

The LONGi logo is displayed in white, bold, uppercase letters on a red rectangular background in the top-left corner of the page.

LONGi

Propelling the transformation

PV Module Unpacking, Handling and Storing Guide



Top Tips for Unpacking, Handling and Storing LONGi Modules



If your modules are damaged on arrival, notify the driver immediately, notify carrier and LONGi staff within 24 hours of delivery, and provide a record with detailed information within 48 hours of delivery. See [claims and warranties](#) for full details.



When moving modules with a forklift:

- Always insert the fork from the short side of the pallet, as long as it is safe to do so.
- Use the right-size forklift forks based on the pallet size. **Do NOT** use oversized forks.
- Use forklifts with a backrest greater than 48 inches.
- **Do NOT** press the forklift backrest into the cardboard.



Prior to unpacking, store pallets in a covered, dry and ventilated location. When unpacking and staging, place pallets in a flat, open and dry location.



While unpacking, position pallets next to a solid, self-standing support structure. Do NOT support the pallet with sharp objects or loose materials.



Review the [Installation Manual for LONGi Solar PV Modules](#) before you begin installation.

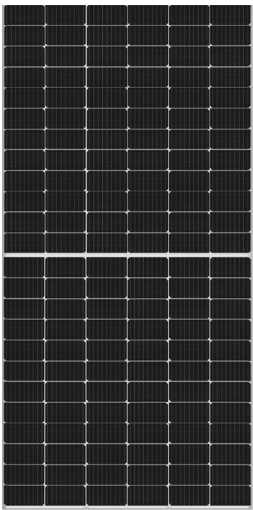


Do not carry a module alone; **always use two people** to lift and carry.

Introduction

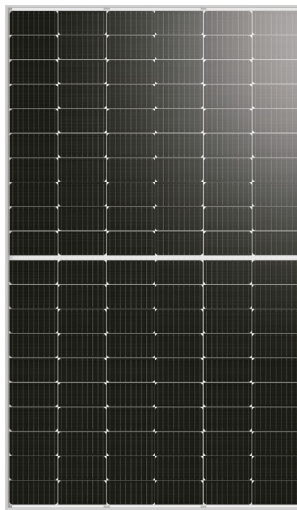
The LONGi team of industry veterans and experts is excited to partner with you for success from arrival to installation with LONGi's PV solar modules. This guide serves as a reference for inspecting, transporting, unpacking, handling and storing LONGi PV solar modules to ensure safe practices for you and the modules. No matter where you are in the delivery and installation process, LONGi is here to help if something goes wrong.

These unpacking, handling and storing best practices pertain to the following LONGi modules:



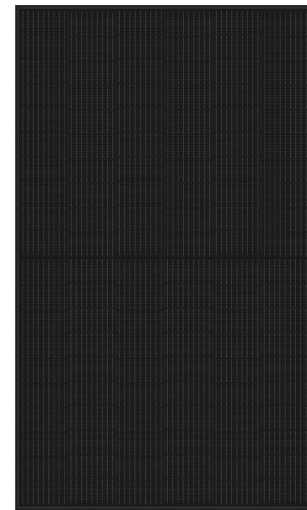
Hi-MO 4 72-cell bifacial

72-cell/ 144 half-cell, dual glass, bifacial (LR4-72HBD-xxxM)



Hi-MO 4m 60-cell monofacial

60-cell/ 120 half-cell, single glass, monofacial (LR4-60HPH-xxxM)



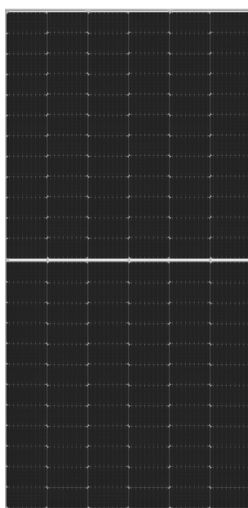
Hi-MO 4m 60-cell monofacial black

60-cell/ 120 half-cell single glass, monofacial (LR4-60HPB-xxxM)



Hi-MO 4m 72-cell monofacial

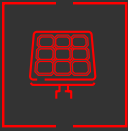
72-cell/ 144 half-cell, single glass, monofacial (LR4-72HPH-xxxM)



