

# Mounting systems 2018



MOUNTING SOLUTIONS: TILE ROOF TRAPEZOIDAL SHEET CORRUGATED ROOF SANDWICH ROOF SEAMED METAL FLAT ROOF INSERTION SYSTEM FACADE SYSTEM

Electricity and the sun: For us, these go hand-in-hand.  
With photovoltaics (PV), we have a technology in our hands which can  
continue to provide us with electricity in the future.  
That is why we have been focussing exclusively on the sun for over 25 years.

---

## CONTENTS

---

<b>Introduction</b>	08 BayWa r.e. – New energy supply methods 08 Photovoltaics. Yes please! 10 novotegra – the perfect solution for every installation 13 Certifications and approvals 14 Photovoltaic system planning “from A-Z” with Solar-Planit 15 A perfect affair: system planning with Solar-Planit 16 Installation system layout with Solar-Planit 18 Skill, expertise and years of experience	<b>1</b>
<b>Sloping roofs</b>	22 Mounting solutions for tile roofs 38 Mounting solutions for trapezoidal panel roofs 48 Mounting solutions for corrugated and sandwich roofs 61 Mounting solutions for seamed metal roofs	<b>2</b>
<b>Flat roof</b>	69 Mounting solutions for flat roofs	<b>3</b>
<b>Custom solutions In-roof system   Facade system</b>	80 In-roof system 81 Facade system	<b>4</b>
<b>Single item</b>	84 Roof attachment 93 Profile rails 99 Rail connectors and expansion joints 104 Cross connectors 106 Module protection and rail top cover 110 Module attachment 114 Elevation 119 Facade-system 121 Sealing and protective components   cable protection 122 Accessories and optional components 123 Tools	<b>5</b>
<b>Appendix</b>	125 Guarantee conditions 126 Contact and imprint 127 Respond flexibly	<b>6</b>

---

# r.e.think energy

BayWa r.e. is the energy designer of the future:  
we are setting new renewable energy standards worldwide with innovative solutions.

In all relevant areas, we support our customers  
as a reliable market partner with a full-service range of  
technical, planning and commercial services.  
We make sure that more and more regions worldwide  
produce and consume renewable energy and that our  
customers profit from this added value.

---

## OUR PARTNER IN THE PHOTOVOLTAICS MARKET – NOW AND IN THE FUTURE

As one of the largest system providers worldwide, we are a partner for local installers and deliver high-quality components. Our customers know that we always give maximum effort. This was confirmed for us in 2018 for the seventh time in a row: the renowned market research institute EuPD Research rated us as one of the best large-scale trading companies in Germany and Europe.

On top of that, the quality seal “Top PV Supplier” confirms that we were awarded top marks by installers. But that's not all: Since quality and good service are especially important to us, we also had ourselves certified according to ISO 9001 by TÜV SÜD. An advantage which pays off for our customers.



“We do a lot to ensure the success of our customers. That is why BayWa r.e. regularly receives top marks.”



Thomas Pfaff,  
Head of Product Management and Mounting Systems Purchasing



Alexander Schütt,  
Managing Director, BayWa r.e. Solar Energy Systems GmbH

**For the best products**

We subject our products to the highest requirements. Our technicians look for the best solution for every requirement while conscientiously taking the feedback we receive from our customers into consideration. This is how we contribute to the continuous optimisation of components and, thus, yield increases. We stay in contact with leading specialists in the solar sector to continuously expand our knowledge and give the further development of photovoltaics crucial momentum.

**For equal opportunity for our fellow human beings**

For years, we have worked together with sheltered workshops in Baden-Wuerttemberg to preassemble individual parts of our novotegra mounting system. This collaboration offers people with disabilities and mental illness diverse chances and opportunities to be involved in working life and to develop themselves further.

As an IHK-certified company, we continuously provide young people with official training and increase their chances in the job market.



# 1

---

## Introduction

---

# BayWa r.e. – New energy supply methods

One of our most important jobs for the future is to drive photovoltaics forward and take advantage of its inexhaustible potential for decentralised energy supply. At the same time we need a balanced blend of renewable energy such as photovoltaics, wind energy, biomass and geothermal energy to ensure our energy supply, especially considering the ever dwindling resources. The interplay and use of these renewable energy for securing our energy supply in the 21st century is our biggest, global challenge.

BayWa AG recognised this fact early on and founded the subsidiary BayWa r.e. renewable energy in 2009 to bundle all engagements in the area of renewable energy into the business units of solar energy, wind energy, biomass and geothermal energy. Since then, BayWa r.e. renewable energy has developed into one of the leading trading companies and project developers in Germany and Europe – this is demonstrated by more than one gigawatt of installed capacity which we, together with customers, have already connected to the grid. It is our goal to spur on the development of regenerative energies worldwide as well.

## QUALITY THAT PAYS OFF

As reliable specialist partners, PV wholesalers of BayWa r.e. deliver components and services for photovoltaic projects worldwide. Our customers are cared for on location by photovoltaic experts from independent subsidiaries. We consult our customers with regard to planning, financing and implementation and offer various plant operation services. A comprehensive product range and high-quality products are the foundation of your success. With our size, our worldwide network of sales locations, the financial strength of BayWa AG and the know-how of the BayWa r.e. business units, we are well equipped to drive the worldwide development of regenerative energies.

As one of the largest system providers, we provide you with the support of a large and powerful brand – guaranteeing you a successful photovoltaic business today and in the future.

## Photovoltaics. Yes please!

### YOUR PARTNER FOR PHOTOVOLTAICS

Since as far back as 1991, BayWa r.e. Solar Energy Systems GmbH has banked on the sun as the number one energy supplier. Since then, we have actively been involved in the evolution of solar energy in Germany and continuously deepened our expertise in the area of photovoltaics. We do not only consider ourselves a wholesaler, but also as a partner of the trades. In close personal exchanges, we bring our experience to every photovoltaics project, guaranteeing the best possible results and top returns. We adhere to a concept which places as much importance on comprehensive consultation and planning services as it does on active support during initial assembly at the construction site.



Solar energy



Wind energy



Biomass

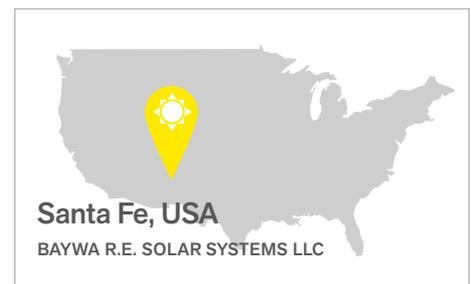


Geothermal energy

Business units of BayWa r.e. renewable energy GmbH



BayWa r.e. commercial subsidiaries in Europe



Operational subsidiaries of BayWa r.e. in the USA, Thailand and Australia



BayWa r.e. experts  
in consultation and planning



More than 10,000 square metres of warehouse space



BayWa r.e.  
Solar Energy Systems GmbH sales offices in Germany

## PROVEN QUALITY

Our novotegra mounting systems are made of the durable and corrosion-resistant materials aluminium and stainless steel and are – under consideration of the Eurocode resistance standards – extremely stable and able to withstand stress, even in heavy snow and high wind conditions. Our mounting systems are certified to guarantee that they meet these quality standards. Be it a CE marking, a TÜV Rheinland certification or building authority approvals – you're always on the safe side with our mounting systems!

## PROFESSIONAL PLANNING

Do you need a mounting system for a flat roof with a low load reserve? Then plan your installation together with our experts. We select the ideal components for your specific requirements, focus on proper dimensioning and shade-free positioning and precisely match all components with one another. We are happy to help you plan your installation and support you with our professional expertise.

## RELIABLE LOGISTICS

Consultation, quality and service are our top priorities. A top-performance warehouse and logistics centre is essential for us to be able to reliably deliver all articles ordered from this catalogue on time. More than 10,000 square metres of storage space provide enough room to keep all components in stock at all times. Quick delivery times and prompt shipping directly to your construction site guarantee top planning reliability.

## COMPREHENSIVE SERVICE

We maintain a close personal relationship with our customers in Germany though our head office in Tübingen and our four sales offices in Munich, Nuremberg, Duisburg and Brunswick. Each location houses a full sales team with photovoltaics experts ready to answer any questions regarding planning, components and mounting systems. And online as well, we are always there to support you.

You can find all the mounting videos for the various systems on our YouTube channel. We also show you how to get the best out of our Solar-Planit. Have a look now and let us win you over at [www.youtube.de/novotegra](http://www.youtube.de/novotegra)

## BAYWA R.E. SALES COLLABORATIONS

Through our partner sales, we collaborate with sales partners who have close ties to possible end customers. Together, we develop individual business models to inform end customers about photovoltaics and provide tailored and attractive offers. We do all of this with the goal of sparking even more peoples' interest in photovoltaics. How do you profit? Photovoltaic installations are implemented for end customers using only selected professional installers and solar technicians from our network. For our shared success.

# novotegra – The perfect solution for every installation

NOVOTEGRA FOR INTERLOCKING TILE ROOFS

NOVOTEGRA FOR  
BEAVERTAIL ROOFS



NOVOTEGRA FOR  
SANDWICH ROOFS

NOVOTEGRA FOR  
CORRUGATED ROOFS

# novotegra – The perfect solution for every installation

NOVOTEGRA FLAT ROOF  
EAST/WEST SYSTEM

NOVOTEGRA FOR  
SEAMED METAL ROOFS



NOVOTEGRA FOR  
TRAPEZOIDAL ROOFS

NOVOTEGRA FLAT ROOF  
SOUTH SYSTEM

# The perfect solution for every installation

INSERTION SYSTEM

FACADE SYSTEM



INSERTION SYSTEM

FACADE SYSTEM

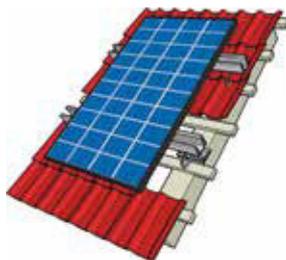
# Certifications and approvals



top-fix



side-fix



Whether sloping or flat roof systems, clamp or insertion systems – we subject our mounting system to top quality standards. Our mounting system is as diverse as our customers' wishes. This is why we have clearly organised the sloping roof area for tile roofs and corrugated and sandwich roofs into our novotegra top-fix and novotegra side-fix product lines. The novotegra top-fix is our connector for fixing C-rails from above – and novotegra side-fix is our connector for side attachment of the grooved guide rails. You can differentiate the two product lines by looking at the symbols next to them. novotegra stands for quality – top-quality materials and reliable production are our guarantee. Our certifications and approvals ensure that this will always be the case.

## TÜV RHEINLAND CERTIFICATION

The reliability and quality of our mounting system has been certified with the TÜV Rheinland test mark. The inspection catalogue for the certification includes all building law and technical requirements that mounting systems must meet. This ensures that all our photovoltaic mounting systems are produced in the same way as the tested systems – with the same materials and processes and thus with the same quality. By the way: our sales and support services also convinced the auditors.

## CE MARKING

The in-house monitoring for the novotegra mounting system by BayWa r.e. Solar Energy Systems GmbH meets all mandatory requirements stipulated in EN 1090-1:2009+A1:2011, Annex ZA as the foundation of the CE marking within the framework of the EU Regulation no. 305/2011 (Construction Product Regulation – CPR). Execution in accordance with EN 1090-2 and EN 1090-3, EXC1.

## GENERAL APPROVALS BY THE BUILDING AUTHORITIES

For your safety, we had the static calculations of relevant parts of the system checked by independent authorities. We prepared the approvals required for this in cooperation with an independent inspector and received the following general approvals from Deutsches Institut für Bautechnik (German Institute for Structural Engineering):

- Z-14.4-716: Connections for PV mounting systems
- Z-14.4-723: Rail connectors and base profile
- Z-14.4-735: Module attachments, module supports, cross rail connectors
- Z-14.4-741: Roof hooks, stock screws, attachments to the rail base

## STRUCTURAL ANALYSIS CALCULATION WITH SOLAR-PLANIT

With our planning tool Solar-Planit, you can see the system structural analysis of our mounting system at the push of a button – and for free! The load determination for the structural analysis of the substructure is based on the specifications of Eurocode 1 – taking into account the national specifications of the countries that can be selected in the software. The only exception is Switzerland, where load is determined according to SIA 261 (2003) specifications.

# Photovoltaic system planning “from A-Z” with Solar-Planit

From the mounting system, modules and inverters up to the battery storage system: With Solar-Planit, you can plan your complete photovoltaic system “from A-Z.” – simply, quickly and reliably. With just a few clicks, you can design a system that is perfectly suited to your location and requirements, with optimally matched components as well as a secure and reliable system structure. This includes a transparent yield forecast and profitability calculation.

The planning software is clearly structured with several graphics and can be operated comfortably and intuitively. Solar-Planit is free of charge for you and, because it is web-based, can be used from anywhere. Solar-Planit thus also allows a simple exchange of your projects - whether within your team or with our sales department.

You get your result in the form of an attractive and clearly structured documentation and can thus present the system planning to your customers – as a PDF or print version. Try it out at [www.solar-planit.de](http://www.solar-planit.de).

## INDIVIDUAL: YOUR PROJECT DATA

What is the shape, inclination, orientation and coverage of your roof? First, you define your project data. With a click on our satellite map, you determine the location. Solar-Planit now knows all relevant geodata – from the anticipated wind and snow load to the radiation quantity.

## FLEXIBLE: MODULE AND MOUNTING SYSTEM DESIGN

Should your system have one or two parts, be installed vertically or horizontally, mounted on the side or from above? Which modules are suitable? Solar-Planit makes suitable suggestions for the mounting system design. You can try out different variations to see what is technically possible. Afterwards, you receive a full parts list, a system structure analysis calculation according to Eurocode – and an overview of the static utilisation of each individual component.

## MATCHING: THE INVERTER

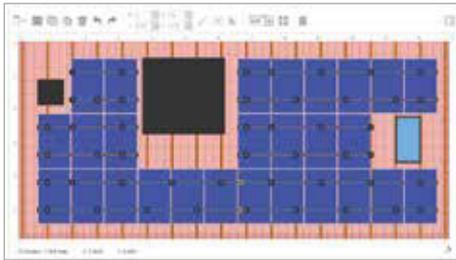
Solar-Planit suggests suitable inverter interconnection constellations – depending on the module and configuration. You decide whether the highest possible yield or a top price/performance ratio is more important. If you plan on using your own choice of inverter, no problem: our planning software tells you if and how certain modules and inverters can be interconnected

## OPTIONAL: THE BATTERY STORAGE SYSTEM

Are you planning a solar power system with battery storage? Solar-Planit offers you a selection – exactly matching and, depending on the PV inverter, with or without an integrated battery inverter.

## TRANSPARENT: YIELD AND PROFITABILITY

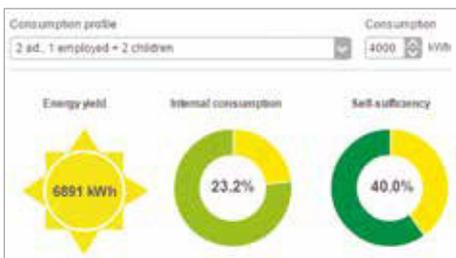
Finally, Solar-Planit calculates yield and profitability. The yield forecast gives you a clear indication of the annual and monthly yield, your own consumption rate, the degree of autarkic operation and CO<sub>2</sub> savings. And Solar-Planit also calculates the profitability of the installation clearly and transparently by taking data such as investment, financing and mains power costs as well as yield into consideration.



