An Intro to SnapNrack Series 200

SnapNrack Series 200 PV Mounting System offers a low profile, visually appealing, photovoltaic (PV) module installation system. This innovative system simplifies the process of installing solar PV modules, shortens installation times, and lowers installation costs.

SnapNrack systems, when installed in accordance with this manual, will be structurally adequate for the specific installation site and will meet the local and International Building Code. Systems will also be bonded to ground, under SnapNrack’s UL 2703 Listing.

The SnapNrack installation system is a set of engineered components that can be assembled into a wide variety of solar mounting structures. It is designed to be installed by qualified solar installation technicians. With SnapNrack you will be able to solve virtually any PV module mounting challenge.
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Certification Details

SnapNrack Series 200 system has been evaluated by Underwriters Laboratories (UL) and Listed to UL Standard 2703 for Grounding/Bonding.

Grounding/Bonding

The Series 200 system has been designed in compliance with UL Standard 2703 Section 9.1 Exception, which permits accessible components that are not part of the fault current ground path to not be electrically bonded to the mounting system. The UL Listing covers bonding for a load rating up to 45 psf. For more details on the integrated grounding functionality see the Grounding Specifications section.

This racking system may be used to ground and/or mount a PV module complying with UL 1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions. See the Grounding Specifications for the list of modules tested with the Series 100 system for integrated grounding. Ground Lug has been evaluated to both UL 467 and UL 2703 Listing requirements.

Series 200 has been listed with the following Enphase microinverter models for grounding/bonding: M215, M250 and C250. The Enphase microinverters are certified to be mounted to SnapNrack rail with the MLPE Attachment or to the module frame with the Enphase Frame Mount. When installing the Enphase microinverters per the specifications in the MLPE Installation section of this manual, the total roof-mounted PV system is bonded (modules, racking and microinverters) and grounded through the Enphase ground circuit when the Enphase units are properly grounded through to the service entrance. Therefore, no ground lugs or equipment grounding conductor (EGC) are required on the SnapNrack systems.

Series 200 has been Listed with the following SolarEdge optimizer models for grounding/bonding: P300 and P350. The SolarEdge optimizers are certified to be mounted to SnapNrack rail with the MLPE Attachment or to the module frame with the SolarEdge Power Optimizer Frame-Mounted Module Add-On. When installing the SolarEdge optimizers per the specifications in the MLPE Installation section of this manual, the total roof-mounted PV system is bonded to the optimizer backing plate (modules, racking and optimizers) and grounded through the ground lugs installed on the SnapNrack rail. Therefore, it is not necessary to run an EGC to each SolarEdge optimizer.

The mounting system Bonding Listing is only valid when installed with a Non-Separately Derived PV system. The PV system is required to have a direct electrical connection to another source, such as connecting to the grid via a grid interactive inverter.

General System Requirements

SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any application outside of those specified in this Installation Manual and the Structural Engineering Report may void the warranty and structural certification could become invalid.

SnapNrack recommends a periodic re-inspection of the completed installation for loose components, loose fasteners, and any corrosion, such that if found, the affected components are to be immediately replaced.
Part Details

Structural Components

- SnapNrack Ground Rail
- SnapNrack Pipe Clamp Assembly
- SnapNrack Adjustable X-End Clamp Assembly
- SnapNrack Universal End Clamp
- SnapNrack Ground Rail End Cap
- SnapNrack Mid Clamp
- Kee Klamp Plug End
- Hollaender Single Socket Tee
- Hollaender Single Adjustable Socket Tee
- Hollaender Double Adjustable Socket Tee
- Hollaender Plug End
Pre-Installation Requirements

Site Survey

- Measure the installation area and develop an accurate drawing identifying any obstacles such as buildings, ditches and trees. (If plans are available, check to make sure that the plans match the layout.)

- Review the shading pattern across the installation area from nearby structures, trees, etc. A shade analysis prior to the design as a part of the standard site analysis is recommended.

