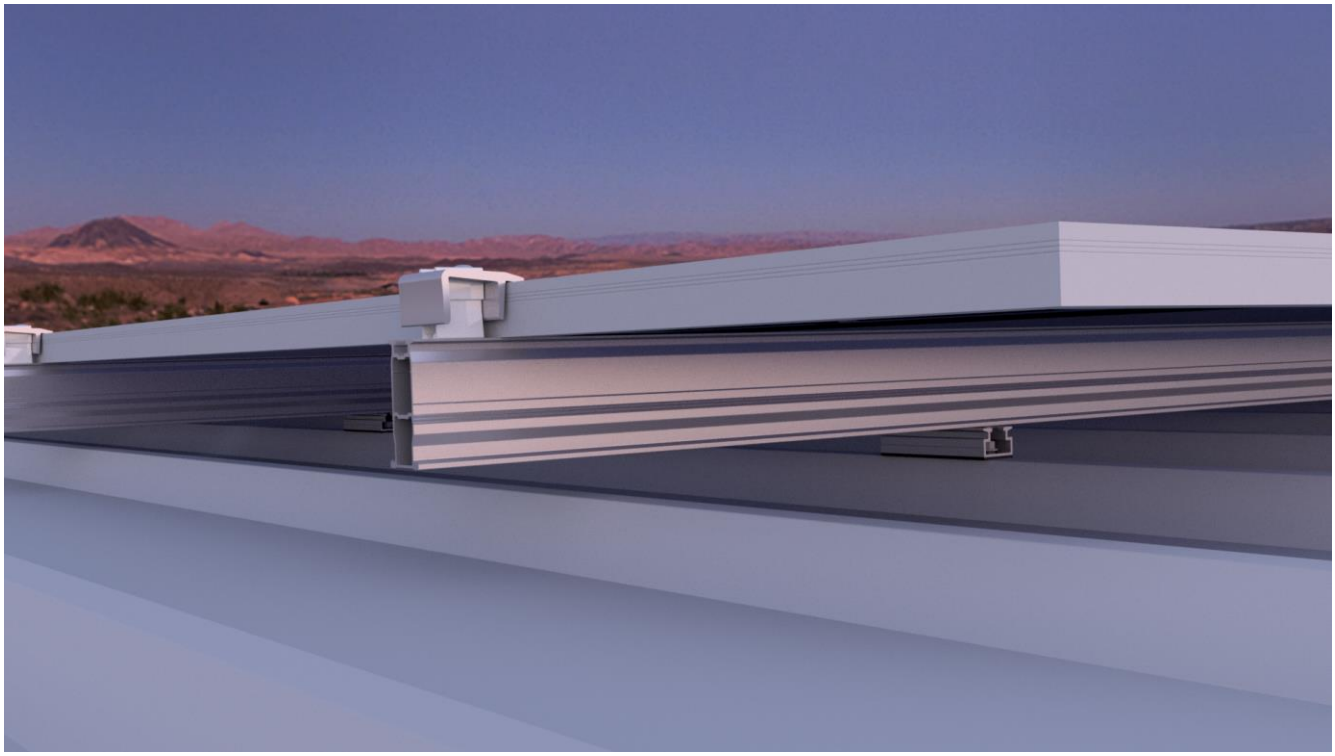
Solar systems from Schweizer

Installation instructions for PV mounting system MSP-TT
Trapezoidal sheet metal roof



Read carefully before use and keep in a safe place.

All information and illustrations were up to date at the time of publication.

The current version can be downloaded at any time Installation instructions MSP-TT.

Technical changes and errors excepted.

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1 About these instructions

1.1 Basic notes on the installation instructions

The installation instructions contain important information on how to install the installation system safely, properly and correctly. By following the instructions, hazards are avoided and repair costs and downtimes are minimised.

These installation instructions are to be observed during the entire installation period of the PV mounting system.

to be kept for future reference.

The applicable documents are listed in the appendix **Chapter 10 Additional documents**

1.2 Standards and technical guidelines

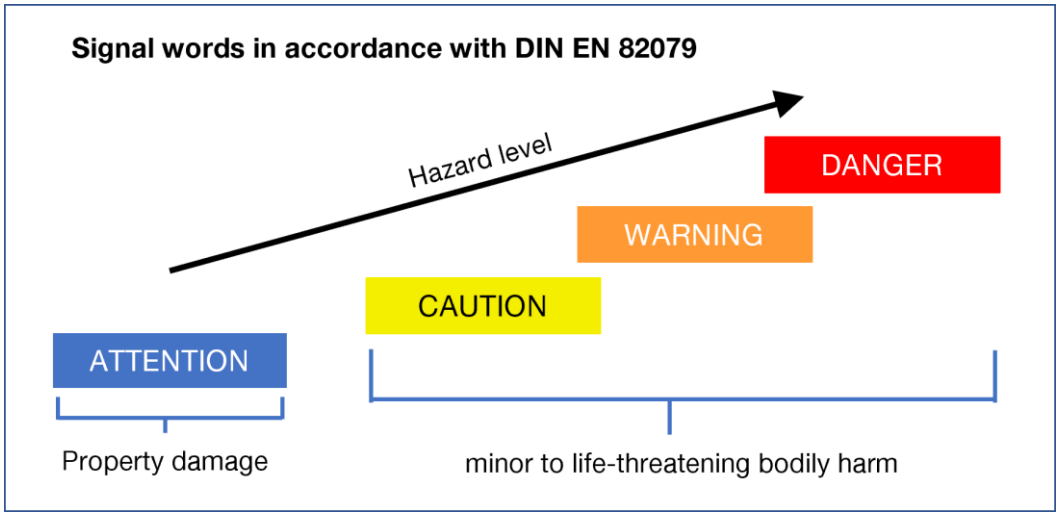
The Schweizer MSP-TT PV mounting system complies with the following standards, among others:

DIN EN 1990	Eurocode 0: Fundamentals of structural design
DIN EN 1991-1-1	Eurocode 1: Actions on structures - Part 1-1: General actions on structures - Weights, self-weight and live loads in buildings
DIN EN 1991-1-3	Eurocode 1: Actions on structures - Part 1-3: Snow loads including national annexes
DIN EN 1991-1-4	Eurocode 1: Actions on structures - Part 1-4: Wind loads including national annexes
DIN EN 1999-1-1	Eurocode 9: Design of aluminium structures

1.3 Structure of the warnings according to hazard levels

Differentiation of hazard levels

The following signal words indicate the different hazard levels by means of different colour backgrounds:



2 Caption to the assembly instructions

	Attention		Warning of dangerous electrical electrical voltage
	See project report		Audible click
	Correct execution		Direction of movement
	Faulty execution		Tightening / tightening torque
Option	Optional step		Earthing / earthing installation

3 Copyright

3.1 Reservation of rights

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All appendices are integral parts of the installation instructions.

The PV mounting system was built in accordance with recognised safety regulations. However, improper use can endanger persons or cause damage to property.

3.2 Liability

Liability is governed by the General Terms and Conditions of Ernst Schweizer AG, Hedingen (CH) and Ernst Schweizer GmbH, Satteins (AT), which are available at General Terms and Conditions - Ernst Schweizer Solar Systems.

4 Security

4.1 Intended use

The Schweizer PV mounting system MSP-TT is only suitable for mounting framed photovoltaic modules on buildings with trapezoidal sheet metal roofs. In the case of sandwich panels, the suitability of the panel must be checked. Any other use is (strictly) prohibited by Schweizer and not in accordance with the intended use.
The definition of intended use includes compliance with the information in these installation instructions. Schweizer cannot be held liable for damage or loss resulting from non-compliance with these installation instructions, in particular the safety instructions, or from misuse of the product.

4.2 Reasonably foreseeable misuse en

The reasonably foreseeable misuse described here does not claim to be exhaustive. If necessary, the list must be expanded with documented incidents.

These include:

- Persons standing under suspended loads (during assembly)
- Use of fittings and accessories such as screws or connectors when installing the supporting structure that are not originally included in the scope of delivery
- Installation of the supporting structure by unauthorised, technically unsuitable personnel
- Damage to the roof cladding
- Installation of the supporting structure on a non-load-bearing substrate/roof
- Incorrect positioning of the PV modules
- When setting up the construction site on the roof, storing the installation material on the roof and when leaving the construction site, the construction site material (tools, packaging material, pallets, installation and system material not yet installed, etc.) and unfinished systems always be adequately secured against the effects of the weather.
- Failure to observe the safety equipment, safety regulations and current accident regulations
- When leaving the construction site, unfinished installations must be secured.

Faults can also occur if unauthorised components are used during repairs

4.3 Requirements for safe operation

In order to avoid personal injury and damage to property, care must be taken during all activities in connection with the intended operation of the PV mounting system. In the event of non-compliance, Ernst Schweizer AG accepts no liability for any damage to property and/or personal injury.

The following also applies:

- The PV mounting system must only be operated in perfect, functional condition.
- All warnings and safety instructions in these installation instructions, as well as those in the suppliers must be followed at all times.
- Unauthorised modifications to the PV mounting system are prohibited.

4.4 Responsibility of the customer or installer

The customer or the installer is responsible for compliance with the following relevant points:

It must be ensured that,

- all applicable accident prevention regulations and occupational safety regulations (or equivalent regional standards) are complied with.
  - DGUV Regulation 1 - Principles of prevention (replaces BGV A1)
  - DGUV Regulation 3 - Electrical systems and equipment (replaces BGV A3)
  - DGUV Regulation 38 - Construction work (replaces BGV C22)
- the installation is carried out exclusively by persons who have suitable basic technical and specialised knowledge.
- the persons responsible for carrying out the work are able to assess the tasks assigned to them and recognise possible risks.
- the persons responsible for carrying out the work are familiar with the system components and the installation process.
- the project report for the project to be installed has been read and fully understood by the persons responsible for carrying out the work.
- the project report is available at all times during installation. The project report is an essential component of the Schweizer PV mounting system.
- the permissible installation conditions are observed. Schweizer cannot be held liable for damage or losses resulting from non-compliance with these conditions.
- the correct assembly in accordance with the project report and the provision of any necessary tools is guaranteed.
- if necessary, a suitable lifting device is used for assembly.
- components with visible damage must not be used and replaced.
- each component and its accessories are used exclusively as intended and specified in the project report.
- only Schweizer MSP-TT or other specified MSP Schweizer components are used for assembly, even if parts have to be replaced. Otherwise, no warranty claims will be recognised.
- maintenance work must be carried out once a year, including an inspection of the screw connections, the mechanical connections, the position of protective layers, the cabling, the earthing and the condition of the roof cladding.
- the roof on which the system is mounted is designed and built to withstand the PV mounting system adequately and safely. This includes, among other things, the structural strength of the roof, the condition and compatibility of the roof structure and the covering. Schweizer cannot be held responsible for damage to roofs where the construction or design of the roof is not suitable for accommodating the system installation.
- The Schweizer PV mounting system MSP-TT can be included in the design of the electrical potential equalisation system and connected to it by properly attaching a suitable earthing clamp or screw. The customer must ensure compliance with current regulations, legal requirements and guidelines.
- the installation complies with current national regulations and guidelines, including, but not limited to, maintaining the required edge distance to the roof, installing safety barriers, restricting access during operation, or taking precautions for expected dynamic loads or special events such as earthquakes and extreme weather conditions.
- if the system is attached to the building in any way, this attachment must be appropriately designed and provided.
- any existing lightning protection system of the building must be adapted in accordance with the current technical regulations and statutory provisions