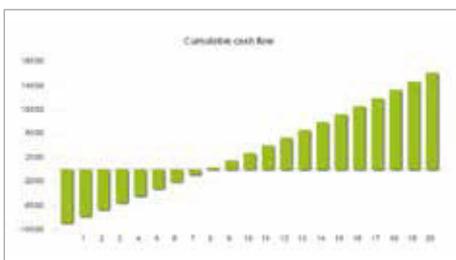
Mounting system design



Inverter interconnection

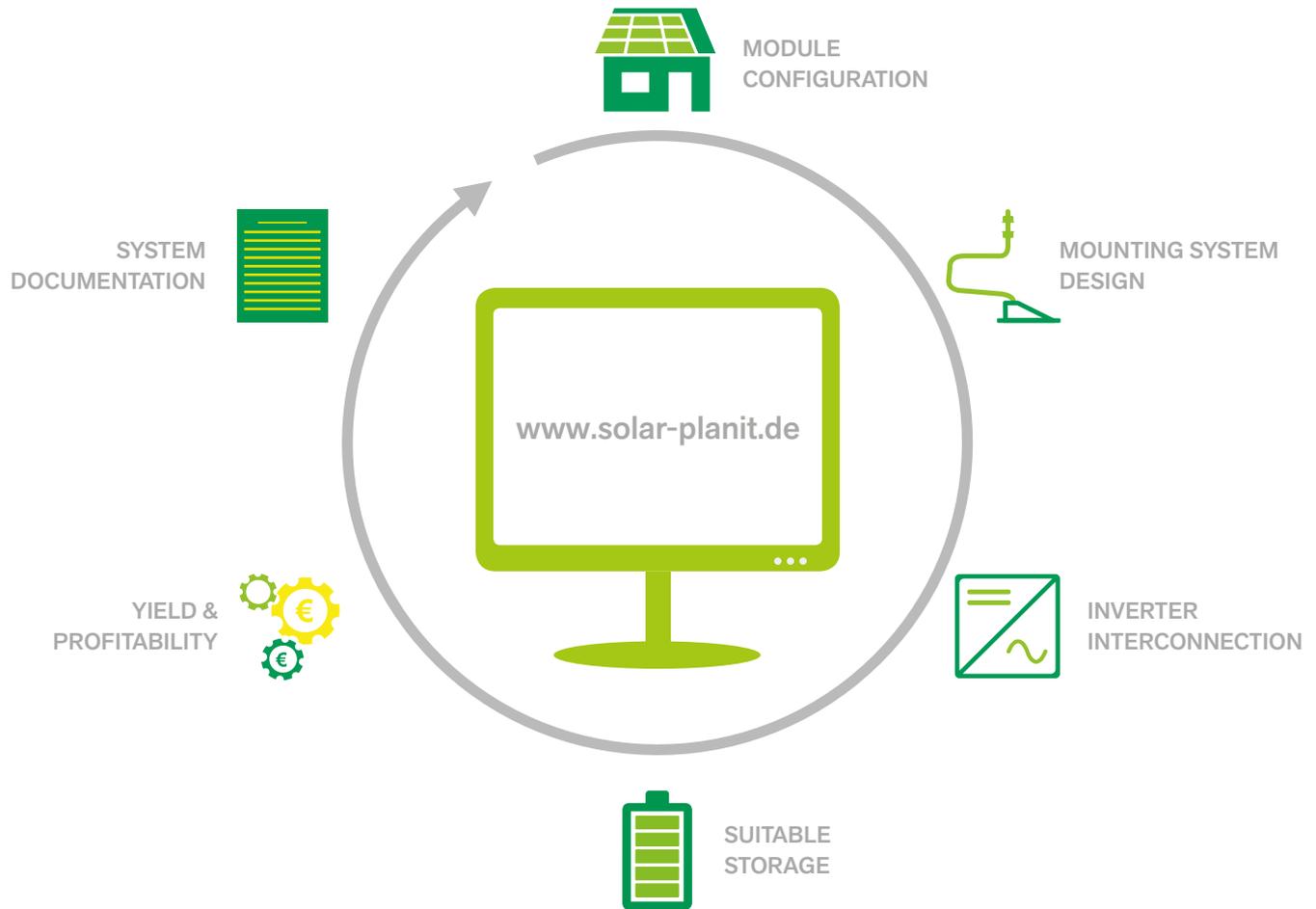


Yield forecast



Profitability

# A perfect affair: system planning with Solar-Planit



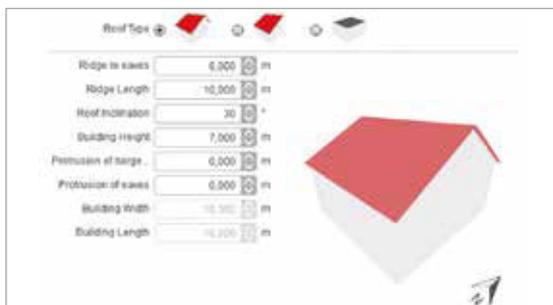
## Your benefits

- Complete system planning, from its assembly to its profitability, in one tool
- Free web-based planning at [www.solar-planit.de](http://www.solar-planit.de)
- Recommends a suitable inverter and storage facility for your best price-performance ratio
- Transparency: Determines the yield, profitability and your own consumption rate
- Clearly detailed documentation and archiving of your projects

# Installation system layout with Solar-Planit

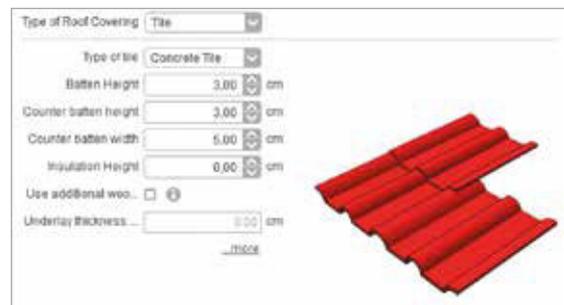
Project planning – self-contained, quick and simple.

ROOF



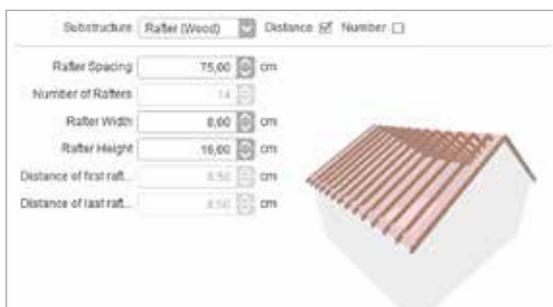
1. Input roof dimensions

COVERAGE



2. Enter roof coverage data

ROOF CONSTRUCTION



3. Input roof construction details

ENVIRONMENT



4. Select the locations

PROJECT DATA



Entering data is quick, clear and easy!

## Solar-Planit – A result is just a few clicks away

- Define location and roof features individually for your project.
- Select module and mounting system design – from tile roof to flat roof
- Plan the module configuration – easily plan around chimneys, skylights and dormers
- Perform a structural analysis and optimise the system – in line with the Eurocode standard for many European countries
- The result: complete overview of the structural analysis, material requirements and costs
- System project reports – documentation for you and your customers at the push of a button

# Installation system layout with Solar-Planit

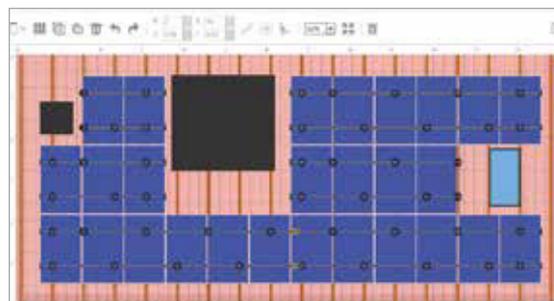
Solar-Planit lets you keep control of costs and statics.

MOUNTING SYSTEM



5. Choose the module and construction

MODULE CONFIGURATION



6. Position hindering objects and modules

3D PREVIEW



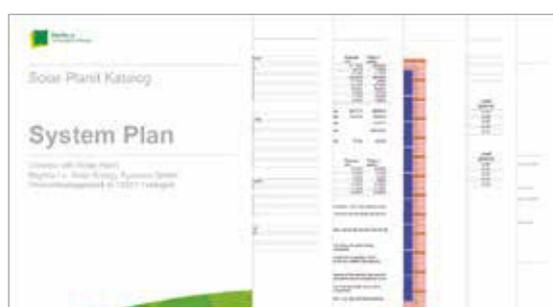
7. Optional 3D preview

RESULTS

Description	Number of ur.	Price per unit	Price in packs
Roof hook set ZD 30 M12	36	311.40 €	289.90 €
Roof hook mounting screw 8x100	36	8.64 €	7.20 €
Roof hook mounting screw 8x140	36	13.32 €	11.15 €
C-rail 47-2 6-12 m	7	245.00 €	190.40 €
Rail connector set 47	2	10.10 €	8.90 €
Middle clamp set 34-42	28	51.80 €	47.60 €
End clamp set 34-42	20	20.00 €	39.00 €
Module slip guard M5	18	6.65 €	4.75 €
Grounding connector set AF 18	1	11.10 €	10.05 €

8. Material parts list including costs and statics

DOCUMENTATION



Clear project report at the push of a button

## Your benefits

- Free system planning, simply register at [www.solar-planit.de](http://www.solar-planit.de) and get started
- Monthly webinars from our novotegra experts and free participation in our seminars
- Independent and self-contained planning – for our mounting system solutions
- This web-based solution makes short administrative paths possible for project collaboration either with your team or with our sales team
- Clear and customised documentation
- Safety for your project thanks to load assumptions according to Eurocode

# Skill, expertise and years of experience

Take advantage of our experience and expertise: Our photovoltaics mounting system has performed successfully on the market for several years now – and, at this point, worldwide as well. From development to the first prototypes to series maturity: every component of our photovoltaic mounting system has its origin in our company. All components are tested extensively at our test bench with calibrated measurement instruments. Our international experience gain through sales and deployment across Europe and worldwide is incorporated into the further development of our products: This is why our mounting system takes country-specific details into account.

## WELL EXPLAINED: OUR WORKSHOPS AND PROMOTIONAL MATERIAL

We offer Europe-wide mounting workshops for our customers – at our sales locations in various countries and at our BayWa r.e. Solar Energy Systems headquarters in Tübingen, Germany. Furthermore, you can find free online seminars for our Solar-Planit planning tool and helpful mounting videos at “[www.youtube.de/novotegra](http://www.youtube.de/novotegra)”.

We are very happy to provide you with promotional material which you can use to show your customers the benefits of our photovoltaic mounting system in an attractive and descriptive way. In addition to our catalogue, our brochures, the data sheets and the comprehensive information you can find on our website, you can also rent diverse promotional material for use at in-house exhibitions or during customer visits, for example – from models to promotional gifts to show trailers. We offer small mounting system models for rent or sale. If you want to learn more about our promotional materials: we are happy to help you personally.

## LET US HELP YOU: OUR INITIAL ASSEMBLY SERVICE ON-SITE

Are you installing one of our mounting systems for the first time? Then take advantage of our free initial assembly service. This way you can get to know your mounting system from the inside out in a practical scenario. One of our technical consultants will spend an entire day with you on site. Our expert will give you a briefing, support you regarding any questions about the mounting system and help with the installation. He will go over the results of the structure analysis calculation by our Solar-Planit planning tool. Furthermore, you will learn about the development and production of our components and get helpful tips and tricks related to our mounting system.

## SECURITY: WIND TUNNEL TESTED FLAT ROOF SYSTEM

Our aerodynamic flat roof systems were tested in a boundary layer wind tunnel by experts from Wacker engineers in Birkenfeld according to the specifications in Eurocode DIN EN 1991-1-4/NA in. Only a boundary layer wind tunnel can accurately model the profiles of medium wind speed and turbulence intensity. The results of the wind tunnel tests are reflected in the system plans by our planning tool Solar-Planit – minimum ballast with maximum security.



Excellent consultation for custom solutions by our novotegra experts



Advertising material support



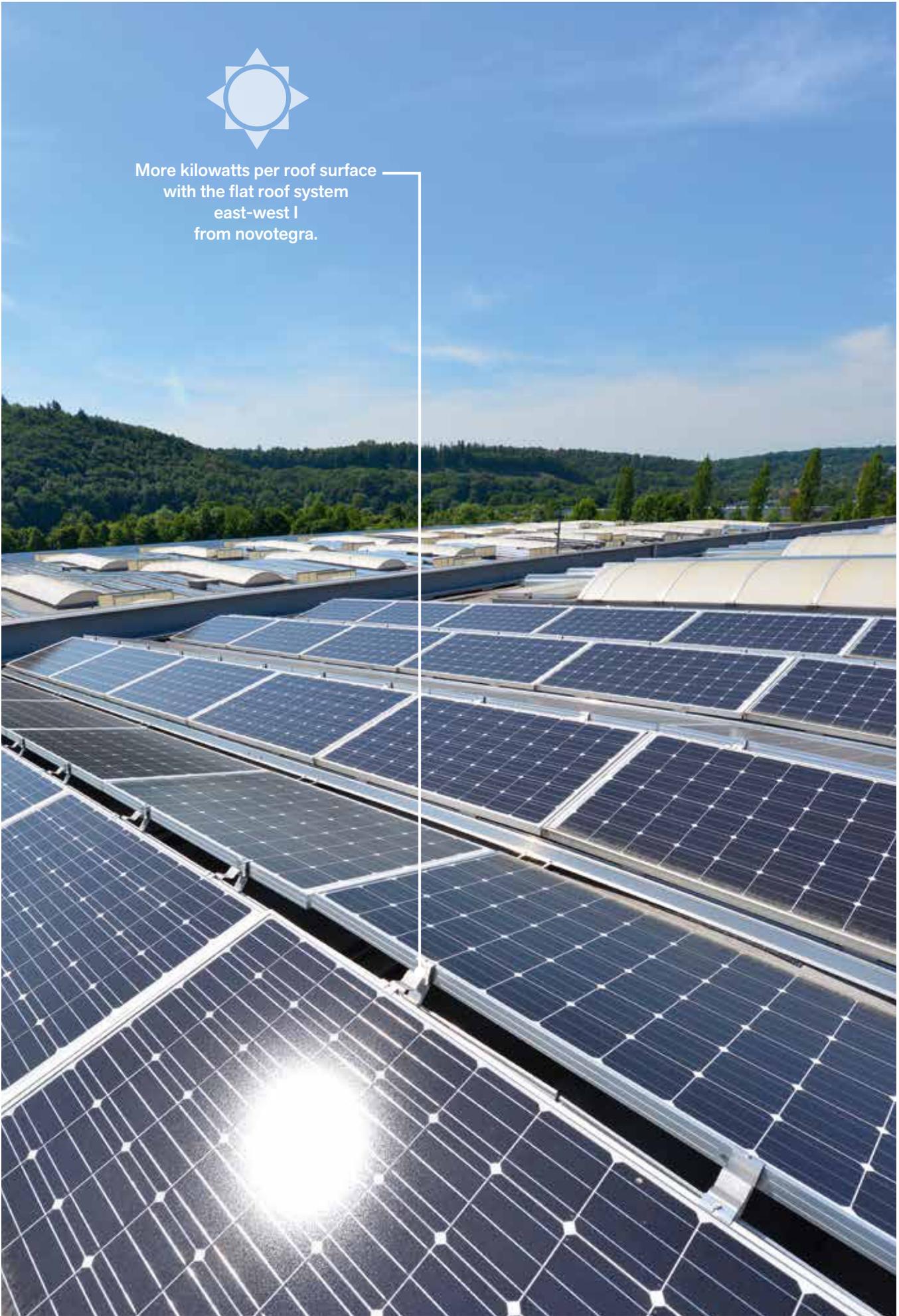
Initial assembly service



Wind tunnel testing



More kilowatts per roof surface  
with the flat roof system  
east-west I  
from novotegra.





