height (the tilt Angle required to lift the modules $< 2^\circ$), the smaller the distance from the ground when the forklift out of the container door, ensure that the height of the forks from the ground and the distance from the goods to the top of the container is not more than 80mm;
When the horizontal electric forklift is used to unload the goods, the arm length of the forklift mechanical arm is required to be $\geq 1800\text{mm}$. The arm length of the forklift mechanical arm is required to lift the modules from the short side of the pallet with a fork (the height of the forklift is required to be $\leq 40\text{mm}$ from the ground), and the modules are moved out slowly.
If the modules are unloaded from long side forks, fuel oil forklifts are needed to unload.

- H2**: Height of the module packing box
- H1**: Height of the container door



HANDING INFORMATION

1.4 Attention in loading and unloading with hoisting

- The hoisting rope of crane unloading needs to choose a longer nylon sling, wire rope is not allowed to use(Figure 7) ;
- Before lifting, the length of the sling should be evenly distributed on both sides to avoid the case body tilting to one side during lifting, which causes the sling to be too tight and the assembly to explode;
- When lifting, the box should be kept balanced to avoid module tilting ;
- When someone is required to direct the hoisting box to fall down during unloading, it shall be kept as flat as possible to avoid collision and throwing of the module box, and the ground shall be flat (Figure 8).



Figure 7



Figure 8

- In order to minimize the impact of sling on the safety of goods in the process of hoisting, the modules without frame should be supported during loading and unloading. For example, wooden sticks, boards or other fixtures of the same width as the outer packing cases should be used on the upper part of the box to reduce the pressure of the contact position on the box (Figure 9).

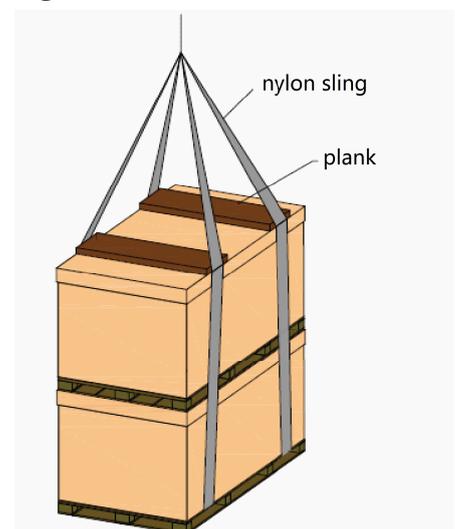


Figure 9

STORAGE INFORMATION

2.1 Attentions for storage

- Due to the complex environment and climate of the project site, it is recommended to store the stacked modules with single support after dismounting in order to ensure the safe storage of the modules on site (Only after cutting the outer packing belt of the connecting two brackets, separate the upper and lower brackets), The double glass modules should be stored with single support after dismounting ;
- The modules should be stored in a complete outer package, and the storage area should be protected and pallets and packing cases from damp, direct sunlight and waterproof (rain) measures ;
- The modules storage areas should be kept dry, level, the ground and the horizontal Angle is less than 10° ;
- Make sure that all modules with the same current gear are installed in the same area centrally (Square matrix, bus box);



Figure 10

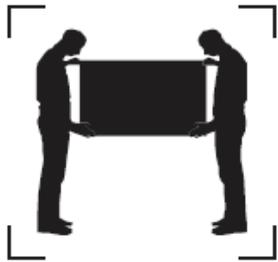


Figure 11

- The modules should be placed neatly with a safe distance between the boxes. The spacing between boxes should be greater than 30cm(Figure 10);
- Please do not stack other items on the modules or boxes (Figure 11).