Hi-MO 5 72-cell bifacial

72-cell/ 144 half-cell, dual glass, bifacial (LR5-72HBD-xxxM)

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How your modules are packed

LONGi ships modules in pallets with the following dimensions, based on module type:

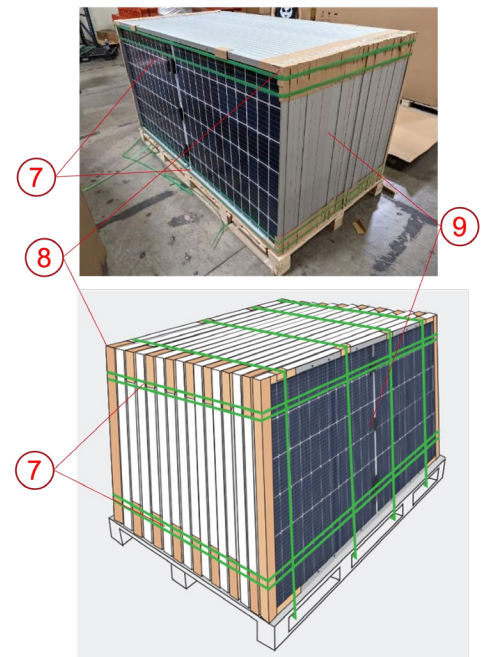
Module Type	Module Dimensions (mm)	Pcs/ Pallet	Module Weight	Pallet Dimensions* (LxWxH)	Pallet Weight*	Pallets per 40HC Container
LR4-72HBD	2094 x 1038 x 35	30	27.5 kg (60.7 lbs)	2140 x 1130 x 1180 mm (84.3 x 44.5 x 46.5 in)	875 kg (1930 lbs)	22
	2094 x 1038x 35	31	27.5 kg (60.7 lbs)	2140 x 1145 x 1190 mm (84.3 x 45.1 x 46.9 in)	903 kg (1991 lbs)	22
LR4-72HPH	2094 x 1038 x 35	30	24.3 kg (53.6 lbs)	2140 x 1130 x 1180 mm (84.3 x 44.5 x 46.5 in)	779 kg (1718 lbs)	22
LR5-72HBD	2256 x 1133 x 35	31	32.3 kg (71.3 lbs)	2300 x 1120 x 1238 mm (90.6 x 44.1 x 48.8 in)	1051 kg (2318 lbs)	18
LR4-60HPH	1755 x 1038 x 35	30	19.5 kg (43.0 lbs)	1800 x 1130 x 1175 mm (70.9 x 44.5 x 46.3 in)	635 kg (1400 lbs)	26
LR4-60HPB	1755 x 1038 x 35	30	19.5 kg (43.0 lbs)	1800 x 1130 x 1175 mm (70.9 x 44.5 x 46.3 in)	635 kg (1400 lbs)	26

*Note: Pallet dimensions and weight are for reference only.

We package our modules using industry best practices to ensure safe transport, sustainable packaging and ease of unpacking for installers. LONGi packages each pallet as follows:

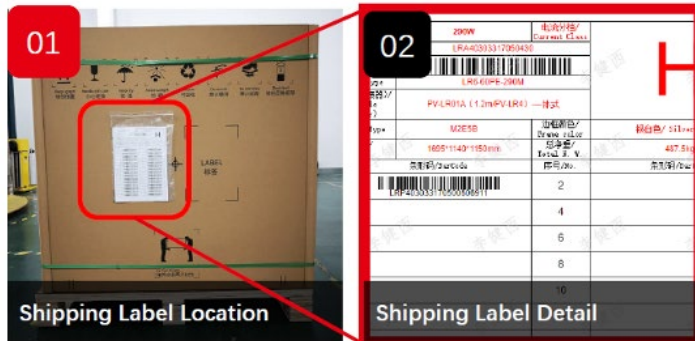
Components

1. Stack interconnecting straps
2. Shipping label (use the label to identify your modules)
3. External strapping
4. External corner protectors
5. Cardboard sleeve (remember that the glass side of the module is directly on the other side of the cardboard. Do not cut into the cardboard with a sharp object on the sides)
6. Plywood divider
7. Internal strapping (when you remove the strapping, be sure to store your modules safely)
8. Module corner protector
9. Vertically strapped panels