# 2

---

## Pitched roofs

---



# Mounting solutions for tile roof

## novotegra top-fix



Clamping system: Single-rail in portrait



Insertion system: In portrait



Clamping system: Single-rail in portrait on beavertail tiles



Insertion system: In portrait on beavertail tiles



Clamping system: Cross-rail in landscape



Insertion system: In landscape

## Your benefits

- Clamping and insertion systems for mounting modules in portrait and in landscape
- Multiply adjustable roof hooks – unique design
- Rail with an integrated cable channel and room for plugs
- Quick mounting from above with easily graspable components



# Mounting solutions for tile roof

## novotegra side-fix



Clamping system: Single-rail in portrait



Insertion system: In portrait



Clamping system: Cross-rail in landscape



Insertion system: In landscape



Clamping system: Cross-rail in portrait

## Your benefits

- Clamping and insertion systems for mounting modules in portrait and in landscape
- Robust, die-cast aluminium roof hooks – unmistakable
- Mounting the rail from the side with view of the mounting spot
- Clamping system with click mechanism, impossible to lose during mounting



novotegra top-fix – single-rail clamping system with modules installed in portrait

## POWERFUL, STABLE AND FLEXIBLE

Our roof hook sets from the novotegra family are ideal for roof attachment when mounting modules on tile roofs. The various sets consist of a base profile and a bracket which is screwed into the base profile. Because they are three-way adjustable, the roof hook sets are perfectly adaptable to any tile roof. This way you can always achieve a homogenous module field, even on uneven roofs. Whether you choose a large base profile with a second bracket for heavy snow loads or the flex roof hook set for light loads – we always have a simple, stable and flexible solution for your tile roof.

C-rails are always mounted using the same principle: The classic screw connection with a locking nut ensures a quick, strong and permanently reliable connection for both single-rail and cross-rail connections. At the same time, the interior of the rail acts as a cable channel with enough room for cables and plugs.

All end and middle clamps are pre-assembled and also available in a black anodised variant. Be it vertically or horizontally installed modules or a single-rail or cross-rail installation, thanks to reliable clamping technology, modules can be attached to C-rails quickly and securely. The end clamps close the module field flush to the C-rails, making the substructure nearly invisible – for visually perfect installations.

## YOUR BENEFITS

- Secure, stable and durable
- Three-way adjustable roof hooks
- The C-rail also acts as a cable channel
- Double roof hooks for heavy snow loads
- High-quality production and proven clamping technology
- Only three clamps for all frame heights
- For all conventional tiles and minimal tile adjustment
- Excellent rear ventilation of the module
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Double roof hooks for heavy snow loads



C47 S rail connectors for profile clamps



End cap on the edge of the installation



## CLAMPING SYSTEM

Middle clamp or end clamp

Page 110



Item no. 03-000302



Item no. 03-000299



Item no. 03-000301



Item no. 03-000298

## NOVOTEGRA TOP-FIX

End cap

Page 107

Item no. 03-000259



Connector

Page 100

Item no. 03-000001



Rail

Page 95

Item no. 03-000291



Roof hook

Page 84

Item no. 03-000254



Screws

Page 91

Item no. 03-000281





novotegra top-fix – single-rail clamping system on beavertail tile roofing with modules installed in portrait.

## SOLUTION FOR BEAVERTAIL TILES

For the installation of our system on a beavertail tile roof, you can use the beavertail roof hook set or for lesser loads the flex roof hook set. The various sets consist of a base profile and a bracket which is screwed into the base profile. Due to their special shape, both the beavertail and the flex roof hooks are ideal for the small spaces between roof battens on a beavertail tile roof. In addition: The bracket fits between two tiles and not under the tile.

The roof hook sets are three-way adjustable and thus allow for the leveling of uneven roof surfaces to achieve a homogeneous module field. Because the bracket does not sit on the roof tile, you don't need any expensive underlay plates. This reduces the overall system costs.

The C-rail is connected easily, quickly and permanently to the roof hook using a conventional screw connection with a locking nut – it then serves simultaneously as a cable channel.

All end and middle clamps are pre-assembled and also available in a black anodised variant. Be it modules installed in portrait or landscape or a single-rail or cross-rail installation, thanks to reliable clamping technology, modules can be attached to C-rails quickly and securely. The end clamps close the module field flush to the C-rails, making the substructure nearly invisible – for visually perfect installations.

## YOUR BENEFITS

- Secure, stable and durable
- Three-way adjustable roof hooks
- The C-rail also acts as a cable channel
- Double roof hooks for heavy snow loads
- quick and easy mounting
- Excellent rear ventilation of the module
- Only three clamps for all frame heights
- Simple, Eurocode-compliant layout with our Solar-Planit online tool
- no beavertail sheet metal tile required



Position of the bracket with beavertail tiling



Rail connector C 47 S for profile chambers



End cap on the edge of the installation



## CLAMPING SYSTEM

Middle clamp or end clamp

Page 110



Item no. 03-000302



Item no. 03-000299



Item no. 03-000275



Item no. 03-000298

## NOVOTEGRA TOP-FIX

End cap

Page 107

Item no. 03-000259



Connector

Page 100

Item no. 03-000925



Rail

Page 95

Item no. 03-000291



Roof hook

Page 85

Item no. 03-000258



Screws

Page 91

Item no. 03-000281





novotegra side-fix – single-rail clamping system with modules installed in portrait

## QUICK AND EASY FIXING

From roofing shingles to concrete roofing tiles: novotegra is perfect for every tile roof. It is quick and easy to fix, offers several individual solution options and is extremely stable and able to withstand stress.

Our roof hooks facilitate the height-adjustable connection of the rail with the groove. The grooved guide rail can be connected to the slot bolt through the slot on the head of the roof hook and securely clamped over the fluting. The side connection eliminates high-effort mounting from below and provides a good view of the attachment point. The roof hooks are simply attached to the rafter and do not contact the roof, even under stress – expensive sheet metal tiles therefore are not necessary.

The grooved guide rails enable rail overhang beyond the attachment point on the roof hook. Depending on the rail diameter, they are available for various spans and can easily be extended using plug-in connectors which are screwed in from the side.

With its click-in mechanism, the clamping system comes with an extremely comfortable and secure mounting technology for attaching modules. You can install the modules vertically or horizontally, with a single rail or with cross-rails and benefit from low installation workload thanks to pre-assembled module clamps. The module clamps are available in blank aluminium or black. This creates a visually attractive, homogenous module field.

## YOUR BENEFITS

- Secure, stable and durable
- Die-cast aluminium roof hooks without a welding seam
- Height-adjustable rail connection
- Easy-to-mount connection from the side
- Installation-friendly clamps with a click-in mechanism
- Pre-assembled components
- Quick and efficient mounting
- Only two clamps for all frame heights
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Roof hook with height-adjustment N-rail



Connector N-rail standard



End clamp with spacer in N-rail



## CLAMPING SYSTEM

Middle clamp or end clamp

Page 110 / 111



Item no. 03-000569



Item no. 03-000964



Item no. 03-000615



Item no. 03-000572



Item no. 03-000553

## NOVOTEGRA SIDE-FIX

End cap

Page 108

Item no. 03-000529



Connector

Page 101

Item no. 03-000524



Rail

Page 95

Item no. 03-000965



Roof hook

Page 86

Item no. 03-000613



Screws

Page 91

Item no. 03-000281





novotegra top-fix – insertion system with modules installed in portrait

## POSITION, INSERT – FINISHED!

Simple and elegant – our insertion system for tile roofs. Precisely adjust the substructure to your roof, and you will have a visually perfect PV installation thanks to the insertion system.

The insertion rails are available in either blank aluminium or black to match the frame colour, and the thought-through technology ensures security and mounting efficiency. As a floating installation, the module frame – vertical or horizontal – transfers the load to the rails. Insert the modules in the blink of an eye and lay the cables, including plugs, in the lower rail of the cross connection. The combination of the C-rail as a supporting rail and the cable channel makes it unique – tidy and efficient.

The connection of the C-rail to the rail bottom using a traditional screw connection on the three-way adjustable roof hook set enables continuous adjustment and levelling of the lower rail position. The adjustable bracket which is screwed into the base profile makes the roof hook easy to adapt to the roof coverage. The base profile facilitates precise positioning of the bracket over the tile – the roof hook set is available in different variations, perfect for your project.

The installation is completed with end caps and edge stops and can also be equipped with a snow guard – design and quality, that is what our insertion system stands for.

## YOUR BENEFITS

- High-quality installation aesthetics
- Tension-free module mounting
- Easy and secure – stable and durable
- Three-way adjustable roof hooks
- Roof hooks for light and heavy loads
- The C-rail also acts as a cable channel
- Quick and efficient thanks to insertion technology and pre-assembled parts
- Excellent rear ventilation of the module
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Height-adjustable flex roof hook set



Rail connector insertion rail



Closing insertion rail and C-rail



## INSERTION SYSTEM

Insertion rail	 Item no. 03-000540	Page 93
Connector	 Item no. 03-000499	Page 99
Edge stop	 Item no. 03-000693	Page 106

## NOVOTEGRA TOP-FIX

Cross-rail connector	 Item no. 03-000321	Page 104
End cap	 Item no. 03-000260	Page 107
Connector	 Item no. 03-000001	Page 100
Rail	 Item no. 03-000291	Page 95
Roof hook	 Item no. 03-000254	Page 84
Screws	 Item no. 03-000281	Page 91



novotegra top-fix – insertion system on beavertail tile roofing with modules installed in portrait

## CLASSIC MEETS MODERN – BEAVERTAIL WITH INSERTION SYSTEM

Are you looking for a photovoltaic mounting system for beavertail tile roofs with double tiling? By choosing our insertion system, you are choosing top-quality stability and safety and also an attractive appearance for your system – that matches the delicate and timelessly elegant beavertail tiling. Our insertion rails are available in blank aluminium or black, depending on the colour of your module frames. You get the best look for your project. The very slim and unobtrusive roof hooks and the C-rail to store the cables mean the substructure is nearly invisible.

Whether you choose the flex roof hooks for light loads or the BS roof hooks for higher loads, our roof hooks do not rest on the tiling, so they do not need expensive sheet metal tiles.

The adjustable roof hook set can be adjusted perfectly to the shape of the roof – the bracket is simply inserted between two neighbouring tiles. Stress-free storage of the modules in landscape or portrait, expertly laid cables in the integrated C-rail cable channel and secure fastening and flexible adjustment of the roof hooks to the roof – our system is unparalleled for this roof coverage.

## YOUR BENEFITS

- Attractive and unmistakable appearance
- Quick and efficient thanks to insertion technology and pre-assembled parts
- Module installation – landscape and portrait – floating and tension-free
- Insertion rails in blank aluminium or black
- Excellent rear ventilation of the module
- Three-way adjustable roof hooks
- Roof hook without resting on tile – no sheet metal tiles required
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Position of base profile BS on rafters



Closing insertion rail and C-rail



Rail connector insertion rail



## INSERTION SYSTEM

Insertion rail	 Item no. 03-000540	Page 93
Connector	 Item no. 03-000499	Page 99
Edge stop	 Item no. 03-000693	Page 106

## NOVOTEGRA TOP-FIX

Cross-rail connector	 Item no. 03-000321	Page 104
End cap	 Item no. 03-000260	Page 107
Connector	 Item no. 03-000001	Page 100
Rail	 Item no. 03-000291	Page 95
Roof hook	 Item no. 03-001149	Page 84
Screws	 Item no. 03-000281	Page 91



novotegra side-fix – insertion system with modules installed in portrait

## PROVEN AND ATTRACTIVE

By choosing our insertion system for tile roofs, you are not only choosing top-quality stability and security but also a highly attractive appearance for your photovoltaic installation.

The insertion rails hold the modules securely and gently: The floating installation of the modules in the rails distributes the load across the entire length of the module frame. The insertion system makes quick and easy installation of modules in landscape or portrait possible, ensures excellent rear ventilation and is also available with a snow guard.

The installation in a cross connection construction gives you the highest degree of flexibility. Our roof hooks are three-way adjustable for flexible adjustment on existing uneven roofs or one-way adjustable for quick fixing on new roofs. They are simple to fix – without broken tiles or expensive sheet tiles – and enable a height-adjustable connection of the lower rail with the groove. The insertion rails are connected to the grooved guide rails with the pre-assembled cross-rail connector set. The insertion rails are available in blank aluminium or black, depending on the colour of your module frames.

When used together with other decent mounting system components, this system creates an attractive, highly homogenous module field. Every roof turns into a design object with a uniform construction of black anodised insertion rails and dark modules.

## YOUR BENEFITS

- Attractive and unmistakable appearance
- Floating and tension-free module installation
- Easy and secure - stable and durable
- Die-cast aluminium roof hooks without a welding seam
- Height-adjustable rail connection
- Easy-to-mount connection from the side
- Quick and efficient thanks to insertion technology and pre-assembled parts
- Low substructure clearance to the roof coverage
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Roof hook with height-adjustment N-railrail



Rail connector insertion rail



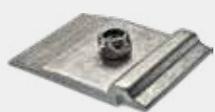
Insertion rail on N-rail



## INSERTION SYSTEM

Insertion rail	 Item no. 03-000540	Page 93
Connector	 Item no. 03-000499	Page 99
Edge stop	 Item no. 03-000693	Page 106

## NOVOTEGRA SIDE-FIX

Cross-rail connector	 Item no. 03-000409	Page 104
End cap	 Item no. 03-000529	Page 108
Connector	 Item no. 03-000524	Page 101
Rail	 Item no. 03-000965	Page 95
Roof hook	 Item no. 03-000612	Page 86
Screws	 Item no. 03-000281	Page 91

# Mounting solutions for tile roof

## Further applications

---



novotegra top-fix: Insertion system in portrait



novotegra side-fix: Insertion system in portrait



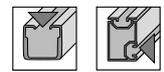
novotegra top-fix: Cross-rail clamping system on beavertail tiles



novotegra side-fix: Single-rail clamping system in landscape

---

# Combination matrix for mounting system components



The following table illustrates the possible combinations of profile rails and roof attachments. These combinations apply for both the clamping systems (p. 24 et seq.) and the insertion systems (p. 30 et seq.).