STORAGE INFORMATION

MODULE SHOULD BE HANDLED BY 2 PERSONS



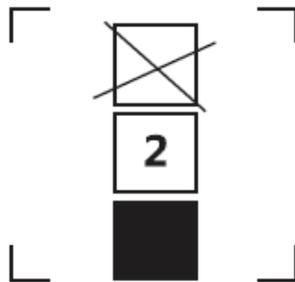
**MODULE SHOULD BE
HANDLED BY 2 PERSONS**

KEEP DRY



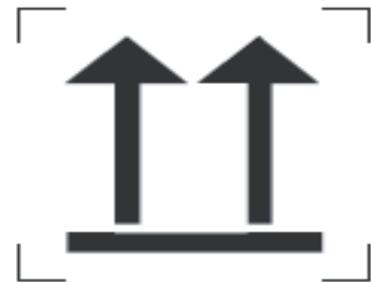
KEEP DRY

STACK LIMIT IN 2 UNITS THIS SIDE



STACK LIMIT IN 2 UNITS

THIS SIDE UP



THIS SIDE UP

FRAGILE



FRAGILE

DO NOT STEP ON



DO NOT STEP ON

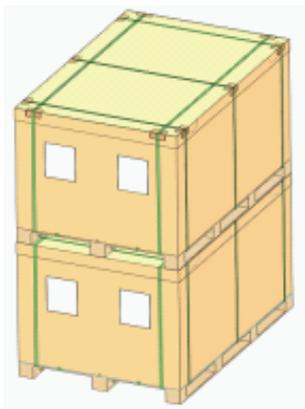
UNPACKAGING INSTRUCTION

3.1 Equipment and Tools: Cutter, Glove, Forklift

3.2 People: No less than two persons

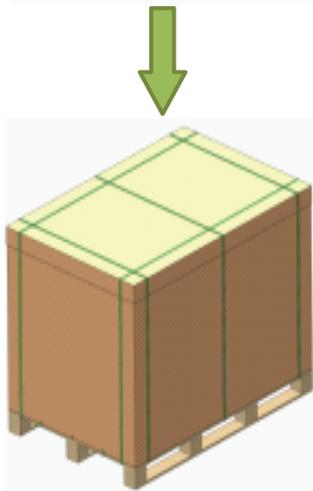
3.3 Border module Unpacking step

Packing method A:

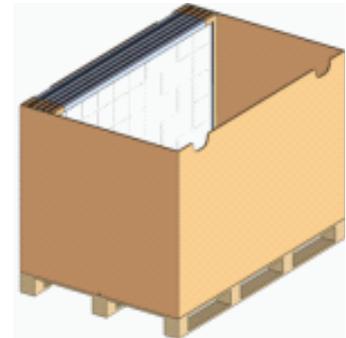


Cut off the whole packing belt of the pallet, and use a forklift to separate the two pallet modules.

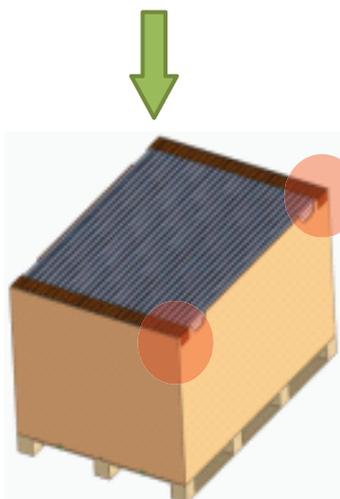
When the last 5 pieces of modules are left in the carton, please provide sufficient strength support on the side of modules to avoid the carton turned over due to the strong wind and accidental collision.



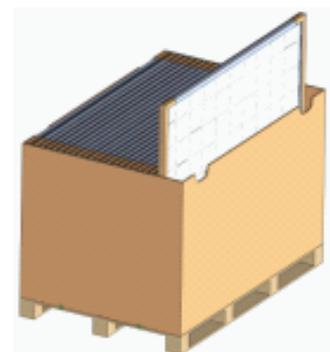
Cut off the packing tape of the single pallet, remove the isolated wood (or plastic wrap) and the carton cover.



Remove remaining modules from the carton sequentially.

