SunPower Maxeon and Performance Photovoltaic Panels

Safety and Installation Instructions for Europe, Asia, Australia, Latin America and Africa

> Available Languages: English French German Italian Spanish Polish Indonesian

SunPower Maxeon and Performance Photovoltaic panels



Safety and Installation Instructions (English - IEC Version)

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This document includes references to X-Series, Maxeon and Performance modules:

- SPR-XYY-XXX-COM
- SPR-MAX3-XXX, SPR-MAX3-XXX-BLK, SPR-MAX3-XXX-COM, SPR-MAX3-XXX-R, SPR-MAX3-XXX-BLK-R
- SPR-MAX5-XXX
- SPR-MAX6-XXX, SPR-MAX6-XXX-BLK, SPR-MAX6-XXX-COM
- SPR-MAX7-XXX-PT
- SPR-P3-XXX-BLK, SPR-P3-XXX-UPP
- SPR-P5-XXX-UPP
- SPR-P6-XXX-COM-M-BF, SPR-P6-XXX-XOM-S-BF, SPR-P6-XXX-BLK, SPR-P6-XXX-COM-XS
- SPR-P7-XXX-COM-S, SPR-P7-XXX-BLK

Do not mix X, MAX3, MAX5, MAX6, MAX7, P3, P5, P6 and P7 in one system. All module series does not require functional grounding and are compatible with transformer-less inverters (ref. section 4.1)

This document describes the limited warranty, mounting configuration, handling, maintenance and cleaning of modules. Save this documentation for future reference and comply with all provided instructions.

In case of inconsistencies or conflicts between the English version and any other versions of this manual (or document), the English version shall prevail and take control in all respects.



For the latest revision, please refer to <u>www.sunpower.maxeon.com/int/PVInstallGuideIEC</u> Contents of this manual are subject to change without notice. Maxeon Solar Technologies, Ltd. <u>www.sunpower.maxeon.com</u>

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1.0 Introduction

This manual provides safety and installation instructions for IEC certified Maxeon photovoltaic modules carrying the TUV logo on the product label (Figure 1).



Figure 1

Important! Please read this instruction sheet in its entirety before installing, wiring, or using this product in any way. Failure to comply with these instructions will invalidate the Maxeon Limited Warranty for PV Modules.

1.1 Disclaimer of Liability

The installation techniques, handling and use of this product are beyond company control. Therefore, Maxeon does not assume responsibility for loss, damage or expense resulting from improper installation, handling or use.

1.2 Conformity to International Electrotechnical Commission (IEC) standards

This product meets or exceeds the requirements set forth by IEC 61215 Edition 3-2016 for PV Modules, as well as IEC 61730 Edition 1 and 2 series for Class II applications. The IEC Standard covers flat-plate PV modules intended for installation on buildings and those intended to be freestanding. This product is not intended for use where artificially concentrated sunlight is applied to the module. This manual shall be used in combination with industry recognized best practices. Modules should be installed by certified professionals only.

1.3 Limited Warranty

Module limited warranties are described in the Maxeon warranty document obtainable at <u>www.sunpower.maxeon.com</u>. Please read this document for more information.

Warranties do not apply to any of the following;

PV Modules subjected to: (i) misuse, abuse, neglect or accident; (ii) alteration or improper installation (improper installation includes, without limitation, installation or array that does not comply with all Maxeon installation instructions and operations and maintenance instructions of any type (as may be amended and updated from time to time at Maxeon's sole discretion), and all national, state, and local laws, codes, ordinances, and regulations); (iii) repair or modification by someone other than an approved service technician of Maxeon; (iv) conditions exceeding the voltage, wind, snow load specifications; and any other operational specification; (v) power failure surges, lightning, flood, or fire; (vi) damage from persons, biological activity, or industrial chemical exposure; (vii) glass breakage from impact or other events outside Maxeon's control.

2.0 Safety Precautions

Before installing this device, read all safety instructions in this manual.

Danger! Module interconnects pass direct current (DC) and are sources of voltage when the module is under load and when it is exposed to light. **Direct current can arc across gaps and may cause injury or death if improper connection or disconnection is made, or if contact is made with module components that are damaged.** Do not connect or disconnect modules when current from the modules or an external source is present.

- Cover all modules in the PV array with an opaque cloth or material before making or breaking electrical connections.
- Do not disconnect any modules when its inverter is feeding in to the grid. Switch off the inverter before disconnecting, reinstalling or making any action with the modules.
- For connectors, which are accessible to untrained people, it is imperative to use the locking connectors and safety clips, if applicable, in order to defend against untrained personnel disconnecting the modules once they have been installed.
- All installations must be performed in compliance with all applicable regional and local codes.
- There are no user serviceable parts within the module. Do not attempt to repair any part of the module.
- Installation should be performed only by qualified personnel.
- Remove all metallic jewelry prior to installing this product to reduce the chance of accidental exposure to live circuits.
- Use insulated tools to reduce your risk of electric shock.
- Do not stand on, walk, drop, and scratch or allow objects to fall on the glass surface of the modules.
- Damaged modules (broken glass, torn back sheet, broken j-boxes, broken connectors, etc) can be electrical hazards as well as laceration hazards. Contact with damaged module surfaces or module frame can cause electric shock. Damaged modules should be immediately disconnected from the electric system. The module should be removed from array as soon as possible and contact the supplier for disposal instructions.
- Unconnected connectors must always be protected from pollution (e.g dust, humidity, foreign particles, etc), prior to installation. Do not leave unconnected (unprotected) connectors exposed to the environment. A clean assembly environment is therefore essential to avoid performance degradation.
- Do not allow the connectors to come in contact with chemicals such as sunscreen, greases, oils and organic solvents which may cause stress cracking.
- Do not install or handle the modules when they are wet or during periods of high wind.
- Do not block drain holes or allow water to pool in or near module frames
- Contact your module supplier if maintenance is necessary.
- Save these instructions!

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3.0 Electrical Characteristics

The module electrical ratings are measured under Standard Test Conditions (STC) of 1 kW/m² irradiance with AM 1.5 spectrum and a cell temperature of 25 °C. Maxeon modules have specific electrical characteristics as shown on the datasheets.

A photovoltaic module may produce more current and/or voltage than reported at STC. Sunny, cool weather and reflection from snow or water can increase current and power output. Therefore, the values of I_{sc} and V_{oc} marked on the module should be multiplied by a factor of 1.25 when determining component voltage ratings, conductor ampacities, fuse sizes, and size of controls connected to PV output. An additional 1.25 multiplier may be required by certain local codes for sizing fuses and conductors. Maxeon recommends the use of open-circuit voltage temperature coefficients listed on the datasheets when determining Maximum System Voltage.

4.0 Electrical Connections

Modules may be connected in series and/or parallel to achieve the desired electrical output as long as certain conditions are met. Please use only the same type of modules in a combined source circuit.

Even if allowed by local regulation, Plug and Socket connectors mated together in a PV system must be of the same type (model, rating) from the same manufacturer i.e. a plug connector from one manufacturer and a socket connector from another manufacturer, or vice versa, shall not be used to make a connection. Maxeon recommends that all wiring be double insulated with a minimum rating of 85° C (185° F). All wiring should use flexible copper (Cu) conductors. The minimum size should be determined by the applicable codes. We recommend a size not less than 4mm². The insulation type should be appropriate for the type of installation method used and must meet SCII (Safety Class II) and IEC 61730 requirements. To minimize the risk from indirect lightning strikes (Voltage surges), the system should be designed to avoid loops in the wiring.

Maxeon recommends a conservative minimum bending radius (R) 5x cable diameter must be maintained and must not be bent on the direct exit of the connector or junction box. Avoid exposure of electrical connections to direct sunlight and do not place the connector in a location where water could easily accumulate. Installers must refer to connector manufacturer's instruction for further installation and connection requirements.

Connectors are factory assembled with intentional gaps between the cable nut and the body of the connector. Do not retighten module connector nuts as this may lead to stress cracking of the connector assembly and will void the warranty.

4.1 System & Equipment Grounding

Please refer to the applicable regional and local codes on grounding PV arrays and mounting frames for specific requirements (e.g. lightning protection).

Module Types

SPR X, P series modules and our Maxeon and Performance Product Line are compatible with Transformer Less (TL) inverters, when used as an ungrounded PV source. No frame grounding requirements (including functional frame grounding), but may be subjected to local regulation. Functional system grounding of a polarity (positive or negative) is optional and may be subject to local requirements. X Series:

SPR-Xyy-xxx-COM

P Series/ Performance Product Line:

SPR-P3-xxx-BLK SPR-P3-xxx-UPP SPR-P5-xxx-UPP SPR-P6-xxx-COM-M-BF SPR-P6-xxx-COM-S-BF SPR-P6-xxx-BLK SPR-P6-xxx-COM-XS SPR-P7-xxx-COM-S SPR-P7xxx-BLK

Maxeon Product Line:

SPR-MAX3-xxx SPR-MAX3-xxx-BLK SPR-MAX3-xxx-BLK-R SPR-MAX3-xxx-R SPR-MAX3-xxx-COM SPR-MAX5-xxx SPR-MAX6-xxx SPR-MAX6-xxx-BLK SPR-MAX6-xxx-COM SPR-MAX7-XXX-PT

Note: If you are installing an older Module Type than above mentioned, please refer to different/previous applicable Safety and Installation Manual.

