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AXITEC LLC

Installation Manual

Version Date: 10232019



Table of Contents

Introduction.....	Page 1
1. General Safety Precautions.....	Page 2
2. Codes and Regulations.....	Page 2
3. Mechanical Installation.....	Page 2 - 7
4. Electrical Installation.....	Page 8 - 13
5. Operation and Maintenance.....	Page 14
6. Transport, Storage Modules.....	Page 14
7. Module information.....	Page 14 - 15
8. Editing records of installing manual.....	Page 15

Please read the installation manual before using or installing Axitec LLC modules. Photovoltaic modules produce electricity when exposed to sunlight. Follow all applicable electrical safety precautions. Only qualified personnel should install or perform maintenance work on modules. Do not damage or scratch the rear surface of the module. Do not handle modules when they are wet, may increase the risk of electrical shock.

INTRODUCTION

Thank you for choosing AXITEC LLC PV modules. With proper operation and maintenance, AXITEC LLC modules will provide you with clean and renewable solar electricity for years to come. This manual contains necessary installation, maintenance and safety information. The word “module” as used in this manual refers to one or more PV modules. Retain this manual for future reference.

DISCLAIMER OF LIABILITY

AXITEC LLC does not assume responsibility and expressly disclaims liability for any loss, damage, or expense arising out of, or in any way connected with installation, operation, use, or maintenance by using this manual. AXITEC LLC assumes no responsibility for any infringement of patents or other rights of third parties, which may result from use of modules. No license is granted by implication or under any patent or patent rights. The information in this manual is reliable, but does not constitute an expressed and/or implied warranty. AXITEC LLC reserves the right to make changes to the product, specifications, or this manual without prior notice. Without any prior written authorization, AXITEC LLC will not accept any returned modules.

1. General Safety Precautions

- 1.1. Photovoltaic modules have no on/off switch. Modules can be rendered inoperative only by removing them from sunlight, or by fully covering their front surface with cloth, cardboard, or other completely opaque material, or by working with modules face down on a smooth, flat surface.
- 1.2. Photovoltaic modules produce DC electricity when exposed to light and therefore can produce electrical shock or burns. Modules produce voltage even when not connected to an electrical circuit or load. Modules produce nearly full voltage when exposed to as little as 5% of full sunlight both current and power increase with light intensity. Use insulated tools and rubber gloves when working with modules in sunlight. It would be best by covering their front surface fully with completely opaque materials when operating on the modules. Artificially concentrated sunlight shall not be directed on the module.
- 1.3. Modules may produce higher output than the rated specifications. Industry standard ratings are made at conditions of 1000 watts/m² and 25°C cell temperature, AM 1.5. Reflection from snow or water can increase sunlight and therefore boost current and power. In addition, temperature below 25°C can substantially increase voltage and power.
- 1.4. Axitec LLC modules are constructed with tempered glass, but still must be handled with care, If the front glass is broken or if the polymer back-skin is torn, contact with any module surface or the frame can produce electrical shock, particularly when the module is wet. Broken or damaged modules must be disposed of properly.
- 1.5. Axitec LLC modules are intended for use in terrestrial applications only, thus excluding aerospace or maritime conditions or use with sunlight concentration. Excluded applications include, but are not limited to, installations where modules are likely to come in contact with any salt water or where likely to become partially or wholly submerged in fresh or salt water, we suggested that the modules should installed at least 500m away from the sea.

2. Codes and Regulations

The mechanical and electrical installation of Module systems should be performed in accordance with all applicable codes, including electrical codes, building codes, and electric utility interconnection requirements. Such requirements may vary for mounting location, such as building rooftop or motor vehicle applications.

Requirements may also vary with system voltage, and for DC or AC application. Contact local authorities for governing regulations.

3. Mechanical Installation

The module is considered to be in compliance with UL 1703 only when the module is mounted in the manner specified by the mounting instructions below. Any module without a frame (laminated) shall not be considered to comply with the requirements of UL 1703 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 UL 1703. The modules when used with a Listed mounting system that has been rated as a Class C System when installed with type 1 modules, is suitable to maintain the System Class C Fire Rating. For cUL listed products - Class C fire rating.

3.1. Selecting the location

Select a suitable location for installation of the module. The module should be facing true south in northern latitudes and true north in southern latitudes for best power production.

For detailed information on the best elevation tilt angle for the installation, refer to standard solar photovoltaic installation guides or a reputable solar installer or systems integrator.

The module should not be shaded at any time of the day. Do not use module near equipment or in ad loc.

