SUNRAIL™
INVERTER RACK

FLAT ROOF RACKING SYSTEM

Installation Manual

RELEASE, FEB. 2026

TABLES OF CONTENT

INTRODUCTION

About this manual

This manual serves as a comprehensive guide for installing an Opsun's SunRail Inverter Rack system. It meticulously covers each step of the assembly process, with references to the parts list for easy identification of required items. The guide is structured into sections, each addressing milestone assembly steps and including sub-assembly steps where necessary.

General Notes

For grounding, use a conductor with at least the following specifications: 6 AWG copper rated at 90°C, compliant with UL2703, and UL467 connectors.

Opsun requires installers to fully adhere to local safety regulations, including those set by OSHA, CCOHS, or other relevant local safety standards. Installers must use fully qualified personnel equipped with the appropriate personal protective equipment and tools.

Product overview

Opsun's SunRail Inverter Rack system is a versatile and highly efficient mounting solution designed to fit the majorities of inverter models.

Faster installation

SunRail Inverter Rack is designed for quick installation, featuring preassembled parts and standardized bolts and nuts. This streamlined approach makes the installation process 25% faster than traditional racking systems.

Durability

Constructed with aluminium extrusion and stainless-steel fasteners, the system boasts a lightweight yet robust design.

Warranty

No insurance claims, no incident, Opsun provides a 20+ year warranty.

Maintenance

Maintenance must be performed annually to ensure the safety of the system (see O&M section).

Disclaimer

SAFETY MEASURE

Warnings

During any solar power installation, the first step is to ensure the personnel are properly trained. It is not enough to know how to carry out their operations safely; they must also be trained to handle emergency situations in a timely and effective manner.

PEE

High-quality and well-maintained Personal Protective Equipment (PPE) is to be used during the solar power installation.

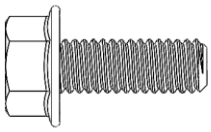
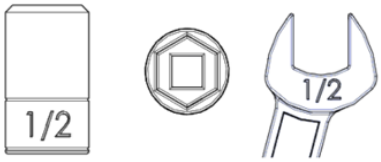
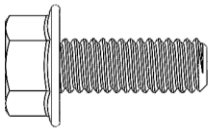
1. Safety shoes
2. Safety helmet
3. Reflecting jackets
4. Gloves
5. Safety Glasses
6. Full body harness with lifeline

Electric Hazard

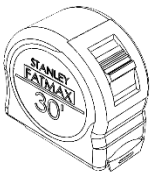
Working with solar panel electricity can be particularly hazardous because solar panels are always "live" and cannot be de-energized. It is essential to follow all electrical safety rules. If you are not well-versed in electrical safety, it is advisable to consult an electrician. You can still handle the mechanical installation of your solar array and racking yourself, then hire an electrician to take care of the electrical connections.

Another unique danger associated with solar power is arc flashes. When multiple solar panels are connected in a string, they produce high DC voltage, which can cause electric shocks or create an electrical arc if the string is disconnected under load. An electrical arc can be intense enough to cause blindness and generate enough heat to burn the oxygen in the air and ignite your clothing.

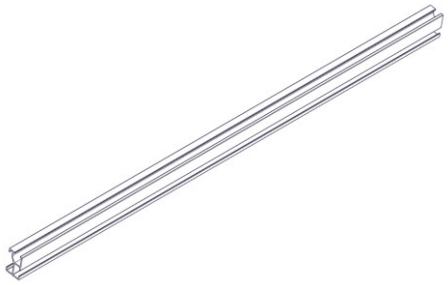
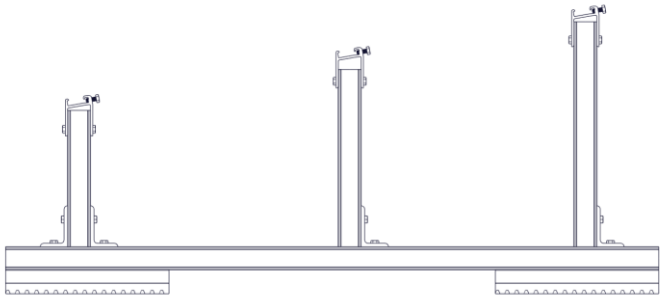
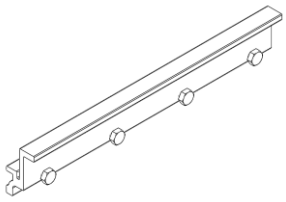
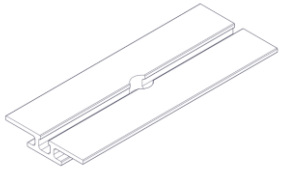
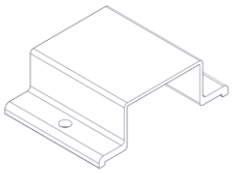
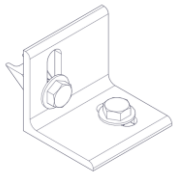
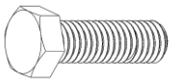
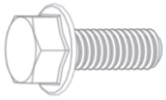
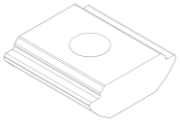
PREPARATION