– The following standards (or corresponding regional standards) for the design and installation of lightning protection, earthing and potential equalisation must be observed:

  - DIN EN 62305 Lightning protection
  - DIN VDE 0185 Part 1-4 Lightning protection
  - DIN VDE 0100 Part 410 Earthing
  - DIN VDE 0105 Operation of electrical installations
  - DIN VDE 0298 Electrical cables

Furthermore are:

- "The regulations of the Central Association of German Roofers (ZVDH)" or equivalent, regionally applicable standards for work on roofs must be observed.
- DIN 18338 Roofing work
- DIN 18451 Scaffolding work

and:

- The guidelines for loss prevention VDS 2023 - Electrical installations in buildings with predominantly combustible building materials and DIN 4102 - Fire behaviour of building materials and components (or equivalent, regionally applicable standards) must be observed.

4.5 Basic safety instructions

The following basic safety instructions and warnings are an integral part of this manual and are of fundamental importance when handling this product:

– Work clothing must be worn in accordance with national regulations.

– Occupational safety regulations must be observed.

– It must be ensured that all electrical work is carried out by qualified electricians. All relevant regulations and directives must be complied with.

– The presence of a second person who can provide assistance in the event of an accident is mandatory during the entire installation work.

– These installation instructions must be kept in the immediate vicinity of the system for use by the persons authorised to carry out the work.

– Until the PV system is fully completed and ready for operation, all incomplete sections, components and materials must be secured in accordance with the applicable regulations.

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5 Residual risks

The following safety instructions must be followed to avoid danger to people and damage to the PV mounting system and the PV modules.

DANGER

Electric shock due to lightning striking the PV mounting system

The supporting structure with the installed photovoltaic systems is operated outdoors. A lightning strike can lead to life-threatening injuries.

Ground the PV mounting system properly.

Do not carry out any maintenance or servicing work on the PV mounting system during a thunderstorm.

DANGER

Electrical voltage due to loosened protective conductor or earthing connections

If protective conductors or earthing connections have been disconnected, conductive parts including handles, covers and locks that appear insulated can cause an electric shock if touched. Check that all protective conductors and earthing connections are connected.

Leave the danger zone immediately in the event of an electric shock on defective components or cables.

WARNING

Danger of falling

Carelessness and tripping can result in a fall when working at height. This can result in life-threatening injuries.

- Access to the roof must be secured by the operator in such a way that no unauthorised persons can enter the roof area.
- When carrying out cleaning and maintenance work, ensure that suitable anchorage devices and a body holding device are available.

CAUTION

Risk of tripping and falling

Objects lying around or cable ducts attached to the floor can cause tripping and falling hazards, which can result in injuries.

- Avoid obstacles in the field of movement.
- Lay the cable ducts so that there are no obstacles.
- Do not store or place any objects in the danger zone.

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6 Technical clarification before assembly begins

The suitability of the roof for supporting a PV system must be checked and confirmed by the customer (structural engineer / specialist planner) in accordance with the recognised rules, technology, legal requirements, standards and technical regulations.
The following points, among others, should be emphasised here:

- Sufficient structural load-bearing capacity for the additional loads of the PV system
- Suitability and condition of the roof cladding
- Condition of the roof (free of any damage)
- Compliance of the trapezoidal sheet quality with the calculation assumptions in the report (in particular material and thickness)

Before starting the installation of the PV system, the roof must be

- comply with the required minimum standards.
- must be thoroughly cleaned, removing all dirt and deposits
- be free of snow and ice.

The customer must confirm that the installation conditions required for the MSP-TT PV mounting system are met. It must be ensured that the persons responsible for the work are fully familiar with the developed design.
Ensure that the necessary tools are available (a torque spanner, a powerful cordless screwdriver, a size 8 hexagon bit and a size 30 Torx bit).

7 Roof preparation

The installer must ensure that the installation conditions required for the MSP-TT are met and that the persons responsible for the installation work are professionally trained and fully familiar with the PV mounting system.

NOTE

The material must be distributed on the roof in such a way that no excessive point loads occur.

8 Commissioning and maintenance

Observe the safety instructions listed here as well as the instructions at the beginning of these operating instructions **at 4 Security**

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9 Assembly conditions

The Schweizer PV mounting system MSP-TT is designed for the following conditions:

- The installation of the system must be correctly adapted to the project and its local conditions, in particular with the necessary calculation of additional loads.
- For module sizes according to data sheet MSP-TT
- Suitable for ambient conditions within the range of normal corrosive environments (e.g. at least 1 km from the seashore) and in more corrosive environments (e.g. C4) if regular maintenance is ensured.
- For roofs that can sufficiently withstand the additional load from the PV mounting system (as assessed by the customer and within his responsibility). The calculated total load applied to the roof by the MSP-TT PV mounting system includes the PV mounting system and the modules (as specified in the project report). All other loads are excluded (e.g. cables, inverters, etc.).

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10 Additional documents

Document type	Rubrics	Webpage
pdf	Important documents Information sheets Test results	

11 Tools required

Cordless screwdriver

If the cordless screwdriver is equipped with an impact drilling function, it must be switched off.