If you are doing a frame grounding connection, avoid the direct contact between Aluminum and Copper using an intermediate metal like stainless steel or tin.

4.2 Series Connection

The modules may be wired in series to produce the desired voltage output. Do not exceed the maximum system voltage specified in module datasheet.

4.3 Parallel Connection

The modules may be combined in parallel to produce the desired current output. Series string must be fused prior to combining with other strings if the resulting maximum reverse current exceeds the fuse rating as shown in the datasheets. Bypass diodes are factory installed in the modules. Please refer to the applicable regional and local codes for additional fusing requirements and limitations on the maximum number of modules in parallel.

5.0 Module Mounting

The Maxeon *Limited* Warranty for PV Modules is contingent upon modules being mounted in accordance with the requirements described in this section.

5.1 Site Considerations

Maxeon modules should be mounted in locations that meet the following requirements:

Operating Temperature: All Maxeon modules must be mounted in environments within the following maximum and minimum operating temperatures:

Maximum Operating Temperature	+85 °C (+185 °F)
Minimum Operating Temperature	-40 °C (-40 °F)

Care should be taken to provide adequate ventilation behind the modules, especially in hot environments.

Shading: Modules should be installed so that permanent shading of cells is avoided and partial shading that may occur during certain times of the day or year is minimized. Permanent shading is defined as shade that is cast over the same position (of constant area) of the solar module throughout the generation hours of the day.

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Shading may induce in certain cases strong energy production reduction, even in case of small shading and should be avoid as much as possible, specially at mid-day when the production is maximum.

Design Strength: Maxeon modules are designed to meet a positive or negative (upward and downward, e.g. wind) withstanding test pressure load and a negative (or downward, e.g. static load or snow load) withstanding test pressure load, as per IEC 61215, when mounted in the configurations specified in Appendix.

When mounting modules in snow prone or high wind environments, special care should be taken to mount the modules in a manner that provides sufficient design strength while meeting local code requirements.

Additional authorized Operating Environments:

Modules can be mounted in the following aggressive environment according to the test limits mentioned below (available upon request)

Salt mist corrosion testing: IEC 61701 Severity 6*

Ammonia Corrosion Resistance: IEC 62716 Concentration: 6,667ppm

*Severity 8 for SPR-P7-XXX-COM-S, SPR-P7-XXX-BLK

Excluded Operating Environments:

Certain operating environments are not recommended for specific Maxeon modules and are excluded from the Maxeon *Limited* Warranty for these modules.

No Maxeon module should be mounted at a site where it may be subject to direct contact with salt water, or other aggressive environment.

Modules should not be installed near flammable liquids, gases, or locations with hazardous materials; or moving vehicules of any type.

Performance Series Mounting Orientation

Performance Series (P-Series) modules are designed to be installed in landscape orientation. In landscape orientation, P-series modules maintain higher power under row to row shading and edge soiling.

5.2 Mounting Configurations

Mounting system must provide a flat plane for the modules to be mounted on and must not cause any twist or stress to be placed on the Module, even in case of thermal expension.

Modules may be mounted at any angle from horizontal to vertical. Select the appropriate orientation to maximize sunlight exposure. Maxeon recommends for a good performance of the system (reduction of soiling effect/water pooling) a minimum of 5° tilt angle. The cleaning frequency must be increased for modules installed with a very low angle.

Commercial modules (128 cells) frames have permanently attached stacking pins located a 20mm zone on the long side frame at 388-408 mm (Appendix). Mounting system hardware used with commercial modules must account for the presence of these stacking pins (Appendix). Specific information on module dimensions and the location of mounting and grounding holes is provided in Appendix

In order to prevent water from entering the junction box, which could present a safety hazard, modules should not be mounted such that the front/top glass faces downward (e.g., on a tracking structure that positions the module with the junction box facing skyward during sleep mode).

It shoule be noted that the watertightness is not ensured by the modules but by the mounting system and that drainage should be well designed for Modules.

Clearance between the module frames and structure or ground is required to prevent wiring damage and allows air to circulate behind the module. The recommended assembling clearance between modules installed and the roof surface should be minimum of 50 mm distance.

When installed on a roof, the module shall be mounted according to the local and regional building and fire safety regulations. In case the module is installed in a roof integrated PV-System (BIPV), it shall be mounted over a watertight and fire-resistant underlayment rated for such application

Modules mounting systems should only be installed on building that have been formally considered for structural integrity, and confirmed to be capable of handling the additional weighted load of the Modules and mounting systems, by a certified building specialist or engineer.

Mounting system supplier shall manage the galvanic corrosion which can occur between the aluminium frame of the Modules and mounting system or grounding hardware if such devices is comprised of dissimilar metals. The module is only certified for use when its factory frame is fully intact. Do not remove or alter the module frame. Creating additional mounting holes or removing the stacking pins may damage the module and reduce the strength of the frame, therefore are not allowed. Using mounting Clamps or clips with additional grounding bolts or grounding metal sheets could be in compliance with this Safety and Installation Instructions manual subject to conditions of Section 4.1

Modules may be mounted using the following methods only:

- Frame Holes: Secure the module to the structure using the factory mounting holes. Four M6 or M8 stainless steel bolts, with nuts, washers, and lock washers are recommended per module. Bolts to be fasten according to racking supplier recommendations. Refer to Appendix for the module dimensions and mounting hole locations.
- 2) **Pressure Clamps or Clips:** Mount the module with the opposite clips on the longer and/or shorter side of the frame of the module. The clips allowed location should be according to Appendix. Installers should ensure the clamps are of sufficient strength to allow for the maximum design pressure of the module. Clips and clamps are not provided by Maxeon.

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Clamps must apply force collinear with the 'wall' of

the module frame and not only to the top flange. Clamps shall not apply excessive force to the top frame, warp the top flange, or contact the glass- these practices void the



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module warranty and risk glass breakage. Figure 1a illustrates locations for top frame clamp force. Avoid clamping within 50mm of module corners to reduce risk of frame corner deflection and glass breakage. When clamping to the module frame, torque should never exceed 15 N.m to reduce chances of frame deformation, if the clamp datasheets show a specific torque value which is lower than 15 Nm the installer should follow the torque value which ever is more stringent. A calibrated torque wrench must be used. Mounting systems should be evaluated for compatibility before installing specially when the system is not using Clamps or clips. Please contact Maxeon for the approval of the use of non-standard pressure clamps or clips where torque values are higher than otherwise stated.

Minimum clamp width allowance is ≥35mm, and for corner clamping the minimum clamp width is: ≥50mm. Clamps should not be in contact with the front glass and clamps should not deform the frame.

Maxeon does not recommend nor endorse the application on the modules of clamps which, as part of their grounding or earthing function, have teeth or claw features (see Figure 2) which may, individually or cumulatively, cause the module breakage due to (and without limitation):

- i) the grounding features touching the front glass
- which is incorporated into the module due to the position of such grounding feature, ii) the shape, the



position or the Figure 2 number of the grounding features deforming the module top frame, or

- iii) the clamp being over-torqued during the installation.
- 5) End Mount: End mounting is the capture mounting of the length of the module's shorter frames with clamps on each shorter sides of the frame. Three different configurations are possible: 1) with two mounting rails under the complete length of each shorter side of the Modules, with two mounting rails parallel to the long side of the Modules without any mounting rail (Appendix). The end-mounting rails and clips or clamps must be of sufficient strength to allow for maximum designed test pressure of the module.

Verify this capacity with the mounting system of vendor before installation.

- 4) Hybrid Mount: Combination with clamps or clips located on longer or shorter sides of Modules are also possible, see Table 1.2 for allowed configurations. In any case, four clampings points are needed.
- 5) Maxeon specified or Maxeon supplied mounting systems. Modules mounted with strict adherence to Maxeon documentation, using hardware systems supplied by or specified by Maxeon.

5.3 Ground Mount Applications for Bifacial modules

Various environmental and installation parameters affect bifacial gain. Albedo is a measure of the amount of light reflected from the ground surface. A higher albedo factor will increase irradiance on the backside and result in higher bifacial gain of the module. The surface conditions, month of the year, time of day, GHI and DNI both influence the amount of incident rearside irradiance. Maxeon recommends to check with solar module mounting hardware supplier in order to determine the Structure Shading factor of your particular installation. The Structure Shading Factor varies with racking system design, irradiance, albedo and height of module installation above ground and has an overall impact on the rear side irradiance mismatch.

