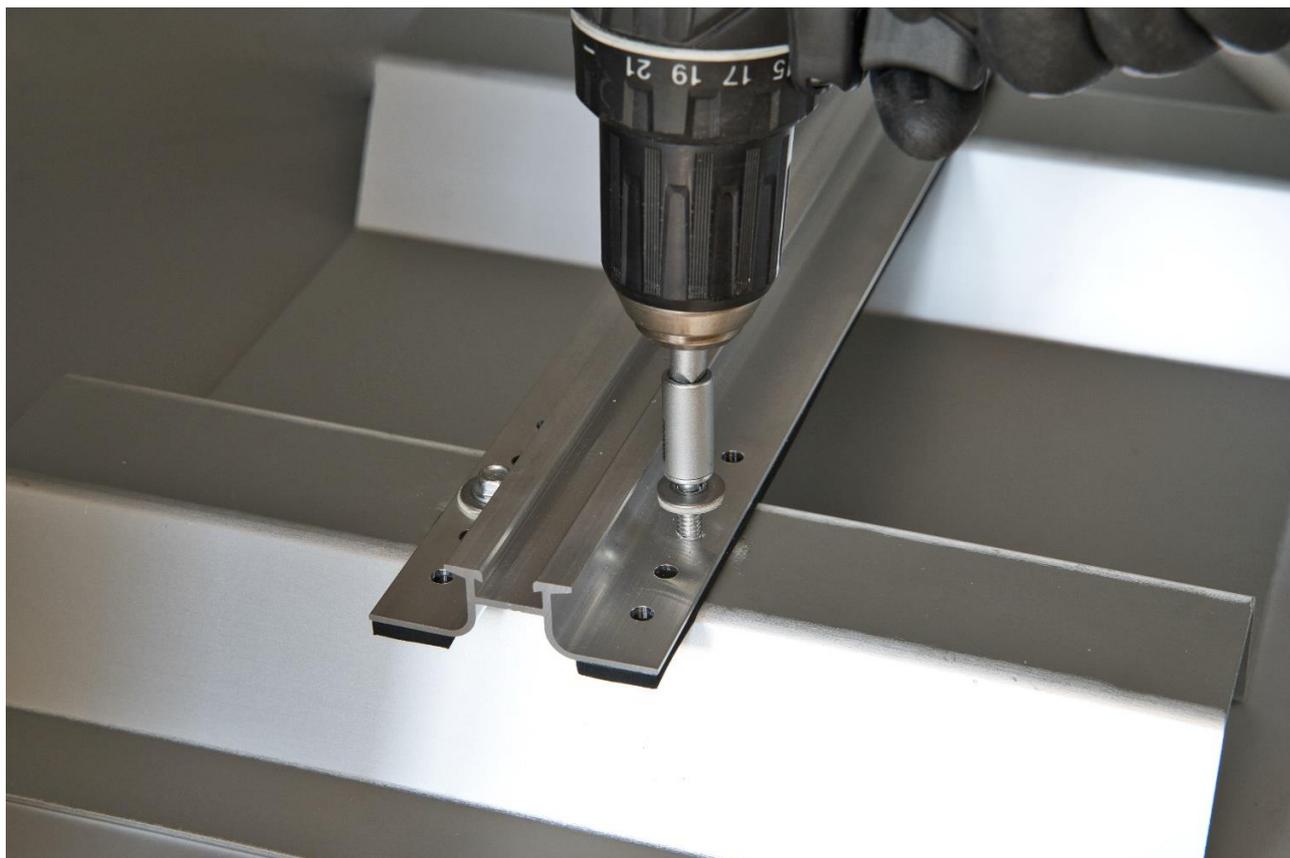


Solar systems from Schweizer: Mounting Instructions – MSP-TT-2CO trapezoidal sheet metal roof PV mounting system



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Standards and technical guidelines

Amongst others, Schweizer's MSP-TT-2CO PV mounting system complies with the following standards:

DIN EN 1990:2010-12	Eurocode 0: Basis of structural design
DIN EN 1991-1-1:2010-12	Eurocode 1: Actions on structures - Part 1-1: General actions – densities, self-weight, imposed loads for buildings
DIN EN 1991-1-3:2010-12	Eurocode 1: Actions on structures - Part 1-3: Snow loads including national annexes
DIN EN 1991-1-4:2010-12	Eurocode 1: Actions on structures - Part 1-4: Wind loads including national annexes
DIN EN 1999-1-1:2010-05	Eurocode 9: Design of aluminium structures

Correct use in accordance with the purpose intended

- Schweizer's MSP-TT-2CO PV mounting system is exclusively intended for the fastening of framed photovoltaic modules on buildings with trapezoidal sheet metal roofs made of steel or aluminium. In the case of sandwich panels, the suitability of the panel needs to be investigated.
- No other kind of use complies with the purpose intended.
- The definition of 'use in accordance with the purpose intended' includes having due regard to the information in these Mounting Instructions.

