



# Installation Instructions

for DMEGC Photovoltaic Modules



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## 1. Purpose of this guide

This guide contains information regarding the installation and safe handling of DMEGC photovoltaic module (hereafter is referred to as “module”).

All instructions should be read and understood before attempting to install. If there are any questions, please contact our sales department for further explanation. The installer should conform to all the safety precautions in the guide when installing the module. Local codes should also be followed in such installation.

Before installing a solar photovoltaic system, the installer should become familiar with the mechanical and electrical requirement for such a system. Keep this guide in a safe place for further reference (care and maintenance) and in case of sale or disposal of the module.

## 1.1 General

- Installing solar photovoltaic systems may require specialized knowledge and appropriate technical skills. Therefore, installation should be performed only by qualified person.
- All modules come with a permanently attached junction box.
- The installer should assume the risk of all injury that might occur during installation, including, without limitation, the risk of electric shock.
- One individual module may generate DC voltages greater than 30 volts when exposed to direct sunlight. Contact with a DC voltage of 30V or more is potentially hazardous.
- When disconnecting wires connected to a photovoltaic module that is exposed to sunlight, an electric arc may result. Such arcs may cause burns, may start fires and may otherwise create problems. Therefore, be extremely careful!
- Photovoltaic solar modules change light energy to direct-current electrical energy. They are designed for outdoor use. Modules may be ground mounted, mounted on rooftops, vehicles or boats. Proper design of support structures are responsibility of the system designer and installer. Use of mounting holes is suggested in a following paragraph.
- When installing modules on the roof, the appropriate structure of the roof should be guaranteed. Besides It is possible to affect the fire resistance of the roof by installing solar modules. The recommended clearance to roof is >10cm and the gap between each module >1cm to make sure the module will not over heated and lower module temperature will helpful to gain more yield.
- Do not attempt to disassemble the module, and do not remove any attached nameplates or components.
- Do not apply paint or adhesive to module top surface.
- Do not use mirrors or other magnifiers to artificially concentrate sunlight on the module.
- When installing the system, abide with all local, regional and national statutory regulations. Obtain a building permit where necessary. Abide with any local and national regulations when mounting on vehicles or boats.



## 2. Safety precautions

Solar modules produce electrical energy when light shines on their front surface. The DC voltage may exceed 30 V. If modules are connected in series, the total voltage is equal to the sum of the individual module voltages. If modules are connected in parallel, the total current is equal to the sum of individual module currents.

- Keep children well away from the system while transporting and installing mechanical and electrical components.
- Completely cover the module with an opaque material during installation to keep electricity from being generated.
- Do not wear metallic rings, watchbands, ear, nose, lip rings or other metallic devices while installing or troubleshooting photovoltaic systems.



- Use only insulated tools that are approved for working on electrical installations.
- Abide with the safety regulations for all other components used in the system, including wiring and cables, connectors, charging regulations, inverters, storage batteries and rechargeable batteries, etc.
- Use only equipment, connectors, wiring and support frames suitable for use in a solar electric system. Always use the same type of module within a particular photovoltaic system.
- Rated electrical characteristics are within  $\pm 10$  percent of the indicated values of  $I_{sc}$ ,  $V_{oc}$ ; and  $P_{max}$  [ 0; +5W ] under standard test conditions (irradiance of  $100\text{mW}/\text{cm}^2$ , AM 1.5 spectrums and a cell temperature of  $25^\circ\text{C}$  ( $77^\circ\text{F}$ )).

Under normal outdoor conditions, the module will produce current and voltages that are different from those listed in the data sheet. Data sheet values are expected at standard test conditions.



### **3. Mechanical Installation**

#### **3.1 Selecting the location**

- Select a suitable location for the module installation, where they receive maximum sunlight throughout the year.
- The module must be facing true south in northern latitudes and true north in southern latitudes.
- 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 locations where flammable gases can be generated or collected.