How to identify your modules

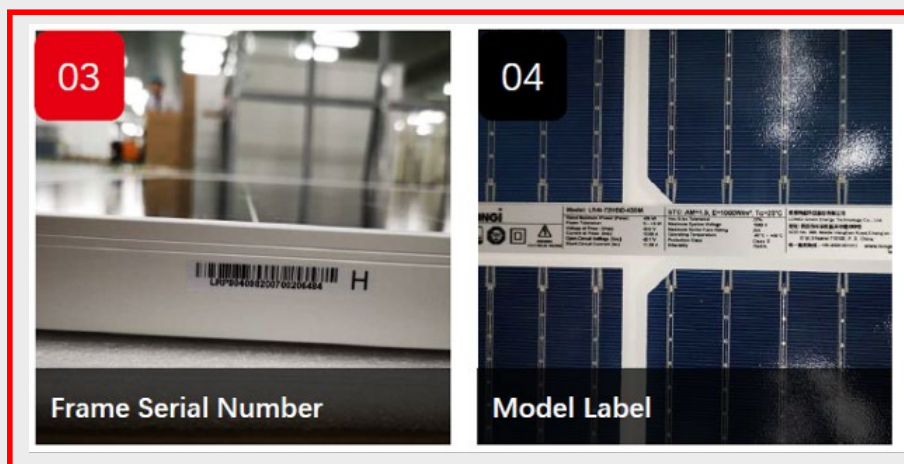
Before you unpack your modules, check the shipping label to ensure you received the right modules.



The pallet shipping label is located on the short side of the box, including:

- Power bin (wattage)
- Pallet ID: LRA____
- Model number
- Barcode and serial numbers of all modules in the pallet

Once you unpack your modules, check the module frame serial number and model label against the shipping label.



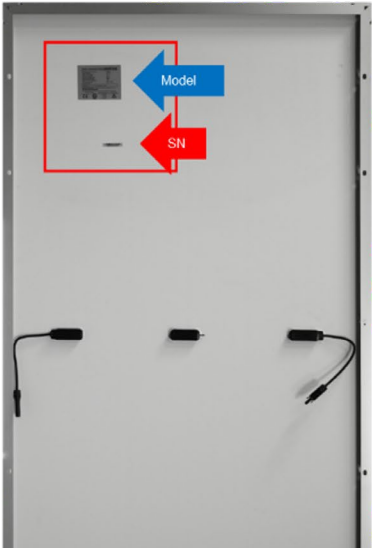
The serial number is the unique identifier of each PV module. A protected copy of the barcode is located on the front top-left corner under the glass and cannot be removed or damaged. The matching serial number is located on the frame and on the rear of the module.

The model label lists these details:

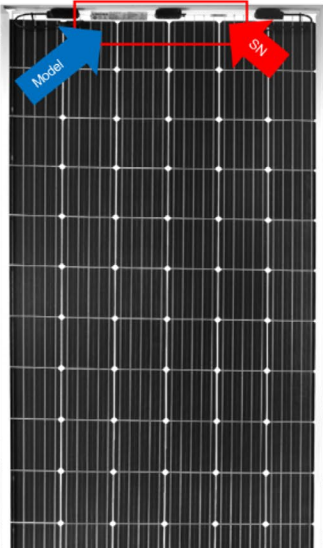
- Model number
- Nominal power rating
- Voc, Isc, Vmp, Imp
- Maximum system voltage + certifications

Unique identifier for each individual PV panel, located in three places per standard panel:

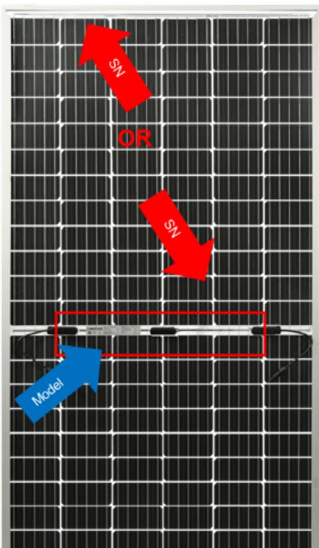
- Front (under glass)
- Rear (top corner)
- Side (frame)