Fastener	Tool	Torque
5/16” Fasteners 		19.0 N·m (14 lbf•ft)
3/8” Fasteners 		27.1 N·m (20 lbf•ft)

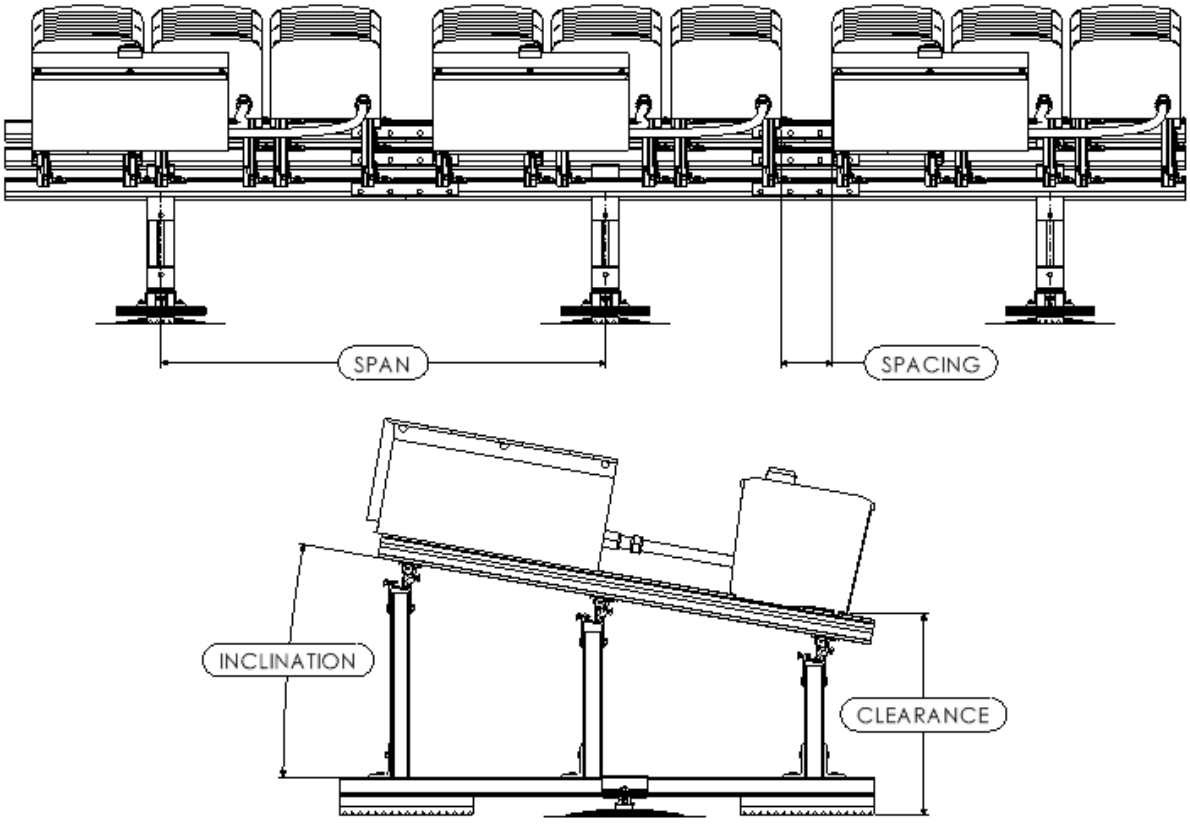
Other tools to simplify the installation:

Impact Drill	Tape Measure
	

SYSTEM COMPONENTS

Cross Rail 		Ground Beam 	
Normal Linker Assembly 	Bottom Hat 	Top Hat 	Side Clamp 
Bolt 	Serrated Flange Bolt 	Nut 	Fit Nut 

SYSTEM DETAILS



Spacing: Space between two inverters

Inclination: Angle of the system

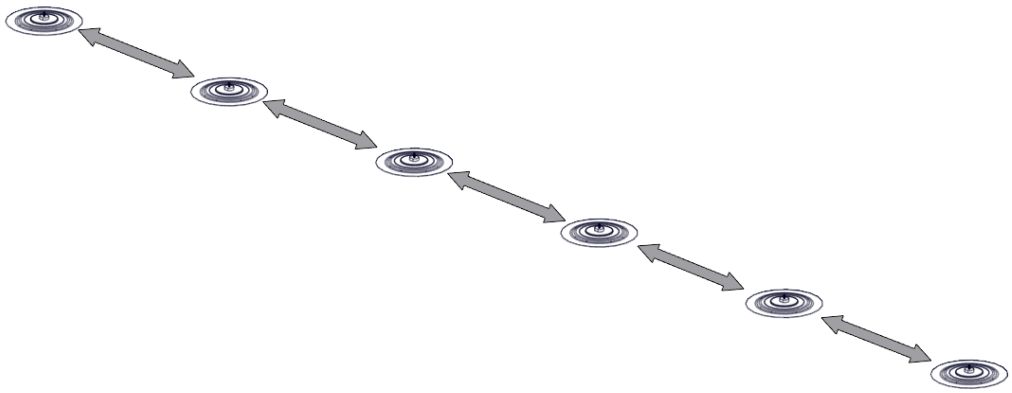
Clearance: Distance from the roof to the lower point of the inverter

