



# PACKAGING INSTRUCTION OF SOLAR PANELS

*This instruction manual is valid for Volta, Volta + and Galvani series framed Set Solar solar panels.*

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#### HEADQUARTERS

Aydın Mahallesi Aydın Küme Evleri  
No: 78 06980 K.Kazan / ANKARA

#### FACTORY

Büyükosb Mah. Nevzat Ayaz Bulvarı  
No: 2 Korgun OSB, Korgun / ÇANKIRI

[f](#) [@](#) [in](#) /setsolartr

[www.setsolar.com.tr](http://www.setsolar.com.tr)



## 1. INTRODUCTION

For a safe and damage free transport of Set Solar solar panels, please follow the instructions of this manual. For transport damage caused by neglecting the described packaging rules the sender will be charged.

### PALLET QUANTITY

Type	Volta Series SETM60	Volta Series SETM72	Volta + Series SETM120		Volta + Series SETM144		GALVANI Series SETT144		GALVANI Series SETT72	
Container	40HQ	40HQ	40HQ		40HQ		40HQ		40HQ	
Piece / Pallet	32	28	Box 31	Plastic Wedge 24	Box 27	Plastic Wedge 20	Box 32	Plastic Wedge 23	Box 32	Plastic Wedge 23
Pallet Gross Weight (kg)	630	655	665	540	710	560	980	720	982	722
Volume / Pallet (m <sup>3</sup> )	2,364	2,798	2,590	2,540	3,075	2,900	3,609	3,26	3,55	3,29
Pallet / Container	18	18	24	23	20	20	20	20	20	20
Panel / Container	576	504	744	552	540	400	640	460	640	460

Type	Volta Series SETM60	Volta Series SETM72	Volta + Series SETM120		Volta + Series SETM144		GALVANI Series SETT144		GALVANI Series SET72	
Pallet/ Truck *	32	26	Box 28	Plastic Wedge 28	Box 24	Plastic Wedge 24	Box 22	Plastic Wedge 22	Box 22	Plastic Wedge 22
Piece / Pallet	32	28	31	26	27	22	32	26	32	26
PV Module/Truck*	1024	728	868	728	648	528	704	572	704	572

\* These dimensions are given for awning truck. It is 13600 \* 2450 \* 2700 mm in size



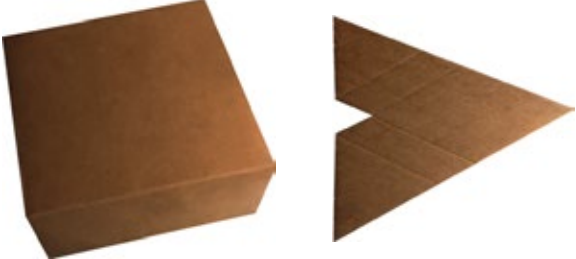



### WOODEN PALLET SIZES & DIMENSIONS

Dimensions(mm)	Volta Series SETM60	Volta Series SETM72	Volta + Series SETM120	Volta + Series SETM144	GALVANI Series SETT144	GALVANI Series SET72
Plastic Corner Wedge Packaging	-	-	1820x1090x200	2160x1090x200	2340x1200x200	2360x1200x200
Boxed Packaging	1690x1200x140	2000x1200x140	1780x1200x140	2120x1200x140	2310x1200x140	2330x1200x140

## 2. PACKAGING PARTS LIST

Packing lists in the titles according to 2 different packaging systems 2.1. and 2.2. is located in.

