



Installation instructions & user manual

Installation instructions limited to testing standards
contained in PRI Validation 2400C

This product approval governs structural issues and
electrical issues are subject to review and approval by the
local authority having jurisdiction.

version: 082023.4FBC

1. Introduction

Congratulations and thank you very much!

You have acquired a state-of-the-art, high-performance, safe, building integrated photovoltaic system that, with good care, will have a very long service life and performance.

The Solteq solar roof is a building-integrated system for the pitched roof. The system is suitable for both new builds and retrofitting.

The solar shingles are simply installed by a roofer and require an electrician to complete the electrical connections.

PV systems are actual power plants, which will produce high outputs. This requires high voltages and currents. Failure to observe safety measures, may result in a risk of electric shock. Always follow instructions.

We wish you a lot of fun (and high yields) with your new PV roof.

Stay green

Our nature and your wallet will thank you!

Your Solteq team

... clean energies, in harmony with nature!

2. Safety



A photovoltaic system produces high electrical voltages and currents which, **if not handled properly, can lead to life-threatening electric shocks or fires.**



In order not to endanger the safety of persons and warranty claims, please carefully observe the safety instructions and the specifications in this manual.

The electrical connection of all components may only be carried out by a licensed electrician!

Please read our warranty and conditions.

It is imperative that this manual is followed to have the warranty in force. The installer is solely responsible for the technical execution of the Solteq roof installation.

The sub-roof/underlayment, and flashings, are responsible for the waterproofing of the roof.

**SOLTEQ IS ONLY LIABLE FOR PRODUCTS MANUFACTURED BY SOLTEQ, NOT FOR THE DESIGN OR ADDITIONAL PRODUCTS, EVEN IF THESE ARE SUPPLIED BY SOLTEQ!
FOR NON-SOLTEQ PRODUCTS, THE PRODUCT MANUFACTURER IS EXCLUSIVELY LIABLE!**

Safety

- *The MC-4 connectors are only 100% tight when connected properly. The contacts inside the connector can corrode and become unusable in the event of moisture, rain, or other wetness. In this case the module cannot be used.*
- *The Solteq solar tiles and accessories are made of high-quality glass. There is a risk of injury if it breaks!*
- *The surface is slippery, there is a risk of death if you fall!*
- *The space between the back of the module and the roof substructure must be kept open for ventilation of the module and unrestricted air circulation must be ensured. Under no circumstances may the space on the underside of the module be restricted or used in any way that obstructs airflow. Absolutely no roofing garbage of any type or size may be left underneath*
- *The back of the module must be protected from damage. A module with a damaged back sheet may no longer be installed / put into operation and must be replaced.*
- *During the assembly and maintenance of the solar power roof tiles, the valid regulations and safety instructions for the installation of electrical devices and systems as well as any regulations of the responsible energy supplier for the parallel operation of solar power systems must be observed.*
- *Series connection of the solar power roof tiles (addition of the module voltages) can result in voltages above the safety extra-low voltage of 120 VDC.*
- *Never pull or insert MC-4 connections under load current.*
- *Observe the requirements for use, the additional installation instructions, and the maximum permissible stress on the solar power roof tiles.*
- *Lay cables with strain relief, free of mechanical stress and with sufficient bending radii.*
- *If necessary. Fasten lines with cable ties.*
- *It is essential to pay attention to the polarity of the solar power roof tiles. Reverse polarity will destroy the protective diode. This can damage the module. Caution! Loss of warranty in the event of incorrect connection!*
- *Only connect solar power roof tiles of the same type and output class in series.*
- *In the case of safety shutdowns from other manufacturers, the manufacturer's safety regulations must be observed. The product manufacturer is liable for these products.*

3. Roofing

Danger to life when working on the roof! The construction site must be adequately secured in accordance with all OSHA regulations. As a rule, scaffolding with appropriate interception measures must be set up. In individual cases and smaller roof work, rope safety measures are also used to prevent falls.

- *During installation, the relevant regulations on occupational safety and accident prevention must be observed and adhered to.*
- *Use suitable fall protection devices.*
- *When installing on the roof, there is a risk that tools, installation material or solar power roof tiles fall from the roof and injure people who are underneath. You should therefore cordon off the danger area on the floor before starting the assembly work.*
- *Solteq solar power roof tiles are made of glass. If it is mechanically destroyed, for example, if an object falls on it, or if it smashes on the floor, glass splinters can arise and cause injuries. Correspondingly, safety measures must be taken for self-protection and for the protection of other people.*
- *Warn people who are in the vicinity of the danger area or in the house.*
- *Keep children away from the danger area.*
- *Do not allow unauthorized persons to climb onto the roof.*
- *The cables must always be protected against unnecessary bending, squeezing, or compression by fitting cables into a space they don't fit.*
- *The solar shingles are to be installed in a free state of mechanical tension.*
- *The roofer is solely responsible and responsible for the execution and tightness of the roof structure.*

These installation instructions must be read carefully and followed each time the system is installed. In the event of damage caused by non-observance of the instructions, the warranty claim expires. No liability is accepted for consequential damage.

We explicitly point out that these assembly instructions do not release the installer from applicable standards, obligations, and laws. Installation may only be carried out by a specialist or specialist company trained in the roofing trade. The installer must adhere to the local building codes pertinent to building integrated solar roofing. Solteq cannot be made liable for violations of these and the resulting damage. The installer must find out about all applicable codes beforehand! In the event of improper installation contrary to any codes, or this manual and other manufacturer information, the warranty and guarantee are void.

We reserve the right to make technical changes, for any errors or mistakes in this manual!

Every contractor must be a trained specialist and is responsible for his own actions. The roofing must be carried out in accordance with the local codes, regulations, and standards.

