

Application

Restrictions

SoliTek PV modules must be mounted on appropriate mounting structures positioned on suitable buildings, the ground, or other structures suitable for PV modules (e.g. carports, building facades or PV trackers). PV modules must not be mounted on moving vehicles of any kind. Modules must not be installed in locations where they could be submerged in water.

Artificially concentrated light must not be directed on SoliTek PV modules.

Recommendations

SoliTek recommends that PV modules be mounted at a minimum tilt angle of 10 degrees to allow for proper self-cleaning from rain.

Partial or complete shading of a PV module or modules can significantly reduce system performance. SoliTek recommends minimizing the amount of shade throughout the year to increase the amount of energy produced by the PV modules.

High system voltages could be induced in the event of an indirect lightning strike, which could cause damage to PV system components. The open area of wire loops should be minimized; in order to reduce the risk of lightning induced voltage surges.

Electrical installation

Configuration

Under normal conditions, a photovoltaic module is likely to experience conditions that produce more current and/or voltage than reported at Standard Test Conditions (STC: 1000 W/m², AM 1.5, and 25 °C cell temperature). The short-circuit current (ISC) should be multiplied by a factor of 1.25 and the open-circuit voltage (VOC) should be multiplied by a factor of up to 1.25 based on the lowest ambient temperature recorded for the installation location when determining component voltage ratings, conductor current ratings, fuse sizes, and size of controls connected to the PV output.

Voltages are additive when PV modules are connected directly in series, and module currents are additive when PV modules are connected directly in parallel. PV modules with different electrical characteristics must not be connected directly in series. The use of suitable third-party electronic devices connected to PV modules may enable different electrical connections and must be installed according to the manufacturer's specified instructions.

The maximum number of PV modules that can be connected in a series string must be calculated in accordance with applicable regulations in such a way that the specified maximum system voltage of the PV module and all other electrical DC components will not be exceeded in open-circuit operation at the lowest temperature expected at the PV system location.

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

Cable & wiring

SoliTek PV modules are provided with two standard, sunlight resistant output cables that are terminated with PV connectors ready for most installations. The positive (+) terminal has a male connector while the negative (-) terminal has a female connector. The module wiring is intended for series connections [i.e. male (+) to female (-) interconnections], but can also be used to connect suitable third-party electrical devices that may have alternative wiring configurations so long as the manufacturer's instructions are followed.

Use field wiring with suitable cross-sectional areas that are approved for use at the maximum short-circuit current of the PV module. SoliTek recommends installers use only sunlight resistant cables qualified for direct current (DC) wiring in PV systems. The minimum wire size should be 4 mm².

Cables should be fixed to the mounting structure in such a way that mechanical damage of the cable and/or the module is avoided. Do not apply stress to the cables. For fixing, use appropriate means, such as sunlight resistant cable ties and/or wire management clips.

While the cables are sunlight resistant and waterproof, where possible, avoid direct sunlight exposure and water immersion of the cables.

Connectors

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

Faulty connections can result in arcs and electrical shock. Check that all electrical connections are securely fastened. Make sure that all locking connectors are fully engaged and locked.

Bypass diodes

The junction box used with SoliTek PV modules contains bypass diodes wired in parallel with the PV cell strings. In the case of partial shading, the diodes bypass the current generated by the non-shaded cells, thereby limiting module heating and performance losses.

Bypass diodes are not overcurrent protection devices. Bypass diodes divert current from the cell strings in the event of partial shading.

Mounting instructions

Mounting rails

Please observe the safety regulations and installation instructions included with the mounting rail. If necessary please contact the supplier directly for further information.

The modules must be safely set onto the mounting rail. The whole rail supporting the photovoltaic system must be strong enough to resist potential mechanical pressures caused either by wind or snow, in accordance with local, regional and state safety (and other associated) standards.

Make sure that the mounting rail will not deform or affect the modules when it expands as a result of thermal expansion.

The mounting rail must be made of durable, anti-corrosive and UV-resistant materials.

Mounting with clamps

SoliTek has tested its modules with Alumero laminated CLICK 6.8 clamps. Use at minimum 4 clamps to fix modules on the mounting rails. Modules clamps metal parts should not come into contact with the front or back glass. When choosing this type of clamp-mounting method, use at least four clamps on each module; two clamps should be attached on each long side. Depending on local wind and snow loads, additional clamps may be required to ensure that modules can bear the load.

To withstand 5400Pa (snow) load pv module should be mounted using 4 clamps (2 on each long side) and over 2 transversal metal bars, which have to be mounted just behind the module attached to the back glass with no separation to prevent the module from bending. Clamps selection and fixation points are given in the mounting schemes.

Applied torque should refer to mechanical design standard according to the bolt customer is using. It is recommended to use only certificated equipment for the PV plant installation.

Maintenance

In order to ensure optimum module performance, SoliTek recommends the following: If necessary, the glass front of the module can be cleaned with water and a soft sponge or cloth. A mild, non-abrasive detergent can be used to remove more stubborn stains.

Check the electrical and mechanical connections periodically and make sure they are clean, safe, complete and secure.

In the event of a problem, consult with a licensed/qualified person.

Disclaimer of liability

Since it is impossible for SoliTek to control installation, operation, application and maintenance of the photovoltaic system according to this instruction. SoliTek does not accept responsibility and expressly disclaims liability for any loss, damage or expense arising out of or in any way connected with such installation, operation, use or maintenance.

SoliTek will not take any responsibilities for any possible violation of patent rights and third party rights that are related to application of the solar energy system. No permission of patents is given through implication.

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