3.2. Selecting the proper support frame

Always observe the instructions and safety precautions included with the support frame to be used with the module.

Do not attempt to drill holes in the glass surface of the module. Do not drill additional mounting holes in the frame of the module. Doing so will void the warranty.

Modules must be securely attached to the mounting structure using four mounting points for normal installation. If additional wind or snow loads are anticipated for this Installation, the support module mounting structure must be made of durable corrosion-resistant and UV-resistant material.

3.3. Ground mount

Select the height of the mounting system to prevent the lowest edge of the module from being covered by snow for a long time in winter in areas that experience heavy snowfalls. In addition, assure the lowest portion of the module is placed high enough so that it is not shaded by plants or trees or damaged by sand and stones driven by wind.

3.4. Roof mount

When installing a module on a roof or building, ensure that it is securely fastened and cannot fall as a result of wind or snow loads. Provide adequate ventilation under a module for cooling (10cm minimum air space between module and mounting surface). **Slope should be less than 5 in/ft (127 mm/305 mm) required to maintain a fire Class rating.**



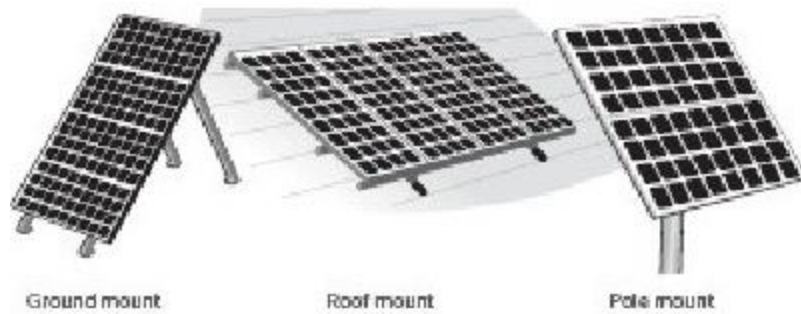
When installing module on a roof, ensure that the roof construction is suitable. In addition, any roof penetration required to mount the module must be properly sealed to prevent leaks. In some cases, a special support frame may be necessary. The roof installation of solar modules may affect the fireproofing of the house construction.

The fire rating of this module is valid only when mounted in the manner specified in the mechanical mounting instructions. The modules are rated fire Class C, and are suitable for mounting over a class A roof. When installing the module on a roof or building, do so in calm winds. Installing a module during strong winds may cause accidents.

The System Fire Class Rating of the module or panel in a mounting system in combination with a roof covering complete with requirements to achieve the specified System Fire Class Rating for a non-BIPV module or panel. Any module or panel mounting system limitations on inclination required to maintain a specific System Fire Class Rating.

3.5. Pole mount

When installing a module on a pole, choose a pole and module mounting structure that will withstand anticipated winds for the area.



3.6. General Installation

Module mounting must use the pre-drilled mounting holes in the frame. Mounting ways: Using 8 screws and 8 screw nut to respectively fix the 8 mounting holes, **see the figure below.**

- Do not lift the module by grasping the module's junction box or electrical leads.
- Do not stand or step on module.
- Do not drop module or allow objects to fall on module.
- To avoid glass breakage, do not place any heavy objects on the module.
- Do not set the module down hard on any surface.
- Inappropriate transport and installation may break the glass of the module.

3.7. Installing Methods

- 3.7.1. Modules installed with mounting holes (14*9). Modules should be bolted with M8 bolt to the support structures through mounting holes located in the frame back flanges. See the table as follow. The torque should be 12.5N·m-18N·m to tighten the bolt.
- 3.7.2. Modules installed with mounting holes (10*6.5) Modules should be bolted with M6 bolt to the support structures through mounting holes located in the frame back flanges. See the table as follow. The torque should be 12.5N·m-18N·m to tighten the bolt.
- 3.7.3. Modules installed with clamping, Modules should be bolted to the support structures rail by metal clamps. It is recommended to use clamps under the following condition or approved by system installation Clamps materials: Aluminum Alloy Bolt torque requirments:12.5N·m-18N·m
- 3.7.4. the clamps must not make contact with the front glass or deform frame in any way. Materials and sizes of Bolts, screw nuts, flat washers, spring washers that refer to mounting are as follows:
 (Stainless steel (SS)) Bolt: M8 SS, Flat washer SS : $\Phi 16-\Phi 8.4$ H1.6 SS
 Spring washer: $\Phi 12.6-\Phi 8.4$ H4.7 SS

3.7.5. **DO NOT** lift the module by grasping the module's junction box or electrical leads.

DO NOT stand or step on module.