4. Basic information

- *The solar power solar shingles must be installed and operated according to the recognized rules of technology.*
- *Treat the solar power solar shingles like the glass products they are. Do not drop anything on them.*
- *The solar shingles should never be walked on! Point loading is to be avoided. There is no right of recourse in the event of non-compliance or glass breakage! The manufacturer is not liable for possible mechanical defects, glass breakage, cell breakage, damage, or loss of performance due to damage to the cells!*
- *Solteq advises against installation without suitable aids such as roofing scaffolding.*
- *Even if the glass does not break, it can lead to micro-cracks in the cells and to a loss of performance.*
- *If it should become necessary, depending on the type of tile, the solar roof can be stepped on using a load-distributing measure, for example, foam panels. However, this is not guaranteed to not break the glass underneath.*

- *Solar power solar shingles must be checked immediately upon delivery and any transport damage must be reported to the forwarding agent immediately.*
- *Protect solar power solar shingles on the front and back from scratches and damage.*
- *Focusing the sunlight on the module surface with mirrors or lenses is prohibited.*
- *The maximum permissible system voltage of the solar power solar shingles must not be exceeded, even at low ambient temperatures (see data sheet and module type plate).*
- *The grounding of the solar shingles must be carried out professionally in accordance with local building codes.*
- *If the solar power solar shingles are to be integrated into a lightning protection system, the relevant regulations must be observed and adhered to.*

5. Storage

- *Solteq products are only shipped with suitable transport packaging delivered from the factory. This protection must be maintained during transport and uncovered storage. Storage of the pallets is only permitted on an even surface and dry rooms.*
- *Do not store the Solteq solar shingles unsecured.*
- *The Solteq solar shingles packaging and pallets supplied are not tight against water and humidity.*
- *They must be stored dry and clean and protected against any moisture.*
- *The connectors must NOT be exposed to MOISTURE when they are open. Moist ambient air also represents moisture. If the plug contacts should corrode due to moisture, DANGEROUS ARC FLASHES AND FIRE can result*
- *The Solteq solar shingles must not be exposed to direct weather or water (rain or moisture, dew) during storage.*
- *Unpack Solteq solar shingles.*
- *Remove the pallet lid.*
- *Remove the Solteq solar shingles individually from the pallet packaging.*
- *Do not install damaged Solteq solar shingles. Damaged Solteq solar shingles and components must be reported immediately prior to use or assembly, or the warranty will be voided.*

6. Definitions

REGULAR ROOF PITCH

The standard roof pitch is understood to be the roof pitch limit at which a roof covering has proven to be sufficiently rainproof in practice. Solteq solar tiles can only be used on 2/12 to 22/12 roof pitches.

MINIMUM PITCH

The minimum roof pitch is a 2/12

RAIN PROOFING

Definition according to technical rules: "Rainfall flowing down from top to bottom". There is no absolute watertightness.

WATERPROOF

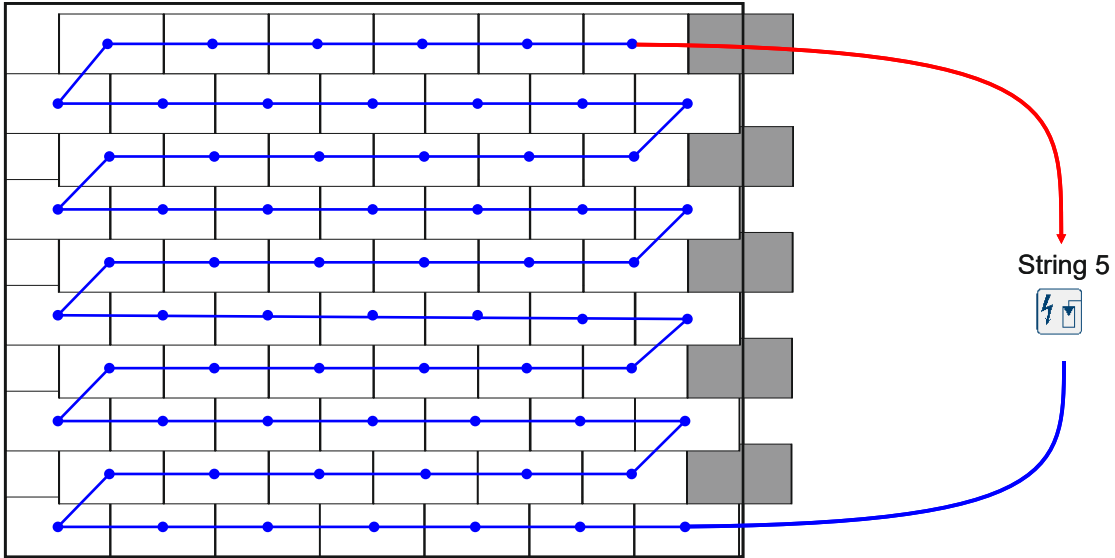
No water or moisture can penetrate. Solution: waterproof roofing underlayment (per s.1507 of the FBC), and proper flashing.

Execution of roof coverings are to be carried out in accordance with the rules of the roofing trade, taking the waterflow into account. The underlayment and flashings must be installed according to installation instructions.

7. Electrical

- *The system consists of individual solar power roof tiles, which work in parallel with the grid. To do this, the solar power roof tiles are interconnected to form individual blocks and strings and connected to the inverter (s).*
- *All individual strings together form the solar generator. The inverters establish the connection to the utility grid. The solar power roof tiles can be used with all common inverters in accordance with the local codes, and the regulations of the inverter manufacturer.*
- *For interconnection, the solar shingles have 2 solar cables (a plus and a minus line) with plugs that are reverse polarity protected .*
- ***The electrical design must be carried out by a licensed electrical engineer in accordance with all local codes.***

Example of a string plan using the "double tile".



8. Electrical connection

- *The planning of the assembly, the assembly, the crimping of the connectors and the commissioning of the solar power solar shingles may only be carried out by persons who are familiar with the assembly and the proper and safe execution due to their professional qualifications. The electrical execution may only be carried out by a trained electrician.*
- *The Solteq solar power solar shingles are electrical voltage sources with the associated potential dangers. The full open circuit voltage is to be expected even with low irradiation.*
- *Incorrect execution during assembly or commissioning can lead to damage and endanger people.*
- *The Solteq solar shingles are to be checked for damage when unpacking. Any damaged Solteq solar shingles must not be installed or put into operation. Any damage must be reported to the supplier immediately. Any damaged Solteq solar shingles must be replaced and must not be used.*
- *The junction box must not be opened; opening the junction box will void the product warranty.*
- *The connection cables must not be loosened from the junction box.*
- *The installation of the PV system must be designed in such a way that cables can be laid freely (free from tensile stress).*
- *It is essential to prevent damage to the connector (e.g., during assembly or when unpacking the solar crate).*
- *It must be ensured that the plug connections of the cables to the module interconnection always fully engage.*
- *The original condition of the solar shingles must not be changed. This applies to the cables and plugs on the module. In addition, only suitable quality connectors of the same type are permitted for further connection of the Solteq solar shingles (string cables to the inverter).*



The pressing / crimping and connection of the MC-4 contacts may only be carried out by a trained electrician. The MC-4 connectors on the string lines must be of the same manufacturer and type as those on the solar modules. In the case of inadequate electrical transition contacts within the MC-4 connectors, poorly pressed connectors from different manufacturers or other defective or improper connectors, this can lead to excess temperatures due to increased resistances.

