



Wagner Solar

ENERGIETECHNIK
ENERGY TECHNOLOGY
TECHNOLOGIE ÉNERGÉTIQUE
ENERGIETECHNIEK



TRIC Mounting Systems

Fast, clever, versatile



TRIC

Solar Power With Passion

Everyone has goals. We help ecologically minded home owners, installers and enterprises meet theirs with our components, systems and solutions. We bank on years experience in the field and our unshakable belief that the future is solar.

We design and produce

The design of a solar power racking system has to meet highest standards. It has to ensure that the modules remain firmly mounted in adverse conditions for the long-term. We have designed and produced high-performance systems with optimally aligned components. Our versatile systems suit any application - new buildings, retrofits, single family homes and large commercial projects.

Economical and safe

Coherent designs and smart detail solutions simplify and speed installation. Safety is key. All our racking systems are certified by TÜV, the German Technical Inspection Association and MCS.

See the many advantages of our racking systems on the following pages.



We are solar pioneers with perspective. We have been successfully working with the sun for more than 6 years. As total systems supplier we stand for integrated sustainable solar power, solar heat and battery storage solutions.

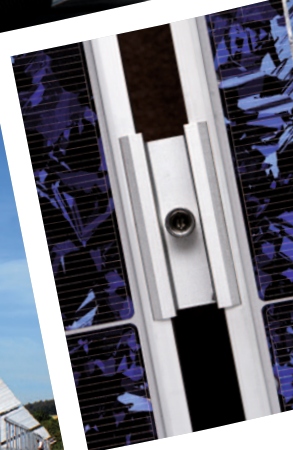
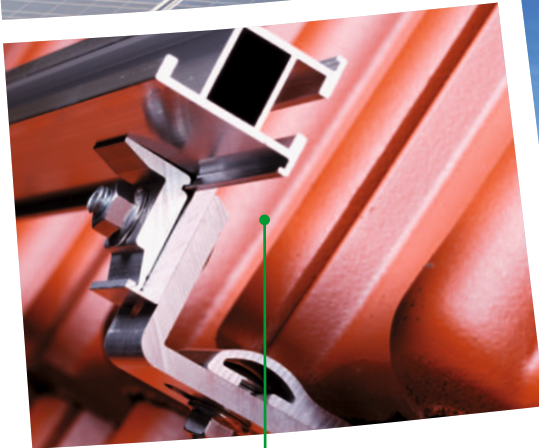
TRIC F Duo - for industrial roofs

Aerodynamically optimized, low-weight flat-roof racking system. Because of its compactness it does not need to be fixed to the roof structure.



TRIC F - versatile mechanical innovation

Free standing set-up of solar panels on almost any type of even or sloping surfaces. Solid construction, and easy to handle.



APPROVED PRODUCT



Certificate Number **MCS IK0193**
for Pitched Roof Installation Kits



Seal of the Berlin
branch of TÜV, the
German Technical
Inspection Association

TRIC A - universally applicable

The roof racking system offers varied solutions for all applications. Pre-assembled components and a sophisticated system concept assure rational and safe installations.

Greenfield mounting system TRIC flex

Universal mounting system for free standing greenfield installation on rammed ground anchors. Applicable for all framed module types; also available as East-West variant.

With our pre-assembled system components, panel mounting becomes a walk in the park. Individually tailored for each respective installation you find a TRIC A solution for every case. Even under difficult and complicated conditions the system proves to be efficient and flexible.



On-Roof Mounting System TRIC A

Install anywhere

A system for placing solar modules on nearly all roofs. High-quality materials, smart detail solutions and system coherence assure fast, rational and safe installation.

Smart components

The strong and lightweight HDC aluminum racking rails allow for free rail length of up to 1.85 m between roof brackets. Ready made rail connectors with gap keepers enable problem-free installation in any situation. We supply roof anchors and brackets for all common roofing materials and tiles.

Ready to install

All system components are pre-assembled and delivered with fastening materials. They can be customized and tailored for specific installations. Components for potential equalization complete the system.

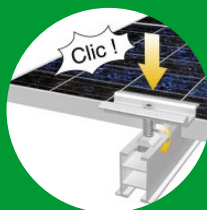


Video TRIC A



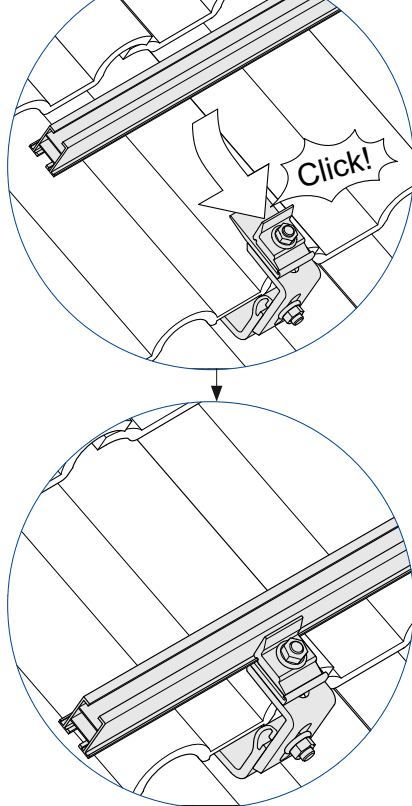
INSTALL FROM ABOVE

Adjustable roof brackets for all common roofing and tile types ease installation. Rails are affixed from above.



TRIC clip PANEL FASTENERS

Simple, fast and safe module installation: a flick of the hand and the TRIC clip panel fastener automatically snaps into its position, confirmed by an audible click. For all TRIC on-roof and free standing systems.