- Determine the design wind speed and specific conditions for the site and reference the Configuration Table in the Engineering Letter for your state to determine the maximum allowable rail span and footing spacing for this site. (All engineering letters are available for download from www.SnapNrack.com.)

Best Practice:

Use only SnapNrack supplied parts for the rail system.

Make sure that the SnapNrack components and other products are appropriate for the particular installation and the installation environment.

See Appendix A for the list of modules that have been tested with the Series 200 UL system.

Before you dig any holes, contact all utilities in the area to locate any underground lines, pipes, and wiring.

If you are unsure about the local design wind speed, consult with the local building jurisdiction.

UL Note:

The UL Listing covers bonding for a load rating up to 45 psf.

These systems have been evaluated by UL for module to system bonding only, to the requirements of UL Subject 2703.

Design Note:

SnapNrack has a suite of design tools to help configure your PV installation to be an accurate and fast install. Please visit us at: www.SnapNrack.com.

Safety Guidance

Always wear appropriate OSHA approved safety equipment when at active construction site.

Ensure safe installation of all electrical aspects of the PV array.

Safety equipment should be checked periodically for wear and quality issues.

Always wear proper eye protection.
Pre-Installation Requirements

System Layout

1) Typically most ground mounted arrays are installed in a landscape configuration, with the long side of the PV modules horizontal and the rails running up the slope. This is different from roof mount installations which typically are in a portrait configuration with the long side of the module running up slope and the rails running horizontally.

2) Layout rails so that module frame ends do not overhang mounting rails by more than 25% of total module frame length. Verify that mounting rail spans are in accordance with the Configuration Table in your state’s Engineering Letter. Also, verify that rail ends do not overhang by a distance greater than 30% of the acceptable rail span specified in the same table.

3) Submit array plans to local permitting jurisdiction and proceed with the layout only when all permits for the project have been granted by the authority having jurisdiction.

**Layout Note:**
- Module mid clamps are installed between modules in a row and require 0.5 inch of space between the modules.
- X clamps require 1.5 inches of extra rail to extend past the end of the module frame.
- When installing multiple rows of modules, a minimum spacing gap of 1/8 inch should be used between columns.
- Layout rails such that module frame ends do not overhang mounting rails by more than 25% of total module length.

**Note:**
All Engineering Letters for each state are available for download at www.SnapNrack.com/resources.
Concrete Pier

Required Tools

- 12” diameter Excavation Drill Auger
- Portable Band Saw (18 tpi)
- Concrete Mixer
- Basic Concrete Tools
- String Line
- Surveying Marker Pen or Paint

Materials Included

1. Sched 40 or 80 1-1/2” Pipe w/ 1.9” outside diameter (Local Supplier)
2. Rebar #4 (Optional)
3. Concrete/Concrete Mix

Standard Pier Detail
1) Prepare to excavate holes by measuring and staking hole locations. Set first stake and run a string perpendicular to true South and set second stake. Stake remaining corners of the array according to the plan layout. Excavate core footings at marked location to the depth indicated in your state’s Engineering Letter. Footing size may vary depending on job-specific conditions. All conditions should be reviewed by customer’s site engineer.

2) Pour mixed concrete into excavated holes.

3) Insert posts into wet concrete and move posts up and down to ensure concrete fills inside of posts. Bottom of posts are not in contact with dirt. Set sonotubes at ground level centered on vertical, and fill with concrete. Use string line grid and post level to place verticals square and plumb. (Do not set sonotube in the concrete, as this will make removal difficult.) Smooth concrete.

4) Determine the proper angle for the module array and calculate the length of the vertical posts. Front posts should be maximum 48” above grade tilt angle, tilt angle maximum 48 degrees. Supports vertical pipes at the proper height and angle until the concrete piers are set. Use a string line to ensure alignment of posts.

Install Note:
To speed up installations, it is recommended to use a 12-inch power auger to dig the footings.

Before you dig any holes, contact all utilities in the area to locate any underground lines, pipes, and wiring.

