

Installation & Maintenance Manual

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1.PREFACE

1. This manual offers general information regarding installation and maintenance of Photovoltaic modules made by Boviet Solar, which hereafter referred to as “modules”.
2. This manual instructions should be read and understood before installation, handling or maintenance. To ensure the correct & safe use of the Photovoltaic modules, the installer should be familiar with the mechanical and electrical requirements for photovoltaic systems.

1.1. Disclaimer Of Liability

1. The installation, handling and use of modules are beyond Boviet’s control, and Boviet Solar does not assume responsibility for loss, damage, injury or expense resulting from the improper installation, handling, use or maintenance.
2. Boviet Solar assumes no responsibility for any infringement of patents or other rights of the third parties that may result from use of the module. No license is granted by implication or under any patents or patent rights.
3. Boviet Solar reserves the right to update this manual, module specifications or relevant information without prior notice.

1.2. Declaration

1. The fire rating of the module is valid only when mounted in the manner specified in the mechanical mounting instructions.
2. The module is considered in compliance with UL1703 only when mounted in the manner specified in the mechanical mounting instructions below.
3. A module with exposed conductive parts is considered to be compliance with UL1703 only when it is electrically in accordance with the instructions presented below and National Electrical Code.
4. Any module without a frame(laminator) should not be considered to comply with the requirements of UL1703 unless the module is mounted with hardware that has been tested and evaluated with the module under this standard or by a field certifying that the installed module complies with the requirements of UL1703.

2.UNPACKING AND STORAGE

1. At the time of receipt, verify that the product delivered is the very product ordered. The product name, subname and serial number of each module are clearly marked on the outside of each packing box.



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2. Store packing boxes in a dry and ventilated room.
3. Leave the product in its original packing box until it is ready for installation.
4. If pallets are stored outside temporarily, a protective covering over the pallet should be placed to protect products from direct weathering and do not stack more than one pallet high.
5. At the installation site, keep modules and electrical contacts clean and dry before installation.
6. Do not stack more than the maximum amount of allowable pallets on top of each other.
7. Do not place modules directly on top of each other.
8. Do not place excessive loads on the module or twist the module frame.

9. Do not stand, step, walk and/or jump on the module.
10. Do not carry a module by its wires or junction box but by its frame with both hands by two or more persons.
11. Do not mark the module with sharp instrument.

3. SAFETY PRECAUTIONS

1. Before installing system, contact appropriate authorities for site, installation, inspection permission and requirement.
2. Operators shall foresee the injury risk during the processes of installation, debugging and maintenances of modules. Therefore, only authorized and trained personnel should have access or perform work on the modules or system.
3. Ensure that modules meet the technical requirements of the system as a whole.
4. During electrical connections, remove all metallic jewelry, use properly insulated tools or wear appropriate personal protective equipment to reduce the risk of electric shock.
5. Do not disassemble the modules or remove any part of the module.
6. Do not stand or step on, damage or scratch surfaces of the module
7. Do not install or handle wet modules.
8. Do not touch the exposed cables or connectors.
9. Do not artificially concentrate sunlight on these solar modules.

4. ENVIRONMENTAL CONDITIONS

4.1. Environmental Conditions

Install the PV modules as following conditions:



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1. Ambient temperature : -40 °C to 40°C.
2. Operating temperature: -40 °C to 85°C.
3. Storage temperature: -30 °C to 50°C.
4. Humidity: <85RH%
5. Keep modules away from inflammable gas, hazardous chemicals or fire source.
6. Mechanical Load Pressure: Design load minimum 30lb/ft2.

4.2 Installation Site

1. To ensure the modules to be installed in the position of the full sun exposures, position the modules to minimize chances of shading by trees, buildings or something others surrounding at any time of the day.
2. Solar modules should normally be mounted facing the equator at an angle to the horizontal plane equivalent to the latitude of the installation for optimum energy generation. The module tilt angle is measured between the solar modules and the horizontal (Figure 1). Any slope less than 5in/ft(127mm/305mm) is required to maintain a fire class rating.
3. Do not install modules in the location where they will be immersed in water or continually exposed to water from a sprinkler or fountain, etc.
4. Please leave a safe working area between the edge of the roof and the external edge of the solar array when installing modules on a roof.
5. Avoid the mounting method that will block the drainage holes in the module frame.