Span: Distance between two anchors

INSTALLATION

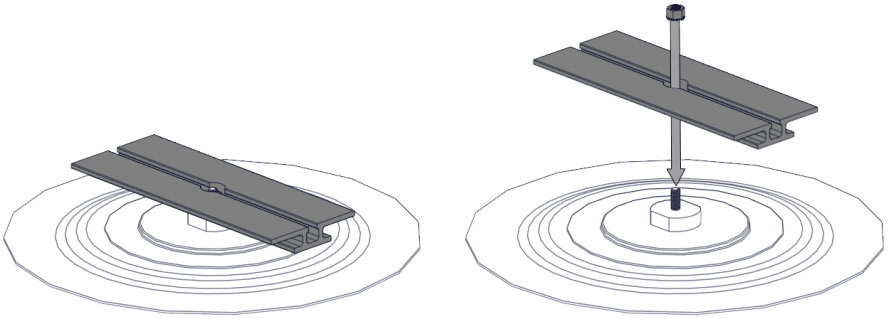
Anchor Installation

Locate the anchor as Opsun recommendation spacing, for the number of units



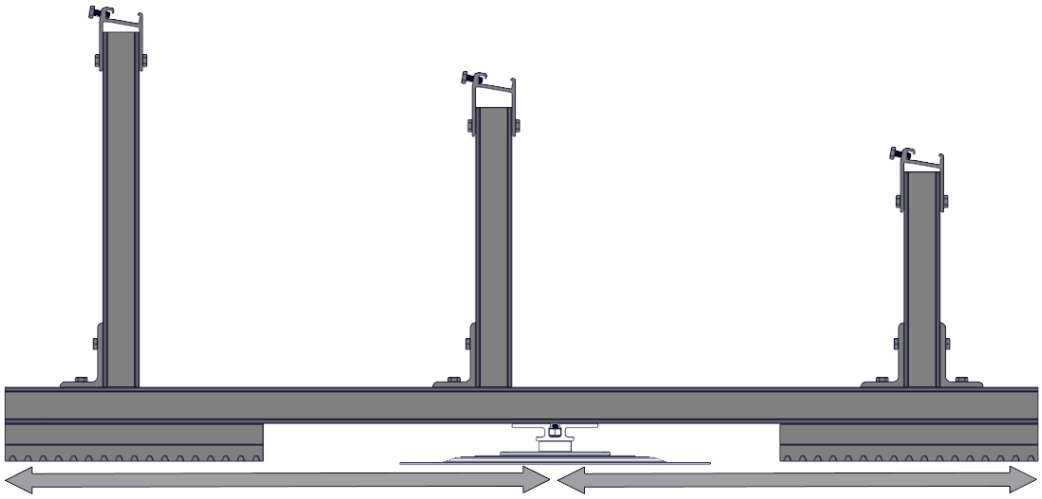
Anchor Adaptor Installation

Place a bottom hat on the anchor stud and fix it in place.



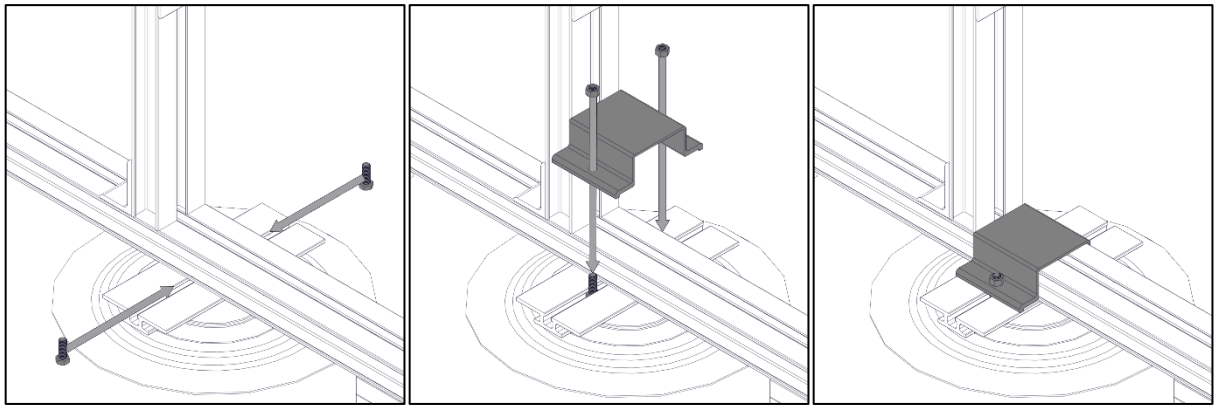
Ground Beam Installation

Place the ground beam over the bottom hat, install previously, as center as possible.



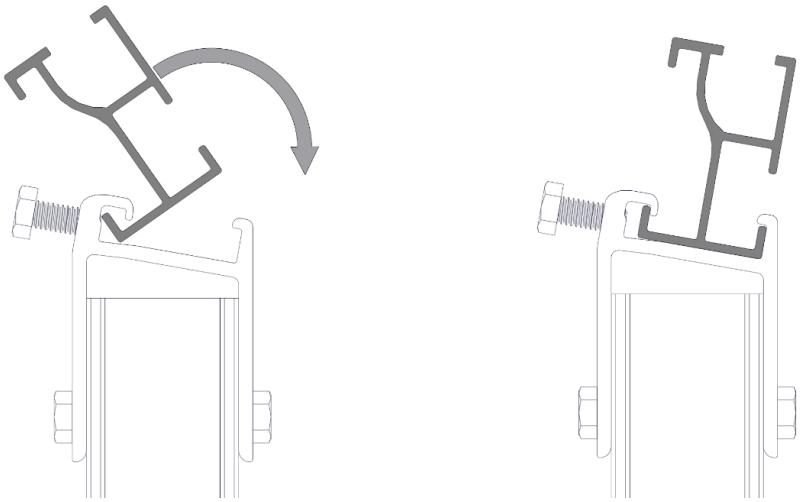
Secure Ground Beam

When the ground beam in place, secure it by placing a top hat over it and bolt it in place.



