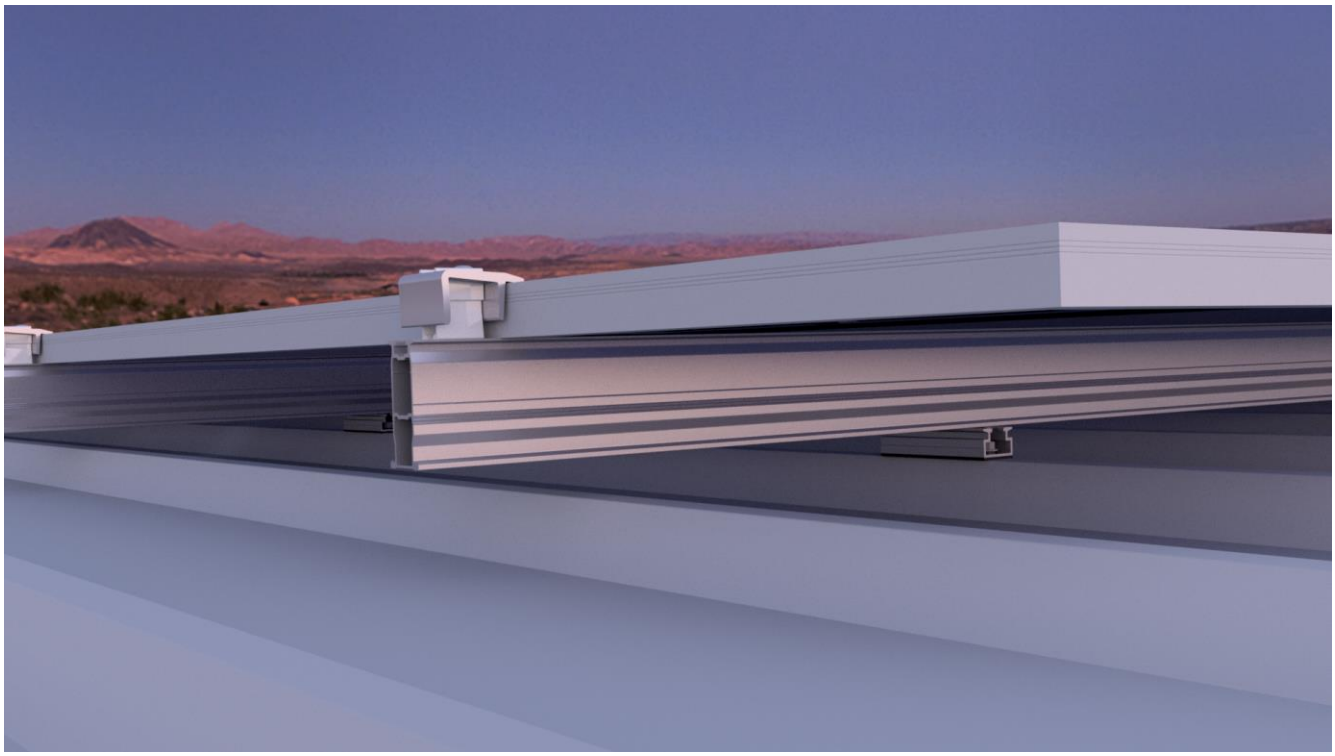
Solar Systems from Schweizer

Installation Instructions for PV Mounting System Trapezoidal Sheet Metal Roof MSP-TT



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 at Installation instructions MSP-TT.

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1 About these instructions

1.1 Basic information concerning the installation instructions

The installation instructions contain important information on how to install the mounting system safely, properly and correctly. Following the instructions avoids hazards and reduces repair costs and downtimes.

These installation instructions must be retained for reference throughout the entire PV mounting system installation period.

Applicable documents are listed in the appendix (**Chapter 10 Additional documents**).

