组件安装手册

General Installation Manual

目 录 Contents

1. 介绍 Introduction

- 非常感谢您选择泰德光伏菲律宾公司（以下简称“泰德”）光伏组件（以下简称“组件”）。
  Thank you for choosing Tidesolar Philippines Corporation (hereinafter referred to as "Tidesolar") photovoltaic modules (hereinafter referred to as "modules")

  本安装手册提供了泰德组件的安装和安全使用信息。

  This manual contains information for the installation and safe handling of Tidesolar PV Modules.
- 本手册不具备任何质保书的意义。本手册介绍了泰德组件的安全安装和正确操作的相关信息，在安装、运转和维护组件前，必须仔细阅读本手册。如果有任何问题，请联系我们，以获得进一步的信息。安装人员必须遵守手册中提到的所有安全防范规则。在安装组件前，安装人员必须熟悉组件的机械和电气要求。

  This manual does not have the meaning of any warranty. This manual introduces the safe installation and handling information. Please read it carefully before the installation, transportation and maintenance of PV modules. If you have any questions, please contact us for further information. The installation workers shall observe all the safety rules mentioned in this manual. Before the installation, workers must be familiar with the mechanical and electrical requirement of PV modules.

2. 免责说明 Disclaimer

- 随着光伏技术的更新，我公司会对手册相关信息进行改进，恕不另行通知。本手册只针对陆地安装使用，用户应该仔细阅读并遵守。请仔细阅读本手册中的描述和图纸，不按照本手册中提到的方法安装组件会导致质保失效。

  Tidesolar reserves the right to modify and update the manual. This manual can be used only for the ground systems, and users should read and observe carefully. Please read the descriptions and drawings in this manual carefully, or else the guarantee will be failed if you do not refer to the installation method in this manual.
- 在使用光伏产品时，可能会导致侵犯第三方的专利或其它权利，这些不属于泰德的责任范围。客户并不因使用泰德的产品，而获得任何专利或者专利权利的使用授权，无论是明示的或隐含的。

  The use of PV products may result in the infringement of patents or other rights of third parties, which are not within the scope of Tidesolar’s responsibility. Customers are not authorized to use any patents or patent rights because of the use of Tidesolar PV products, whether explicit or implicit.
- 本手册中所有的内容均属于泰德的知识财产，这些财产源于泰德长期的技术与经验的探索和积累。

  The information in this manual is the intellectual property of Tidesolar. The property is based on Tidesolar long-term technology and experience in the exploration and

accumulation.

3. 通则 General Provisions

- 组件的安装需要一定程度的专业技能，应该由有合格执照的专业人员进行操作。

  The installation of PV modules requires a great degree of skill and should only be performed by a qualified licensed professional, including licensed contractors and licensed electricians.

- 泰德所有的组件都配备了终端接线盒，接线盒上配有一定长度的线缆和接线头（分公头和母头），方便组件之间的电气连接。

  All Tidesolar PV modules are provided with terminal junction boxes. For the convenient of electrical connection between the modules, the junction box is equipped with a cable at a certain length and connector (male & female).

- 泰德的组件设计符合 IEC 61215-1:2021, IEC 61215-1-1:2021, IEC 61215-2:2021, IEC 61730-1:2023& IEC 61730-2:2023 等标准，其电击防护等级为 II 类。

  Tidesolar modules are designed in accordance with the international standard IEC 61215-1:2021, IEC 61215-1-1:2021, IEC 61215-2:2021, IEC 61730-1:2023& IEC 61730-2:2023， The PV modules have been qualified for protection class II.

- 组件的机械安装和电气安装应该参照当地相应的法规，包括电气法、建筑法和电力连接要求等。

  The mechanical and electrical installation of the module should obey the requirements of local regulations, including electrical laws, building laws, and power connections etc.

- 组件在运输或存储过程中，不要打开组件的包装，除非到达安装地点。

  During transportation or storage, unless you reach the installation site, otherwise, do not open the package of the modules.

- 遵守系统中所有部分的安全警告。

  Follow all safety precautions of other components used in the system.

4. 组成 Components of PV Modules

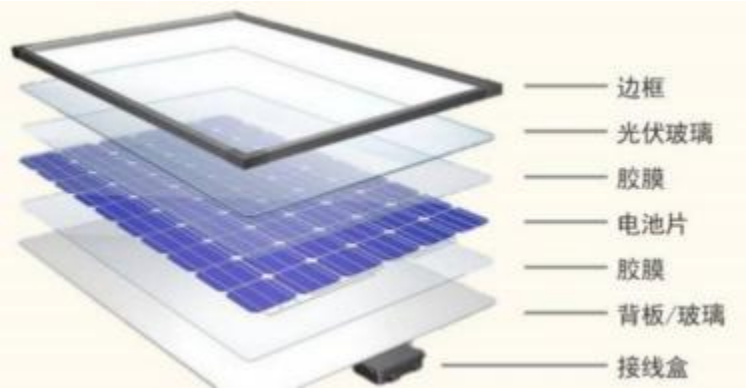


图 4-1 组件内部组成

Figure 4-1 the components of a module

5. 机械安装 Mechanical Installation

- 不管组件的安装地点是屋顶还是地面或者其它，都应该采用合适的安全措施，安装过程应该使用必需的安全设备以避免可能出现的安全隐患。需要注意的是，根据当地的建筑消防法规，屋顶组件的安装可能需要采用额外的防火措施。

  Regardless of the installation location of modules, whether on the roof, on the ground or other locations, all the installation should adopt appropriate safety measures. The installation process should use the necessary safety equipment to avoid possible security risks. It needs to note that, according to local building fire codes, the installation of the roof assembly may need additional fire protection measures.
- 当阳光或者其他光源照射组件表面时，组件会产生电能。组件串联时，电压累加；组件并联时，电流累加。因此，大规模的光伏系统能产生很高的电压和电流，不恰当的操作可能导致严重的人身伤害或死亡。

  When the module is under the sunshine or other light source, PV modules will produce power. PV modules wired in series increase voltage; Wired in parallel increase current. Therefore, large-scale PV system can produce high voltage and current, and improper operation may result in serious personal injury or death.