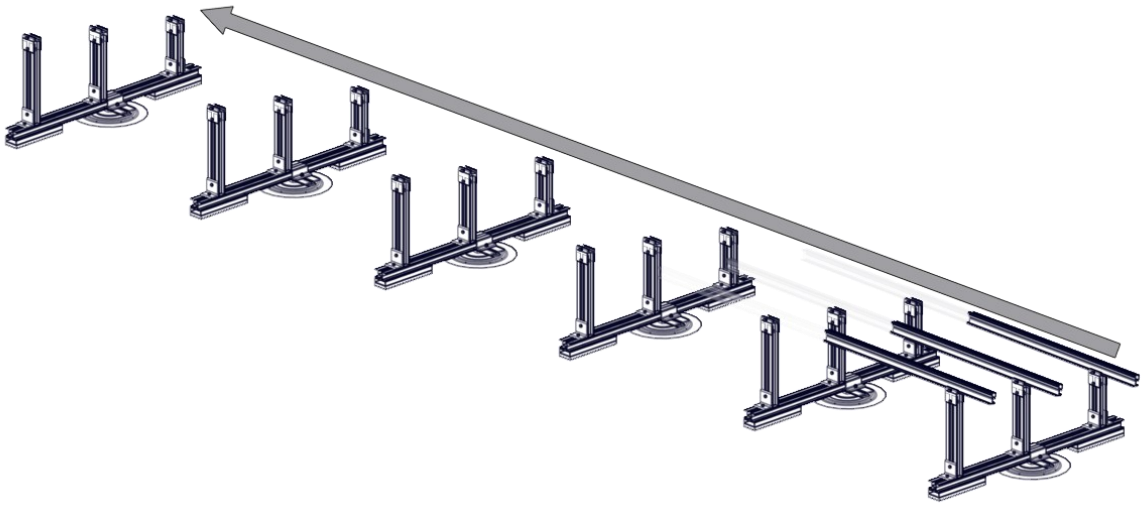
Rail Installation

Place a cross rail inside the inclined bracket.



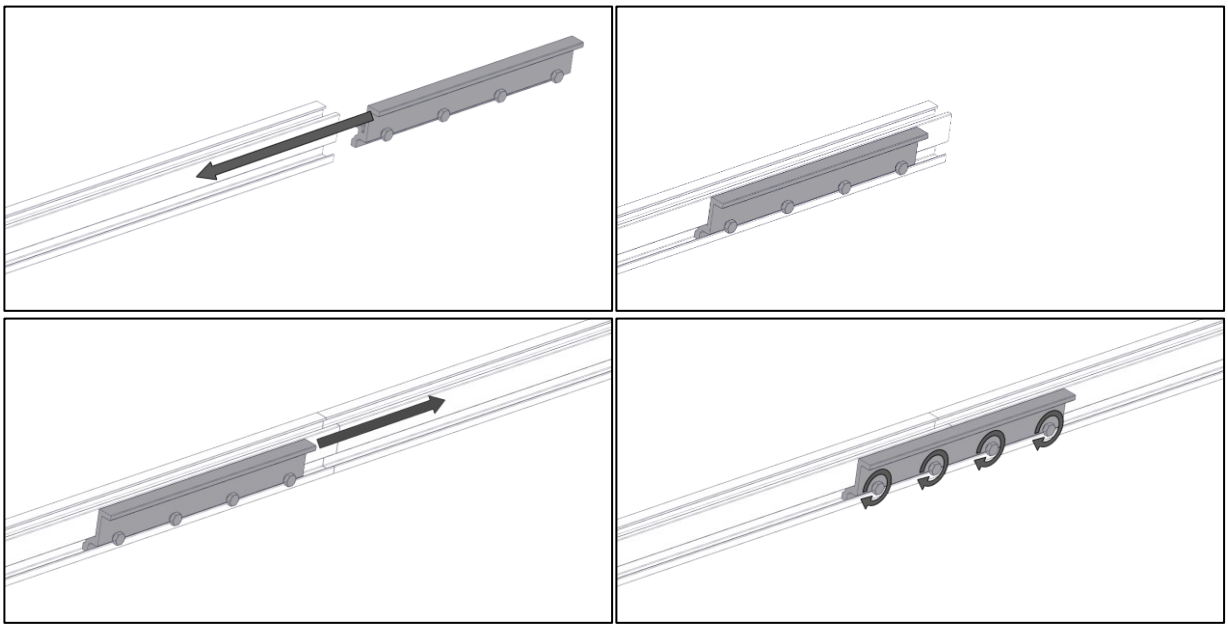
Rail Distribution Installation

Repeat the last step for each inclined bracket, until you complete the system.