Before concrete completely cures, be sure to make final adjustments to posts.
Grade Beam

Required Tools

- Backhoe tractor with 12” Bucket
- Concrete Mixer
- Basic Concrete Tools String Line
- Surveying Marker Pen or Paint

Materials Included

1. Sched 40 or 80 1-1/2” Pipe w/ 1.9” outside diameter (Local Supplier)
2. Rebar #4
3. 2x4 for bracing pipes

Conversion Chart for Pier to Grade Beam Footings

<table>
<thead>
<tr>
<th>12 diameter Pier Depth</th>
<th>12” wide Grade Beams Depth (in)</th>
<th>18” wide Grade Beams Depth (in)</th>
<th>24” wide Grade Beams Depth (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>4 ft</td>
<td>17</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>5 ft</td>
<td>20</td>
<td>18</td>
<td>17</td>
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<tr>
<td>6 ft</td>
<td>24</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>7 ft</td>
<td>29</td>
<td>26</td>
<td>23</td>
</tr>
</tbody>
</table>
INSTALLATION INSTRUCTIONS

1) Prepare to excavate grade beams by measuring and staking hole locations. Set first stake and run a string perpendicular to true South and set second stake. Stake remaining corners of the array according to the plan layout. Excavate grade beams at marked location to the depth indicated in your state’s Engineering Letter. Grade beam size may vary depending on job-specific conditions. All conditions should be reviewed by customer’s site engineer.

2) Pour mixed concrete into excavated grade beams.

3) Insert posts into wet concrete and move posts up and down to ensure concrete fills inside of posts. Bottom of posts must not be in contact with dirt. Use string line grid and post level to place verticals square and plumb. (Do not set sonotubes in the concrete, as this will make removal difficult.) Smooth concrete.

4) Determine the proper angle for the module array and calculate the length of the vertical posts. Front posts should be maximum 48” above grade tilt angle, tilt angle maximum 48 degrees. Supports vertical pipes at the proper height and angle until the grade beams are set. Use a string line to ensure alignment of posts.

Install Note:
Before you dig any holes, contact all utilities in the area to locate any underground lines, pipes, and wiring.

A site specific analysis is required when using a grade beam option at locations with a design wind speed of 120 mph or higher.

12” Wide Grade Beam Footing Option

18” Wide Grade Beam Footing Option

24” Wide Grade Beam Footing Option
Required Tools

- Allen Wrench
- Portable Band Saw
- Measuring Tape

Materials Included

1. Sched 40 or 80 1-1/2" Pipe (Local Supplier)
2. Single Socket Tee
3. End Caps
4. Galvanized Spray

Socket Tee to Post

Horizontal Pipes with Bracing
1) Determine the necessary cross bracing and required structural fittings before horizontal pipes are installed. Slide all fittings onto vertical pipes to meet bracing plan. If needed, cross bracing will be specified on the plans and in the BOM (needed if verticals are over 5’).

2) Determine the required number of single socket tees and slide onto the horizontal pipes. Connect designated tees to vertical posts.

3) Set horizontals in place and check for proper leveling and angle (pitch). Use a rail to check along entire length of array for proper pitch. Use existing rigid couplers to connect long pieces together. Make sure to leave some extra on each end in case of errors. Run structural fittings in to place.

4) Measure, cut, and install bracing pipes. Measure the distance between each brace fitting on the vertical posts and then cut to measured length. Once braces are installed, tighten allen screws of fittings.

❓ Install Note:
The online Configuration Tool estimates the brace lengths (to ensure you purchase enough pipe), but actual field measurements should be taken and used.

Make sure verticals are plumb and set before installing cross bracing.

Check to make sure that the allen screws on the structural fittings are accessible for tightening.
Braced Option

Required Tools
- Allen Wrench
- Portable Band Saw
- Measuring Tape

Materials Included
1. Sched 40 or 80 1-1/2" Pipe (Local Supplier)
2. Single Socket Tee
3. Swivel Socket Tee
4. End Caps
5. Galvanized Spray
1) Determine the necessary cross bracing and required structural fittings before horizontal pipes are installed. Slide all brace fittings onto vertical pipes. If needed, cross bracing will be specified on the plans and in the BOM (needed if verticals are over 5').