5.1 选择位置 Select the Location

- 组件安装的位置应有充足的正面阳光照射，请确保安装地点周围没有任何障碍物。
  The location of modules installation should have plenty of sunlight from the obverse side, and make sure that no obstructions around the installation site.
- 组件安装的位置背面照射组件允许的最大辐照强度为300W/m^2。

  The maximum irradiation intensity allowed on the back of the installation position of the modules is 300W / m^2.
- 组件位置的选择应该符合各种电气和防火规范的要求，本组件的防火等级为**C**级（UL790），当组件安装在屋顶时，要求屋顶耐火，因此需要考虑房屋结构、屋顶原材料，以及当地的相关法律法规。

  The installation position of modules should be consistent with the requirements of various kinds of electrical and fire codes. Fire rating of this module is class C (UL790). When modules are installed on the roof, the roof needs to be fire-resistant, therefore, the design of the housing structure, the selection of raw materials for the roof as well as the local relevant laws and regulations need to be taken into consideration.
- 若组件安装在大雪、低温、强风、水面上或近水区域（该区域极易受盐水腐蚀）、海岛、沙漠等区域，需采取适当的步骤以保证可靠性和安全性，要保持所有电接触体干净和干燥。

  Take proper steps in order to maintain reliability and safety, in case the PV modules are

used in areas such as: Heavy snow areas / extremely cold areas / Strong wind areas / Installations over, or near, water / Areas where installations are prone to salt water damage / Small islands or desert areas, all electrical contacts need to keep clean and dry.

- 建议组件安装在温度为-40℃到70℃的环境中。

  We recommend the modules to be installed in an environment temperature from -40 ℃ to 70 ℃.
- 组件应该安装在海拔2000米以下的位置。

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

5.2 选择倾角 Selecting the Tilt Angle

- 组件的倾角是指组件与水平地面之间所成的夹角。当组件与太阳光垂直时，组件产能最大；

  The tilt angle of the PV module is the angle between the PV module and a horizontal ground surface. The PV module generates the maximum output power when it faces the sun directly.
- 在北半球，组件通常应该朝向南方；而在南半球，组件通常应该朝向北方；

  In the Northern Hemisphere, the PV modules should typically face south, and in the Southern Hemisphere, the PV modules should typically face north.
- 对于含蓄电池的固定支架的独立光伏系统，在设计最佳安装倾角时，需要保证在阳光稀缺时系统供电充足，若在阳光稀缺季节，系统产生的电能够满足负载要求，那么这个安装倾角也能满足其他季节的用电要求；对于固定支架的并网系统，为了在一年内组件产出最大功率，建议组件的安装倾角等于当地的纬度值；

  For the standalone systems with a battery where the PV modules are attached to a permanent structure, the tilt angle of the PV modules should be determined to optimize the performance when the sunlight is the scarcest. In general, if the electric power generation is adequate when the sunlight is the scarcest, then the angle chosen should be adequate during the rest of the year. For grid-connected installations where the PV modules are attached to a permanent structure, it is recommended to tilt the PV module at the angle equal to the latitude of the installation site so that the power generation from the PV module will be optimum throughout the year.
- 对于详细的安装角度，依据区域的不同而不同，可参考有经验的组件安装商给出的建议。

  For the detailed installation angle, which is different in different area, recommendations from experienced PV modules installation suppliers should be referred to.

5.3 选择支架 Selecting the Proper Mounting Structure and Hardware

- 在设计选择支撑结构时，遵守所有安装指南和安全防护措施；

- When designing and selecting the mounting structure, please comply with all installation instructions and safety protection measures;
- 组件可以安装在地面，屋顶以及其它合适的支撑系统上，考虑支撑结构负荷量是系统设计者和安装者的责任；

  Modules can be installed on the ground, roof and other suitable mounting system. Load calculations are the responsibility of system designers and installers.
- 支撑结构必须用持久耐用、抗腐蚀和抗紫外辐射的材料做成，考虑所用材料的热膨胀系数；

  The mounting structure and hardware must be made of durable, corrosion-resistant and UV-resistant materials, and shall consider the various thermal expansion coefficients of the materials.
- 应该遵守支架所附的手册指导和安全守则；

  Observe the mounting structure attached instructions guidance and safety rules.
- 组件出厂时，已经实现设计完毕，请不要尝试任何的改变组件结构或构造等行为。

  The design of the module is completed before delivery. Please do not try to change the module structure or conduct any similar behavior.

5.4 安装安全 Installation Safety

- 地面安装时选择适合的安装高度，防止冬天下雪时组件的下半部分长时间被积雪覆盖；

  Select the appropriate installing height when modules installed on the ground, to prevent the lower half of the modules from being covered by snow for long time in the winter.
- 组件背面要确保通风顺畅 (组件和安装表面的最小间隔推荐为20cm)，在屋顶安装时，安装固定组件时所需要穿透的屋顶应该适当密封，以防屋漏；

  Ensure the ventilation of module back (the minimum interval between modules and installation surface recommended as 20cm). When installing modules on the roof that needs to be penetrated, the roof needs to be properly sealed to prevent leakage.
- 安装组件时应避免组件接触尖锐物体而导致组件划伤；切勿在组件表面放置重物；

  When installing modules should avoid contact with sharp objects to prevent modules scratch. Never put heavy objects on module surface.
- 请不要在组件边框上钻孔或做任何改变组件原有结构的操作，否则会影响组件的质量和寿命，且经过另外加工的组件将不在质保范围内；

  Do not drill holes or make any changes on the module, otherwise it will affect the quality and lifespan of the products, and modules after another processing will invalidate the warranty.

其他注意事项：Other Considerations

- 组件属于易碎物品，请轻拿轻放，尤其在拆包过程中。人为破坏的组件不在质保范围内。

  Modules belong to fragile products. Please handle it with care, especially in the process of unpacking. Modules damaged by manmade is beyond the scope of warranty.
- 因施工方造成隐裂或其他隐患，导致功率衰减及其他不良的组件不享受我司相关质保。

  Modules with problems caused by the contractor, such as the problem of power degradation caused by cracks happened during construction, are beyond the scope of warranty.
- 不要让小孩或者未经许可的人接近组件安装所在地或者组件储存区域。

  Do not allow children or unauthorized person close to the module installation position or storage area.
- 在组件开箱前，请把组件存储在阴冷和干燥的地方。

  Please store modules in cold and dry places before open the box of modules.
- 请保护好组件的包装，在装卸组件时请稳拿轻放，严禁让组件直接跌落。

  Please protect modules package, handle gently when unload modules, never drop modules directly.
- 不要踩踏组件。

  Do not stamp modules.
- 不要拆卸组件、移动任何铭牌或黏附的部件。

  Do not disassemble modules, remove any nameplate or adhered parts.
- 不要通过拖拽接线盒及其电缆来移动组件。

  Do not move modules by dragging the junction boxes or cables.
- 不要将组件安装在有可燃气体或者水蒸气的区域。

  Do not install modules in areas where there is flammable gas or vapor.
- 不要人为地将光线聚集在组件上。

  Do not gather light on the module artificially.
- 佩戴适当的防护用品（例如手套、防护服、安全鞋、护目镜等）。

  Please wear appropriate protective equipment (eg. gloves, protective clothing, safety shoes, goggles, etc.).
- 在安装过程中用不透明材料完全覆盖组件以防止电流产生。

  Cover modules completely with an opaque material to prevent current from being generated while modules are installed.
- 确保其它系统元件（例如逆变器、电线、支撑结构等）在机械和电学特性方面兼容。

  Ensure that other system components (such as inverters, wires, support structure, etc.) are compatible with the mechanical and electrical properties.