### 2.1. Boxed Packaging Parts List;

<p><b>Palette</b></p> <p>Please use the original SOLARWATT palette adapted to the panel size. Only the original palette offers sufficient stability and load capacity for a damage free transport of the panels (e.g. micro cracking of solar cells).</p>	
<p><b>Corrugated Cardboard Underlayment</b></p> <p>Place a corrugated cardboard underlayment flush to the palette size to avoid any scratching of the surface of the panel (framing and glass surface), due to the roughness of the palette material. The corrugated cardboard should consist of at least 2 layers.</p>	
<p><b>Edge Protector</b></p> <p>Starting from the topmost panel, place one piece for every edge of the panel(4 in total) per 2 panels.</p>	
<p><b>Corner Protector</b></p> <p>Place 4 pieces for every package, should be placed on top of the strap.</p> <p>Material requirements: edge protector may be made of plastic or cardboard material, in applied conditions edge protector may not overlap the areal dimensions of the palette.</p>	
<p><b>Straps</b></p> <p>Material requirements: Strength: app. 400kg, Strain 15%, Elastic Recovery 95%, for strap material with inferior properties an increase of applied straps (6 instead of 4) may be carried out to reach the required overall strength Approved material: polyester strap 12,5x0,7; PET strap 12,5x0,7;15,5x07.</p>	
<p><b>Stretch Foil (PE)</b></p> <p>Use regularly 25µm thick PE-Foil, for 22-32 panels approx. 8-10 complete wrappings are necessary, number of wrappings can be reduced by increasing the foil thickness</p>	

## 2.2. Plastic Corner Wedge Packaging Parts List;

<p><b>Palette</b></p> <p>Please use the original SOLARWATT palette adapted to the panel size. Only the original palette offers sufficient stability and load capacity for a damage free transport of the panels (e.g. micro cracking of solar cells).</p>	
<p><b>Bottom Start, Corner Wedge, Top Finish</b></p> <p>The bottom start is placed on the 4 corners on the pallet. 4 corner wedges are placed on the corners of the panel and fixed to the lower starts on the pallet. This process is repeated according to the number of 22–26 panels, until the 22nd in the 22-pack panel and the 26th in the 26-packaging type. Top finish end lid is placed on the corner wedges of the panel.</p>	
<p><b>Nylon Tarpaulin</b></p> <p>A nylon tarpaulin is placed on the panels whose connection tapes have been completed.</p>	
<p><b>Straps</b></p> <p><b>Material requirements: Strength: app. 400kg, Strain 15%, Elastic Recovery 95%, for strap material with inferior properties an increase of applied straps (6 instead of 4) may be carried out to reach the required overall strength</b>  <b>Approved material: polyester strap 12,5x0,7; PET strap 12,5x0,7;15,5x07.</b></p>	
<p><b>Streç Film (PE)</b></p> <p>Stretch film can be used when nylon tarpaulin is not available. Use regularly 25µm thick PE-Foil, for 22–32 panels approx. 8–10 complete wrappings are necessary, number of wrappings can be reduced by increasing the foil thickness</p>	

### 3. PACKAGING INSTRUCTIONS

#### 3.1. Volta and Volta+ Series Boxed Packaging Stages

<ul style="list-style-type: none"> <li>▪ Check palette before usage and place the palette on a plane and stable surface</li> </ul>		
<ul style="list-style-type: none"> <li>▪ Place the corrugated cardboard underlay centered on the palette. (should flush with the palette)</li> </ul>		
<ul style="list-style-type: none"> <li>▪ Start packing the modules one after the other towards the support surface.</li> <li>▪ Inside the box, the 32/28 modules are placed sideways and alternately in each corner with the protective protected by cardboard.</li> </ul>		
<ul style="list-style-type: none"> <li>▪ After stacking 32/28 modules, place the corner protectors, and then place 2 straps upright at the long and short sides close to the palette outer blocks.</li> </ul>		

- Position the box into a rectangular shape and pack the modules in. After packing all the modules, put the module barcode list on the cardboard box (every package has its own individual barcode list (flash data) for packaged modules)



- Tie 2 packing strips vertically on the long side.

