

Installation Manual

For RUNDA SOLAR Bifacial Dual Glass Modules

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IMPORTANT SAFETY INSTRUCTIONS

This manual contains important safety instructions for the Photovoltaic solar module of Yancheng Runda PV Co.,Ltd. (hereafter referred to as “Runda Solar”). Installers should follow all safety precautions described in this guide as well as local codes when installing a module.

Installing solar photovoltaic systems requires specialized skills and knowledge. Installation should only be performed by qualified personnel. Before installing a solar photovoltaic system, installers should familiarize themselves with its mechanical and electrical requirements. Keep this guide in a safe place for future reference and in case of sale or disposal of the modules. For any questions, please contact our quality personnel for technical support.

1. Introduce

This Installation Manual contains essential information for electrical and mechanical installation that you must know before handling, installing modules. This Manual also contains safety information you need to be familiar with. All the information described in this Manual is the intellectual property of us and is based on the technologies and experience that have been acquired and accumulated by us.

This Manual does not constitute a warranty, expressed or implied. We do not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected with installation, operation, use or maintenance of modules. No responsibility is assumed by us for any infringement of patents or other rights of third parties that may result from use of modules. We reserve the right to make changes to the product, specifications or installation manual without prior notice.

Failure to comply with the requirements listed in this manual will invalidate the Limited Warranty for modules as provided by us at the same time of sale to the direct customer. Additional recommendations are provided to enhance safety practices and performance results. Please provide a copy of this manual to the PV system owner for their reference, and inform them of all relevant aspects of safety, operation, and maintenance.

2. Safety Precautions

2.1 General Safety

Modules are designed to meet the requirements for the standards IEC 61215-1:2021, IEC61215-1-1:2021, IEC61215-2:2021, IEC61730-1:2023 and IEC61730-2:2023 that have safety class II according to IEC 61140. The construction meets Class C fire rating for UL790.

When modules are mounted on rooftops, the roof must have a fire resistance covering suitable for this application. Rooftop PV systems should only be installed on rooftops capable of handling the additional weighted load of PV system components, including modules, and have a complete analysis of the structure performed by a certified building specialist or engineer.

For your safety, do not attempt to work on a rooftop until safety precautions have been identified and taken, including without limitation: fall protection measures, ladders or stairways, and personal protective equipment.

For your safety, do not install or handle modules under adverse conditions, including without limitation strong or gusty winds, and wet or frosted roof surfaces.

2.2 Electrical performance safety

Photovoltaic modules can produce DC electricity when exposed to light and therefore can produce an electrical shock or burn. DC voltage of 30 Volts or higher is potentially lethal.

Modules produce voltage even when not connected to an electrical circuit or load. Please use insulated tools and rubber gloves when working with modules in sunlight.

Modules have no on/off switch. Modules can be rendered inoperative only by removing them from sunlight.

In order to avoid arcs and electrical shock, please do not disconnect electrical connections under load. Faulty connections can also result in arcs and electrical shock. So please keep connectors dry and clean, and ensure that they are in proper working condition. Never insert metal objects into the connector, or modify them in any way in order to secure an electrical connection.

Modules can produce higher output than the rated specifications. Industry standard ratings are made at Standard Test Conditions of 1000 W/m² Irradiance, 25°C Cell Temperature and 1.5 Air Mass.

Reflection from snow or water can increase sunlight and therefore boost current and power. In addition, colder temperatures can substantially increase voltage and power.

If the glass or other material is damaged, please wear personal protection equipment and separated the module from the circuit.

Do not touch the modules if it's wet, unless during the cleaning procedure. At the same time the cleaning operation should according to the manual.

Do not touch the wet connector without protecting yourself with personal protection equipment or rubber gloves. Do not use mirrors or other magnifiers to concentrate sunlight onto the modules.

If instructions are provided allowing modules to be installed in parallel electrically, the installation instructions shall specify that each module (or series string of modules so connected) shall be provided with the maximum series fuse. Recommended maximum series is $[\text{Max System voltage } V / (1.25 \cdot V_{oc})]$, parallel module configurations is $[\text{fuse rating} / 1.25 \cdot I_{sc}]$.

2.3 Operating safety

Do not open the package of modules until they are ready to be installed during transportation and storing. At the same time please protect the package against exposure to damage. Secure pallets from falling over.

Do not exceed the maximum height of pallets to be stacked, as indicated on the pallet packaging. Store pallets in a cool and dry location until the modules are ready to be unpackaged.

Do not lift the modules by grasping the modules' junction box or electrical leads in any condition.

Do not stand or step on the modules.

Do not drop the modules on another module.

Do not place any heavy objects on the modules to avoid glass breakage.

Be cautious when setting the modules down on to a surface, especially on the corner of the modules. Inappropriate transport and installation may break the modules.

Do not attempt to disassemble the modules, and do not remove any attached nameplates or components from the modules.

Do not apply paint or adhesive to the modules top surface.

Do not drill holes in the frame. This may compromise the frame strength and cause corrosion of the frame.

Do not scratch the anodized coating of the frame (except for grounding connection). It may cause corrosion of the frame or compromise the frame strength.

Do not attempt to repair the modules with damaged glass.

Work only under dry conditions, and use only dry tools. Do not handle modules when they are wet unless wearing appropriate protective equipment.

When storing uninstalled modules outdoor for any period of time, always cover the modules and ensure

that the rear faces down to stop water from collecting inside the modules and causing damage to exposed connectors. The nameplate side is the rear side of the module.

Once they are heavy or exceed the allowable weight of one person, at least two people are needed to lift the modules.

2.4 Fire Safety

Consult your local authority for guidelines and requirements for building or structural fire safety.

Roof constructions and installations may affect the fire safety of building. Improper installation may create hazards in the event of a fire.

Use appropriate components such as fuses, circuit breaker and grounding connector as requires by local authority. Do not use modules where flammable gasses may be generated.

3. Installation Condition

3.1 Installation position and working environment

Do not use mirrors or other magnifiers to concentrate sunlight onto the modules.

Modules must be mounted on appropriate mounting structures positioned on suitable buildings, the ground, or other structures suitable for modules (e.g. carports, building facades or PV trackers).

Modules must not be installed in locations where they could be submerged in water.

Modules should be installed in locations where the altitude is less than 2000m.

The modules are suitable for operation in outdoor non-weather protected locations, exposed to direct and indirect solar radiation, in an environmental temperature range of at least -40°C to $+40^{\circ}\text{C}$ and up to 100 % relative humidity as well as rain. The component [T98] has a maximum operating temperature of 70°C , which can briefly reach 85°C . The temperature limits are defined as the monthly average high and low of the installation site.

Ensure modules are not subject to wind or snow loads exceeding the maximum permissible loads.

The modules should be installed in a location where there's no shading throughout the year. Ensure there's no obstacle to block light near the installation site.

Lightning protection is recommended for PV systems that are to be installed in locations with high probability of lightning strikes.

Do not use modules near equipment or in locations where flammable gasses may be generated or collected.

It is prohibited to install or handle components during rain, snow, or strong winds. If installation or operation occurs after rain or on dewy mornings, appropriate protective measures must be taken to prevent moisture from penetrating the connectors.

The irradiance reflected on the rear of the bifacial solar modules shall not exceed $300\text{W}/\text{m}^2$.

3.2 Tilt Angle of Installation

The installation of PV module string should be in the same orientation and the same installation angle. Different installation directions and installation angles will lead to the mismatches in current and voltage which is caused by different light absorption of different PV modules, this mismatch will cause the PV system power output loss.

The largest power will be generated when direct sunlight on solar PV module. For modules which are installed on the fixed Brackets, the best installation angle should be selected to ensure the maximum power output can be generated at winter time, if the angle can guarantee enough power output during the winter, it will make the whole solar PV system in the rest of the year can have enough power output also.

Solar modules are recommended to be installed at an optimized tilt angle to maximize the energy output.

For detailed information on the best installation angle, please refer to standard solar photovoltaic installation guides or consult a reputable solar installer or systems integrator. Dust building up on the surface of the modules can impair module performance. We recommend installing the modules with a tilt angle of at least 10° , making it easier for dust to be washed off by rain. Any faults caused by and/or attributable to tilt angle less than 10 degrees are not covered by manufacturer's warranty. It is roughly equal to the latitude of the project site as a rule of thumb, facing toward the equator. Optimized system designs must incorporate other local requirements. In addition, when the PV model is placed in the southern hemisphere, it should face north, e.g. RSXXXS8-108GANT/RSXXXS8B-108GANT, RSXXXS8-120GANT/RSXXXS8B-120GANT, RSXXXS8-132GANT/RSXXXS8B-132GANT, RSXXXS8-144GANT/RSXXXS8B-144GANT, etc.

Installation inclination refers to the Angle between the module and the ground plane, as shown in Figure 1.

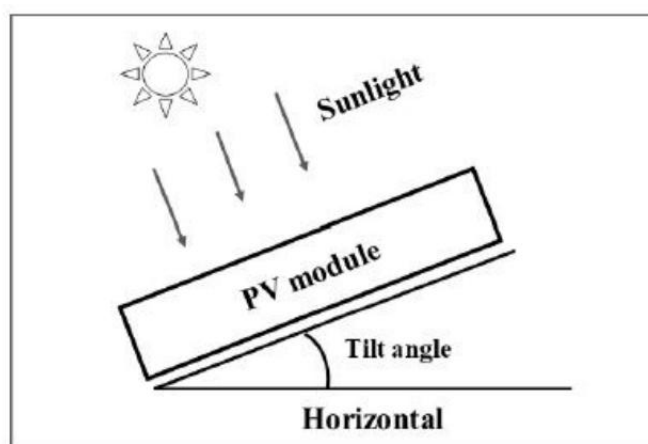


Fig.1 Tilt angle

Table 1 Recommended tilt angle for fixed systems

Latitude	Tilt angle
$0^{\circ} \sim 15^{\circ}$	15°
$15^{\circ} \sim 25^{\circ}$	The same latitude
$25^{\circ} \sim 30^{\circ}$	Same latitude $+5^{\circ}$
$30^{\circ} \sim 35^{\circ}$	Same latitude $+10^{\circ}$
$35^{\circ} \sim 40^{\circ}$	Same latitude $+15^{\circ}$
$40^{\circ}+$	Same latitude $+20^{\circ}$

3.3 INSTALLATION REQUIREMENTS FOR BIFACIAL MODULE

Under the certain installation conditions, the backside of bifacial cells module will also generate electricity power after receiving the reflected light, which will Bring additional power generation gain to the power station system.

The shading on the module surface will affect the power generation much, the module should be installed in the place where the module cannot be shadowed totally (such as the shadow from building, chimney and tree etc.), and even the partially shading (such as the dirt, snow and aerial wire etc.) should be avoided.

The generation gain is related to the ground reflectivity, the module installation height to the ground, the array spacing and the shadow shading to the module backside.

Generally speaking, the reflectance is various with the different ground (See table 2), and this will lead to different power generation gain.