THIS CAN LEAD TO DANGEROUS ARC FLASHES AND A FIRE!

These dangers exist with every photovoltaic system if it is improperly executed.

The connectors on the solar tiles are pre-assembled at the factory and must not be processed, exchanged, or otherwise manipulated! If a cable, connector, or junction box is defective, the solar tile must be removed from the circuit immediately, considering the safety and voltage measures, or not installed at all.

The crimping of the MC-4 connectors on the string lines, as well as the entire execution, may only be carried out professionally by a trained electrician. The crimping must only be carried out with a crimping tool provided for this purpose. Only high-quality MC-4 connectors from the same manufacturer and type as the counterpart are to be used. Protect connectors from contamination. Do not establish a plug connection with dirty plug connectors!

9. Basic Installation

These instructions show the properties of the solar roof tiles. Local codes may vary, and all local codes apply.

- *The solar cells must not be shaded under any circumstances, otherwise there will be enormous losses in performance.*
- *The active and passive tiles made of glass must not be cut or sawed, otherwise the tempered glass will shatter. Tiles made of aluminum, or composite are available where cutting is necessary. Use this passive option for areas that need to be adjusted or cut.*
- *Underlayment: should be per s.1507 of the FBC*
- *IMPORTANT: The roof, sub-roof, and the roofing company are responsible for the watertightness of the roof! The Solteq solar roof is a rainproof roof tile, but not "waterproof".*
- *There must be flashings in the "Dry-in", and flashings in the Solteq tiles.*
- *All valleys that terminate above the lowest point of the roof must have water directed back on top of the Solteq roof tiles. Minimize the amount of water that flows beneath the tiles.*
- *There must be a temperature-resistant and water-resistant / watertight seal underneath the substructure so that the rear ventilation of the solar shingles can function properly, and the house is not unnecessarily heated.*
- *The edge areas must be checked by the contractor and made watertight and windproof with sheet metal elements. This also applies to the ridge and rakes. On the ridge and rakes, metal ridge cap, and metal rake trim are used over "Z" cleats screwed into place.*
- *The solar shingles or shingles are installed with brackets and secured with a screw to prevent slipping.*

The installation method of the underlayment and flashings is as important as the installation of the Solteq tiles.

- *Roofer (on a re-roof) removes all the existing roofing materials down to the plywood. All flashings are removed, and where needed, stucco/siding is removed to access these flashings. The first layer of underlayment is installed starting at the bottom of the roof and proceeding up the roof slope. Any place that the roof abuts a wall, the underlayment is installed up the wall surface 4" as the first line of defense at this intersection.*
- *Once the roof is "dried-in", install the .040 aluminum (except coastal locations) drip edge, valleys, and all wall flashings, and counter flashings. The next step is to install our second layer of underlayment under any headwall flashings, and over any sidewall, valley, or drip edge, always allowing for positive water flow.*
- *At the bottom of any valley, or cricket, that terminates on another roof plane, a splash is installed. This is a 30" X 30" flexible flashing that will direct the water back onto the top of the tiles below, rather than allow it to run under the tiles below the valley termination.*
- *Anywhere stucco/siding was removed for flashing install, the area is prepped to install new stucco/siding. The mesh reinforcing is exposed, the waterproof barrier is exposed, and our waterproofing is tucked behind the existing. A bonding agent is applied, then a scratch coat of stucco, then a finish coat to match the existing finish. When sufficiently cured this will be primed with a hot stucco primer, then painted to match as close as possible. If it is siding one ensures that the vapor barrier is intact and flashed over the flashings.*
- *Lines are snapped on the underlayment to ensure the Solteq solar roof tiles are installed in straight rows, and the roof is ready to load the Solteq solar roof tiles. The tiles are loaded throughout the roof where it is needed, and then installed. (Keep dry until installed)*

All flashings need to be constructed of minimum .040 Kynar coated aluminum. Coastal areas need 16 oz copper flashings minimum.

Direct oceanfront requires 20 oz copper minimum.

Valley splashes need to be compatible with the metal used in the valley.

- ***Always install all passive tile as much as possible before installing active tile. On new construction finish any stucco, siding, painting, or any other trades before installing the tiles. This lessens the chances of any damage to active tiles.***
- *Solteq solar powered tiles need to have an engineered plan directing where they are installed, and how and where to run the wiring, and install the inverter. Solteq solar powered tiles are attached with an aluminum bracket especially made to fasten these tiles. The tiles also have a slot clip on the lower back which slide into the bracket which holds the tile below.*
- *Anywhere the roof abuts the wall a step flashing is installed. This also keeps water from the underlayment and onto the tiles to keep the wear and tear of the underlayment to a minimum. Anywhere the roof intersects with a headwall, a flashing is installed over the tile to once again, keep as much water as possible on the tiles and off the underlayment, promoting longer life. Any skylights, vents, or any other roof penetration will be flashed in the same manner, keeping as much water off the underlayment as possible.*

Bracket Spacing

These details conform to the assemblies tested by PRI under standard TAS 100 and TAS 107.

13-Series

All 13-series brackets are spaced 6.575 inches (167mm) horizontally, (center to center) and 13.58 inches (345mm) vertically (center to center).