The Rearside mismatch losses are proportional to the albedo, height of the modules above ground and structure shading factor. The irradiance non-uniformity on the rearside results in mismatch generally as the albedo increases and installation height of the modules are lower to the ground.

5.4 Rooftop Applications for Bifacial modules

Bifacial modules use direct, reflected or diffuse sunlight at the rearside to generate additional power. Therefore, it is recommended to use bifacial modules installed on flat roof applications.

In order to maximize the bifacial gain at the rooftop applications the following parameters listed below should be considered:

Surface Albedo
Roof Integrity
Module Tilt Angle
Module Elevation
Structural Backside Shading

The bifacial modules can be mounted both landscape or portrait orientation as shown in Appendix section.

When installing a bifacial module on a roof, check applicable building codes and ensure that the roof construction and the structural load calculations of the building are suitable.

Bifacial gain tends to be most effective with a higher tilt angle.

As the tilt angle and the module elevation from the underlying surface increases, more reflected light and diffuse light can be captured by the module. The mounting rails shall be designed to limit the rear side shading as much as possible. Obstacles between modules and the

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ground should be avoided as much as possible in order to increase the bifacial gain.

5.5 Bifacial Electrical Considerations

The overall electrical bifacial gain is determined by the combination of surface albedo, irradiance, module tilt angle, shading losses from the rearside, rearside mismatch and module elevation above ground. Please refer to the Maxeon datasheet for the electrical outputs with respect to the overall bifacial gain. Please utilise a suitable performance software package to simulate the overall bifacial gain.

5.6 Handling of Modules during Installation

Do not place modules face forward in direct contact with abrasive surfaces like roofs, driveways, wooden pallets, railings, stucco walls, etc...

The module front surface glass is sensitive to oils and abrasive surfaces, which may lead to scratches and irregular soiling.

During storage, modules need to be protected from rain or any kinds of liquids. Required storage temperature is between 10°C to 40°C in a dry environment (humidity between 30 to 80%). Do not store modules outdoor to avoid moisture and wet conditions.

Modules that feature antireflective coated glass are prone to visible finger print marks if touched on the front glass surface. Maxeon recommends handing modules with antireflective glass with gloves (no leather gloves) or limiting touching of the front surface. Any finger print marks resulting from installation will naturally disappear over time or can be reduced by following the washing guidelines in Section 6.0 below. Any module coverage (colored plastic tarps or similar) during installation can lead to permanent front glass discoloration and is not recommended. The use of vacuum lifting pads can cause permanent marks on the front glass. Never lift or move the module using the cables or the junction box under anycircumstances.

Ties or tapes used to secure cables are designed for transportation. They are not designed to comply with local requirements for securing PV cable to the array, and may cause shading on bifacial panels reducing performance.

Shading incidence need to be avoided during PV system operation. The system is not supposed to be energized until the mounting scaffolding, fences or railing have been removed from the roof.

Systems should be disconnected in any cases of maintenance which can cause shading (e.g. chimney sweeping, any roof maintenance, antenna/dish installations, etc).

When a residential installation (with "RES" in the description) is designed/planned using SunPower/Maxeon modules with different Part Numbers (SKU's), in order to minimise cosmetic differences between modules, please ensure the anti-reflective supplier of the modules are identical. This can be done by referring to the product description, and looking for AR-XX, where "XX" denotes the supplier and these characters shall be all identical.

6.0 Maintenance

Maxeon recommends visual inspection on a regular basis of all modules for safe electrical connections, sound mechanical connection, and free from corrosion. This visual inspection should be performed by trained personnel. The standard frequency is once a year according to environmental conditions, periodic cleaning of modules is recommended but is not required. Periodic cleaning has resulted in improved performance levels, especially in regions with low levels of annual precipitation (less than 46,3cm (18,25 inches)). Consult your dealer or supplier about recommended cleaning schedules for your area.

To clean a module, wash with potable, non-heated, water. Normal water pressure is more than adequate, but pressurized water up to 100 bar (min.50 cm distance) may be used. Maxeon recommends using a large hosepipe and not to perform cleaning at high outside temperatures. Fingerprints, stains, or accumulations of dirt on the front surface may be removed as follows: first rinse off area and let soak for a short period of time (5 mins). Re-wet and use a soft sponge or seamless cloth to wipe glass surface in a circular motion.

Fingerprints typically can be removed with a soft cloth or sponge and water after wetting. Do not use harsh cleaning materials such as scouring powder, steel wool, scrapers, blades, or other sharp instruments to clean the glass surface of the module. Use of such materials or cleaning without consultation will invalidate the product warranty. As dry cleaning is also risky for Anti-Reflective (AR) coated module surface, spinning brush is not recommended for module cleaning.

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Recommended Cable Management



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Landscape Stringing

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Performance 7 Product Line:

Portrait Stringing



Leapfrog Stringing (Portrait)



Landscape Stringing

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Appendix: Mounting Configurations and Load Ratings

SunPower Maxeon 3 104 cells Commercial Solar Panel (SPR-MAX3-XXX-COM)



TOP CLAMPS			Me	asurement To	erances are
Mounting Configuration Description	Mounting Config Front View	uration Diagram Back View	Mounting Zone Locations (distance from corner in mm)	Test Load ² Downward/Upward (Pa)	Design Load ³ Downward/Upwar (Pa)
			50 - 150	+2700/-2700	+1800/-1800
Long Side Mounting, Rails Perpendincular			150 - 254	+3600/-3600	+2400/-2400
to Mounting Frame ⁴			254 - 423 ⁵	+8100/-5400	+5400/-3600
			423 - 646 ⁵	+3600/-3600	+2400/-2400
			50 - 150 ⁸	+2700/-2700	+1800/-1800
Long Side Mounting		1 1	150 - 254 ⁸	+3600/-3600	+2400/-2400
Point Supported ⁶			254 - 423 ⁸	+5400/-5400	+3600/-3600
			423 - 646 ⁸	+3600/-3600	+2400/-2400
			50 - 150 ⁸	+2700/-2700	+1800/-1800
Long Side Mounting,		150 - 254 ⁸	+3600/-3600	+2400/-2400	
Mounting Frame			254 - 423 ⁸	+5400/-5400	+3600/-3600
			423 - 646 ⁸	+3600/-3600	+2400/-2400
Short Side Mounting, Rails Perpendicular to Mounting Frame (End Mount) ⁴			0 - 350 ⁵	+2700/-2700	+1800/-1800
Short Side Mounting, Point Supported (End Mount) ⁶			0 - 350 ⁸	+2700/-2700	+1800/-1800
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)			0 - 350 ⁸	+2700/-2700	+1800/-1800

In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest design load values should be considered as allowable design load. 2 Test loads are for information purposes only, design loads should be considered for the project design. 3 Design Load considers 1.5 Factor of Safety, Test load – Design load x 1.5. Product Warranty covers only design load values. The design load slisted in this table supersede all other loads that may be defined by other parties, unless there is a formal authorization by Maxeon.

- A Ground Holes (4X Ø4.2mm)
- B Slots (4X 5.0mm(W) x 15mm (L))
- C Mounting Holes (20X Ø6.8mm)

GEN 4.2 FRAME PROFILE

SIDE FRAME PROFILE END FRAME PROFILE





BOLTS

Mounting Zone Locations (distance from corner Mounting Mounting Configuration Diagram Test Load Design Load³ Configuration Description¹ vard/Upwar (Pa) vard/Upw (Pa) Front View Back Viev in m +8100/-3600 +5400/-2400 1423mm Holes 1200mm Holes +8100/-3600 +5400/-2400 Long Side Mounting +5400/-3600 +3600/-2400 539mm Holes Rails Perpendincular to Mounting Frame +3600/-2400 400mm Holes +5400/-3600 1423mm Holes +5400/-3600 +3600/-2400 1200mm Holes +5400/-3600 Long Side Mounting +3600/-2400 Point Supported 539mm Holes +3600/-3600 +2400/-2400 400mm Holes +3600/-3600 +2400/-2400

A Rails must not be under the junction box. 5 IEC 61730 Cert Tested 6 Bottom flange mounting. 7 Range indicates positioning of the clamp and not the rails. 8 Slight bending may occur due to weight of the module.

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SunPower Maxeon 3 104 cells Residential Solar Panel (SPR-MAX3-XXX, SPR-MAX3-XXX-BLK)



Measurement Tolerances are +/-3 mm for the Length and Width of the Module.