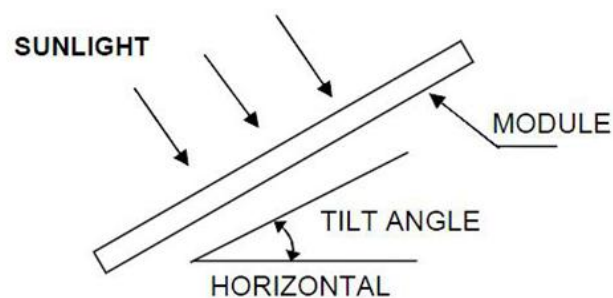


Figure 1. PV Module Tilt Angle

5. MOUNTING

- a. The recommended standoff height is 115 mm. If other mounting means are employed this may affect the UL Listing.
- b. The modules have been evaluated by UL for bolt mounting method & clamp mounting method with a maximum positive or negative design loading of 30lbs/ft².
- c. Only for UL listed products -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.

- d. 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.
- e. Each module (or series string of modules so connected) shall be provided with the maximum series fuse as specified
- f. 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.
- g. 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.
- h. Where common grounding hardware (nuts, bolts, star washers, spilt-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.
- i. 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.

- j. The modules with the specified construction in below table, when used with a Listed mounting system that has been rated as a Class A System when installed with type 1 modules, is suitable to maintain the System Class A Fire Rating.

Module model	Marking
All	Module Fire Performance:Type 1

- k. For roof mounting applications the assembly is to be mounted over a fire resistant roof covering rated for the application.
- l. Any module without a frame (laminate) 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.

5.1 Mounting

PV modules can be mounted to substructure with either corrosion-proof M8 bolts placed through mounting holes on the module frame or specially designed module clamps.

Regardless of the fixing method, the final installation of the modules should ensure,

- A clearance of at least 115mm is provided between module frame and the surface of the wall or roof.
- Minimum distance between two modules should be 10mm.
- The mounting method should not block the drainage holes.

Panels are not subjected to wind or snow loads exceeding the maximum permissible loads, and are not subjected to excessive forces due to the thermal expansion of the support structures.



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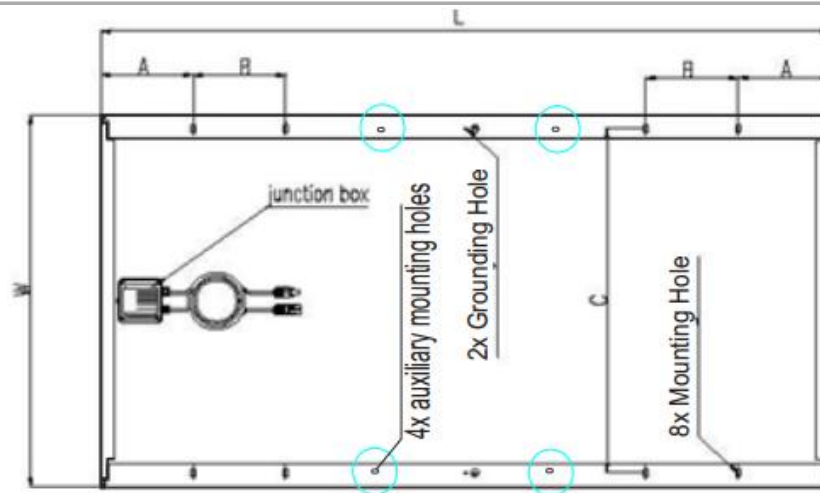


Figure 2. PV module Mechanical drawing

Boviet Solar modules can be mounted with following methods:

(Note: All installation methods herein are only for reference, and Boviet Solar will not provide related BOS components, the system installer or trained professional personnel must be responsible for the PV system's design, installation, and mechanical load calculation and security of the system).

- Use corrosion-proof screws (M8) in the existing mounting holes on the module frame.
- Use suitable module clamps on the long side of the module frame to mount the modules ('portrait orientation')
- Four mounting holes (M6) to assist the installation.

5.2 Mounting with Bolts:

There are 4 or 6 mounting holes (Length* Width: 14mm*9mm) on the each panel frame to mount the modules on supporting structure. The module frame must be mounted on the mounting rail using M8 corrosion-proof screws together with spring washers and flat washers in four symmetrical locations on the module. The applied torque should be approximately 5 Newton-meters. Please find detailed mounting information as following figure 3. When using 6 mounting holes, the middle two mounting holes are the auxiliary mounting holes, using the M6 installation.