2) Determine the required number of single socket tees and slide onto the horizontal pipe. Connect designated tees to vertical posts.

3) Set horizontals in place and check for proper leveling and angle (pitch). Use a rail to check along entire length of array for proper pitch. Use existing rigid couplers to connect long pieces together. Run structural fittings in to place.

4) Measure, cut, and install bracing pipes. Measure the distance between each brace fitting on the vertical posts and then cut to measured length. Brace E and F are to be attached to the horizontal at 1/3 the distance between the two posts. Once braces are installed, tighten allen screws of fittings.

Install Note:
Make sure verticals are plumb and set before installing cross bracing.

Make sure to leave extra length on each end in case of errors.

Check to make sure that the allen screws on the structural fittings are accessible for tightening.

Online configuration tool estimates brace lengths, but actual field measurements should be taken and used.
Installing and Leveling Rails

Required Tools
- Level
- 1/2" Socket Wrench
- String Line or Spare Rail
- 5/32" Allen Key
- Pitch Meter
- Torque Wrench
- Roof Sealant

Materials Included
1. Ground Rail
2. Pipe Clamp Assemblies

Pipe Clamp to Rail Assembly

Materials Included - Wire Clips
1. (1) SnapNrack Wire Clip

Dimensioned Wire Clip
INSTALLATION INSTRUCTIONS

1) Find center of array and mark edges of each module on the lower horizontal pipe. Determine the distance from the lower horizontal to the edge of the rail. Mark all rails at this distance.

2) Place pipe clamps on horizontal rails where markings are placed. Next, place rails where markings are placed.

3) Attach rails with the pipe clamps by snapping-in the bonding channel nuts to rail. Channel nuts are designed to snap in and out of rail channels. This enables you to quickly assemble systems without having to slide inserts from the end of the rail. Then tighten bolts to create a secure attachment to pipes. Pipe clamps torque to 12 ft-lbs.

4) Use a 3-4-5 to square one rail and tighten. Transfer distances from the lower horizontal to the upper horizontal, maintaining a common reference point. Tighten rails at your marks. Double check squareness by checking corner to corner distances (diagonals). If the rails are of equal length, and are parallel, the diagonal distances should be equal.

SnapNrack Wire Clip

1) Place all electrical conductors in the bottom of the rail channel.

2) Install the wire clip by snapping it into place on the rail. All electrical conductors are now securely enclosed in the rail.
Attaching Modules

Required Tools

- Torque Wrench
- 1/2” Socket Wrench

Materials Included - Install Module Clamps

1. Pre Installed SnapNrack Pipe Structure Attachments
2. Pre Installed SnapNrack Rails
3. SnapNrack Mid Clamp Assemblies
4. SnapNrack End Clamp Assemblies
5. PV Modules

Mid Clamp Assembly

1. (1) 5/16”-18 SS HCS Bolt
2. (1) 5/16” SS Split Lock Washer
3. (1) SnapNrack Bonding Mid Clamp
4. (1) 5/16”-18 SnapNrack Channel Nut

Adjustable End Clamp Assembly

1. (1) 5/16”-18 SS HCS Bolt
2. (1) 5/16” SS Split Lock Washer
3. (1) SnapNrack Self Adjusting Top
4. (1) SnapNrack Self Adjusting Bottom

Universal End Clamp Assembly

1. (1) 5/16”-18 X 1-1/2” SS HCS Bolt
2. (1) 5/16” X 3/4” SS Flat Washer
3. (1) SnapNrack Universal Wedge
4. (1) SnapNrack Universal Wave
INSTALLATION INSTRUCTIONS

SnapNrack Mid Clamp

1) Snap the preassembled SnapNrack Mid Clamp’s channel nut into the top channel of the rail.