1.2 Standards and technical guidelines

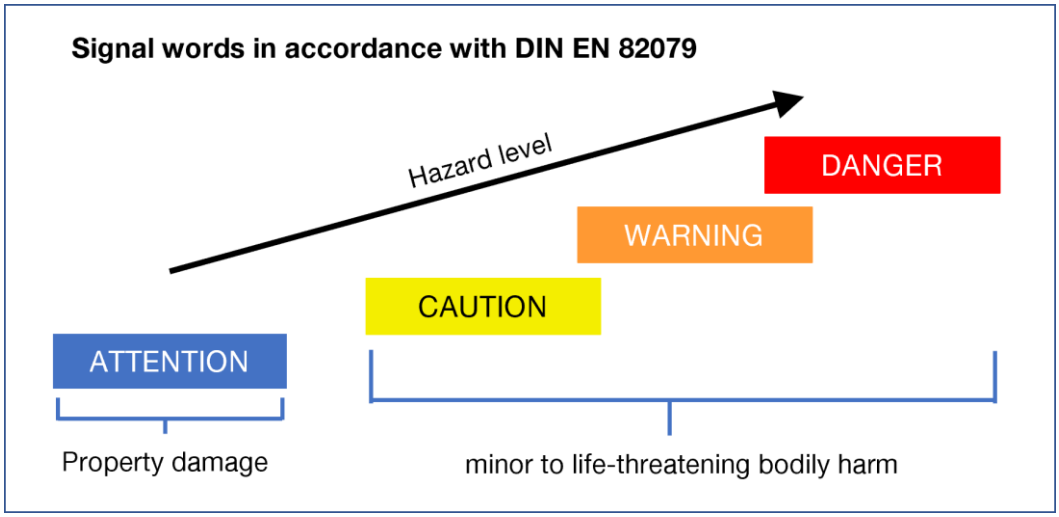
The Schweizer MSP-TT PV mounting system complies with standards which include the following:

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

1.3 Structure of warnings according to hazard levels

Differentiation of hazard levels

The following signal words indicate different hazard levels through different coloured backgrounds:



2 Caption key to installation instructions

	Attention		Warning of dangerous 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 constructed in accordance with recognised safety regulations. However, improper use can endanger persons or cause material damage.

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 can be retrieved at https://ernstschweizer.com/de/agb/.

4 Safety

4.1 Intended use

The Schweizer MSP-TT PV mounting system is designed exclusively 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 not in accordance with the intended purpose.
The definition of intended use includes compliance with the information in these installation instructions.

4.2 Reasonably foreseeable misuse

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

These include the following:

- Persons under suspended loads (during installation)

  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 unqualified personnel
- Damage to the roof cladding
- Installation of the supporting structure on a surface/roof unsuitable for load bearing
- Incorrect positioning of the PV modules
- When setting up the construction site on the roof, storing installation material on the roof and when exiting the construction site, construction site material (tools, packaging material, pallets, installation and system material not yet installed, etc.) and unfinished systems must in all cases be adequately secured against the effects of the weather.
- Failure to observe safety equipment, safety regulations and current accident prevention regulations
- Unfinished systems must be secured when exiting the construction site.

Faults can also occur if unauthorised components are used during repairs.

4.3 Requirements for safe operation

To avoid injuries and material damage, care must be taken during all activities relating to the intended operation of the PV mounting system. Ernst Schweizer AG assumes no liability for any damage to property and/or injury in the event of non-compliance.

The following also applies:

- The PV mounting system must only be operated in a perfect functional condition.

  All warnings and safety instructions in these installation instructions, including those of suppliers, must be observed.

  All modifications to the Ernst Schweizer AG PV mounting system lie outside its area of responsibility and must be planned and realised by specialised personnel.

4.4 Responsibility of the customer or installer

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

It must be ensured that

- all applicable accident prevention regulations and occupational safety provisions (or equivalent regionally valid standards) are observed.
  - 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)
- installation is only realised by persons who have suitable basic and specialised technical expertise.
- persons entrusted with realising the work are able to assess the tasks assigned to them and identify possible risks.
- persons entrusted with realising the work are familiar with the system components and installation process.
- the project report for the project to be installed has been read and fully understood by those persons entrusted with realising the work.
- the project report is available at all times during installation. The project report is an essential part of the Schweizer PV mounting system.
- permissible installation conditions are observed. Schweizer cannot be held responsible for damage or losses resulting from non-compliance with these conditions.
- correct installation is in accordance with the project report, and provision of the required tools is assured.
- a suitable lifting device is used for installation where appropriate.
- components with visible damage are not used and are replaced.
- each component and its accessories are used exclusively as intended and as specified in the project report.
- only Schweizer MSP-TT or other specified MSP Schweizer components are used for installation, including where parts need to be replaced. No warranty claims will be recognised otherwise.
- regular maintenance work is realised once a year, including an inspection of screw connections, mechanical connections, the position of protective layers, wiring, earthing and the condition of roof cladding.
- the roof on which the system is mounted is designed and built to adequately and safely support the PV mounting system. This includes the structural strength of the roof and the condition and compatibility of the roof structure and 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 MSP-TT PV mounting system can be incorporated into the design of the electrical equipotential bonding system and connected to it by correctly attaching a suitable earthing clamp or screw. The customer must ensure compliance with current rules, statutory provisions and guidelines.
- the installation complies with current national regulations and guidelines, including maintaining the required edge distance to the roof, the installing of safety barriers, restricting access during operations or taking precautions with regard to anticipated dynamic loads or particular events such as earthquakes and extreme weather conditions.
- any existing lightning protection system on the building must be adapted in accordance with current technical regulations and statutory provisions.