- 不要试图使用或安装前板玻璃或背板损坏的组件。
  Do not attempt to use or install the module with damaged front or backsheet.
- 不建议水平安装组件，因为水平安装更容易积累污垢从而影响功率输出。组件排水系统必须可靠，由降雨引起的水或冷凝水积聚，会导致玻璃面板和粘接物质（正面和背面玻璃间的封装材料）的腐蚀。
  The level installation of modules is not recommended, as the level installation accumulates dirt easily, and thus affects the power output. Module drainage system must be reliable, because the accumulation of rainfall water or condensed water will lead to corrosion of the glass panel and adhesive substance (the encapsulating material between the front and rear glass).
- 请勿在组件的表面刷油漆或其他任何材料的粘胶剂。
  Do not use paint or any other adhesive materials onto the surface of modules.
- 当组件潮湿时不要操作，除非穿戴有合适的防电击装备。
  Do not operate when module is wet, unless wearing suitable protection equipment against electric shock.
- 请勿在雨雪天气或者大风条件下安装组件。
  Do not install modules in rainy, snowy, or windy conditions.
- 插紧连接器，确保导线通路；在负载工作的情况下，不要直接拔开连接器。
  Plug connectors firmly, ensuring that the wires are connected; Do not unplug the connectors directly while they are working.
- 更换组件时，请勿损坏周围的组件和安装结构。
  Do not damage the surrounding modules and mounting structure while exchanging modules.
- 用绝缘束将线缆捆绑在一起。从接线盒散落下来的线缆可能会导致诸如动物啃咬和在水坑中漏电的各种问题。
  Bundle the cables together with Insulation beam. The cables scattering down from the junction box may lead to various problems such as animal bites or leakage in the puddles.
- 安装之后线缆应该位于不会被阳光直接曝晒的地方，以防止线缆老化。
  The cable should not be in places of direct sunshine to prevent cable aging.
- 为了更好的防水效果，建议在组件安装时将接线盒端放置在支架上侧。
  For better waterproof effect, it is recommended that the junction box port is placed on the upper of the support when installing modules.

5.5 安装方式 Installation Method

5.5.1组件安装方式

Installation

a. TDM778-xxxG (xxx=610 to 645, 5W 一档)
b. TDM772-xxxG (xxx=560 to 595, 5W 一档)
c. TDM766-xxxG (xxx=515 to 545, 5W 一档)
d. TDM760-xxxG (xxx=465 to 500, 5W 一档)
e. TDM754-xxxG (xxx=420 to 450, 5W 一档)
f. TDM866-xxxG (xxx=590 to 630, 5W 一档)
g. TDM966-xxxG (xxx=675 to 720, 5W 一档)
h. TDM960-xxxG (xxx=610 to 655, 5W 一档)
i. TDP772-xxxG (xxx=535 to 560, 5W 一档)
j. TDP766-xxxG (xxx=490 to 510, 5W 一档)
k. TDP760-xxxG (xxx=445 to 465, 5W 一档)
l. TDP754-xxxG (xxx=400 to 420, 5W 一档)

a. TDM778-xxxG (xxx=610 to 645, in steps of 5)
b. TDM772-xxxG (xxx=560 to 595, in steps of 5)
c. TDM766-xxxG (xxx=515 to 545, in steps of 5)
d. TDM760-xxxG (xxx=465 to 500, in steps of 5)
e. TDM754-xxxG (xxx=420 to 450, in steps of 5)
f. TDM866-xxxG (xxx=590 to 630, in steps of 5)
g. TDM966-xxxG (xxx=675 to 720, in steps of 5)
h. TDM960-xxxG (xxx=610 to 655, in steps of 5)
i. TDP772-xxxG (xxx=535 to 560, in steps of 5)
j. TDP766-xxxG (xxx=490 to 510, in steps of 5)
k. TDP760-xxxG (xxx=445 to 465, in steps of 5)
l. TDP754-xxxG (xxx=400 to 420, in steps of 5)

请确保安装手册中所描述的所有信息适用于你的安装。请仔细检查说明和图纸，不按其中的方式安装组件可能会使您的质保无效。这些安装方法的正面最大测试压强为5400Pa(设计载荷为 3600Pa，安全因子 1.5)，背面最大测试压强为 2400Pa(设计载荷为1600Pa,安全因子 1.5)。

Please make sure that all the information described in the installation manual is proper for your installation. Please review the descriptions and drawings carefully; not installing the modules according to one of these methods may void your warranty. Maximum static test load of the front side is 5400pa (design 3600Pa,safety factor 1.5) and back side is 2400pa(design 1600Pa,safety factor 1.5) .

- **安装孔安装：**

使用抗腐蚀的M8防腐蚀螺丝、弹性垫圈和扁平垫圈，通过组件边框上的安装孔与安装支架固定，推荐的扭矩范围： 14N.m to 20N.m.

Use the corrosion-resistant M8 bolt, a flat washer and a spring washer for fixing with the installation support through the installation hole in the frame of the module, and tighten to a torque of 14~20 N.m

单块组件的边框上有4或者8个9㎜*14㎜的安装孔，安装孔数量根据负载载荷需求使用。

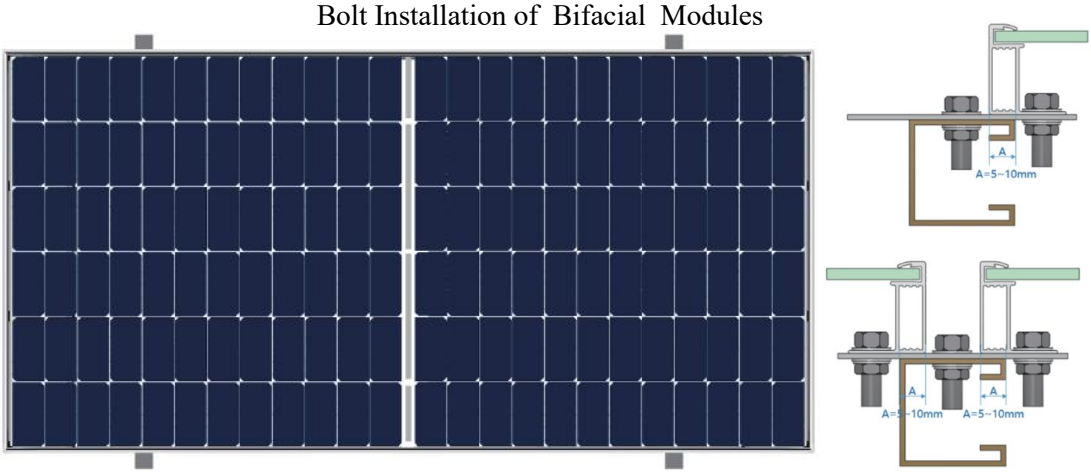
The frame of each module has 4 or 8-φ9*12mm mounting holes. The number of mounting holes shall be used according to the load demand.