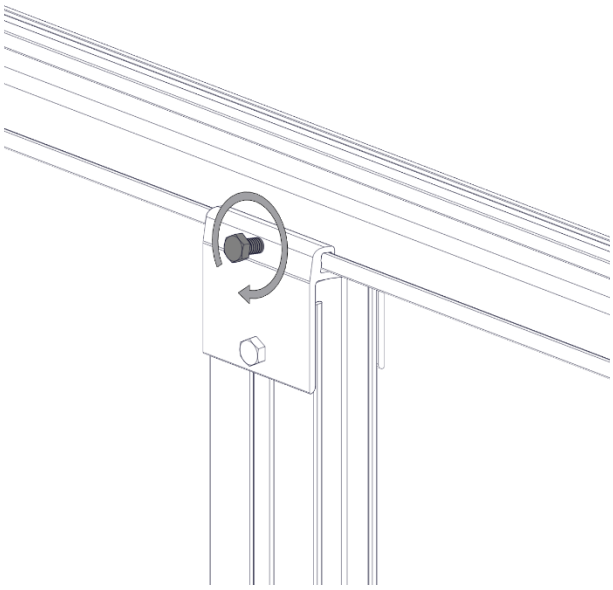
Linker Installation

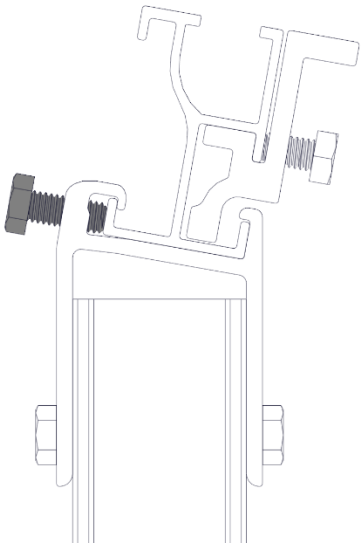
At each rail intersection, link both rail with a linker by tightening all four bolts.



Rail Secured

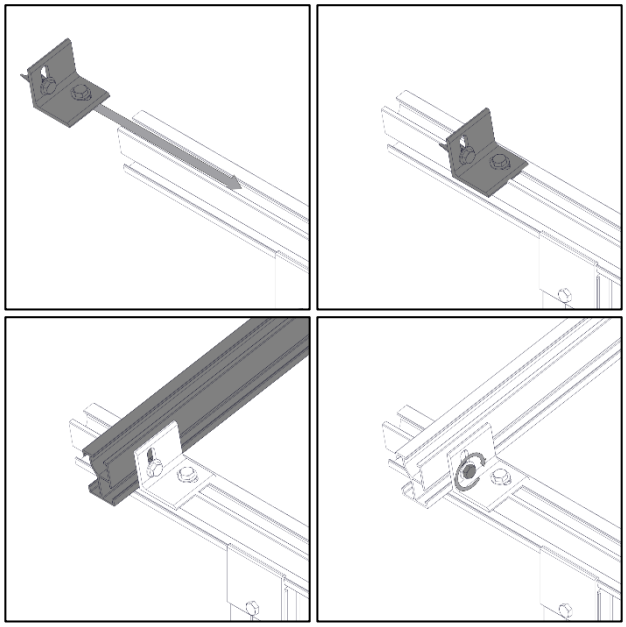
Secure all rails by tightening the SC2 bracket on the inclined adapter.