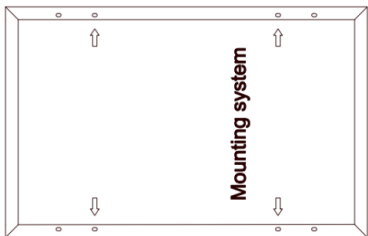
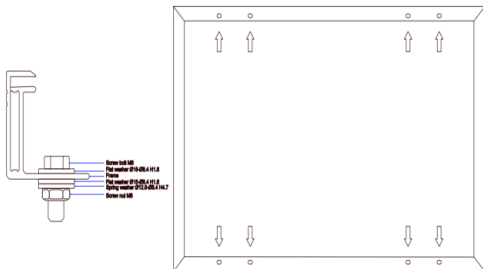
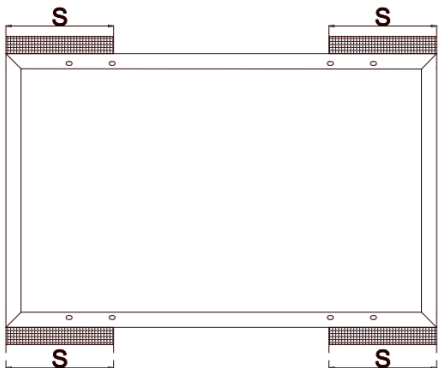
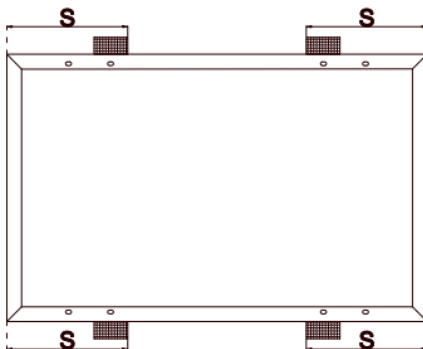
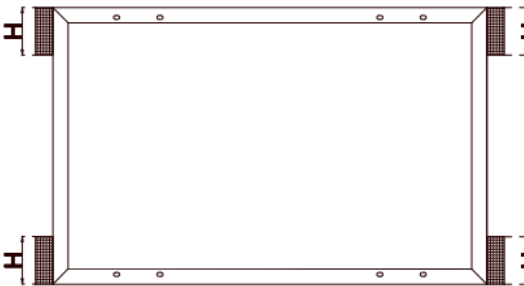
DO NOT drop module or allow objects to fall on module.

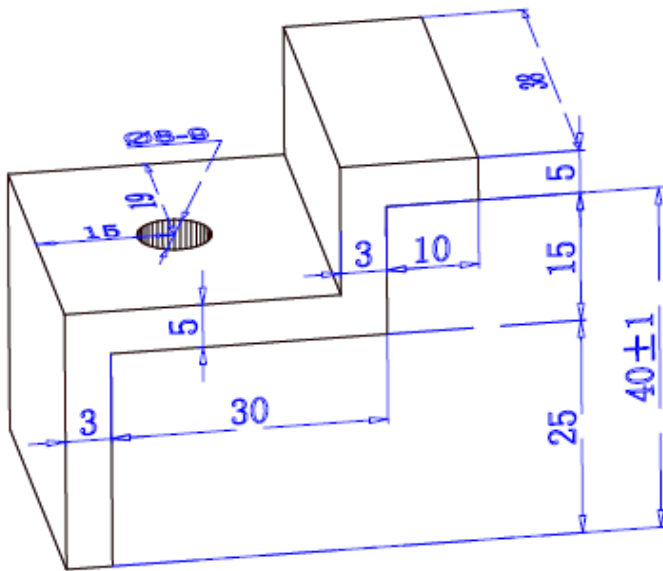
DO NOT set the module down hard a surface.

To avoid glass breakage, **DO NOT** place any heavy objects on the module.

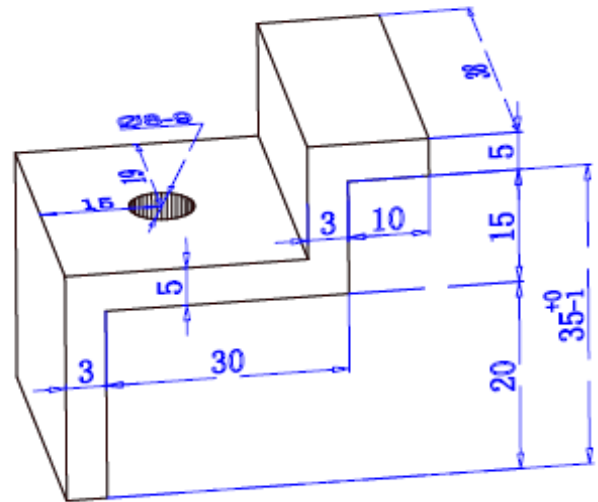
Inappropriate transport and installation may break the glass of the module