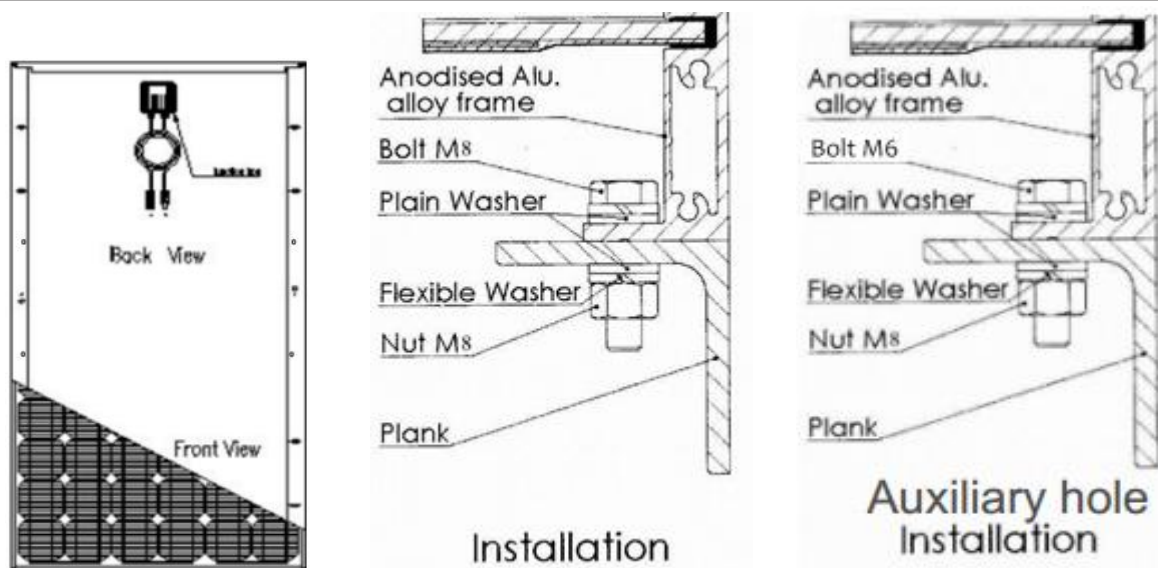
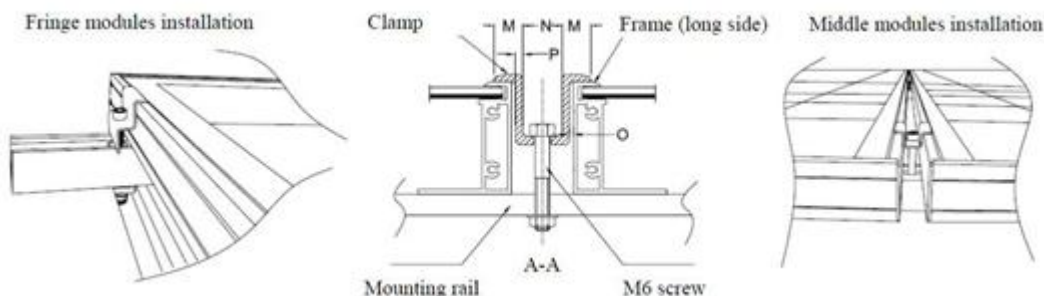


Figure 3. PV module installed with Screw fitting method

5.3 Mounting with Clamps: Use a certain number of clamps to fix the modules on the mounting rail. The module clamps should not come into contact with the front glass and deform the frame.

Be sure to avoid shadowing effects from the module clamps. The module frame is not to be modified under any circumstances. When choosing this type of clamp mounting method, please be sure to use at least four clamps on each module, two clamps should be attached on the long sides of the module. Depending on the local wind and snow loads, additional clamps may be required to ensure that the module can bear the loads. The applied torque should be about 8 Newton-meters.

