



LIGHTNING PROTECTION AND EQUIPOTENTIAL BONDING OF PV-RACKING SYSTEMS



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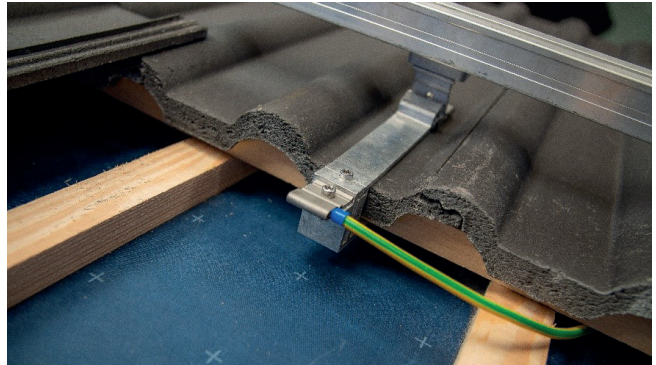
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- The illustrations shown here are SL Rack's recommendations for installing lightning protection and equipotential bonding for the specified systems.
- SL Rack GmbH expressly states that the use of the components shown is only a recommendation. Lightning protection components from other manufacturers may also be installed.
- The installation of lightning protection for the PV racking system must not interfere with an existing lightning protection system of the building.
- The installation of lightning protection must be coordinated with a lightning protection specialist or a lightning protection design office.
- The lightning protection installed for the PV system must be designed to function without PV modules.
- The connections between cables and PV racking systems must be selected in such a way that they do not cause contact corrosion, considering the electrochemical differences.
- The design and implementation of lightning protection must comply with national, local and building codes.
- The module manufacturer's installation instructions must be followed.
- Each module must be included in the equipotential bonding if grounding of the frames is required by the module manufacturer. In the case of module integration, the equipotential bonding should be designed so that modules can be removed without difficulty.

According to VDE 0100, PV systems must always be designed with equipotential bonding. This applies to all touchable and conductive components. Equipotential bonding is the equalization of potential differences between connected components. Equipotential bonding means that all components have the same voltage and therefore no difference can be measured. If you are not familiar with the terminology, we recommend that you consult an expert.



Example: Connection to the SL ALU Multihook with the Potential Equalization Clamp

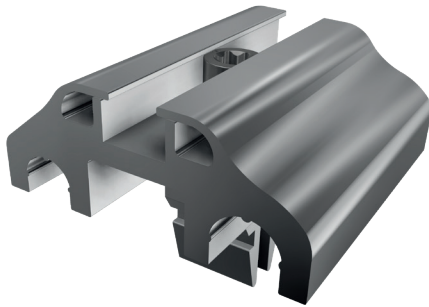
Connecting the entire PV racking system to a grounding system in the earth is called grounding. Grounding has the following advantages:

- Personal protection by preventing electric shock
- Lightning protection
- Functional grounding of equipment

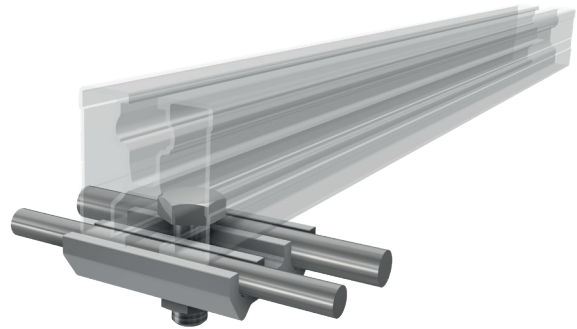
The combination of equipotential bonding and grounding provides an effective protection system.



Example: Grounding / grounding pit



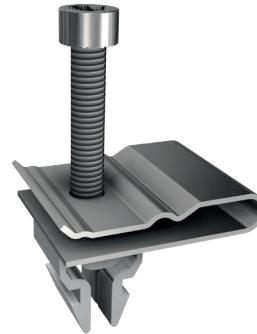
Lightning Protection Clamp Top
(Item no. 91518-00)



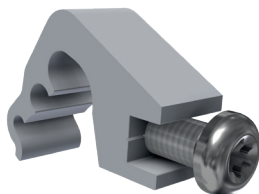
Lightning Protection Clamp Bottom
(Item no. 91520-00)



Potential Equalization Plate (Item no. 93201-00)



Potential Equalization Clamp for RAIL
(Item no. 91545-00)



Potential Equalization Clamp for SL Alu and Alpha-Flex (Item no. 11101-20)



Potential Equalization Clamp for SL Alu Multi Hook
(Item no. 11101-08)

According to DIN EN 62305, the PV racking only needs to be connected to a lightning protection system if the lightning protection system is already installed on the building and the required separation distance cannot be maintained.

If there is no lightning protection system on the building, or if the required separation distance can be maintained, then a connection to the lightning protection system is not required.

4.1. Separation Distance

The separation distance is calculated with the following formula according to DIN EN 62305:

$$s = k_i \times \frac{k_c}{k_m} \times l$$

s = Separation distance

k_i = Induction factor (depending on lightning protection class)

k_c = Current sharing coefficient: $k_c = \frac{1}{2n} + 0.1 + 0.2 \times \sqrt[3]{V^c}$

k_m = Material factor: Insulation properties of the surroundings

l_m = Distance of the approximation point, usually to the foundation („fathom dimension“)

Source: Blitzschutzfibel

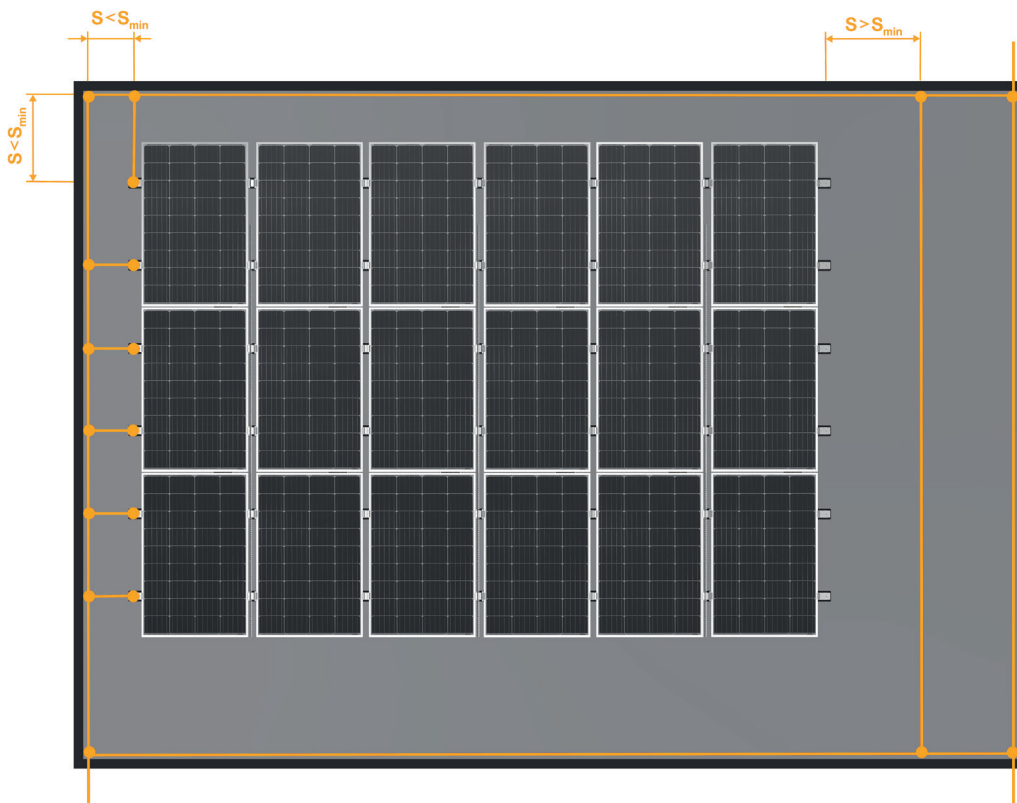


Image: Separation distance for the entire system

4.2. Lightning current capacity of PV racking systems

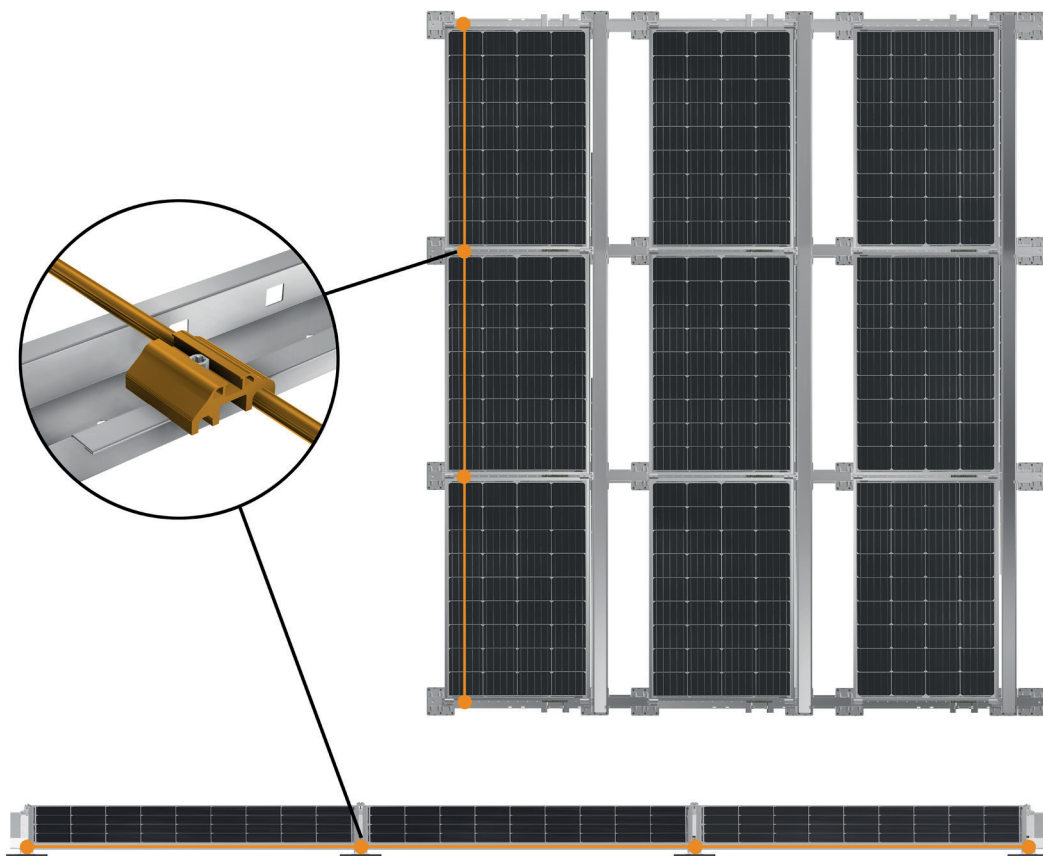
The connection between the PV mounting system and the existing lightning protection system must be designed to withstand lightning currents if a PV mounting system is integrated into an existing external lightning protection system of a building.

In this case, the PV mounting system is not considered to be a lightning arrester and therefore does not need to be a lightning arrester in itself. The arrester function is performed by the existing external lightning protection system.

The system itself must be capable of carrying lightning currents if the PV racking system replaces all or part of the external lightning protection system.

The entire design for integration into the existing external lightning protection system must be carried out by a lightning protection specialist or lightning protection company. Correct installation in accordance with the design specifications must be carried out by a lightning protection specialist or a lightning protection company.

5.1. Connecting the lightning protection system to the flat roof system SL Fast Flat



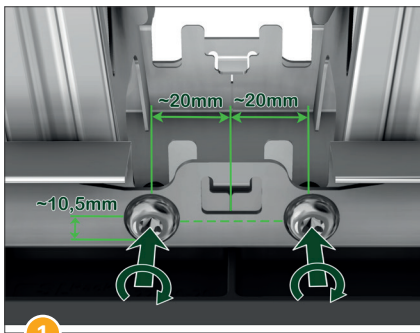
Attention: The SL Fast Flat System may only be connected to an existing lightning protection system by a lightning protection specialist or a lightning protection company.

Tools:

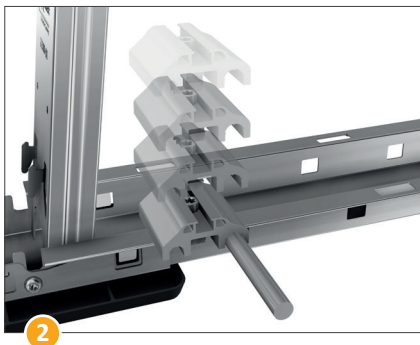
- Cordless screwdriver with Torx 40

Components:

- Lightning Protection Clamp Top
- Recommendation: 8mm/10mm round aluminum wire



Fasten the Base Plate to the Basic Frame at the location shown in the illustration. This creates a connection that can carry lightning currents in accordance with DIN EN 62305.



Press the Lightning Protection Clamp Top (item no. 91518-00) into the front recess of the Basic Frame. Install the round wire (8 or 10 mm) and tighten the Lightning Protection Clamp with 10 Nm.

Attention: Connection to external lightning protection systems should only be carried out by trained personnel.



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