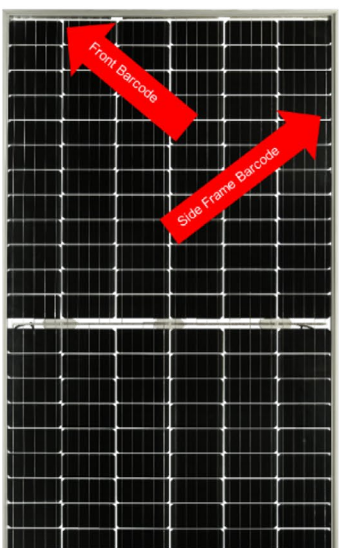
Single-Glass Module (Rear)



Double-glass Full-Cell Module (Rear)



Double-glass Half-Cell Module (Rear)

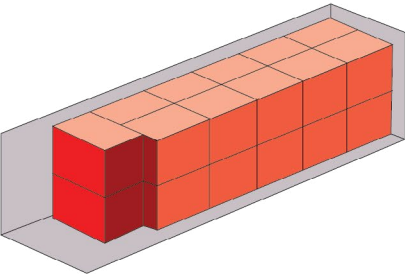


Double-glass Half-Cell Module (Front)

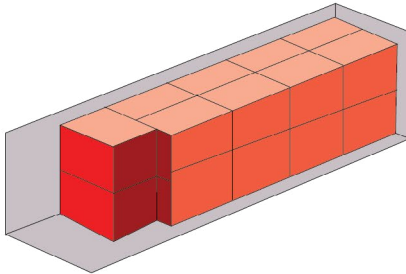
How to load modules for transit

LONGi uses industry best practices to load modules for transit in shipping containers.

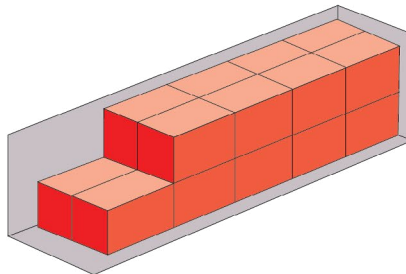
We use a **standard loading pattern** for both our Hi-MO 4 and Hi-MO 5 modules:



Hi-MO4 LR4-60HPH/HPB module:
26 pallets per 40'HC container



Hi-MO4 LR4-72HPH/HBD module:
22 pallets per 40'HC container

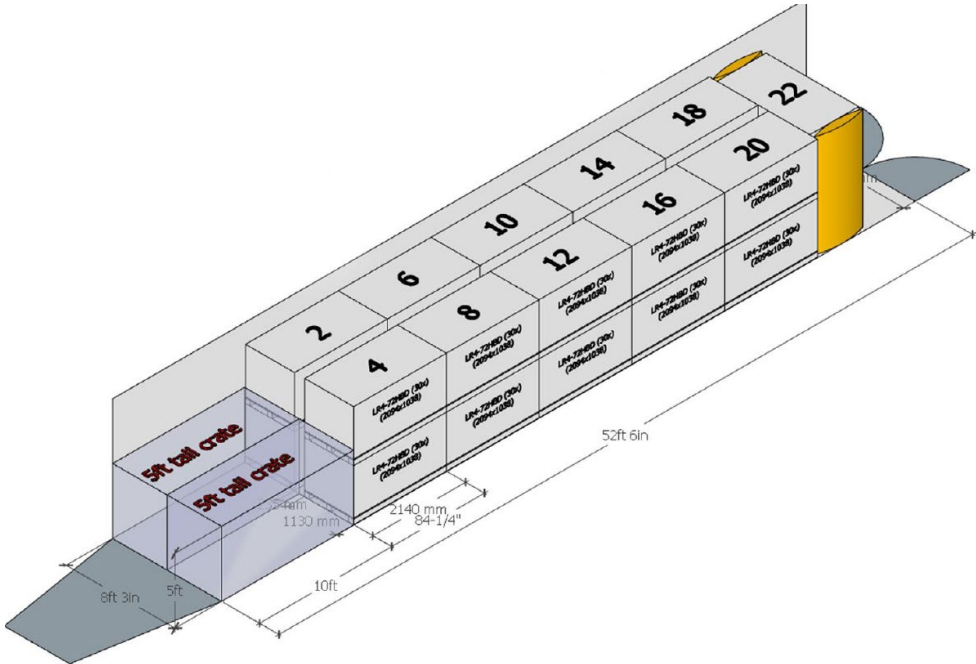


Hi-MO5 LR5-72HBD module:
18 pallets per 40'HC Container

We recommend a transloaded arrangement for 53-foot dry moving van with:

- No unsupported, free-standing pallet stacks.
- Pallets parallel to the vessel, with any spaces greater than 4 inches to be filled with airbags.