9-Series

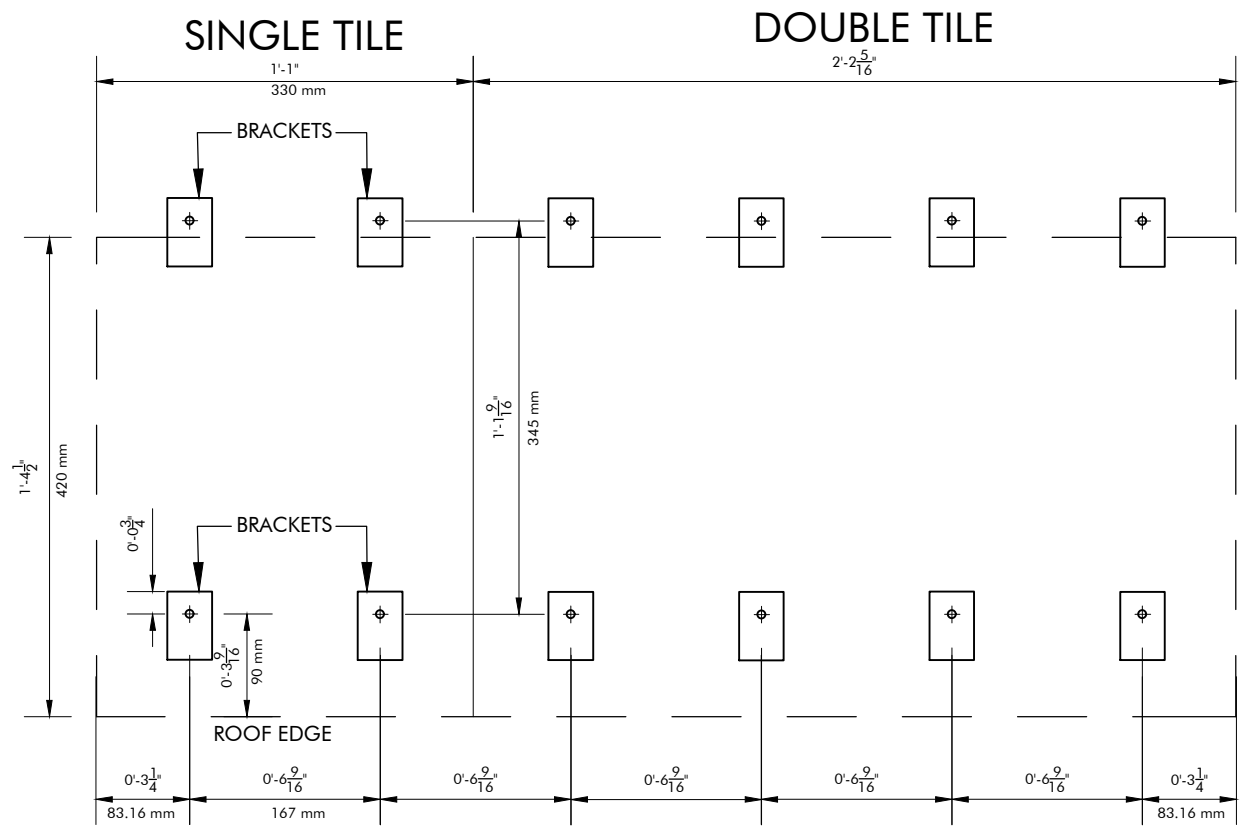
All 9-series brackets are spaced 9.13 inches (232mm) horizontally, (center to center) and 13.58 (345mm) inches vertically.

Q-Series

All Q-series brackets are spaced 9.85 inches (250mm) horizontally, and 20.08 inches (510mm) vertically.

Tiles arrive with factory installed clips on the rear of the tiles, which are spaced accordingly. The first row of brackets (starter brackets) are set to a line so the tile laps over the eave closure. Subsequent rows of brackets go over the top of the previous row, and are dual purpose. The brackets hold the previous row of tile in place, and then the next row "clips" into the same bracket. The brackets are screwed to the roof deck with one stainless steel hex head 1 1/2" screw with a rubber washer per bracket. The last row of tiles will end with a "finisher" bracket.

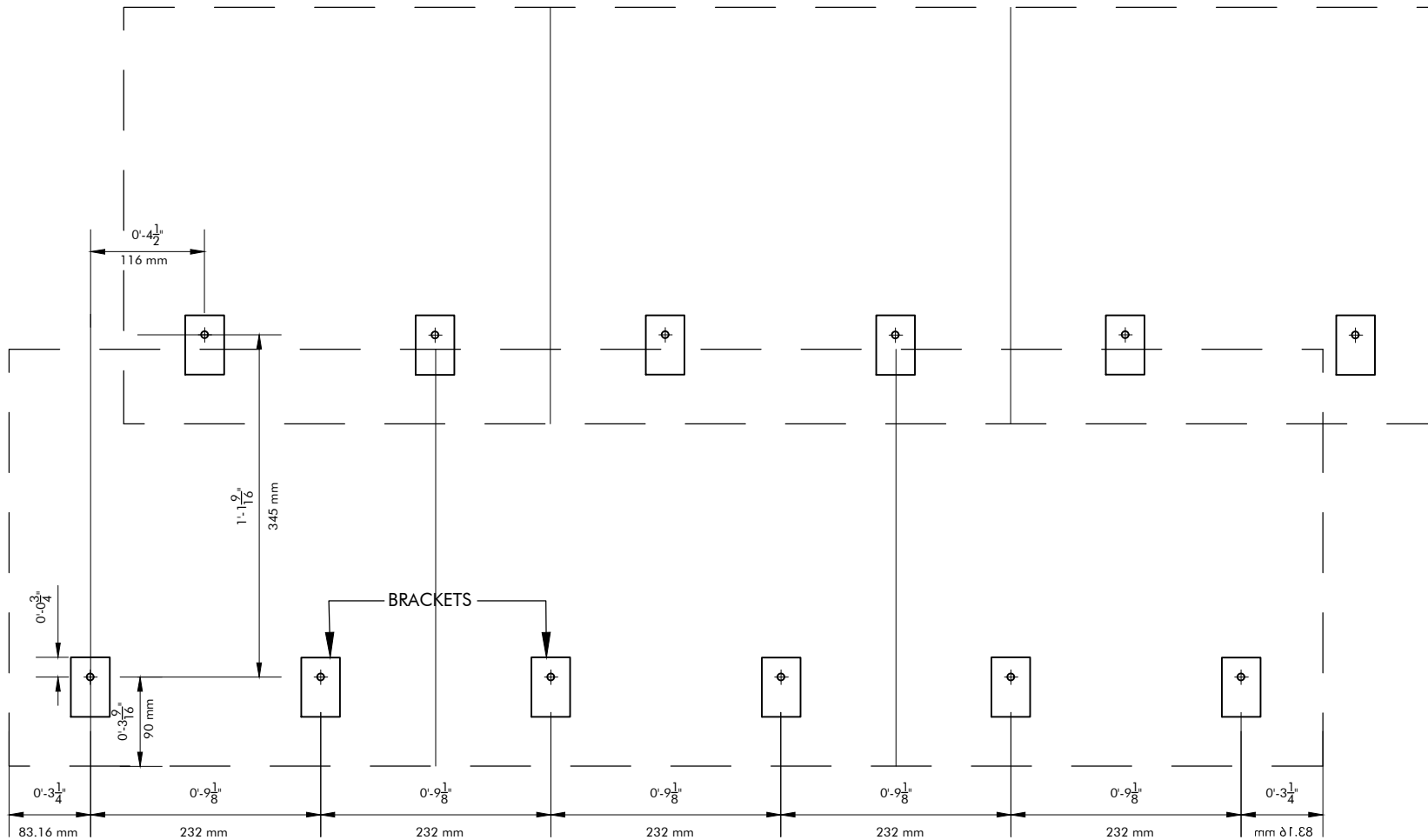
See detail drawings next pages.