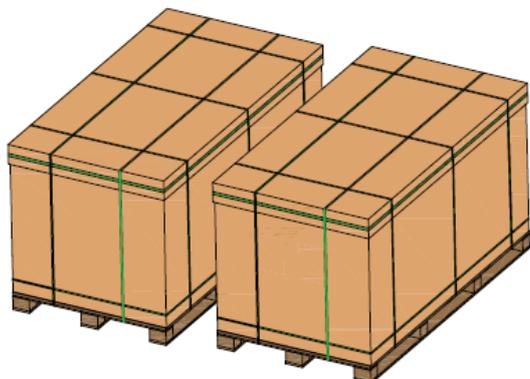


Remove the first module labeled "1" from the opening position (marked in red) firstly.

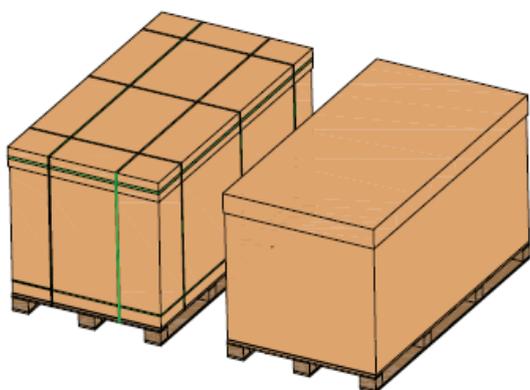


3.3 Border module Unpacking step

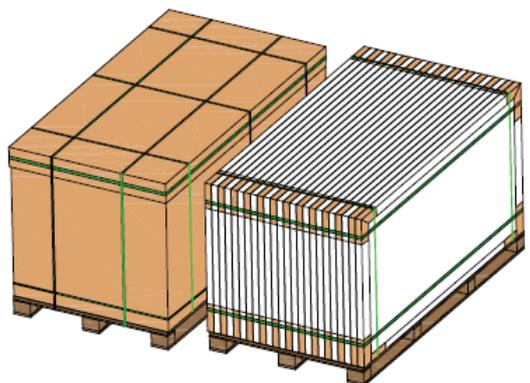
Packing method B: Plan 1



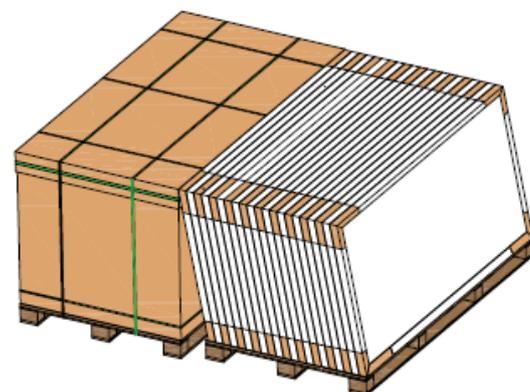
1. Remove the stretch film around the two boxes and separate the two boxes.



2. Leave the long side of the single box about 15~20 cm to solid support, such as wall, rack or unpacked module box of the same type. Then cut all the packing strap around the single box.



3. Remove the top cover on the box and then follow the sleeve of the box.



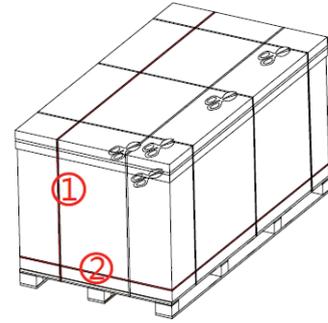
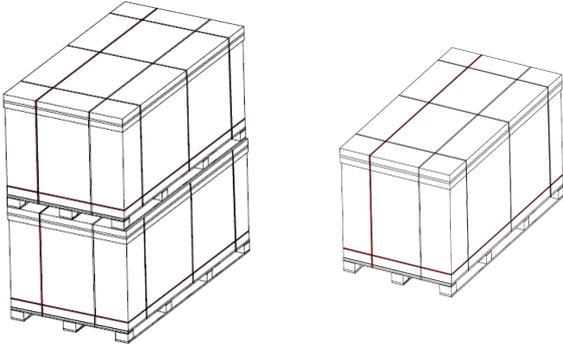
4. Two workers hold the modules to protect them from falling down. One of the workers cut the internal packing strap (totally 4 pieces of straps). The two workers then push the modules tenderly to lean them against the solid support and remove the modules from the first one outside to the last one inside in sequence.