A - Ground Holes (4X Ø4.2mm) B - Mounting Holes (8X Ø6.8mm)

TOP CLAMPS

Mounting	Mounting Configu	ration Diagram	Mounting Zone Locations	Test Load ²	Design Load ³
Description	Front View	Back View	(distance from corner in mm)	Downward/Upward (Pa)	Downward/Upward (Pa)
			50 - 150	+2700/-2700	+1800/-1800
Long Side Mounting,			150 - 254	+3600/-3600	+2400/-2400
to Mounting Frame ⁴		+	254 - 423 ⁵	+8100/-5400	+5400/-3600
			423 - 646 ⁵	+3600/-3600	+2400/-2400
			50 - 150 ⁸	+2700/-2700	+1800/-1800
Long Side Mounting.	1 [1 1	150 - 254 ⁸	+3600/-3600	+2400/-2400
Point Supported ⁶			254 - 423 ⁸	+5400/-5400	+3600/-3600
			423 - 646 ⁸	+3600/-3600	+2400/-2400
			50 - 150 ⁸	+2700/-2700	+1800/-1800
Long Side Mounting,			150 - 254 ⁸	+3600/-3600	+2400/-2400
Mounting Frame ⁷			254 - 423 ⁸	+5400/-5400	+3600/-3600
			423 - 646 ⁸	+3600/-3600	+2400/-2400
Short Side Mounting, Rails Perpendicular to Mounting Frame (End Mount) ⁴			0 - 350 ⁵	+2700/-2700	+1800/-1800
Short Side Mounting, Point Supported (End Mount) ⁶			0 - 350 ⁸	+2700/-2700	+1800/-1800
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)			0 - 350 ⁸	+2700/-2700	+1800/-1800

GEN 4.2 FRAME PROFILE END FRAME PROFILE





BOLTS

Mounting Configuration Description	Mounting Configuration Diagram		Mounting Zone Locations	Test Load ²	Design Load ³
	Front View	Back View	(distance from corner in mm)	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting,		• +++	1300mm Holes	+8100/-3600	+5400/-2400
Rails Perpendincular to Mounting Frame			1100mm Holes	+8100/-3600	+5400/-2400
Long Side Mounting, Point Supported [®]		1300mm Holes	+5400/-3600	+3600/-2400	
			1100mm Holes	+5400/-3600	+3600/-2400

In the cases where hypord mounting is necessary (combination or long and short side mounting), the lowest design load values should be considered as allowable design load. 2 Test loads are for information purposes only, design loads should be considered for the project design. 3 Design load considers 1.5 Factor of Safety, Test load – Design load x 1.5. Product Warranty covers only design load values. The design loads listed in this table supersede all other loads that may be defined by other parties, unless there is a formal authorization by Maxeon.

4 Kails must not be under the junction box. 5 IEC 61730 Cert Tested 6 Bottom Flange Mounting. 7 Range indicates positioning of the clamp and not the rails. 8 Slight bending may occur due to weight of the module.

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Maxeon 3 112 cells AC Ready Solar Panel (SPR-MAX3-XXX-R, SPR-MAX3-XXX-BLK-R, SPR-MAX3-XXX-COM-R)



A - Ground Holes (4X Ø4.2mm)

B - Mounting Holes (8X Ø6.8mm)

			Man		
Configuration Description ¹	Mounting Configure	ration Diagram Back View	Locations (distance from corner in mm)	Test Load Downward/Upward (Pa)	Design Load ³ Downward/Upward (Pa)
			50 - 150	+2700/-2700	+1800/-1800
Long Side Mounting.			150 - 272	+3600/-3600	+2400/-2400
Rails Perpendincular			272 - 450	+5400/-4200	+3600/-2800
to Mounting Frame		++	350 - 450 ⁶	+5400/-5400	+3600/-3600
			450 - 710 ⁵	+3600/-2400	+2400/-1600
Long Side Mounting, Rails Perpendincular to Mounting Frame ⁴			Outer Clamps: 272 - 453 Middle Clamps: 856 - 956	+7400/-7400	+4933/-4933
			50 - 150 ⁹	+2700/-2700	+1800/-1800
Law Cide Manusland			150 - 272 ⁹	+3600/-3600	+2400/-2400
Point Supported ⁷			272 - 450 ⁹	+5400/-4200	+3600/-2800
			450 - 710 ⁹	+3600/-2400	+2400/-1600
		Ι	50 - 150 ⁹	+2700/-2700	+1800/-1800
Long Side Mounting,			150 - 272 ⁹	+3600/-3600	+2400/-2400
Rails Parallel to Mounting Frame ⁸			272 - 450 ⁹	+5400/-4200	+3600/-2800
_			450 - 710 ⁹	+3600/-2400	+2400/-1600
Short Side Mounting, Rails Perpendicular to Mounting Frame (End Mount) ⁴			0 - 350 ⁵	+2700/-2700	+1800/-1800
Short Side Mounting, Point Supported ⁷ (End Mount)			0 - 350 ⁹	+2700/-2700	+1800/-1800
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)			0 - 350 ⁹	+2700/-2700	+1800/-1800

In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest design load values should be considered as allowable design load.
2 Test loads are for information purposes only, design loads should be considered for the project design.
3 Design load considers 1.5 Pactor of Safety, Test load – Design load x1.5 Product Warranty covers only design load values. The design loads listed in this table supersede all other loads that may be defined by other parties, unless there is a formal authorization by Maxeon.
4 Rails must not be under the junction box.

GEN 5.2 FRAME PROFILE



BOLTS

Mounting	Mounting Configuration Diagram		Mounting Zone Locations	Test Load ²	Design Load ³
Description ¹	Front View	Back View	(distance from corner in mm)	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting, Rails Perpendincular		\square	1300mm Holes	+5400/-5400	+3600/-3600
to Mounting Frame	4		1100mm Holes	+5400/-5400	+3600/-3600
Long Side Mounting, Point Supported	$\{ \cdot \}$	1300mm Holes	+5400/-5400	+3600/-3600	
		┫╌╧┝╎┥┫╌╋╵	1100mm Holes	+5400/-5400	+3600/-3600

6 For High Velocity Hurricane Zone (HVHZ), the modules achieved the required test loads. For hurricane zone building code requirements, please check with your installer.

Bottom flange mounting.
 8 Range indicates the positioning of the clamps and not the rail
 9 Slight bending may occur due to weight of the module.

EN

FROM MAXEON SOLAR TECHNOLOGIES

SunPower Maxeon 3 112 cells Residential Solar Panel (SPR-MAX3-XXX, SPR-MAX3-XXX-BLK)





TOP CLAMPS

Mounting Mounting Zone Mounting Configuration Diagram Test Load² Design Load Locations Configuration vard/Upv (Pa) rard/Up (Pa) Description Front View Back View in mm) 50 - 150 +2700/-2700 +1800/-1800 Long Side Mounting, +3600/-3600 +2400/-2400 Rails Perpendincular to Mounting Frame 272 - 453⁵ +5400/-4200 +3600/-2800 453 - 710⁵ +3600/-2400 +2400/-1600 50 - 150⁸ +2700/-2700 +1800/-1800 150 - 272⁸ +3600/-3600 +2400/-2400 Long Side Mounting +5400/-4200 272 - 453 +3600/-2800 Point Supported 453 - 710⁸ +3600/-2400 +2400/-1600 50 - 150 ⁸ +1800/-1800 +2700/-2700 Long Side Mounting 150 - 2728 +2400/-2400 +3600/-3600 Rails Parallel to 272 - 453⁸ Mounting Frame⁷ +5400/-4200 +3600/-2800 453 - 710⁸ +3600/-2400 +2400/-1600 1 Short Side Mounting Rails Perpendicular to 0 - 350⁵ +2700/-2700 +1800/-1800 Mounting Frame (End Mount)⁴ hort Side Mounting Point Supported (End Mount)⁶ 0 - 3508 +2700/-2700 +1800/-1800 Short Side Mounting Rails Parallel to 0 - 350 Mounting Frame (End Mount) +2700/-2700 +1800/-1800

GEN 4.2 FRAME PROFILE SIDE FRAME PROFILE END FRAME PROFILE A



BOLTS

Mounting Configuration Description ¹	Mounting Configuration Diagram		Mounting Zone Locations	Test Load ²	Design Load ³
	Front View	Back View	(distance from corner in mm)	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting, Rails Perpendincular to Mounting Frame		\square	1300mm Holes	+5400/-5400	+3600/-3600
		1100mm Holes	+5400/-5400	+3600/-3600	
Long Side Mounting, Point Supported ⁸			1300mm Holes	+5400/-5400	+3600/-3600
			1100mm Holes	+5400/-5400	+3600/-3600

In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest
 design load values should be considered as allowable design load.
 2 Test loads are for information purposes only, design loads should be considered for the project design.
 3 Design Load considers 1.5 Factor of Safety, Test load = Design load x 1.5. Product Warranty covers only design
 load values. The design loads listed in this table supersede all other loads that may be defined by other
 parties, unless three is a formal authorization by Maxeon.

4 Rails must not be under the junction box. 5 Covered under IEC 61730 Cert Test for 104 cell 6 Bottom flange mounting. 7 Range indicates positioning of the clamp and not the rails. 8 Slight bending may occur due to weight of the module.