Table 3.6-1 Install methods(Valid for 3.6.1 and 3.6.2)

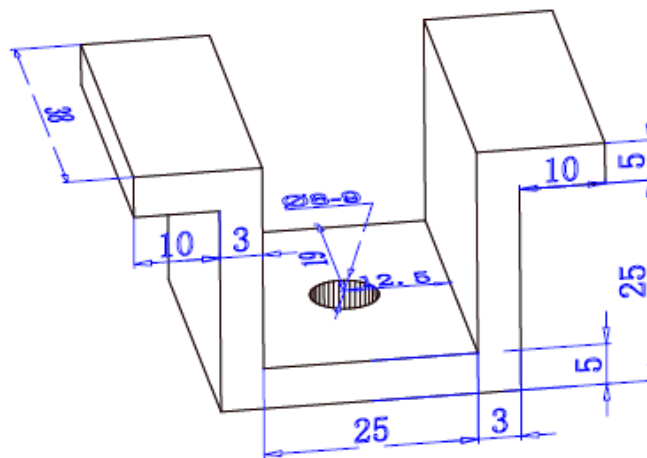
	Low/normal level loading condition(Apply to most of environment conditions, rated load is 1600Pa, safety factor is 1.5)	High level loading condition(Apply to harsher environment conditions, such as storm, heavy snow etc. Rated load is 3600Pa, safety factor is 1.5)
Mounting system	<p>Mounting holes, use 4 mounting holes</p> 	<p>Mounting holes, use 8 mounting holes</p> 
Clamping system(Attach to the long frame)	<p>Permissible range of clamp $0 < S \leq 1/4L$</p> 	<p>Permissible range of clamp $(1/4L - 50) < S \leq (1/4L + 50)$</p> 
Clamping system(Attach to the short frame)	<p>Permissible range of clamp $0 < H \leq 1/4W$</p> 	



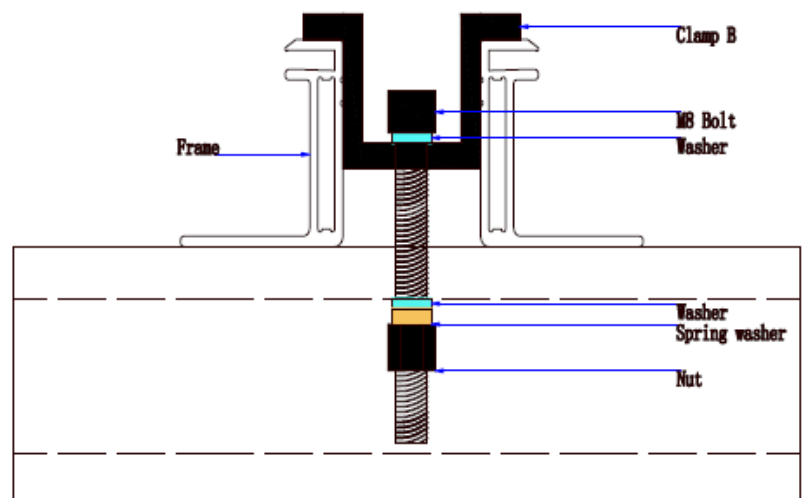
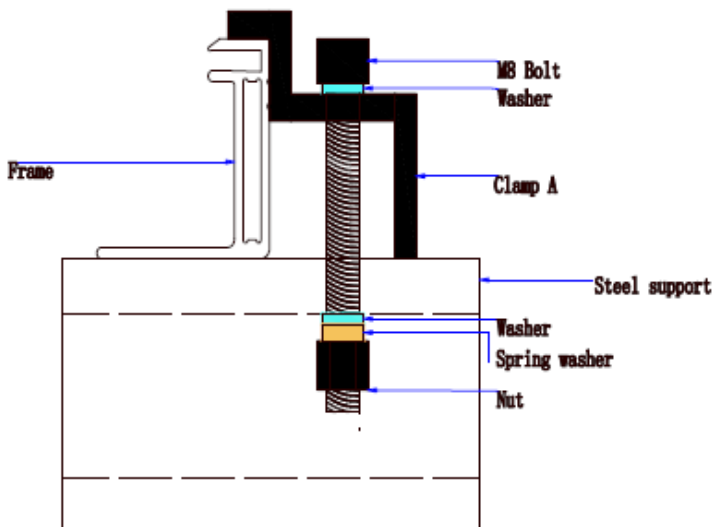
Clamp A use for frame with 40mm height