UNPACKAGING INSTRUCTION

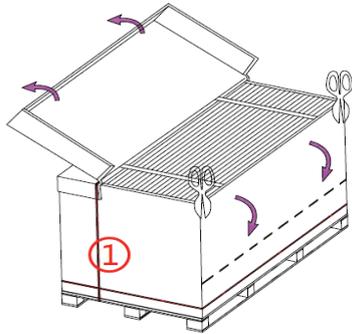
3.3 Border module Unpacking step

Packing method B: Plan 2

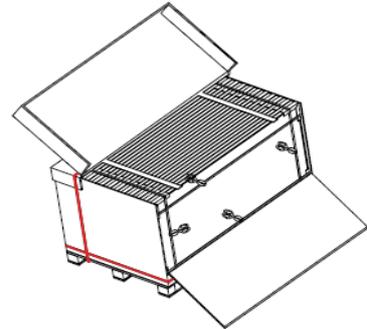
1. **Take down the upside pallet**—Cut the stretch film around the carton boxes first, then cut the packing straps which wrapped the two carton boxes together. Take down the upside pallet using forklift.
2. **Cutting packing straps**—Cutting all the packing tapes on the carton except no.1 strap and no.2 strap.



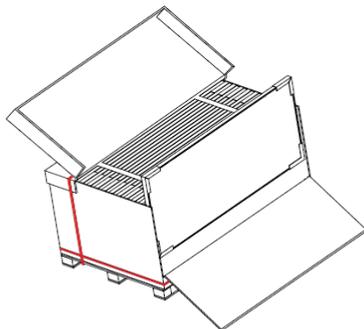
3. **Opening the box cover**—Open the box cover from that side where strap has been cut. Turn the cover over to no. 1 strap.



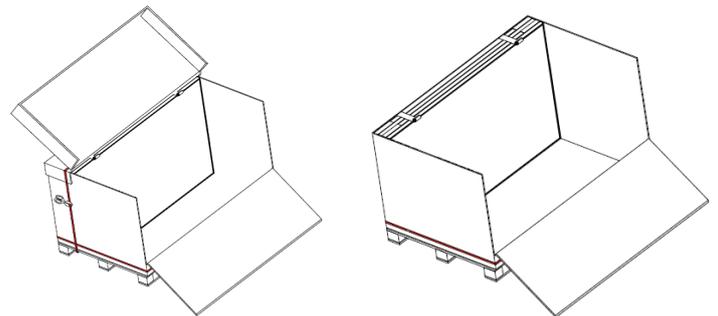
4. **Cutting the carton and fold it down**—Cut down the side of the carton by 1/2 to 2/3 height (keep at least 1/3 height), then cut down the side of the carton (the folding line is about the red line in the figure) and cut off the four packing straps inside the carton.



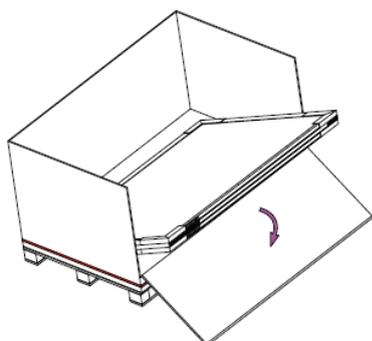
5. **Taking out the modules in turn**—Tear the tape from the first module border and remove the first module (make sure the remaining straps is tight to prevent the module from tipping). Tear off the tape on the frame in order of modules, and take out the remaining modules in order from the carton.



6. **Cutting the remaining packing straps**—When the remaining modules are covered by the uncut packing belt, two workers should hold the remaining modules, cut the no.1 packing belt and remove the top cover of the carton.