FROM MAXEON SOLAR TECHNOLOGIES

SunPower Maxeon 3 128 cells Solar Panel (SPR-Xyy-XXX-COM) 150 311 554 885 885 554 311 150 1. a l° I 11 11 11 1046 mm 1002 mm 11 I 11 11 11 11 ||С в п 11 Ш ١, 300 mm 398 mm 400 mm -539 mm 1058 mm 1200 mm 1423 mm 2047 mm A - Drainage Holes (4X Ø4.8mm) Measurement Tolerances are +/-3 mm for the Length and Width of the Module. B - Stacking Pins (4X Ø6.10mm) TOP CLAMPS Mounting Zone Locations (distance from corne C - Mounting Holes (24X Ø6.8mm) Mounting Mounting Configuration Diagram Test Load² Design Load Configuration Description D - Slots (4X 5.0mm(W) x 15.0mm(L)) ward/Upw (Pa) vard/Upwa (Pa) Front View Back View E - Ground Holes (4X Ø4.2mm) in mm) +1333/-1333 0 - 150 +2000/-2000 **GEN 4.0 FRAME PROFILE** Long Side Mounting +5400/-3600 +3600/-2400 Rails Perpendincula SIDE FRAME PROFILE END FRAME PROFILE 311 - 554 +5400/-3600 +3600/-2400 to Mounting Frame 0.50 3.18 mr nm 554 - 885 +5400/-3600 +3600/-2400 **→** 0 - 150⁸ +1333/-1333 +2000/-2000 150 - 311 +3600/-3600 +2400/-2400 Long Side Mounting Point Supported 311 - 554 **5,8** +5400/-3600 +3600/-2400 46.08 46.08 m 554 - 885⁸ +3600/-3600 +2400/-2400 1 27 mm 0 - 150 8 +2000/-2000 +1333/-1333 T 22 mm BOLTS 32 r Long Side Mounting 150 - 311⁸ +3600/-3600 +2400/-2400 Rails Parallel to 311 - 554^{5,8} Mounting Zone Locations Mounting Frame +5400/-3600 +3600/-2400 Mounting Mounting Configuration Diagram Design Load³ Test Load² Configuration Description 554 - 885 ⁸ +3600/-3600 +2400/-2400 tance from cor Front View Back View ard/Upw vard/Upwai (Pa) in mm) (Pa) +5400/-3600 1423mm Holes +3600/-2400 Short Side Mounting tails Perpendicular to Mounting Frame (End Mount)⁴ 0 - 350 +2400/-2400 +1600/-1600 1200mm Holes +3600/-2400 +5400/-3600 Long Side Mounting +3600/-3600 +2400/-2400 539mm Holes Rails Perpendincular to Mounting Frame +2400/-2400 400mm Holes +3600/-3600 Short Side Mountin +3600/-3600 +2400/-2400 300mm Holes Point Supported 0 - 350⁸ +2000/-2000 +1333/-1333 (End Mount) 1423mm Holes +5400/-3600 +3600/-2400 +5400/-3600 +3600/-2400 1200mm Holes Long Side Mounting hort Side Mounting 539mm Holes +3600/-3600 +2400/-2400 Point Supported Rails Parallel to 0 - 350⁸ +2400/-2400 +1600/-1600 Mounting Frame (End Mount) 400mm Holes +3600/-3600 +2400/-2400 300mm Holes +3600/-3600 +2400/-2400 In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest design load values should be considered as allowable design load.
2 Test loads are for information purposes only, design loads should be considered for the project design.
3 Design Load considers 1.5 Factor of Safety Test load – Design load x 1.5. Product Warranty covers only design load values. The design load listed in this table supersede all other loads that may be defined by other parties, unless there is a formal authorization by Maxeon. A Rails must not be under the junction box. 5 There is a 20mm zone at 388-408mm from the corner where mounting is not allowed due to the stacking pin 6 Bottom flange mounting. 7 Range indicates positioning of the clamp and not the rails. 8 Slight bending may occur due to weight of the module.

FROM MAXEON SOLAR TECHNOLOGIES





A - Ground Holes (4X Ø4.2mm)

TOP CLAMPS

Mounting Configuration Description ¹	Mounting Configu Front View	ration Diagram Back View	Mounting Zone Locations (distance from corner	Test Load ² Downward/Upward	Design Load ³ Downward/Upwar
			in mm) 0 - 150	+2400/-2400	+1600/-1600
Long Side Mounting,		+++	150 - 265	+2400/-2550	+1600/-1700
to Mounting Frame	IJ LI		265 - 514	+5400/-4050	+3600/-2700
			514 - 714	+2400/-2550	+1600/-1700
			0 - 150 ⁶	+2400/-2400	+1600/-1600
Long Side Mounting		1 1	150 - 265 ⁶	+2400/-2400	+1600/-1600
Point Supported ⁴			265 - 514 ⁶	+5400/-3600	+3600/-2400
			514 - 714 ⁶	+2400/-2400	+1600/-1600
			0 - 150 ⁶	+2400/-2400	+1600/-1600
Long Side Mounting,			150 - 265 ⁶	+2400/-2400	+1600/-1600
Mounting Frame ⁵			265 - 514 ⁶	+5400/-3600	+3600/-2400
			514 - 714 ⁶	+2400/-2400	+1600/-1600
Short Side Mounting, Rails Perpendicular to Mounting Frame (End Mount)			0 - 350	+3600/-2400	+2400/-1600
Short Side Mounting, Point Supported ⁴ (End Mount)			0 - 350 ⁶	+2400/-2400	+1600/-1600
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)			0 - 350 ⁶	+2400/-2400	+1600/-1600

In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest design load values should be considered as allowable design load. 2 Test loads are for information purposes only, design loads should be considered for the project design. 3 Design Load considers 1.5 Factor of Safety, Test load = Design load x 1.5. Product Warranty covers only design load values. The design loads should be under the project design load values is a formal authorization by Maxeon.

GEN 5.2 FRAME PROFILE



4 Bottom flange mounting 5 Range indicates positioning of the clamp and not the rails 6 Slight bending may occur due to weight of the module

FROM MAXEON SOLAR TECHNOLOGIES

Maxeon 6 66 cells Residential Solar Panel (SPR-MAX6-XXX)



A - Ground Holes (4X Ø4.2mm) B- Mounting Holes (4X Ø6.8mm) Measurement Tolerances are +/-3 mm for the Length and Width of the Module.

TOP CLAMPS

Mounting Configuration Description ¹	Mounting Config Front View	uration Diagram Back View	Mounting Zone Locations (distance from corner	Test Load ² Downward/Upward (Pa)	Design Load ³ Downward/Upward
			0 - 153	+2400/-2400	+1600/-1600
Long Side Mounting, Bails Perpendincular			153 - 271	+2400/-2550	+1600/-1700
to Mounting Frame ⁴			271 - 525	+5400/-4050	+3600/-2700
			525 - 729	+2400/-2550	+1600/-1700
			0 - 153 7	+2400/-2400	+1600/-1600
Long Side Mounting		1	153- 271 7	+2400/-2400	+1600/-1600
Point Supported 5			271 - 525 ⁷	+5400/-3600	+3600/-2400
			525 - 729 7	+2400/-2400	+1600/-1600
Lana Cida Mauntina			0 - 153 7	+2400/-2400	+1600/-1600
Rails Parallel to		153- 271 7	+2400/-2400	+1600/-1600	
Mounting Frame			271 - 525 7	+5400/-3600	+3600/-2400
(End Would) -			525 - 729 7	+2400/-2400	+1600/-1600
Short Side Mounting, Rails Perpendicular to Mounting Frame (End Mount) ⁴			0 - 350	+3600/-2400	+2400/-1600
Short Side Mounting, Point Supported (End Mount) ⁵			0 - 350 ⁷	+2400/-2400	+1600/-1600
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)			0 - 350 ⁷	+2400/-2400	+1600/-1600

In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest design load values should be considered as allowable design load.
 Zest loads are for information purposes only, design loads should be considered for the project design.
 Design Load considers 1.5 Factor of Safety, Test load – Design load x 1.5. Product Warranty covers only design load values. The design loads listed in this table supersede all other loads that may be defined by other parties, unless there is a formal authorization by Maxeon.

GEN 5.2 FRAME PROFILE



BOLTS

Mounting	Mounting Configuration Diagram		Mounting Holes	Test Load ²	Design Load ³
Configuration Description 1	Front View	Back View	Location	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting, Rails Perpendincular to Mounting Frame			1100mm Holes	+5400/-6000	+3600/-4000
Long Side Mounting, Point Supported ⁷			1100mm Holes	+5400/-5400	+3600/-3600

4 Rails must not be under the junction box. 5 Bottom flange mounting. 6 Range indicates the positioning of the the clamps not the rails. 7 Slight bending may occur due to weight of the module.