Table 2 reflectivity of different surfaces

The ground type	Water	Grassland	Ground	Concrete	Sand	Snow
Reflectivity range(%)	5-12	12-25	20-33	20-40	20-40	80-85

Due to the different ground clearance height will affect the power generation gain, it is recommended to install the module at a height from 1m to 2m. See Fig. 2.

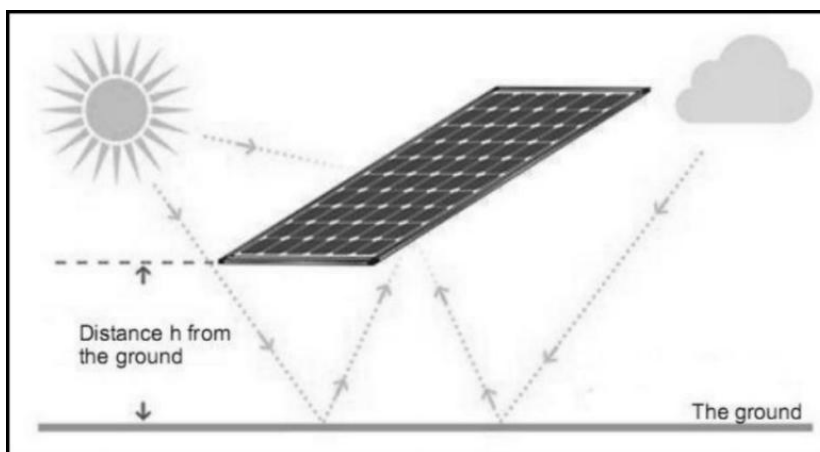


Fig. 2 Distance from the earth

In the system design, besides the ground type and the module installation height to ground, the proper array spacing and how to avoid shadow shading on the back need to be considered too, please consult with the professional system designer.

4. Mechanical Installation

4.1 Conventional requirements

Ensure the installation method and supporting system of modules is strong enough to make the modules can withstand all the load conditions. The Installer should provide this guarantee. The installation supporting system should be tested by the third-party organization with the analysis ability of Static Mechanical, according to the local national or international standards.

The fire rating of this module is valid only when mounted in the manner specified in the mechanical mounting instructions. The module is considered to be in compliance with IEC61730-2:2023 only when the module is mounted in the manner specified by the mounting instructions. Based on standards IEC61730-2:2023 standard, when for the rooftop mounting, the rooftop covering material should have class C fire resistance at least.

The modules mounting structure should be made of durable, corrosion-resistant and UV-resistant material. Modules should be securely attached to the mounting structure.

When the modules are supported parallel to the surface of the building wall or roof, a minimum stand-off of 102 mm (4 inches) between the modules and the surface of the wall or the roof is required to allow air to circulate behind the modules for heat dissipation. The position of junction box should be on the top side, and away from the ground.

Do not attempt to drill holes in the glass surface and the modules frames of the modules as this will void the warranty.

Before installing modules on a roof, ensure the roof coverings should have fire resistant Class C. In

addition, any roof penetration required to mount the modules should be properly sealed to prevent leaks.

Dust building up on the surface of the modules can impair with modules performance. We recommend installing the modules with a tilt angle of at least 10 degrees, making it easier for dust to be washed off by rain.

Observe the linear thermal expansion of the modules frames (the recommended minimum distance between two modules is 1 cm).

A module with exposed conductive parts is considered to be in compliance with IEC TS 62548:2013 only when it is electrically grounded in accordance with the instructions presented below and the requirements of the national regulations. Any module without a frame (laminate) shall not be considered to comply with the requirements of IEC 61215-1:2021, IEC61215-1-1:2021, IEC61215-2:2021, IEC61730-1:2023 and IEC61730- 2:2023 unless the module is mounted with hardware that has been tested and evaluated with the module under this standard or by a field Inspection certifying that the installed module complies with the requirements of IEC TS 62548:2013.

Metals with the aluminum frame of the modules that will result in galvanic corrosion. An addendum to IEC 60950-1 Table J.1 that recommends metal combinations not exceeds an electrochemical potential difference of 0.6 Volts.

For the Australian Market, Building Integrated PV Module installations must comply with the requirements of the National Construction Code and AS/NZS 5033

4.2 Installation methods for normal modules

4.2.1 Modules installed with mounting holes

Modules should be bolted to support structures through total 8 mounting holes located in the frame's back flanges with minimum positive design load 3600Pa (Safety factor is 1.5) and negative design load 1600Pa (Safety factor is 1.5).When selecting the bolt installation method, ensure that each component has at least four bolts arranged symmetrically.The positions of bolt mounting holes are shown in Figure 3.

Refer to what is shown in Figure 4 (Mounting Details). Besides, two or more screws or two full threads of a single screw shall engage the metal,Four bolts are required for installation.

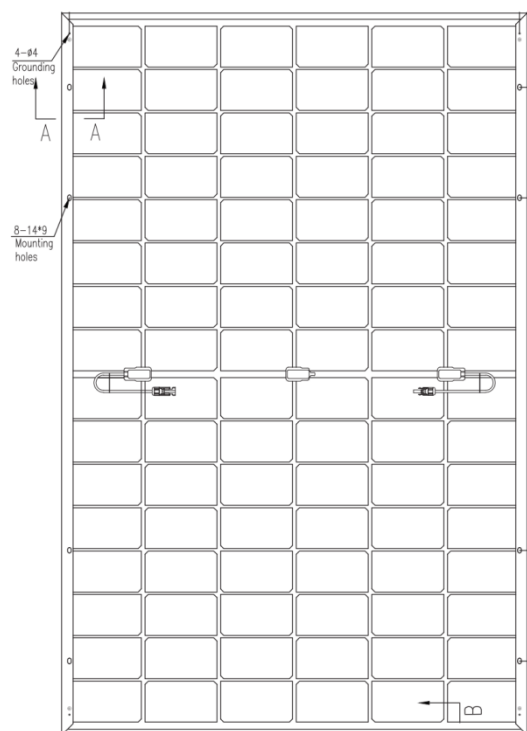


Fig. 3 Mounting hole position

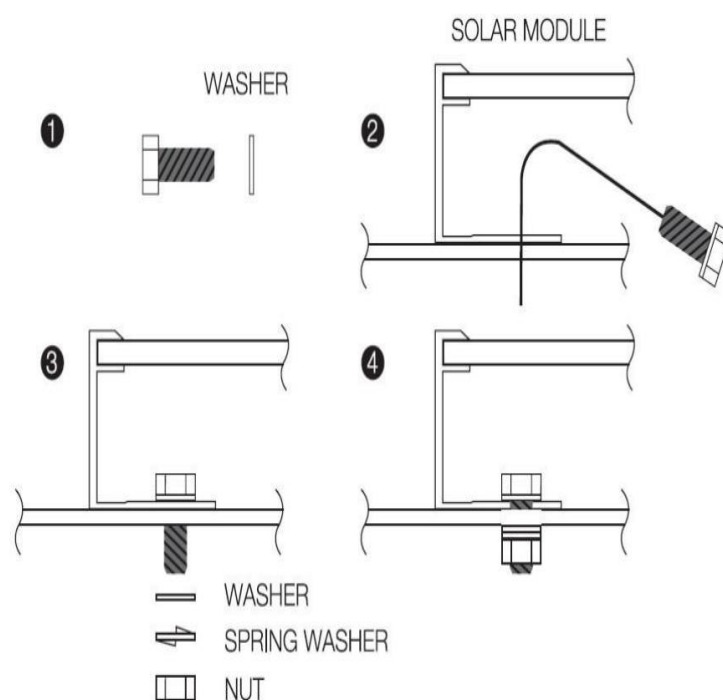


Fig. 4 Mounting Details

For your reference, please use the components specified in below:

1.Bolt

Material: Stainless Steel
Size and Length: M8* 16mm

2.Washer

Material: Stainless Steel
Size: M8

3.Spring Washer

Material: Stainless Steel
Size: M8

4.Nut

Material: Stainless Steel
Size: M8

Recommended torque is between 14N.m to 20N.m.

4.2.2 Modules installed with clamps

Modules should be mounted using specialized clamps as shown in Figure 5. When choosing the clamp mounting method, ensure there are at least four clamps on each module.

A) A module should be attached on a supporting structure rail by metal clamps.

It is recommended to use the clamps under the following condition or approved by system installation:

Size: Clamp A width $\geq$ 50mm, Clamp B width $\geq$ 38mm

Thickness: Following as Clamp A and Clamp B

Material: Aluminum Alloy 6063-T5

Bolt: Stainless Steel, M8

Nut: Stainless Steel, M8

Washer: Stainless Steel, M8

B) Recommended bolt torque range: 18N.m to 24N.m.

C) The modules clamps should not contact the front glass or deform the frame in any way. Avoid shading effects from the modules clamps. Drainage holes on the modules frame should not be closed or obscured by the clamps. Besides, two or more screws or two full threads of a single screw shall engage the metal.

D) This mounting method is designed for positive load 3600Pa (Safety factor is 1.5) or negative load 1600Pa (Safety factor is 1.5). Only those types which have been qualified could use this method.

E) Mounting method (showed in the table below): $A=1/4*L\pm 50\text{mm}$.

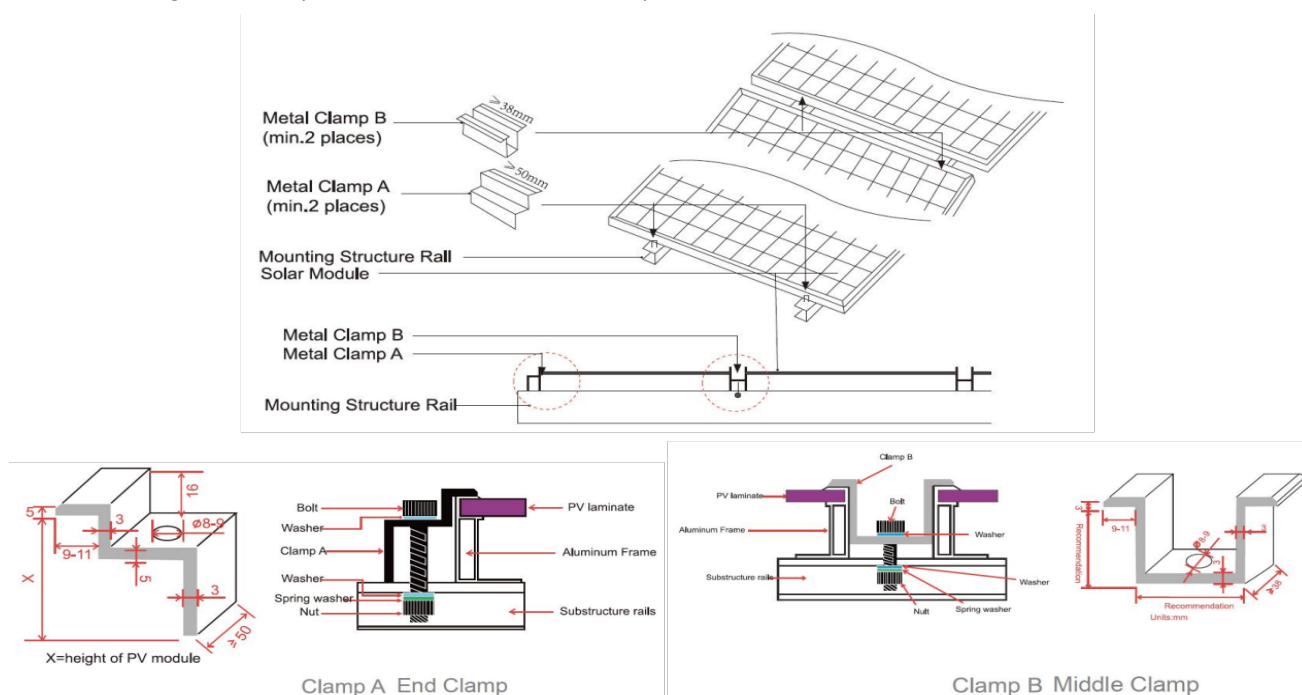
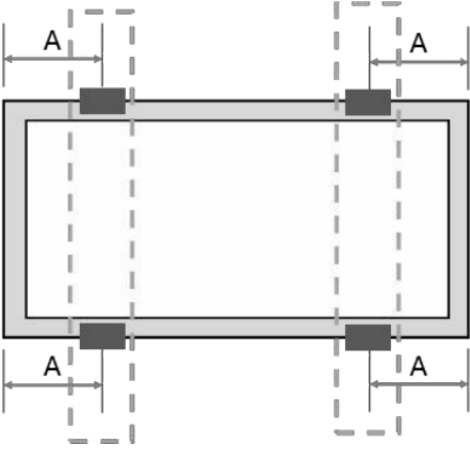