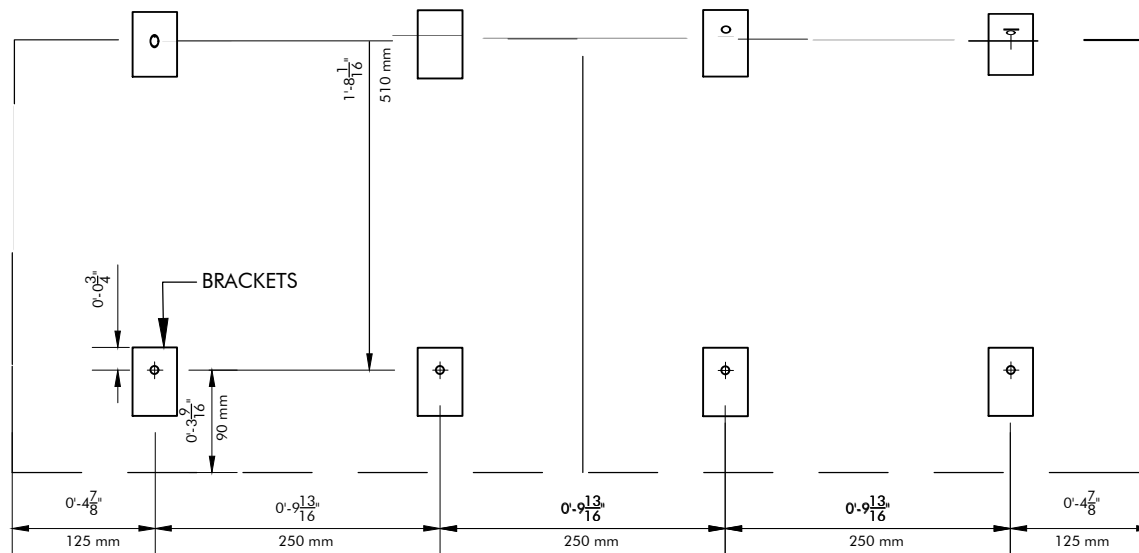
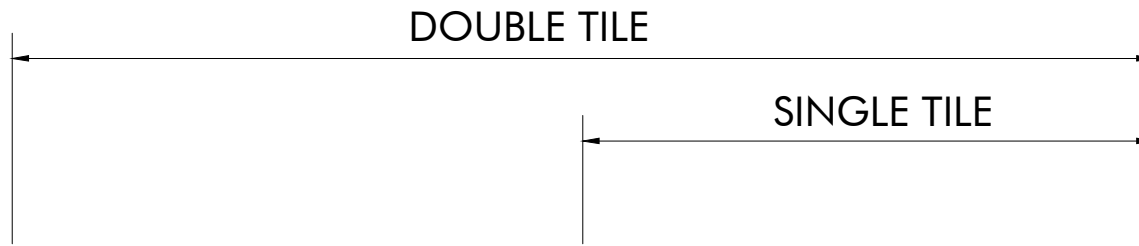
Solteq

13 SERIES BRACKET SPACING

THIS SERIES, BRACKETS ARE STACKED ONE DIRECTLY ABOVE THE OTHERS.



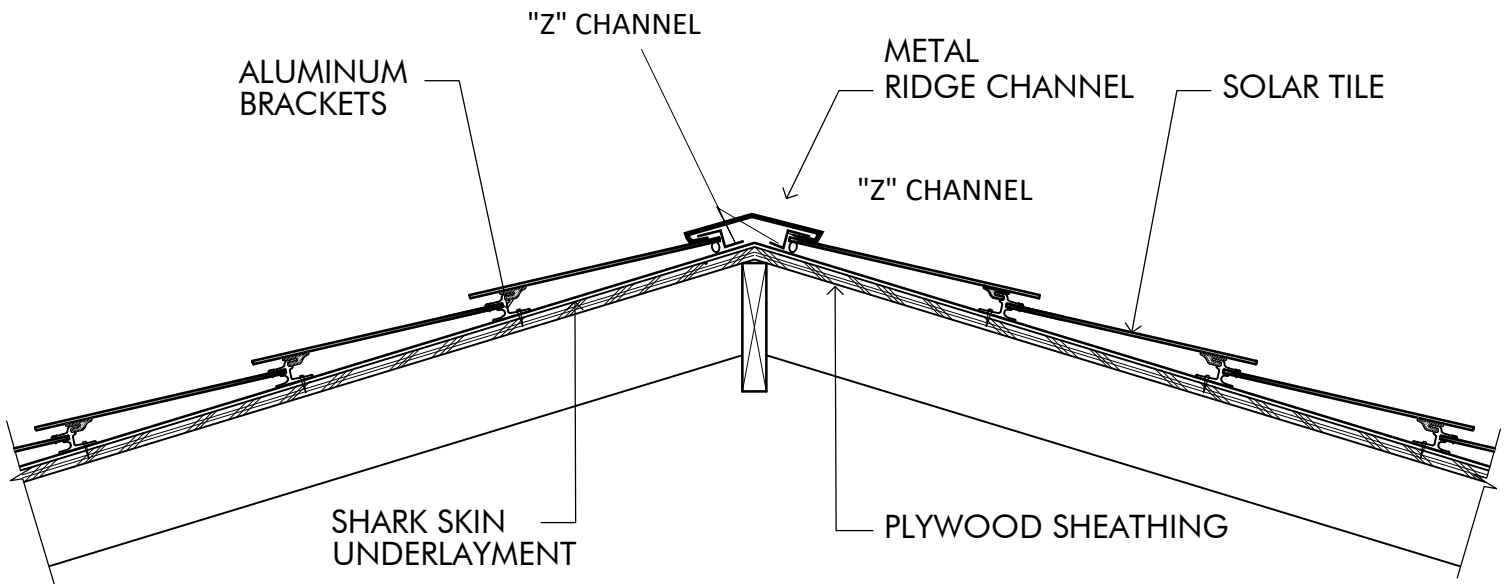
Solteq
9 SERIES BRACKET SPACING
 THIS SERIES, BRACKETS ARE STGGERED
 OFFSET FROM THE ROW BELOW (116mm)