TRIC A HDC mounting system

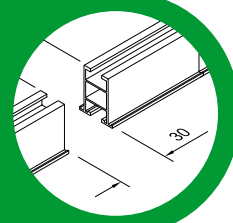
- Basic set for 1, 2, 3, 4, 5, 6 or 7 panels, extension set for 4 panels
- 2 HDC racking rails in 3.30m lengths can be joined with connectors
- Patented TRIC clip panel fasteners, -potential equalisation
- Available in aluminum (blank) or black
- Upright, side-by-side panel alignment, individual installation
- Choice of roof anchors or brackets for any roofing type

| TRIC A HDC | Module | Module manufacturer |
|-----------------------|--------|---|
| TRIC A HDC 1 | 1 | JA SOLAR / BISOL / INTENERGY / BEN Q / LG |
| TRIC A HDC 2 | 2 | JA SOLAR / BISOL / INTENERGY / BEN Q / LG |
| TRIC A HDC 3 | 3 | JA SOLAR / BISOL / INTENERGY / BEN Q / LG |
| TRIC A HDC 4 | 4 | JA SOLAR / BISOL / INTENERGY / BEN Q / LG |
| TRIC A HDC 5 | 5 | JA SOLAR / BISOL / INTENERGY / BEN Q / LG |
| TRIC A HDC 6 | 6 | JA SOLAR / BISOL / INTENERGY / BEN Q / LG |
| TRIC A HDC 7 | 7 | JA SOLAR / BISOL / INTENERGY / BEN Q / LG |
| TRIC A HDC, another 4 | 4 | JA SOLAR / BISOL / INTENERGY / BEN Q / LG |

LEAVE EXPANSION GAPS

Without expansion gaps, temperature changes could build tension and deform the aluminum racking rails. To prevent this, an expansion gap is placed after every 12-meter length of rail. Solar panels must not be attached over these gaps.

For example, with temperature fluctuations from -25°C to +50°C and a rail length of 12 m the length may expand by up to 21.5 mm.



On Roof Mounting System TRIC A

Tool set TRICA HDC

- Allen T-grip S8
- Combined ratchet spanner
- Set of 10 TORX RX 40 bits
- BIT holder with lock



Tool set TRIC A HDC

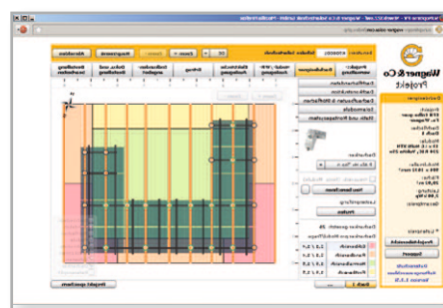
Part no.

290 301 08

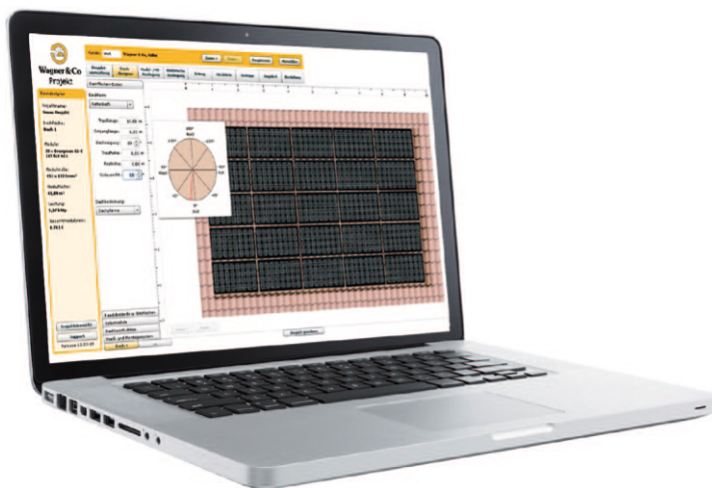
Design software TRIC Optimo PV

Our design tool TRIC Optimo PV allows us to quickly and easily plan and start up your PV projects, from sizing over yield forecast and profitability calculation all the way to the bill of material for your order. Step by step - fast and efficient.

- Manage your projects
- Roof designer
- Module and inverter dimensioning
- Electrical design
- Yield forecast
- Wind and Snow loading calculations
- Comprehensive project documentation
- Bill of material and order



When you contact one of our technical team with a system requirement we can produce a full system design. All we need are the full specifications. Once an order is placed we will provide a comprehensive project package.



PHOTOVOLTAIC INSTALLATIONS INCREASE THE ROOF LOAD

A solar power installation - panels, racking rails, anchors - can add from 15 to 20 kilograms per m² to the weight of a roof.

More strain on the roof structure can also come from wind and snow loads. For example, the upper edge of the panel field prevents snow sliding off.

On Roof Mounting System TRIC A

Roof brackets

Roof bracket P for all standard roof tiles

- Pre-assembled, includes self-drilling wood screws
- Easy single-handed attaching of racking rails from above by tiltable clamping angle.



| Roof bracket P | Material | Adjustability | Part no. |
|-------------------------------------|-------------------|-----------------------------|------------|
| P Alu Hv Top | Aluminum | Height, horizontally, angle | 219 401 80 |
| P A2 Hv Top | Stainless steel | Height, angle | 219 401 76 |
| P A2 Top | Stainless steel | - | 219 401 77 |
| P Stv KF Top | Steel, galvanized | - | 219 401 78 |
| PS Stv Top* | Steel, galvanized | - | 219 401 79 |
| * Designed for heavy-snowfall areas | | | |

Roof bracket BS for plain tile/slate

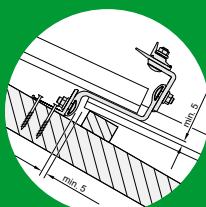
- Pre-assembled, includes self-drilling wood screws
- Easy single-handed attachment of the racking rails from above by tiltable clamping angles.



| Roof bracket BS | Material | Adjustability | Part no. |
|-----------------|----------------------|---------------|------------|
| BS A2 Hv Top | Stainless steel | Height | 219 401 81 |
| BS Stv KF Top | Steel, galvanized | - | 219 401 82 |
| BS MPT Stv Top | Steel, powder coated | - | 219 402 70 |

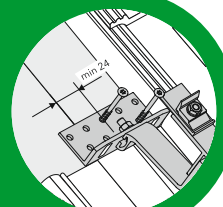
AVERT TILE BREAKAGE

A roof bracket must be able to change shape to absorb stresses. For that it needs to be able to move. So mount the bracket with a gap of about 5 mm to the lowest tile.



KEEP THE EDGE SPACING

The distance of the wood screws from the edge in the rafters and/or purlins is stipulated in the DIN 1052 standard. The minimum distance is the triple diameter of the screw. For our self-drilling screws that is 24 mm.