Newton-meters



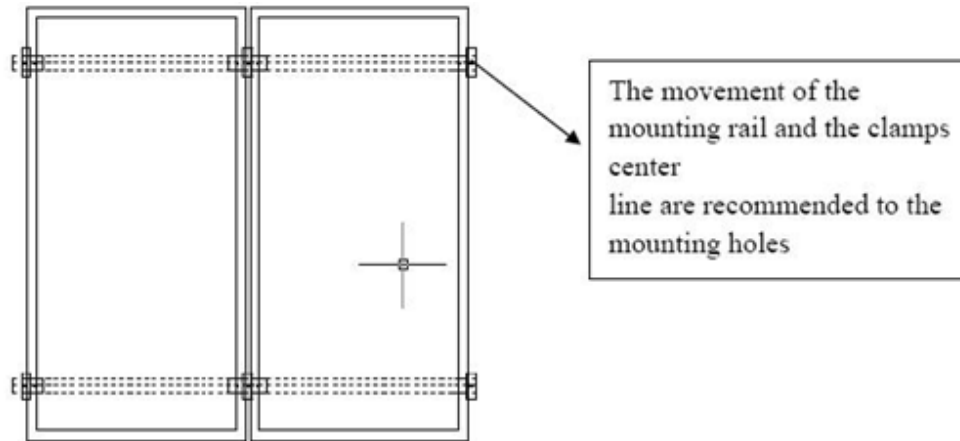


Figure 4 PV module installed at portrait orientation with Clamp fitting method

To ensure the safety of buildings, the recommended standoff height is 20cm. For rooftop installation, a minimum slope of 5cm/12 cm is required.

5.4 GROUNDING:

1. All module frames and mounting racks must be properly grounded in accordance with the appropriate respective National Electrical Code.
2. The modules are required to be grounded, and the module installation complies with all local electrical codes and regulations. And the grounding connection should be made by a qualified electrician.
3. Proper grounding is achieved by bounding the module frame and all metallic structural members together continuously using a suitable grounding conductor. The grounding conductor or strap may be copper, copper alloy or other material acceptable for use as an electrical conductor per respective National Electrical Codes. The grounding conductor must make a connection to earth using a suitable earth ground electrode.
4. Where common grounding hardware (nuts, bolts, star washers, spilt-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.
5. 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, maybe used for grounding connections in accordance with the instructions provided with the module.

6. Boviet Solar recommends method below,

(1) A grounding kit with M5 size SS cap bolt, M5 size SS flat washer, M5 size SS cup washer, and M5 size SS nut(with teeth) is used to attach a copper grounding wire to grounding hole pre-drilled on the frame.

(2) Attach the wire between the flat washer and the cup washer. Ensure the cup washer is between the frame and the wire with concave side up to prevent corrosion due to dissimilar metal. Tighten the bolt securely using the SS nut with teeth. A wrench may be used in this application. The tighten torque is 1Nm.



Figure 5 Schematic drawing for PV module grounding

6. ELECTRICAL CONFIGURATION

PV systems operates automatically and require day to day supervision. The solar array generates DC electricity whenever lights falls on it similarly the inverter automatically turns ON as soon as there is sufficient solar energy from the array to efficiently convert this into grid quality AC Power.



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Electrical performance of Boviet solar panels reads as following,