The following standards (or corresponding regionally valid standards) must be observed for the design and installation of lightning protection, earthing and equipotential bonding:

- DIN EN 62305 Protection against lightning
- DIN VDE 0185 Parts 1–4 Protection against lightning
- DIN VDE 0100 Part 410 Earthing
- DIN VDE 0105 Operation of electrical installations
- DIN VDE 0298 Electrical cables

Furthermore:

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

Also:

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

4.5 Basic safety instructions

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

- Work clothing must be worn that conforms to national regulations.
- Occupational safety regulations must be observed.
- It must be ensured that all electrical work is realised 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.
- A copy of these installation instructions must be provided in the immediate vicinity of the system for use by persons assigned to realise 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 applicable regulations.

5 Residual risks

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

DANGER

Electric shock due to lightning striking the PV mounting system

The supporting structure with the mounted photovoltaic systems is operated outdoors. A lightning strike can result in life-threatening injuries.

Earth the PV mounting system properly.

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

DANGER

Electrical voltage due to loosened protective conductors or earthing connections

If protective conductors or earthing connections have been disconnected, conductive parts including handles, covers and locks which appear to be 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 electricity transferring to defective components or cables.

WARNING

Risk of falling

Carelessness and tripping may result in a fall when working at a height. The consequence of this may be life-threatening injuries.

- Access to the roof must be secured by the operator to prevent any unauthorised persons from trespassing on the roof area.
- When realising cleaning and maintenance work, ensure that suitable anchorage devices and a body-restraining device are available.

CAUTION

Risk of tripping and falling

Objects lying around or cable ducts on the ground can cause tripping and falling hazards which can result in injuries.

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

6 Technical clarification prior to commencing installation

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

- Sufficient structural load-bearing capacity for 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 the material and thickness)

Before commencing with the installation of the PV system, the roof must

- comply with the required minimum standards.
- be cleaned thoroughly, 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 have been met. It must be ensured that persons commissioned with the work are fully familiar with the developed design.
Ensure that the required 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 installation conditions required for the MSP-TT are met and that persons responsible for the installation work are professionally trained and completely familiar with the PV mounting system.

NOTE

The material must be distributed on the roof in a manner that avoids excessive localised loading.

8 Commissioning and maintenance

Observe the safety instructions listed here and the indications at the beginning of these operating instructions in **Chapter 4 Safety**.

9 Installation conditions

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

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

10 Additional documents

Document type	Designation	File
Document	MSP-TT data sheet	MSP-TT data sheet
Information leaflet	Earthing terminals	Earthing terminals

11 Required tools

Cordless screwdriver

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

Torx attachment TX30

Hexagon attachment hex. 8

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

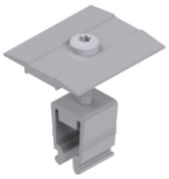
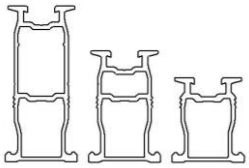
Cleaning of the roof surface before installing the MSP-TT system

Installation instructions for stainless steel screw connections:

The installation must be realised professionally. To avoid cold welding between the bolt and nut

- use a screwdriver without an impact drilling function
- set an appropriate speed that is not too high
- do not generate increased pressure on the screw

12 Components

1	2	3	4	5
				
Profile **MSP-TT-CHV**	**Profile** **MSP-TT-CHA 270** **MSP-TT-CAH-370**	**Screw** **MSP-TT-TS 6x25**	**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**
6	**7**	**8**	**9**	
				
Cross connector **MSP-PR-CC**	**Support profile** **MSP-PR-CH 70** **MSP-PR-CH 50** **MSP-PR-CH 38**	**Insert profile** **MSP-PR-IC** **MSP-PR-ICB**	**S.P.T. project report**	

13 Preparation – the following must be realised before assembly:

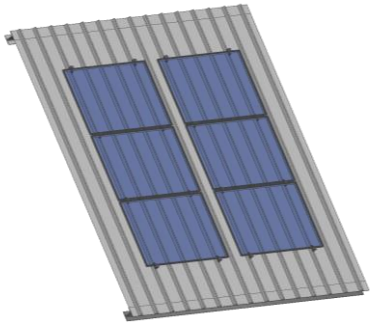
- The S.P.T project report must be available.
- The material required must be complete.