Fig. 5

Module	Mechanical Load Pressure	Mounting Direction
RSxxxS8(B)-156GANT RSxxxS8(B)-144GANT RSxxxS8(B)-132GANT RSxxxS8(B)-120GANT RSxxxS8(B)-108GANT RSxxxS8(B)-96GANT RSxxxS8(B)-84GANT RSxxxS8(B)-72GANT RSxxxS8R(B)-132GANT RSxxxS8R(B)-120GANT RSxxxS8R(B)-108GANT RSxxxS8R(B)-96GANT RSxxxS9(B)-132GANT RSxxxS9(B)-120GANT RSxxxS9(B)-108GANT RSxxxS9(B)-96GANT	Designed mechanical load +3600/-1600, safety factor 1.5	 $A=1/4L\pm 50\text{mm}$; L=Module length *NOTE: 1. The crossbeam is perpendicular to the long side frame. 2. The A is from the module edge to the middle of the clamp. Clamps width $\geq 60\text{mm}$. 3. Need two support rails below the PV module to make sure the Mechanical load. 4. The side with serial number inside the glass is the front side of the module.

5. Electrical Installation

5.1 Electrical Property

Rated electrical characteristics such as P_{max} is within $\pm 3\%$ and V_{oc} within $\pm 3\%$ and I_{sc} within $\pm 4\%$ of tolerance values at Standard Test Conditions. Under normal conditions, the photovoltaic modules may experience conditions that produce more current and/or voltage than reported at Standard Test Conditions. Accordingly, the values of short circuit current, I_{sc} , and open circuit voltage, V_{oc} , marked on modules should be multiplied by a factor of 1.25 when determining component voltage ratings, conductor capacities, fusing sizes, and size of controls connected to the modules output.

For a module or panel in abnormal condition, the multiplying 1.25 factor at conditions of an irradiance of 125 mW/cm^2 , AM 1.5 spectrum, and a cell temperature of minus 10°C for V_{oc} and plus 75°C for I_{sc} should be taken into consideration.

The maximum number of modules that can be connected in a series string should be calculated in accordance with applicable regulations in such a way that the specified maximum system voltage of the modules and all other electrical DC components will not be exceeded in open-circuit operation at the lowest temperature expected at the PV system location. For this, the IEC TS62548:2013 is to be a reference. The parallel number is 1.

An appropriately rated over-current protection device should be used when the reverse current could exceed the value of the maximum fuse rating of the modules. An over-current protection device is required for each series string if more than two series strings are connected in parallel.

5.2 Cables and Wiring

The junction boxes have been designed to be easily interconnected in series for their well-connected cable and the connector with IP67 (IP68) protection grade. Each modules has two single-conductor wires, one positive and one negative, which are pre-wired inside the junction box. The connectors at the opposite end of these wires allow easy series connection of adjacent modules by firmly inserting the positive connector of a module into the negative connector of an adjacent module until the connector is fully seated.

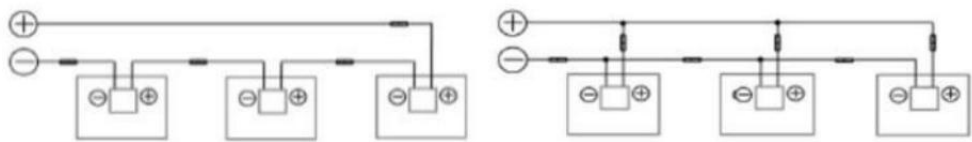
Use field wiring with suitable cross-sectional areas that are approved for use at the maximum short-circuit current of the modules. We recommend installers use only sunlight resistant cables qualified for direct current (DC) wiring in PV systems. The rated current of photovoltaic cable shall not be less than the short-circuit current of PV module.

Each PV module has two PV cables which can withstand 85°C temperature and they are sunlight resistant(UV). The cross-sectional area of the cable is 4mm^2 or 12AWG, and the external diameter is $5\text{mm} \sim 7\text{mm}$. The minimum bending radius of the cables must be 43mm . Any cable damage caused by bending too much or cable management system is not covered under warranty. Plug & Play connectors are included at the end of each cable. All other cables used to connect the direct current system shall have similar (or higher) specifications, and should have the suitable insulation ability which can suffer the possible maximum system V_{oc} . We require all cables and electrical connections to comply with the electrical regulations of the countries where the PV system is installed.

Cables should be fixed to the mounting structure in such a way that mechanical damage of the cable and/or the modules is avoided Do not apply stress to the cables. For fixing, use appropriate means, such as sunlight resistant cable ties and/or wire management clips specifically designed to attach to the module frame. While the cables are sunlight resistant and waterproof, where possible, avoid direct sunlight exposure and water immersion of the cables. Cable arrangement must comply with local laws and regulations.

To ensure the system operates properly, ensure the polarity of the cable when connecting the assembly or load (e. g., inverter, battery, etc.).If the assembly is not connected correctly, the bypass diode may be

damaged. Photovoltaic modules can be connected in series to increase voltage and connected in parallel to increase current.



Series connection, parallel connection

Cut the cable tie and be careful not to scratch the cable and backplane. Plug the positive and negative module connector in order to confirm that the "click" signal indicates that the connection is in place, otherwise the connector will be burned out in the future due to the virtual arc.

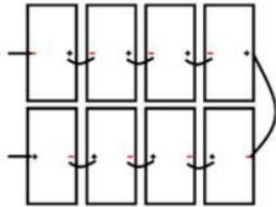
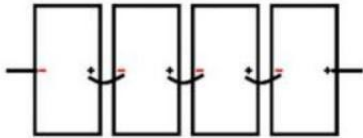
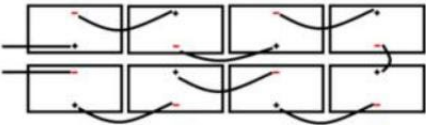
Before commissioning and operation of the power station, electrical inspection of the modules and strings need to confirm that the polarity of the strings is correct and the open circuit voltage meets the requirements of the acceptance specification.

The number of modules in series and parallel shall be reasonably designed according to the system configuration.

All of the above instructions must be followed to meet the Runda PV warranty conditions.

The following two wiring methods are recommended (select a long or short cable as the assembly is installed).

The installations shall comply with local regulations/electrical codes.

Recommended wiring mode	graphic
module vertical installation: Select the standard short cable	 Two rows of vertical installation
	 Single row vertical installation
module horizontal: Select a standard long cable or be custom-made	 Horizontal installation

5.2.1 Fuses

The correction coefficient shall be determined by the authorized professional electrical engineer according to the relevant design regulations and the system simulation results. Runda PV is not responsible for the determination of the minimum fuse specification.

The rated current of the fuse shall be selected by different criteria, as shown below

$$\frac{1.5}{K_f} I_{sc} I_n \text{ module} \cdot \leq \text{maximum fuse rated current (area using IEC)}$$

$$\frac{1.56}{K_f} I_{sc} I_n \text{ module} \cdot \leq \text{maximum fuse rated current (area using NEC)}$$

Where:

I_n : Fuse-rated current

I_{sc} : Assembly short-circuit current

K_f : Temperature correction coefficient

Additional current values are corrected for different operating environment temperatures by the temperature correction coefficient. Please confirm the final fuse model selection with the qualified design agency and fuse manufacturer of the installation site. The maximum fuse rated current of the modules provided on Runda datasheet is for reference only.

5.3 Connector

Keep connectors dry and clean, and ensure that connector caps are hand tight before connecting the modules. Do not attempt making an electrical connection with wet, soiled, or otherwise faulty connectors. Avoid sunlight exposure and water immersion of the connectors. Avoid connectors resting on the ground or roof surface.

Faulty connections can result in arcs and electrical shock. Check that all electrical connections are securely fastened. Make sure that all locking connectors are fully engaged and locked. Besides, the connector should be mated with its original female or male connector of the same supplier.

Type	Manufacture	System Voltage	Rated Current	Temperature Rating
PV-XT101.2	Suzhou XTONG Photovoltaic Technologies Co.,Ltd.	DC 1500V	41A	-40°C to +85°C

5.4 Bypass Diodes

If PV module part by shadow block, which can lead to reverse voltage related to solar cells, PV modules in other unaffected battery string or other PV modules in the system and current will force through keep out part of the power loss and heat affected cell. When the PV module is connected in parallel with the bypass diode, the current in the system will flow directly through the diode, so as to bypass the blocked part of the PV module and minimize the heating degree and power consumption of the PV module.

Please do not try to open the junction box to replace the diode, or even when the diode problem, please do this work by professionals.

Type	Manufacture	Rated current
XT4050M-B	Suzhou XTONG Photovoltaic Technologies Co.,Ltd.	25A

6. Grounding

The modules use an anodic oxidized aluminum frame to resist corrosion. So the frame of modules should be connected to the equipment grounding conductor to prevent thunder and electrical shock. All PV module

frames and mounting Brackets must be properly grounded in accordance with the applicable national electrical code.

When grounding, the grounding device must be fully in contact with the frame aluminum alloy and the installation Bracket, through the oxide film on the frame surface and the insulation layer of the Bracket. Please do not drill any additional ground holes on the border of the assembly.

The grounding method should not result in the direct contact of dissimilar metals with the aluminum frame of the modules that will result in galvanic corrosion. An addendum to IEC 60950-1 that recommends metal combinations not exceeds an electrochemical potential difference of 0.6 Volts. The frame rails have pre-drilled holes marked with a grounding sign. These holes should be used for grounding purposes and should not be used for mounting the modules. Where common grounding hardware (nuts, bolts, star washers, split-ring lock washers, flat washers and the like) is used to attach a listed grounding/bonding device, the attachment should be made in conformance with the grounding device manufacturer's instructions. Common hardware items such as nuts, bolts, star washers, lock washers and the like have not been evaluated for electrical conductivity or for use as grounding devices and should be used only for maintaining mechanical connections and holding electrical grounding devices in the proper position for electrical conductivity. Such devices, where supplied with the module and evaluated through the requirements in UL 1703, may be used for grounding connections in accordance with the instructions provided with the module.