On-Roof Mounting System TRIC A

Roof brackets

Roof bracket for metal roofings

- Clamping bracket for rounded standing seam KalZip roofs (Type KK) and standing seam roofs (Type KS), incl. set of T-bolts

| Roof bracket TR | Material | Part no. |
|-----------------|-----------------|------------|
| KK | Aluminum | 219 401 10 |
| KS | Aluminum | 219 401 13 |
| KS A2 | Stainless steel | 219 401 12 |



Roof anchor K for trapezoidal roofs, corrugated roofings

- Stainless steel, adjustable height, pre-assembled
- Comfortable fastening through tiltable clamping plate (single handed "top" mounting from above)

| Roof anchor K A2 Hv | Length (mm) | Part no. |
|---------------------|-------------|------------|
| K A2 Hv 180 | 180 | 219 402 94 |
| K A2 Hv 200 | 200 | 219 402 95 |
| K A2 Hv 250 | 250 | 219 402 96 |
| K A2 Hv 300 | 300 | 219 402 97 |



| CONTACT CORROSION | | | | | | |
|--------------------------|--------------------------|------|--------|------|-----------------------|-------------------|
| Material with small area | Material with large area | | | | | |
| | Aluminum | Lead | Copper | Zinc | Stainless steel V2/V4 | Steel, galvanized |
| Aluminum | + | + | - | o | + | o |
| Lead | + | + | + | + | + | + |
| Copper | - | + | + | - | + | - |
| Zinc | + | + | - | + | + | + |
| Stainless steel V2/V4 | + | + | + | o | + | o |
| Steel, galvanized | + | + | - | + | + | + |

+ good / o uncertain / - poor

We use only high-quality materials in our racking systems, for example aluminum as used in shipbuilding or Class A2 70 stainless steel screws. Irrespective of that, electrochemical corrosion can occur between the roof anchor and roof surface with certain metal pairings. To avoid this, use only the material combinations marked + (good) in the table.

On-Roof Mounting System TRIC A

Roof brackets

Roof anchors BE for trapezoidal and corrugated roofing

- Stainless steel, adjustable height, pre-assembled
- The version for trapezoidal roofings (E16/8) requires suitable calottes, which have to be determined on a case by case base
- Special drills upon request
- Always order the appropriate set of accessories!

| Roof bracket BE for steel sub-structures | Roofing | Length (mm) | Part no. |
|---|---------------------|-------------|------------|
| BE steel 8.0 x 64 E16/8 | Trapezoidal roofing | 64 | 219 402 42 |
| BE steel 8.0 x 64 FZD | Corrugated roofing | 64 | 219 402 43 |
| BE steel 8.0 x 80 E16/8 | Trapezoidal roofing | 80 | 219 402 44 |
| BE steel 8.0 x 80 FZD | Corrugated roofing | 80 | 219 402 45 |
| BE steel 8.0 x 100 E16/8 | Trapezoidal roofing | 100 | 219 402 46 |
| BE steel 8.0 x 100 FZD | Corrugated roofing | 100 | 219 402 47 |
| BE steel 8.0 x 125 E16/8 | Trapezoidal roofing | 125 | 219 402 48 |
| BE steel 8.0 x 125 FZD | Corrugated roofing | 125 | 219 402 49 |
| BE steel 8.0 x 150 E16/8 | Trapezoidal roofing | 150 | 219 402 50 |
| BE steel 8.0 x 150 FZD | Corrugated roofing | 150 | 219 402 51 |
| BE steel 8.0 x 160 E16/8 | Trapezoidal roofing | 160 | 219 402 52 |
| BE steel 8.0 x 160 FZD | Corrugated roofing | 160 | 219 402 53 |
| BE steel 8.0 x 200E16/8 | Trapezoidal roofing | 200 | 219 402 54 |
| BE steel 8.0 x 200 FZD | Corrugated roofing | 200 | 219 402 55 |

| for wood sub-structures | | | |
|-------------------------|---------------------|-----|------------|
| BE wood 8.0 x 80 E16/8 | Trapezoidal roofing | 80 | 219 402 56 |
| BE wood 8.0 x 80 FZD | Corrugated roofing | 80 | 219 402 57 |
| BE wood 8.0 x 100 E16/8 | Trapezoidal roofing | 100 | 219 402 58 |
| BE wood 8.0 x 100 FZD | Corrugated roofing | 100 | 219 402 59 |
| BE wood 8.0 x 130 E16/8 | Trapezoidal roofing | 130 | 219 402 60 |
| BE wood 8.0 x 130 FZD | Corrugated roofing | 130 | 219 402 61 |
| BE wood 8.0 x 150 E16/8 | Trapezoidal roofing | 150 | 219 402 62 |
| BE wood 8.0 x 150 FZD | Corrugated roofing | 150 | 219 402 63 |
| BE wood 8.0 x 180 E16/8 | Trapezoidal roofing | 180 | 219 402 64 |
| BE wood 8.0 x 180 FZD | Corrugated roofing | 180 | 219 402 65 |
| BE wood 8.0 x 200E16/8 | Trapezoidal roofing | 200 | 219 402 66 |
| BE wood 8.0 x 200 FZD | Corrugated roofing | 200 | 219 402 67 |

Accessory set for roof anchor BE

- "Top" mounting from above, comfortable fixing of mounting rail with adjustability through screw slot

| Roof anchor BE accessory set | Part no. |
|------------------------------|------------|
| | 219 402 94 |



On-Roof Mounting System TRIC A

Roof brackets

Roof Brackets TR fix for Trapezoidal Sheet Roofings, with Short Mounting Rails

- Fixed directly in the trapezoidal sheeting (screw or rivet)
- A set comprises: 2 x rail section Fix-Profil 21 × 66 mm, with holes, length 395 mm, 4 x neoprene underlay sealant; 8 x self tapping sheet metal screw or 8 x blind rivet with gasket; 1 x cable strap
- Structural rating is absolutely mandatory



Set with short mounting rails and metal screws



Set with short mounting rails and blind rivets

Roof Brackets TRN for Trapezoidal Sheet Roofings, with Long Mounting Rails

- Fixed directly in the trapezoidal sheeting (screw or rivet)
- A set comprises: 22 x neoprene underlay sealant, 2 x self tapping sheet metal screw or 2 x blind rivet with gasket
- Only in connection with mounting rail
- Structural rating is absolutely mandatory