组件系列 Module Series	硬件 Hardware	材质 Material	大小 Size	提供数量 NO. Provide (Per hole)	安装孔大小 Mounting hole Size
所有系列 All	螺栓 Screw Bolt	不锈钢 Stainless Steel	M8	1	9*14mm
	弹簧垫圈 Spring washe			2	
	平垫圈 Flat washer			1	
	螺母 Screw Nut			1	

组件型号 Module Series	设计载荷（安装支架垂直于长边框） Design load(Beam perpendicular to long sides)	
	内四孔（9*14㎜） Inner 4 holes	外四孔（9*14㎜） Outer 4 holes
TDM754-XXXG TDP754-XXXG	/	3600Pa/1600Pa
TDM760-XXXG TDP760-XXXG	3600Pa/1600Pa	/
TDM766-XXXG TDP766-XXXG	/	3600Pa/1600Pa
TDM772-XXXG TDP772-XXXG	/	3600Pa/1600Pa
TDM778-XXXG	3600Pa/1600Pa	/
TDM866-XXXG	/	3600Pa/1600Pa
TDM966-XXXG	/	3600Pa/1600Pa
TDM960-XXXG	/	3600Pa/1600Pa

双玻组件螺栓安装示意图

Bolt Installation of Bifacial Modules



螺栓安装

支架垂直于长边框

Installation with bolts

(Beam perpendicular to long sides)

- **长边压块安装：**

Mounting Using Clips on Long Edge of Module

选择夹具安装方法时，请确保每个模块上至少使用四个夹具，两个夹具应连接在模块的每个长边上。根据当地风荷载和雪荷载，如果预计压力荷载过大，则需要额外的夹具或支架，以确保模块能够承受荷载。施加的扭矩值应足够大，以稳定地固定模块，我们建议施加的扭矩约为 16~20 N-m。(具体扭矩值请咨询夹具或支架供应商)。

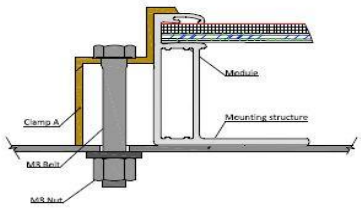
必须使用 M8 不锈钢五金件将卡箍固定到支撑结构上(所有配件部件必须采用防腐材料)。

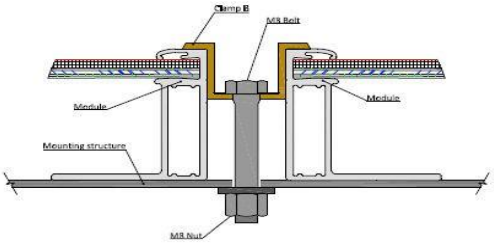
请参考以下详细的安装信息。

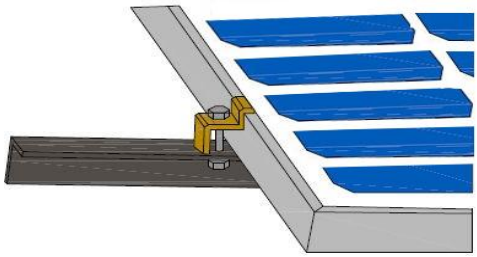
When choosing clamp mounting method, please be sure to use at least four clamps on each module, two clamps should be attached on each long sides of the module. Depending on the local wind and snow loads, if excessive pressure load is expected, additional clamps or support would be required to ensure the module can bear the load. The applied torque value should be big enough to fix the modules steadily, we recommend the applied torque is about 16~ 20 N-m. (Please consult with the clamp or support's supplier for the specific torque value)

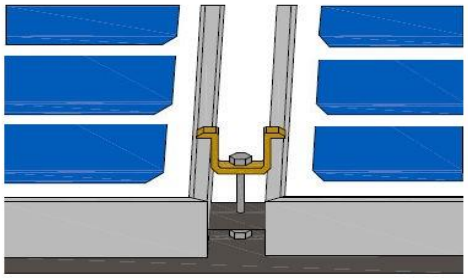
The clamps must be fastened to supporting structure using M8 stainless steel hardware (all fitting components must be corrosion-proof material).

Please refer to the following detailed installation information.

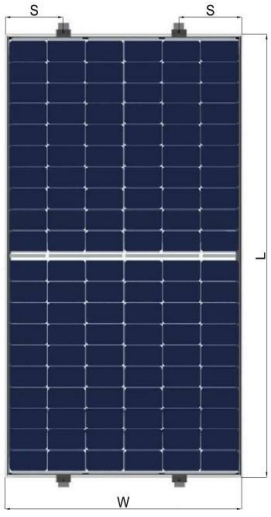


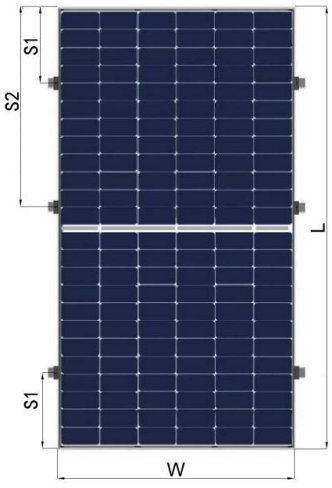


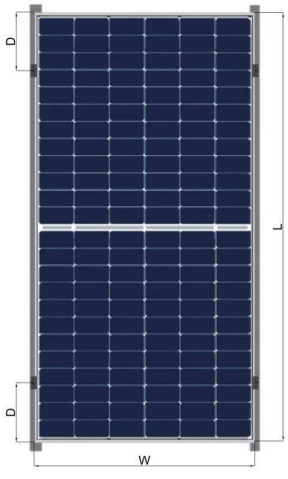




安装方式 Mehtod	安装边框 Installed Frame(L)	夹具位置 Clamp Position(S)	设计载荷 Design load
夹具安装 Mounting with clamps	长边框 Long Frame	(1/4L- 50mm)<S≤(1/4L+50mm)	3600Pa(Front)&1600Pa(Back)
		400≤S1≤ 450, (1/2L-70)≤S2≤(1/2L-50)	
		350 ≤ D ≤ 450	2400Pa(Front)&1600Pa(Back)
		0＜S≤1/4L	1600Pa（Front)& 1600Pa(Back)
	短边框 Short Frame	0<S≤1/4W	