Options:

- **Direct mounting MSP-TT-CHV**
- **Cross bond on MSP-TT-CHV**
- **Inlay system MSP-TT CHV inlay**
- **Direct mounting MSP-TT-CHA**
- **Cross bond on MSP-TT-CHA**

14 Direct mounting MSP-TT-CHV

1
Overview



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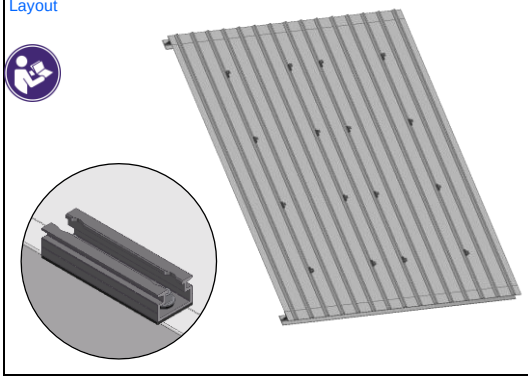

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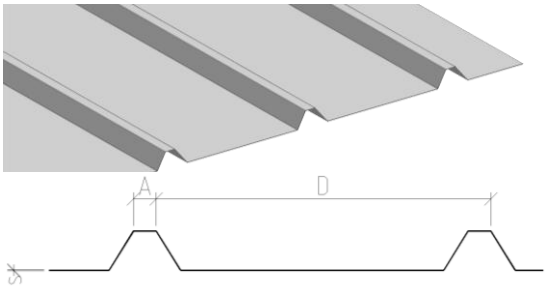
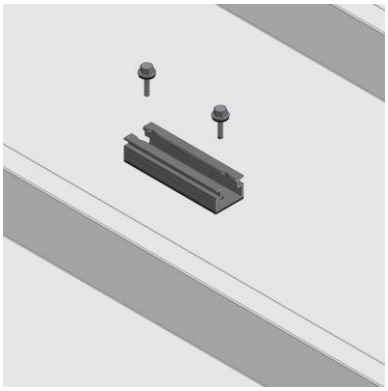


A	D	s
≥ 15 mm	≤ ¼ solar module	0.5 – 1.5 mm

4
Hex 8



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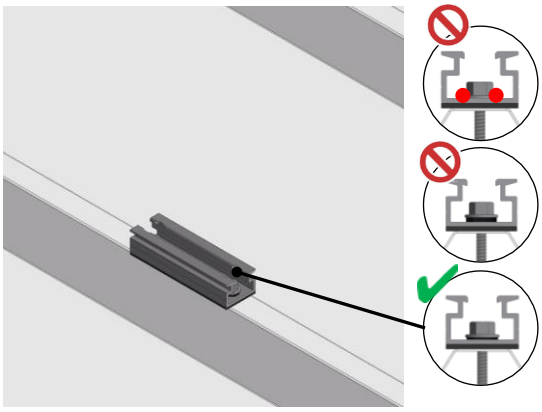

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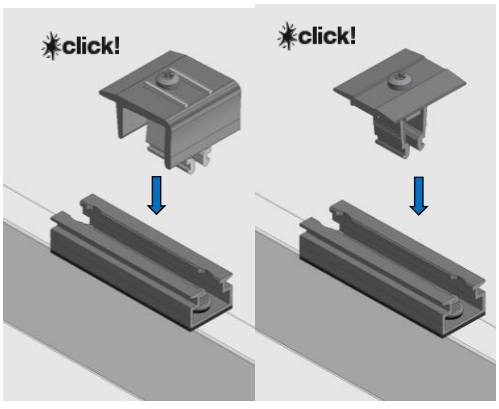

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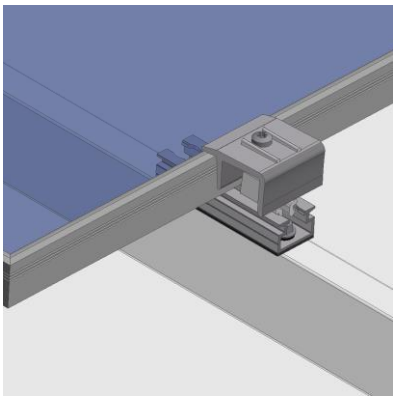
T 30 / 10Nm



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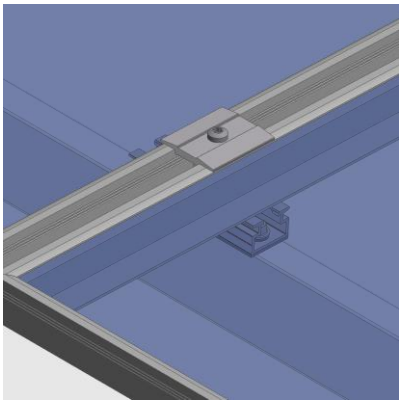
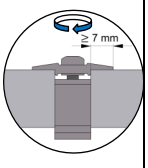
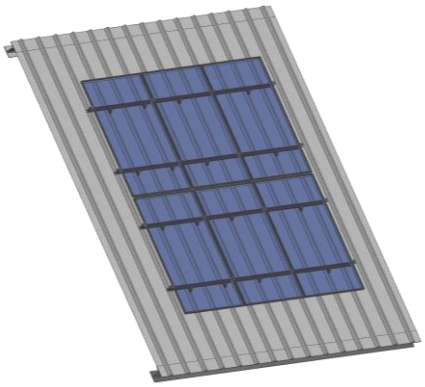