FROM MAXEON SOLAR TECHNOLOGIES

SunPower Maxeon 6 72 cells Commercial Solar Panel (SPR-MAX6-XXX-COM)



TOP CLAMPS

Mounting Configuration	Mounting Configuration Diagram		Mounting Zone Locations	Test Load ²	Design Load ³
Description	Front View	Back View	in mm)	(Pa)	(Pa)
			50 - 150	+1800/-1800	+1200/-1200
Long Side Mounting, Rails Perpendincular			150 - 296	+2400/-2400	+1600/-1600
to Mounting Frame ⁴	│┥ └│		296 - 536	+5400/-3600	+3600/-2400
			536 - 825	+2400/-2400	+1600/-1600
			50 - 150 ⁷	+1800/-1800	+1200/-1200
Long Side Mounting.		1 1	150 - 296 ⁷	+2400/-2400	+1600/-1600
Point Supported 5		ļļ	296 - 536 7	+5400/-2400	+3600/-1600
			536 - 825 7	+2400/-2400	+1600/-1600
			50 - 150 ⁷	+1800/-1800	+1200/-1200
Long Side Mounting, Bails Parallel to			150 - 296 7	+2400/-2400	+1600/-1600
Mounting Frame ⁶			296 - 536 7	+5400/-2400	+3600/-1600
			536 - 825 7	+2400/-2400	+1600/-1600
Short Side Mounting, Rails Perpendicular to Mounting Frame (End Mount) ⁴			0 - 350	+2400/-1600	+1600/-1067
Short Side Mounting, Point Supported (End Mount) ⁵			0 - 350 7	+1800/-1600	+1200/-1067
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)			0 - 350 7	+1800/-1600	+1200/-1067

In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest
 design load values should be considered as allowable design load.
 2 Test loads are for information purposes only, design loads should be considered for the project design.
 3 Design Load considers 1.5 Factor of Safety, Test load – Design load x 1.5. Product Warranty covers only design
 load values. The design load slisted in this table supersede all other loads that may be defined by other
 parties, unless there is a formal authorization by Maxeon.

A - MLSD Holes

B - Mounting Holes (16X Ø6.8mm)

C - Ground Holes (4X Ø4.2mm)

GEN 5.6 FRAME PROFILE



END FRAME PROFILE



BOLTS

Mounting Configuration Description	Mounting Configuration Diagram		Mounting Zone Locations	Test Load ²	Design Load ³
	Front View	Back View	(distance from corner in mm)	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting, Rails Perpendincular to Mounting Frame			1423mm Holes	+5400/-4500	+3600/-3000
		1200mm Holes	+5400/-4500	+3600/-3000	
			400mm Holes	+2400/-2400	+1600/-1600
Long Side Mounting,			1423mm Holes	+2400/-4500	+1600/-3000
			1200mm Holes	+2400/-4500	+1600/-3000
			400mm Holes	+2400/-2400	+1600/-1600

A Rails must not be under the junction box. 5 Bottom Flange Mounting 6 Range indicates positioning of the clamps and not the rails. 7 Slight bending may occur due to weight of the module.

FROM MAXEON SOLAR TECHNOLOGIES

SunPower Maxeon 7 Residential Solar Panel



Measurement Tolerances are +/-3 mm for the Length and Width of the Module.

A - Ground Holes (4X Ø4.2mm)

TOP CLAMPS

This module is designed for Portrait Mounting due to shorter cable length.

Mounting	Mounting Configu	ration Diagram	Mounting Zone	Test Load ²	Design Load ³	
Configuration Description ¹	Front View	Back View	distance from corner in mm)	Downward/Upward (Pa)	Downward/Upward (Pa)	
			50 - 148	+2700/-2700	+1800/-1800	
Rails Perpendincular			148 - 269	+3600/-3600	+2400/-2400	
to Mounting Frame ⁴	_		269 - 447 ⁵	+5400/-4200	+3600/-2800	
			447 - 701 ⁵	+3600/-2400	+2400/-1600	
			50 - 148 ⁷	+2700/-2700	+1800/-1800	
Long Side Mounting.		1 1	148 - 269 7	+3600/-3600	+2400/-2400	
Point Supported 6			269 - 447 7	+5400/-4200	+3600/-2800	
			447 - 701 ⁷	+3600/-2400	+2400/-1600	
Short Side Mounting, Point Supported (End Mount) ⁶			0 - 350 ⁷	+2700/-2700	+1800/-1800	
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)			0 - 350 ⁷	+2700/-2700	+1800/-1800	
In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest design load values should be considered as allowable design load. 2 Test loads are for information purposes only, design loads should be considered for the project design. 3 Design Load considers 1.5 Factor of Safety. Test load = Design load x 1.5. Product Warranty covers only design load values. The design loads listed in this table supersede all other loads that may be defined by other parties, unless there is a formal authorization by Maxeon.						



BO	LTS

Mounting Configuration Description	Mounting Configuration Diagram		Mounting Holes	Test Load ²	Design Load ³
	Front View	Back View	Locations	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting, Rails Perpendincular to Mounting Frame		\square	1300mm Holes	+5400/-5400	+3600/-3600
		1100mm Holes	+5400/-5400	+3600/-3600	
Long Side Mounting,			1300mm Holes	+5400/-5400	+3600/-3600
rom: supported		4 +	1100mm Holes	+5400/-5400	+3600/-3600

A Rails must not be under the junction box. 5 Covered under IEC 61730 Cert Test for 104 cell 6 Bottom flange mounting. 7 Slight bending may occur due to weight of the module.

GEN 4.2 FRAME PROFILE SIDE FRAME PROFILE END FRAME PROFILE

B - Mounting Holes (8X Ø6.8mm)

FROM MAXEON SOLAR TECHNOLOGIES

SunPower Performance 3 Residential Solar Panel (SPR-P3-XXX-BLK)



Measurement Tolerances are +/-3mm for the Length and Width of the module.

A - Ground Holes (4X Ø 4.2mm)

B - Mounting Holes (8X Ø 6.8mm)

TOP CLAMPS

Mounting	Mounting Config	uration Diagram	Mounting Zone	Test Load ²	Design Load ³
Configuration Description ¹	Front View	Back View	(distance from corner in mm)	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting,			50 - 180	+2400/-2400	+1600/-1600
Rails Perpedincular to Mounting Frame			180 - 472	+5400/-2400	+3600/-1600
			472 - 692	+2400/-2400	+1600/-1200
Long Side Mounting, Point Supported ⁴			0 - 100 ⁶	+2400/-1600	+1600/-1067
Long Side Mounting, Rails Parallel to Mounting Frame ⁵			180 - 472 ⁶	+3600/-2400	+2400/-1600
Short Side Mounting, Rails Perpendicular to Mounting Frame (End Mount)			80 - 180	+6000/-2400	+4000/-1600
Short Side Mounting, Point Supported (End Mount)4			0 - 100 ⁶	+2400/-1500	+1600/-1000
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)			140 - 240 ⁶	+2400/-2000	+1600/-1333

In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest design load values should be considered as allowable design load.
 2 Test loads are for information purposes only, design loads should be considered for the project design.
 3 Design Load considers 1.5 Factor of Safety, Test load = Design load x 1.5. Product Warranty covers only design load values. The design loads listed in this table supersede all other loads that may be defined by other parties, unless there is a formal authorization by Maxeon.

GEN 4.3 FRAME PROFILE



4 Bottom flange mounting. 5 Range indicates positioning of the clamp and not the rails. 6 Slight bending may occur due to weight of the module.

MAXEON SOLAR TECHNOLOGIES, LTD. Safety and Installation Instructions - Document 001-15497 Rev.AB

FROM MAXEON SOLAR TECHNOLOGIES

SunPower Performance 3 UPP Solar Panel (SPR-P3-XXX-UPP)



A - Ground Holes (4X Ø 4.2mm)

B - SLOT Holes (8X 14mm (L) x 9mm (W), R4.5mm) C - Mounting Holes (8X 10mm (L) x 7mm (W), R3.5mm)