ROOF ATTACHMENT	PROFILE RAIL					CATALOGUE PAGE
	ITEM NUMBER DESIGNATION	N-RAIL ECO 22 × 50 6.00 M 03-000679	N-RAIL STANDARD 30 × 50 6.00 M 03-000965	C-RAIL 38-1.6 6.12 M 03-001074	C-RAIL 47-2 6.12 M 03-000291	
	Roof hook set ZD adjustable 633 vertical M8 03-000949	✓	✓			85
	Roof hook set ZD 533 vertical M8 03-000612	✓	✓			86
	Roof hook set ZD 544 horizontal M8 03-000613	✓	✓			86
	Roof hook set flex 30 40 M10 03-001149 03-001151			✓	✓	84
	Double Roof hook set flex 30 40 M10 03-001150 03-001152			✓	✓	84
	Roof hook set ZD 30 40 M12 03-000254 03-000256			✓	✓	84
	Double Roof hook set ZD 30 40 M12 03-000255 03-000257			✓	✓	85
	Roof hook set BS 30 M12 03-000258			✓	✓	85
	Double Roof hook set BS 30 M12 03-000267			✓	✓	85
	CATALOGUE PAGE	95	95	95	95	

# Mounting solutions for trapezoidal roofs

## Roof-parallel applications with direct fixing

---



Clamping system: In portrait short rail



Insertion system: In portrait



Clamping system: In landscape short rail



Insertion system: In landscape short rail



Clamping system: In portrait rail pieces

---

## Your benefits

- Clamping and insertion systems for mounting modules in portrait or in landscape
- Only a handful of components, low installation workload and cost-effective
- Quick mounting thanks to direct fixing with chipless screws
- Easy layout planning with Solar-Planit – 10-year product guarantee

# Mounting solutions for trapezoidal roofs

## Elevated applications with direct fixing



Clamping system: South-facing



Insertion system: South-facing with triangle on bridge



Clamping system: South-facing on east-west roof



Insertion system: South-facing with triangle on east-west roof



Clamping system: In Portrait

## Your benefits

- For elevation angles of 3 - 18° or 13 - 40°
- Module elevation solutions for all roof orientations
- Insertion system with elevation triangles for direct fixing
- Rail solutions with module attachment according to manufacturer specifications



Clamping system with direct fixing and modules installed in landscape

## PRE-ASSEMBLED COMPONENTS – QUICK ASSEMBLY

With our clamping system for trapezoidal metal roofs, we always have the right solution completely pre-assembled for you. Whether for the yield-optimised system or the project business, or blank aluminium or black – you get a proven mounting system with a high quality of finish and made from durable and corrosion-resistant materials. Our clamping system for trapezoidal metal roofs also gives you an attractive price-performance ratio.

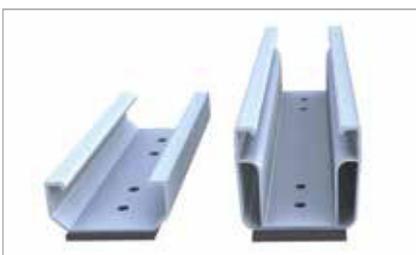
With the building authority-approved thin sheet screws, you can attach the pre-cut short rails, which are pre-equipped with EPDM sealing strips, directly to the trapezoidal raised beads. The modules are then attached with the tried and tested middle and end clamps – we cover all frame heights from 28 – 52 mm with only three different clamps.

Easy on-site handling guarantees quick and efficient mounting from above without saw or drill chips. You only need one tool to complete the installation, as the thin sheet screws and the clamps use an identical drive.

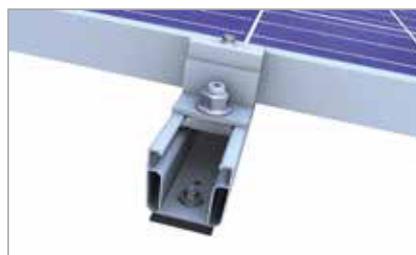
Excellent rear ventilation of the modules, electrical conductivity between mounting systems and the roof membrane as well as minimal material use and attractive aesthetics are all additional advantages of our mounting system, leaving no wish unfulfilled.

## YOUR BENEFITS

- Only a handful of components – entirely pre-assembled
- Only one mounting tool necessary
- Easy and secure – attached directly to the trapezoidal sheet
- Electrically conductive connection between the mounting system and the roof membrane
- For steel panel thicknesses from 0.4 mm
- Quick mounting from above
- Short rails available in two different heights
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Short rail variations with EPDM seal



Slip guard on short rail for landscape



Hole pattern short rail for portrait



CLAMPING SYSTEM

Middle clamp or end clamp

Page 110



Item no. 03-000302



Item no. 03-000299



Item no. 03-000301



Item no. 03-000298

MODULE IN LANDSCAPE

Slip guard

Page 108

Page 108



Item no. 03-000233



Item no. 03-000233

Rail

Page 95

Page 95



Item no. 03-000841



Item no. 03-001108

Roof attachment

Page 91

Page 91



Item no. 03-000880

Item no. 03-000893



Item no. 03-000880

Item no. 03-000893



Clamping system with direct fixing and modules installed in portrait

## VERTICAL MODULE INSTALLATION – ALWAYS THE RIGHT SOLUTION

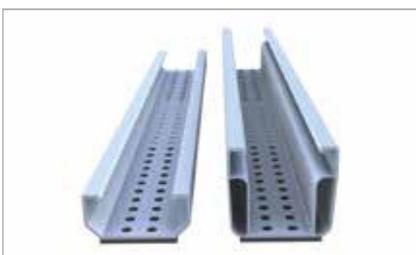
Our systems – your choice! The versions with the short rail C24 and C47 are easy to handle on site thanks to their pre-assembled components. Or you might decide on the C-rail assembly. Then you'll get neat cable routing and a load-distributing connection to the trapezoidal sheet. Our clamping systems for modules in portrait meet every requirement.

When assembling on short rails, you use our 385 mm long, pre-punched module support profiles pre-assembled with EPDM seal. The short rails can be adjusted flexibly to all trapezoidal sheet corrugation grids and are available in two different heights. With the short rail C24, you get a material-saving and economical solution for your projects. Or you can use the short rail C47 and get the ideal rear ventilation of the modules due to sufficient space to the roof coverage. Whichever way you decide, with our short-rail versions, every choice is the right one!

To meet your requirements for even load distribution on a trapezoidal sheet and for neat cable routing at the same time, we recommend our C-rail solution. These rails are mounted on pre-stuck EPDM sealing strips using several raided beads. Whether you are using material-optimised C-rail 38 or proven C-rail 47, you get both rails in a length of 2.10 m – just lay them, screw them in and you're finished!

## YOUR BENEFITS

- Quick mounting from above
- Only one mounting tool necessary
- Only a handful of components – entirely pre-assembled
- Short rails or C-rails in two different heights
- Only three clamps for all frame heights
- Fastening with building authority-approved thin sheet screws
- Conductive connection between the mounting system and the roof membrane
- Solution for roofs with low load reserves
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Versions of short rail 385 mm



Hole pattern short rail for portrait



Middle clamp in short rail C47



CLAMPING SYSTEM

Middle clamp or end clamp

Page 110



Item no. 03-000302



Item no. 03-000299



Item no. 03-000301



Item no. 03-000298

MODULE IN PORTRAIT

Slip guard

Page 107

Page 107



Item no. 03-000007



Item no. 03-000007

Rail

Page 96

Page 96



Item no. 03-001081



Item no. 03-000873

Roof attachment

Page 91

Page 91



Item no. 03-000880

Item no. 03-000893



Item no. 03-000880

Item no. 03-000893



Insertion system with direct fixing and modules installed in portrait

## CONVINCING QUALITY FOR YOUR TRAPEZOIDAL ROOF

The insertion system from novotegra enables tension-free, floating – and at the same time very secure and stable – installation of your photovoltaic modules. The modules are gently placed in our insertion rails, which are available in either blank aluminium or black, with their entire frame length. Depending on the combination of rail and module, you can create a very aesthetic and homogenous installation surface with the insertion mounting system. The insertion mounting system is also popular because of its thought-through construction, resulting in a quick and easy assembly with high-quality, durable and corrosion-resistant components.

The insertion rail is attached directly to the trapezoidal sheet using a fixing clamp which is attached to the side of the raised bead. Our insertion system for trapezoidal roofs can be used starting at a steel plate thickness of 0.4 mm. It provides excellent rear ventilation of the modules, which can be installed either vertically or horizontally.

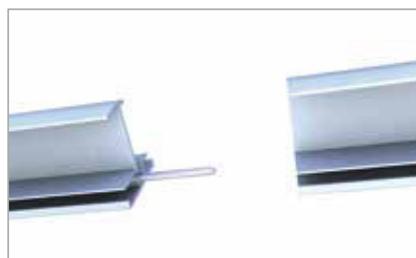
Very practical for installation on the roof: the insertion system for trapezoidal roofs consists of only a handful of individual components, greatly simplifying installation. For trapezoidal roofs, we use building authority-approved chipless thin sheet screws which are screwed into the trapezoidal metal without producing any chips which could corrode.

## YOUR BENEFITS

- Attractive and unmistakable appearance
- Only a handful of components – entirely pre-assembled
- Quick and efficient thanks to insertion technology and pre-assembled parts
- Floating and tension-free module installation
- Insertion rails in blank aluminium or black
- Easy and secure – attached directly to the trapezoidal sheet
- For steel panel thicknesses from 0.4 mm
- Excellent rear ventilation
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Insertion rail on EPDM with trapezoidal clamp



Connecting insertion rails on trapezoidal sheet



Module security at low roof inclination



## INSERTION SYSTEM

Insertion rail	 <p>Item no. 03-000492</p>	Page 93
Connector	 <p>Item no. 03-000647</p>	Page 99
Edge stop	 <p>Item no. 03-000691</p>	Page 106

## ATTACHMENT SYSTEM

EPDM sealing strips	 <p>Item no. 03-000633</p>	Page 121
Roof attachment	 <p>Item no. 03-000459</p>	Page 90



Insertion system with direct fixing and modules installed in portrait

## COMBINED – INSERTION RAILS ON SHORT RAIL

Do you value the advantages of quick module assembly with our insertion system and would also like excellent rear module ventilation? Then we have exactly the right solution for your trapezoidal metal roofs, using the combination of our insertion rails and our various short rails.

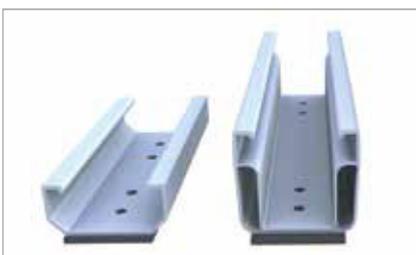
Regardless of whether the modules are portrait or landscape, the sub-structure is constructed according to the same principle. You decide, depending on your rear module ventilation requirements, on the height of your short rail, and fasten these directly to the trapezoidal roof using building authority-approved thin sheet screws – this means you can choose between two short rails of different heights.

The insertion rails are placed on the short rails and are fastened with pre-assembled cross rail connector set C ES M8. The complete assembly of the components – whether the short rails are assembled or insertion rails fastened – is done from above.

With the combination of our insertion rails on short rails, you can combine the aesthetic appearance of your PV system thanks to the insertion system with optimal rear module ventilation for yield optimisation. Fewer components – completely pre-assembled – make assembly easy and quick.

## YOUR BENEFITS

- Attractive and unmistakable appearance
- Short rails available in two different heights
- Only a handful of components – entirely pre-assembled
- Quick and efficient thanks to insertion technology and pre-assembled parts
- Floating and tension-free module installation
- Insertion rails in blank aluminium or black
- Easy and secure – attached directly to the trapezoidal sheet
- For steel panel thicknesses from 0.4 mm
- Yield optimisation due to excellent rear ventilation of the module
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Short rail variations with EPDM seal



Module security at low roof inclination



Insertion rail attached to short rail



## INSERTION SYSTEM

Insertion rail	 Item no. 03-000492	Page 93
Connector	 Item no. 03-000648	Page 99
Edge stop	 Item no. 03-000691	Page 106

## SHORT RAIL C24

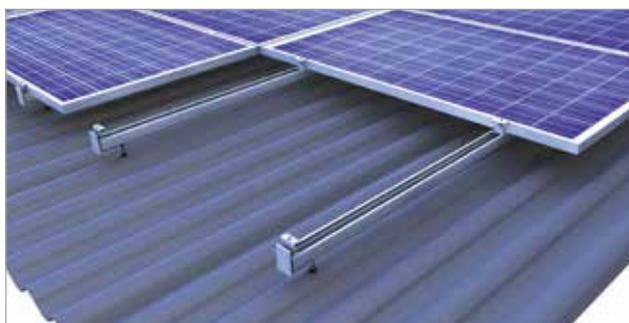
## SHORT RAIL C47

Rail	 Item no. 03-000841	Page 95	 Item no. 03-001108	Page 95		
Roof attachment	 Item no. 03-000880	Item no. 03-000893	Page 91	 Item no. 03-000880	Item no. 03-000893	Page 91



# Mounting solutions for corrugated and sandwich roof

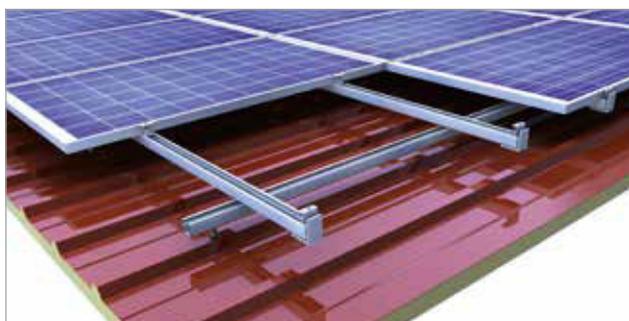
## novotegra top-fix



Clamping system: Single-rail in landscape



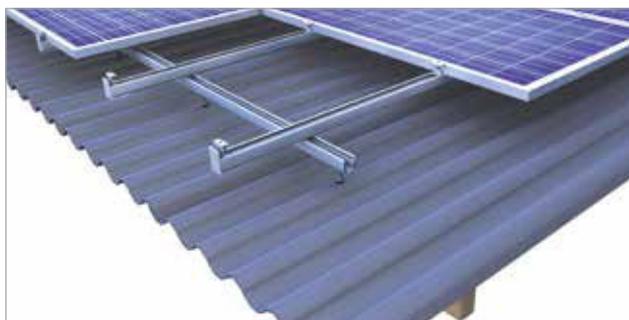
Insertion system: In portrait



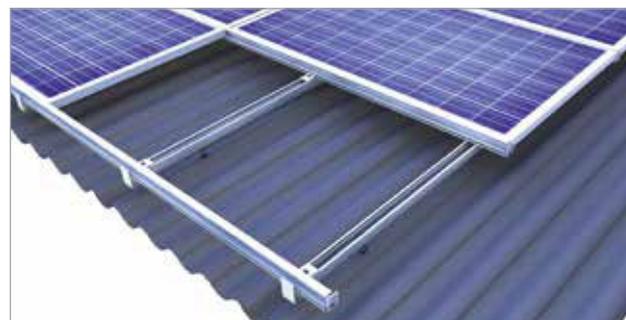
Clamping system: Cross-rail in portrait



Insertion system: In landscape



Clamping system: Cross-rail in landscape



Insertion system: In landscape

## Your benefits

- Clamping and insertion systems for mounting modules in portrait and in landscape
- Centric load distribution to the stock screw, making the system suitable for very heavy loads
- Rail with an integrated cable channel and room for plugs
- Quick mounting from above with easily graspable components