Torx attachment TX30

Hexagon attachment Hex. 8

Torque spanner (10 Nm) for/with Torx attachment TX30

Cleaning the roof surface before installing the MSP-TT system

Required tool MSP-TT-CHVH 100 and MSP-TT-CHAH 370

Hexagon socket 8 mm 1/4" (L = 25 mm)

850-8 - HAZET - The tool

Machine screwdriver adapter 1/4" (L = 100 mm)

8508S-4 - HAZET - The tool

Torque spanner (10 Nm) for/with Torx attachment TX30

Assembly instructions for stainless steel screw connections:

Assembly must be carried out professionally. To avoid cold welding between the bolt and nut

- use a screwdriver without impact drilling function
- set an appropriate speed that is not too high
- No increased pressure to be generated on the screw

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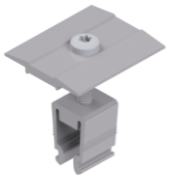
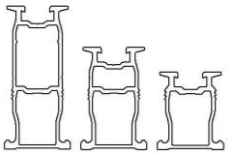
12 Components

1	2	3	4	5
				
Trapezoidal rail **MSP-TT-CHV**	**Trapezoidal rail** **MSP-TT-CHVH 100**	**Trapezoidal rail** **MSP-TT-CHA 270** **MSP-TT-CHA 370**	**Trapezoidal rail** **MSP-TT-CHAH 370**	**Thin sheet metal screw** **MSP-TT-TS 6x25**
6	**7**	**8**	**9**	**10**
				
End clamp **MSP-PR-EC** **MSP-PR-ECB** **MSP-PR-ECG** **MSP-PR-ECBG**	**Middle clamp** **MSP-PR-MC** **MSP-PR-MCB** **MSP-PR-MCG** **MSP-PR-MCBG**	**Cross connector** **MSP-PR-CC**	**Support profile** **MSP-PR-CH 70** **MSP-PR-CH 50** **MSP-PR-CH 38**	**Insertion channel** **MSP-PR-IC** **MSP-PR-ICB**
11				
				
S.P.T project report				

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13 Preparation - before assembly

- the S.P.T project report must be available.
- the material must be complete.

Options:

- **Direct mounting MSP-TT-CHV 100 / MSP-TT-CHVH 100**
- **Cross composite on MSP-TT-CHV 100 / MSP-TT-CHVH 100**
- **Inlay system MSP-TT Inlay-CHV 100 / MSP-TT-Inlay-CHVH 100**
- **Direct mounting MSP-TT-CHA / MSP-TT-CHAH**
- **Cross-link on MSP-TT-CHA / MSP-TT-CHAH**

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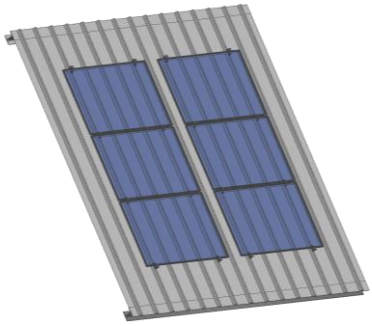
14 Direct mounting MSP-TT-CHV 100 / MSP-TT-CHVH 100

1
Overview



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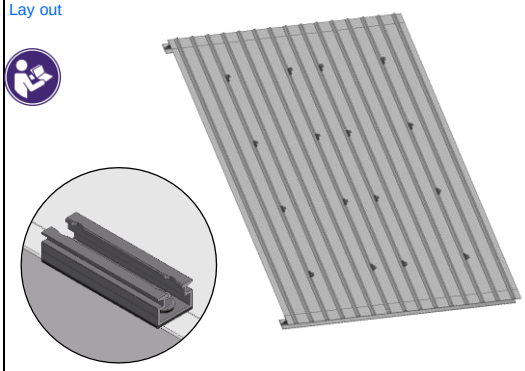
Lay out



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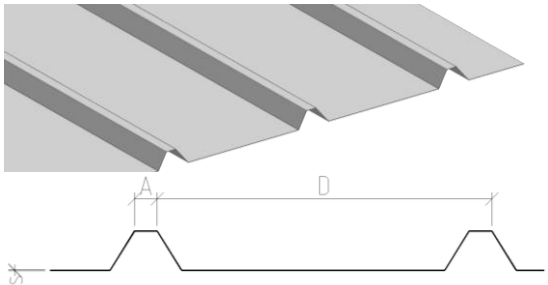
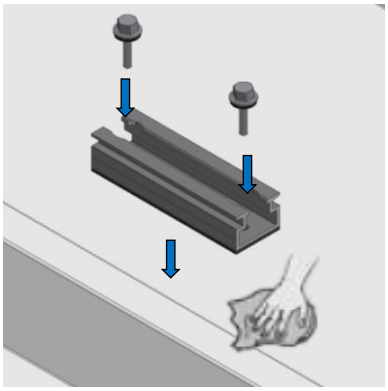


A	D	s
≥ 20 mm	≤¼ Solar module	0.5 - 1.5 mm

4
Hex 8



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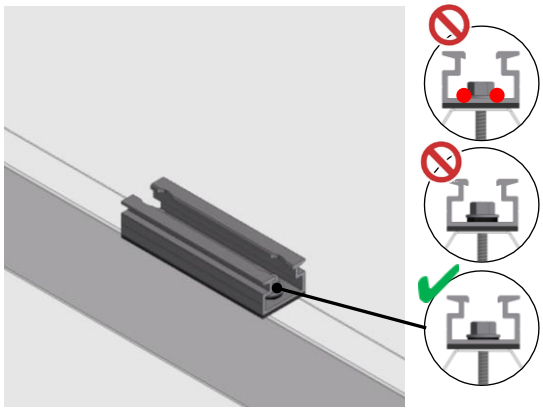
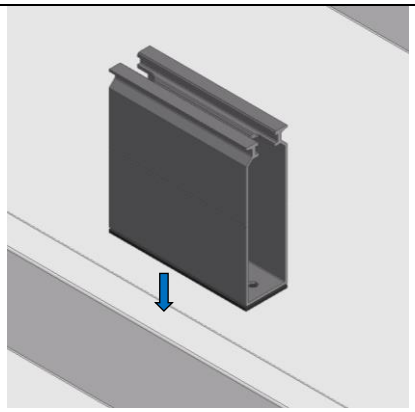
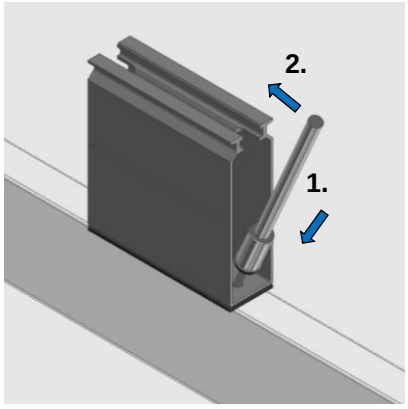


