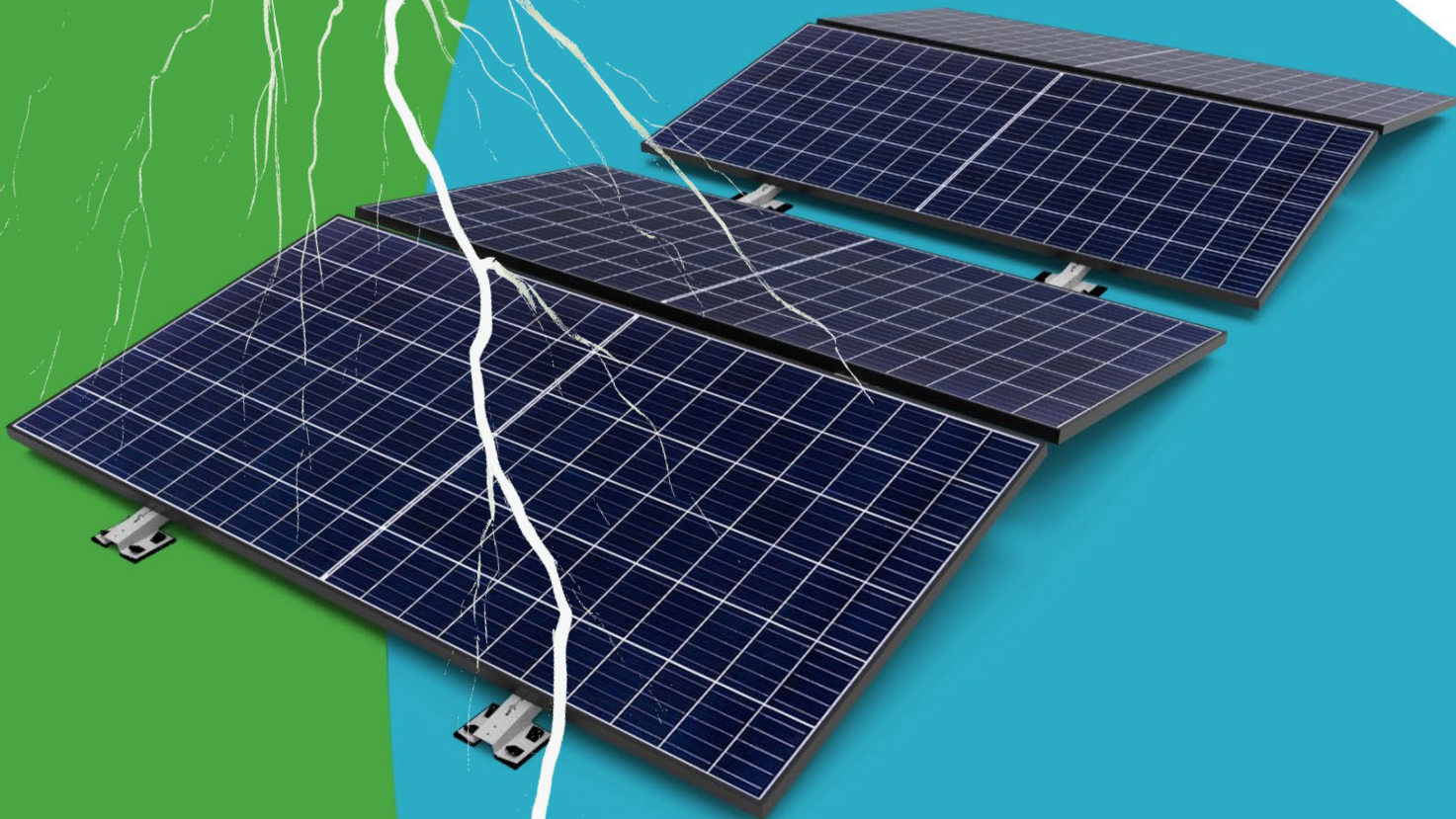


SmartSolarBox

The Power-Package

The revolution in
flat roof PV systems



SmartSolarBox Version 5.x
Connection to an external
lightning protection system

General information

- Below you will find recommendations on how connections capable of carrying lightning current can be set up with the SmartSolarBox .
- Smartvolt AG expressly points out that the use of the components mentioned is only a recommendation. Alternatively, lightning protection components from other manufacturers can also be used.
- It is essential that the planning to integrate the system into the existing external lightning protection and therefore also the number of connections for the external lightning must be carried out by a lightning protection specialist.
- During planning and implementation of the connections between the cables and the SmartSolarBox, permanently suitable materials must be chosen in order to prevent contact corrosion, taking account of the electrochemical voltage series.
- The components listed below are required in addition to the SmartSolarBox. Alternatively, additional or different connecting clamps can be purchased directly from specialist suppliers.
- It is essential to observe the national and site-specific standards concerning the planning and implementation. We would like to point out that the recommendation was produced on the basis of the German and Swiss standards.
- Requirements regarding planning can be found in the relevant standards.