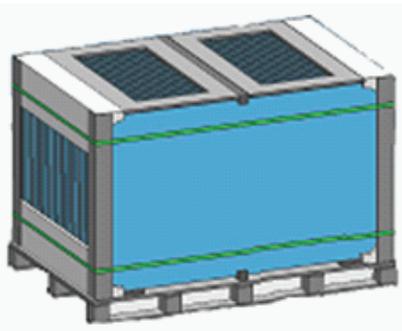
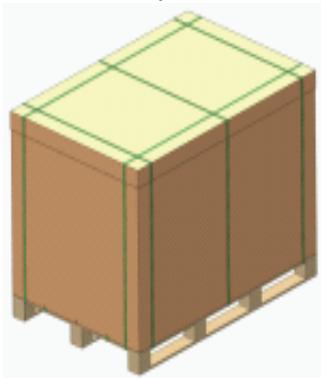
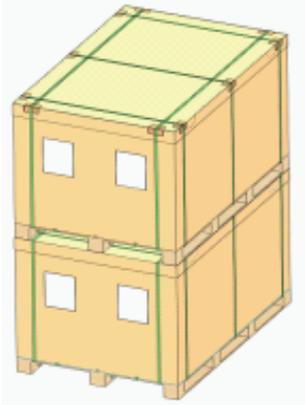
7. **Remove remaining modules**—Pour the remaining modules slowly, place them flat on the tray, and take out the remaining modules in turn.



UNPACKAGING INSTRUCTION

3.4 Unpacking step of double glass bezel-less module

Packing method A:



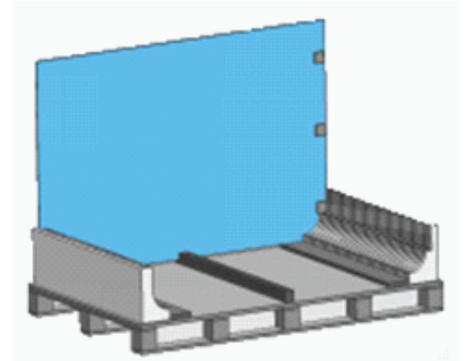
Cut off the whole packing belt of the pallet, and use a forklift to separate the two pallet modules.

Cut off the packing strap of the single pallet and remove the top cover of the carton.

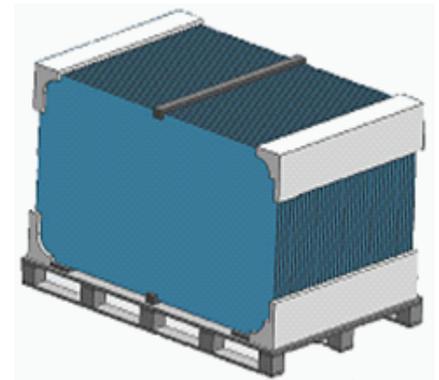
Take off the carton body vertically, and then cut off the two packing belts on top and bottom of the carton body, remove the four protecting ridges.



When each of the modules is taken out in turn, lift up the EVA card slot on the top to ensure that the remaining modules are still in a fixed state, and then take out all modules in turn.



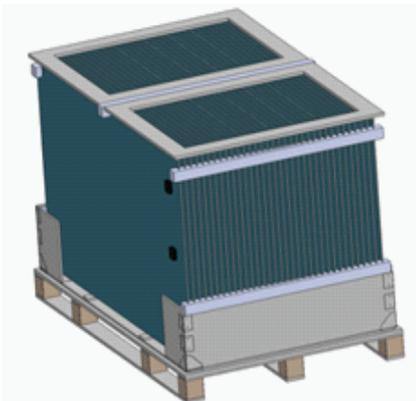
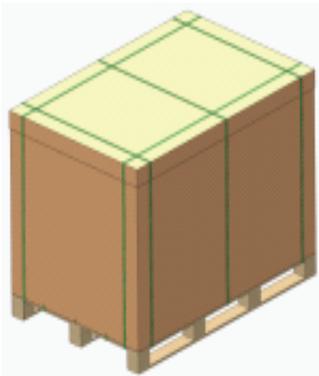
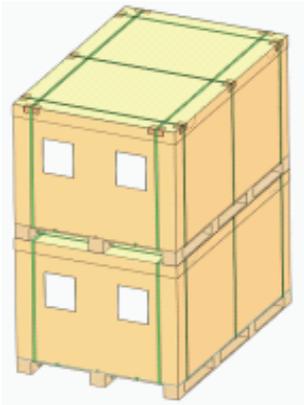
Remove the lifting bracket and the movable card slots (top and sides) successively.