6.1 Grounding by using grounded clamp

There is a grounding hole with 4.2 mm diameter on the edge side closer to the middle of the back frame of the modules. The middle line of the grounding mark is overlapped with the grounding hole, and the direction is same as the longer frame.

The grounding between modules should be approved by qualified electrician. And the grounding device should be produced by qualified electrical manufacturer. The recommended twist torque value is 2.3 Nm. A copper core in size of 6 mm² can be used as grounding clamp. The copper wire should not be squashed during the installation.

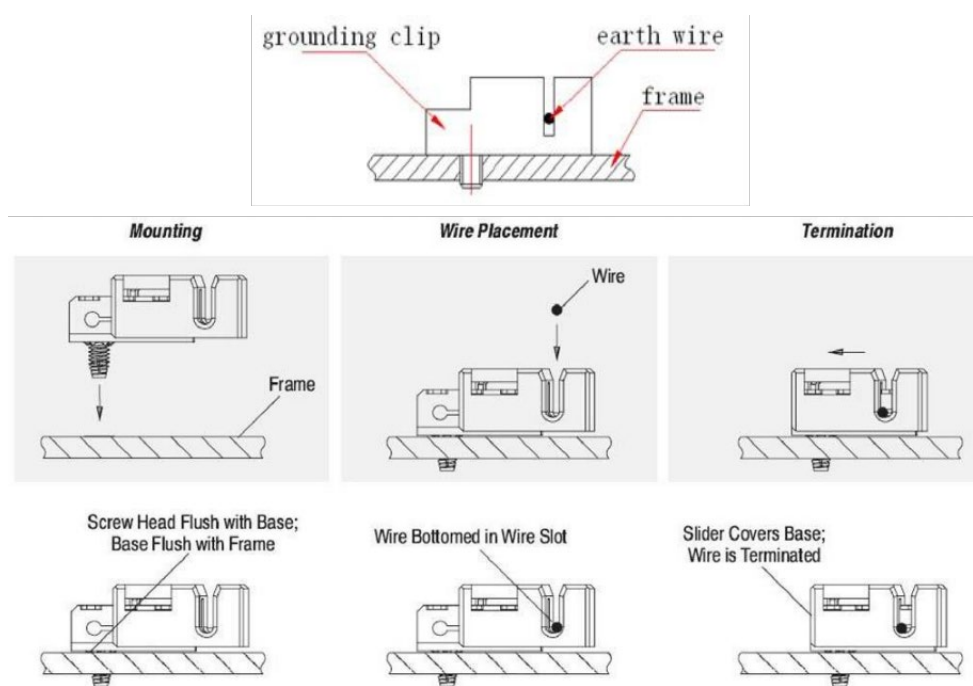


Fig. 5: Installation Methods

Note: The figure above is using TYCO. 1954381-1 (recommended)

6.2 Other professional grounding devices

The electrical contact points of all the above grounding methods should penetrate the anodized film of the aluminum frame. PV modules can be grounded by other grounding devices, which must be reliable and certified. The manufacturer's requirements should be followed.

7. Operation and Maintenance

It is required to perform regular inspection and maintenance of the modules, especially within warranty scope. It is the user's responsibility to report to the supplier regarding the damages found within 2 weeks.

The dust accumulated on the front transparent substrate may reduce the power output, and may even cause regional hot-spot effect. The industrial effluents or bird drops may be serious cases, and the extent of the severity depends on the transparency of the foreign objects. It's usually not dangerous of the accumulated dust to reduce the sunshine, because the light intensity is still homogeneous and the power reduction usually is not obvious.

When modules are working, there exist environmental influence factors to cast shadows and cover part or even all of the modules, such as other modules, system support, bird drops and a lot of dust, clay or plant and so on, these may distinctly reduce the power output. We advise that there should be no obstructed object over the modules surface at any time.

The cleaning frequency depends on the accumulating velocity of the fouling. In many instances the front substrate goes cleaned with the rain, and we can decrease the cleaning frequency. It is recommended to wipe the glass surface with wet sponge or soft cloth. Please do not clean the glass with cleaning agent which contains acid or alkali.

7.1 Module appearance inspection

Inspect the modules visually to find if there are appearance defect, the following two types need more attention especially:

- A) Whether the glass is broken;
- B) Corrosion along the cells' bus-bar.

The corrosion is caused by the dampness infiltrated into the modules when the surface encapsulation material damaged during the installation or transportation.

7.2 Connector and cable inspection

It is recommended to conduct electrical preventive inspection and maintenance every 6 months.

Check the tightness of the connector and whether there is any external sheath damage or direct sunlight, and whether the connection is solid.

Check electrical leakage to ground.

Check the sealing gels of the junction box for any damage.

7.3 Cleaning

Dust accumulation on the glass surface of the module will reduce its power output and may cause hot spots. So the surface of PV modules should be kept clean. Maintenance work should be performed at least once six months or frequently. Warning: It should be carried out by trained personnel.

The back surface of the module normally does not need to be cleaned but, in the event this is deemed necessary, avoid the use of any sharp projects that might damage the penetrating the substrate material.

7.4 Troubleshooting

If the PV system fails to operate normally after the module is put into service, notify the installer immediately. It is recommended to carry out preventive inspection every 6 months. Do not replace

components without authorization. If inspection and maintenance of electrical or mechanical properties are required, qualified and professionally trained professionals should be allowed to operate to avoid electric shock or casualties.

Appendix 1: Performance at STC

RSxxxS8-156GANT / RSxxxS8B-156GANT Series :

	Module type	RS595S8-156GANT / RS595S8B-156GANT	RS600S8-156GANT / RS600S8B-156GANT	RS605S8-156GANT / RS605S8B-156GANT	RS610S8-156GANT / RS610S8B-156GANT	RS615S8-156GANT / RS615S8B-156GANT	RS620S8-156GANT / RS620S8B-156GANT	RS625S8-156GANT / RS625S8B-156GANT
STC condition	Pmp [W] /Tolerance	595 ± 3%	600 ± 3%	605 ± 3%	610 ± 3%	615 ± 3%	620 ± 3%	625 ± 3%
	Voc [V] /Tolerance	54.41 ± 3%	54.60 ± 3%	54.79 ± 3%	54.98 ± 3%	55.17 ± 3%	55.36 ± 3%	55.55 ± 3%
	Isc [Adc] /Tolerance	13.91 ± 4%	13.97 ± 4%	14.03 ± 4%	14.09 ± 4%	14.15 ± 4%	14.21 ± 4%	14.27 ± 4%
	Vmp [V]	45.32	45.49	45.66	45.83	46.00	46.17	46.33
	Imax [Adc]	13.13	13.19	13.25	13.31	13.37	13.43	13.49
BNPI condition	Pmp [W] /Tolerance	649 ± 3%	654 ± 3%	659 ± 3%	665 ± 3%	670 ± 3%	676 ± 3%	681 ± 3%
	Voc [V] /Tolerance	54.41 ± 3%	54.60 ± 3%	54.79 ± 3%	54.98 ± 3%	55.17 ± 3%	55.36 ± 3%	55.55 ± 3%
	Isc [Adc] /Tolerance	15.16 ± 4%	15.23 ± 4%	15.29 ± 4%	15.36 ± 4%	15.42 ± 4%	15.49 ± 4%	15.55 ± 4%
BSI/aBSI condition	Isc [Adc] /Tolerance	17.25±5%	17.32±5%	17.40±5%	17.47±5%	17.55±5%	17.62±5%	17.69±5%
bifaciality coefficient	φPmax	81 ± 5%	81 ± 5%	81 ± 5%	81 ± 5%	81 ± 5%	81 ± 5%	81 ± 5%
	φVoc	99 ± 5%	99 ± 5%	99 ± 5%	99 ± 5%	99 ± 5%	99 ± 5%	99 ± 5%
	φIsc	80 ± 5%	80 ± 5%	80 ± 5%	80 ± 5%	80 ± 5%	80 ± 5%	80 ± 5%
	Maximum system voltage [V]	1500	1500	1500	1500	1500	1500	1500
	Maximum Over-Current Protection Rating [A]	30	30	30	30	30	30	30
	Temperature Coefficient of Pmax	-0.310%/°C						
	Temperature Coefficient of Voc	-0.26 %/°C						
	Temperature Coefficient of Isc	+0.046 %/°C						

	Module type	RS630S8-156GANT / RS630S8B-156GANT	RS635S8-156GANT / RS635S8B-156GANT	RS640S8-156GANT / RS640S8B-156GANT	RS645S8-156GANT / RS645S8B-156GANT	RS650S8-156GANT / RS650S8B-156GANT	RS655S8-156GANT / RS655S8B-156GANT	
STC condition	Pmp [W] /Tolerance	630± 3%	635± 3%	640± 3%	645 ± 3%	650 ± 3%	655 ± 3%	
	Voc [V] /Tolerance	55.74± 3%	55.93± 3%	56.12± 3%	56.31 ± 3%	56.50 ± 3%	56.69 ± 3%	
	Isc [Adc] /Tolerance	14.33± 4%	14.39± 4%	14.45± 4%	14.51 ± 4%	14.57 ± 4%	14.63 ± 4%	
	Vmp [V]	46.50	46.66	46.82	46.98	47.14	47.30	
	Imax [Adc]	13.55	13.61	13.67	13.73	13.79	13.85	
BNPI condition	Pmp [W] /Tolerance	687 ± 3%	692± 3%	698 ± 3%	703 ± 3%	709 ± 3%	714 ± 3%	
	Voc [V] /Tolerance	55.74 ± 3%	55.93 ± 3%	56.12 ± 3%	56.31 ± 3%	56.50 ± 3%	56.69 ± 3%	
	Isc [Adc] /Tolerance	15.62 ± 4%	15.69 ± 4%	15.75± 4%	18.00 ± 4%	18.07 ± 4%	18.14 ± 4%	
BSI/aBSI condition	Isc [Adc] /Tolerance	17.77±5%	17.84±5%	17.92±5%	17.99±5%	18.07±5%	18.14±5%	
bifaciality coefficient	φPmax	81 ± 5%	81 ± 5%	81 ± 5%	81 ± 3%	81 ± 3%	81 ± 3%	
	φVoc	99 ± 5%	99 ± 5%	99 ± 5%	99 ± 3%	99 ± 3%	99 ± 3%	
	φIsc	80 ± 5%	80 ± 5%	80 ± 5%	80 ± 4%	80 ± 4%	80 ± 4%	
	Maximum system voltage [V]	1500	1500	1500	1500	1500	1500	
	Maximum Over-Current Protection Rating [A]	30	30	30	30	30	30	