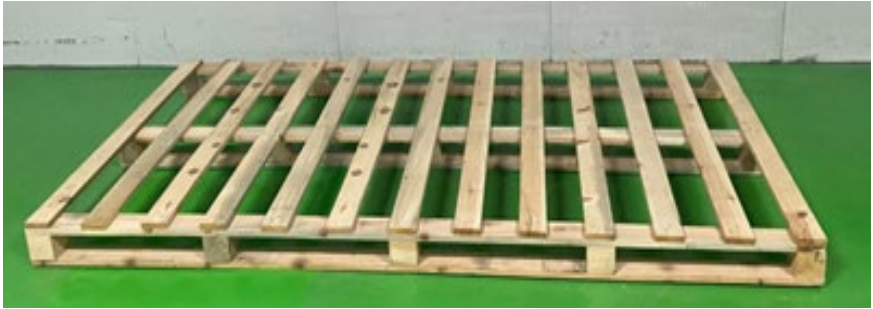

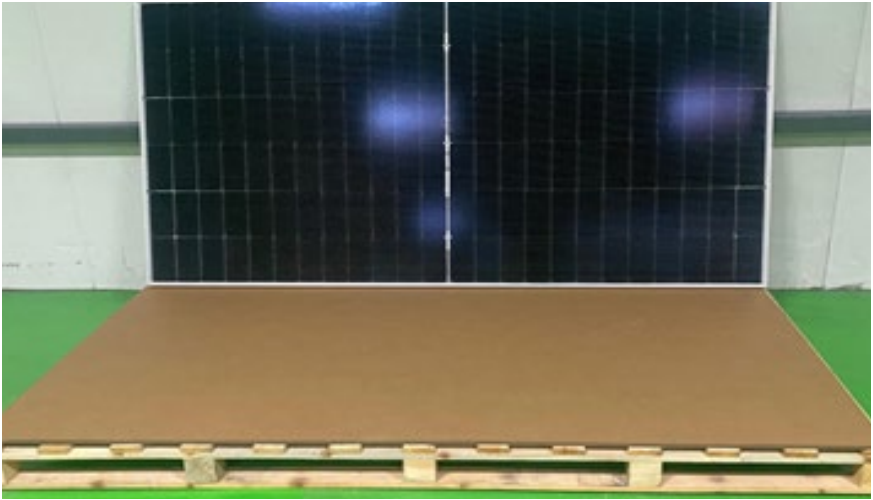
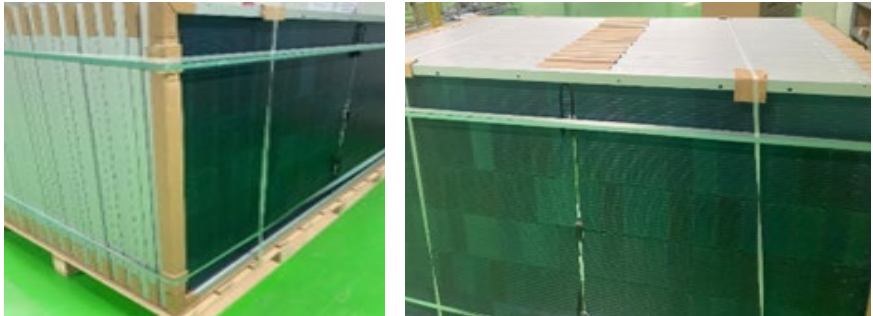


- Repeat the process with the second cardboard box on top of the first one. After finishing the process, place 2 straps upright at the long and short sides of the both cardboard boxes. Lastly, wrap the packages sufficiently with PE foil.



\* **Important Note:** First and the last panels should be placed with the sunny side of the both panels towards each other.

### 3.1.1. Galvani Series Boxed Packaging Stages

<ul style="list-style-type: none"> <li>▪ Check palette before usage and place the palette on a plane and stable surface</li> </ul>	
<ul style="list-style-type: none"> <li>▪ Place the corrugated cardboard underlay centered on the palette. (should flush with the palette)</li> </ul>	
<ul style="list-style-type: none"> <li>▪ Start packing the modules one after the other towards the support surface.</li> <li>▪ Inside the box, the 32 modules are placed sideways and alternately in each corner with a protective protected by cardboard.</li> </ul>	
<ul style="list-style-type: none"> <li>▪ After stacking 32 modules, place the corner protectors, and then place 2 straps upright at the long and short sides close to the palette outer blocks.</li> </ul>	