Set with sheet metal screws



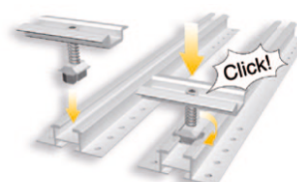
Set with blind rivets



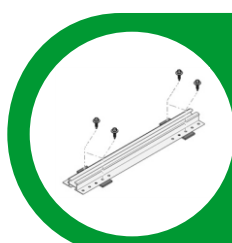
long mounting rail with Alu Fix-Profil

Module Fastener TRIC clip

- Module fasteners made from aluminum / stainless steel, completely pre-assembled
- Simple and safe installation with patented design
- Significantly time saving, in the right position with a flick of the hand
- Suitable for all TRIC mounting rails
- For all common modules with frame heights of 30-50 mm



| Technical Data | Roof bracket system TR fix |
|--------------------|---|
| Application | Trapezoidal Sheet Roofings |
| Rail variants | Short, punched rails (395 mm), continuous rails (6000 mm / 5200 mm) |
| Fastening variants | Self tapping sheet metal screws (for steel / aluminum sheeting from 0.5 mm), blind rivets (for Steel sheeting from 0.63 mm) |
| Module types | For all common framed modules |
| Material | Aluminum, stainless steel, EPDM |
| Product warranty | 10 years |



APPLICATION OF TR Fix

When using the TR Fix bracket the minimum required thickness of the trapezoidal roof sheeting must be taken into account. The self tapping screws are certified steel sheeting with a thickness of 0.50 mm or more. Make sure to not overtighten the

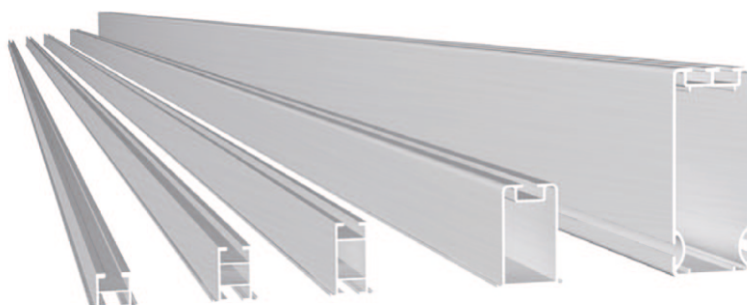
screws. Overtightened screws cannot transfer the occurring forces. Before commencing installation make sure that sub-structure and trapezoidal sheeting are safely and durably joined.

On-Roof Mounting System TRIC A

Mounting rails

Aluminum mounting rails

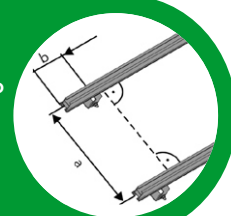
| Mounting rails | Span width (max.) | Length | Part no. | Length | Part no. |
|----------------------|-------------------|--------|-------------|--------|------------|
| LDC (36 x 28) | 1,200 | 3,30 | 3RAIL3.3LDC | | |
| HDC (34 x 44) | 1,800 | 3,30 | 3RAIL3.3HDC | | |
| SDC (36 x 60) | 2,500 | 5,200 | 290 101 89 | 6,000 | 290 101 88 |
| MLC (50 x 85) | 3,500 | 4,250 | 219 300 94 | 6,000 | 219 300 93 |
| HL (75 x 182) | 6,000 | 6,000 | 219 300 72 | | |
| All dimensions in mm | | | | | |



CORRECT RAIL INSTALLATION

The following instructions must be observed: The stipulated gaps between the racking rails, the permitted cantilever length and the maximum permitted span between two roof brackets.

Generally the module manufacturers also have their own fitting rules that need to be followed.



On-Roof Mounting System TRIC A

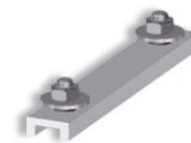
Accessories

TRIC A HDC rail connection set

- Aluminum rail incl. 2 sets of pre-assembled M8 stainless steel screws
- For firm connections

TRIC A HDC rail connection set

Part no. 219 707 19

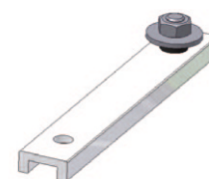


TRIC A HDC slide connector set

- Aluminum rail incl. 1 set of pre-assembled M8 stainless steel screws
- For sliding connections (length adjustment)

TRIC A HDC slide connector set

Part no. 219 050 33



TRIC A MLC rail connection set

- Aluminum rectangular pipe with rail connector incl. 12 rivets

TRIC A ML rail connection set

Part no. 219 300 98

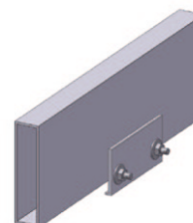


TRIC A HL rail connection set

- Aluminum rectangular pipe with 2 rail connectors incl. 4 sets of pre-mounted M10 stainless steel screws and self-drilling tin screw

TRIC A HL rail connection set

Part no. 219 305 91

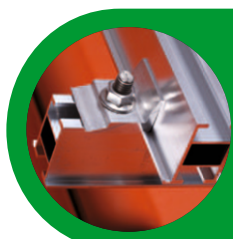


TRIC A HDC cross connector set

- For fastening the HDC/LDC/MLC racking rails to each other in a cross bond
- Aluminum clamp suited for crossing angle of 45° - 90°, incl. set of pre-assembled SW 15 T-bolts

TRIC A HDC cross connector set

Part no. 219 707 28



WHY A CROSS BOND?

A cross bond or cross connection is an assembly of the racking rails in which a second layer of rails is fixed perpendicularly (cross-shaped) on the horizontal rails.

Such a construction is needed a) if the panels are to be mounted horizontally, b) for providing additional connection points for rafter parallel rail positioning, e.g. where snowfalls are unusually high.