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	Temperature Coefficient of Pmax	-0.310%/°C
	Temperature Coefficient of Voc	-0.26 %/°C
	Temperature Coefficient of Isc	+0.046 %/°C

RSxxxS8-144GANT / RSxxxS8B-144GANT Series :

	Module type	RS600S8-144GANT / RS600S8B-144GANT	RS605S8-144GANT / RS605S8B-144GANT	RS610S8-144GANT / RS610S8B-144GANT	RS615S8-144GANT / RS615S8B-144GANT	RS620S8-144GANT / RS620S8B-144GANT
STC condition	Pmp [W] /Tolerance	600 ± 3%	605 ± 3%	610± 3%	615±3%	620±3%
	Voc [V] /Tolerance	53.01± 3%	53.21± 3%	53.41± 3%	53.61± 3%	53.81 ± 3%
	Isc [Adc] /Tolerance	14.30 ± 4%	14.37 ± 4%	14.44 ± 4%	14.51 ± 4%	14.58 ± 4%
	Vmp [V]	43.80	43.94	44.08	44.21	44.35
	Imax [Adc]	13.70	13.77	13.84	13.91	13.98
BNPI condition	Pmp [W] /Tolerance	654± 3%	659± 3%	665± 3%	670± 3%	676± 3%
	Voc [V] /Tolerance	53.01± 3%	53.21± 3%	53.41± 3%	53.61± 3%	53.81± 3%
	Isc [Adc] /Tolerance	15.59± 4%	15.66± 4%	15.74± 4%	15.82± 4%	15.89± 4%
bifaciality coefficient	φPmax	81 ±3%	81 ±3%	81 ±3%	81 ±3%	81 ±3%
	φVoc	99±3%	99±3%	99±3%	99±3%	99±3%
	φIsc	80±4%	80±4%	80±4%	80±4%	80±4%
	Maximum system voltage [V]	1500	1500	1500	1500	1500
	Maximum Over-Current Protection Rating [A]	30	30	30	30	30
	Temperature Coefficient of Pmax	-0.310%/°C				
	Temperature Coefficient of Voc	-0.26 %/°C				
	Temperature Coefficient of Isc	+0.046 %/°C				

RSxxxS8-132GANT / RSxxxS8B-132GANT Series :

	Module type	RS550S8-132GANT / RS550S8B-132GANT	RS555S8-132GANT / RS555S8B-132GANT	RS560S8-132GANT / RS560S8B-132GANT	RS565S8-132GANT / RS565S8B-132GANT	RS570S8-132GANT / RS570S8B-132GANT
STC condition	Pmp [W] /Tolerance	550 ± 3%	555 ± 3%	560 ± 3%	565 ± 3%	570 ± 3%
	Voc [V] /Tolerance	48.61 ± 3%	48.81 ± 3%	49.01 ± 3%	49.21 ± 3%	49.41 ± 3%
	Isc [Adc] /Tolerance	14.27± 4%	14.34 ± 4%	14.41 ± 4%	14.48 ± 4%	14.55 ± 4%
	Vmp [V]	40.26	40.42	40.58	40.74	40.89
	Imax [Adc]	13.66	13.73	13.80	13.87	13.94
BNPI condition	Pmp [W] /Tolerance	600± 3%	605± 3%	610± 3%	616± 3%	621± 3%
	Voc [V] /Tolerance	48.61± 3%	48.81± 3%	49.01± 3%	49.21± 3%	49.41± 3%
	Isc [Adc] /Tolerance	15.55± 4%	15.63± 4%	15.71± 4%	15.78± 4%	15.86± 4%
bifaciality coefficient	φPmax	81 ±3%	81 ±3%	81 ±3%	81 ±3%	81 ±3%
	φVoc	99±3%	99±3%	99±3%	99±3%	99±3%
	φIsc	80±4%	80±4%	80±4%	80±4%	80±4%
	Maximum system voltage [V]	1500	1500	1500	1500	1500

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	Maximum Over-Current Protection Rating [A]	30	30	30	30	30
	Temperature Coefficient of Pmax	-0.310%/°C				
	Temperature Coefficient of Voc	-0.26 %/°C				
	Temperature Coefficient of Isc	+0.046 %/°C				

RSxxxS8-120GANT / RSxxxS8B-120GANT Series :

	Module type	RS500S8-120GANT / RS500S8B-120GANT	RS505S8-120GANT / RS505S8B-120GANT	RS510S8-120GANT / RS510S8B-120GANT	RS515S8-120GANT / RS515S8B-120GANT	RS520S8-120GANT / RS520S8B-120GANT
STC condition	Pmp [W] /Tolerance	500 ± 3%	505 ± 3%	510 ± 3%	515 ± 3%	520 ± 3%
	Voc [V] /Tolerance	44.13± 3%	44.33± 3%	44.53± 3%	44.73± 3%	44.93± 3%
	Isc [Adc] /Tolerance	14.26± 4%	14.33± 4%	14.40± 4%	14.47± 4%	14.54± 4%
	Vmp [V]	36.66	36.83	37.01	37.18	37.36
	Imax [Adc]	13.64	13.71	13.78	13.85	13.92
BNPI condition	Pmp [W] /Tolerance	545 ± 3%	550 ± 3%	556 ± 3%	561 ± 3%	567 ± 3%
	Voc [V] /Tolerance	44.13 ± 3%	44.33 ± 3%	44.53 ± 3%	44.73 ± 3%	44.93 ± 3%
	Isc [Adc] /Tolerance	15.54± 4%	15.62± 4%	15.00± 4%	15.77± 4%	15.85± 4%
bifaciality coefficient	φPmax	81 ± 3%	81 ± 3%	81 ± 3%	81 ± 3%	81 ± 3%
	φVoc	99± 3%	99± 3%	99± 3%	99± 3%	99± 3%
	φIsc	80± 4%	80± 4%	80± 4%	80± 4%	80± 4%
	Maximum system voltage [V]	1500	1500	1500	1500	1500
	Maximum Over-Current Protection Rating [A]	30	30	30	30	30
	Temperature Coefficient of Pmax	-0.310%/°C				
	Temperature Coefficient of Voc	-0.26 %/°C				
	Temperature Coefficient of Isc	+0.046 %/°C				

RSxxxS8-108GANT / RSxxxS8B-108GANT Series:

	Module type	RS450S8-108GANT / RS450S8B-108GANT	RS455S8-108GANT / RS455S8B-108GANT	RS460S8-108GANT / RS460S8B-108GANT	RS465S8-108GANT / RS465S8B-108GANT
STC condition	Pmp [W] /Tolerance	450 ± 3%	455 ± 3%	460 ± 3%	465 ± 3%
	Voc [V] /Tolerance	39.73 ± 3%	39.93 ± 3%	40.13 ± 3%	40.33 ± 3%
	Isc [Adc] /Tolerance	14.22 ± 4%	14.29 ± 4%	14.36 ± 4%	14.43 ± 4%
	Vmp [V]	33.06	33.26	33.45	33.65
	Imax [Adc]	13.61	13.68	13.75	13.82
BNPI condition	Pmp [W] /Tolerance	491± 3%	496± 3%	501± 3%	507± 3%
	Voc [V] /Tolerance	39.73± 3%	39.93± 3%	40.13± 3%	40.33± 3%
	Isc [Adc] /Tolerance	15.50± 3%	15.58± 3%	15.65± 3%	15.73± 3%

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bifaciality coefficient	ϕP_{max}	$81 \pm 3\%$	$81 \pm 3\%$	$81 \pm 3\%$	$81 \pm 3\%$
	ϕV_{oc}	$99 \pm 3\%$	$99 \pm 3\%$	$99 \pm 3\%$	$99 \pm 3\%$
	ϕI_{sc}	$80 \pm 4\%$	$80 \pm 4\%$	$80 \pm 4\%$	$80 \pm 4\%$
	Maximum system voltage [V]	1500	1500	1500	1500
	Maximum Over-Current Protection Rating [A]	30	30	30	30
	Temperature Coefficient of P_{max}	-0.310%/°C			
	Temperature Coefficient of V_{oc}	-0.26 %/°C			
	Temperature Coefficient of I_{sc}	+0.046 %/°C			

RSxxxS8R-132GANT / RSxxxS8RB-132GANT Series (for 182x105 cell):

	Module type	RS595S8R-132GANT / RS595S8RB-132GANT	RS600S8R-132GANT / RS600S8RB-132GANT	RS605S8R-132GANT / RS605S8RB-132GANT	RS610S8R-132GANT / RS610S8RB-132GANT	RS615S8R-132GANT / RS615S8RB-132GANT	RS620S8R-132GANT / RS620S8RB-132GANT
STC condition	P_{mp} [W] /Tolerance	$595 \pm 3\%$	$600 \pm 3\%$	$605 \pm 3\%$	$610 \pm 3\%$	$615 \pm 3\%$	$620 \pm 3\%$
	V_{oc} [V] /Tolerance	$47.50 \pm 3\%$	$47.70 \pm 3\%$	$47.90 \pm 3\%$	$48.10 \pm 3\%$	$48.30 \pm 3\%$	$48.50 \pm 3\%$
	I_{sc} [A] /Tolerance	$15.90 \pm 4\%$	$15.95 \pm 4\%$	$16.00 \pm 4\%$	$16.05 \pm 4\%$	$16.10 \pm 4\%$	$16.15 \pm 4\%$
	V_{mp} [V]	39.27	39.45	39.59	39.77	39.96	40.11
	I_{max} [A]	15.15	15.21	15.28	15.34	15.39	15.46
BNPI condition	P_{mp} [W] /Tolerance	$649 \pm 3\%$	$654 \pm 3\%$	$659 \pm 3\%$	$665 \pm 3\%$	$670 \pm 3\%$	$676 \pm 3\%$
	V_{oc} [V] /Tolerance	$47.50 \pm 3\%$	$47.70 \pm 3\%$	$47.90 \pm 3\%$	$48.10 \pm 3\%$	$48.30 \pm 3\%$	$48.50 \pm 3\%$
	I_{sc} [A] /Tolerance	$17.33 \pm 4\%$	$17.39 \pm 4\%$	$17.44 \pm 4\%$	$17.49 \pm 4\%$	$17.55 \pm 4\%$	$17.60 \pm 4\%$
BSI/aBSI condition	I_{sc} [A] /Tolerance	$19.72 \pm 5\%$	$19.78 \pm 5\%$	$19.84 \pm 5\%$	$19.90 \pm 5\%$	$19.96 \pm 5\%$	$20.03 \pm 5\%$
bifaciality coefficient	ϕP_{max}	$81 \pm 3\%$	$81 \pm 3\%$	$81 \pm 3\%$	$81 \pm 3\%$	$81 \pm 3\%$	$81 \pm 3\%$
	ϕV_{oc}	$99 \pm 3\%$	$99 \pm 3\%$	$99 \pm 3\%$	$99 \pm 3\%$	$99 \pm 3\%$	$99 \pm 3\%$
	ϕI_{sc}	$80 \pm 4\%$	$80 \pm 4\%$	$80 \pm 4\%$	$80 \pm 4\%$	$80 \pm 4\%$	$80 \pm 4\%$
	Maximum system voltage [V]	1500	1500	1500	1500	1500	1500
	Maximum Over-Current Protection Rating [A]	30	30	30	30	30	30
	Temperature Coefficient of P_{max}	-0.310%/°C					
	Temperature Coefficient of V_{oc}	-0.26 %/°C					
	Temperature Coefficient of I_{sc}	+0.046 %/°C					