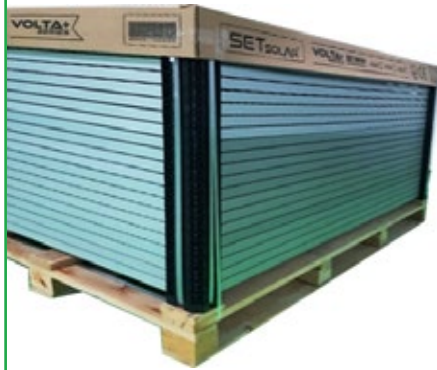
<ul style="list-style-type: none"> <li>Position the box into a rectangular shape and pack the modules in. After packing all the modules, put the module barcode list on the cardboard box (every package has its own individual barcode list (flash data) for packaged modules)</li> </ul>		
<ul style="list-style-type: none"> <li>Tie 2 packing strips vertically on the long side.</li> </ul>		
<ul style="list-style-type: none"> <li>Repeat the process with the second cardboard box on top of the first one. After finishing the process, place 2 straps upright at the long and short sides of the both cardboard boxes. Lastly, wrap the packages sufficiently with PE foil.</li> </ul>		

\* **Important Note:** First and the last panels should be placed with the sunny side of the both panels towards each other.

### 3.2. Volta and Volta+ Series Plastic Corner Wedge Packaging Stages

<ul style="list-style-type: none"> <li>▪ Check palette before usage and place the palette on a plane and stable surface</li> </ul>		
<ul style="list-style-type: none"> <li>▪ Place sub-starts on pallet endpoints.</li> </ul>		
<ul style="list-style-type: none"> <li>▪ Insert corner wedges into the end corner points of the panel. It should be in 4 corners</li> <li>▪ Place the panel on the lower starts on the pallet.</li> </ul>		
<ul style="list-style-type: none"> <li>▪ Place the panels with corner wedges on each other, paying attention to the direction of barcode alignment so that max.22-26 pieces overlap each other.</li> </ul>		
<ul style="list-style-type: none"> <li>▪ After the panels are lined up, fix them with 22-26 panel strips from the corner wedges from 4 corners. After fixing, do the same with the pallet and corner wedges.</li> </ul>		

- Thread cardboard covers over the panels.



- Pass the plastic tarpaulin over the cardboard cover for the protection of the panels, Paste the pallet list on the front short edge with the file pocket.



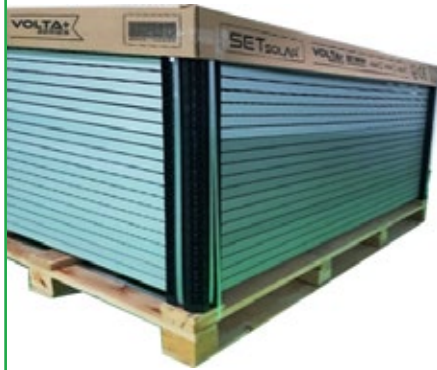
- Repeat the process on a second pallet to be stacked.



### 3.2.1. Galvani Series Plastic Corner Wedge Packaging Stages

<ul style="list-style-type: none"> <li>▪ Check palette before usage and place the palette on a plane and stable surface</li> </ul>		
<ul style="list-style-type: none"> <li>▪ Place sub-starts on pallet endpoints.</li> </ul>		
<ul style="list-style-type: none"> <li>▪ Insert corner wedges into the end corner points of the panel. It should be in 4 corners</li> <li>▪ Place the panel on the lower starts on the pallet.</li> </ul>		
<ul style="list-style-type: none"> <li>▪ Place the panels with corner wedges on each other, paying attention to the direction of barcode alignment so that max.26 pieces overlap each other.</li> </ul>		
<ul style="list-style-type: none"> <li>▪ After the panels are lined up, fix them with 26 panel strips from the corner wedges from 4 corners. After fixing, do the same with the pallet and corner wedges.</li> </ul>		

- Thread cardboard covers over the panels.



- Pass the plastic tarpaulin over the cardboard cover for the protection of the panels, Paste the pallet list on the front short edge with the file pocket.



- Repeat the process on a second pallet to be stacked.



## 4. LABELING

- Cover and wrap the package using the material described in the parts list
- Paste the palette list into the area specified in the box.