- Recommendations or installation instructions from the module manufacturer must be observed.

SmartSolarBox lightning protection

- If the system is to be integrated into a building's existing external lightning protection, the connection to the SmartSolarBox must be designed in such a way that it is capable of carrying lightning current.
- It is essential that the planning to integrate the system into the existing external lightning protection and therefore also the number of connections for the external lightning must be carried out by a lightning protection specialist.
- We recommend using an aluminum round wire ($\geq 50 \text{ mm}^2$) for the electrical connection to the lightning protection.
- The SmartSolarBox is manufactured in different versions depending on requirements. A version that is capable of carrying lightning current is available from your SmartSolarBox partner.

CAUTION :

Unfortunately, the lightning current carrying capacity cannot be retrofitted in the field because additional connections are required underneath the PV modules. Lightning protection and the resulting requirements for the SmartSolarBox must therefore be defined by the lightning protection specialist during project planning.

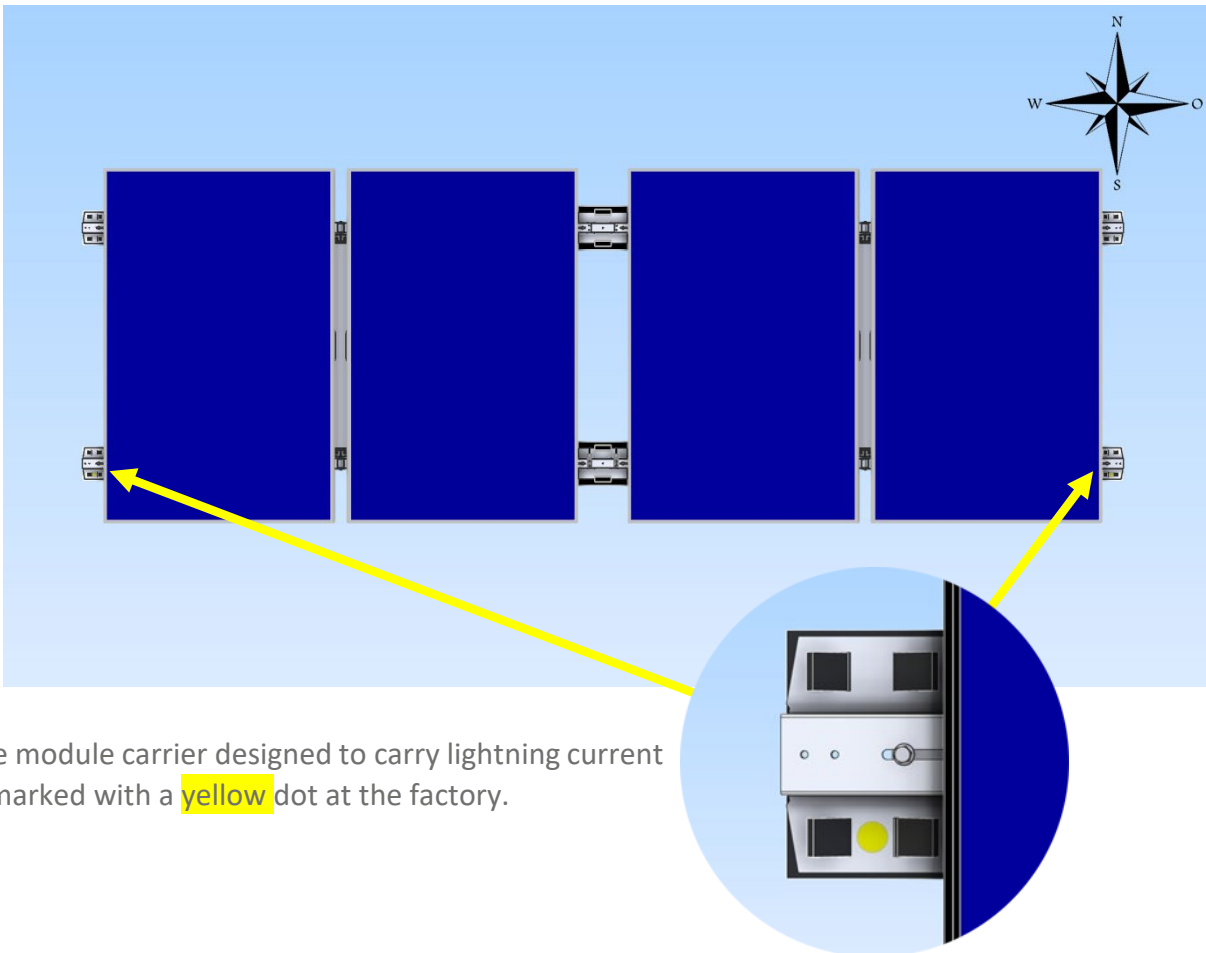
The SmartSolarBox is made out of ZM310 coated steel. When connecting the lightning protection system, care must be taken to select the correct material with regard to contact corrosion:

- Smartvolt recommends using the DEHN aluminum seam clamp (Art.No. 365 031).
When used in corrosiveness category C1 or C2, the stainless steel seam clamp (Art.No. 365 019) can also be used.
- Alternatively, clamps from other manufacturers can also be used.

The following descriptions refer to the lightning current carrying version of the SmartSolarBox.

Lightning current carrying capacity

The SmartSolarBox can carry lightning current along one module carrier in an east-west direction. The test certificate for lightning current carrying capacity for test class N (50kA) is available online at <https://smartsolarbox.com/en/downloads>.



The module carrier designed to carry lightning current is marked with a **yellow** dot at the factory.

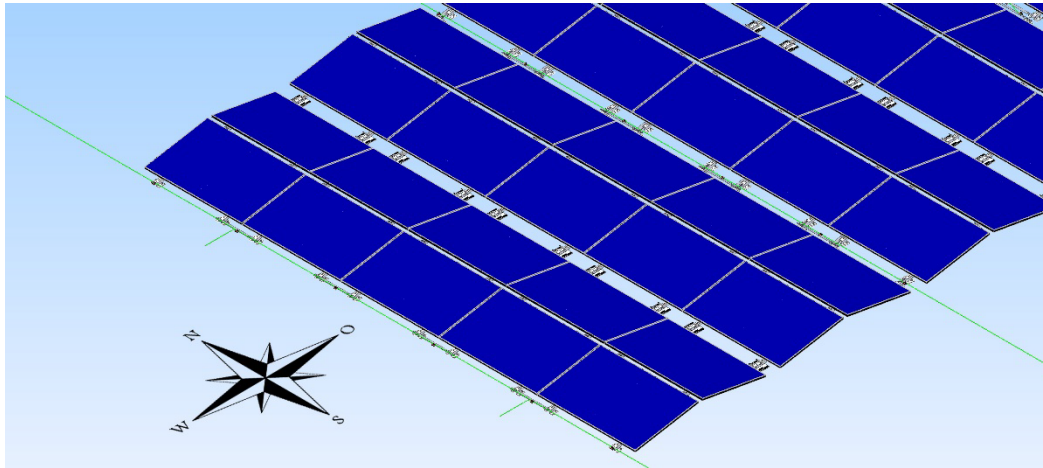
CAUTION:

When building the PV-system on the roof, care must be taken to ensure that all module carriers marked in yellow lie one behind the other - this is the only way to create a module field that can carry lightning current throughout.

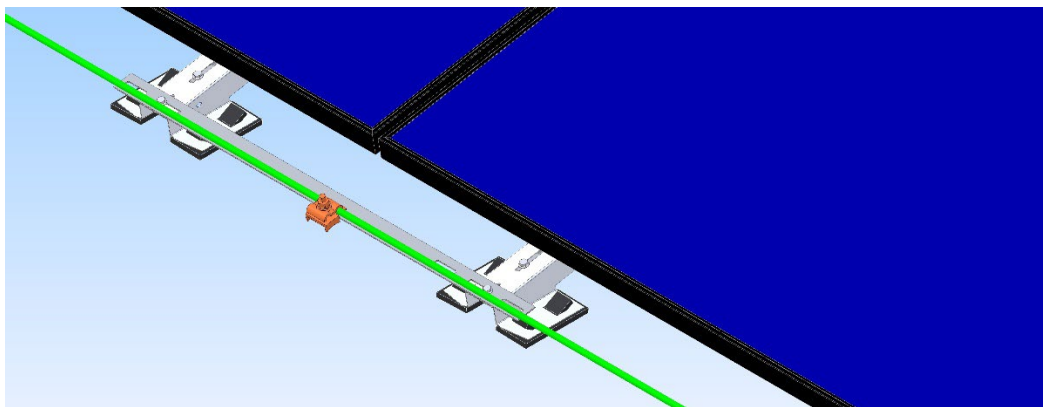
Connecting a module field to the external lightning protection:

The PV-system must be supplemented with continuous lightning rods in the north-south direction at the prescribed distance (every 5m, 10m or 15m, depending on the lightning protection class).

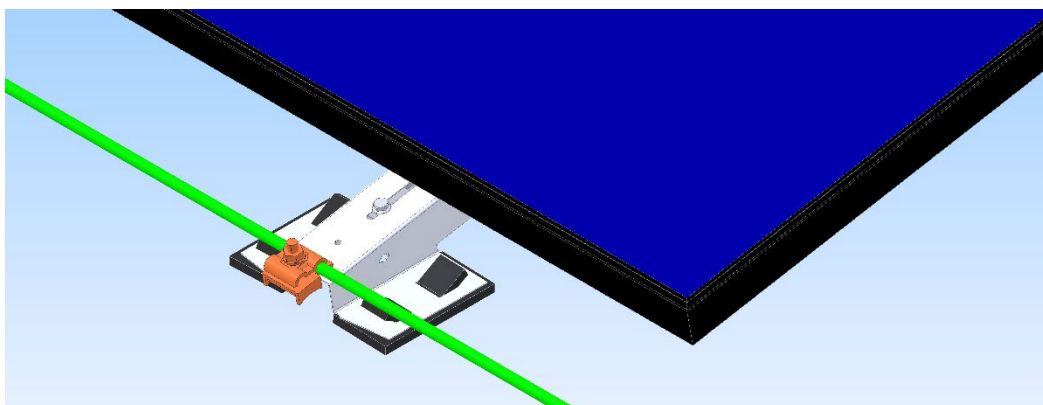
At the beginning/end of a system:



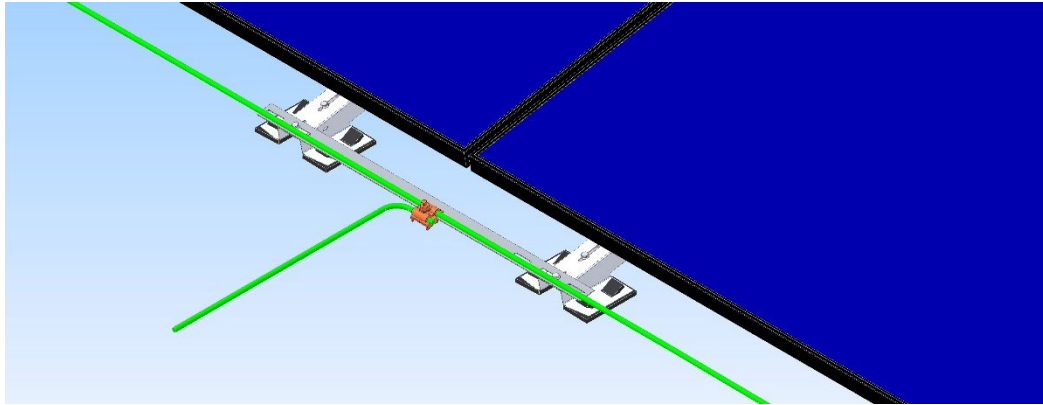
The lightning rod (green) must be connected to all module carriers. If cross connectors are available, the round wire is connected to the cross connector using a clamp (orange):