Clamp A use for frame with 35mm height



Clamp B



4. Electrical Installation

The electrical characteristics are within $\pm 3\%$ percent of the indicated values of I_{sc} , V_{oc} , and P_{max} under standard test conditions (irradiance is 100 mW/cm², AM 1.5 spectrum, and a cell temperature of 25°C (77°F)). A module with exposed conductive parts is considered to be in compliance with UL 1703 only when it is electrically grounded in accordance with the instructions presented below and the requirements of the National Electrical Code (NEC).

For installations in Canada, shall be in accordance with CSA C22.1, Safety Standard for Electrical Installations, Canadian Electrical Code, Part 1.

- 4.1. Modules should be mounted to maximize direct exposure to sunlight and to eliminate or minimize shadowing. Even partial shadowing can substantially reduce module and system output. Furthermore, partial shadowing can elevate the shaded portion's internal temperature, which may lower output and shorten module life. Bypass diodes are factory installed. Blocking diodes should be installed in series with each module or series string to prevent possible back flow of energy through the modules when modules or strings are connected in parallel or used in conjunction with a battery.
- 4.2. Whenever necessary to comply with local codes, use a listed fuse or circuit breaker, rated for the maximum series fuse rating of the module and the system voltage.
- 4.3. All electrical components should have ratings equal or greater to the system rating. Do not exceed the maximum allowable system voltage as listed on the module label. All module frames should be grounded for safety.
- 4.4. Under normal conditions, a photovoltaic module may experience conditions that produce more current and/or voltage than reported at Standard Test Conditions. Accordingly, the values of short circuit current, and open circuit voltage, marked on modules should be multiplied by a factor of more than 1.25 when determining component voltage ratings, conductor capacities, fuse sizes, and size of controls connected to the module output. Rated electrical characteristics are more than 10 percent of measured values at Standard Test Conditions of: 1000 W/m², 25°C cell temperature and solar spectral irradiance per ASTM E 892.
- 4.5. Axitec LLC modules are equipped with factory-installed wires and quick connectors. These modules have been designed to be easily interconnected in series. Each module has two single-conductor wires, one positive and one negative, that 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 male connector of a module into the female connector of an adjacent module until the connector is fully seated. For more information, please See module literature for appropriate mating connectors.
- 4.6. A separate return wire or wires may be required to run the positive and negative terminations of the series string of modules to the load. Male and/or female connectors pre-attached to wires may be used at the string terminations for return wire connections and/or for source circuit box terminations.
- 4.7. All modules have (3) by-pass diodes installed.

4.8. Grounding

- 4.8.1. 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 must be made in conformance with the grounding device manufacturer's instructions. Details for wiring in accordance with the NEC, and that the grounding method of the frame of arrays shall comply with the NEC, article 250
- 4.8.2. 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. All the PV modules frame and installing support must be earthed correctly in accord to local electrical laws, use correct ways of grounding, using suitable grounding wires to connect PV modules and frame supports. Grounding wires' materials can be copper, copper alloy or other conductors which correspond with electrical laws. Grounding wires must be connected with earth with suitable grounding electrode. Use Bolt M4, cup washer, grounding wires, flat washer, tooth washer, screw nut M4 and install like the photo below, torque should be 2N·M-3N·M, this way it can be grounded firmly.

Materials and sizes are as follow:

Bolt M4: Stainless steel, abbreviated to SS

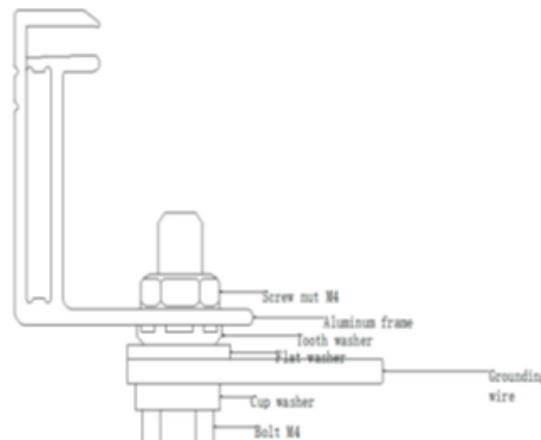
cup washer: SS $\Phi 9 \Phi 4.3$ h8

grounding wires: single conductor, the cross section of conductor is no less than 4mm^2