Model	Cell Type	Cell conf.	Module weight (kg)	Module size(mm)	Pmax	Max. system voltage	Voc (V)	Isc (A)	Vpm (V)	Ipm (A)
BVM6609M	Mono	6*9	15.5	1481×992×40	215	1000	32.70	8.76	26.60	8.09
BVM6609M	Mono	6*9	15.5	1481×992×40	220	1000	32.80	8.80	27.00	8.15
BVM6609M	Mono	6*9	15.5	1481×992×40	225	1000	33.40	8.92	27.00	8.34
BVM6609M	Mono	6*9	15.5	1481×992×40	230	1000	33.70	9.01	27.30	8.43
BVM6609M	Mono	6*9	15.5	1481×992×40	235	1000	33.90	9.08	27.40	8.58
BVM6609M	Mono	6*9	15.5	1481×992×40	240	1000	34.10	9.15	27.80	8.64
BVM6609M	Mono	6*9	15.5	1481×992×40	245	1000	34.30	9.23	28.20	8.69
BVM6609M	Mono	6*9	15.5	1481×992×40	250	1000	34.60	9.31	28.50	8.78
BVM6609M	Mono	6*9	15.5	1481×992×40	255	1000	34.90	9.38	28.80	8.86
BVM6609M	Mono	6*9	15.5	1481×992×40	260	1000	35.30	9.46	29.10	8.94
BVM6609M	Mono	6*9	15.5	1481×992×40	265	1000	35.80	9.51	29.50	8.99
BVM6609M	Mono	6*9	15.5	1481×992×40	270	1000	36.30	9.56	29.90	9.04
BVM6609M	Mono	6*9	15.5	1481×992×40	275	1000	36.80	9.61	30.30	9.08
BVM6609M	Mono	6*9	15.5	1481×992×40	280	1000	37.30	9.66	30.70	9.13
BVM6609M	Mono	6*9	15.5	1481×992×40	285	1000	37.60	9.73	31.00	9.20
BVM6610M	Mono	6*10	18.5	1640×992×40	215	1000	36.10	7.93	29.20	7.37
BVM6610M	Mono	6*10	18.5	1640×992×40	220	1000	36.40	8.06	29.40	7.49
BVM6610M	Mono	6*10	18.5	1640×992×40	225	1000	36.70	8.18	29.60	7.61
BVM6610M	Mono	6*10	18.5	1640×992×40	230	1000	36.90	8.31	29.80	7.72
BVM6610M	Mono	6*10	18.5	1640×992×40	235	1000	37.20	8.42	30.10	7.81
BVM6610M	Mono	6*10	18.5	1640×992×40	240	1000	37.30	8.50	30.30	7.93
BVM6610M	Mono	6*10	18.5	1640×992×40	245	1000	37.40	8.59	30.50	8.04
BVM6610M	Mono	6*10	18.5	1640×992×40	250	1000	37.60	8.68	30.70	8.15
BVM6610M	Mono	6*10	18.5	1640×992×40	255	1000	37.80	8.78	30.90	8.26
BVM6610M	Mono	6*10	18.5	1640×992×40	260	1000	38.00	8.87	31.10	8.36
BVM6610M	Mono	6*10	18.5	1640×992×40	265	1000	38.20	8.98	31.20	8.50
BVM6610M	Mono	6*10	18.5	1640×992×40	270	1000	38.40	9.09	31.40	8.60
BVM6610M	Mono	6*10	18.5	1640×992×40	275	1000	38.60	9.21	31.60	8.71
BVM6610M	Mono	6*10	18.5	1640×992×40	280	1000	38.80	9.33	31.80	8.81
BVM6610M	Mono	6*10	18.5	1640×992×40	285	1000	38.90	9.56	31.50	9.05
BVM6610M	Mono	6*10	18.5	1640×992×40	290	1000	39.20	9.65	31.80	9.12
BVM6610M	Mono	6*10	18.5	1640×992×40	295	1000	39.40	9.73	32.00	9.22
BVM6610M	Mono	6*10	18.5	1640×992×40	300	1000	39.50	9.84	32.20	9.33