On-Roof Mounting System TRIC A

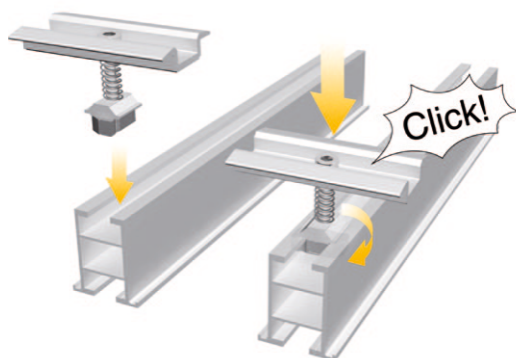
Panel fastener TRIC clip

Panel fasteners TRIC clip

- Pre-assembled Al/stainless steel module fasteners
- Patented design for simple and safe installation
- Considerable time savings!
- Suitable for all TRIC mounting rails
- For all common PV modules with frame heights from 30-50 mm
- 10 years warranty

| Panel fastener TRIC clip, center | Module frame height | Aluminum, part no. | Black, part no. |
|----------------------------------|---------------------|--------------------|-----------------|
| | 27 - 31 mm | 219 700 84 | 219 700 85 |
| | 32 - 36 mm | 219 700 86 | 219 700 87 |
| | 37 - 41 mm | 219 700 88 | 219 700 89 |
| | 42 - 46 mm | 219 700 90 | 219 700 91 |
| | 47 - 51 mm | 219 700 92 | 219 700 93 |

| Panel fastener set, edge | Module frame height | Aluminum, part no. | Black, part no. |
|--------------------------|---------------------|--------------------|-----------------|
| | 30 mm | 219 701 22 | 219 701 23 |
| | 31 mm | 219 701 24 | 219 701 25 |
| | 34 mm | 219 700 94 | 219 700 26 |
| | 35 mm | 219 700 95 | 219 700 96 |
| | 36 mm | 219 701 28 | 219 700 97 |
| | 38 mm | 219 700 98 | 219 700 98 |
| | 40 mm | 219 700 99 | 219 701 00 |
| | 42 mm | 219 701 02 | 219 701 03 |
| | 46 mm | 219 701 04 | 219 701 05 |
| | 50 mm | 219 701 06 | 219 701 07 |



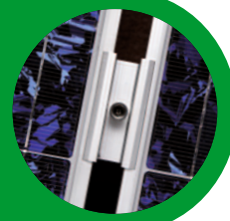
Video TRIC clip

SAFE INSTALLATION WITH TRIC clip

A flick of the hand, an acoustic "click" signal, and the TRIC clip panel fastener safely sits in its correct position, yet it can still be shifted, if required. The clever mechanism turns panel mounting into a breeze!

Official type approval is pending.

To thwart theft, a stainless steel ball is hammered into the hexagonal nut to prevent it being unscrewed



On-Roof Mounting System TRIC A

Accessories

Potential equalization earth strap

- Stainless steel mesh strap, 180 mm, 2 pre-assembled T-bolts with nuts and washers
- To bridge expansion gaps in mounting rails

Potential equalization earth strap

Part no. 219 400 26

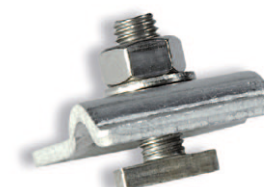


Potential equalization terminal set

- For connecting round aluminum wire to the racking rails
- Aluminum, incl. pre-assembled T-bolt with nut and washer

Potential equalization terminal set

Part no. 219 400 30



Wire strap clip "Edge"

- For attaching the solar cables to the panel frame
- UV resistant

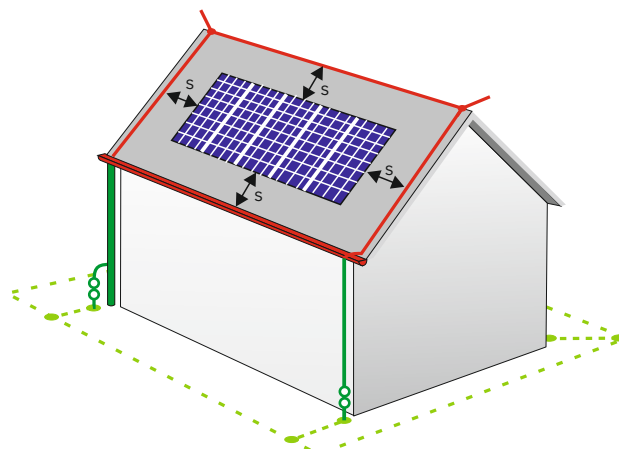
Wire strap clip "Edge"

Part no. 249 001 27



Lightning protection, potential equalization and cable positioning

All racking rails of a panel field are interconnected as conductors for functional potential equalization. The cross section of the cables used must be at least 6 mm². The anodized panel frames are not a conducting link. If there is a lightning arrestor system on the building, a lightning protection expert should be consulted for the assembly. For problem-free attachment of the cables to the panel frames we recommend our UV resistant wire strap clip "Edge".





Flat Roof Mounting System TRIC F

We placed particular emphasis on racking versatility when developing the TRIC F system. Be it a flat roof, a sloping one or complex demands, such as slanted positioning on sloping roofs – none is a problem.



Video TRIC F

Versatile mechanical innovation

With TRIC F solar panels can be freely racked on almost all even and sloping surfaces. The system impresses with high-quality materials, smart detail solutions and a coherent overall concept.

Less is more

Root-and-branch reworking and consistent alignment of all components further optimized the system and achieved significant reductions in the materials needed. Hence fewer racking elements are required and assembly of up to two panels per racking triangle is possible. Fast, simple and safe installation is guaranteed.

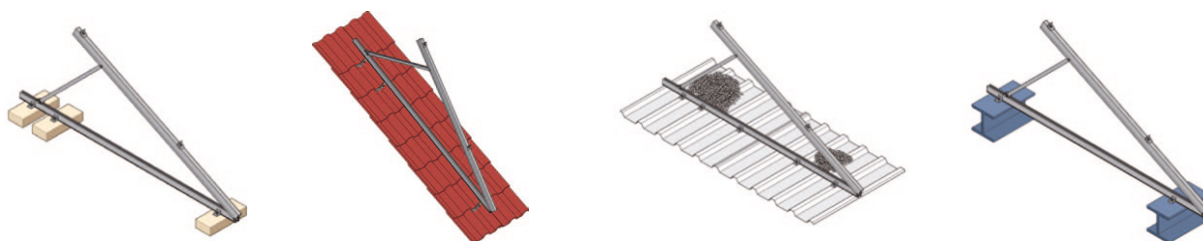
FOLDED

The TRIC F racking triangles are delivered folded up. That saves space and costs, easing transportation. At the installation site they are simply unfolded to the desired angle and screwed together.