flat washer: SS $\Phi 9 \Phi 4.3$ h8

tooth washer: SS $\Phi 7.8 \Phi 4.3$ Thickness: 0.5 number of gears: 11

screw nut M4: SS



4.9. Module Size, type, rated temperature and electrical parameters

Module Size	Type	Rated temperature
1956×992×40	AC-"XXX"P/72V AC-"XXX"P/72S	-40°C~+85°C
1640×992×40	AC-"XXX"P/60V AC-"XXX"P/60S	-40°C~+85°C
1956(1966)×992×40	AC-"XXX"M/72V AC-"XXX"M/72S	-40°C~+85°C
1640(1650)×992×40 or 1640(1650)×992×35	AC-"XXX"M/60V AC-"XXX"M/60S	-40°C~+85°C
1956(1966)×992×40	AC-"XXX"P/72XV AC-"XXX"P/72X	-40°C~+85°C
1640(1650)×992×40 or 1640(1650)×992×35	AC-"XXX"P/60XV AC-"XXX"P/60X	-40°C~+85°C
1956(1966)×992×40	AC-"XXX"M/72XV AC-"XXX"M/72X	-40°C~+85°C
1640(1650)×992×40 or 1640(1650)×992×35	AC-"XXX"M/60XV AC-"XXX"M/60X	-40°C~+85°C
2000×992×40	AC-"XXX"MH/144S AC-"XXX"MH/144V	-40°C~+85°C
1675×992×35	AC-"XXX"MH/120S AC-"XXX"MH/120V	-40°C~+85°C

Electrical Parameters (1000V) at STC

MODULE	Open Circuit Voltage, (Vdc)	Rated Voltage (Vdc)	MaxSystem Voltage (Vdc)	Rated Current (A dc)	Short Circuit Current (A dc)	Rated Maximum Power (Watts)	Maximum Series Fuse (A)
AC-335M/72S	46.04	37.44	1000	8.95	9.41	335	20
AC-340M/72S	46.16	37.57	1000	9.05	9.48	340	20
AC-345M/72S	46.61	37.96	1000	9.09	9.51	345	20
AC-350M/72S	46.89	38.34	1000	9.13	9.58	350	20
AC-355M/72S	47.16	38.63	1000	9.19	9.66	355	20
AC-360M/72S	47.44	39.01	1000	9.23	9.73	360	20
AC-365M/72S	47.67	39.38	1000	9.26	9.81	365	20
AC-370M/72S	47.91	39.84	1000	9.29	9.89	370	20
AC-375M/72S	48.16	40.21	1000	9.33	9.95	375	20
AC-280M/60S	39.05	31.68	1000	8.84	9.36	280	20
AC-285M/60S	39.24	31.81	1000	8.96	9.43	285	20
AC-290M/60S	39.42	32.01	1000	9.06	9.54	290	20
AC-295M/60S	39.56	32.25	1000	9.15	9.67	295	20
AC-300M/60S	39.72	32.37	1000	9.27	9.74	300	20
AC-305M/60S	39.81	32.42	1000	9.41	9.83	305	20
AC-310M/60S	39.9	32.47	1000	9.55	9.92	310	20
AC-305MH/120S	39.42	32.38	1000	9.42	9.86	305	20
AC-310MH/120S	39.58	32.58	1000	9.52	9.95	310	20
AC-315MH/120S	39.74	32.79	1000	9.61	10.04	315	20
AC-320MH/120S	39.92	33.03	1000	9.69	10.13	320	20
AC-325MH/120S	40.1	32.91	1000	9.93	10.43	325	20
AC-330MH/120S	40.27	32.91	1000	10.02	10.51	330	20
AC-335MH/120S	40.44	33.11	1000	10.11	10.6	335	20
AC-340MH/120S	40.62	33.31	1000	10.21	10.69	340	20
AC-355MH/144S	46.82	39.02	1000	9.1	9.6	355	20
AC-360MH/144S	47.01	39.2	1000	9.19	9.69	360	20
AC-365MH/144S	47.21	39.39	1000	9.27	9.77	365	20
AC-370MH/144S	47.4	39.6	1000	9.35	9.85	370	20
AC-375MH/144S	47.61	39.81	1000	9.43	9.93	375	20
AC-380MH/144S	47.8	40.02	1000	9.5	10.01	380	20
AC-385MH/144S	48	40.21	1000	9.58	10.08	385	20
AC-390MH/144S	48.18	40.37	1000	9.66	10.48	390	20
AC-395MH/144S	48.37	40.55	1000	9.74	10.59	395	20
AC-400MH/144S	48.55	40.77	1000	9.81	10.64	400	20
AC-405MH/144S	48.73	40.95	1000	9.89	10.71	405	20
AC-410MH/144S	48.91	41.12	1000	9.97	10.79	410	20