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BVM6610M	Mono	6*10	18.5	1640×992×40	305	1000	39.90	9.94	32.40	9.42
BVM6610M	Mono	6*10	18.5	1640×992×40	310	1000	40.10	10.04	32.60	9.51
BVM6610M	Mono	6*10	18.5	1640×992×40	315	1000	40.50	10.12	32.90	9.58
BVM6610M	Mono	6*10	18.5	1640×992×40	320	1000	41.00	10.15	33.30	9.61
BVM6612M	Mono	6*12	26.5	1956×992×40	255	1000	43.00	7.91	35.30	7.23
BVM6612M	Mono	6*12	26.5	1956×992×40	260	1000	43.20	8.02	35.50	7.33
BVM6612M	Mono	6*12	26.5	1956×992×40	265	1000	43.50	8.11	35.70	7.43
BVM6612M	Mono	6*12	26.5	1956×992×40	270	1000	43.80	8.22	35.90	7.53
BVM6612M	Mono	6*12	26.5	1956×992×40	275	1000	44.00	8.33	36.10	7.62
BVM6612M	Mono	6*12	26.5	1956×992×40	280	1000	44.30	8.42	36.10	7.76
BVM6612M	Mono	6*12	26.5	1956×992×40	285	1000	44.70	8.48	36.30	7.86
BVM6612M	Mono	6*12	26.5	1956×992×40	290	1000	44.90	8.51	36.50	7.95
BVM6612M	Mono	6*12	26.5	1956×992×40	295	1000	45.10	8.59	36.70	8.04
BVM6612M	Mono	6*12	26.5	1956×992×40	300	1000	45.20	8.67	36.80	8.16
BVM6612M	Mono	6*12	26.5	1956×992×40	305	1000	45.40	8.74	37.00	8.25
BVM6612M	Mono	6*12	26.5	1956×992×40	310	1000	45.50	8.87	37.10	8.36
BVM6612M	Mono	6*12	26.5	1956×992×40	315	1000	45.60	8.96	37.20	8.47
BVM6612M	Mono	6*12	26.5	1956×992×40	320	1000	45.80	9.07	37.40	8.56
BVM6612M	Mono	6*12	26.5	1956×992×40	325	1000	46.00	9.16	37.60	8.65
BVM6612M	Mono	6*12	26.5	1956×992×40	330	1000	46.20	9.26	37.70	8.76
BVM6612M	Mono	6*12	26.5	1956×992×40	335	1000	46.40	9.35	37.90	8.84
BVM6612M	Mono	6*12	26.5	1956×992×40	340	1000	46.60	9.45	38.10	8.93
BVM6612M	Mono	6*12	26.5	1956×992×40	345	1000	47.00	9.50	38.40	8.99
BVM6612M	Mono	6*12	26.5	1956×992×40	350	1000	47.20	9.59	38.50	9.10
BVM6612M	Mono	6*12	26.5	1956×992×40	355	1000	47.40	9.67	38.60	9.20
BVM6612M	Mono	6*12	26.5	1956×992×40	360	1000	47.50	9.83	38.80	9.29
BVM6612M	Mono	6*12	26.5	1956×992×40	365	1000	47.60	9.94	38.90	9.39
BVM6612M	Mono	6*12	26.5	1956×992×40	370	1000	47.70	10.04	39.00	9.49
BVM6612M	Mono	6*12	26.5	1956×992×40	375	1000	48.00	10.11	39.20	9.57
BVM6612M	Mono	6*12	26.5	1956×992×40	380	1000	48.30	10.19	39.40	9.65
BVM6612M	Mono	6*12	26.5	1956×992×40	385	1000	48.50	10.26	39.60	9.73
BVM6609P	Poly	6*9	18.5	1481×992×40	210	1000	32.90	8.46	26.90	7.81
BVM6609P	Poly	6*9	18.5	1481×992×40	215	1000	33.10	8.62	26.90	8.00
BVM6609P	Poly	6*9	18.5	1481×992×40	220	1000	33.40	8.71	27.00	8.15
BVM6609P	Poly	6*9	18.5	1481×992×40	225	1000	33.80	8.83	27.00	8.34
BVM6609P	Poly	6*9	18.5	1481×992×40	230	1000	34.10	8.92	27.40	8.40
BVM6609P	Poly	6*9	18.5	1481×992×40	235	1000	34.60	9.01	27.70	8.49