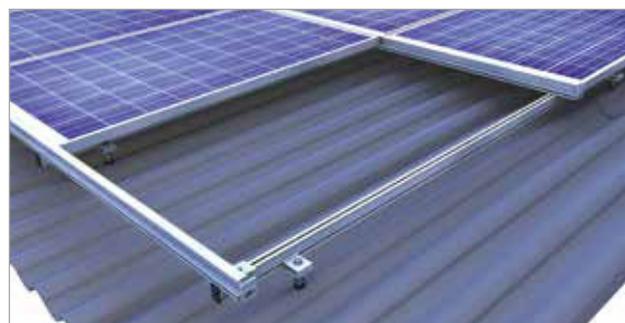


# Mounting solutions for corrugated and sandwich roof

## novotegra side-fix



Clamping system: Single-rail in landscape



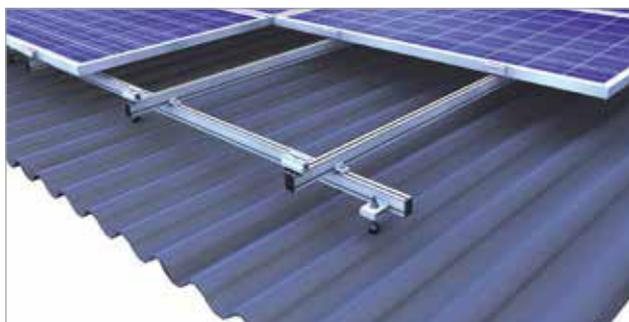
Insertion system: In portrait



Clamping system: Cross-rail in landscape



Insertion system: In landscape with bridge



Clamping system: Cross-rail in landscape



Insertion system: In landscape

## Your benefits

- Clamping and insertion systems for mounting modules in portrait and in landscape
- Stock screw with click adapter for the rail groove
- Side-mounting on the rail with a view of the mounting spot
- Clamping system with click mechanism, impossible to lose during mounting



novotegra top-fix – single-rail clamping system with modules installed in landscape

## SIMPLE MOUNTING SYSTEM TECHNOLOGY

When mounting on corrugated and sandwich roofs, you fix the photovoltaic installation directly to the purlins of the roof construction. For wooden purlins, you need the stock screw set for wood and for steel purlins the stock screw set for steel. The centric connection of the C-rails to the stock screw transfers the load centrally on the stock screw – this means that it is not additionally subjected to bending stress.

C-rails are always mounted using the same principle: The classic screw connection with a locking nut ensures a quick, strong and permanently reliable connection for both single-rail and cross-rail connections. At the same time, the interior of the rail acts as a cable channel with enough room for cables and plugs. The connection of the stock screw to the rail bottom makes height adjustment possible, and the installation can be levelled – this way you can achieve a homogenous module field, even on uneven roofs.

All end and middle clamps are pre-assembled and also available in a black anodised variant. Be it modules installed in portrait or landscape or a singlerail or cross-rail installation, thanks to reliable clamping technology, modules can be fixed to C-rails quickly and securely. The end clamps close the module field flush to the C-rails, making the substructure nearly invisible – for visually perfect installations.

## YOUR BENEFITS

- Centric load distribution
- The C-rail also acts as a cable channel
- For wooden and steel purlins
- Secure, stable and durable
- High-quality production and proven clamping technology
- Only three clamps for all frame heights
- Also suitable for trapezoidal roofs
- Excellent rear ventilation of the module
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Centric load distribution in to the stock screw



Cross-rail connection C-rail



Middle clamp on C-rail



## CLAMPING SYSTEM

Middle clamp or end clamp

Page 110



Item no. 03-000302



Item no. 03-000299



Item no. 03-000301



Item no. 03-000298

## NOVOTEGRA TOP-FIX

End cap

Page 107

Item no. 03-000259



Connector

Page 100

Item no. 03-000001



Rail

Page 95

Item no. 03-000291



Stock screw

Page 87

Item no. 03-000222





novotegra side-fix – single-rail clamping system modules installed in landscape

## EASY AND STABLE, PROVEN AND FLEXIBLE

Our mounting system with stock screws is installed on sandwich and corrugated roofs. The stock screw provides a high degree of flexibility: It is available in various diameters for diverse construction heights, insulation thicknesses and wooden and steel purlins. The rails are mounted using a simple click-in method from the side. Together with the reliable module clamping technology, this is a very secure and stable attachment for photovoltaic installations which has proven itself over years of use.

With novotegra, you can achieve the perfect system layout – for every single requirement of sandwich and corrugated roofs. With the clamping technology, the modules can be installed either vertically or horizontally, and the substructure can be installed on a single rail or in a cross-rail connection. The rails are available for various spans. They can be extended using plug-in connectors – even overhangs are possible.

With its click-in mechanism, the clamping system comes with an extremely comfortable and secure mounting technology for attaching modules to the grooved guide-rails. Using only two different clamping types, available in either blank aluminium or black, you can attach all frame heights.

Our mounting system will win you over with its top-grade production quality; our components are made of durable, corrosion-resistant materials.

## YOUR BENEFITS

- Base plate height-adjustable on the stock screw
- N-rail to base plate clip-in installation
- For wooden and steel purlins
- Quick and efficient mounting
- High-quality production and proven clamping technology
- Installation-friendly clamps with a click-in mechanism
- Only two clamps for all frame heights
- Also suitable for trapezoidal roofs
- Excellent rear ventilation of the module
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Base plate stock screw in the groove



Cross-rail connection N-rails



Middle clamp on N-rail



## CLAMPING SYSTEM

Middle clamp or end clamp

Page 110 / 111



Item no. 03-000569



Item no. 03-000964



Item no. 03-000572



Item no. 03-000553



Item no. 03-000615

## NOVOTEGRA SIDE-FIX

End cap

Page 108

Item no. 03-000529



Connector

Page 101

Item no. 03-000524



Rail

Page 95

Item no. 03-000965

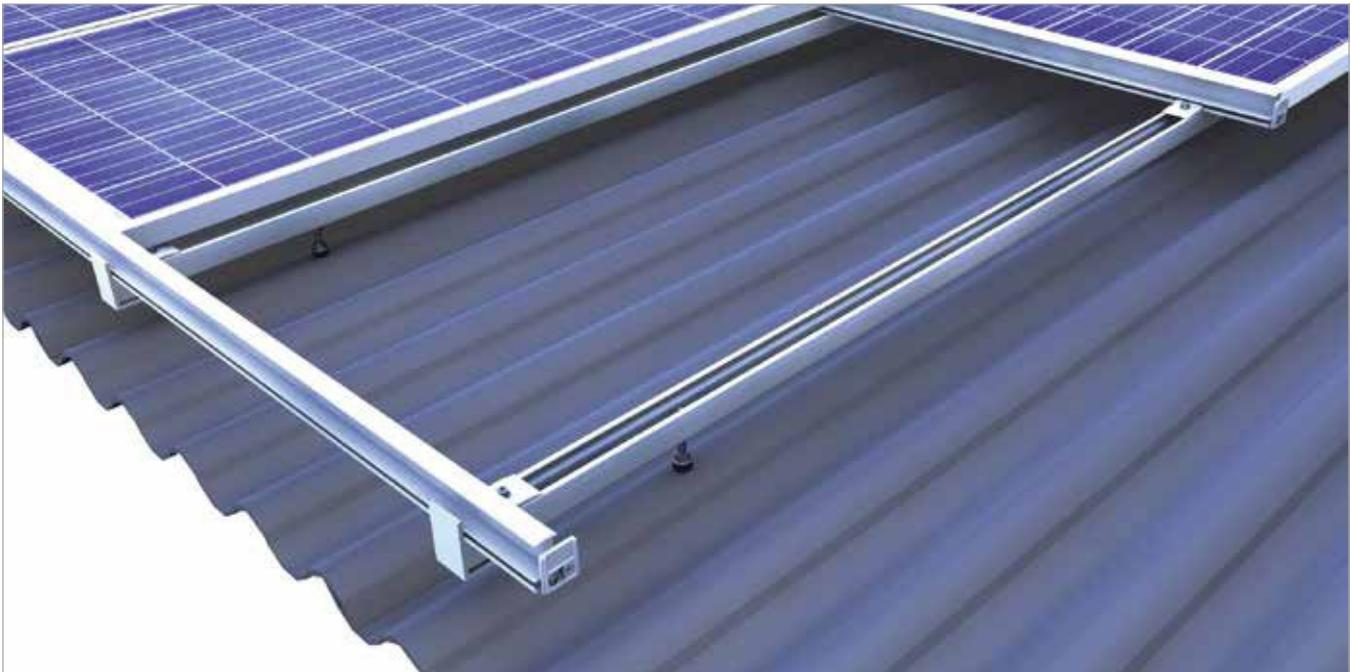


Stock screw

Page 87

Item no. 03-000561





novotegra top-fix – insertion system with modules installed in portrait

## EASY, STABLE AND FLEXIBLE

Whether you have a purlin roof with wooden or steel purlins, or a roof covering with corrugated or sandwich elements, with our stock screw set you can use our insertion system quickly and easily in your projects.

The insertion rails are available in either blank aluminium or black to match the frame colour. The well-thought-out technology ensures security and mounting efficiency. As a floating installation, the module frame – vertical or horizontal – transfers the load to the rails. Insert the modules in the blink of an eye and lay the cables, including plugs, in the lower rail of the cross connection. The combination of the C-rail as a supporting rail and the cable channel makes it unique – tidy and efficient.

The connection of the C-rail to the stock screws using a traditional screw connection on the rail bottom enables continuous adjustment and levelling of the lower rail position. The centre connection of the C-rails to the stock screw transfers the load centrally on to the stock screw, meaning that it is not additionally subjected to bending stress – the stock screw set is available in various lengths and widths, perfect for any roof.

The installation is completed with end caps and edge stops and can also be equipped with a snow guard – design and quality, that is what our insertion system stands for.

## YOUR BENEFITS

- High-quality installation aesthetics
- Tension-free module mounting
- Quick and efficient thanks to insertion technology and pre-assembled parts
- Centric load distribution
- The C-rail also acts as a cable channel
- For wooden and steel purlins
- Secure, stable and durable
- Also suitable for trapezoidal roofs
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



C-rail for various spans



C-rail connector extern



Fixation insertion rail to C-rail



## INSERTION SYSTEM

Insertion rail	 Item no. 03-000492	Page 93
Connector	 Item no. 03-000648	Page 99
Edge stop	 Item no. 03-000691	Page 106

## NOVOTEGRA TOP-FIX

Cross-rail connector	 Item no. 03-000321	Page 104
End cap	 Item no. 03-000259	Page 107
Connector	 Item no. 03-000001	Page 100
Rail	 Item no. 03-000291	Page 95
Stock screw	 Item no. 03-000222	Page 87



novotegra side-fix – insertion system with modules installed in portrait

## IDEAL FOR CORRUGATED AND SANDWICH ROOFS

High quality, upheld for years and thought through down to the last detail: The insertion mounting system makes secure and stable attachment of photovoltaic installations possible on any corrugated or sandwich roof. The insertion rails, in either blank aluminium or black, use floating, tension-free installation of the modules, holding them gently. They enable very fast module installation both vertically and horizontally. If desired, the insertion rails can also be equipped with a snow guard – as additional protection against roof avalanches.

Our stock screw sets for steel and wooden purlins enable mounting on various coverings and construction heights. Depending on the purlin distancing, the N-rail - diameter matching the required span - as lower rail in the cross connection transfers the load securely and stably to the stock screw. The pre-assembled stock screw base plates enable easy clip-in mounting from the side into the groove – this gives you a good view of the attachment point. The insertion rails are then connected to the grooved guide rails with the preassembled cross-rail connector set – finished.

Our insertion system for corrugated and sandwich roofs is suitable for very heavy loads and ensures excellent rear ventilation of the photovoltaic installation. All components are made of durable, corrosion-free materials.

## YOUR BENEFITS

- Attractive and unmistakable appearance
- Floating and tension-free module installation
- Quick and efficient thanks to insertion technology and pre-assembled parts
- Base plate height-adjustable on the stock screw
- N-rail to base plate clip-in installation
- For wooden and steel purlins
- Secure, stable and durable
- Also suitable for trapezoidal roofs
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



N-rail on stock screw bridge



N-rail for various spans



EPDM T protection module in insert rail



## INSERTION SYSTEM

Insertion rail	 Item no. 03-000492	Page 93
Connector	 Item no. 03-000648	Page 99
Edge stop	 Item no. 03-000691	Page 106

## NOVOTEGRA SIDE-FIX

Cross-rail connector	 Item no. 03-000409	Page 104
End cap	 Item no. 03-000529	Page 108
Connector	 Item no. 03-000524	Page 101
Rail	 Item no. 03-000965	Page 95
Stock screw	 Item no. 03-000561	Page 87

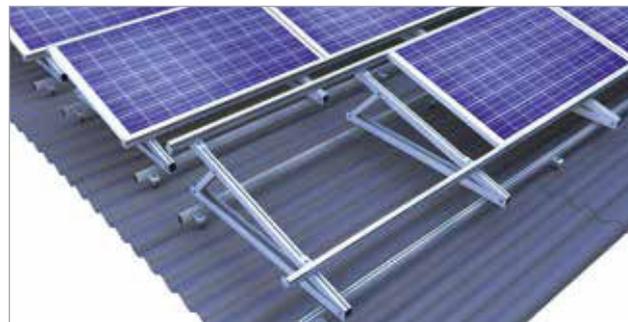
# Mounting solutions for corrugated and sandwich roof

## Further applications

---



Elevation: Cross-rail south-facing



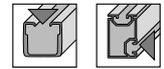
Elevation: South-facing with triangle on east-west roof