The angle can be set steplessly. Angles from 15° to 60° can be set with the systems TRIC F 15, 30 and 45.



Flat Roof Mounting System TRIC F



Mounting system TRIC F for flat and sloping roof installation

- Completely pre-assembled racking triangles of bend-resistant Wagner & Co profiles
- Connecting elements of stainless steel and aluminum
- Flexible fastening with mounting groove in the ground rail

TRIC F horizontal

- 2 racking triangles for horizontal installation of 1 module
- Step-less adjustment of angle from 18° - 43°

| TRIC F horiz. | Mod. frame height | Color | Part no. |
|---------------|-------------------|-------------|------------|
| | 35 mm | Aluminum | 219 050 42 |
| | 35 mm | Black | 219 050 10 |
| | 38 mm | Aluminum | 219 050 60 |
| | 42 mm | Black | 219 050 64 |
| | 43 mm | Aluminum | 219 050 12 |
| | 46 mm | Black | 219 050 40 |
| | 50 mm | Aluminum | 219 050 39 |
| | Other heights | Alum./black | 219 050 43 |



| Spacing racking triangles for different snow and wind conditions (examples)* | | | | | |
|--|----|-----------------------|-----------------------|-----------------------|-----------------------|
| SLZ | WZ | H = 0 - 300 m | H = 300 - 500 m | H = 500 - 700 m | H = 700 - 900 m |
| | | A _{max} [mm] | A _{max} [mm] | A _{max} [mm] | A _{max} [mm] |
| 1a | 1 | 1,720 | 1,500 | 1,200 | 920 |
| 2 | 2 | 1,500 | 1,090 | 860 | 630 |
| 2 | 4 | 1,090 | 920 | 710 | 550 |
| 2a | 2 | 1,330 | 1,000 | 710 | 520 |
| 3 | 2 | 1,200 | 860 | 630 | 460 |
| 3 | 4 | 1,000 | 750 | 570 | 410 |

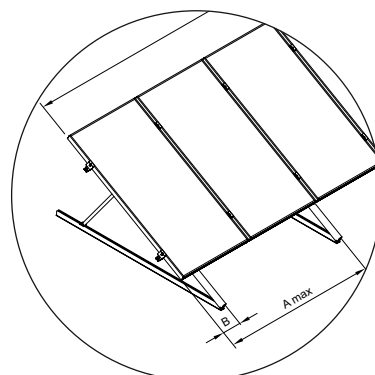
TRIC F 30° / Building height < 10m / H = Height above NN / SLZ/WZ = snow load zones/wind zones; *Based upon German snow and wind zones; contact our technical support team for more information on structural dimensioning and rating.

Flat Roof Mounting System TRIC F

TRIC F 15/30/45

- Structurally optimized: up to 2 vertically installed modules per racking triangle (dep. on location and module type)
- Step-less adjustment of racking angle
- To fasten the modules an additional TRIC A HDC mounting system is required.

| TRIC F 15/30/45 | Racking angle | Part no. |
|-----------------|---------------|------------|
| TRIC F 15 | 15° - 22° | 219 050 01 |
| TRIC F 30 | 22° - 38° | 219 050 02 |
| TRIC F 45 | 38° - 60° | 219 050 03 |

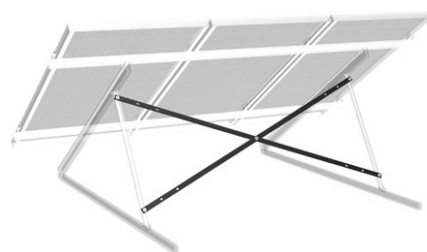


TRIC F diagonal strutting set

- For the additional stabilization, 1 set per module row
- Mandatory for installation in pitched roofs
- Maximum spacing of racking triangles 1,500 mm

TRIC F Diagonal strutting set

| | |
|----------|------------|
| Part no. | 219 050 41 |
|----------|------------|



Gravel board installation set

- Steel gravel board for fastening the TRIC F racking system to the ground; with aluminum clamping angles and rivets.
- Ground area 2,000 x 1,035 mm, for 1 racking triangle (TRIC F 15/30/45) resp. for 1 horizontal panel (TRIC F horizontal)

Gravel board installation set

| | |
|----------|------------|
| Part no. | 219 050 27 |
|----------|------------|

Concrete slab installation set

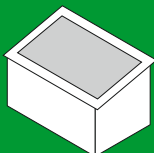
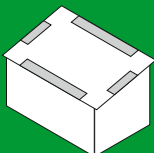
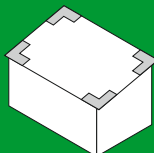
- To fasten the TRIC F racking system on concrete slabs
- For 1 triangle, 8 AL clamps, dowels, stainless steel screws

Concrete slab installation set

| | |
|----------|------------|
| Part no. | 219 203 45 |
|----------|------------|



Gravel ballast loading G [kg] per m² module area (incl. safety co-efficients according to DIN 1055-100)

| Wind zone |  |  |  |
|-----------|---|---|--|
| 1 | 105 | 172.5 | 232.5 |
| 2 | 135 | 217.5 | 285 |
| 3 | 172.5 | 270 | 352.5 |
| 4 | 210 | 330 | 427.5 |

TRIC F 30° / Building height < 10 m / inland, 800 m altitude; *based upon German wind and snow zones, contact our technical support for more information on structural dimensioning and rating.



Keeping the racking system's own weight as low as possible is key to installing on industrial roofs. In standard cases TRIC F Duo require less ballast.

Flat Roof Mounting System TRIC F Duo

Aerodynamically optimized

TRIC F Duo is an aerodynamically optimized, wind tunnel tested installation system we developed specifically for industrial flat roofs. Its stand-out feature is its greatly reduced construction height of only 240mm in the 10° pitch and 360mm in 18°

Low weight

Involving the panels as active elements of the racking system saves material, weight and installation time. The construction not only avoids the ram pressure under the installation, it also lessens the wind induced suction loads, which in turn reduces the required ballast weight.