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BVM6609P	Poly	6*9	18.5	1481×992×40	245	1000	35.30	9.15	28.30	8.66
BVM6609P	Poly	6*9	18.5	1481×992×40	250	1000	35.70	9.28	28.6	8.75
BVM6609P	Poly	6*9	18.5	1481×992×40	255	1000	36.00	9.37	28.9	8.83
BVM6609P	Poly	6*9	18.5	1481×992×40	260	1000	36.40	9.45	29.2	8.90
BVM6609P	Poly	6*9	18.5	1481×992×40	265	1000	36.80	9.54	29.5	8.98
BVM6610P	Poly	6*10	18.5	1640×992×40	215	1000	36.10	7.94	29.00	7.42
BVM6610P	Poly	6*10	18.5	1640×992×40	220	1000	36.40	8.06	29.10	7.57
BVM6610P	Poly	6*10	18.5	1640×992×40	225	1000	36.60	8.19	29.30	7.68
BVM6610P	Poly	6*10	18.5	1640×992×40	230	1000	36.80	8.33	29.50	7.80
BVM6610P	Poly	6*10	18.5	1640×992×40	235	1000	37.00	8.48	29.70	7.92
BVM6610P	Poly	6*10	18.5	1640×992×40	240	1000	37.20	8.57	29.80	8.06
BVM6610P	Poly	6*10	18.5	1640×992×40	245	1000	37.40	8.68	30.00	8.17
BVM6610P	Poly	6*10	18.5	1640×992×40	250	1000	37.50	8.79	30.20	8.28
BVM6610P	Poly	6*10	18.5	1640×992×40	255	1000	37.70	8.88	30.40	8.39
BVM6610P	Poly	6*10	18.5	1640×992×40	260	1000	37.90	8.98	30.60	8.50
BVM6610P	Poly	6*10	18.5	1640×992×40	265	1000	38.10	9.07	30.80	8.61
BVM6610P	Poly	6*10	18.5	1640×992×40	270	1000	38.30	9.16	31.00	8.71
BVM6610P	Poly	6*10	18.5	1640×992×40	275	1000	38.50	9.25	31.20	8.82
BVM6610P	Poly	6*10	18.5	1640×992×40	280	1000	38.70	9.34	31.40	8.92
BVM6610P	Poly	6*10	18.5	1640×992×40	285	1000	39.00	9.45	31.60	9.02
BVM6610P	Poly	6*10	18.5	1640×992×40	290	1000	39.20	9.56	31.80	9.12
BVM6610P	Poly	6*10	18.5	1640×992×40	295	1000	39.50	9.66	32.00	9.22
BVM6612P	Poly	6*12	26.5	1956×992×40	255	1000	43.00	7.91	34.40	7.42
BVM6612P	Poly	6*12	26.5	1956×992×40	260	1000	43.20	8.03	34.60	7.52
BVM6612P	Poly	6*12	26.5	1956×992×40	265	1000	43.40	8.14	34.80	7.62
BVM6612P	Poly	6*12	26.5	1956×992×40	270	1000	43.60	8.26	35.00	7.72
BVM6612P	Poly	6*12	26.5	1956×992×40	275	1000	43.80	8.37	35.20	7.82
BVM6612P	Poly	6*12	26.5	1956×992×40	280	1000	44.10	8.52	35.40	7.91
BVM6612P	Poly	6*12	26.5	1956×992×40	285	1000	44.30	8.63	35.60	8.01
BVM6612P	Poly	6*12	26.5	1956×992×40	290	1000	44.40	8.68	35.70	8.13
BVM6612P	Poly	6*12	26.5	1956×992×40	295	1000	44.60	8.77	36.00	8.20
BVM6612P	Poly	6*12	26.5	1956×992×40	300	1000	44.80	8.86	36.20	8.29
BVM6612P	Poly	6*12	26.5	1956×992×40	305	1000	45.00	8.91	36.40	8.38
BVM6612P	Poly	6*12	26.5	1956×992×40	310	1000	45.10	9.02	36.60	8.47
BVM6612P	Poly	6*12	26.5	1956×992×40	315	1000	45.30	9.09	36.80	8.56
BVM6612P	Poly	6*12	26.5	1956×992×40	320	1000	45.50	9.17	37.00	8.65
BVM6612P	Poly	6*12	26.5	1956×992×40	325	1000	45.70	9.25	37.20	8.74



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BVM6612P	Poly	6*12	26.5	1956×992×40	330	1000	45.80	9.33	37.40	8.83
BVM6612P	Poly	6*12	26.5	1956×992×40	335	1000	46.30	9.32	38.00	8.82
BVM6612P	Poly	6*12	26.5	1956×992×40	340	1000	46.50	9.40	38.20	8.91
BVM6612P	Poly	6*12	26.5	1956×992×40	345	1000	46.80	9.49	38.40	8.99
BVM6612P	Poly	6*12	26.5	1956×992×40	350	1000	47.00	9.58	38.60	9.07
BVM6612P	Poly	6*12	26.5	1956×992×40	355	1000	47.30	9.66	38.80	9.15
System voltage (V)				DC1000V						
Power Tolerance				0~+5W						
Insurance Current (A)				15						
Insulation resistance				≥40MΩ , m ²						
Application Class				Class A						
Standard Test Conditions (STC): AM=1.5, E=1000W/m ² , T=25°C										

The electrical characteristics are within ± 10 percent of the indicated values of I_{sc} , V_{oc} and P_{max} under standard test conditions (irradiance of 100mW/cm², AM 1.5 spectrum, and a cell temperature of 25°C (77°F)).

Under normal conditions, a photovoltaic module is likely to experience conditions that produce more current and/or voltage than reported at standard test conditions. The requirements of the National Electrical Code (NEC) in Article 690 shall be followed to address these increased outputs. In installations not under the requirements of the NEC, the values of I_{sc} and V_{oc} marked on this module should be multiplied by a factor of 1.25 when determining component voltage ratings, conductor ampacities, overcurrent device ratings, and size of controls connected to the PV output.

Thermal Characteristics

BVM6610P、BVM6612P	
Pmax Temperature Coefficient	-0.43%/K
Voc Temperature Coefficient	-0.33%/K
Isc Temperature Coefficient	+0.05%/K
NOCT	113±3.6° F
BVM6610M、BVM6612M	
Pmax Temperature Coefficient	-0.44%/K
Voc Temperature Coefficient	-0.35%/K
Isc Temperature Coefficient	+0.04%/K
NOCT	113±3.6° F



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7. WIRING AND NOTES:

All wiring should be performed by qualified installers according to the local codes and regulations.