### PALLET LIST EXAMPLE

Ürün Bilgileri		Palet Bilgileri		Akım Sınırlandırması: I ■ II ■ III ■	
Kategori: Model: Tip: Ürün Ölçüleri:		Palet Ölçüleri: Ürün Adedi: Net Ağırlık:		Tarih: EPC Firması: Proje Adı: Seri No: <input type="text"/>	
1		12		23	
2		13		24	
3		14		25	
4		15		26	
5		16		27	
6		17		28	
7		18		29	
8		19		30	
9		20		31	
10		21		32	
11		22		33	

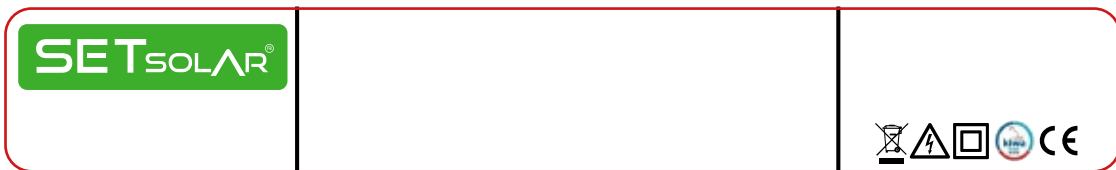
#### 4.1. Volta and Volta+ Series Module Serial Number Meaning



SETM144032112111080169

0001	: Seri Numarası
201005	: Tarih (Yıl Ay Gün)
1	: Modül Tipi (Cam-Backsheet/Cam-Cam)
1	: Voltaj Tipi (1000-1500 VDC)
1	: Hücre Boyutu (Tam Hücre / Yarım Hücre)
01	: BOM Listesi
M144	: Hücre Tipi ve Miktarı
SET	: Şirket Kodu

#### 4.1.1. Volta and Volta+ Series Label Sample

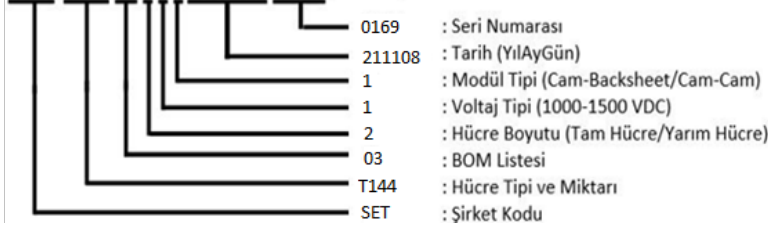


PV Module datasheet can be found on the backside of module.

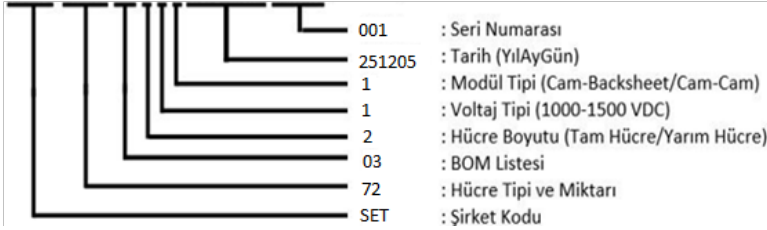
## 4.2. GALVANI Series Module Serial Number Meaning



SETT144032112111080169



SET72032112512050001



### 4.2.1. GALVANI Series Label Sample



PV Module datasheet can be found on the backside of module.

## 5.5. CONTAINER LOADING AND UNLOADING INSTRUCTION

- Boxes and pallets must be transported with mechanical lifting machines (forklift, etc.)
- Lifting the short side of the pallet is highly recommended. Please ensure that suitable forklift with the minimum requirement (mini and mobil forklifts are not recommended). Forklifts need to move up and down slowly to grasp the modules' center of gravity.
- When stacking the pallet inside of the container, should be stacked in quantities no higher than two total pallets.
- It's recommended to stack and load pallets horizontally.
- For longitudinal transport of Volta and Volta + series Set Solar Solar panels, extensions must be added to the fork of the forklift.
- Pallets should be stacked on top of each other, and corners should be aligned and not protruding.
- After the loading, to prevent any accidents pallets must be fixed with straps in the storage area of the truck or container.
- After the loading the pallets should be interlocked with supporting wooden planks nailed to the floorboard to prevent slipping.