15 Cross bond assembly MSP-TT-CHV

1
Overview



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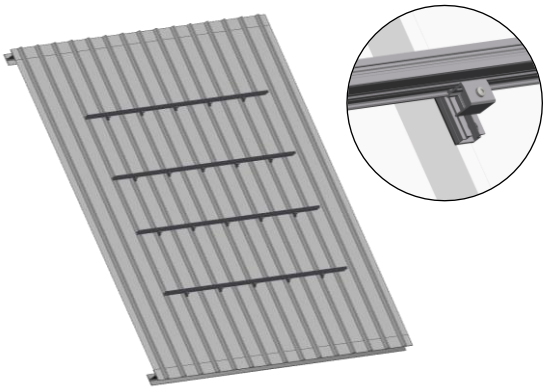
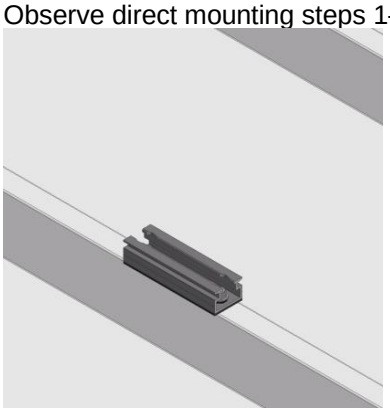


3
Hex 8

Observe direct mounting steps 1–5



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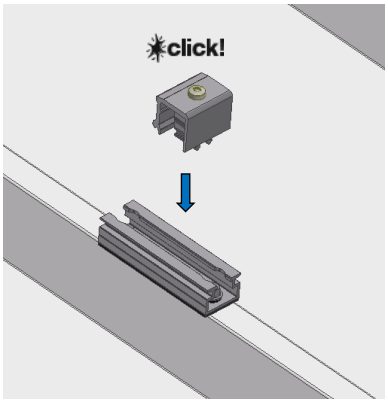

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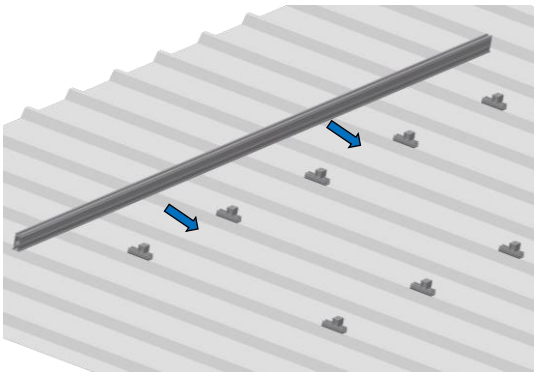

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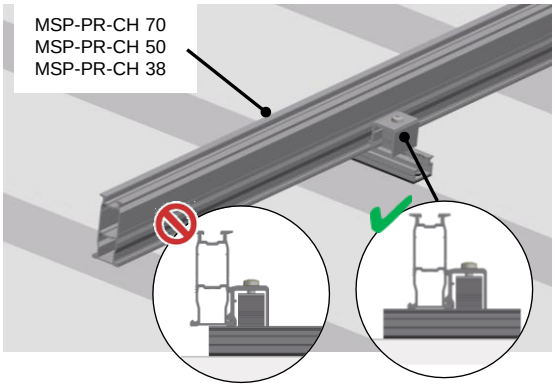

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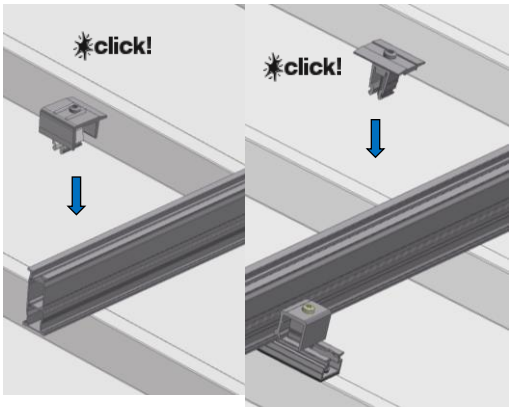
Option