LR4-72HBD



How to inspect packaging upon arrival

When the modules arrive, identify your modules and then inspect the packaging for any visible damage.

Common issues may include:



Pallet wear and tear or damaged modules



Unusual dents or scratches on cardboard



Unusual loading method, shifted or tilted pallets

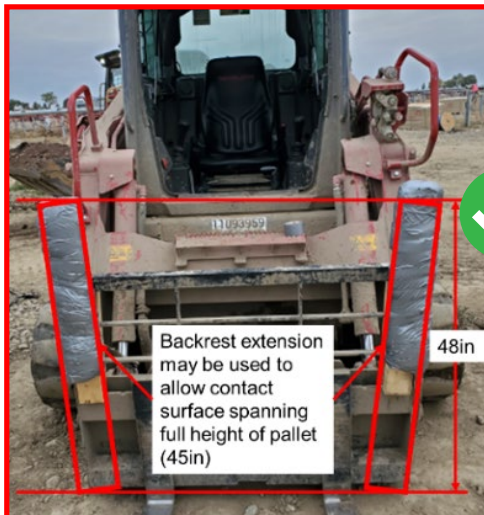
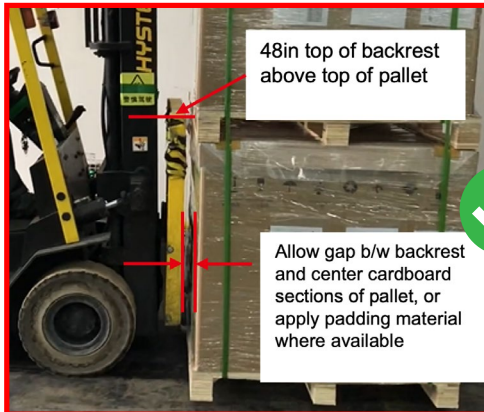


Forklift damage on pallet with exposed modules

If you find damage, you must notify the driver immediately, notify carrier and LONGi staff within 24 hours of delivery, and provide a record with detailed information within 48 hours of delivery. See [claims and warranties](#) for full details.

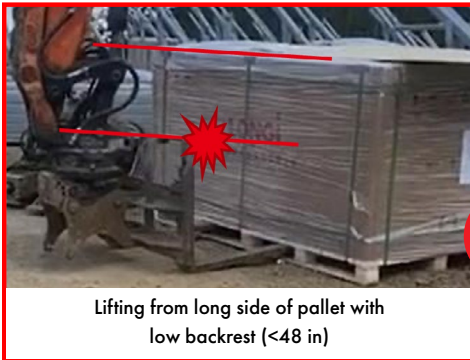
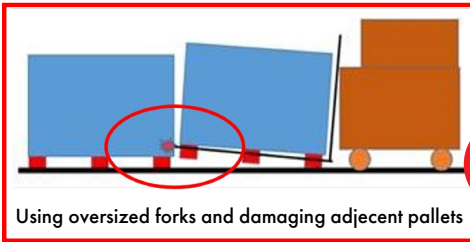
How to maneuver pallets with a forklift

As you maneuver pallets with a forklift, be sure to adhere to best practices to ensure safety and limit damage to the modules:

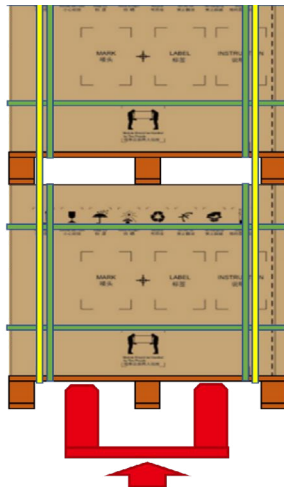


- Do **NOT** ram pallets!
- **ALWAYS** insert the fork from the short side of the pallet, as long as it is safe to do so. Impacts from the backrest are the leading cause of module damage and moving modules from the short side avoids contact with this area.
- Use the right-sized forklift forks based on the pallet size. Do **NOT** use oversized forks.
- For loading from the short side:
 - ◇ Use a 72-inch fork for 72-cell modules ([LR4-72HPH-xxxM](#), [LR4-72HBD-xxxM](#), and [LR5-72HBD-xxxM](#)).
 - ◇ Use a fork less than 70 inches for 60-cell modules ([LR4-60HPH-xxxM](#), and [LR4-60HPB-xxxM](#)).
- For loading from the long side (only if required for safety reasons), use a 42-inch fork.
- Use forklifts with a backrest greater than 48 inches whenever possible.
 - ◇ The backrest may be extended using padded lumber to achieve 48 inches above forks.
 - ◇ Side contact areas to backrest should be against the wooden parts of the pallet.

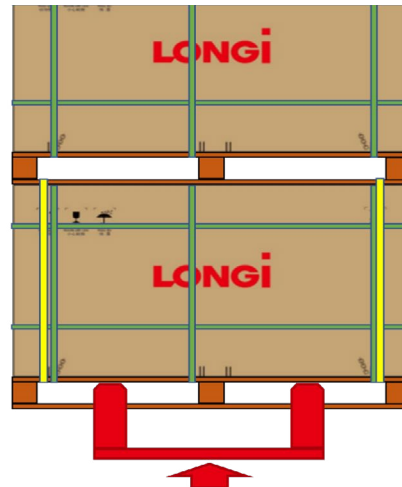
How to maneuver pallets with a forklift continued



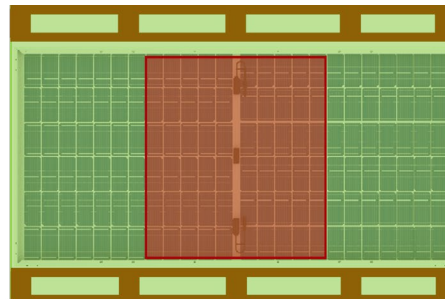
- Allow space between the backrest and pallet where safe to do so.
- Do **NOT** press backrest into cardboard, particularly not against areas marked in red (see image).
- Do **NOT** extend forks past the pallet, as it may damage adjacent pallets. Check the surrounding area before loading/unloading.
- Avoid or minimize leaning/tilting pallets while in transit.



Short side: size appropriately based on model



Long side: use 42" forks



Pressure Sensitive Areas for Palletized PV Modules
(Shown in red)



Recommended forklift specifications:

- **Length:** minimum 60 inches, 72 inches for 72-cell format, up to 70 inches for 60-cell format
- **Height:** 48 inches recommended
- Allow gap between pallet and backrest where safe to do so
- When lifting stacked pallets, minimize cargo recline
- Inspect connecting strap integrity (marked in yellow)



Recommended forklift specifications:

- **Length:** 42 inches
- **Height:** 48 inches required for Hi-MO 4 (LR4-60/72 models), 52 inches for Hi-MO 5 (LR5 models)
- Backrest height **MUST** be equal or higher than single pallet height
- Gap **MUST** be maintained between pallet and backrest. **DO NOT** press backrest into cardboard
- Avoid reclining stacked pallets
- Inspect connecting strap integrity (marked in yellow), employ additional strapping where needed

How to unpack your modules



Recommended forklift specifications:

1. Stage pallets on a flat, open and dry location.
2. Position pallets next to a solid, self-standing support structure (e.g., tracker post, wall, another pallet) to prevent loose modules from falling. Do not use sharp, unstable structures to support modules, which may cause damage to the modules or harm the installer.
3. Cut and remove the external straps and shrink wrap.
4. Remove the cardboard top.
5. Inspect the cardboard for dents or tears. Then slide the cardboard panel up to remove and inspect the outermost modules for damage on the glass and frame. In case of damage, take a photo of the following and see [claims and warranties](#) for next steps.
 - a. Pallet ID
 - b. Module ID
 - c. Damage area details
 - d. Cardboard cover adjacent to the damaged area
6. Cut internal straps.
7. Lean modules against support structure (See [how to store your modules](#)).
8. Remove modules one at a time.

How to unpack your modules



- ✓ **DO** unstack the pallets immediately if the pallet or packaging is compromised, wet or damaged.
- ✓ **DO** use stable, self-standing structures or devices, or other pallets for support.