6
MSP-TT-CHVH 100



7
H8



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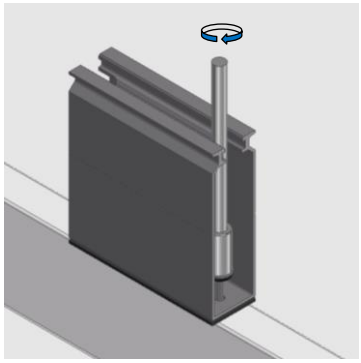

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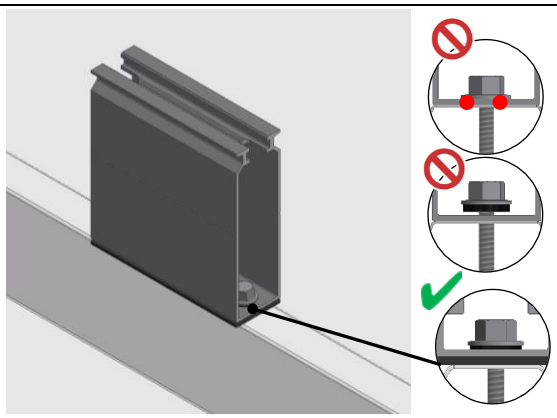
9



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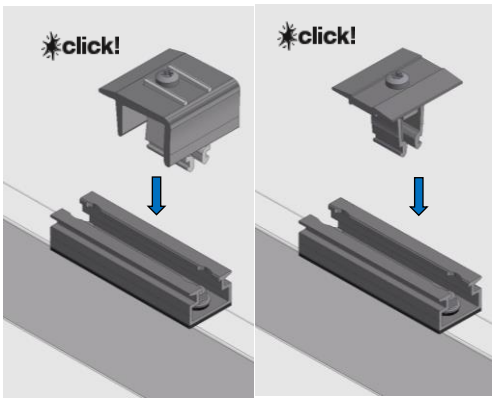
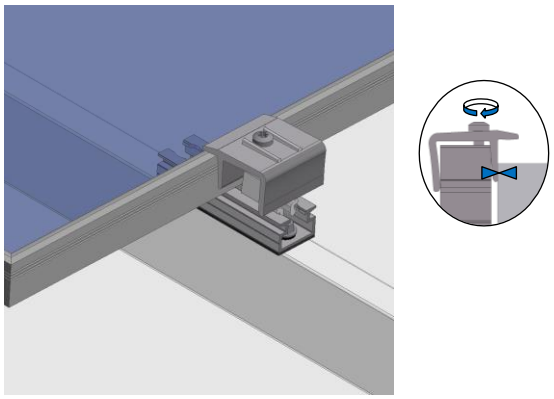


11

T 30 / 10Nm



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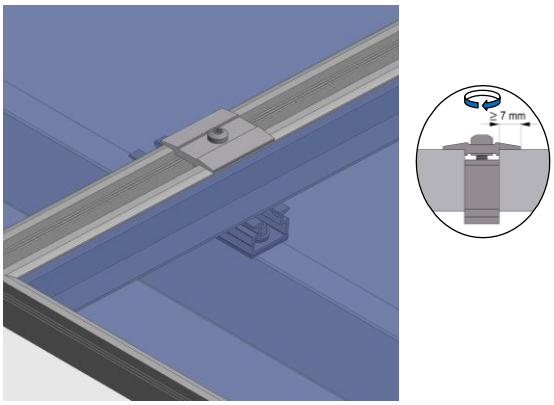
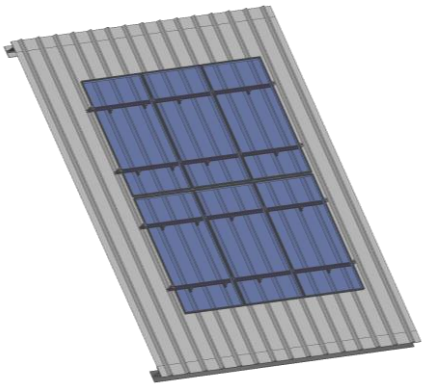
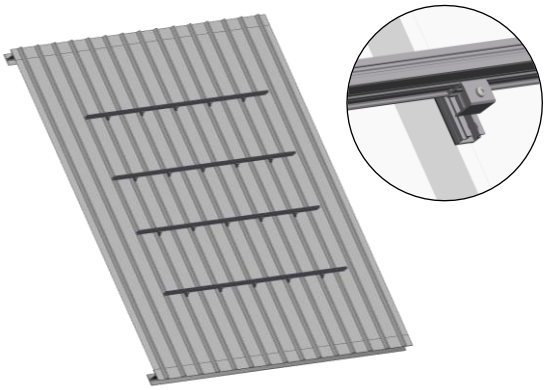