UNPACKAGING INSTRUCTION

3.4 Unpacking step of double glass bezel-less module

Packing method B:



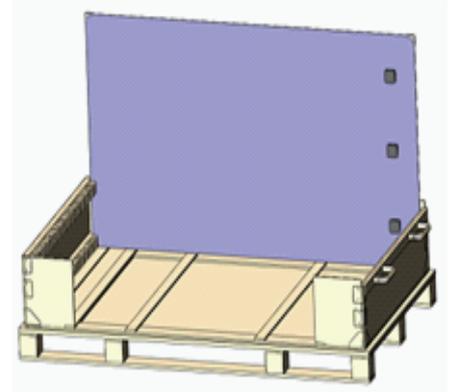
Cut off the whole packing belt of the pallet, and use a forklift to separate the two pallet modules.

Cut off the packing strap of the single pallet and remove the top cover of the carton.

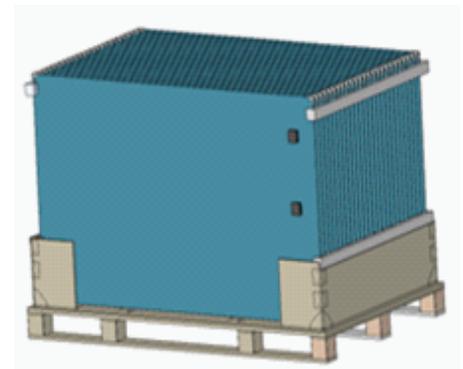
Take off the carton body vertically, and then cut off the two packing belts on top and bottom of the carton body, remove the four protecting ridges.



When each of the modules is taken out in turn, lift up the EVA card slot on the top to ensure that the remaining modules are still in a fixed state, and then take out all modules in turn.



Remove the lifting bracket and the movable card slots (top and sides) successively.



UNPACKAGING INSTRUCTION

3.5 Attention to unpacking :

- When opening cartons outdoors, avoid operating on rainy days because the cartons will soften and spread out to damage modules after rain ;
- Fixed measures shall be taken for disassembled modules when outdoor wind-operated. It is advisable not to move the modules to avoid damage ;
- Stack modules in a ventilated, rainproof and dry place before the modules are unpacked ;
- Use scissors or art knife to cut the outer box packing tape. Do not scratch glass. Confirm the number of modules in the box immediately after opening the case ;
- After leaving the box, support should be placed on the back of the assembly to prevent the modules from collapsing (Figure12) ;
- The working ground needs to ensure that the packing box can be stably placed horizontally to avoid dumping of the modules ;



Figure 12

UNPACKAGING INSTRUCTION

3.5 Attention to unpacking :

- The transshipment movement of the packing box shall be completed before the outer packing case is removed, and after unpacking, it shall no longer be transshipped with no fixed protection of the packaging material, and it shall be repackaged before being transported, or a single piece of manual short distance lifting shall be carried out. ;
Please wear protective gloves during unpacking and handling to avoid scratching hands or leaving fingerprints on glass ;
- Each module needs to be carried by 2 people , Pull the junction box is prohibited in any case ; When lifting the module, grab the short edge and take out the module (Figure 13) ;
- Do not remove the corner guard from the modules before installation (Double glass borderless modules do not need to remove corner guard) ;
- The install remaining modules should be placed centrally and protected by packing case.
- Before installation, please use scissors to cut the binding band of the fixed wire to avoid the connector hitting the back and damaging the modules.