Electrical Parameters (1000V) at STC

MODULE	Open Circuit Voltage, (Vdc)	Rated Voltage (Vdc)	Max System Voltage (Vdc)	Rated Current (A dc)	Short Circuit Current (A dc)	Rated Max Power (Watts)	Maximum Series Fuse (A)
AC-335M/72V	46.04	37.44	1500	8.95	9.41	335	20
AC-340M/72V	46.16	37.57	1500	9.05	9.48	340	20
AC-345M/72V	46.61	37.96	1500	9.09	9.51	345	20
AC-350M/72V	46.89	38.34	1500	9.13	9.58	350	20
AC-355M/72V	47.16	38.63	1500	9.19	9.66	355	20
AC-360M/72V	47.44	39.01	1500	9.23	9.73	360	20
AC-365M/72V	47.67	39.38	1500	9.26	9.81	365	20
AC-370M/72V	47.91	39.84	1500	9.29	9.89	370	20
AC-375M/72V	48.16	40.21	1500	9.33	9.95	375	20
AC-280M/60V	39.05	31.68	1500	8.84	9.36	280	20
AC-285M/60V	39.24	31.81	1500	8.96	9.43	285	20
AC-290M/60V	39.42	32.01	1500	9.06	9.54	290	20
AC-295M/60V	39.56	32.25	1500	9.15	9.67	295	20
AC-300M/60V	39.72	32.37	1500	9.27	9.74	300	20
AC-305M/60V	39.81	32.42	1500	9.41	9.83	305	20
AC-310M/60V	39.9	32.47	1500	9.55	9.92	310	20
AC-305MH/120V	39.42	32.38	1500	9.42	9.86	305	20
AC-310MH/120V	39.58	32.58	1500	9.52	9.95	310	20
AC-315MH/120V	39.74	32.79	1500	9.61	10.04	315	20
AC-320MH/120V	39.92	33.03	1500	9.69	10.13	320	20
AC-325MH/120V	40.1	32.91	1500	9.93	10.43	325	20
AC-330MH/120V	40.27	32.91	1500	10.02	10.51	330	20
AC-335MH/120V	40.44	33.11	1500	10.11	10.6	335	20
AC-340MH/120V	40.62	33.31	1500	10.21	10.69	340	20
AC-355MH/144V	46.82	39.02	1500	9.1	9.6	355	20
AC-360MH/144V	47.01	39.2	1500	9.19	9.69	360	20
AC-365MH/144V	47.21	39.39	1500	9.27	9.77	365	20
AC-370MH/144V	47.4	39.6	1500	9.35	9.85	370	20
AC-375MH/144V	47.61	39.81	1500	9.43	9.93	375	20
AC-380MH/144V	47.8	40.02	1500	9.5	10.01	380	20
AC-385MH/144V	48	40.21	1500	9.58	10.08	385	20
AC-390MH/144V	48.18	40.37	1500	9.66	10.48	390	20
AC-395MH/144V	48.37	40.55	1500	9.74	10.59	395	20
AC-400MH/144V	48.55	40.77	1500	9.81	10.64	400	20
AC-405MH/144V	48.73	40.95	1500	9.89	10.71	405	20
AC-410MH/144V	48.91	41.12	1500	9.97	10.79	410	20

- 4.10. Overcurrent protection type: None // Number of By-pass diodes: 3
- 4.11. Diameter of cables. Every module has (2) cables whose diameter is 4mm² for each of them, and it can endure 90°C insulation and can be exposed under sun light.

Ways of connecting: Every module comes with (2) connectors and they are respectively positive electrode and negative electrode. When modules are installed in series, the first positive connector should connect with the negative connector of the next module. The modules are equipped with PV wiring connectors that comply with the Standard for Connectors for Use in Photovoltaic Systems, UL 6703, the specific allowable mating connector manufacturer(s) and model number(s) are listed as below, different model connectors should not be mated with each other.