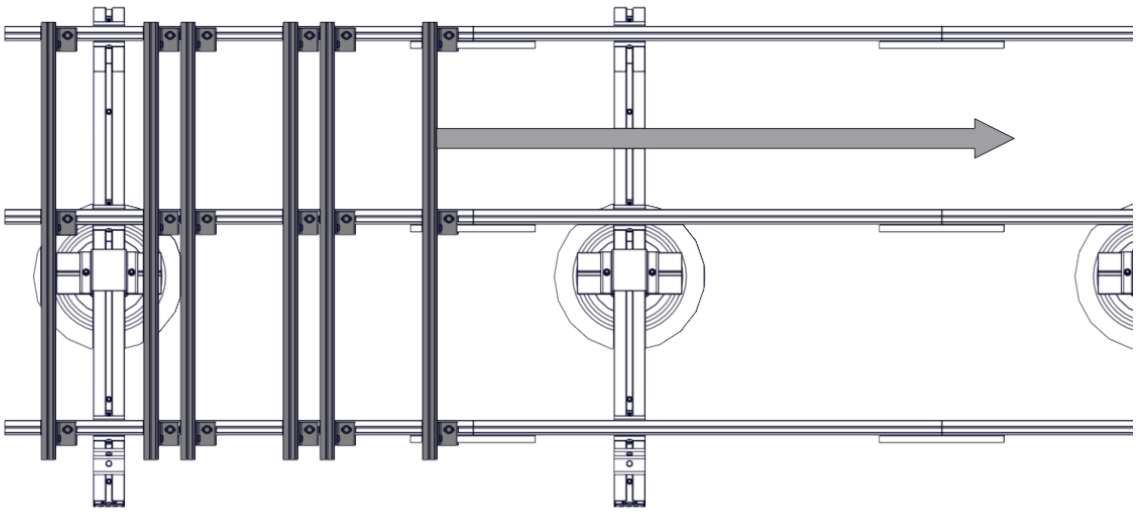
Side clamp Installation

Install rail transversal with the side clamp, position the support rail to fit



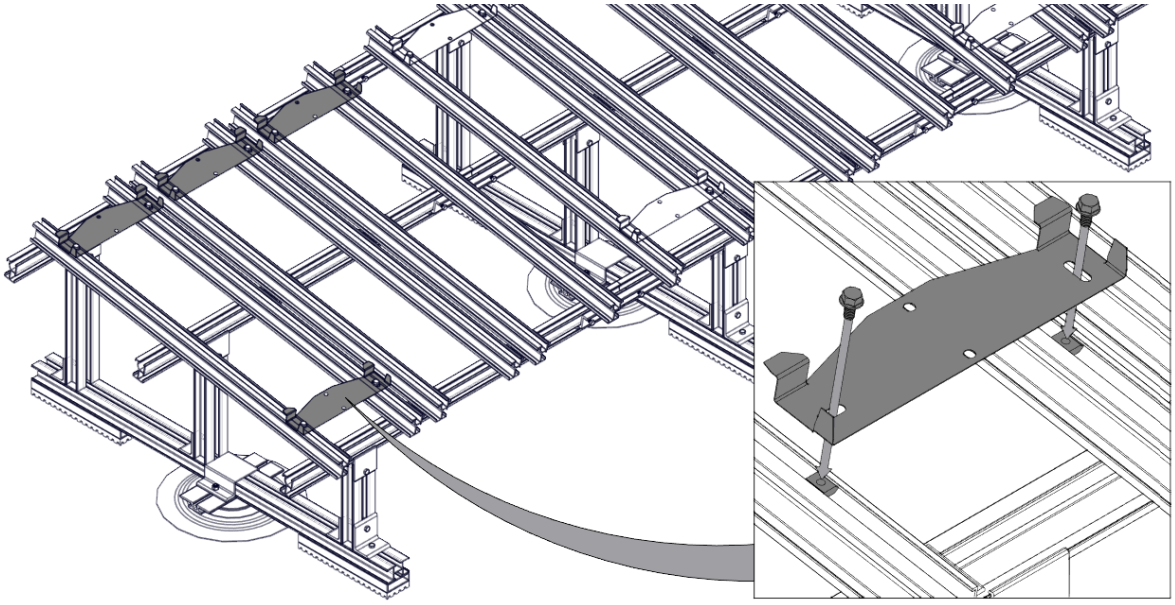
Support Rail Installation

Repeat the previous step, for each support location as recommended in the inverter manual. (respecting spacing between inverter)