2) Slide the mid clamp flush to the module with the top lip of the mid clamp over the top edge of the module. Place the next module flush to the other side of the mid clamp.

3) Tighten hardware, torque silver hardware to 10-16 ft-lbs and black hardware to 8-10 ft-lbs.

Adjustable End Clamp Assembly

1) Snap the clamp channel nut into the top channel of the rail.

2) Slide the clamp flush to the edge of the module with the lip of the top of the end clamp over the top of the module and lip of the bottom of the end clamp under the module.

3) Tighten hardware, torque silver hardware to 10-16 ft-lbs and black hardware to 8-10 ft-lbs.
INSTALLATION INSTRUCTIONS

SnapNrack Universal End Clamp

1) Slide the preassembled Universal End Clamp (UEC) into the end of the rail.

2) Lift the module and slide the universal end clamp under the module far enough to pass the lip of the bottom edge of the module.

3) Use the pull tab to pull the universal end clamp tight to the end of the rail.

4) Hold and tighten the universal end clamp to 12 - 16 ft-lbs. Then install rubber end cap to finish.

Install Note:
Modules need to be grounded separately when Universal End Clamps are the only type of clamp attaching a module.
MLPE Installation

Required Tools

- Torque Wrench
- Socket Wrench
- 1/2" Socket

Materials Included - MLPE Rail Attachment Kit

1. (1) 5/16" X 1-1/2" X 0.125" SS Fender Washer
2. (1) SnapNrack Channel Nut
3. (1) 5/16"-18 X 1-1/4" SS Flange Bolt

Other Materials Required

1. (1) MLPE Unit

Materials Needed - Enphase Frame Mount

1. (1) Enphase Microinverter
2. (1) Enphase Frame Mount

Materials Needed - SolarEdge Frame Mount

1. (1) SolarEdge Optimizer
   w/ Frame-Mounted Module Add-On
MLPE Installation

INSTALLATION INSTRUCTIONS - MLPE RAIL ATTACHMENT

1) Snap the SnapNrack MLPE Rail Attachment Kit channel nut into the desired location on the rail where the microinverter will be installed.

2) Install the microinverter mounting plate onto the bolt of the MLPE Rail Attachment Kit, ensuring that the large fender washer is between the rail and mounting plate.

3) Tighten hardware, torque silver hardware to 10 ft-lbs.

Install Note:
Bolt and washers may need to be removed and then replaced.

INSTALLATION INSTRUCTIONS - SOLAREEDGE FRAME MOUNT

1) Locate the SolarEdge optimizer with Frame-Mounted Module Add-On at a location on the module frame that will not interfere with the SnapNrack rail.

2) Install the optimizer mounting plate onto the module frame and tighten hardware to 7 ft-lbs.

3) Connect the module leads to the input connectors on the optimizer.

Install Note:
Refer to the SolarEdge optimizer Frame-Mounted Module Add-On installation guide for additional instructions.
1) Locate the Enphase Frame Mount bracket clamp at a location on the module frame that will not interfere with the SnapNrack rail.

2) Slide the microinverter unit onto the bracket clamp, then move it slightly to the left.

3) Tighten hardware to 13 ft-lbs

**Install Note:**
The microinverter mounting flange should be on the outside of the module frame.

4) Connect the module leads to the microinverter DC connectors.

**Install Note:**
Refer to the Enphase Frame Mount installation guide for additional instructions.
Grounding Specifications

System Bonding Methods

1. SnapNrack Mid Clamp
2. SnapNrack Adjustable End Clamp
3. SnapNrack Pipe Clamp
4. Hollaendar Pipe Fittings

Note:
SnapNrack module clamps contain a SnapNrack Channel Nut with integral bonding pins in assembly to properly bond the system (except Universal End Clamps).