#### **3.2 Selecting the proper support frame**

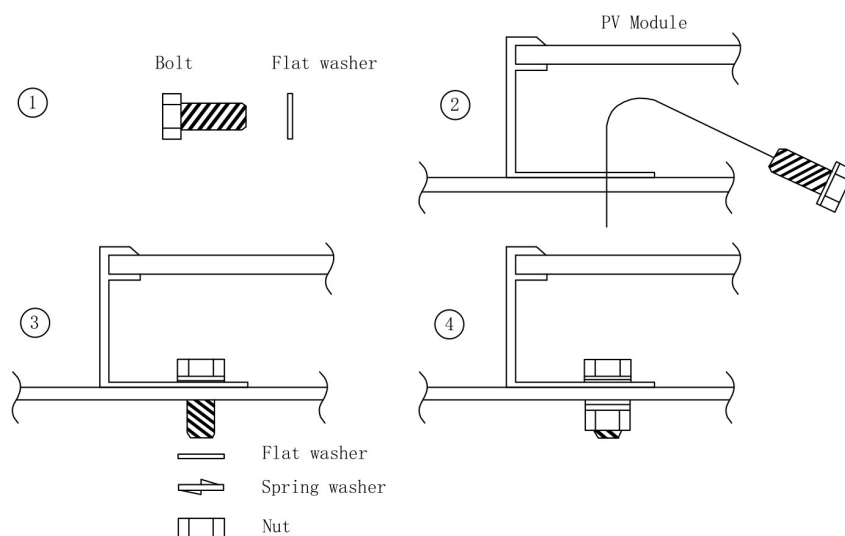
- Always observe the instructions and safety precautions included with the support frame to be used with the module.
- No attempt must be made to drill holes in the glass surface of the module. Doing so will void the warranty.
- Do not drill additional mounting holes in the frame of the module. Doing so will void the warranty.
- The support module mounting structure must be made of durable, corrosion-resistant and UV-resistant material.

## 4. General installation

- Do not lift the module by grasping the module's junction box or electrical leads.
- Do not stand or step on the module.
- Do not drop modules or allow objects to fall on modules.
- To avoid the breakage of the glass of the module, 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.
- It is suggested Modules are installed at least 10cm higher from the ground.

### 4.1 Mounting with Bolts

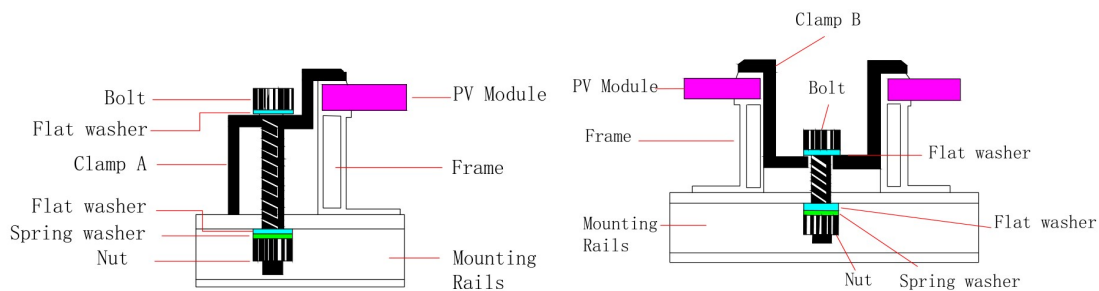
- Modules can be attached through the mounting holes on the back frame of the module, by fixing the module to the support rails with bolts.
- The frame of each module has 8 mounting holes, ideally placed to optimize the load handling capability, to secure the modules to supporting structure.
- To maximize mounting longevity, DMEGC strongly recommends the use of corrosion proof (stainless steel) attachment hardware.
- The mounting details are shown in the following figures.



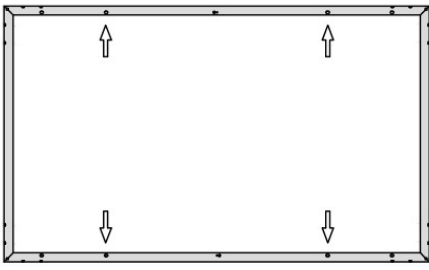
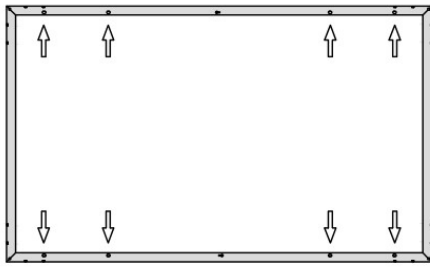
- The tightening torque (suggest stainless steel M8 bolts) should be around 15-20 Nm.