15 Cross connection assembly MSP-TT-CHV 100 / MSP-TT-CHVH 100

1
Overview



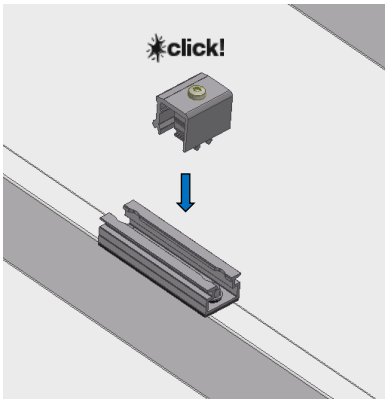
2
Lay out



3
Hex 8

Observe steps 1-5 for "14 Direct mounting"

4



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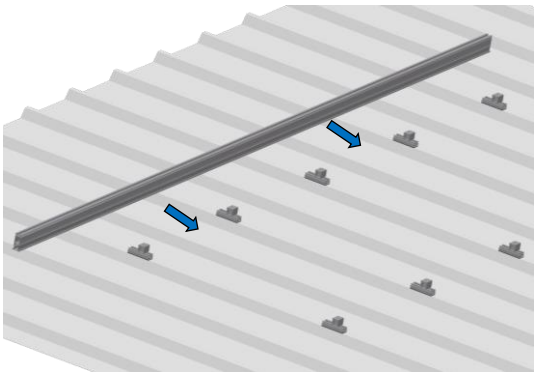
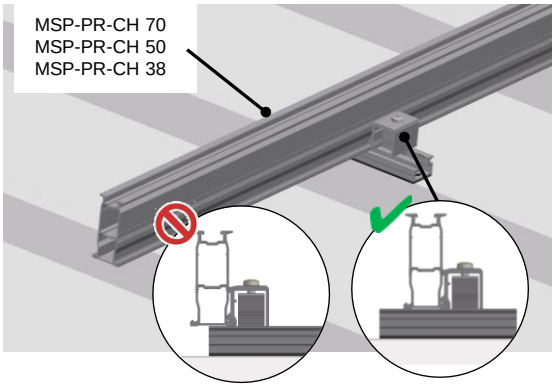


6
T 30 / 10Nm

MSP-PR-CH 70
MSP-PR-CH 50
MSP-PR-CH 38



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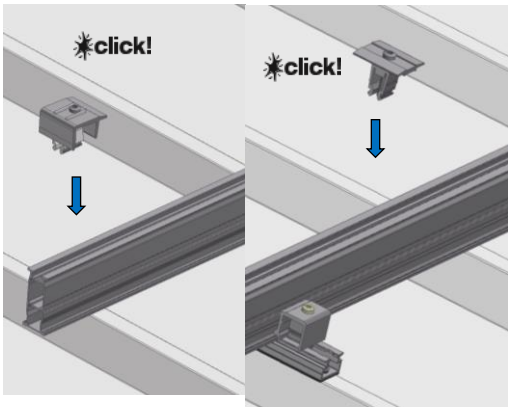
Option



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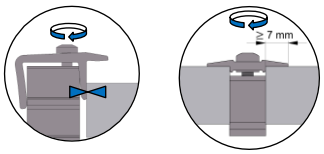
T 30 / 10Nm

Note steps 11-12 in "14 Direct mounting"



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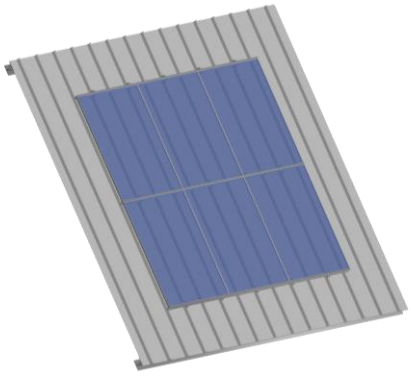
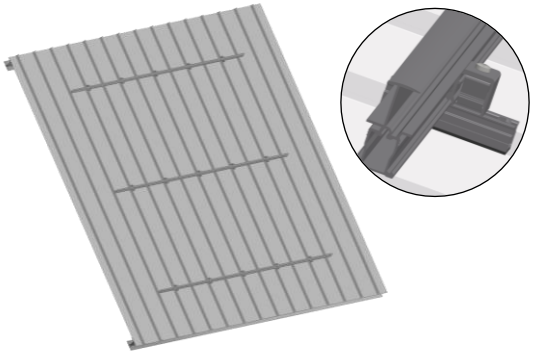
16 Inlay MSP-TT-CHV 100 / MSP-TT-CHVH 100

1
Overview



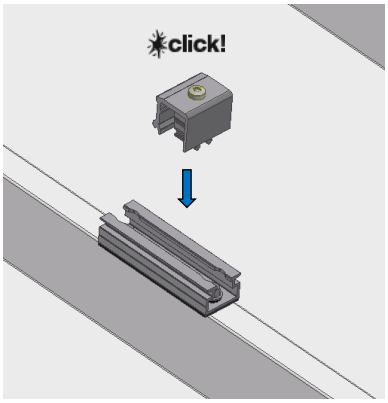
2
Lay out



3
Observe steps 1-5 for "14 Direct mounting"

Hex 8

4



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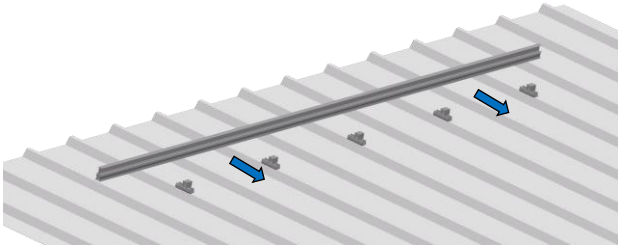
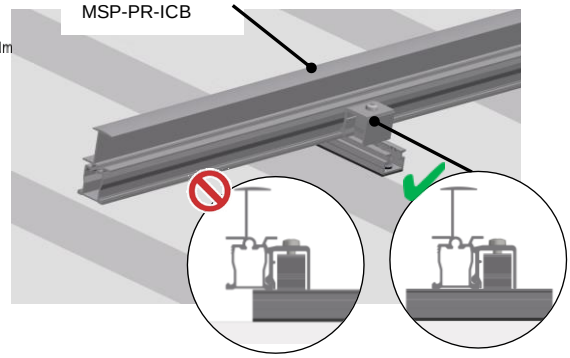