SnapNrack Ground Lug Assembly
Grounding Specifications

Ilsco Lay-in Lug Assembly

Ground Path Details

rail  pipe fitting  pipe clamp  ground lug

module clamp

m = midclamp
x = x-end clamp
u = universal end clamp

to egc
Ground Path Details - SolarEdge

Ground Path Specifications

- **Ground Path**: Indicates the path for ground current.
- **Rail**: Represents the structural element of the system.
- **Pipe Fitting**: Connects different parts of the grounding system.
- **Pipe Clamp**: Secures the pipe connections.
- **Ground Lug**: Part of the electrical connection.
- **Equipment Grounding Conductor**: Connects the system to the grounding source.
- **SolarEdge Optimizer**: Component of the solar system.
- **Module Clamp**: Used for securing modules.
- **Midclamp (M)**: Indicates a midsection clamp.
- **X-End Clamp (X)**: Indicates a clamp at the X-end.
- **Universal End Clamp (U)**: Indicates a clamp at the universal end.

Diagram shows the grounding path connections to EGC (Equipment Grounding Conductor) through various components and clamps.
Grounding Specifications

Ground Path Details - Enphase

Diagram showing the ground path details with symbols for rail, pipe fitting, equipment grounding, pipe clamp, module clamp, midclamp, x-end clamp, and universal end clamp. The diagram illustrates the connection to the equipment grounding conductor (EGC) and includes labels for midclamp (M), x-end clamp (X), and universal end clamp (U).
INSTALLATION INSTRUCTIONS

SnapNrack Ground Lug

1) Snap the SnapNrack Ground Lug into the rail channel on one rail per array.

2) Place grounding conductor into slot underneath split ring washer.

3) Tighten all hardware to a minimum of 16 ft-lbs.

Install Note:
SnapNrack Ground Lug may be used in top or bottom channel, and may be rotated 90 degrees relative to slot to facilitate running copper across top of rails.

Install Note:
SnapNrack Ground Lug only Listed for use with 6-12 AWG solid copper conductor.
INSTALLATION INSTRUCTIONS

Ilresco Lay-In Lug

1) Drill a 3/8” hole in side of the rail for the Ilsco lug to attach to, place the bolt through the hole, and attach the lug assembly on one rail per array.

2) Place grounding conductor into slot.

3) Tighten set screw per Ilsco’s recommendation (see below).

Install Note:
Torque rail connection to 5 ft-lbs.

Install Note:
Torque set screw to 20 in-lbs for #10–#14 solid and stranded copper, 25 in-lbs for #8 stranded copper, and 35 in-lbs for #4–#6 stranded copper.

Note:
- System has been evaluated to a maximum overcurrent device (OCD) protection level of 20 Amps.
- Universal End Clamp (UEC) does not bond module to rail. Be sure to separately ground any modules that are only secured by UECs, especially during servicing.
- SnapNrack Ground Lug: torque bolt to 16 ft-lbs. The Ground Lug may be used in top or bottom channel. It may be rotated 90 degrees relative to slot to facilitate running copper across top of rails.
- Grounding with a standard Ilsco GBL-4DBT Lug is a listed alternate and requires drilling of a hole in the rail.
- Hardware connection to rail: 5 ft-lbs. Torque for lug set screw: #10–#14 solid and stranded copper- 20 in-lbs, #8 stranded copper- 25 in-lbs, #4–#6 stranded copper- 35 in-lbs.
Grounding Specifications

Series 200 has been tested with the following UL Listed modules:

The Series 200 System employs top-down clamps which have been evaluated for frame-to-system bonding, at a specific mounting torque and with the specific modules listed below. The system has been assessed to a maximum Over-Current Device (OCD) protection level of 20 amps.