Simple, compact assembly

The panels are fastened to the base rail and supporting back piece and then clad with a back wall. This creates a very stable panel compound that does not have to be attached to the roof construction.



SIMPLE BALLASTING

The racking system is ballasted by concrete slabs that are simply laid into the rear walls. Slabs can also be laid onto the racking rails at the edges.



LOADING CALCULATIONS

Because of its low construction height of maximum 0.24 m in 10° and 0.36m in 18° the TRIC F Duo sets loading reports can be easily calculated just talk to one of our technical team.



Flat Roof Mounting System TRIC F Duo

TRIC F Duo

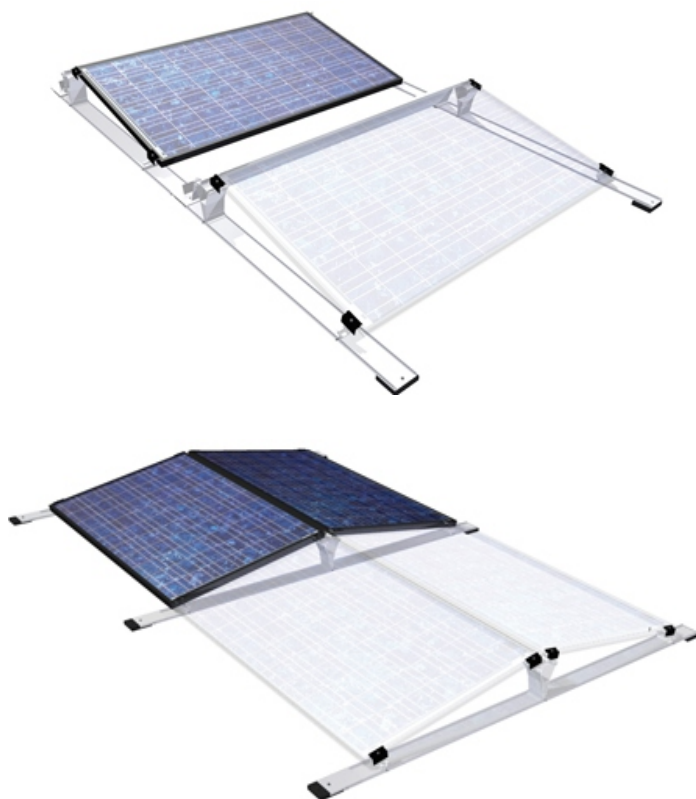
- Aerodynamically optimized industrial roof system
- Low weight, 10° or 18° inclination angle
- Installation without puncturing the roof skin
- Sets contain all the base materials incl. building protection mats
- Ballast trays available for easy distribution of ballast

| TRIC F Duo | Version | Part no. |
|-------------|---------|------------|
| South | 10° | 219 051 11 |
| East / West | 10° | 219 051 10 |
| South | 18° | 219 051 12 |

Protective underlay for TRIC F Duo

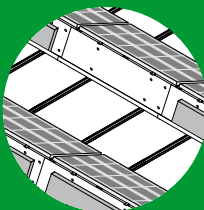
- Mat, 110x95x20mm (LxWxH)
- Additional mats may be required depending on layout

| TRIC F Duo protective mat | Part no. |
|---------------------------|------------|
| Mat standard | 219 251 00 |
| Mat aluminum laminated | 219 251 01 |



EVEN LOAD DISTRIBUTION

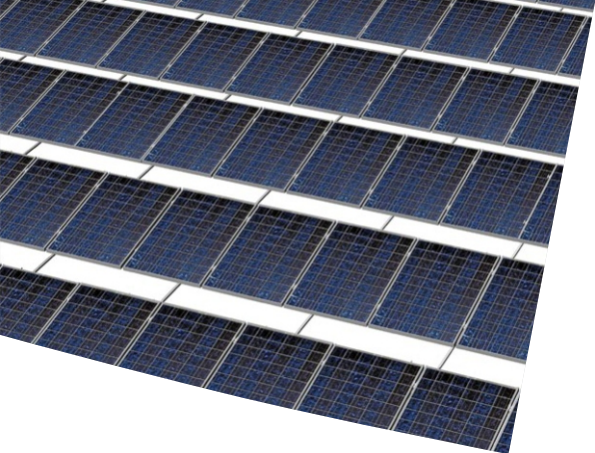
The compounded panel array with continuous ground rails avoids horizontal push stress. Loads are evenly spread across the roof surface.



OPTIMAL AIRFLOW

The back wall cladding prevents ram pressure below the panels. A gap between the back wall and the panels diffuses pressure.





TRIC F Box utilizes the maximum of the existing roof area while reducing the structural load. The intelligent and optimized system layout halves the installation time.

Flat Roof Mounting System TRIC F box

Rapid installation

The clever TRIC F box mounting system can be installed with just a few components and simple steps, requiring no more than two tools. At least 50% time savings!
The setup is independent of the module installation schedule.

Lightweight design

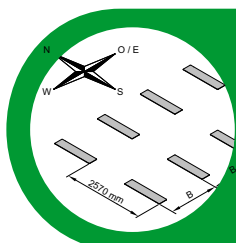
Aerodynamically optimized and wind tunnel tested system components significantly reduce the structural loads (realistic values from 20 kg/kWp). At the same time the roof loads are significantly reduced (realistic values of 12 kg/m²).

Flexible orientation

With a single system you can choose for either southern or East-West orientation of the modules.
Suitable for all common types of industrial flat roofs by means of choosing suitable protective underlays.



Video TRIC F box



BEST ROOF AREA UTILIZATION

The vertical alignment of the modules and the low mounting angle of only 10° allow for a roof utilization of up to 95% for East-West and 65% for southern orientation.

FOR ALL MODULE TYPES

Module installation is done with TRIC clip panel fasteners on HDC mounting rails. Therefore almost all common framed module types can be mounted.