6. 电气安装 Electrical Installation

6.1 连接 Connection

- 不要在同一光伏系统中混合使用不同配置的组件。
  Do not use modules of different configurations in the same system.
- 组件之间仅能使用兼容的连接器进行连接，即使用同一供应商的同一型号连接器。 Only compatible connectors can be mated, i.e., from the same vendor and model shall be used.
- 为了确保系统的正常运行，在将组件连接到电池或者其他组件时，请注意观察电缆 线的极性（图 6-1 和 6-2）。如果连接不正确，旁路二极管可能会损坏。
  In order to ensure the normal operation of the system, make sure the modules polarity is observed (Fig.6-1 and Fig.6-2) when the modules are connected to the battery or other modules. Reverse polarity might cause damage to the protective diodes.
- 组件中有三个旁路二极管用以处理正面遮挡产生的的热斑效应，可以防止遮挡区域 过热和降低组件输出性能损失。旁路二极管的资料详见组件材料清单；
  Each module has 3 bypass diodes to deal with the hot spot phenomenon caused by frontal occlusion， it can prevent the covered area from overheating and reduce the loss of modules output performance.For information on bypass diodes, please refer to the component material list
- 本组件提供了接线盒（含有电缆和连接器）。参照相关标准，以确定系统电缆线的 尺寸、类型和导体温度等级等参数。推荐电缆尺寸：横截面为 4.0㎜^{2} ，导线的额定温度：-40~90℃；
  This module is supplied with junction box (containing cables and connectors) .Refer to related standards to determine system wiring size, types and temperature ratings of conductors. Recommended cable size: cross-section is 4.0 mm2 , wire Rated temperature:-40 ~ 90 ℃
- 组件串联连接电压累加。从一块组件的正极接线端连接到下一块组件的负极接线端。 图 6-1 显示的是组件串联连接。
  PV modules can be wired in series to increase voltage. Connect wires from the positive terminal of one module to the negative terminal of the next module. Fig.6-1 shows modules connected in series.
- 组件并联连接电流累加。从一块组件的正极接线端连接到下一块组件的正极接线端。图 6-2 显示的是组件并联连接。
  Connect PV modules in parallel to increase current. Connect wires from the positive terminal of one module to the positive terminal on the next module. Fig.6-2 shows modules connected in parallel.

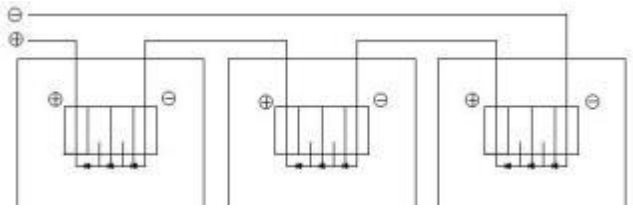


图 6-1 串联增加电压

Fig. 6-1 in series to increase

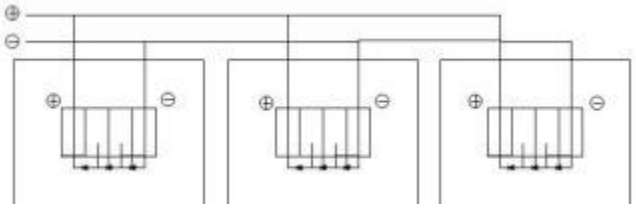


图 6-2 并联增加电流

Fig. 6-2 in parallel to increase current

组件配置（推荐）Module Configurations (recommended)

- #无适当措施（如保险丝或防反二极管）下的最大并联串数：1 串。

  #If without appropriate measures (such as fuses or anti diode), the maximum number of parallel strings should be just 1 string.

- 注：在采取适当措施阻止反向电流流动的情况下（如防止组件和线缆过大电流的保 险丝，防止串间电压不均衡的防反二极管），并联配置是没有限制的。

  Note: In the case of taking appropriate measures to prevent reverse current flow (such as the fuse to prevent a large current of the modules and cables, the anti diode to prevent the voltage imbalance between strings), there is no restriction to the parallel configuration.

6.2 接地 Grounding

1） 遵守当地相关的电力法规和条例。

Observe all local electric codes and regulations.

2） 推荐使用接地线配件（接线鼻）连接接地电缆。

Recommend using ground wire accessories (wiring nose) to connect the ground cable.

3) 所有组件支撑支架或夹具必须妥善接地。对于金属支撑框架，框架表面必须电镀， 保证其具有良好的导电性能，组件负极也必须接地，否则组件质保将失效。

All module mountings or clamps must be properly grounded. For metal mounting frame, the frame surface must be electroplated to ensure a good conductivity. The negative pole must also be grounded, otherwise the guarantee will fail.

6.3 电气安全 Electrical Safety

1) 不管组件是否连接，接触组件任何带电部位（如接线端子）都可能会造成烧伤、火 花或是致命的电击。

Contact with electrically active parts of a PV module such as terminals can result in burns, sparks and lethal shock whether the PV modules is connected or not.

2) 不建议将组件直接连接到负载上，因为取决于阳光辐照度的输出功率的变化有可能 对所连接的负载造成损害。

Do not connect the PV modules directly to the loads since the variation of the output power depending on the solar irradiation causes damage for the connected load.

3) 出现问题时，立即关闭逆变器和断路器。

Turn off inverters and circuit breakers immediately, should a problem occur.

4) 不要遮挡组件，被遮蔽的电池片会发热（热斑效应），影响功率输出。

Do not shade the PV module. The shaded cell may become hot (hot spot phenomenon) which results in solder joints peeling off.

5) 在正常情况下，一块组件可能会遇到比在标准测试条件下产生更多的电流和（或） 电压。因此，当计算额 定电压、导线容量、熔断器规格、连接到组件输出端的控制 器的尺寸时，应用该组件上标明的短路电流和 开路电压值乘以 1.25 倍；

Under normal conditions, a photovoltaic module is likely to experience conditions that produce more current and/or voltage than reported at Standard Test Conditions. Accordingly, the values of Isc and Voc marked on this module should be multiplied by a factor of 1.25 when determining module voltage ratings, conductor capacities, fuse sizes and size of controls connected to the module output.