Responsibility of the customer and installer

The customer and installer are responsible for observance of the following relevant points:

- It must be ensured that all applicable accident prevention requirements and occupational safety provisions (or regionally applicable standards having equivalent value) shall be observed.
 - BGV A1 – Fundamentals of accident prevention
 - BGV A3 – Electrical systems and operating resources
 - BGV C22 – Construction works
- It must be ensured that mounting is only carried out by persons who possess suitable technical qualifications and a basic knowledge of mechanics.
- It must be ensured that the persons instructed to carry out the work estimate correctly the tasks assigned to them and are capable of detecting possible risks.
- It must be ensured that the persons instructed to carry out the work are familiar with the system components and the context of installation.
- The assumptions made in the statics calculations and the load-bearing capacity of the roof skin and roof structure must be checked by the customer.
- As in comparison with conventional roof coverings the properties of solar roofs in relation to snow and ice may change, before installation of a solar system the statics calculations must be checked as appropriate, and snow retention measures (including any existing ones) adapted to the new situation.
- It must be ensured that the detailed proMSP Report / Software Report (for the given installation project, including these Mounting Instructions) shall be available during installation. The Software Report is an essential component of the product.
- It must be ensured that the Mounting Instructions, along with the Software Report and in particular including the safety instructions of those commissioned to carry out the work, have been read and understood in full.
- It must be ensured that the permissible mounting conditions (in particular the conditions of the module manufacturer) shall be observed. Schweizer cannot be made liable for damages or losses resulting from non-compliance with these conditions.

Solar systems from Schweizer:

Mounting Instructions – MSP-TT-2CO

metal roof PV mounting system.

- It must be ensured that the product is installed correctly in accordance with the Mounting Instructions and the Software Report, the necessary tools being provided.
- It must be ensured that a suitable lifting device shall be used as appropriate for the mounting operations.
- It must be ensured that components that are visibly damaged shall not be used. Such components must be replaced.
- It must be ensured that all components are used as intended and as prescribed in the Mounting Instructions, and that the components shall not be mounted in such a way that they perform other or additional tasks.
- Only original Schweizer components may be used if parts need to be replaced. Otherwise no claims under guarantee will be admitted.
- It must be ensured that only Schweizer MSP-TT-2CO or other specified Schweizer components shall be used for mounting operations.
- It must be ensured that the roof skin is not damaged in any way by parts of the mounting system dropping and penetrating it.
- It must be ensured that regular servicing shall be carried out once a year, including investigation of the screw fittings, the mechanical connections, the cabling and possibly also the earthing and the condition of the roof.
- It is the responsibility of the customer to adapt any lightning protection systems already present on the building in accordance with currently applicable technical regulations and requirements.
- The following standards (or regionally applicable standards of equivalent value) for the design and installation of lightning protection, earthing and equipotential bonding systems are to be observed:
 - DIN EN 62305:2009-10 –Part 3: Physical damage to structures and life hazard – Supplement 5: lightning and overvoltage protection for photovoltaic power supply systems
 - DIN VDE 0185 Part 1-4 – Lightning protection
 - DIN VDE 0100 Part 410:2007-06 – Low voltage electrical installations - Part 4-41: Protection for safety – protection against electric shock
 - DIN VDE 0105 – Operation of electrical installations
 - DIN VDE 0298 – Application of cables and cords in electrical installations
- The following safety guidelines have to be observed: VDS 2023 – Electrical installations in structures with primarily combustible construction materials, and DIN 4102 – Fire behaviour of building materials and elements (or regionally applicable standards of equivalent value).
- The customer is responsible for ensuring that the roof on which the system is mounted is designed and built in such a way that it provides an appropriate, safe and stable foundation. This covers such aspects as the structural stability of the roof, the condition and tolerance of the roof skin and suitable measures for the drainage of water from the roof surface. Schweizer cannot be held responsible for damage to roofs where the design or structure of the roof is unsuitable for the mounting of an installation of this nature.
- The customer is responsible for ensuring that the mounting shall be carried out in compliance with currently applicable requirements and guidelines, including for example observation of the required peripheral distance from the roof edge, the installation of safety barriers, restriction of access during operation and prophylactic measures for the anticipated dynamic load or any special occurrences such as earthquake or extreme weather conditions.

Solar systems from Schweizer:

Mounting Instructions – MSP-TT-2CO metal roof PV mounting system.

- The regulations for roofing work of the Zentralverband des Deutschen Dachdeckerhandwerks (ZVDH) [Central Association of the German Roofing Trade], or regionally applicable standards of equivalent value, must be observed.
 - DIN 18338 Roofing work
 - DIN 18451 Scaffolding work

Fundamental safety instructions

The following fundamental safety instructions and warnings constitute an essential component of these instructions, and are of crucial importance for dealing with this product:

- Work clothing must be comply with national regulations.
- Any applicable health and safety provisions are to be observed.
- It must be ensured that all electrical work shall be carried out by qualified professional electricians, and all applicable regulations and guidelines must be complied with.
- It is a mandatory requirement that a second person be present throughout the mounting work, so as to be able to provide assistance in case of an accident.
- A copy of these Mounting Instructions must be kept in the immediate vicinity of the installation, for use by persons who are commissioned to carry out the work.
- Until the photovoltaic system has been entirely completed and is ready for operation, all incomplete sections, components and materials must be secured in accordance with the applicable regulations.