1. To minimize the risk of indirect lighting strike and avoid forming closed loops, check of correct wiring before starting the system is necessary. If the measured data of open circuit voltage and short-circuit current differ from the specifications, please check wiring before connection.
2. Before connecting modules always ensure that the contacts are corrosion free, clean and dry.
3. Product can be irreparably damaged if an array string is connected in reverse polarity to another. Always verify the voltage and polarity of each individual string before making a parallel connection. If reversed polarity and a difference of more than 10V between 10V strings are measured please check the string configuration before making the connection.
4. The maximum voltage of the system should be less than the maximum certified voltage (1000V typically) and the maximum input voltage of the inverter and of the other electrical devices installed in the system. To ensure this, the open circuit voltage of the array needs to be calculated at the lowest ambient temperature for the location.
5. The minimum and maximum outer cable diameters are 5 to 7mm².
6. before connecting the components, check the appearance of the material there is no problem, the connector itself can not be damaged, material fracture and other issues.
7. Please see the table below which indicate the connector used on the module and the allowable mating connector.



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Manufacturer	The model of the connector	Allowable mating connector	Allows the connector of the manufacturer's official website
ZHE JIANG JIANG TIANHEYUAN	PV-JM601	PV-JM601 and PV-JM601A	http://www.jmthy.com/
ZHE JIANG JIANG TIANHEYUAN	PV-JM601A		http://www.jmthy.com/
MULTI-CONTACT USA	PV-KST4/6II-UR(made),PV-KBT4/6II-UR(female)	PV-KST4/6II-UR(made),PV-KBT4/6II-UR(female)	http://ec.staubli.com/downloads/
MULTI-CONTACT USA	PV-KST4-EV02/6II-UR(made),PV-KBT4-EV02/6II-UR(female)	PV-KST4-EV02/6II-UR(made),PV-KBT4-EV02/6II-UR(female)	http://ec.staubli.com/downloads/
AMPHENOL INDUSTRIAL OPERATIONS	UTXCFA4AI	UTXCFA4AI	www.amphenol-Solar.com
AMPHENOL INDUSTRIAL OPERATIONS	Helios H4 Assembled	Helios H4 Assembled	www.amphenol-Solar.com
AMPHENOL INDUSTRIAL OPERATIONS	Helios HH4 Assembled	Helios HH4 Assembled	www.amphenol-Solar.com
ZHE JIANG RENHE	05-6-2q	05-6-2q	http://www.rehesolar.com/cn/index.php








8. The following table is the connector model picture



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Connector model	image
	
 <p>PV-JM601A</p>	
 <p>PV-KST4/6II-UR(made),PV-KST4/6II-UR(female)</p>	
 <p>PV-KST4-EV02/6II-UR(made),PV-KST4-EV02/6II-UR(female)</p>	
	
 <p>bled</p>	
 <p>Helios HH4 Assembled</p>	
<p>05-6-2q</p>	

8.MAINTENANCE:

A well designed system needs minimum maintenance.

- Maintenance should be carried out at least once a year by well trained personnel.
- Check that the mounting hardware is properly tightened. Check if cables, nuts, bolts are secure and not loose. Tighten the loose component if necessary.
- Check ground resistance performance and water resistance of connecting cables, grounding cables, connectors.
- Check electrical and mechanical connections from free of corrosion.
- Do not touch the live part of the wire, cable and connector directly but with safety equipment (insulating tools) when necessary.
- Use opaque cloth or other materials to cover the front side of the modules while maintaining. The module may produce high voltage which is a potential danger when exposed in sunlight.



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7. In the event that modules need to be cleaned, clean modules with a soft cloth together with a mild detergent and clean water. To avoid severe thermal shocks which might damage the module by cleaning modules with water of which the temperature is similar to the modules being cleaned.

9. WARNING

Contact your installer immediately if you suspect your system is not working properly.

- Contact your installer
- Contact Boviet Solar after sales service team at service@boviet.com or your sales contact.

WARNING: The PV system must be shut down first if it needs any electrical maintenance. Improper maintenance may cause lethal electric shock and/or burns.

Note:

1st edition was made in May, 2011

2nd edition was modified in October 2014 with detailed electrical characteristics, grounding method and fire rating.

3rd edition the electrical parameter was modified in February 2016.

4th edition the electrical parameter and connector were modified in July 2017.



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