Flat Roof Mounting System TRIC F box

Mounting TRIC F box for flat roof/industrial roof mounting

- Aerodynamically optimized
- Reduced roof load, fixed mounting angle 10°
- Optimally suitable for regions with high wind and snow loads
- Available as southern as well as East-West versions
- Concrete slabs to be provided on site
- Structural dimensioning required
- To interlock the box rows to form a structural compound additional LDC rails are required. They have to be ordered on a case by case base.



| TRIC F box | Part no. |
|--|------------|
| TRIC F box, set of 1 (1 box, 6 cross connectors) | 219 050 80 |
| TRIC F box rear sheeting (only southern ver.) | 219 050 76 |

Module mounting components for TRIC F box

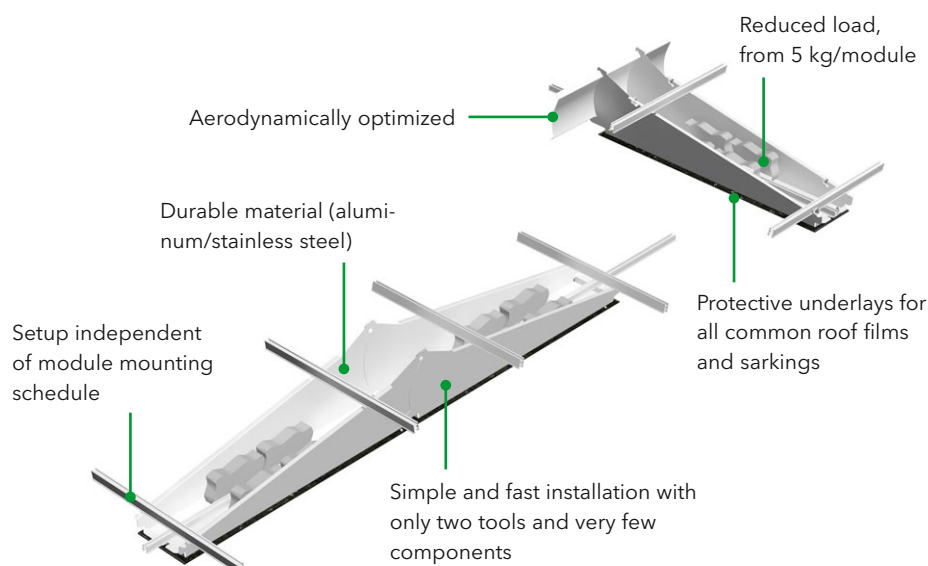
- HDC mounting rails, panel fasteners, rail connectors

| TRIC F box module mounting | Part no. |
|----------------------------|-------------|
| As dimensioned | 3RAIL3.3HDC |

Protective underlay for TRIC F box

- Underlay matt, 1,350 x 280 x 6 mm (LxWxH)

| TRIC F box protective underlay matt | Part no. |
|-------------------------------------|------------|
| Underlay standard | 219 050 81 |
| Underlay, aluminum laminated | 219 050 82 |



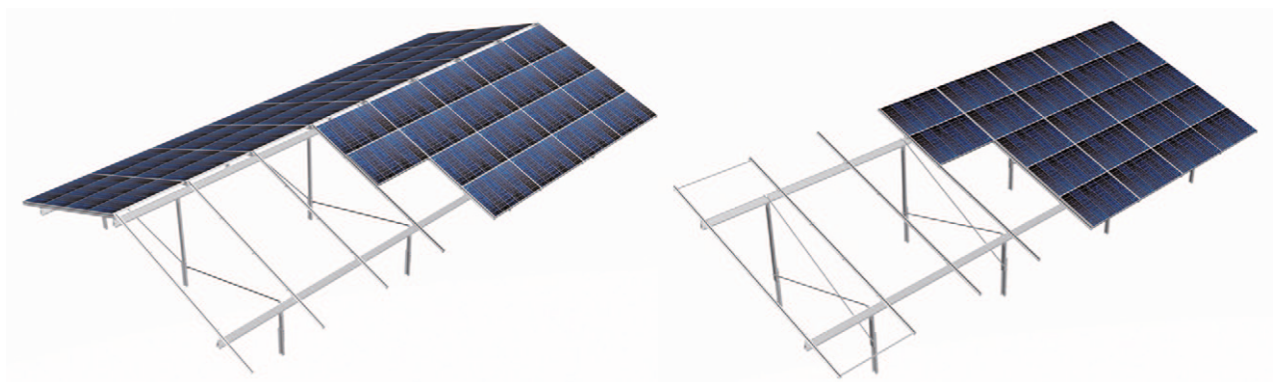


Greenfield Mounting System TRIC flex

Greenfield mounting System TRIC flex

- Mounting system for Greenfield ground installation on rammed ground anchors (sigma profiles), suitable for all framed module types
- Maximum length per module table 13.40 m
- Available as southern or East-West version
- Order ground anchors (ramming elements) separately
- Project specific sizing required
- Delivery time approx. 4 weeks

| Greenfield mounting system TRIC flex | Part no. |
|--|--------------|
| Southern version, 2 row ramming for approx. 40 modules horizontal, in 5 rows one above the other | Upon request |
| East-West version, 3 row ramming for approx. 2 x 32 modules, horizontal in 4 rows, one above the other | Upon request |



TURNKEY DELIVERY

The mounting system will be structurally optimized by our experts for each construction site - of course at no additional costs. For your convenience we also offer total turnkey project development.



SAFE GROUNDING

The standard case is grounding with sigma profile ramming foundations. With suitable adaptors the system can also be set up with drilled or screwed ground anchors or concrete foundations.

Customized Dimensioning

TRIC Optimo and TÜV certification

Individual dimensioning

Our experts quickly and precisely dimension your solar project with our newly developed customizing program, TRIC Optimo. Using your project data we calculate the numbers of roof anchors and racking triangles needed. We guarantee the norm-abiding design of the rack system with a certificate attesting state of the art calculations according to EUROCODE 1, subject to the condition that wind and snow loads were provided according to valid local norms and regulations. Customizing cuts your costs and prevents risks resulting from under-dimensioning.

TÜV-certified quality

Safety is our top priority. A solar power racking system must guarantee the secure hold of the panels in the long term and under harsh conditions.

Hence, aside from the rack assembly, the quality of the components and the entire system is of paramount importance.

To be absolutely certain, we submit all our assembly systems to testing and certification by TÜV, a global provider of technical, safety and certification services.

APPROVED PRODUCT



Certificate Number **MCS IK0193**
for Pitched Roof Installation Kits



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