Mounting conditions

Schweizer's MSP-TT-2CO PV mounting system is designed for use subject to the following conditions:

- Suitable for trapezoidal sheet metal roofs with a pitch of at least 5° up to a maximum of 70°.
- It must be capable of withstanding all prevailing wind and snow load scenarios. It must however be assembled correctly for the conditions of the specific place and project, especially with regard to the required calculation of additional loads.
- Designed for the fastening of framed photovoltaic modules with a frame height of 30-50 mm.
- For use on trapezoidal sheet metal roofs with a metal thickness of 0.5 mm up to a maximum of 2.0 mm and with a pitch of at least five degrees.
- For trapezoidal sheet metal roofs with metal of the following qualities: steel S235 – EN 10025-1; S280GD – EN 10346, S320GD – EN 10346; aluminium with $f_{u,min} \geq 165 \text{ N/mm}^2$.
- For trapezoidal sheet metal roofs with a bead spacing of max. 333 mm and a minimum bead width of 15 mm.
- Suitable for environmental conditions within the bandwidth of normal corrosive environments (e.g. at least 1 km distant from a sea coast), or in more corrosive environments (e.g. C4) provided that special service requirements are met (guidelines and instructions obtainable from Schweizer on request).
- The adequate load-bearing capacity of the module itself falls in the customer's sphere of responsibility.
- For roofs sufficiently capable of withstanding the additional load of the PV system (according to the customer's estimate, and as a matter for which the customer is responsible).

Preparations for the installation

An expert opinion on the roof must be obtained in order to determine the suitability of the roof for supporting a PV system and taking the structural properties, building regulations and condition of the roof into account.

If required, establishing the suitability of the roof must include scrutiny of the following points:

- Sufficient structural load-bearing capacity for the additional load of the PV system.
- Fitness for purpose and condition of the roof skin.

Solar systems from Schweizer: Mounting Instructions – MSP-TT-2CO metal roof PV mounting system.

- Condition of the roof (not damaged).

Before starting to mount the PV system, the roof must

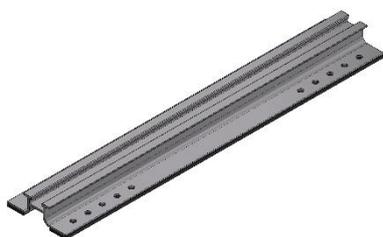
- comply with the mandatory minimum standards;
- be thoroughly cleaned, all dirt and deposits being removed;
- be free from snow and ice.

The customer must confirm that the necessary mounting conditions for the MSP-TT-2CO PV mounting system are met. It must be ensured that the persons commissioned to carry out the work are completely familiar with the design.

The material must be distributed evenly on the roof, in order to avoid point loads. Make sure that the necessary tools are available (a torque wrench, a powerful battery-powered screwdriver, an SW 8 hexagonal bit and a size 30 Torx bit).

System components:

1



MSP-TT-CHA 270mm/370mm

2



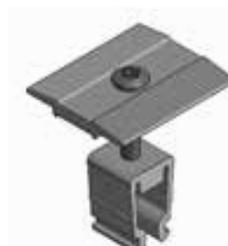
MSP-TT-TB

3



MSP-PR-EC/ECB

4



MSP-PR-MC/MCG/MCB/MCBG

5



proMSP Report

Legend to the Mounting Instructions



Take note of additional information

*click.

An audible click



NB: pay attention to detail



Direction of movement of a part when assembled correctly



Indicates correct execution



Parts label



Indicates faulty execution

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Mounting Instructions – MSP-TT-2CO metal roof PV mounting system.

Mounting steps:

proMSP Report / Software Report:

Note: The proMSP Report / Software Report is created subsequently to the planning of the PV system with the help of the proMSP software.

It must be ensured that the proMSP Report is available on the building site and that those who are commissioned to execute the work are completely familiar with the sequence of installation.

Fig. 1: Clean roof surface.

Fig. 2 + 2.1: Arrange trapezoidal track (MSP-TT-CHA) and position it symmetrically with reference to the bead; fix in place with 2 screws per bead.

Fig. 3 + 3.1: Tighten screws.

Note: Screws must be placed with the help of the slip clutch in such a way that the sealing washer emerges slightly. Screws must not be overtightened or subjected to excessive pressure. Make sure that no gap is left between the trapezoidal rail and trapezoidal roof.

Fig. 4: Click end clamp or middle clamp into the rail so that an audible click is heard.

Note: Use middle clamp for 2 adjacent PV modules, otherwise end clamp.

Fig. 4.1: Position end clamp or middle clamp.

Note: No positioning of the end clamp or middle clamp outside the outermost screw fastenings of the trapezoidal rail (MSP-TT-CHA) is permissible.

Fig. 5: Arrange PV module, tighten end clamp with 10 Nm torque.

Fig. 6: Arrange PV module, tighten middle clamp with 10 Nm torque.

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