TOP CLAMPS

Configuration Front View Back View (distance from corner in mm) Downward/Upward (Pa) Downward/Upward (Pa)	Mounting	Nounting Mounting Configuration Diag	ram Mounting Zone Locations	Test Load ² Downward/Upward (Pa)	Design Load ³
Long Side Mounting, Rails Perpedincular to Mounting Frame Long Side Mounting, Rails Parallel to Mounting Frame ⁴	Description ¹	escription ¹ Front View Back View	N (distance from corner in mm)		Downward/Upward (Pa)
Long Side Mounting, Rails Perpedincular to Mounting Frame 303 - 566 +5400/-2400 +3600/-1 Long Side Mounting, Rails Parallel to Mounting Frame ⁴ 303 - 566 ⁶ +5400/-2400 +3600/-1			158 - 303	+3600/-2400	+2400/-1600
Mounting Frame 566 - 690 +2400/-1800 +1600/-1 Long Side Mounting, Rails Parallel to Mounting Frame ⁴ 303 - 566 ⁶ +5400/-2400 +3600/-1	ng Side Mounting, Is Perpedincular to	ide Mounting,	303 - 566	+5400/-2400	+3600/-1600
Long Side Mounting, Rails Parallel to Mounting Frame ⁴ 303 - 566 ⁶ +5400/-2400 +3600/-1	√Iounting Frame	nting Frame	566 - 690	+2400/-1800	+1600/-1200
Long Side Mounting, Rails Parallel to Mounting Frame ⁴ 303 - 566 ⁶ +5400/-2400 +3600/-1			690 - 883	+2400/-1600	+1600/-1067
	ng Side Mounting, Rails Parallel to Mounting Frame ⁴	side Mounting, S Parallel to unting Frame ⁴	303 - 566 ⁶	+5400/-2400	+3600/-1600
Short Side Mounting, Rails Perpendicular to Mounting Frame (End Mount)	ort Side Mounting, ils Perpendicular Mounting Frame (End Mount)	ide Mounting, erpendicular unting Frame d Mount)	240 - 340	+5400/-1500	+3600/-1000
Short Side Mounting, Point Supported (End Mount) ^S	ort Side Mounting, oint Supported (End Mount) ⁵	ide Mounting, Supported ad Mount) ⁵	0 - 100 ⁶	+1400/-1400	+933/-933
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)	ort Side Mounting, Rails Parallel to Mounting Frame (End Mount)	ide Mounting, S Parallel to nting Frame d Mount)	100 - 340 ⁶	+2400/-2400	+1600/-1600

1 In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest design load values should be considered as allowable design load. 2 Test loads are for information purposes only, design loads should be considered for the project design. 3 Design Load considers 1.5 Foctor of Safety, Test load = Design load x 1.5. Product Warranty covers only design load values. The design loads link and this table supersed all other loads that may be defined by other parties, unless there is a formal authorization by Maxeon.

GEN 4.3 FRAME PROFILE



BOLT

Mounting Configuration Description ¹	Mounting Configuration Diagram		Mounting Holes	Test Load ²	Design Load ³
	Front View	Back View	Locations	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting, Rails Perpedincular to Mounting Frame			1058mm Holes	+5400/-2400	+3600/-1600
			1300mm Holes	+5400/-2400	+3600/-1600
_			400mm Holes	+2400/-2400	+1600/-1600

A Range indicates positioning of the clamp and not the rails 5 Bottom flange mounting 6 Slight bending may occur due to weight of the module.

FROM MAXEON SOLAR TECHNOLOGIES

SunPower Performance 5 & 6 Bifacial Solar Panel (SPR-P5-XXX-UPP, SPR-P6-XXX-COM-M-BF)



Measurement Tolerances are +/-3 mm for the Length and Width of the Module.



B - Mounting Holes (4X 10mm (L) x 7mm (W), R6.8mm) C - Ground Holes (4X Ø 4.2mm)

TOP CLAMPS

Mounting Configuration	Mounting Configuration Diagram		Mounting Zone Locations	Test Load ²	Design Load ³
Description ¹	Front View	Back View	(distance from corner in mm)	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting			50 - 546	+2400/-1200	+1600/-800
Rails Perpedincular to Mounting Frame			546 - 646 ⁴	+5400/-2400	+3600/-1600
			646 - 1042	+2400/-2000	+1600/-1333
Long Side Mounting,			50 - 150 ⁸	+1800/-1800	+1200/-1200
Point Supported ⁵			546 - 646 ⁸	+3000/-2400	+2000/-1600
Long Side Mounting, Rails Parallel to Mounting Frame ⁶			50 - 546 ⁸	+5400/-1200	+3600/-800
			546 - 646 ⁸	+5400/-2400	+3600/-1600
Short Side Mounting, Point Supported (End Mount) ⁵			0 - 323 ⁸	+1400/-1400	+933/-933
Short Side Mounting, Point Supported with Rail (End Mount)			0 - 323	+3600/-2400	+2400/-1600
Short Side Mounting, Rails Parallel to		\square	0 - 223 ⁸	+1400/-1400	+933/-933
Mounting Frame (End Mount)			223 - 323 ⁸	+2400/-1200	+1600/-800

In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest design values should be considered as allowable design load.
 Test loads are for information purposes only, design loads should be considered for the project design.
 Design Load considers 1.5 Factor of Safety, Test load = Design load x 1.5. Product Warranty covers only design load values. The design loads listed in this table supersede all other loads that may be defined by other parties, unless there is a formal authorization by Maxeon.

GEN 4.3 FRAME PROFILE





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Mounting Configuration Description ¹	Mounting Configuration Diagram		Mounting Zone	Test Load ²	Design Load ³
	Front View	Back View	(distance from corner in mm)	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting.			1400mm Holes	+5400/-2400	+3600/-1600
Rails Perpedincular to Mounting Frame			1100mm Holes	+5400/-2400	+3600/-1600
			400mm Holes	+2400/-2000	+1600/-1333
Center Mounting (1x Portrait Tracker)			400mm Holes	+1800/-1800	+1200/-1200

4 IEC validated. 5 Bottom flange mounting. 6 Range indicates positioning of the clamp and not the rails. 7 Minimum of 24mm in diameter washer size is required. 8 Slight bending may occur due to weight of the module.

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MAXEON SOLAR TECHNOLOGIES, LTD. Safety and Installation Instructions - Document 001-15497 Rev.AB

FROM MAXEON SOLAR TECHNOLOGIES

SunPower Performance 6 Bifacial Solar Panel (SPR-P6-XXX-COM-S-BF)



A - Grounding Holes (4X Ø 4.2mm) B - Mounting Holes (8X 9mm (W) x 14mm (L), R4.5mm)

Measurement Tolerances are +/-3mm for the Length and Width of the module.

Mounting Configuration Description ³	Mounting Configuration Diagram		Mounting Zone Locations	Test Load ²	Design Load ¹
	Front View	Back View	(distance from corner in mm)	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting			50 - 496	+1800/-1600	+1200/-1066
Rails Perpedincular to Mounting Frame			496 - 596	+5400/-2400	+3600/-1600
			596 - 942	+2400/-1600	+1600/-1066
			50 - 496 ⁶	+1800/-1600	+1200/-1066
Long Side Mounting,			496 - 596 ⁶	+3000/-2400	+2000/-1600
1 one supported			596 - 942 ⁶	+2000/-1600	+1600/-1066
Long Side Mounting			50 - 496 ⁶	+2800/-1800	+1867/-1200
Rails Parallel to			496 - 596 ⁶	+2800/-1800	+1867/-1200
into an ang marine			596 - 942 ⁶	+2800/-1800	+1867/-1200
Short Side Mounting, Point Supported (End Mount) ⁴			0 - 100 ⁶	+1200/-1000	+800/-666
			100 - 323 ⁶	+1600/-1600	+1066/-1066
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)			223 - 323 ⁶	+2400/-1400	+1600/-933
1 Design Load consider load values. The desi parties, unless there 2 Test loads are for info 3 In the cases where h design load values sh	rs 1.5 Factor of Sa gn loads listed in is a formal author ormation purpose ybrid mounting is rould be considere	fety, Test load = D this table superse rization by Maxeo s only, design loa necessary (comb ed as allowable d	esign load x 1.5. Pro de all other loads th n. ds should be consic ination of long and esign load.	oduct Warranty or nat may be define lered for the proj short side moun	overs only designed by other ect design. ting), the lowest

GEN 4.3 FRAME PROFILE







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Mounting Configuration Description ³	Mounting Configuration Diagram		Mounting Zone Locations	Test Load ²	Design Load ¹
	Front View	Back View	(distance from corner in mm)	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting, Rails Perpendincular to Mounting Frame			1100mm Holes	+5400/-2400	+3600/-1600
			1400mm Holes	+5400/-2400	+3600/-1600

4 Bottom flange mounting 5 Range indicates positioning of the clamp and not the rails. 6 Slight bending may occur due to weight of the module.

FROM MAXEON SOLAR TECHNOLOGIES

SunPower Performance 6 Residential and Commercial Solar Panel (SPR-P6-XXX-BLK, SPR-P6-XXX-COM-XS)





Measurement Tolerances are +/-3mm for the Length and Width of the module.

TOP CLAMPS

Mounting Configuration	Mounting Configuration Diagram		Mounting Zone Locations (distance from corner	Test Load ²	Design Load ³ _{Downward/Upward}
Description ¹	Front View	Back View	in mm)	(Pa)	(Pa)
Long Side Mounting, Rails Perpedincular to Mounting Frame			217 - 617	+2700/-2000	+1800/-1333
			50 - 287	+2000/-2000	+1333/-1333
Long Side Mounting,			287 - 402	+2700/-2000	+1800/-1333
to Mounting			402 - 502	+5400/-2400	+3600/-1600
Frame			502 - 754	+2000/-1800	+1333/-1200
			50 - 402 ⁶	+2000/-2000	+1333/-1333
Long Side Mounting, Point Supported 4			402 - 502 ⁶	+2000/-2400	+1333/-1600
			502 - 754 ⁶	+1400/-1800	+933/-1200
Long Side Mounting			50 - 402 ⁶	+2800/-1800	+1867/-1200
Rails Parallel to Mounting Frame ⁵			402 - 502 ⁶	+2800/-1800	+1867/-1200
, in the second se			502 - 754 ⁶	+2800/-1800	+1867/-1200
Short Side Mounting, Point Supported (End Mount) ⁴			0 - 221 ⁶	+1600/-1400	+1067/-933
			221 - 321 ⁶	+1800/-1200	+1200/-800
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)			0 - 221 ⁶	+1400/-1400	+933/-933
			221 - 321 ⁶	+1600/-1600	+1067/-1067

In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest design load values should be considered as allowable design load.
 Test loads are for information purposes only, design loads should be considered for the project design.
 Design Load considers 1.5 Factor of Safety, Test load = Design load x 1.5. Product Warranty covers only design load values. The design loads listed in this table supersede all other loads that may be defined by other parties, unless there is a formal authorization by Maxeon.

GEN 4.4 FRAME PROFILE

SIDE FRAME PROFILE





END FRAME PROFILE

4 Bottom flange mounting 5 Range indicates positioning of the clamp and not the rails 6 Slight bending may occur due to weight of the module.

FROM MAXEON SOLAR TECHNOLOGIES

SunPower Performance 6 Commercial Solar Panel (SPR-P6-XXX-COM-XS) (1092mm)





Measurement Tolerances are +/-3mm for the Length and Width of the module.

TOP CLAMPS

Mounting Configuration	Mounting Configuration Diagram		Mounting Zone Locations	Test Load ²	Design Load ³
Description 1	Front View	Back View	(distance from corner in mm)	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting, Rails Perpedincular to Mounting Frame			217 - 617	+2700/-2000	+1800/-1333
			50 - 287	+2000/-2000	+1333/-1333
Rails Perpedincular			287 - 402	+2700/-2000	+1800/-1333
to Mounting			402 - 502	+5400/-2400	+3600/-1600
Frame			502 - 754	+2000/-1800	+1333/-1200
			50 - 402 ⁶	+2000/-2000	+1333/-1333
Long Side Mounting, Point Supported 4			402 - 502 ⁶	+2000/-2400	+1333/-1600
i onic oupported			502 - 754 ⁶	+1400/-1800	+933/-1200
Long Side Mounting			50 - 402 ⁶	+2800/-1800	+1867/-1200
Rails Parallel to Mounting Frame ⁵			402 - 502 ⁶	+2800/-1800	+1867/-1200
			502 - 754 ⁶	+2800/-1800	+1867/-1200
Short Side Mounting, Point Supported (End Mount) ⁴			0 - 221 ⁶	+1600/-1400	+1067/-933
			221 - 321 ⁶	+1800/-1200	+1200/-800
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)			0 - 221 ⁶	+1400/-1400	+933/-933
			221 - 321 ⁶	+1600/-1600	+1067/-1067

In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest design load values should be considered as allowable design load.
 Test loads are for information purposes only, design loads should be considered for the project design.
 Design Load considers 1.5 Factor of Safety, Test load = Design load x 1.5. Product Warranty covers only design load values. The design loads listed in this table supersede all other loads that may be defined by other parties, unless there is a formal authorization by Maxeon.

GEN 4.4 FRAME PROFILE

SIDE FRAME PROFILE







4 Bottom flange mounting 5 Range indicates positioning of the clamp and not the rails 6 Slight bending may occur due to weight of the module.

FROM MAXEON SOLAR TECHNOLOGIES

SunPower Performance P7 COM-S Bifacial Solar Panel (SPR-P7-XXX-COM-S)



B - Mounting Holes (8X 9mm (W) x 14mm (L), R4.5mm)

Measurement Tolerances are +/- 3mm for the Length and Width of the module.

				-	
Mounting Configuration	Mounting Config	uration Diagram	Mounting Zone Locations (distance from corner	Test Load ² Downward/Upward	Design Load ¹ Downward/Upward
Description	TOTEVIEW	Dack view	in mm)	(Pa)	(Pa)
Long Side Mounting,		+	50 - 439	+2000/-1800	+1333/-1200
Rails Perpedincular to Mounting Frame			439 - 539	+5400/-2400	+3600/-1600
			539 - 890	+3000/-2000	+2000/-1333
			50 - 439 ⁶	+2000/-1800	+1333/-1200
Long Side Mounting,			439 - 539 ⁶	+3000/-2400	+2000/-1600
romt supported			539 - 890 ⁶	+2000/-1600	+1333/-1200
Long Side Mounting, Point Supported ⁴			Outer Clamps: 439 - 539 Middle Clamps: 1028 - 1128	+3000/-2400	+2000/-1600
			50 - 439 ⁶	+3000/-2400	+2000/-1600
Rails Parallel to			439 - 539 ⁶	+3000/-2400	+2000/-1600
Wounting Frame			539 - 890 ⁶	+3000/-2400	+2000/-1600
Short Side Mounting, Rails Perpendicular to Mounting Frame (End Mount)			0 - 323	+2000/-1400	+1333/-933
Short Side Mounting, Point Supported			0 - 100 ⁶	+1500/-1200	+1000/-800
(End Mount) ⁴			100 - 323 ⁶	+1500/-1400	+1000/-933
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)			223 - 323 ⁶	+2000/-1500	+1333/-1000
1 Design Load conside load values. The des parties, unless there 2 Test loads are for inf 3 In the cases where h design load values sh	rs 1.5 Factor of Sa ign loads listed in is a formal autho ormation purpose sybrid mounting is nould be consider	fety, Test load = D this table superse rization by Maxec es only, design loa necessary (comb red as allowable d	Design load x 1.5. Pr ede all other loads t on. ads should be consideration of long and lesign load.	oduct Warranty c hat may be defin dered for the pro I short side mour	overs only desig ed by other ject design. ting), the lowes

GEN 4.3 FRAME PROFILE



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Mounting Configuration Description ³	Mounting Configuration Diagram		Mounting Hole	Test Load ²	Design Load ¹
	Front View	Back View	Locations	Downward/Upward (Pa)	Downward/Upward (Pa)
Long Side Mounting, Rails Perpendincular to Mounting Frame			1100mm Holes	+5400/-2400	+3600/-1600
	- <u> </u>		1400mm Holes	+5400/-2400	+3600/-1600

4 Bottom flange mounting 5 Range indicates positioning of the clamp and not the rails. 6 Slight bending may occur due to weight of the module.

FROM MAXEON SOLAR TECHNOLOGIES

SunPower Performance 7 Residential Solar Panel (SPR-P7-XXX-BLK)



B - Mounting Holes (4X 9mm (W) x 14mm (L), R4.5mm)

Measurement Tolerances are +/-3mm for the Length and Width of the module.

TOP CLAMPS

Mounting Configuration Description ¹	Mounting Config Front View	uration Diagram Back View	Mounting Zone Locations (distance from corner in mm)	Test Load ² Downward/Upward (Pa)	Design Load ³ Downward/Upward (Pa)
Long Side Mounting			50 - 270	+3000/-2400	+2000/-1600
Rails Perpedincular to Mounting			270 - 445	+5400/-2400	+3600/-1600
Frame			445 - 680	+4000/-2400	+3000/-1600
			50 - 270 ⁶	+3000/-2400	+2000/-1600
Long Side Mounting, Point Supported ⁴			270 - 445 ⁶	+3600/-2400	+2400/-1600
			445 - 680 ⁶	+2700/-2400	+1800/-1600
			50 - 270 ⁶	+3000/-2400	+2000/-1600
Rails Parallel to			270 - 445 ⁶	+3600/-2400	+2400/-1600
Wounting Frame			445 - 680 ⁶	+3000/-2400	+2000/-1600
Short Side Mounting, Rails Perpendicular to Mounting Frame (End Mount)			0 - 323	+3000/-1700	+2000/-1133
Short Side Mounting, Point Supported (End Mount) ⁴			0 - 100 ⁶	+2400/-1700	+1600/-1133
			100 - 323 ⁶	+1200/-1200	+800/-800
Short Side Mounting, Rails Parallel to Mounting Frame (End Mount)			223 - 323 ⁶	+2700/-1700	+1800/-1133

In the cases where hybrid mounting is necessary (combination of long and short side mounting), the lowest design load values should be considered as allowable design load.
 Test loads are for information purposes only, design loads should be considered for the project design.
 Design Load considers 1.5 Factor of Safety, Test load = Design load x 1.5. Product Warranty covers only design load values. The design loads listed in this table supersede all other loads that may be defined by other parties, unless there is a formal authorization by Maxeon.

GEN 4.4 FRAME PROFILE

SIDE FRAME PROFILE







4 Bottom flange mounting 5 Range indicates positioning of the clamp and not the rails 6 Slight bending may occur due to weight of the module.