Jinko Solar: JKMxxxP-60 – JKM250P-60, JKM255P-60, JKM260P-60, JKM265P-60; JKMxxxP-60 – JKM305P-60, JKM310P-60, JKM315P-60, JKM320P-60, JKM325P-60, JKM330P-60, JKM335P-60, JKM340P-60, JKM345P-60, JKM350P-60, JKM355P-60, JKM360P-60; JKMxxxP-72 – JKM255P-72, JKM260P-72, JKM265P-72, JKM270P-72, JKM275P-72, JKM300P-72, JKM305P-72, JKM310P-72, JKM315P-72, JKM320P-72, JKM325P-72, JKM330P-72, JKM335P-72, JKM340P-72, JKM345P-72, JKM350P-72, JKM355P-72, JKM360P-72

REC Solar AS: REC214, REC215, REC220, REC225, REC230, REC235, REC240, REC245, REC250, REC255, REC260, REC265, REC270; all followed by PE, PE(BLK), PE-US, PE-US(BLK), PE Q2 or PE Q3


Suniva Inc: MVX-235-60-5-701, MVX-240-60-5-701, MVX-245-60-5-701, MVX-250-60-5-701, MVX-255-60-5-701, MVX-260-60-5-701, MVX-265-60-5-701; MVX-235-60-5-7B1, MVX-240-60-5-7B1, MVX-245-60-5-7B1, MVX-250-60-5-7B1, MVX-255-60-5-7B1, MVX-260-60-5-7B1, MVX-265-60-5-7B1; OPT-250-60-4-800, OPT-255-60-4-800, OPT-260-60-4-800, OPT-265-60-4-800, OPT-270-60-4-800, OPT-275-60-4-800; OPT-250-60-4-8B0, OPT-255-60-4-8B0, OPT-260-60-4-8B0, OPT-265-60-4-8B0, OPT-270-60-4-8B0, OPT-275-60-4-8B0

Talesun: TP660P-xxx – TP660P-240, TP660P-245, TP660P-250, TP660P-255, TP660P-260, TP660P-265
Grounding Specifications

Trina Solar Ltd: TSM-xxxPD05 – TSM-215PD05, TSM-220PD05, TSM-225PD05, TSM-230PD05, TSM-235PD05, TSM-240PD05, TSM-245PD05, TSM-250PD05, TSM-255PD05, TSM-260PD05, TSM-265PD05; TSM-xxxPD05.05 – TSM-245PD05.05, TSM-250PD05.05, TSM-255PD05.05, TSM-260PD05.05; TSM-xxxPD05.08 – TSM-215PD05.08, TSM-220PD05.08, TSM-225PD05.08, TSM-230PD05.08, TSM-235PD05.08, TSM-240PD05.08, TSM-245PD05.08, TSM-250PD05.08, TSM-255PD05.08, TSM-260PD05.08; TSM-xxxPA05 – TSM-215PA05, TSM-220PA05, TSM-225PA05, TSM-230PA05, TSM-235PA05, TSM-240PA05, TSM-245PA05, TSM-250PA05, TSM-255PA05, TSM-260PA05; TSM-xxxPA05.05 – TSM-215PA05.05, TSM-220PA05.05, TSM-225PA05.05, TSM-230PA05.05, TSM-235PA05.05, TSM-240PA05.05, TSM-245PA05.05, TSM-250PA05.05, TSM-255PA05.05, TSM-260PA05.05; TSM-xxxPA05.08 – TSM-215PA05.08, TSM-220PA05.08, TSM-225PA05.08, TSM-230PA05.08, TSM-235PA05.08, TSM-240PA05.08, TSM-245PA05.08, TSM-250PA05.08, TSM-255PA05.08, TSM-260PA05.08


NRTL Listed PV Modules:


ET Solar: P660xxxBB – P660200BB, P660205BB, P660210BB, P660220BB, P660225BB, P660230BB, P660235BB, P660240BB, P660245BB, P660250BB, P660255BB, P660260BB; P660xxxWB/WW – P660200, P660205, P660210, P660215, P660220, P660225, P660230, P660235, P660240, P660245, P660250, P660255, P660260, P660265; all followed by WB or WW; P660xxxWWG – P660240WWG, P660245WWG, P660250WWG; M660xxxBB – M660250BB, M660255BB, M660260BB, M660265BB; M660xxxWW – M660200WW, M660205WW, M660210WW, M660215WW, M660220WW, M660225WW, M660230WW, M660235WW, M660240WW, M660245WW, M660250WW, M660255WW, M660260WW, M660265WW, M660270WW