6) 组件串联连接时，最大开路电压必须小于指定的系统最大电压（我公司组件的最大 系统电压为 1500V/1000V）。 最大开路电压与串联的组件数成比例。在组件并联 连接的情况下，请一定要采取适当的措施（例如，用于组件及其线缆过电流保护的 保险丝，用于预防串间电压不均衡的防反二极管），阻止反向电流。

In case of series connection, the maximum open circuit voltage must not be greater than the specified maximum system voltage (The maximum system voltage of modules from our company is 1500V/1000V). The voltage is proportional to the number of series. In case of parallel connection, please be sure to take proper measure (e.g. fuse for protection of module and cable from over current, and/or blocking diode for prevention of unbalanced strings voltage) to block the reverse current flow.

7) 组件背后的标签上最大功率 Pmax、开路电压 Voc、短路电流 Isc、最大功率点电压 Vmp、最大功率点电流 Imp 均为标称值，请参阅本手册附件中关于各种类型组件 的电性能参数表。

The parameters including Pmax/Voc/Isc/Vmp/Imp on the black label are nominal value. Please refer to the electrical properties of the various types of modules attached to this manual.

7. 维护 Maintenance

- 组件设计的使用寿命很长，必须进行定期检查和维护，尤其是质保期内，这是用户必须承担的责任，并且在发现组件有损坏的时候及时通知供应商（一般在 2 周内）。
  The modules are designed for a long life. The regular inspection and maintenance of the module must be carried out especially during the warranty period. It is the responsibility users must bear. When the module gets damaged, inform the supplier in time (usually 2 weeks)
- 如果组件的倾角大于等于 5 度，在大多数天气条件下正常的降雨足以保持组件玻璃表面的清洁。如果污垢积聚过多，只需用软布和水清洗玻璃表面。严禁使用含有碱、酸的清洁剂清洗组件。
  If the angle of the PV module is 5 degrees or more, normal rainfall is sufficient to keep the module glass surface clean under most weather conditions. If dirt build-up becomes excessive, clean the glass surface only with a soft cloth using water. Do not use acidic or alkaline cleaning agent to wash the modules.
- 为了保证系统获得最大输出，建议定期清洗组件。清洗时严禁踩踏组件，做好安全防护工作。组件正面不得有遮挡物。
  In order to ensure the maximum output of the system, please clean the modules regularly. Do not trample on the module when washing it. Do the security work. There shall be no obstructions on the front of the modules.
- 为了保证系统的运行，请定期检查接线和电线护套是否良好。
  In order to ensure the operation of the system, please check the connection of wiring and the state of the jacket of wires regularly.
- 不要使用化学品清洗组件玻璃表面。不要让水长时间停留在组件的玻璃表面，玻璃长时间浸水有可能出现“发霉”（玻璃的通病），从而导致功率的衰减。
  Do not clean the glass surface with chemicals. Do not let water stay on the glass surface of PV modules for a long time. This creates a risk of white efflorescence (common problem with glass) which may result in the deterioration of energy generation.
- 当组件表面有积雪时，组件下侧积雪更多（组件倾斜安装时），要采取适当的措施防止组件受损。
  When there is snow load on the surface of modules, there will be more snow load under the modules (when modules are installed in a tilt way), appropriate measures have to be taken so that PV modules will not be damaged.

附件：机械和电气额定值
ANNEX: MECHNICAL AND ELECTRICAL RATINGS

标准测试条件：辐照度1000W/m²， AM 1.5和25℃电池温度。
Standard Test Conditions: irradiance of 1kW/m², AM 1.5 spectrum, and cell temperature of 25℃.
BNPI条件：正面：辐照度1000W/m²， 背面135W/㎡
BNPI: Corresponding to 1 000 W/m2 on the module front side and 135 W/m² on the module rear side).

BSI条件：正面：辐照度1000W/m²， 背面300W/㎡
BSI: Corresponding to 1 000 W/m² on the module front side and 300 W/m² on the module rear side).

单个组件的Pmax公差为±3%。
Pmax of any individual module will be within ±3% tolerance of these specified values.

单个组件的Voc±3%，Isc公差为±3%。
Voc of any individual module will be within ±3% tolerance of these specified values. Isc of any individual module will be within ±3% tolerance of these specified values.

附表1中的规格和电气特性受技术和产品更新的限制。本文件中的信息如有变更，恕不另行通知。
Specifications and electric characteristics in Table 1 are subject to technical and product innovations. Information in this document is subject to change without notice.

组件型号	Pmax [W]	Voc [V]	Isc [A]	Vmp [V]	Imp [A]	BNPI					Bifaciality coefficient			BSI [A]	系统电压 [V]	额定熔断电流 [A]
						Pmax [W]	Voc [V]	Vmp [V]	Isc [A]	Imp [A]	φPower (±10%)	φ Voc (±5%)	φ Isc (±10%)			
TDM778-610G	610	56.56	13.62	47.03	12.97	676	56.56	15.09	47.03	14.37	80	98	80	16.89	1500	30
TDM778-615G	615	56.69	13.68	47.20	13.03	681	56.69	15.16	47.20	14.44	80	98	80	16.96	1500	30
TDM778-620G	620	56.82	13.74	47.37	13.09	687	56.82	15.22	47.37	14.50	80	98	80	17.04	1500	30
TDM778-625G	625	56.95	13.80	47.54	13.15	693	56.95	15.29	47.54	14.57	80	98	80	17.11	1500	30
TDM778-630G	630	57.08	13.86	47.70	13.21	698	57.08	15.36	47.70	14.64	80	98	80	17.19	1500	30
TDM778-635G	635	57.21	13.92	47.86	13.27	704	57.21	15.42	47.86	14.70	80	98	80	17.26	1500	30
TDM778-640G	640	57.34	13.98	48.02	13.33	709	57.34	15.49	48.02	14.77	80	98	80	17.34	1500	30
TDM778-645G	645	57.47	14.04	48.18	13.39	715	57.47	15.56	48.18	14.84	80	98	80	17.41	1500	30
TDM772-560G	560	51.70	13.64	43.26	12.94	620	51.70	15.11	43.26	14.34	80	98	80	16.91	1500	30
TDM772-565G	565	51.90	13.77	43.42	13.01	626	51.90	15.26	43.42	14.42	80	98	80	17.07	1500	30
TDM772-570G	570	52.10	13.83	43.58	13.08	632	52.10	15.32	43.58	14.49	80	98	80	17.15	1500	30
TDM772-575G	575	52.30	13.89	43.73	13.15	637	52.30	15.39	43.73	14.57	80	98	80	17.22	1500	30
TDM772-580G	580	52.50	13.95	43.88	13.22	643	52.50	15.46	43.88	14.65	80	98	80	17.30	1500	30
TDM772-585G	585	52.70	14.01	44.02	13.29	648	52.70	15.52	44.02	14.73	80	98	80	17.37	1500	30
TDM772-590G	590	52.90	14.07	44.18	13.36	654	52.90	15.59	44.18	14.80	80	98	80	17.45	1500	30
TDM772-595G	595	53.10	14.13	44.31	13.43	659	53.10	15.66	44.31	14.88	80	98	80	17.52	1500	30
TDM766-515G	515	47.04	13.77	39.58	13.01	571	47.04	15.26	39.58	14.42	80	98	80	17.07	1500	30
TDM766-520G	520	47.29	13.83	39.76	13.08	576	47.29	15.32	39.76	14.49	80	98	80	17.15	1500	30
TDM766-525G	525	47.54	13.89	39.92	13.15	582	47.54	15.39	39.92	14.57	80	98	80	17.22	1500	30