	Module type	RS625S8R-132GANT / RS625S8RB-132GANT	RS630S8R-132GANT / RS630S8RB-132GANT	RS635S8R-132GANT / RS635S8RB-132GANT	RS640S8R-132GANT / RS640S8RB-132GANT		
STC condition	P_{mp} [W] /Tolerance	$625 \pm 3\%$	$630 \pm 3\%$	$635 \pm 3\%$	$640 \pm 3\%$		
	V_{oc} [V] /Tolerance	$48.70 \pm 3\%$	$48.90 \pm 3\%$	$49.10 \pm 3\%$	$49.30 \pm 3\%$		
	I_{sc} [A] /Tolerance	$16.20 \pm 4\%$	$16.25 \pm 4\%$	$16.30 \pm 4\%$	$16.35 \pm 4\%$		
	V_{mp} [V]	40.28	40.44	40.60	40.76		
	I_{max} [A]	15.52	15.58	15.64	15.70		
BNPI condition	P_{mp} [W] /Tolerance	$681 \pm 3\%$	$687 \pm 3\%$	$692 \pm 3\%$	$698 \pm 3\%$		
	V_{oc} [V] /Tolerance	$48.70 \pm 3\%$	$48.90 \pm 3\%$	$49.10 \pm 3\%$	$49.30 \pm 3\%$		

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	Isc [Adc] /Tolerance	17.66±4%	17.71±4%	17.77±4%	17.82±4%		
BSI/aBSI condition	Isc [Adc] /Tolerance	20.09±5%	20.15±5%	20.21±5%	20.27±5%		
bifaciality coefficient	φPmax	81 ± 3%	81 ± 3%	81 ± 3%	81 ± 3%		
	φVoc	99 ± 3%	99 ± 3%	99 ± 3%	99 ± 3%		
	φIsc	80 ± 4%	80 ± 4%	80 ± 4%	80 ± 4%		
	Maximum system voltage [V]	1500	1500	1500	1500		
	Maximum Over-Current Protection Rating [A]	30	30	30	30		
	Temperature Coefficient of Pmax	-0.310%/°C					
	Temperature Coefficient of Voc	-0.26 %/°C					
	Temperature Coefficient of Isc	+0.046 %/°C					

RSxxxS8R-120GANT / RSxxxS8RB-120GANT Series (for 182x105 cell):

	Module type	RS540S8R-120GANT / RS540S8RB-120GANT	RS544S8R-120GANT / RS545S8RB-120GANT	RS550S8R-120GANT / RS550S8RB-120GANT	RS555S8R-120GANT / RS555S8RB-120GANT	RS560S8R-120GANT / RS560S8RB-120GANT
STC condition	Pmp [W] /Tolerance	540 ± 3%	545 ± 3%	550 ± 3%	555 ± 3%	560 ± 3%
	Voc [V] /Tolerance	43.88 ± 3%	44.11 ± 3%	44.34 ± 3%	44.57 ± 3%	44.80 ± 3%
	Isc [Adc] /Tolerance	15.53 ± 4%	15.57 ± 4%	15.61 ± 4%	15.65 ± 4%	15.69 ± 4%
	Vmp [V]	36.51	36.75	36.99	37.22	37.46
	Imax [Adc]	14.79	14.83	14.87	14.91	14.95
BNPI condition	Pmp [W] /Tolerance	589 ± 3%	594 ± 3%	600 ± 3%	605 ± 3%	610 ± 3%
	Voc [V] /Tolerance	43.88 ± 3%	44.11 ± 3%	44.34 ± 3%	44.57 ± 3%	44.8 ± 3%
	Isc [Adc] /Tolerance	16.93 ± 4%	16.97 ± 4%	17.01 ± 4%	17.06 ± 4%	17.10 ± 4%
BSI/aBSI condition	Isc [Adc] /Tolerance	19.26±5%	19.31 ±5%	19.36±5%	19.41±5%	19.46±5%
bifaciality coefficient	φPmax	81 ±3%	81 ±3%	81 ±3%	81 ±3%	81 ±3%
	φVoc	99±3%	99±3%	99±3%	99±3%	99±3%
	φIsc	80±4%	80±4%	80±4%	80±4%	80±4%
	Maximum system voltage [V]	1500	1500	1500	1500	1500
	Maximum Over-Current Protection Rating [A]	30	30	30	30	30
	Temperature Coefficient of Pmax	-0.310%/°C				
	Temperature Coefficient of Voc	-0.26 %/°C				
	Temperature Coefficient of Isc	+0.046 %/°C				

	Module type	RS565S8R-120GANT / RS565S8RB-120GANT	RS570S8R-120GANT / RS570S8RB-120GANT	RS575S8R-120GANT / RS575S8RB-120GANT	RS580S8R-120GANT / RS580S8RB-120GANT	
STC condition	Pmp [W] /Tolerance	565 ± 3%	570 ± 3%	575 ± 3%	580 ± 3%	
	Voc [V] /Tolerance	45.03± 3%	45.26± 3%	45.49 ± 3%	45.72 ± 3%	
	Isc [Adc] /Tolerance	15.73± 4%	15.77± 4%	15.81 ± 4%	15.85 ± 4%	
	Vmp [V]	37.70	37.93	38.16	38.39	
	Imax [Adc]	14.99	15.03	15.07	15.11	

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BNPI condition	Pmp [W] /Tolerance	616± 3%	621± 3%	627 ± 3%	632 ± 3%	
	Voc [V] /Tolerance	45.03± 3%	45.26± 3%	45.49 ± 3%	45.72 ± 3%	
	Isc [Adc] /Tolerance	17.15± 4%	17.19± 4%	17.23 ± 4%	17.28 ± 4%	
BSI/aBSI condition	Isc [Adc] /Tolerance	19.51 ±5%	19.55±5%	19.60 ± 5%	19.65 ± 5%	
bifaciality coefficient	φPmax	81 ± 3%	81 ± 3%	81 ± 3%	81 ± 3%	
	φVoc	99 ± 3%	99 ± 3%	99 ± 3%	99 ± 3%	
	φIsc	80 ± 4%	80 ± 4%	80 ± 4%	80 ± 4%	
	Maximum system voltage [V]	1500	1500	1500	1500	
	Maximum Over-Current Protection Rating [A]	30	30	30	30	
	Temperature Coefficient of Pmax	-0.310%/°C				
	Temperature Coefficient of Voc	-0.26 %/°C				
	Temperature Coefficient of Isc	+0.046 %/°C				

RSxxxS8R-108GANT / RSxxxS8RB-108GANT Series (for 182x105 cell):

	Module type	RS485S8R-108GANT / RS485S8RB-108GANT	RS490S8R-108GANT / RS490S8RB-108GANT	RS495S8R-108GANT / RS495S8RB-108GANT	RS500S8R-108GANT / RS500S8RB-108GANT	RS505S8R-108GANT / RS505S8RB-108GANT
STC condition	Pmp [W] /Tolerance	485 ± 3%	490 ± 3%	495 ± 3%	500 ± 3%	505 ± 3%
	Voc [V] /Tolerance	39.39 ± 3%	39.64 ± 3%	39.90 ± 3%	40.16 ± 3%	40.39 ± 3%
	Isc [Adc] /Tolerance	15.49 ± 4%	15.54 ± 4%	15.58 ± 4%	15.62 ± 4%	15.67 ± 4%
	Vmp [V]	32.79	33.04	33.27	33.51	33.73
	Imax [Adc]	14.79	14.83	14.88	14.92	14.97
BNPI condition	Pmp [W] /Tolerance	529 ± 3%	534 ± 3%	540 ± 3%	545 ± 3%	550 ± 3%
	Voc [V] /Tolerance	39.39 ± 3%	39.64 ± 3%	39.9 ± 3%	40.16 ± 3%	40.39 ± 3%
	Isc [Adc] /Tolerance	16.88 ± 4%	16.94 ± 4%	16.98 ± 4%	17.03 ± 4%	17.08 ± 4%
BSI/aBSI condition	Isc [Adc] /Tolerance	19.21±5%	19.27±5%	19.32±5%	19.37±5%	19.43±5%
bifaciality coefficient	φPmax	81 ± 3%	81 ± 3%	81 ± 3%	81 ± 3%	81 ± 3%
	φVoc	99±3%	99±3%	99±3%	99±3%	99±3%
	φIsc	80±4%	80±4%	80±4%	80±4%	80±4%
	Maximum system voltage [V]	1500	1500	1500	1500	1500
	Maximum Over-Current Protection Rating [A]	30	30	30	30	30
	Temperature Coefficient of Pmax	-0.310%/°C				
	Temperature Coefficient of Voc	-0.26 %/°C				
	Temperature Coefficient of Isc	+0.046 %/°C				

	Module type	RS510S8R-108GANT / RS510S8RB-108GANT	RS515S8R-108GANT / RS515S8RB-108GANT	RS520S8R-108GANT / RS520S8RB-108GANT	RS525S8R-108GANT / RS525S8RB-108GANT	
STC condition	Pmp [W] /Tolerance	510 ± 3%	515 ± 3%	520 ± 3%	525 ± 3%	
	Voc [V] /Tolerance	40.65 ± 3%	40.90 ± 3%	41.16 ± 3%	41.41 ± 3%	
	Isc [Adc] /Tolerance	15.71 ± 4%	15.76 ± 4%	15.80 ± 4%	15.84 ± 4%	

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	Vmp [V]	33.98	34.21	34.43	34.66	
	I _{max} [A _{dc}]	15.01	15.06	15.10	15.15	
BNPI condition	P _{mp} [W] /Tolerance	556 ± 3%	561 ± 3%	567 ± 3%	572 ± 3%	
	V _{oc} [V] /Tolerance	40.65 ± 3%	40.90 ± 3%	41.16 ± 3%	41.41 ± 3%	
	I _{sc} [A _{dc}] /Tolerance	17.13 ± 4%	17.17 ± 4%	17.22 ± 4%	17.27 ± 4%	
BSI/aBSI condition	I _{sc} [A _{dc}] /Tolerance	19.48 ± 5%	19.54 ± 5%	19.59 ± 5%	19.65 ± 5%	
bifaciality coefficient	φ _{Pmax}	81 ± 3%	81 ± 3%	81 ± 3%	81 ± 3%	
	φ _{Voc}	99 ± 3%	99 ± 3%	99 ± 3%	99 ± 3%	
	φ _{Isc}	80 ± 4%	80 ± 4%	80 ± 4%	80 ± 4%	
	Maximum system voltage [V]	1500	1500	1500	1500	
	Maximum Over-Current Protection Rating [A]	30	30	30	30	
	Temperature Coefficient of P _{max}	-0.310%/°C				
	Temperature Coefficient of V _{oc}	-0.26 %/°C				
	Temperature Coefficient of I _{sc}	+0.046 %/°C				