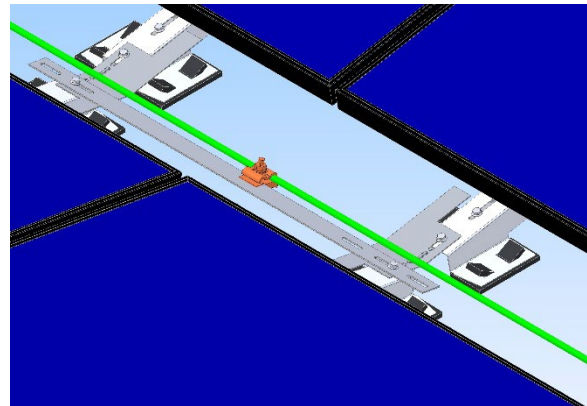
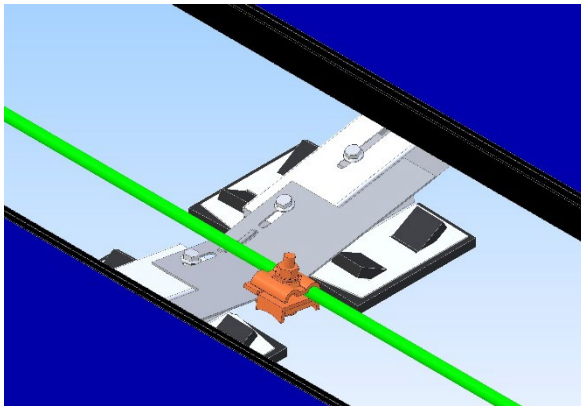
Otherwise, the connection is made directly to the foot of the module carrier:



Furthermore, the module field must be connected to the lightning protection system in an east-west direction using round wire at the prescribed distance (every 5m, 10m or 15m, depending on the lightning protection class).



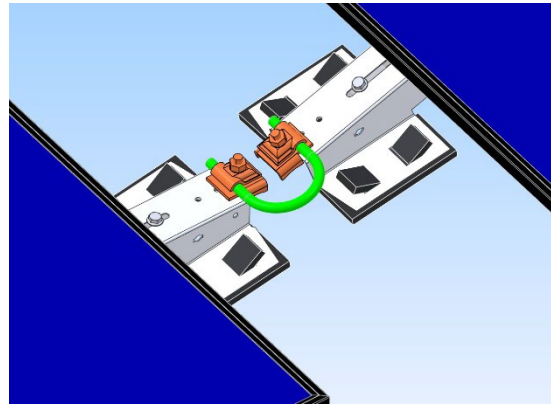
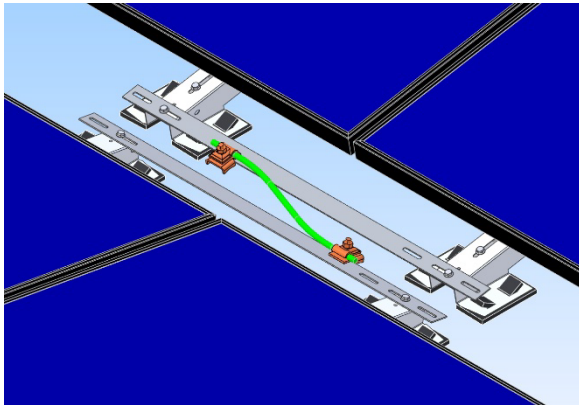
Additional continuous north-south wires must be installed within the generator at the prescribed distance (every 5m, 10m or 15m depending on the lightning protection class) and connected to all module carriers:



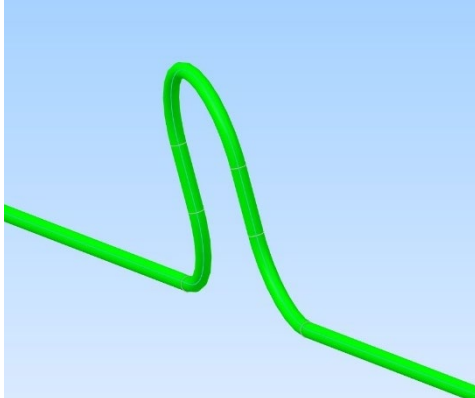
In larger systems with several module fields, the individual system parts must be connected to each other in a way that can carry lightning current across the thermal separation lines or other distances (maintenance path, etc.).

East-West direction:

Connect the individual system parts between the cross connectors in as many places as possible - but at least at the prescribed distance (every 5m, 10m or 15m, depending on the lightning protection class):



North-south direction:



The north-south wire can be easily pulled through using an expansion loop at the thermal separation line.

Use of the SSB2

The SSB2 has a flexible foot on one end. When integrated into a lightning protection system, the rotating base must be fixed using an M6 screw (red in the picture) so that a connection capable of carrying lightning current is created between the base and the module support:

