SmartSolarBox

The Power-Package

The revolution in flat roof PV-Systems

PV-Module Requirements for SmartSolarBox Version 5.0

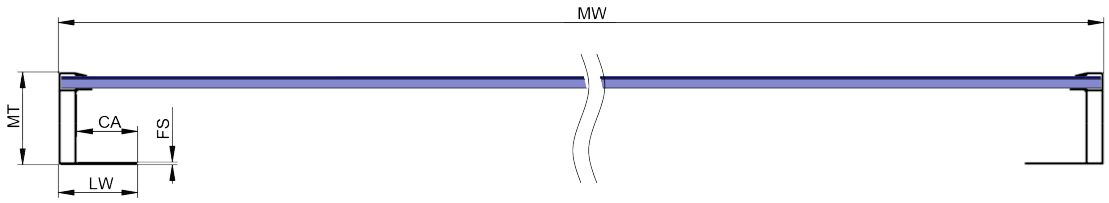
Smartvolt AG

The Path to Smart Energy

The clamping- as well as the folding mechanism of SmartSolarBox leads to several mechanical requirements that the PV-Module needs to comply with. This document is a guideline for Project planners to select a suitable PV-Module. Please be aware that some of the required mechanical properties are not shown on the PV-Module manufacturers datasheet or might be changed by the manufacturer without prior notice!

1. Module dimensions

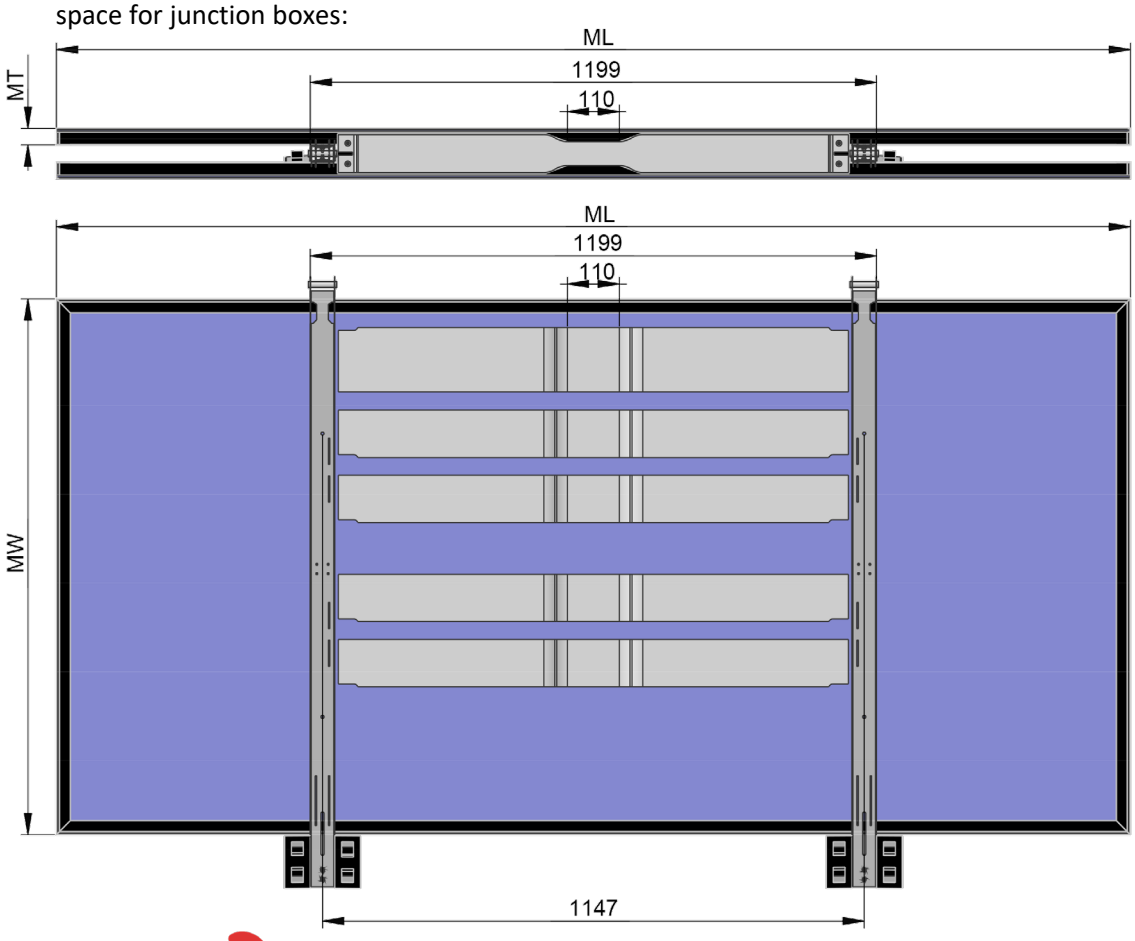
Module length (ML): >1550mm



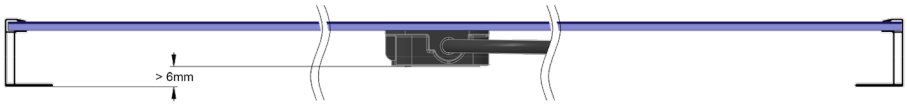
Module thickness (MT): 30-35mm
Frame strength (FS): 1.2mm – 1.6mm
Clamping area (CA): > 19.5mm
➔ no rips and other features allowed in the clamping area CA
Module width (MW): 1005mm + 2 x LW < MW < 1105mm + LW
Example: with LW=35mm the Module width MW is allowed to be 1075mm – 1140mm

2. Junction Box requirements

SmartSolarBox Version 5.0 was designed for half-cut modules. In folded state the integrated ballast elements that are mounted between the supporting rails are defining the available space for junction boxes:



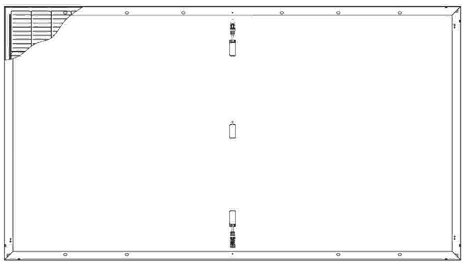
There are no restrictions in the space outside the 1199mm area. Within this area only in the center 110mm is enough room to situate the junction boxes. The free space below the junction box Therefore, be 6mm minimum.



If the junction boxes of the PV-module do not comply with above restrictions the SmartSolarBox might not be foldable as the junction box will interfere with the integrated ballast elements.

3. DC-Cables & Connectors

The SmartSolarBox V5.0 comes with an integrated DC caballing. The DC cables of the PV module need to have original Stäuble MC4 or MC4-EVO-2 connectors and at least 1200mm long connection cables. Minimum cable length was defined for half-cut modules with two central connection boxes.



If a different connection box design is being used, the required minimum cable length might change.

4. Maximum Snow-Load

The SmartSolarBox V5.0 has been tested and approved for a rated load of 7.8kN.
Therefore, get the Snow-Load capability in Pa one needs to divide the 7.8kN by the selected PV-Module surface area.
Example: For a module 1134mm wide and 1722mm long the maximum snow-load of the SmartSolarBox support structure is 7800N / 1.95m^2 = 4000Pa.

The distance between the module-support-rails in the SmartSolarBox V5.0 is 1147mm. As the maximum allowed snow-load depends on how the PV-module is mounted onto the support structure - please read the section “Clamp Mounting on Long Sides of the Frames” in the mounting instruction manual for the selected PV-module carefully to ensure the needed snow-load can be achieved for your project.

As the PV-module will bend under snow-load it needs to be prevented that the module-glass touches the support structure. Therefore, the rigidity of the module is an important property of the PV-module that has to be taken into account when determining the maximum snow load of the SmartSolarBox with the selected PV-module.

For snow-load >2000Pa it is recommended to use glas-glas-modules only.

The project specific maximum allowed snow load of the assembled SmartSolarBox is the lower value of PV-module and support-structure.

Disclaimer:
Smartvolt AG gives no guarantee that the selected module is compliant and can be used with the SmartSolarBox V5.0. Therefore, we recommend a trial assembly to ensure compatibility before project assignment. The project planner is responsible for checking the snow-load requirements as well as maximum load capability of SmartSolarBox in combination with the selected module.

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