## 4.2 Mounting with Clamps



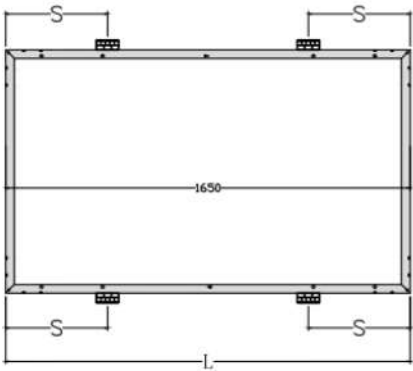
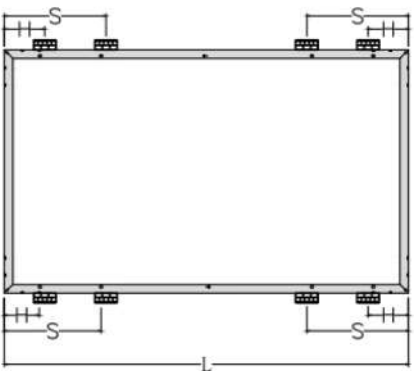



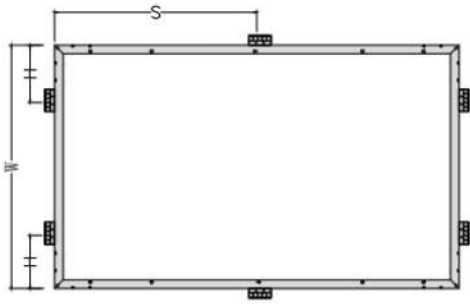
- Use at minimum 4 clamps to attach modules to the mounting rails.
- Modules clamps should not come into contact with the front glass and must not deform the frame.
- Be sure to avoid shadowing effects from the module clamps.
- When choosing this type of clamp-mounting method, use at least four clamps on each module, two clamps should be attached on each long sides of the module (for portrait orientation) or each short sides of the module (for landscape orientation). Depending on local wind and snow loads, additional clamps may be required to ensure that modules can bear the load.
- The mounting details are shown in the following figures.

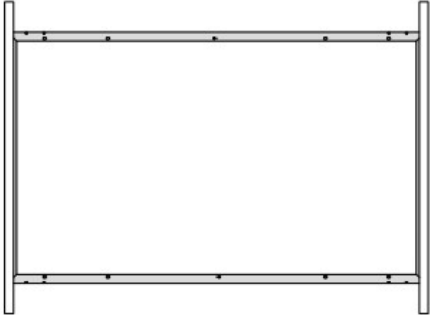

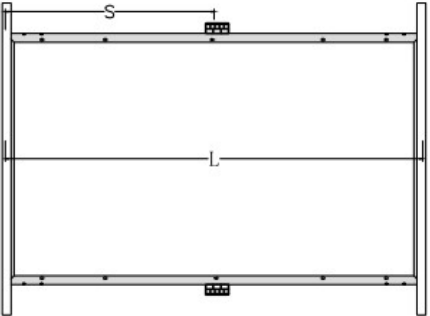



## 4.3 Installation location schematic.

Installation manual	Standard/lower loading capacity applies to normal environment	High loading capacity applies to severe environment, like storm, big snow, etc
Mounting with Bolts	 <p style="text-align: center;">use 4 mounting holes</p>	 <p style="text-align: center;">use 8 mounting holes</p>

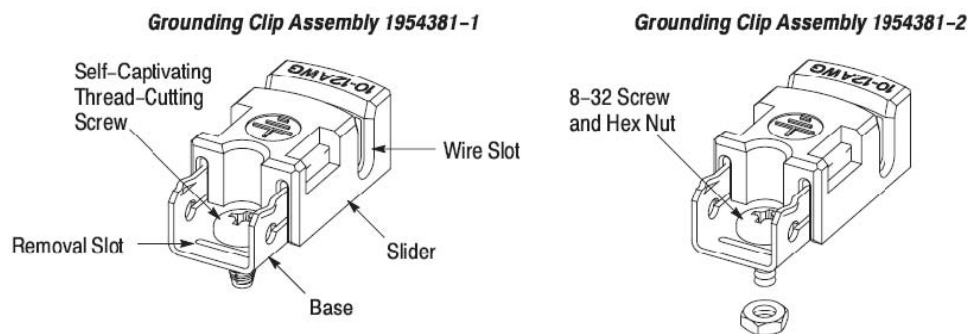


Installation manual	Standard/lower loading capacity applies to normal environment	High loading capacity applies to severe environment, like storm, big snow, etc
Assemble on the long side with clamp	 Allowed assembly with clamp $(1/6.5L-50) < S < (1/4L+50)$	 Allowed assembly with clamp $(1/4L-50) < S < (1/4L+50)$ $(1/10L-50) < H < (1/10L+50)$
		
Assemble on the short side with clamp	 Allowed assembly with clamp $0 < H < 1/4W$	 Allowed assembly with clamp $(1/2L-50) < S < (1/2L+50)$ $0 < H < 1/4W$
		

Installation manual	Standard/lower loading capacity applies to normal environment	High loading capacity applies to severe environment, like storm, big snow, etc
Module installation by inserting		<p>  Allowed assembly with clamp  <math>(1/2L-50) &lt; S &lt; (1/2L+50)</math> </p>  