组件型号	Pmax [W]	Voc [V]	Isc [A]	Vmp [V]	Imp [A]	BNPI					Bifaciality coefficient			BSI [A]	系统电压 [V]	额定熔断电流 [A]
						Pmax [W]	Voc [V]	Vmp [V]	Isc [A]	Imp [A]	φPower (±10%)	φ Voc (±5%)	φ Isc (±10%)			
TDM766-530G	530	47.79	13.95	40.09	13.22	587	47.79	15.46	40.09	14.65	80	98	80	17.30	1500	30
TDM766-535G	535	48.03	14.01	40.26	13.29	593	48.03	15.52	40.26	14.73	80	98	80	17.37	1500	30
TDM766-540G	540	48.28	14.07	40.42	13.36	598	48.28	15.59	40.42	14.80	80	98	80	17.45	1500	30
TDM766-545G	545	48.52	14.13	40.58	13.43	604	48.52	15.66	40.58	14.88	80	98	80	17.52	1500	30
TDM760-460G	460	43.55	13.37	35.74	12.87	510	43.55	14.81	35.74	14.26	80	98	80	16.58	1500	30
TDM760-465G	465	43.76	13.45	35.94	12.94	515	43.76	14.90	35.94	14.34	80	98	80	16.68	1500	30
TDM760-470G	470	43.97	13.53	36.07	13.03	521	43.97	14.99	36.07	14.44	80	98	80	16.78	1500	30
TDM760-475G	475	44.18	13.61	36.26	13.10	526	44.18	15.08	36.26	14.51	80	98	80	16.88	1500	30
TDM760-480G	480	44.38	13.69	36.45	13.17	532	44.38	15.17	36.45	14.59	80	98	80	16.98	1500	30
TDM760-485G	485	44.58	13.77	36.63	13.24	537	44.58	15.26	36.63	14.67	80	98	80	17.07	1500	30
TDM760-490G	490	44.78	13.85	36.81	13.31	543	44.78	15.35	36.81	14.75	80	98	80	17.17	1500	30
TDM760-495G	495	44.98	13.93	37.00	13.38	548	44.98	15.43	37.00	14.83	80	98	80	17.27	1500	30
TDM760-500G	500	45.18	14.01	37.17	13.45	554	45.18	15.52	37.17	14.90	80	98	80	17.37	1500	30
TDM754-420G	420	39.05	13.53	32.23	13.03	465	39.05	14.99	32.23	14.44	80	98	80	16.78	1500	30
TDM754-425G	425	39.28	13.61	32.44	13.10	471	39.28	15.08	32.44	14.51	80	98	80	16.88	1500	30
TDM754-430G	430	39.51	13.69	32.65	13.17	476	39.51	15.17	32.65	14.59	80	98	80	16.98	1500	30
TDM754-435G	435	39.74	13.77	32.85	13.24	482	39.74	15.26	32.85	14.67	80	98	80	17.07	1500	30
TDM754-440G	440	39.96	13.85	33.06	13.31	488	39.96	15.35	33.06	14.75	80	98	80	17.17	1500	30
TDM754-445G	445	40.18	13.93	33.26	13.38	493	40.18	15.43	33.26	14.83	80	98	80	17.27	1500	30
TDM754-450G	450	40.40	14.01	33.46	13.45	499	40.40	15.52	33.46	14.90	80	98	80	17.37	1500	30
TDM866-590G	590	47.88	15.72	39.87	14.80	654	47.88	15.72	39.87	14.80	80	98	80	19.49	1500	35

组件型号	Pmax [W]	Voc [V]	Isc [A]	Vmp [V]	Imp [A]	BNPI					Bifaciality coefficient			BSI [A]	系统电压 [V]	额定熔断电流 [A]
						Pmax [W]	Voc [V]	Vmp [V]	Isc [A]	Imp [A]	φPower (±10%)	φ Voc (±5%)	φ Isc (±10%)			
TDM866-595G	595	48.08	15.78	40.02	14.87	659	48.08	15.78	40.02	14.87	80	98	80	19.57	1500	35
TDM866-600G	600	48.28	15.84	40.16	14.94	665	48.28	15.84	40.16	14.94	80	98	80	19.64	1500	35
TDM866-605G	605	48.48	15.90	40.31	15.01	670	48.48	15.90	40.31	15.01	80	98	80	19.72	1500	35
TDM866-610G	610	48.68	15.96	40.46	15.08	676	48.68	15.96	40.46	15.08	80	98	80	19.79	1500	35
TDM866-615G	615	48.88	16.02	40.60	15.15	682	48.88	16.02	40.60	15.15	80	98	80	19.86	1500	35
TDM866-620G	620	49.08	16.08	40.74	15.22	687	49.08	16.08	40.74	15.22	80	98	80	19.94	1500	35
TDM866-625G	625	49.28	16.14	40.88	15.29	693	49.28	16.14	40.88	15.29	80	98	80	20.01	1500	35
TDM866-630G	630	49.48	16.20	41.02	15.36	698	49.48	16.20	41.02	15.36	80	98	80	20.09	1500	35
TDM966-675G	675	47.30	18.13	39.40	17.12	748	47.30	20.09	39.40	18.97	80	98	80	22.48	1500	35
TDM966-680G	680	47.50	18.17	39.60	17.15	753	47.50	20.13	39.60	19.00	80	98	80	22.53	1500	35
TDM966-685G	685	47.70	18.21	39.80	17.19	759	47.70	20.18	39.80	19.05	80	98	80	22.58	1500	35
TDM966-690G	690	47.90	18.25	40.10	17.23	765	47.90	20.22	40.10	19.09	80	98	80	22.63	1500	35
TDM966-695G	695	48.30	18.28	40.30	17.25	770	48.30	20.25	40.30	19.11	80	98	80	22.67	1500	35
TDM966-700G	700	48.60	18.32	40.50	17.29	776	48.60	20.30	40.50	19.16	80	98	80	22.72	1500	35
TDM966-705G	705	48.80	18.36	40.70	17.33	781	48.80	20.34	40.70	19.20	80	98	80	22.77	1500	35
TDM966-710G	710	49.00	18.40	40.90	17.36	787	49.00	20.39	40.90	19.23	80	98	80	22.82	1500	35
TDM966-715G	715	49.20	18.44	41.10	17.39	792	49.20	20.43	41.10	19.27	80	98	80	22.87	1500	35
TDM966-720G	720	49.40	18.49	41.30	17.44	798	49.40	20.49	41.30	19.32	80	98	80	22.93	1500	35
TDM960-610G	610	42.60	18.12	35.70	17.10	676	42.60	20.08	35.70	18.95	80	98	80	22.47	1500	35
TDM960-615G	615	42.90	18.15	35.90	17.13	681	42.90	20.11	35.90	18.98	80	98	80	22.51	1500	35
TDM960-620G	620	43.20	18.18	36.10	17.16	687	43.20	20.14	36.10	19.01	80	98	80	22.54	1500	35
TDM960-625G	625	43.50	18.21	36.40	17.19	693	43.50	20.17	36.40	19.05	80	98	80	22.58	1500	35
TDM960-630G	630	43.90	18.24	36.60	17.22	698	43.90	20.21	36.60	19.08	80	98	80	22.62	1500	35