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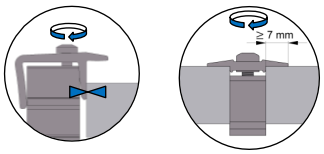
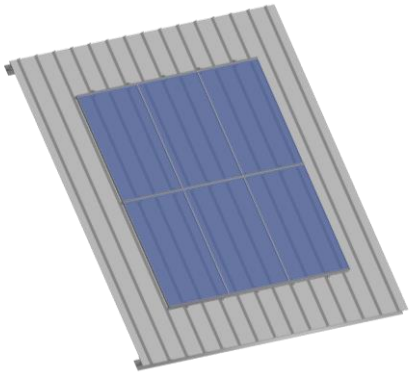
PV module fastening equivalent to steps 7–8



16 MSP-TT-CHV inlay

1
Overview



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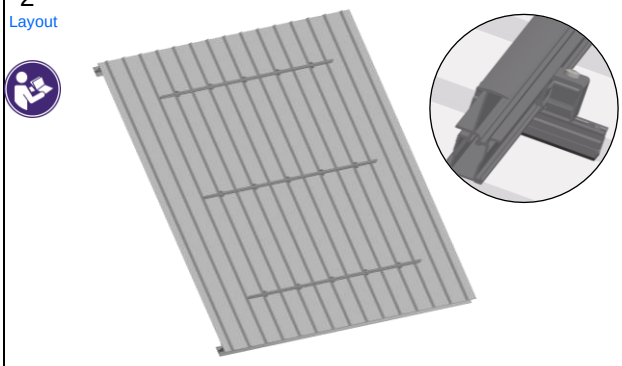

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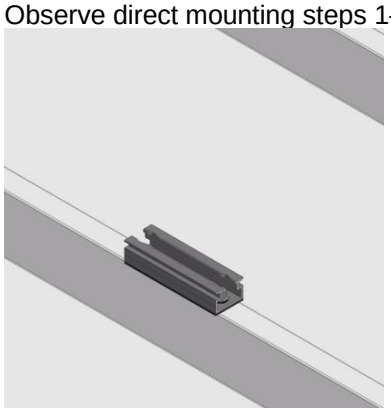
Observe direct mounting steps 1–5

Hex 8



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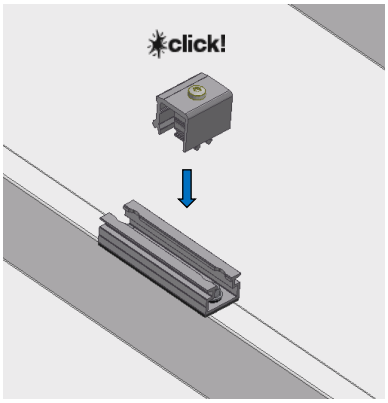

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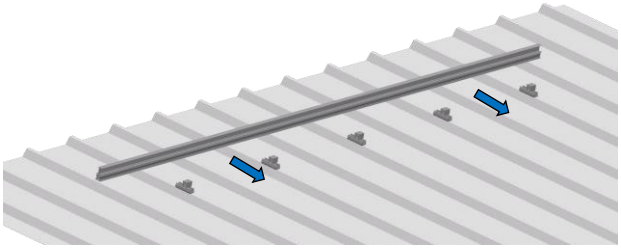

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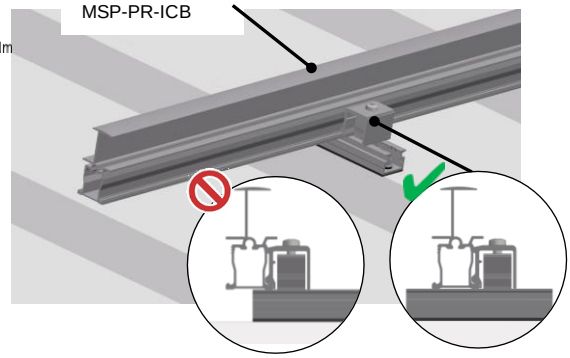
MSP-PR-IC
MSP-PR-ICB

T 30 / 10Nm



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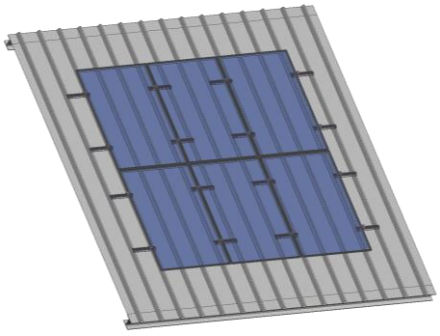
Further steps for fitting the inlay rail on MSP-TT-CHV can be found in the MSP-PR inlay instructions

17 Direct mounting MSP-TT-CHA

1
Overview



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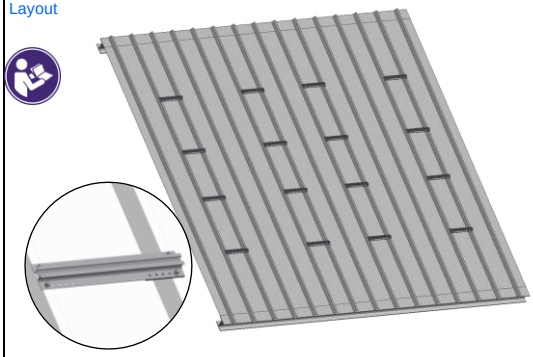