6

T 30 / 10Nm

MSP-PR-IC
MSP-PR-ICB



7

Further steps for mounting the
For inlay splint on MSP-TT-CHV, please refer to the MSP-PR inlay instructions

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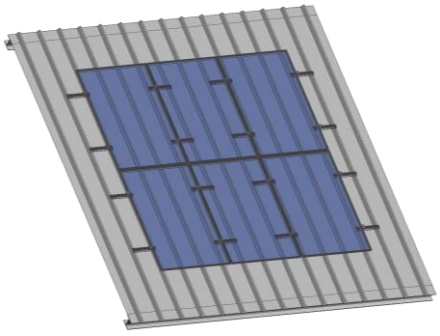
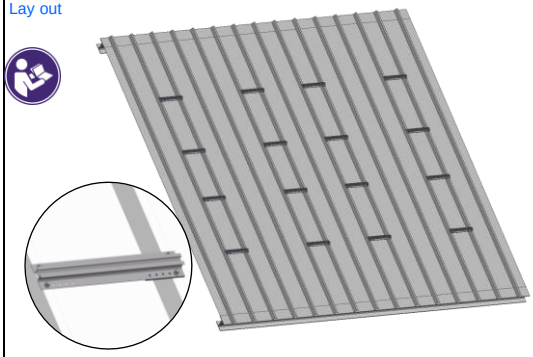
17 Direct mounting MSP-TT-CHA / MSP-TT-CHAH

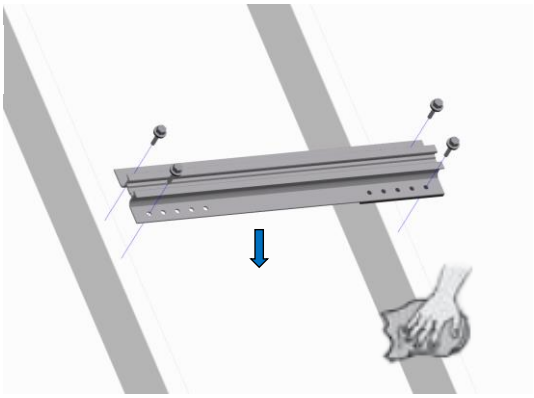
1
Overview



2
Lay out



3
Hex 8



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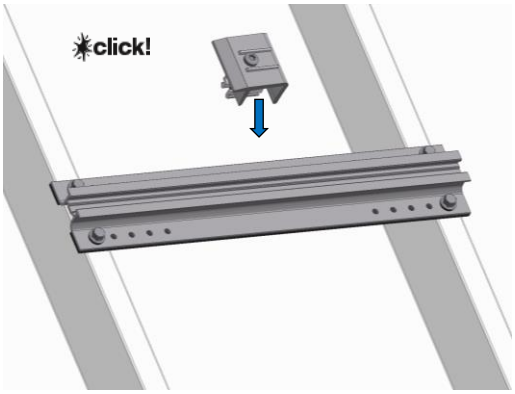

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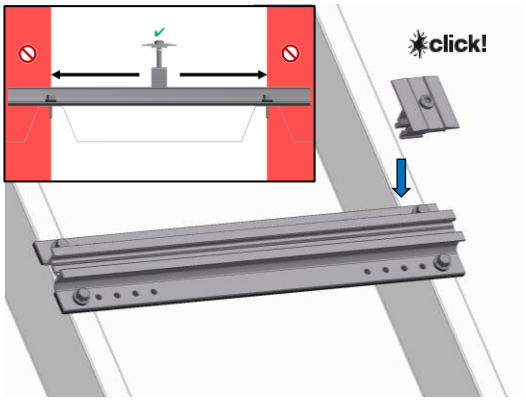
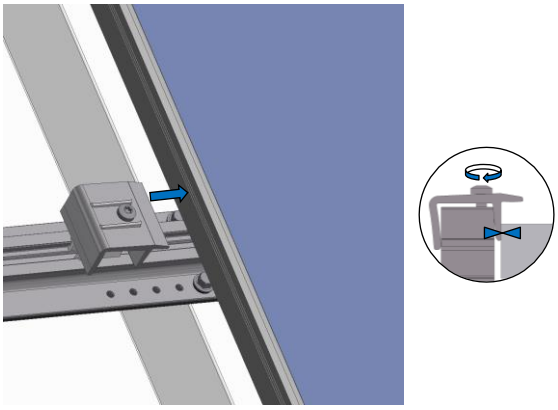


7
T 30 / 10Nm



8
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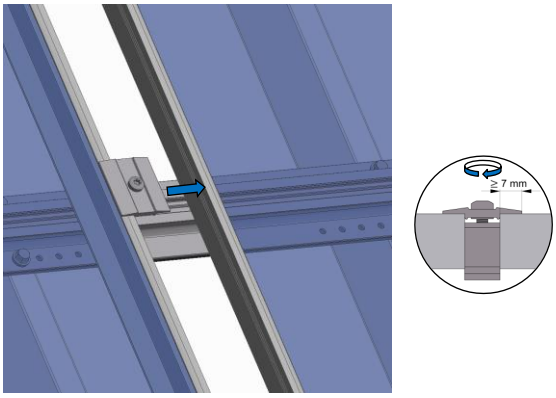