组件型号	Pmax [W]	Voc [V]	Isc [A]	Vmp [V]	Imp [A]	BNPI					Bifaciality coefficient			BSI [A]	系统电压 [V]	额定熔断电流 [A]
						Pmax [W]	Voc [V]	Vmp [V]	Isc [A]	Imp [A]	φPower (±10%)	φ Voc (±5%)	φ Isc (±10%)			
TDM960-635G	635	44.20	18.27	36.80	17.26	704	44.20	20.24	36.80	19.12	80	98	80	22.65	1500	35
TDM960-640G	640	44.50	18.30	37.00	17.30	709	44.50	20.28	37.00	19.17	80	98	80	22.69	1500	35
TDM960-645G	645	44.80	18.33	37.20	17.34	715	44.80	20.31	37.20	19.21	80	98	80	22.73	1500	35
TDM960-650G	650	45.10	18.36	37.40	17.38	720	45.10	20.34	37.40	19.26	80	98	80	22.77	1500	35
TDM960-655G	655	45.40	18.39	37.60	17.42	726	45.40	20.38	37.60	19.30	80	98	80	22.80	1500	35
TDP772-535G	535	49.35	13.78	41.50	12.90	49.35	15.08	41.50	14.12	49.35	70	98	70	17.09	1500	30
TDP772-540G	540	49.50	13.85	41.65	12.97	49.50	15.16	41.65	14.20	49.50	70	98	70	17.17	1500	30
TDP772-545G	545	49.65	13.92	41.80	13.04	49.65	15.24	41.80	14.27	49.65	70	98	70	17.26	1500	30
TDP772-550G	550	49.80	13.98	41.95	13.12	49.80	15.30	41.95	14.36	49.80	70	98	70	17.34	1500	30
TDP772-555G	555	49.95	14.04	42.10	13.19	49.95	15.37	42.10	14.44	49.95	70	98	70	17.41	1500	30
TDP772-560G	560	50.10	14.10	42.25	13.25	50.10	15.43	42.25	14.50	50.10	70	98	70	17.48	1500	30
TDP766-490G	490	45.25	13.74	38.08	12.87	45.25	15.04	38.08	14.26	45.25	70	98	70	17.04	1500	30
TDP766-495G	495	45.40	13.82	38.23	12.95	45.40	15.13	38.23	14.36	45.40	70	98	70	17.14	1500	30
TDP766-500G	500	45.55	13.90	38.38	13.03	45.55	15.21	38.38	14.44	45.55	70	98	70	17.24	1500	30
TDP766-505G	505	45.70	14.00	38.53	13.11	45.70	15.32	38.53	14.54	45.70	70	98	70	17.36	1500	30
TDP766-510G	510	45.88	14.09	38.67	13.19	45.88	15.42	38.67	14.62	45.88	70	98	70	17.47	1500	30
TDP760-445G	445	41.10	13.79	33.82	13.16	41.10	15.09	33.82	14.40	41.10	70	98	70	17.10	1500	30
TDP760-450G	450	41.18	13.86	33.91	13.27	41.18	15.17	33.91	14.52	41.18	70	98	70	17.19	1500	30
TDP760-455G	455	41.33	13.93	34.06	13.36	41.33	15.25	34.06	14.62	41.33	70	98	70	17.27	1500	30
TDP760-460G	460	41.48	14.01	34.20	13.45	41.48	15.33	34.20	14.72	41.48	70	98	70	17.37	1500	30
TDP760-465G	465	41.63	14.08	34.34	13.54	41.63	15.41	34.34	14.82	41.63	70	98	70	17.46	1500	30

组件型号	Pmax [W]	Voc [V]	Isc [A]	Vmp [V]	Imp [A]	BNPI					Bifaciality coefficient			BSI [A]	系统电压 [V]	额定熔断电流 [A]
						Pmax [W]	Voc [V]	Vmp [V]	Isc [A]	Imp [A]	φPower (±10%)	φ Voc (±5%)	φ Isc (±10%)			
TDP754-400G	400	37.10	13.70	30.90	12.95	438	37.10	14.99	30.90	14.17	70	98	70	16.99	1500	30
TDP754-405G	405	37.30	13.77	31.10	13.03	443	37.30	15.07	31.10	14.26	70	98	70	17.07	1500	30
TDP754-410G	410	37.50	13.84	31.30	13.10	449	37.50	15.15	31.30	14.34	70	98	70	17.16	1500	30
TDP754-415G	415	37.70	13.91	31.50	13.18	455	37.70	15.22	31.50	14.43	70	98	70	17.25	1500	30
TDP754-420G	420	37.90	13.98	31.70	13.26	460	37.90	15.30	31.70	14.51	70	98	70	17.34	1500	30

制造商信息

Manufacturer Information

制造商：泰德光伏菲律宾公司

Manufacturer: Tidesolar Philippines Corporation

地址: 1 号，1 区，3 期， 利玛科技中心 - 经济特区，马尔瓦，八打雁省

Address: Lot1， Block1, Phase3 Lima • Technology Center - Special Economic Zone Malvar, Batangas