RSxxxS8R-96GANT / RSxxxS8RB-96GANT Series (for 182x105 cell):

	Module type	RS430S8R-96GANT / RS430S8RB-96GANT	RS435S8R-96GANT / RS435S8RB-96GANT	RS440S8R-96GANT / RS440S8RB-96GANT	RS445S8R-96GANT / RS445S8RB-96GANT	RS450S8R-96GANT / RS450S8RB-96GANT
STC condition	P _{mp} [W] /Tolerance	430 ± 3%	435 ± 3%	440 ± 3%	445 ± 3%	450 ± 3%
	V _{oc} [V] /Tolerance	34.92 ± 3%	35.18 ± 3%	35.43 ± 3%	35.69 ± 3%	35.95 ± 3%
	I _{sc} [A _{dc}] /Tolerance	15.49 ± 4%	15.56 ± 4%	15.61 ± 4%	15.65 ± 4%	15.69 ± 4%
	V _{mp} [V]	29.09	29.33	29.57	29.81	30.04
	I _{max} [A _{dc}]	14.78	14.83	14.88	14.93	14.98
BNPI condition	P _{mp} [W] /Tolerance	469 ± 3%	474 ± 3%	480 ± 3%	485 ± 3%	491 ± 3%
	V _{oc} [V] /Tolerance	34.92 ± 3%	35.18 ± 3%	35.43 ± 3%	35.69 ± 3%	35.95 ± 3%
	I _{sc} [A _{dc}] /Tolerance	16.88 ± 4%	16.96 ± 4%	17.01 ± 4%	17.06 ± 4%	17.10 ± 4%
BSI/aBSI condition	I _{sc} [A _{dc}] /Tolerance	19.21 ± 5%	19.29 ± 5%	19.36 ± 5%	19.41 ± 5%	19.46 ± 5%
bifaciality coefficient	φ _{Pmax}	81 ± 3%	81 ± 3%	81 ± 3%	81 ± 3%	81 ± 3%
	φ _{Voc}	99 ± 3%	99 ± 3%	99 ± 3%	99 ± 3%	99 ± 3%
	φ _{Isc}	80 ± 4%	80 ± 4%	80 ± 4%	80 ± 4%	80 ± 4%
	Maximum system voltage [V]	1500	1500	1500	1500	1500
	Maximum Over-Current Protection Rating [A]	30	30	30	30	30
	Temperature Coefficient of P _{max}	-0.310%/°C				
	Temperature Coefficient of V _{oc}	-0.26 %/°C				
	Temperature Coefficient of I _{sc}	+0.046 %/°C				

	Module type	RS455S8R-96GANT / RS455S8RB-96GANT	RS460S8R-96GANT / RS460S8RB-96GANT	RS465S8R-96GANT / RS465S8RB-96GANT		
STC	P _{mp} [W] /Tolerance	455 ± 3%	460 ± 3%	465 ± 3%		

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condition	Voc [V] /Tolerance	36.21 ± 3%	36.46 ± 3%	36.72 ± 3%		
	Isc [Adc] /Tolerance	15.75 ± 4%	15.80 ± 4%	15.85 ± 4%		
	Vmp [V]	30.28	30.51	30.75		
	I _{max} [Adc]	15.03	15.08	15.13		
BNPI condition	P _{mp} [W] /Tolerance	496 ± 3%	501 ± 3%	507 ± 3%		
	Voc [V] /Tolerance	36.21 ± 3%	36.46 ± 3%	36.72 ± 3%		
	Isc [Adc] /Tolerance	17.16 ± 4%	17.22 ± 4%	17.27 ± 4%		
BSI/aBSI condition	Isc [Adc] /Tolerance	19.53±5%	19.59 ± 5%	19.65 ± 5%		
bifaciality coefficient	φP _{max}	81 ± 3%	81 ± 3%	81 ± 3%		
	φVoc	99 ± 3%	99 ± 3%	99 ± 3%		
	φIsc	80 ± 4%	80 ± 4%	80 ± 4%		
	Maximum system voltage [V]	1500	1500	1500		
	Maximum Over-Current Protection Rating [A]	30	30	30		
	Temperature Coefficient of P _{max}	-0.310%/°C				
	Temperature Coefficient of Voc	-0.26 %/°C				
	Temperature Coefficient of Isc	+0.046 %/°C				

RSxxxS9-132GANT / RSxxxS9B-132GANT Series:

	Module type	RS675S9-132GANT / RS675S9B-132GANT	RS680S9-132GANT / RS680S9B-132GANT	RS685S9-132GANT / RS685S9B-132GANT	RS690S9-132GANT / RS690S9B-132GANT	RS695S9-132GANT / RS695S9B-132GANT	RS700S9-132GANT / RS700S9B-132GANT
STC condition	P _{mp} [W] /Tolerance	675 ± 3%	680 ± 3%	685 ± 3%	690 ± 3%	695 ± 3%	700 ± 3%
	Voc [V] /Tolerance	46.31 ± 3%	46.50 ± 3%	46.69 ± 3%	46.88 ± 3%	47.07 ± 3%	47.26 ± 3%
	Isc [Adc] /Tolerance	18.64 ± 4%	18.69 ± 4%	18.74 ± 4%	18.79 ± 4%	18.84 ± 4%	18.89 ± 4%
	Vmp [V]	38.35	38.55	38.74	38.94	39.13	39.33
	I _{max} [Adc]	17.60	17.64	17.68	17.72	17.76	17.80
BNPI condition	P _{mp} [W] /Tolerance	736 ± 3%	741 ± 3%	747 ± 3%	752 ± 3%	758 ± 3%	763±3%
	Voc [V] /Tolerance	46.31 ± 3%	46.50 ± 3%	46.69 ± 3%	46.88 ± 3%	47.07 ± 3%	47.26±3%
	Isc [Adc] /Tolerance	20.32 ± 4%	20.37 ± 4%	20.43 ± 4%	20.48 ± 4%	20.54 ± 4%	20.59±4%
BSI/aBSI condition	Isc [Adc] /Tolerance	23.11 ± 5%	23.18±5%	23.24±5%	23.30±5%	23.36±5%	23.42±5%
bifaciality coefficient	φP _{max}	80±5%	80±5%	80±5%	80±5%	80±5%	80±5%
	φVoc	99±5%	99±5%	99±5%	99±5%	99±5%	99±5%
	φIsc	80±5%	80±5%	80±5%	80±5%	80±5%	80±5%
	Maximum system voltage [V]	1500	1500	1500	1500	1500	1500
	Maximum Over-Current Protection Rating [A]	35	35	35	35	35	35
	Temperature Coefficient of P _{max}	-0.310%/°C					
	Temperature Coefficient of Voc	-0.26 %/°C					
	Temperature Coefficient of Isc	+0.046 %/°C					

	Module type	RS705S9-132GANT / RS705S9B-132GANT	RS710S9-132GANT / RS710S9B-132GANT	RS715S9-132GANT / RS715S9B-132GANT	RS720S9-132GANT / RS720S9B-132GANT	RS725S9-132GANT / RS725S9B-132GANT	RS730S9-132GANT / RS730S9B-132GANT
STC condition	Pmp [W] /Tolerance	705± 3%	710± 3%	715± 3%	720± 3%	725 ± 3%	730 ± 3%
	Voc [V] /Tolerance	47.45± 3%	47.64± 3%	47.83± 3%	48.02± 3%	48.21 ± 3%	48.40 ± 3%
	Isc [Adc] /Tolerance	18.94± 4%	18.99± 4%	19.04± 4%	19.09± 4%	19.14 ± 4%	19.19 ± 4%
	Vmp [V]	39.52	39.71	39.90	40.09	40.28	40.47
	Imax [Adc]	17.84	17.88	17.92	17.96	18.00	18.04
BNPI condition	Pmp [W] /Tolerance	768 ± 3%	774 ± 3%	779 ± 3%	785 ± 3%	790 ± 3%	796 ± 3%
	Voc [V] /Tolerance	47.45 ± 3%	47.64 ± 3%	47.83 ± 3%	48.02± 3%	48.21 ± 3%	48.40 ± 3%
	Isc [Adc] /Tolerance	20.64 ± 4%	20.70± 4%	20.75 ± 4%	20.81 ± 4%	20.86 ± 4%	20.92 ± 4%
BSI/aBSI condition	Isc [Adc] /Tolerance	23.49± 5%	23.55± 5%	23.61± 5%	23.67 ± 5%	23.73 ± 5%	23.80 ± 5%
bifaciality coefficient	φPmax	80 ± 3%	80 ± 3%	80± 5%	80± 5%	80 ± 3%	80 ± 3%
	φVoc	99 ± 3%	99 ± 3%	99± 5%	99± 5%	99 ± 3%	99 ± 3%
	φIsc	80 ± 4%	80 ± 4%	80± 5%	80± 5%	80 ± 4%	80 ± 4%
	Maximum system voltage [V]	1500	1500	1500	1500	1500	1500
	Maximum Over-Current Protection Rating [A]	35	35	35	35	35	35
	Temperature Coefficient of Pmax	-0.310%/°C					
	Temperature Coefficient of Voc	-0.26 %/°C					
	Temperature Coefficient of Isc	+0.046 %/°C					

RSxxxS9-120GANT / RSxxxS9B-120GANT Series:

	Module type	RS615S9-120GANT / RS615S9B-120GANT	RS620S9-120GANT / RS620S9B-120GANT	RS625S9-120GANT / RS625S9B-120GANT	RS630S9-120GANT / RS630S9B-120GANT	RS635S9-120GANT / RS635S9B-120GANT	RS640S9-120GANT / RS640S9B-120GANT
STC condition	Pmp [W] /Tolerance	615 ± 3%	620 ± 3%	625 ± 3%	630 ± 3%	635 ± 3%	640± 3%
	Voc [V] /Tolerance	42.16 ± 3%	42.35 ± 3%	42.54 ± 3%	42.73 ± 3%	42.92 ± 3%	43.11± 3%
	Isc [Adc] /Tolerance	18.67 ± 4%	18.72 ± 4%	18.77 ± 4%	18.82 ± 4%	18.87 ± 4%	18.92± 4%
	Vmp [V]	34.90	35.11	35.31	35.51	35.71	35.92
	Imax [Adc]	17.62	17.66	17.70	17.74	17.78	17.82
BNPI condition	Pmp [W] /Tolerance	670 ± 3%	676 ± 3%	681 ± 3%	687 ± 3%	692± 3%	698 ± 3%
	Voc [V] /Tolerance	42.16 ± 3%	42.35 ± 3%	42.54 ± 3%	42.73 ± 3%	42.92± 3%	43.11 ± 3%
	Isc [Adc] /Tolerance	20.35 ± 4%	20.40 ± 4%	20.46 ± 4%	20.51 ± 4%	20.57± 4%	20.62 ± 4%
BSI/aBSI condition	Isc [Adc] /Tolerance	23.15± 5%	23.21± 5%	23.27± 5%	23.34± 5%	23.40± 5%	23.46± 5%
bifaciality coefficient	φPmax	80± 5%	80± 5%	80± 5%	80± 5%	80 ± 3%	80 ± 5%
	φVoc	99± 5%	99± 5%	99± 5%	99± 5%	99 ± 3%	99 ± 5%
	φIsc	80± 5%	80± 5%	80± 5%	80± 5%	80 ± 4%	80 ± 5%
	Maximum system voltage [V]	1500	1500	1500	1500	1500	1500
	Maximum Over-Current Protection Rating [A]	35	35	35	35	35	35
	Temperature Coefficient of Pmax	-0.310%/°C					