## 5. Electrical Installation Grounding

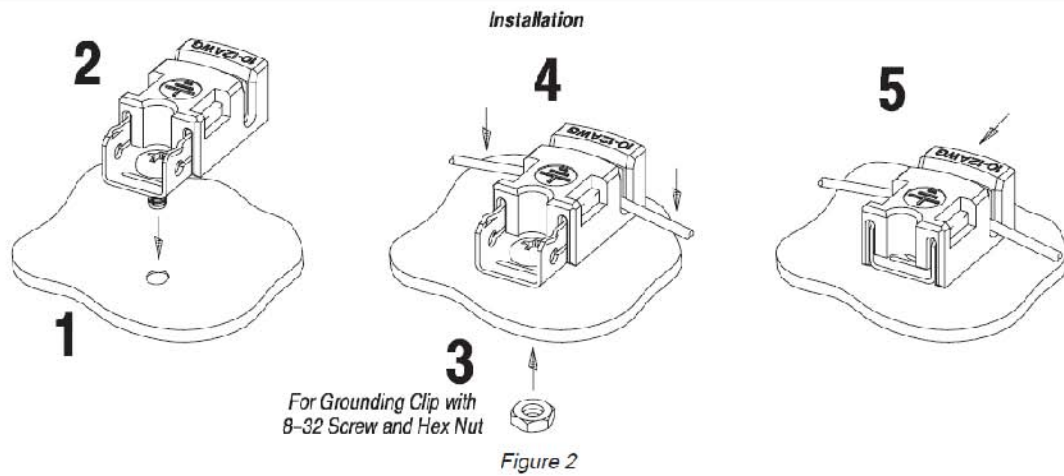
We recommend customers use SolKlip Grounding Clip Assemblies 1954381-[]; SolKlip Grounding Clip Assemblies 1954381-[] are used with metal-framed photovoltaic (solar) panels and related products that require grounding for safety reasons.



The grounding clip assembly consists of a slider, base, and self-captivating thread-cutting screw or 8-32 screw and hex nut. The grounding clip accepts solid uninsulated copper wire sizes 10 or 12 AWG.

### 5.1 Installation

1. Using a No. 21 drill bit, drill a (4.09-mm [.161-in.] diameter) hole in the frame.
2. Place the grounding clip onto the frame, making sure that the screw straddles the drilled hole. Using a No. 2 cross-recessed screwdriver, thread the screw into the hole until the head is flush with the base and the base is flush with the frame, then tighten the screw with another 1/4 to 1/2 turn. Recommended torque is between 2.3 and 2.8 Nm [20 and 25 in.-lbs].
3. For the grounding clip with the 8-32 and hex nut, thread the hex nut onto the end of the screw, then using a 3/8-in. wrench, tighten the nut.
4. Insert the wire into the wire slot. Press down on both ends of the wire (the wire slot will cause the wire to form a slight curve).
5. Manually, or using channel lock pliers, push the slider over the base until it covers the base. This will terminate the wire.



- Do not use modules of different configurations in the same system.
- Several modules are connected in series and then in parallel to form a PV array, especially for application with a high operation voltage. If modules are connected in series, the total voltage is equal to the sum of individual voltages.
- For applications requiring high currents, several photovoltaic modules can be connected in parallel; the total current is equal to the sum of individual currents.
- The module is supplied with Multi-Contact (MC) or MC compatible connectors to use them for the electrical connections of the system. Use the National Electric Code to determine system wiring size, type and temperature rating of conductors to be connected to the module's connectors. Wiring connected to the modules should be #12 AWG, LAPP 4mm<sup>2</sup> (minimum) and must be temperature rated at 90°C (minimum).
- The cross section area of cable and the capacity of connector must be selected to suit the maximum system short circuit current, otherwise the cable and connector will be overheated under large current.



## 6. Maintenance and care

DMEGC recommends the following maintenance in order to ensure optimum performance of the module:

- Clean the glass surface of the module as necessary. Always use water and a soft sponge or cloth for cleaning.
- A mild, nonabrasive cleaning agent can be used to remove stubborn dirt.
- Check the electrical and mechanical connections every six months to verify that they are clean, secure and undamaged.
- If any problems arise, users should have them investigated by a competent specialist.
- Attention, observe the maintenance instructions for all components used in the system, such as support frames, charging regulators, inverters, batteries etc.



## **7. Disclaimer of liability**

Because the use of this manual and the conditions or methods of installation, operation, use and maintenance of photovoltaic (PV) product are beyond DMEGC's control, DMEGC does not accept responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected with such installation, operation, use or maintenance.

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