Elevation: South-facing with clamping system

---

# Combination matrix for mounting system components

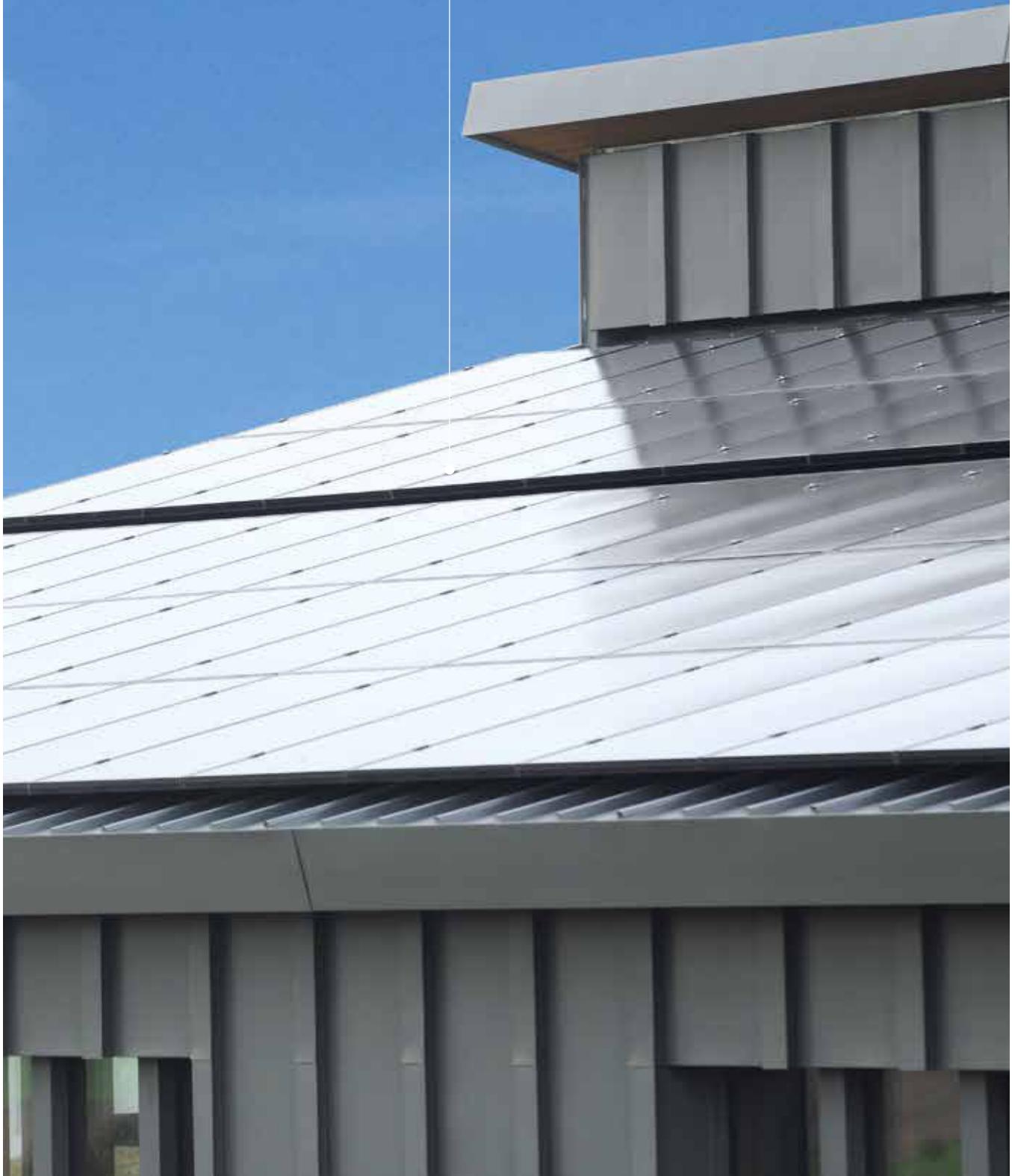


The following table illustrates the possible combinations of profile rails and roof attachments. These combinations apply for both the clamping systems (p. 40 et seq.) and the insertion systems (p. 44 et seq.).

ROOF ATTACHMENT	PROFILE RAIL	N-RAIL ECO 22 × 50 6.00 M 03-000679FF	N-RAIL STANDARD 30 × 50 6.00 M 03-000965FF	C-RAIL 47-2 6.12 M 03-000291FF	C-RAIL 71-2 6.12 M 03-000147FF	CATALOGUE PAGE
	Stock screw set HP (for wood) M10 200 mm GPS1 03-000561ff	✓	✓			87
	Base plate aluminium Stock screw M10 / M12 03-000699ff	✓	✓			88
	Stock screw bridge short up to 200 mm 03-000446	✓	✓			88
	Stock screw bridge long up to 360 mm 03-000447	✓	✓			88
	Stock screw set HP (for wood) M10 03-000222ff			✓	✓	87
	Stock screw set HP (for wood) M12 03-000211ff			✓	✓	87
	Stock screw set SP (for steel) 8.0-M10 03-000199ff			✓	✓	88
	Stock screw set HP (for wood) 8.4-M10 03-000894ff			✓	✓	87
	CATALOGUE PAGE	95	95	95	95	



Low installation workload – novotegra for  
seamed metal roofs



# Mounting solutions for seamed metal roof

## Main applications



Clamping system: In portrait on standing seam



Insertion system: In portrait on standing seam



Clamping system: In portrait on round seam



Insertion system: Installation on standing seam in landscape



Clamping system: In portrait on standing seam copper roof

## Your benefits

- Seam clamps for standing and round seams as well as profile sheet roofs
- Clamping systems with only three different clamps for all frame heights
- Rail with an integrated cable channel and room for plugs
- Quick mounting with only a handful of components thanks to a rail connection from above
- Insertion systems for module mounting in portrait or in landscape



Single-rail clamping system with modules installed in portrait

## PERFECT FOR SEAMED METAL ROOFS

Be it a standing seam roof, a rounded seam roof or a profiled sheet roof, such as a Zambelli RibRoof or Domico GBS: Our novotegra clamping system, which has proven itself over years of service, ensures the reliable, stable and secure attachment of your photovoltaic installation on any seamed metal roof.

With the roof seam clamping technology, our mounting system is attached directly to the roof seam: The load is transferred centric in to the seam. Our clamping system for seamed metal roofs can also be used on standing seam roofs made of copper. They have a high production quality and comprise durable and corrosion-resistant components – perfect for the individual requirements of the photovoltaic installation on site.

Our clamping system is quick and easy to fix to the seamed metal roof. It comprises only three components: the C-rails, the seamed metal and the module clamps. The modules are installed vertically. The module clamps are available in three sizes – and in either blank aluminium or black. Mounting is done comfortably from above. The rails can also be extended with connectors as needed. Our mounting system for seamed metal roofs provides excellent rear ventilation of the modules and – with decent system components and homogenous module fields – attractive aesthetics.

## YOUR BENEFITS

- Only a handful of components – entirely pre-assembled
- Quick mounting from above
- The C-rail also acts as a cable channel
- Only three clamps for all frame heights
- Secure, stable and durable
- For all conventional seamed metal and profile sheet roofs
- Also suitable for standing seam roofs made of copper
- Excellent rear ventilation
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Clamp with saddle for copper standing seam roofs



C-rail connection directly on the seam clamp



Flush closure end clamp with C-rail



## CLAMPING SYSTEM

Middle clamp or  
end clamp

Page 110



Item no. 03-000302



Item no. 03-000299



Item no. 03-000301



Item no. 03-000298

## ATTACHMENT SYSTEM

Connector

Page 100

Item no. 03-000925



Rail

Page 95

Item no. 03-000291



Seam clamp

Page 89

Item no. 03-000219



VA saddle  
(only for copper roofs)

Page 89

Item no. 03-000338





Single-rail insertion system with modules installed in portrait

## PERFECT AESTHETIC AND HIGH EFFICIENCY – THE INSERTION SYSTEM FOR STANDING SEAM ROOFS

Proven clamping technology on standing seams and elegant system aesthetics thanks to our insertion system – the combination of extended standing seam clamps and proven insertion rails makes it possible.

Whether on a gabled roof or a mono-pitch roof, with our insertion system for standing seam roofs, you can install the modules in portrait or landscape on the roof coverage. You can choose between blank aluminium and black insertion rails – we have both versions ready for you and suitable for all module frame heights.

The design of the standing seam clamp allows for gentle fastening to the standing seam flanging and at the same time for simple direct fastening of the insertion rail with the proven holding bracket on the standing seam clamp. This makes our system efficient in assembly and economical because there is no need for a cross rail. We make sure the system looks good as well: the edge stop forms the closure at the edge of the system and also secures the modules in place.

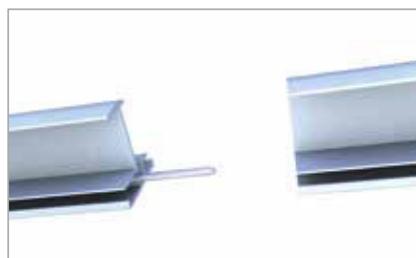
Fewer components, completely pre-assembled – designed for quick and easy assembly.

## YOUR BENEFITS

- Discreet system aesthetics with insertion system
- Proven module insertion technology
- Insertion rails match colour of module frame
- Fewer components – quick assembly
- Cost-optimised single-rail system
- Completely pre-assembled seam clamp with connector for insertion rail
- Clamping technology with clamping points on the seam flanging
- Secure, stable and durable
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Clamp for insertion system on standing seam roof



Insertion rail connection



Module security at low roof inclination



## INSERTION SYSTEM

Insertion rail

Page 93

Item no. 03-000492



Connector

Page 99

Item no. 03-000647



Edge stop

Page 106

Item no. 03-000691



Roof attachment

Page 89

Item no. 03-001028



## ATTACHMENT SYSTEM



# 3

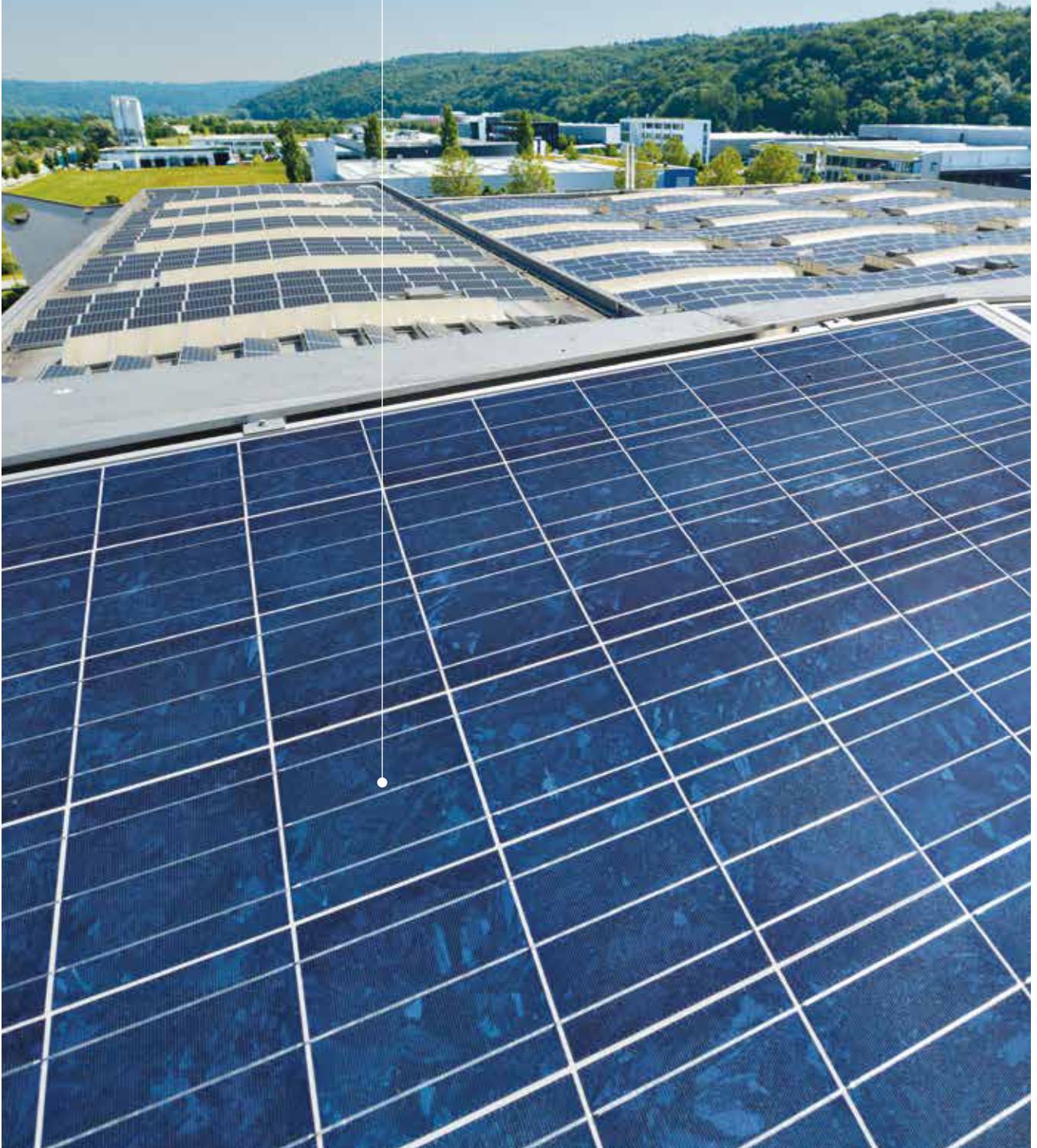
---

## Flat roof

---



Minimal ballasting possible – novotegra for flat roof south-facing system



# Mounting solutions for flat roof

## Main applications



Foil roof: East-West system II



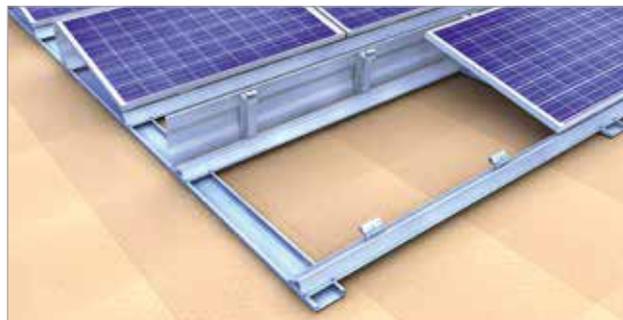
Foil roof: South system closed II



Gravel: East-West system I with cross rail



Gravel: South system I with cross rail



Foil roof: South system closed I with cross rail

## Your benefits

- Aerodynamic system tested in a wind tunnel – reliable security!
- Only a handful of components which are quickly and easily assembled – a cost-effective system
- Minimal need for ballasting thanks due to load redistribution through wide base rails with rounded edges
- Alternative solutions with a stable cross-rail system and elevation triangles



Flat roof system east-west II

## OUR SOLUTION FOR THE EAST-WEST DIRECTION

With our east-west II mounting system, you can optimise the use of the surface area of your flat roof: Compared to south-facing elevations, you can install nearly twice the module surface area. Electricity production is thus distributed more evenly throughout the entire day. The east-west II mounting system is a very secure and stable system for flat roofs with a pitch of up to 5° – and, what is more, it is quick and easy to assemble.

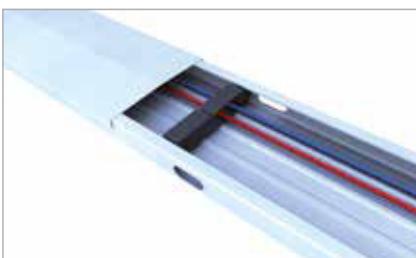
The mounting system is fixed on the roof with its own weight and, if necessary, ballast stones, although the optimised aerodynamics of our system require little to no ballasting: an advantage for flat roofs with low load reserves.