Hanwha SolarOne: HSL60P6-PC-3-245, HSL60P6-PC-3-250, HSL60P6-PC-3-255, HSL60P6-PC-3-260, HSL60P6-PC-3-265, HSL60P6-PC-3-270; all followed by W or B; HSL60P6-PB-2-230Q, HSL60P6-PB-2-235Q, HSL60P6-PB-2-240Q, HSL60P6-PB-2-245Q, HSL60P6-PB-2-250Q, HSL60P6-PB-2-255Q, HSL60P6-PB-2-260Q, HSL60P6-PB-2-265Q, HSL60P6-PB-2-270Q; all followed by additional suffixes.


Grounding Specifications

Solar World: SWxxx-Mono (33mm frame, 5 busbar) – SW285-Mono, SW290-Mono, SW295-Mono, SW300-Mono; SWxxx-Mono (33mm frame) – SW280-Mono, SW285-Mono, SW290-Mono, SW295-Mono; SWxxx-Mono Black (33mm frame) – SW275-Mono Black, SW280-Mono Black, SW285-Mono Black, SW290-Mono Black; SWxxx-Poly (33mm black frame) – SW250-Mono Black, SW255-Mono Black, SW260-Mono Black; SW xxx XL Mono (33mm frame); SW 320 XL Mono, SW 325 XL Mono; SW xxx XL Mono (33mm frame) – SW 340 XL Mono, SW 345 XL Mono, SW 350 XL Mono

Suniva Inc: OPTXXX-60-4-YYY; where XXX may be numbers 240 to 270 in increments of 5; where YYY may be 100; OPTXXX-60-4-YYY; where XXX may be numbers 235 to 265 in increments of 5; where YYY may be 1B0

REC Solar AS: RECxxxPE Series – REC214PE, REC215PE, REC220PE, REC225PE, REC230PE, REC235PE, REC240PE, REC245PE, REC250PE, REC255PE, REC260PE, REC265PE, REC270PE; may be followed by BLK; RECxxxTP Series – REC260TP, REC265TP, REC270TP, REC275TP, REC280TP; may be followed by BLK


Trina Solar Ltd: TSM-xxxPA05 – TSM-215PA05, TSM-220PA05, TSM-225PA05, TSM-230PA05, TSM-235PA05, TSM-240PA05, TSM-245PA05, TSM-250PA05, TSM-255PA05, TSM-260PA05; TSM-xxxPA05.05 – TSM-215PA05.05, TSM-220PA05.05, TSM-225PA05.05, TSM-230PA05.05, TSM-235PA05.05, TSM-240PA05.05, TSM-245PA05.05, TSM-250PA05.05, TSM-255PA05.05, TSM-260PA05.05, TSM-xxxPA05.08 – TSM-215PA05.08, TSM-220PA05.08, TSM-225PA05.08, TSM-230PA05.08, TSM-235PA05.08, TSM-240PA05.08, TSM-245PA05.08, TSM-250PA05.08, TSM-255PA05.08, TSM-260PA05.08, TSM-265PA05.08; TSM-xxxPD05.002 – TSM-245PD05.002, TSM-250PD05.002, TSM-255PD05.002, TSM-260PD05.002, TSM-265PD05.002, TSM-270PD05.002, TSM-275PD05.002, TSM-280PD05.002, TSM-285PD05.002, TSM-290PD05.002, TSM-295PD05.002, TSM-300PD05.002, TSM-305PD05.002, TSM-310PD05.002; TSM-xxxPD05.082 – TSM-245PD05.082, TSM-250PD05.082, TSM-255PD05.082, TSM-260PD05.082, TSM-265PD05.082, TSM-270PD05.082, TSM-275PD05.082, TSM-280PD05.082, TSM-285PD05.082, TSM-290PD05.082, TSM-295PD05.082, TSM-300PD05.082, TSM-305PD05.082, TSM-310PD05.082