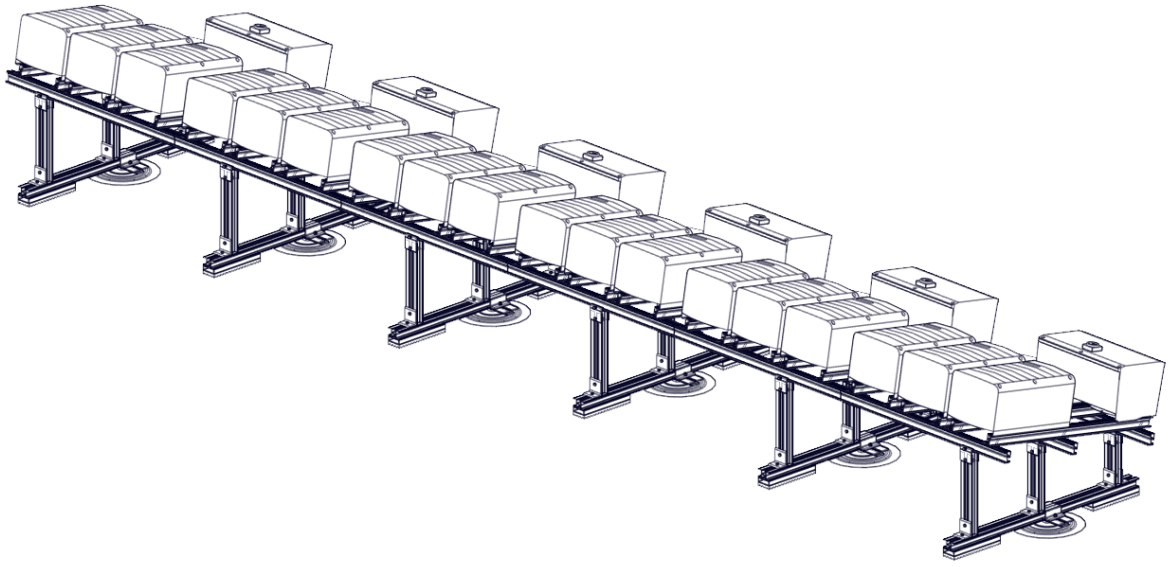
Inverter Bracket Installation

Install the inverter bracket, as recommended by the inverter manual, using the rail as fixation support.



Inverter Installation

Install the inverter on they support bracket as recommended per the manufacturer.



OPERATION AND MAINTENANCE

General instruction

Proper operation and maintenance of a solar array are crucial to maintain the energy generation of a photovoltaic system of any type. Preventive maintenance is a necessary practice to avoid any potential problems or major failure. There are many different PV system components that must be followed up during the life of a solar system, and the racking component is one of them. Opsun racking systems are manufactured to last through decades of harsh environments. But even if it is one of the sturdiest solar racking systems out there, routine inspection must be conducted along with other maintenance of the solar generation system. At least once a year, O&M personnel must conduct a general inspection of the PV installation site.

General Inspection

The following checklist is the racking-related (mounting) elements that must be thoroughly inspected yearly.

1. Check for any visual damage of the PV module.
2. Check for cleanliness throughout the site—there should be no debris that can move anywhere on the site where there are solar panels.
3. Check for damaged or loose-hanging wires in the array.
4. Confirm expansion joints can move appropriately where needed.
5. Check for signs of animal nests under the array and inside the different electrical boxes.
6. Check if the PV panel are clean and, needed, wash them with soap and water, to increase production (clean all dust, bird seeds and droppings, dead leaves, etc.)
7. Check for potential shadows caused by the installation of new equipment or items such as a tree that grew or a new satellite dish.

Racking Inspection

1. Check that there is no physical damage around the PV racking expansion joints.
2. Check if any racking components are loose or damaged, and perform some random torque checks of all different types of screws and bolted connections without Loctite.
3. Check for signs of rust at the terminal and ground wire connection.
4. Check for signs of rust around structural components and connections.
5. Check for any visual damage on the PV clamps and ensure that they are solidly secured.
6. Remove any presence of racking stress in the structure that can be caused by environmental forces (wind, snow, or seismic forces or building structure movement).