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	Temperature Coefficient of Voc	-0.26 %/°C					
	Temperature Coefficient of Isc	+0.046 %/°C					
	Module type	RS645S9-120GANT / RS645S9B-120GANT	RS650S9-120GANT / RS650S9B-120GANT	RS655S9-120GANT / RS655S9B-120GANT	RS660S9-120GANT / RS660S9B-120GANT	RS665S9-120GANT / RS665S9B-120GANT	
STC condition	Pmp [W] /Tolerance	645± 3%	650± 3%	655± 3%	660 ± 3%	665 ± 3%	
	Voc [V] /Tolerance	43.30± 3%	43.49± 3%	43.68± 3%	43.87 ± 3%	44.06 ± 3%	
	Isc [Adc] /Tolerance	18.97± 4%	19.02± 4%	19.07± 4%	19.12 ± 4%	19.17 ± 4%	
	Vmp [V]	36.12	36.32	36.52	36.71	36.90	
	Imax [Adc]	17.86	17.90	17.94	17.98	18.02	
BNPI condition	Pmp [W] /Tolerance	703 ± 3%	709± 3%	714 ± 3%	719 ± 3%	725 ± 3%	
	Voc [V] /Tolerance	43.30 ± 3%	43.49 ± 3%	43.68 ± 3%	43.87 ± 3%	44.06 ± 3%	
	Isc [Adc] /Tolerance	20.68 ± 4%	20.73 ± 4%	20.79 ± 4%	20.84 ± 4%	20.90 ± 4%	
BSI/aBSI condition	Isc [Adc] /Tolerance	23.52±5%	23.58±5%	23.65±5%	23.71±5%	23.77±5%	
bifaciality coefficient	φPmax	80±5%	80±5%	80±5%	23.71 ± 5%	23.77 ± 5%	
	φVoc	99±5%	99±5%	99±5%	80 ± 3%	80 ± 3%	
	φIsc	80±5%	80±5%	80±5%	99 ± 3%	99 ± 3%	
	Maximum system voltage [V]	1500	1500	1500	80 ± 4%	80 ± 4%	
	Maximum Over-Current Protection Rating [A]	35	35	35	35	35	
	Temperature Coefficient of Pmax	-0.310%/°C					
	Temperature Coefficient of Voc	-0.26 %/°C					
	Temperature Coefficient of Isc	+0.046 %/°C					

RSxxxS9-108GANT / RSxxxS9B-108GANT Series:

	Module type	RS555S9-108GANT / RS555S9B-108GANT	RS560S9-108GANT / RS560S9B-108GANT	RS565S9-108GANT / RS565S9B-108GANT	RS570S9-108GANT / RS570S9B-108GANT	RS575S9-108GANT / RS575S9B-108GANT	RS580S9-108GANT / RS580S9B-108GANT
STC condition	Pmp [W] /Tolerance	555 ± 3%	560 ± 3%	565 ± 3%	570 ± 3%	575± 3%	580± 3%
	Voc [V] /Tolerance	37.99 ± 3%	38.18 ± 3%	38.37 ± 3%	38.56 ± 3%	38.75± 3%	38.94± 3%
	Isc [Adc] /Tolerance	18.71 ± 4%	18.76 ± 4%	18.81 ± 4%	18.86 ± 4%	18.91 ± 4%	18.96 ± 4%
	Vmp [V]	31.44	31.66	31.87	32.08	32.29	32.50
	Imax [Adc]	17.65	17.69	17.73	17.77	17.81	17.85
BNPI condition	Pmp [W] /Tolerance	605 ± 3%	610 ± 3%	616 ± 3%	621±3%	627 ± 3%	632 ± 3%
	Voc [V] /Tolerance	37.99 ± 3%	38.18 ± 3%	38.37 ± 3%	38.56±3%	38.75 ± 3%	38.94 ± 3%
	Isc [Adc] /Tolerance	20.39 ± 4%	20.45 ± 4%	20.50 ± 4%	20.56±4%	20.61 ± 4%	20.67 ± 4%
BSI/aBSI condition	Isc [Adc] /Tolerance	23.20±5%	23.26±5%	23.32±5%	23.39±5%	23.45±5%	23.51 ± 5%
bifaciality coefficient	φPmax	80±5%	80±5%	80±5%	80±3%	80±5%	80±5%
	φVoc	99±5%	99±5%	99±5%	99±3%	99±5%	99±5%
	φIsc	80±5%	80±5%	80±5%	80±4%	80±5%	80±5%
	Maximum system voltage [V]	1500	1500	1500	1500	1500	1500
	Maximum Over-Current Protection Rating [A]	35	35	35	35	35	35

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	Temperature Coefficient of Pmax	-0.310%/°C
	Temperature Coefficient of Voc	-0.26 %/°C
	Temperature Coefficient of Isc	+0.046 %/°C

	Module type	RS585S9-108GANT / RS585S9B-108GANT	RS590S9-108GANT / RS590S9B-108GANT	RS595S9-108GANT / RS595S9B-108GANT	RS600S9-108GANT / RS600S9B-108GANT		
STC condition	Pmp [W] /Tolerance	585± 3%	590± 3%	595 ± 3%	600 ± 3%		
	Voc [V] /Tolerance	39.13± 3%	39.32± 3%	39.51 ± 3%	39.70 ± 3%		
	Isc [Adc] /Tolerance	19.01± 4%	19.06± 4%	19.11 ± 4%	19.16 ± 4%		
	Vmp [V]	32.70	32.91	33.12	33.32		
	Imax [Adc]	17.89	17.93	17.97	18.01		
BNPI condition	Pmp [W] /Tolerance	638 ± 3%	643 ± 3%	649 ± 3%	654 ± 3%		
	Voc [V] /Tolerance	39.13 ± 3%	39.32 ± 3%	39.51 ± 3%	39.70 ± 3%		
	Isc [Adc] /Tolerance	20.72 ± 4%	20.78 ± 4%	20.83 ± 4%	20.88 ± 4%		
BSI/aBSI condition	Isc [Adc] /Tolerance	23.57±5%	23.63±5%	23.70±5%	23.76±5%		
bifaciality coefficient	φPmax	80±5%	80±3%	80 ± 3%	80 ± 3%		
	φVoc	99±5%	99±3%	99 ± 3%	99 ± 3%		
	φIsc	80±5%	80±4%	80 ± 4%	80 ± 4%		
	Maximum system voltage [V]	1500	1500	1500	1500		
	Maximum Over-Current Protection Rating [A]	35	35	35	35		
	Temperature Coefficient of Pmax	-0.310%/°C					
	Temperature Coefficient of Voc	-0.26 %/°C					
	Temperature Coefficient of Isc	+0.046 %/°C					

RSxxxS9-96GANT / RSxxxS9B-96GANT Series:

	Module type	RS490S9-96GANT / RS490S9B-96GANT	RS495S9-96GANT / RS495S9B-96GANT	RS500S9-96GANT / RS500S9B-96GANT	RS505S9-96GANT / RS505S9B-96GANT	RS510S9-96GANT / RS510S9B-96GANT	RS515S9-96GANT / RS515S9B-96GANT
STC condition	Pmp [W] /Tolerance	490 ± 3%	495 ± 3%	500 ± 3%	505 ± 3%	510± 3%	515± 3%
	Voc [V] /Tolerance	33.65 ± 3%	33.84 ± 3%	34.03 ± 3%	34.22 ± 3%	34.41± 3%	34.60± 3%
	Isc [Adc] /Tolerance	18.68 ± 4%	18.73 ± 4%	18.78 ± 4%	18.83 ± 4%	18.88± 4%	18.93± 4%
	Vmp [V]	27.79	28.01	28.23	28.45	28.67	28.89
	Imax [Adc]	17.63	17.67	17.71	17.75	17.79	17.83
BNPI condition	Pmp [W] /Tolerance	534 ± 3%	540 ± 3%	545 ± 3%	550 ± 3%	556 ± 3%	561 ± 3%
	Voc [V] /Tolerance	33.65 ± 3%	33.84 ± 3%	34.03 ± 3%	34.22 ± 3%	34.41± 3%	34.60 ± 3%
	Isc [Adc] /Tolerance	20.36 ± 4%	20.42 ± 4%	20.47 ± 4%	20.52 ± 4%	20.58 ± 4%	20.63 ± 4%
BSI/aBSI condition	Isc [Adc] /Tolerance	23.16±5%	23.23±5%	23.29±5%	23.35±5%	23.41±5%	23.47±5%
bifaciality coefficient	φPmax	80±5%	80±5%	80±5%	80±5%	80±5%	80±5%
	φVoc	99±5%	99±5%	99±5%	99±5%	99±5%	99±5%
	φIsc	80±5%	80±5%	80±5%	80±5%	80±5%	80±5%
	Maximum system voltage [V]	1500	1500	1500	1500	1500	1500

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	Maximum Over-Current Protection Rating [A]	35	35	35	35	35	35
	Temperature Coefficient of Pmax	-0.310%/°C					
	Temperature Coefficient of Voc	-0.26 %/°C					
	Temperature Coefficient of Isc	+0.046 %/°C					

	Module type	RS520S9-96GANT / RS520S9B-96GANT	RS525S9-96GANT / RS525S9B-96GANT	RS530S9-96GANT / RS530S9B-96GANT			
STC condition	Pmp [W] /Tolerance	520± 3%	525± 3%	530 ± 3%			
	Voc [V] /Tolerance	34.79± 3%	34.98± 3%	35.17 ± 3%			
	Isc [Adc] /Tolerance	18.98± 4%	19.03± 4%	19.08 ± 4%			
	Vmp [V]	29.10	29.32	29.53			
	Imax [Adc]	17.87	17.91	17.95			
BNPI condition	Pmp [W] /Tolerance	567 ± 3%	572 ± 3%	578 ± 3%			
	Voc [V] /Tolerance	34.79 ± 3%	34.98 ± 3%	35.17 ± 3%			
	Isc [Adc] /Tolerance	20.69 ± 4%	20.74± 4%	20.80 ± 4%			
BSI/aBSI condition	Isc [Adc] /Tolerance	23.54±5%	23.60±5%	23.66±5%			
bifaciality coefficient	φPmax	80±5%	80±5%	80 ± 3%			
	φVoc	99±5%	99±5%	99 ± 3%			
	φIsc	80±5%	80±5%	80 ± 4%			
	Maximum system voltage [V]	1500	1500	1500			
	Maximum Over-Current Protection Rating [A]	35	35	35			
	Temperature Coefficient of Pmax	-0.310%/°C					
	Temperature Coefficient of Voc	-0.26 %/°C					
	Temperature Coefficient of Isc	+0.046 %/°C					