## 6.6. Unpacking Instructions

**Required equipment:** Scissors, working gloves, forklift.

**Personnel:** At least 3

**Attention:**

- To make sure that goods inside of the box are not damaged, visual inspection should be done.
- Make sure that pallet is not damaged.
- Make sure the box, cover, nylon tarpaulin are in good condition.
- Make sure the boxes are correctly aligned to the pallet dimensions.
- Please avoid opening the unpacking outside in rainy weather. Rain softens the box, cardboard cover and can damage modules and personnel.
- Please pay special attention to safety in windy weather. It is recommended not to touch the PV modules when the wind is strong.
- Please make sure that the boxed or plastic wedge-packed panels are placed on a stable and flat surface.
- Please wear gloves during the unpacking to avoid injuring and leaving fingerprints on the glass.
- Transport the palletized packing box with a forklift.
- The long side of unpacked PV modules must be parallel to the long side of the pallet should be close to a solid wall, rack or other unpacked PV module of the same characteristics; recommended distance is 15–20cm.

**Steps:**

1. Check the pallet list for all module information.
2. Remove the stretch film, plastic tarpaulin. If it is boxed packaging, cut the strips of the cardboard box. Use suitable cutting devices (eg scissors)
3. Lift up box cover. Lift the cardboard frame, then remove the bottom strip.
4. Lower the cardboard frame, make a small hole on the cardboard frame, remove the top strap over the package.
5. After removing the strap, please take the PV modules out of the cardboard box. First start with the modules that have edge protector.
6. Place the module in a safe place to avoid damage. To put on the cardboard underlayment is recommended.
7. Repeat the process for all modules until they're all out of the box. Always use the short sides when lifting and transporting modules. Be careful to never stand in a potentially dangerous posture while handling or transporting the modules. Mechanical equipment should always be used when transporting multiple modules.
8. The unpacked PV modules should be placed flat on the pallet. The stacked quantity should not be more than 30 pieces. Be sure to place the first module with the front side up and the others with the front side facing down.

## 7. STORAGE INSTRUCTIONS

- To minimize the possibility of any damage to the box or its contents, pallets should be transported carefully.
- For all operations that carry out with a machine should be carried out by professionally trained personnel
- Pallets should be transported using machines such as forklift.
- Pallets should be stacked on the top of each other and corners should be aligned and not protruding.
- The warehouse should be decluttered and organized correctly; storage area should be clearly marked.
- The stretch film or nylon tarpaulin around the carton of the PV modules is waterproof and dustproof for the modules. If the modules will have a long storage period, please do not remove them.
- Cardboard is not completely waterproof. If the cardboard gets wet, the structural strength would get low and this may cause danger. So please put the modules in a ventilated and dry place where they can be protected from rain.
- Cardboard boxes can be stored as in stacked shape, but the stacked quantity should not be more than 2 pallets.
- Please do not step on cardboards and PV modules.
- It is forbidden to place the modules near corrosive chemicals or flammable gases

## 8. HAZARDS AND PRECAUTIONS TABLE

Situation	Risks	Precaution
<b>Transporting the modules by hand (manual handling)</b>	Objects that could fall during transport	Wear safety shoes
		Avoid distractions
	Hitting stationary / moving objects	Neat and organized working environment
		Avoid distractions
	Cuts	Wear working gloves
		Use safe equipment for cutting
	Overexertion and back injuries	Occupational safety and health education
		Use machines as much as you can
	Stumbling	Avoid distractions
		Wear safety shoes
Neat and organized working environment		
Physical fatigue	Take as much rest as needed according to the risk assessment	
<b>Transporting modules by machine</b>	Vehicle-related accidents.	Marking of the loading area and warehouse as its required by the local laws.
		Use only signaled and reserved lanes for vehicle movement. Make sure that visual and auditory warnings are clear and understandable.
		Check vehicle maintenance regularly
		Machine using training
	Objects falling through collapsing or slipping	The floor should not be slippery or uneven
		Follow the maximum loading limit instructions for all equipment
	Pallets falling off during transportation	To get certain stability, forklift fork should be attached to reach following minimum requirements.