<u>Connector model name</u>	<u>Allowable mating connector model name</u>
PV-ZH202-SBN	PV-ZH202-SBN
TL-Cable01	TL-Cable01
PV-JM601	PV-JM601
PV-ZH202B Series	PV-ZH202B Series
TL-CABLE01S-FM	TL-CABLE01S-FF
PV-JM601A	PV-JM601A
PV-JM608	PV-JM608
PV-KST4-EVO2/6II-UR	PV-KBT4-EV02/6II-UR
PV-KST4/6II-UR	PV-KBT4/6II-UR
UTXCFA4AI, UTXCFA4AC or UTXCFA4AM	UTXCMA4AI, UTXCMA4AC or UTXCMA4AM

5. Operation and Maintenance

- 5.1. No routine maintenance is required. However, it is advisable to perform periodic inspection of the modules for damage to glass, back-skin, or frame. Check electrical connections for loose connections and corrosion.

- 5.2. Photovoltaic modules can operate effectively without ever being washed, although removal of dirt from the front glass can increase output. The glass can be washed with a wet sponge or cloth. Wear rubber gloves for electrical insulation.

6. Transport, Storage Modules

- 6.1. Modules should **NOT** be in a vertical position while in transport.
- 6.2. When moving the modules, use both hands to grasp the module frame, **DO NOT** pull the cable leads on the junction box.
- 6.3. It is strictly prohibited to transform, adapt, modify or rebuild a module.
- 6.4. **DO NOT** place any heavy articles/objects on the modules (i.e. tools).
- 6.5. **DO NOT** stand and/or walk on the modules. There should not be any external force applied to the module
- 6.6. **DO NOT** scratch the back sheet (rear surface) of the modules.
- 6.7. To keep all of the electrical contacts in good working condition keep modules in a dry and un-contaminated area, prior to installing.
- 6.8. If temporary storage is needed, the storage space should be a dry, well ventilated area.

7. Module information

- 7.1. Type: AC-"XXX"P/72V; AC-"XXX"M/72V; AC-"XXX"P/72XV; AC-"XXX"M/72XV; AC-"XXX"P/60V; AC-"XXX"M/60V; AC-"XXX"P/60XV; AC-"XXX"M/60XV
(XXX is power rating)
Standard test condition: 1000W/m², AM1.5, at 25°C
Module application: Class A
Module Fire Performance: Type 1 or Class C (for CUL)
Recommended maximum Series/Parallel module configuration: 24/1 for models as follows: AC-"XXX"P/72V; AC-"XXX"M/72V; AC-"XXX"P/72XV; AC-"XXX"M/72XV
29/1 for models as follows: AC-"XXX"P/60V; AC-"XXX"M/60V; AC-"XXX"P/60XV; AC-"XXX"M/60XV
Maximum series fuse: 20A / Maximum system voltage: 1500V
- 7.2. Type: AC-"XXX"P/72S; AC-"XXX"M/72S; AC-"XXX"P/72X; AC-"XXX"M/72X; AC-"XXX"P/60S; AC-"XXX"M/60S; AC-"XXX"P/60X; AC-"XXX"M/60X
(XXX is power rating)
Standard test condition: 1000W/m², AM1.5, at 25°C

Module application: Class A

Module Fire Performance: Type 1 or Class C (for CUL)

Recommended maximum Series/Parallel module configuration: 16/1 for models as follows: AC-"XXX"P/72S; AC-"XXX"M/72S; AC-"XXX"P/72X; AC-"XXX"M/72X
19/1 for models as follows: AC-"XXX"P/60S; AC-"XXX"M/60S; AC-"XXX"P/60X; AC-"XXX"M/60X

Maximum series fuse: 20A / Maximum system voltage: 1000V

7.3 Type: AC-"XXX"MH/144S & AC-"XXX"MH/120S

(XXX is power rating)

Standard test condition: 1000W/m², AM1.5, at 25°C

Module application: Class A

Module Fire Performance: Type 1 or Class C (for CUL)

Recommended maximum Series/Parallel module configuration: 16/1 for models as follows: AC-"XXX"MH/144S 19/1 for models as follows: AC-"XXX"MH/120S

Maximum series fuse: 20A / Maximum system voltage: 1000V

7.4 Type: AC-"XXX"MH/144V & AC-"XXX"MH/120V

(XXX is power rating)

Standard test condition: 1000W/m², AM1.5, at 25°C

Module application: Class A

Module Fire Performance: Type 1 or Class C (for CUL)

Recommended maximum Series/Parallel module configuration: 24/1 for models as follows: AC-"XXX"MH/144V 29/1 for models as follows: AC-"XXX"MH/120V

Maximum series fuse: 20A / Maximum system voltage: 1500V

8. Editing records of installing manual

Version	Date	Changing information	Comments
US10162018	2018-10-16	NA	
US04302019	2019-04-30	Half Cut update wattages	Electrical and wattages added for HC
US10232019	2019-10-23	Half Cut update wattages	Electrical and wattages added for HC