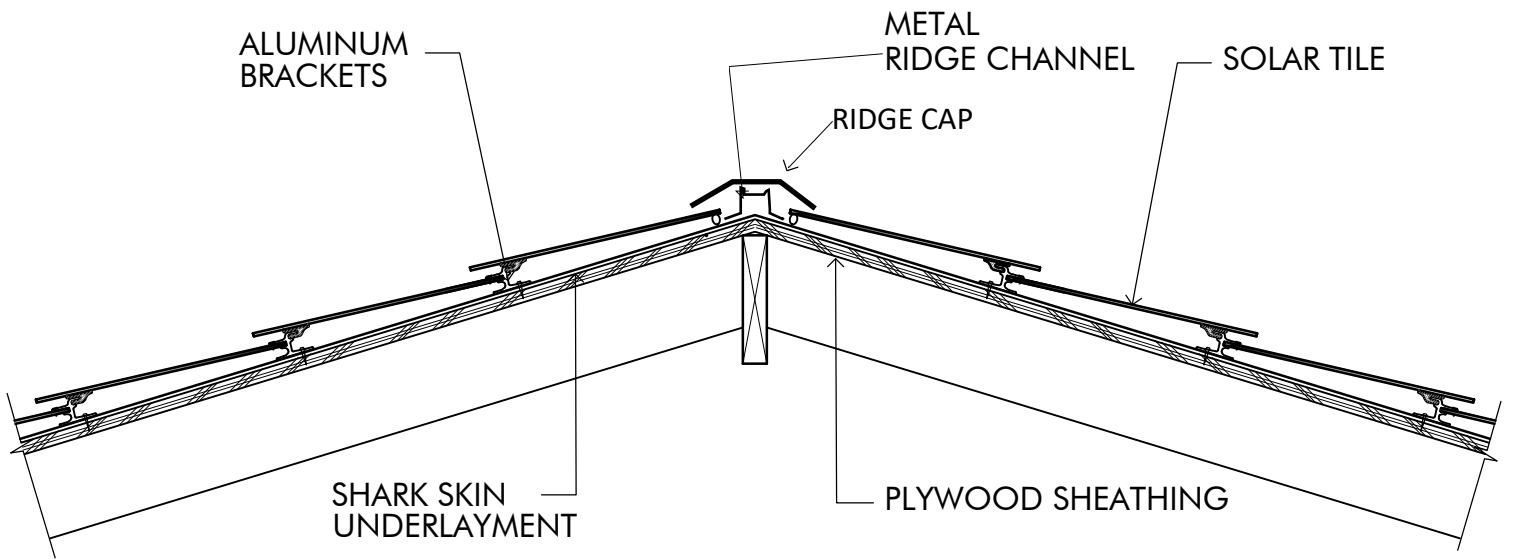
Solteq Q SERIES BRACKET SPACING

THIS SERIES, BRACKETS ARE STACKED
ONE DIRECTLY ABOVE THE OTHERS.