- ✗ **DO NOT** unpack the module pallets from a wet, soft or inclined area.
- ✗ **DO NOT** use sharp, unstable structures for support.
- ✗ **DO NOT** stand or walk on PV modules.

How to store your modules



- ✓ **DO** store unused pallets in a covered, dry and ventilated area



- ✗ **DO NOT** remove cardboard packaging if not installing immediately
- ✗ **DO NOT** leave panels loose and unsupported
- ✗ **DO NOT** exceed indicated maximum stacking layer limit as shown on the pallet
- ✗ **DO NOT** place sharp or heavy objects on your modules to avoid glass damage

How to carry your modules and prepare them for installation:



- Prior to beginning installation, review the [Installation Manual](#) for LONGi Solar PV Modules.
- Do not carry a module alone; always use two people to lift and carry.
- Do not drill holes in the frame of the module. In addition to invalidating the product [warranty](#), this will also reduce frame loading capacity and lead to frame corrosion.
- Be careful not to scratch the anodized frame coating, except for the grounding connection.

What to do if something goes wrong in shipping and handling

If need to file a warranty claim—either for individual modules or an entire pallet—notify your LONGi contact as early as possible.

If your modules were damaged during transportation:

- Notify the driver immediately.
- Indicate damage on the Bill of Lading.
- Notify carrier dispatch and LONGi staff **within 24 hours of delivery** to enable an effective investigation.
- Record the following and share with carrier dispatch and LONGi staff **within 48 hours of delivery**:
 - ◇ Truck container ID
 - ◇ Arrival and unload time and date
 - ◇ Pallet ID
 - ◇ Photo showing damaged pallet in position on truck (if available)
 - ◇ Detailed photo and description of damage, including pallet overview and damage area closeup

Please include ALL of the following to expedite warranty claim verification and processing:

- Completed warranty claim information form with a detailed claim issue description.
- Model number and corresponding quantities of claimed modules
- Pallet ID for whole pallet issues and/or module ID for individual module issue
- Photos of claimed module/pallet:
 - ◇ Module label showing model number and serial number, or pallet label (see [how to identify your modules](#))
 - ◇ Front side of whole module and rear side of whole module
 - ◇ Damage location detail, and multiple angles highlighting point of collision/impact
 - ◇ Corresponding external cardboard indicating collision/impact
- Additional supporting evidence, which may include:
 - ◇ Bill of Lading with driver verification of on-arrival fault
 - ◇ Container number for on-arrival fault
 - ◇ Any additional supporting information indicating quality or transportation issue

Contact us

If your modules were damaged in transport, see [claims and warranties](#).

If you have questions about safe handling practices, visit our [Service Consultation webpage](#) and complete the form, select the phone headset on the right side of the webpage and select the appropriate contact method, or contact us directly at:

✉ market@longi.com

☎ (+86) 4008-601102

Resources

Module data sheets:

[Hi-MO 4](#), 72-cell/ 144 half-cell, dual glass, bifacial (LR4-72HBD-xxxM)

[Hi-MO 4m](#), 60-cell/ 120 half-cell, single glass, monofacial (LR4-60HPH-xxxM)

[Hi-MO 4m](#), 60-cell/ 120 half-cell single glass, monofacial (LR4-60HPB-xxxM)

[Hi-MO 4m](#), 72-cell/ 144 half-cell, single glass, monofacial (LR4-72HPH-xxxM)

[Hi-MO 5](#), 72-cell/ 144 half-cell, dual glass, bifacial (LR5-72HBD-xxxM)

[Installation Manual for LONGi Solar PV Modules](#)

[Module certificates](#)

Disclaimer

No warranties, promises, and/or representations of any kind, expressed or implied, are given as a result of following this guide. Warranty claims shall only be considered for processing when presented in writing by a direct LONGi customer, and acceptance specifically presented in writing by LONGi personnel upon review of supporting information as outlined in this document.

The information contained within this document is solely advisory, and should not be substituted for legal, technical, financial or other professional advice. Any and all decisions and actions must be executed by qualified personnel.

This reference guide is subject to changes by LONGi from time to time with the sole discretion of LONGi without prior or subsequent notice to customers. Customers are recommended to check with LONGi from time to time for periodical updates and changes.