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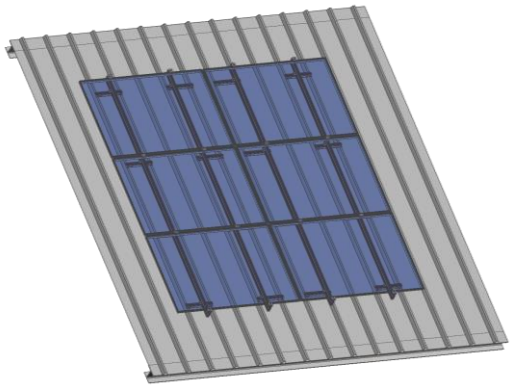
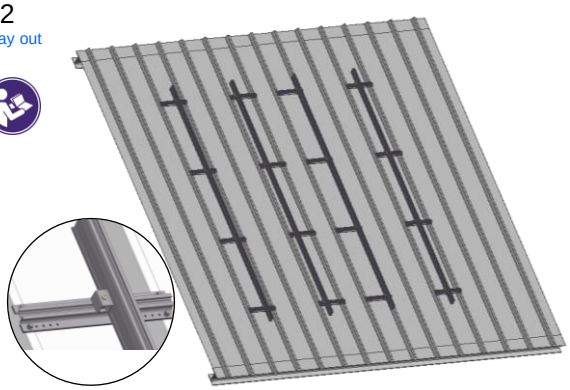
18 Cross composite assembly MSP-TT-CHA / MSP-TT-CHAH

1
Overview

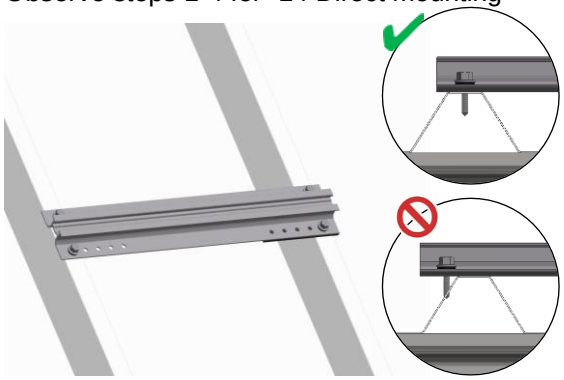


2
Lay out



3
Observe steps 1-4 for "14 Direct mounting"

Hex 8



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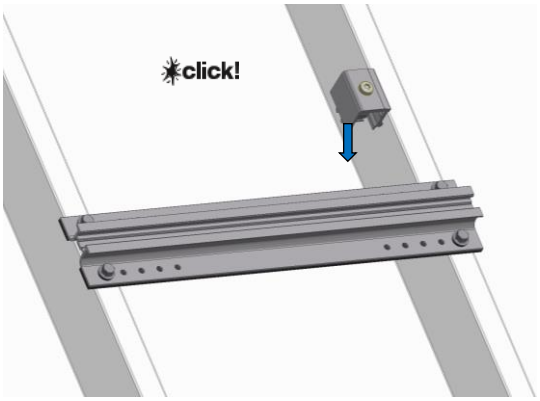

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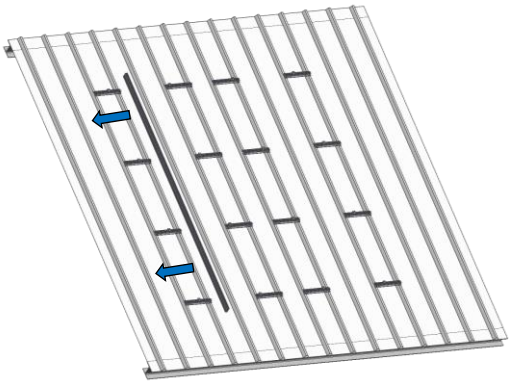
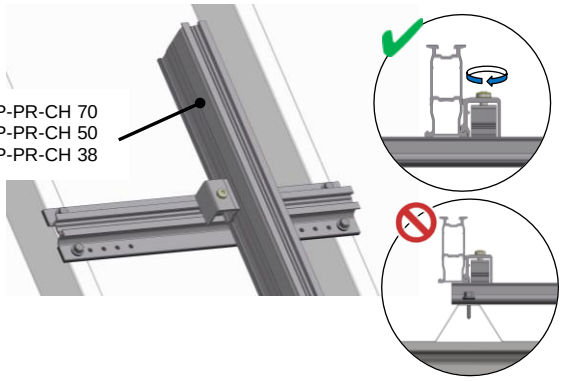


6
T 30 / 10Nm

MSP-PR-CH 70
MSP-PR-CH 50
MSP-PR-CH 38



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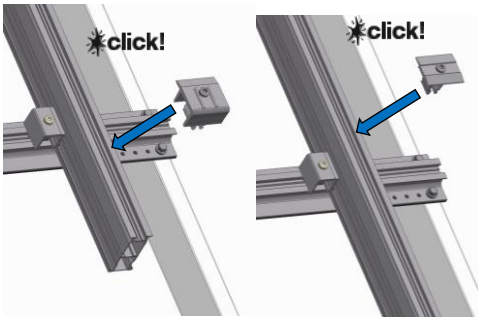
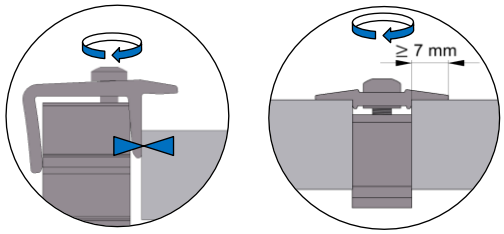


8
Note steps 11-12 in "14 Direct mounting"

T 30 / 10Nm



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