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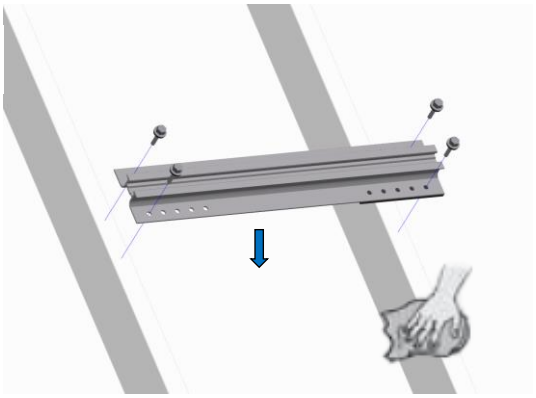
Hex 8



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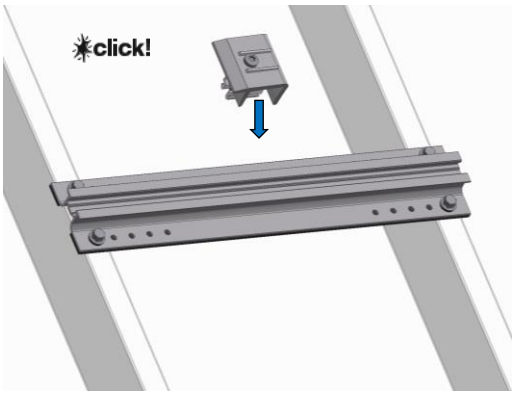

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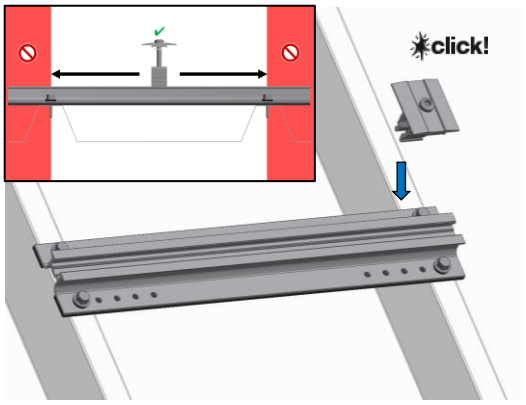
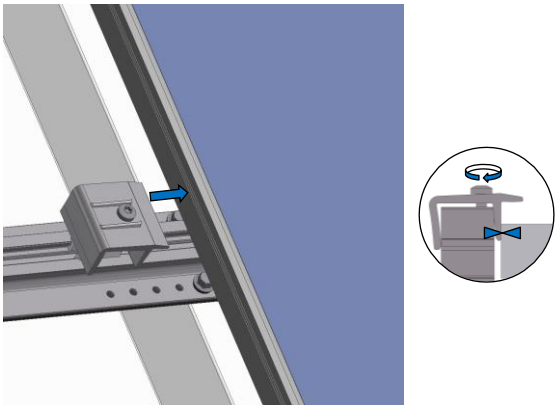
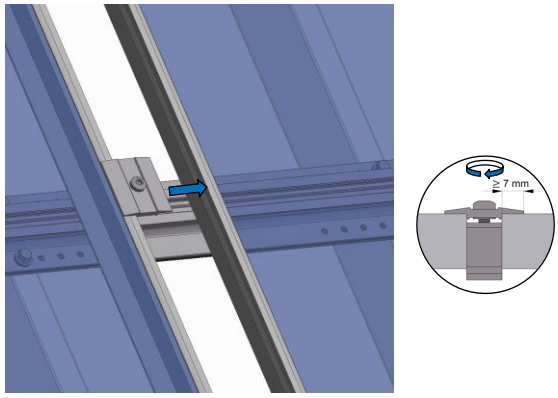