Figure 13

UNPACKAGING INSTRUCTION

3.6 Instructions for project site unpacking, handling and sampling test

1. When the modules are transported in the project site, the transportation route shall be selected on a smooth road to avoid damage or crack of the modules caused by turbulence, collision, extrusion, tilt and other factors. The modules shall be transported on a flat ground;
2. Remove the packing belt and protective film of the upper and lower brackets, and separate the upper and lower brackets with a forklift truck (the shelf wall of the forklift truck shall have cushions, such as foam or silicone pads, to prevent hidden cracks caused by the collision or extrusion between the modules and the shelf wall (Figure 14));
3. If the modules need to be spot tested, please refer to the unpacking instructions of this manual 3.3/3.4 to unbox the modules;
During the unpacking process, supports are provided on one side of the assembly to prevent it from toppling over (Figure 15);

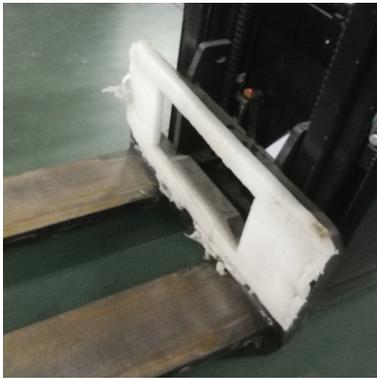


Figure 14(1)

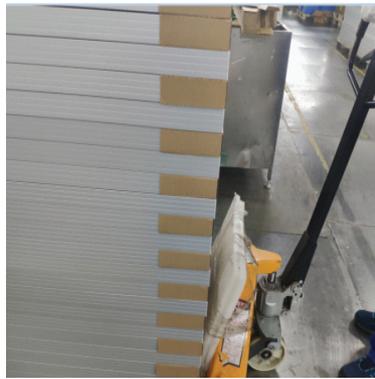


Figure 14(2)

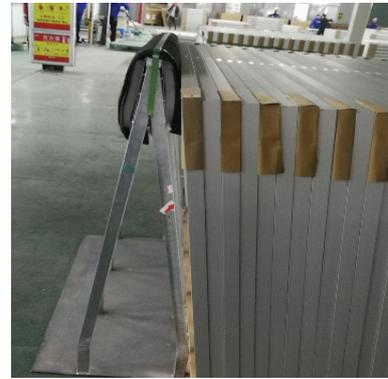


Figure 15

4. When taking the modules out of the packing box, it is recommended to use protective tooling to separate the modules to prevent friction from producing flecks. Hard pulling and skewed drawing of the modules are not allowed (Figure 15).
5. After removing the modules, they should be placed on a vacant tray, which should be carried by two people and handled with care during the sampling test (Figure 17).

In the process of sampling inspection and testing, the following precautions should be paid attention to avoid causing secondary hidden cracks of modules;

If you need to remove the tie of the fixed wire, use scissors and other tools to cut off the tie. Do not hit the lead end on the back.

If the module needs to be turned over, fixing measures (adhesive tape, etc.) shall be adopted to fix the lead head to prevent the hidden crack of the module caused by the drop of the lead (Figure 18);

After the completion of the test, remove the tape of the fixed wire, and then fix the wire with a tie, and then pack the modules again for secondary transport;

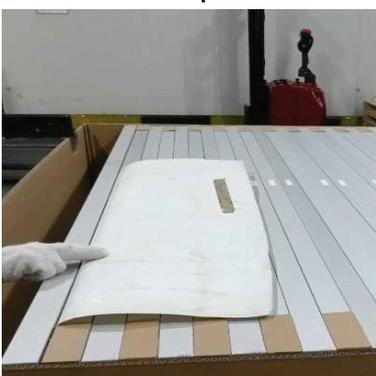


Figure 16



Figure 17



Figure 18

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