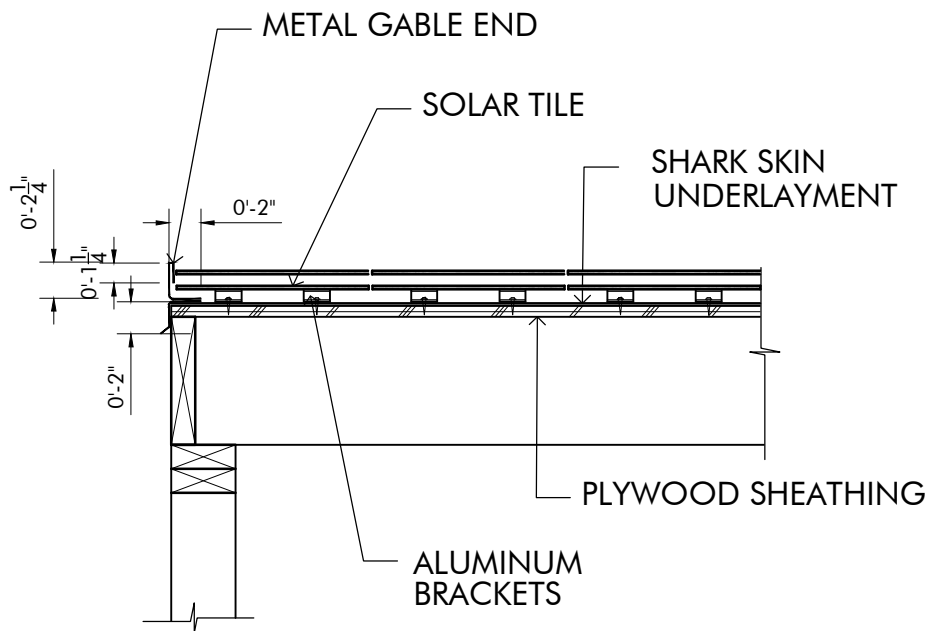
METAL RIDGE / HIP DETAIL



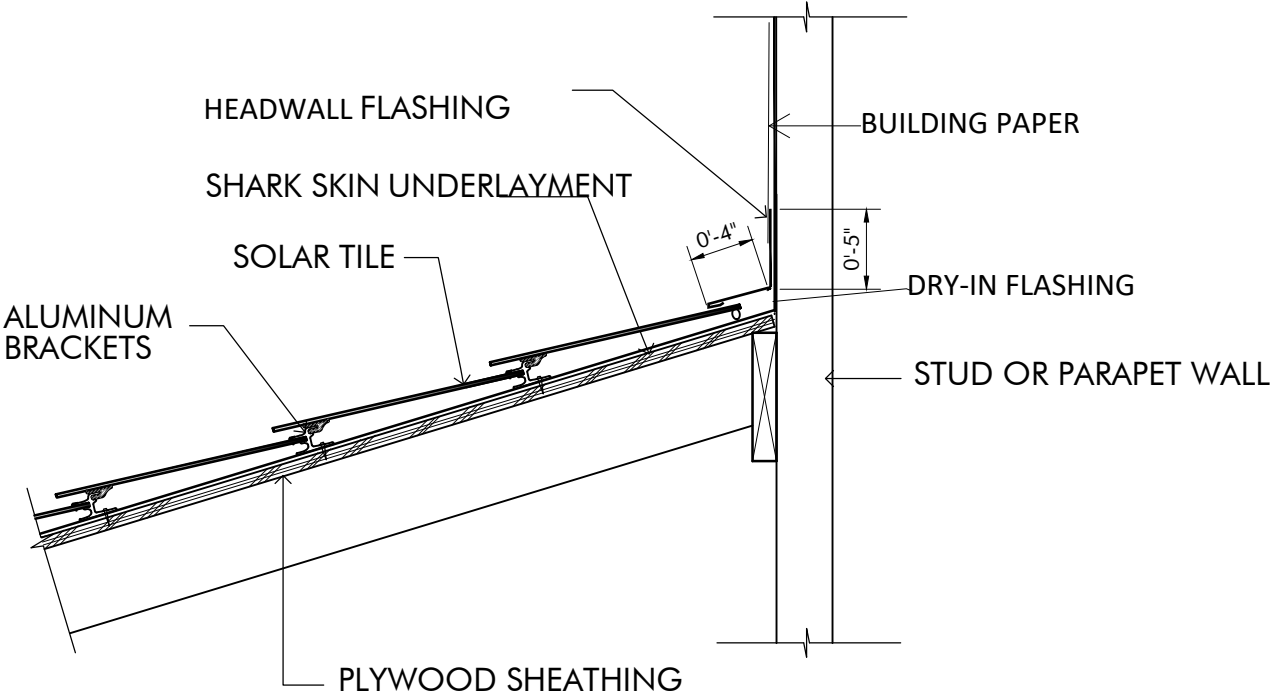
RIDGE / HIP DETAIL



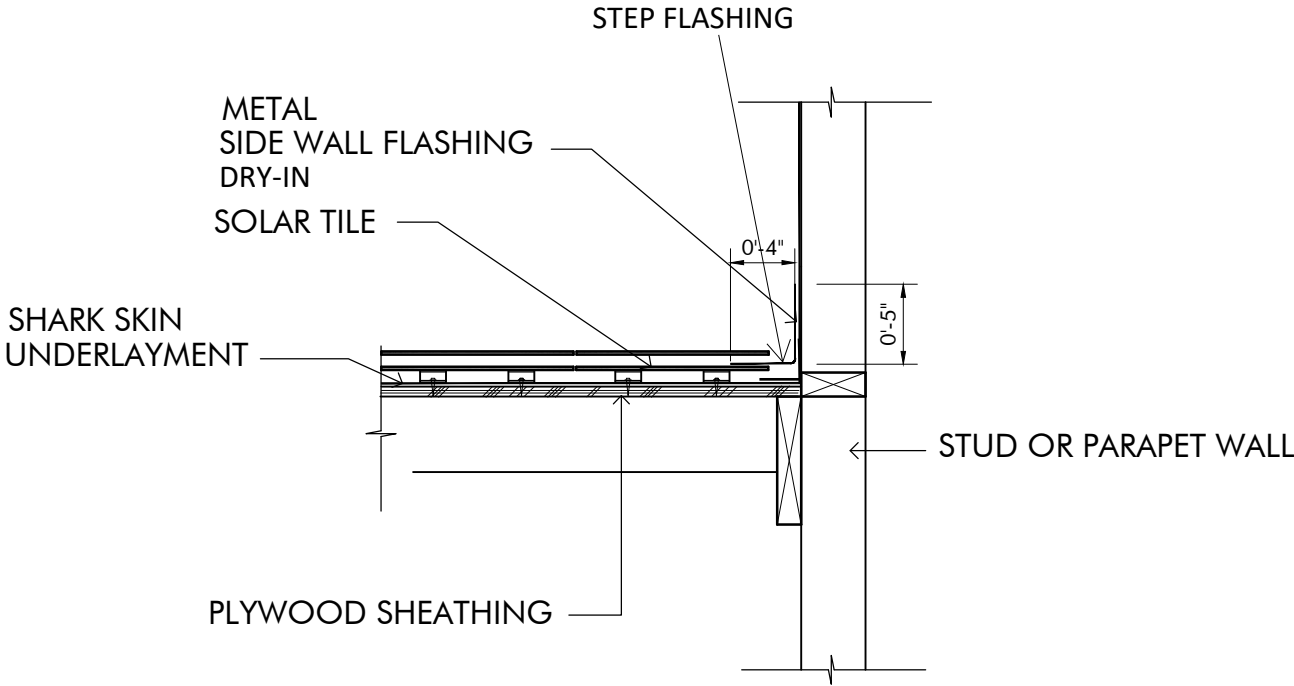
GABLE DETAIL



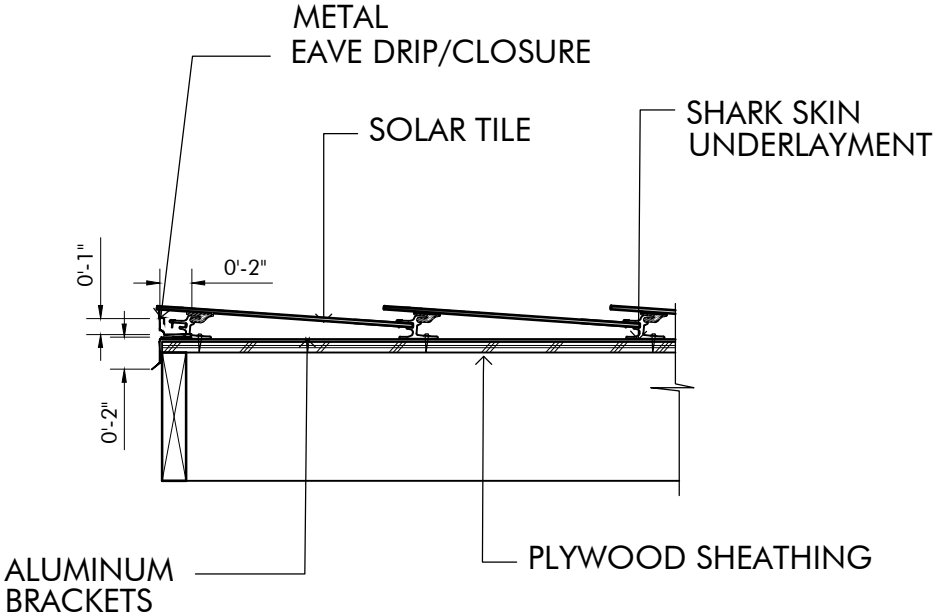
HEAD WALL DETAIL



SIDE WALL DETAIL



EAVE DRIP / EAVE CLOSURE DETAIL



10. Service



IMPORTANT: Before replacing a component in a PV system, always switch the system off or in bring the current-less state! If this is not done, it can lead to dangerous arcing, and electric shock!