7
T 30 / 10Nm

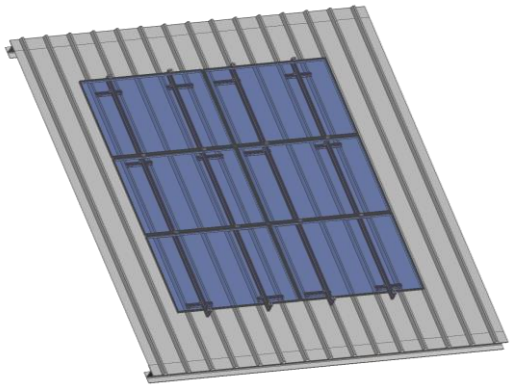


8
T 30 / 10Nm

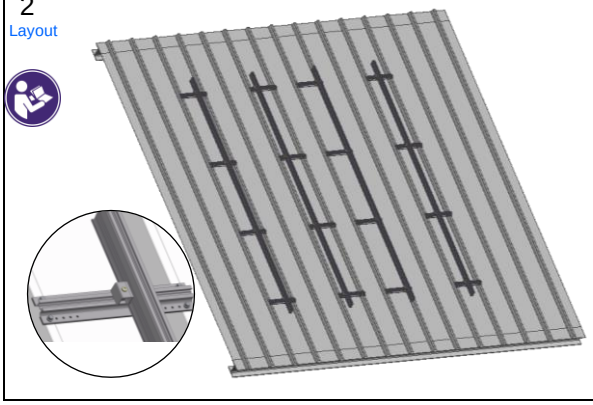


18 Cross bond assembly MSP-TT-CHA

1
Overview

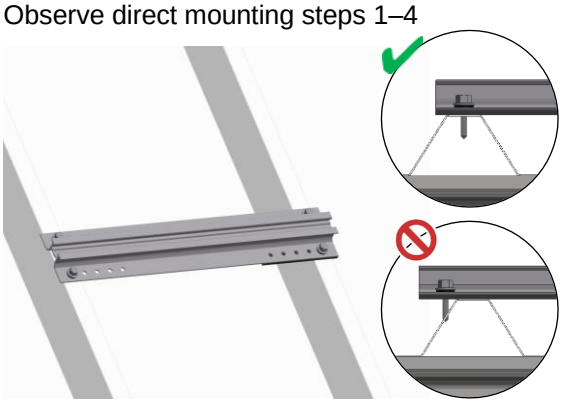


2
Layout



3 Observe direct mounting steps 1–4

Hex 8



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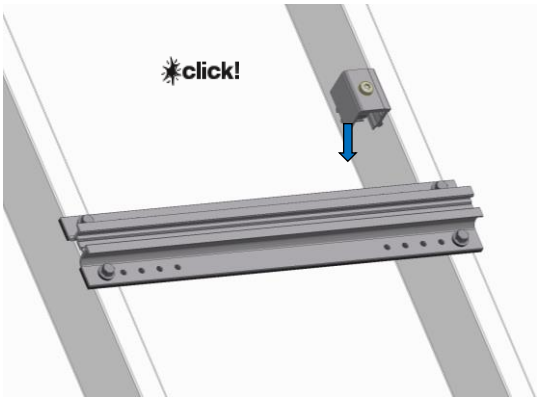

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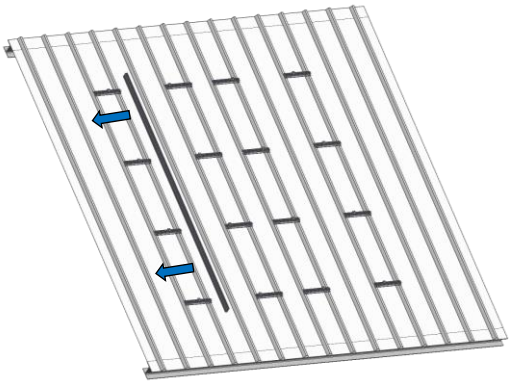
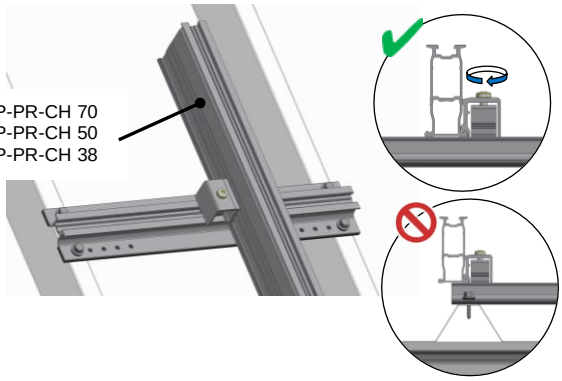


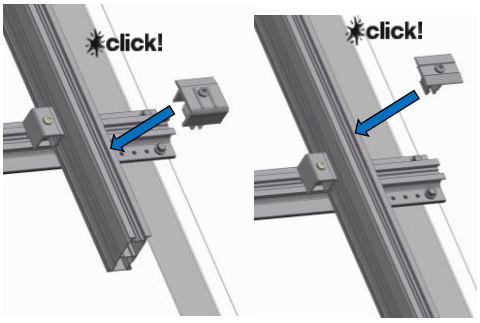
6

T 30 / 10Nm

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



7



8 PV module fastening equivalent to steps 7–8

T 30 / 10Nm