The mounting system consists of only a few components. The substructure is installed in a modular grid. The base foot and the module support are clicked together, and the module fastened by the short side of the frame. The base trough, which can be used as a cable channel, has rounded edges and a separation layer to protect the roof membrane. The system is installed on foil and bitumen roofs and can also be installed on gravel roofs.

Our various supports allow us to tailor solutions to the specific loads – even with heavy load requirements. Per default, we can subject the east-west II mounting system to loads of 2.4 kN/m<sup>2</sup>, and with a module clamp on the long side, even up to 4.8 kN/m<sup>2</sup>.

## YOUR BENEFITS

- Secure, stable and quick to install
- Wind-tunnel tested aerodynamics
- No penetration of the roof membrane
- Minimal ballasting
- Optimal angle of inclination of 13°
- More module surface area possible
- Wide base trough with rounded edges
- Ballast trough for large-format stones
- Double support for heavy loads
- Rail with pads for cross drainage
- Only three clamps for all frame heights
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Base rail with cover and cable holder



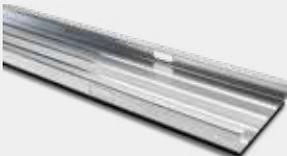
Base foot in base trough with connector



Wind deflector East-West for roof obstacles



### BASIC COMPONENTS

<p>Base trough</p>		<p>Page 96</p>
<p>Connector set base trough</p>		<p>Page 102</p>
<p>Aluminium edge protector self-adhesive</p>		<p>Page 121</p>
<p>Flat roof mounting screw</p>		<p>Page 92</p>
<p>Base foot</p>		<p>Page 114</p>

Item no. 03-000989

Item no. 03-000370

Item no. 03-000407

Item no. 03-000383

Item no. 03-000343

### EAST-WEST-FACING VARIANT

<p>Module support</p>		<p>Page 114</p>
<p>Ballast redistribution</p>		<p>Page 98</p>
<p>Module bracket</p>		<p>Page 114 / 115</p>

Item no. 03-000442

Item no. 03-000314

Item no. 03-000324

Item no. 03-000326

Item no. 03-000310



Flat roof system closed II

## OUR SOLUTION FOR THE SOUTH-FACING DIRECTION

Our "Flat Roof Closed II" system – the perfect solution for the south-facing elevation of your modules on flat roofs with a pitch of up to 5°! We had our system tested by Wacker engineers in a boundary layer wind tunnel with high wind peaks. The result confirms our quality which has proven itself for years: with our flat-roof system, you are choosing unparalleled security and stability.

The closed II system convinces with its quick and easy installation, consists of only a handful of components and click-in system parts – the roof is not punctured during installation. The optimised aerodynamics required little to no ballasting with stones – perfect for your flat roof. This is made possible by our wind deflector which is installed in an overlapping fashion on the closed II elevation and fixed to the supports and rails. This increases the overall stability and ensures optimised load transfer through its attachment to the base rails.

The wide base rail has rounded edges and is pre-assembled with a continuous separation layer or individual pads for cross drainage, as desired. With a suitable cover and cable holder, it can also act as the cable channel for the cables on the base rails. Per default, this mounting system can support loads of up to 2.4 kN/m<sup>2</sup>; and, as necessary, can be expanded to support loads of up to 4.8 kN/m<sup>2</sup>.

## YOUR BENEFITS

- Secure, stable and quick to install
- Wind-tunnel tested aerodynamics
- No penetration of the roof membrane
- Minimal ballasting
- Load redistribution across the wind deflector and base troughs
- Optimal angle of inclination of 13°
- Roof edge clearance of only 0.5 m
- Wide base trough with rounded edges
- Ballast trough for large-format stones
- Only three clamps for all frame heights
- Simple, Eurocode-compliant layout with our Solar-Planit online tool



Base trough extension



Wind deflector and module support



Module clamp on the long frame side base foot



### BASIC COMPONENTS

<p>Base trough</p>		<p>Page 97</p>
<p>Connector set base trough</p>		<p>Page 102</p>
<p>Aluminium edge protector self-adhesive</p>		<p>Page 121</p>
<p>Flat roof mounting screw</p>		<p>Page 92</p>
<p>Base foot</p>		<p>Page 114</p>

Item no. 03-000879

Item no. 03-000370

Item no. 03-000407

Item no. 03-000383

Item no. 03-000343

### SOUTH-FACING VARIATION

<p>Module support</p>		<p>Page 114</p>
<p>Ballast redistribution</p>		<p>Page 115</p>
<p>Module bracket</p>		<p>Page 114 / 115</p>

Item no. 03-000347

Item no. 03-000331

Item no. 03-000324

Item no. 03-000326

Item no. 03-000310



Flat roof system east-west I for gravel

## OUR FLEXIBLE SOLUTION FOR EAST-WEST-FACING SYSTEMS

Do you value flexible assembly and simple ballasting for your flat roof project? Then we have exactly the right solution with our flat roof east-west I system with 13° elevation angle.

With our base trough in the gravel rail version, you use the existing gravel to ballast the PV system. The gravel is simply poured into the 230 x 90 mm gravel rail as ballast. Our base profile is used as a module-bearing rail; it is then fastened flexibly as a cross rail to the bottom gravel rail using thin sheet screws. Reliable, solid and effective – this describes our cross-rail solution for gravel roofs.

The flexible installation means you can also use the east-west I system with the normal base trough with pre-assembled separation layer. Or you can insert the base trough with pads for horizontal drainage. For both base trough types, we have the right support set for you to elevate the modules on the C-rails.

The module bracket set back for connecting to frame holes on the module elevate the module securely in the base profile using form closure. The module bracket set back for clamping the modules are clicked into the C-rails and can be attached to the clamping points provided by the module manufacturer. The C-rail can be used at the same time as a cable channel for the string cables.

## YOUR BENEFITS

- More kilowatts per roof surface
- Simple ballasting using existing gravel
- Stability and flexibility thanks to cross system
- Optimal module clamping at assembly holes
- Tested in a wind tunnel
- Optimised 13° elevation for roof inclination up to 5°
- Edge spacing of just 0.5 m possible
- No penetration of the roof membrane
- Can also be used on foil roofs with normal base trough
- C-rail with optional cover as a cable channel for string cables



Module support and C-rail



Base profile fastening to base trough



Module bracket set front



### BASIC COMPONENTS

<p>Separation layer</p>		<p>Page 121</p>
<p>Base trough</p>		<p>Page 97</p>
<p>Flat roof mounting screw</p>		<p>Page 92</p>
<p>Base profile</p>		<p>Page 97</p>
<p>Base profile connector</p>		<p>Page 103</p>

Item no. 03-000105

Item no. 03-000092

Item no. 03-000383

Item no. 03-000193

Item no. 03-000021

### EAST-WEST-FACING VARIANT

<p>Support</p>		<p>Page 118</p>
<p>Ballast redistribution</p>		<p>Page 95</p>
<p>Rail connector</p>		<p>Page 101</p>
<p>Module bracket</p>	 	<p>Page 116 / 118</p>

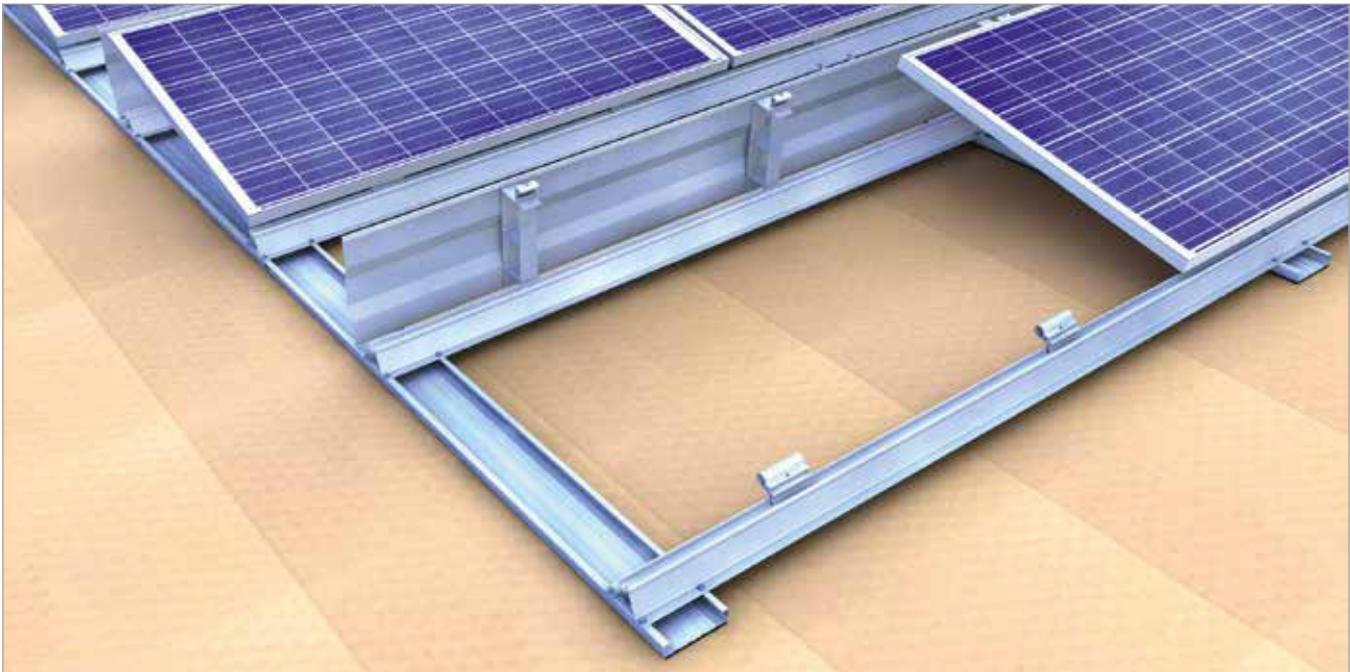
Item no. 03-000181

Item no. 03-000147

Item no. 03-000151

Item no. 03-000078

Item no. 03-000322



Flat roof system closed I

## OUR FLEXIBLE SOLUTION FOR SOUTH-FACING SYSTEMS

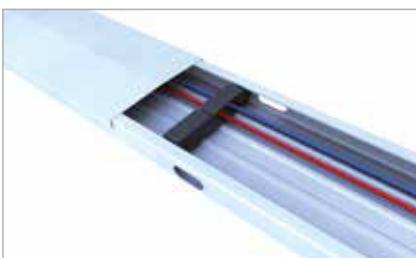
Flexible, stable, proven – that's our closed flat roof system I for south-facing roofs! It is easy to mount, versatile and extremely stable. The aerodynamic flat roof system has been tested in the Wacker Ingenieure boundary layer wind tunnel and combines maximum safety with outstanding stability and flexible assembly. Whether it is mounted on a foil or gravel roof, whether snow loads above 2.4 kN/m<sup>2</sup> or ideal module clamping in 1/4-point are expected – the south system closed I is the ideal solution for demanding flat roof systems.

The substructure is constructed as a cross-rail system with a base trough and module-bearing rail on top. Here, the base trough serves as a base for the ballast and at the same time fastens the module-bearing rails. Our proven base profile is used as a module-bearing rail. Wind and snow loads on the module are safely transferred by the module supports to the base profile. Form closure instead of a screw connection – secure and stable, quick and simple!

The module bracket set front, which is fastened at the frame holes and therefore at the ideal clamping point for the modules, serves as the front bearing on the base profile. The module support set elevates the module, while also being used to support and clamp the module and to fasten the wind deflector.

## YOUR BENEFITS

- Tested in a wind tunnel
- Optimised 13° elevation for roof inclination up to 5°
- Edge spacing of just 0.5 m possible
- No penetration of the roof membrane
- Individual adjustment to the roof
- Flexibility thanks to cross system
- Stable cross-rail system
- Can also be used with base trough to fill with gravel
- Optimal module clamping at assembly holes
- Use of proven system components



Base rail with cover and cable holder



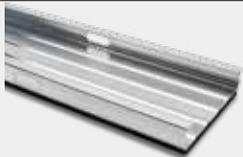
Module support and wind deflector closed I



Module bracket set front in base profile



### BASIC COMPONENTS

<p><b>Base trough</b></p> <p>Item no. 03-000989</p>			<p>Page 96</p>
<p><b>Connector set base trough</b></p> <p>Item no. 03-000370</p>			<p>Page 102</p>
<p><b>Aluminium edge protector self-adhesive</b></p> <p>Item no. 03-000407</p>			<p>Page 121</p>
<p><b>Flat roof mounting screw</b></p> <p>Item no. 03-000383</p>			<p>Page 92</p>
<p><b>Base profile</b></p> <p>Item no. 03-000193</p>			<p>Page 97</p>
<p><b>Base profile connector</b></p> <p>Item no. 03-000021</p>			<p>Page 103</p>

### SOUTH-FACING VARIATION

<p><b>Module support</b></p> <p>Item no. 03-000330</p>			<p>Page 117</p>
<p><b>Wind deflector</b></p> <p>Item no. 03-000013</p>			<p>Page 118</p>
<p><b>Module bracket</b></p> <p>Item no. 03-000078</p>		 <p>Item no. 03-000239</p>	<p>Page 116</p>

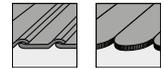


# 4

---

## Custom solutions In-roof system | Facade system

---



The in-roof system solution – PV generator and roof coverage in one

## INSTEAD OF TILES AND CO.: THE INSERTION SYSTEM

It simply looks great: With the Arres in-roof system for mounting photovoltaic modules, your roof turns into an aesthetic, homogenous surface. The photovoltaic installation replaces the roof covering on the entire roof surface – or only in selected areas of the roof. Easy-to-handle blind modules and visually matching, high-quality skylights complete the in-roof system; all components are manufactured in black. Our in-roof mounting system ensures security and a high production quality and durability. It is suitable for any roof and is easy and – in comparison to other in-roof systems on the market – very quick to assemble.

The photovoltaic modules are mounted directly on the roof battens without hooks. The special module frames developed specifically for the in-roof system come from Switzerland, where the modules and frames are assembled. Our in-roof system fulfills the same water-resistance requirements as roof tiles – which has been confirmed through analogue tests by the test and inspection institute in Sursee. It can be used for loads of up to 5.4 kN/m<sup>2</sup>; with heavier loads possible if additional supportive roof battens are used. The modules are mounted horizontally and their frames are scaled over one another.

Stable blind modules, which can easily be fit using a circular saw or a jigsaw, ensure a closed roof surface and an aesthetic result. A snow guard can also be integrated with snow guard blind modules. The visually matching skylights developed for the Arres in-roof system are available in various sizes and as a double window. The high-quality energy-saving windows, which are equipped with a supportive gas pressure spring, comprise a wood-glass construction. Blind modules and windows can be seamlessly integrated in the module grid.

For our in-roof mounting system we offer modules in three different performance classes – to meet all customer needs. The selection is yours.