Attention: If the connector is damaged by pulling the power supply, any warranty is void!

Replacing a defective solar tile is done in this method: slide a metal cutting blade with a reciprocating saw and cut through the glue which attaches the small clip on the rear of the tile. This will allow the tile to slide out. Unplug the tile and remove. Carefully remove the clip on the replacement tile (without damaging the back sheet) slide it in place, fasten the wires correctly, then glue the clip back in place with the glue supplied by Solteq, and clamp until the glue is set.



Never pull or plug the plug connections under load current! When carrying out maintenance or cleaning work, always press the button on the rapid shut down beforehand, thus disconnecting the system from the power supply.

Cleaning:

The front of the solar shingles is made of high-quality, tempered glass. We recommend cleaning the solar tiles regularly so that you can maintain efficiency and high yields for a long time.

Cleaning should be done with spot free water sprayed from the top to the bottom. Always let the water flow from top to bottom, never clean with high water pressure from bottom to top, otherwise the seals could be damaged. If this is not observed, the warranty is void.

11. Warranty

Important: *The following documents are required for processing:*

1. *Type and serial number (see type plate on the side / back of the respective device)*
2. *Exact description of the error with description of the conditions of use (module data sheet, string plan, etc.)*
3. *Proof of purchase / date*

A complaint is not possible without this information. Please do not send the device without contacting SOLTEQ service first: service@solteq.us. The warranty only applies to undamaged and unchanged goods that are in their original condition. The return must be sufficiently and properly packaged. A warranty claim for goods that have not been returned in insufficient packaging will not be accepted. Shipments that are C.O.D. cannot be accepted!

Address to

Solteq USA INC.,

4430 Orchid BLVD STE 202 Cape Coral FL, FLORIDA 33904

Conditions:

The warranty on the solar tiles applies as listed in the warranty certificate. Information from product brochures may be out of date and are only indicative.

In principle, the duration of the statutory warranty applies. All further guarantees are given voluntarily by the manufacturer, for which the conditions in the current “guarantee certificate” apply.

Guarantees are made purely as a gesture of goodwill and subject to change without any fixed claim. The manufacturer grants the statutory warranty on the electronic components for 12 months from the date of purchase. All non-Solteq components and all connectors are excluded. The guarantee of the respective manufacturer applies here. In the event of a complaint, the customer must contact the respective manufacturer directly. Damage caused by lightning strikes, water, or moisture, as well as mechanical damage or non-compliance with these operating instructions are excluded from the guarantee.

Note: *The warranty only relates to defects that are discovered BEFORE installation and operational failures. Failures immediately after installation can be avoided with simple means by following these installation instructions. You should therefore check all components thoroughly BEFORE installation, to ensure that they work together perfectly and are working properly. Any damage must be reported to the transport company immediately. The junction box does not contain any serviceable parts, so please do not open them. The guarantee becomes null and void when it is opened. The place of fulfillment of the guarantee is the factory of the manufacturer.*

Guarantee on the performance: There is a 40-year guarantee on 80% of the installed capacity.

IMPORTANT: *There is only a claim to this guarantee if the system has been properly installed according to the installation instructions and with the correct performance values and the measured values have been entered in the table in the Solteq design planning string table and have been sent to us within 14 days of delivery from our Work, or dealer with proof, have been submitted. Installation and recording of measured values must take place within 2 weeks of delivery. The submission must be confirmed by us. If there is no confirmed submission of the measured values, there is no entitlement to this performance guarantee.*

12. Disclaimer of Liability

Although the information contained in this manual has been created with the greatest care, no liability can be accepted for errors or mistakes. We reserve

the right to make technical changes to the hardware and software, as well as color deviations, performance specifications, etc. The delivered devices and their characteristics are to be checked intensively for the respective application and to be fully tested electrically before installation. The warranty is void in the event of damage due to incorrect or improper handling, overcurrent, or overvoltage problems. Compensation claims for consequential damage of any kind, including defects or misconduct caused by our products, are excluded in any case. The warranty is limited to repair or replacement (at our option) of the corresponding device. Returns must be made freight paid. Deliveries are to be checked immediately after delivery. The warranty only applies to undamaged and unchanged goods that are in their original condition. The return must be sufficiently and properly packaged.

Dismantling, replacement, or other assembly costs cannot be covered. In the event of damage caused by non-observance of the instructions, the warranty claim expires. No liability is accepted for consequential damage.

Lightning damage: External influences and lightning damage are excluded from the guarantee.

Storm: Solteq solar tiles must be installed according to all installation instructions, water damage is not a warranty claim, but as an insured event. It is recommended that a building insurance is in place. Solteq is not liable for storm damage.

The guarantee for the proper roofing and watertightness to be carried out in accordance with the applicable rules of the roofing trade is only guaranteed by the executing trade. Solteq only guarantees the material without any follow-up costs. In the event of a complaint, the customer must give the manufacturer the opportunity to check the goods. For this purpose, the goods must be delivered to Solteq. The goods complained about will be checked and repaired or replaced at our discretion. The correct functioning of all parts supplied must be checked and ensured BEFORE and DURING assembly. Subsequent dismantling / assembly costs and scaffolding costs will not be covered! If these instructions are not observed or the maintenance manual is not kept properly, warranty claims and claims for damages of any kind are excluded. In the case of non-Solteq products, only the product manufacturer, whom the customer must contact directly, is liable. The place of jurisdiction is the seat of the manufacturer in Germany. German law applies.