## YOUR BENEFITS

- Highly homogenous and aesthetic surface
- Flexible thanks to various module types
- Visually attractive integration of obstacles with blind modules
- Visually matching high-quality skylights
- Quick mounting – no hooks
- High-quality production and durability
- Excellent rear ventilation of the module
- Snow guard for blind module



Using facade surfaces optimally

## CLEAR ADDED VALUE FOR YOUR FACADE

With the novotegra facade mounting system, you do not use your roof, but rather the exterior wall of a building to generate electricity: The photovoltaic installation is hung vertically in front of the facade – but it does not touch the building and is well-ventilated from behind. Our facade mounting system is installed on a solid exterior wall out of, for example, brick, stone or concrete – and exclusively on cold facades, meaning on walls without external insulation.

Regardless of whether the exterior wall is on an industrial building or a single-family home: with our photovoltaic mounting system, we create modern, highly-aesthetic facades which give buildings visual added value. All visible mounting systems are available in blank aluminium or black anodised and be combined with blue to nearly black modules – depending on the desired design.

The facade mounting system uses the same durable and corrosion-resistant components as the novotegra on-roof systems and works with our proven insertion technology. The modules are placed in the rail with their entire frame length and held in place gently, firmly and securely. The insertion rails make module mounting quick and easy, even when installed vertically. The small handful of individual components and pre-assembled parts make assembly even easier. To attach the system, we use a technical approved set of studs and stainless steel screws which works in the same way for various wall materials.

With the novotegra facade mounting system, you can mount all conventional frame modules – and, upon request, a multitude of frameless modules – vertically and horizontally. If you want, we can complete your facade photovoltaic system on all sides with a perforated sheet cladding that prevents birds and small animals from accessing the installation but still ensures excellent rear ventilation.

## YOUR BENEFITS

- The facade is used to generate electricity
- Creates modern, visually attractive facades
- From a single module to the entire facade surface
- A construction with excellent rear ventilation which hangs in front of but does not touch the building
- For solid exterior walls
- For cold facades without insulation





# 5

---

## Individual products

---

## Roof hook tile roof and beavertail



Roof hooks for mounting C-rails as vertical and horizontal rails, optimised for narrow rafters, rail-roof hook connection height-adjustable up to 30 mm, roof hook-base profile connection height-adjustable for 18 – 30 mm, 24 – 30 mm or 31 – 40 mm batten, for tile overlap up to approx. 80 mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-001109	Flex roof hook set 18 M10	120	80	23 – 47	Alu/A2SS
03-001149	Flex roof hook set 30 M10	120	80	40 – 52	Alu/A2SS
03-001151	Flex roof hook set 40 M10	120	80	50 – 62	Alu/A2SS

## Double roof hook tile roof and beavertail



Roof hooks for mounting C-rails as horizontal rails, optimised for narrow rafters and heavy loads, rail-roof hook connection height-adjustable up to 30 mm, roof hook-base profile connection height-adjustable for 24 – 30 mm or 31 – 40 mm batten, for tile overlap up to approx. 80 mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-001150	Flex double roof hook set 30 M10	230	80	40 – 52	Alu/A2SS
03-001152	Flex double roof hook set 40 M10	230	80	50 – 62	Alu/A2SS

## Roof hook tile roof



Roof hooks for mounting C-rails as vertical and horizontal rails, rail-roof hook connection height-adjustable up to 35 mm, roof hook-base profile connection height-adjustable for 24 – 30 mm or 31 – 40 mm batten, for tile overlap up to approx. 80 mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000254	Roof hook set ZD 30 M12	155	126	43 – 49	Alu/A2SS
03-000256	Roof hook set ZD 40 M12	155	126	57 – 63	Alu/A2SS

## Double roof hook tile roof



Roof hooks for mounting C-rails as horizontal rails, optimised for heavy loads, rail-roof hook connection height-adjustable up to 35 mm, roof hook-base profile connection height-adjustable for 24 – 30 mm or 31 – 40 mm battens, for tile overlap up to approx. 80 mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000255	Double roof hook set ZD 30 M12	245	125	43 – 49	Alu/A2SS
03-000257	Double roof hook set ZD 40 M12	245	125	57 – 63	Alu/A2SS

## Roof hook beavertail



Roof hooks for mounting C-rails as vertical and horizontal rails on roofs with beavertail tiles, rail-roof hook connection height-adjustable up to 35 mm, roof hook-base profile connection height-adjustable for 24 – 30 mm battens, for beavertail double tile formation.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000258	Roof hook set BS 30 M12	160	95	42 – 48	Alu/A2SS

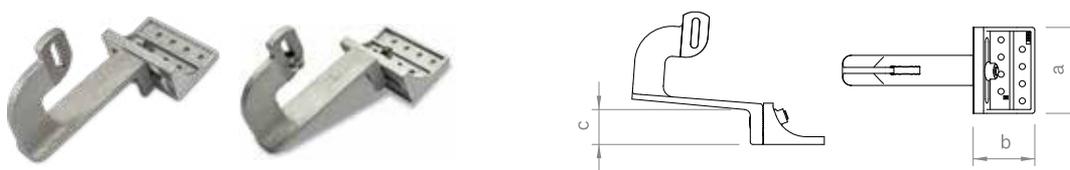
## Double roof hook beavertail



Roof hooks for mounting C-rails as horizontal rails on roofs with beavertail tiles, optimised for heavy loads, rail-roof hook connection height-adjustable up to 35 mm, roof hook-base profile connection height-adjustable for 24 – 30 mm battens, for beavertail double tile formation.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000267	Double Roof hook set BS 30 M12	260	95	42 – 48	Alu/A2SS

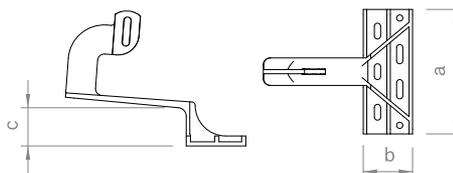
## Roof hook tile roof



Roof hooks for mounting N-rails as vertical rails, rail-roof hook connection height-adjustable in slot 8.5 × 35 mm up to 26 mm, brackets on both sides 32.5 mm, in height 15 mm in slot adjustable, tile overlap up to approx. 100 mm for 30 mm roof battens, optionally pre-assembled with slot bolt M8.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000756	Roof hook adjustable 633 vertical	100	70	41 – 56	Alu cast
03-000949	Roof hook set adjustable 633 vertical M8	100	70	41 – 56	Alu cast/A2SS

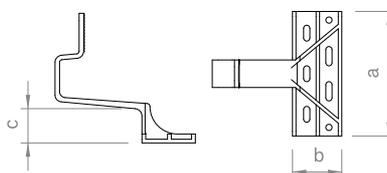
## Roof hook tile roof



Roof hooks for mounting N-rails as vertical rails, rail-roof hook connection height-adjustable in slot 8.5 × 35 mm with fluting up to 26 mm, for tile overlap up to approx. 100 mm and 30 mm roof battens, optionally pre-assembled with slot bolt M8.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000731	Roof hook ZD 533 vertical	181	71	46	Alu cast
03-000612	Roof hook set ZD 533 vertical M8	181	71	46	Alu cast/A2SS

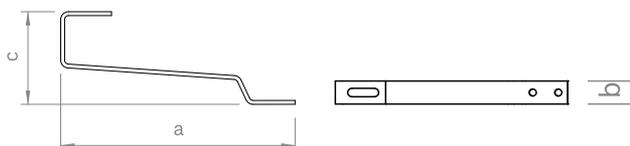
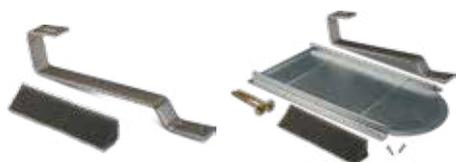
## Roof hook tile roof



Roof hooks for mounting N-rails as horizontal rails, rail-roof hook connection height-adjustable in slot 8.5 × 35 mm with fluting up to 26 mm, for tile overlap up to approx. 100 mm and 30 mm roof battens, optionally pre-assembled with Slot bolt M8.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000611	Roof hook ZD 544 horizontal	181	71	46	Alu cast
03-000613	Roof hook set ZD 544 horizontal M8	181	71	46	Alu cast/A2SS

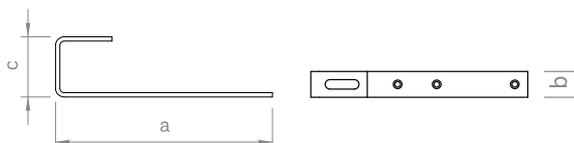
## Roof hook beavertail



Roof hooks for mounting N-rails as vertical and horizontal rails on roofs with beavertail tiles, rail-roof hook connection with L-adapter in slot 11 × 41 mm, for 24 mm roof battens. As a set with underlay plate, screws and sealing wedge, for beavertail double tile formation.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000410	Roof hook BS C-shape A2SS	300	30	120	A2SS
03-000411	Roof hook set BS C-shape A2SS with sheet	300	30	120	A2SS/St. galv.

## Roof hook slate

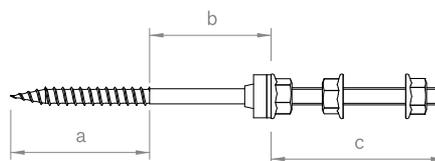


Roof hooks for mounting N-rails as vertical and horizontal rails on roofs with slate or shingle roofing, rail-roof hook connection with L-adapter in slot 11 × 41 mm, with flat foot area. As a set with three 6 × 80 mm chipboard screws AW 30 drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000694	Roof hook S C-shape A2SS	250	30	70	A2SS
03-000594	Roof hook set S C-shape A2SS	250	30	70	A2SS/St. galv.



## Stock screws (for wood)

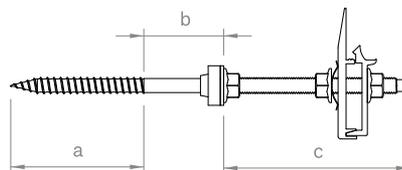


Stock screw for timber purlins with hexagon drive 7 AF or 9 AF, for mounting C-rails, base plates or stock screw bridges, with EPDM seal and 18 AF locking nuts.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000222	Stock screw set (for wood) M10 200 mm	75	25	100	A2SS/EPDM
03-000223	Stock screw set (for wood) M10 250 mm	75	75	100	A2SS/EPDM
03-000224	Stock screw set (for wood) M10 300 mm	75	75	150	A2SS/EPDM
03-000211	Stock screw set (for wood) M12 200 mm	75	25	100	A2SS/EPDM
03-000210	Stock screw set (for wood) M12 250 mm	75	75	100	A2SS/EPDM
03-000216	Stock screw set (for wood) M12 300 mm	75	75	150	A2SS/EPDM



## Stock screws N-rail (for wood)

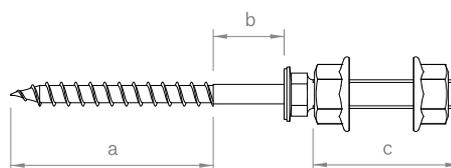


Stock screw for timber purlins with hexagon drive 7 AF or 9 AF, base plate with click mechanism for mounting N-rails, pre-assembled with EPDM seal and 17 AF or 18 AF locking nuts.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000561	Stock screw set (for wood) M10 200mm GPS1	70	10	120	A2SS/Alu/EPDM
03-000562	Stock screw set (for wood) M12 200mm GPS1	75	15	110	A2SS/Alu/EPDM
03-000563	Stock screw set (for wood) M12 250mm GPS1	90	10	150	A2SS/Alu/EPDM
03-000564	Stock screw set (for wood) M12 300mm GPS1	100	40	160	A2SS/Alu/EPDM



## Stock screws (for wood)



Stock screw for timber purlins with hexagon drive 5 AF, for mounting C-rails, base plates or stock screw bridges, with 18 AF locking nuts, combinable with EPDM round seal d = 25mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000894	Stock screw set (for wood) 8.4-M10 160mm	70	10	70	A2SS
03-000895	Stock screw set (for wood) 8.4-M10 190mm	90	20	70	A2SS
03-000940	Stock screw set (for wood) 8.4-M10 210mm	100	30	70	A2SS
03-000941	Stock screw set (for wood) 8.4-M10 240mm	120	40	70	A2SS
03-000942	Stock screw set (for wood) 8.4-M10 260mm	130	50	70	A2SS



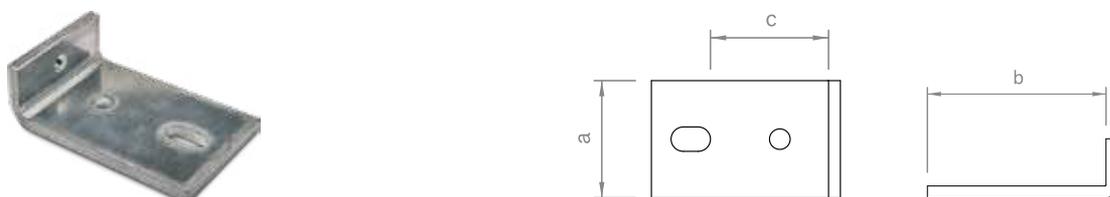
## Stock screws (for steel)



Stock screw for steel purlins with hexagon drive 5 AF, for mounting C-rails, base plates or stock screw bridges, with 18 AF locking nuts, combinable with EPDM round seal  $d = 25\text{mm}$ .

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000199	Stock screw set (for steel) 8.0-M10 140 mm	65	10	50	A2SS
03-000202	Stock screw set (for steel) 8.0-M10 185 mm	65	55	50	A2SS
03-000203	Stock screw set (for steel) 8.0-M10 220 mm	65	90	50	A2SS
03-000943	Stock screw set (for steel) 8.0-M10 260 mm	65	130	50	A2SS

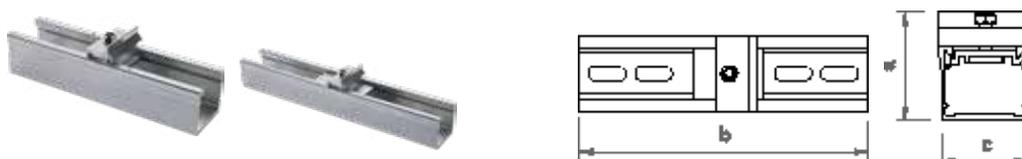
## Base plates for stock screw



Base plate for stock screws with slot  $20 \times 10.5$  or  $20 \times 12.5\text{mm}$ , for mounting N-rails with slot bolts or slot nuts.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000597	Base plate Alu for stock screw M10	60	90	60	Alu
03-000699	Base plate Alu for stock screw M12	60	90	60	Alu

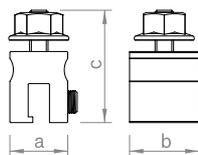
## Stock screw bridges



Stock screw bridge for mounting on two stock screws with slots  $25 \times 12\text{mm}$ , adjustable slides for variable positioning of mounting rails, for raised bead intervals of  $110-210\text{mm}$  or  $170-350\text{mm}$ , completely pre-assembled.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000446	Stock screw bridge short up to 220 mm	75	250	65	Alu/A2SS
03-000447	Stock screw bridge long up to 360 mm	75	390	65	Alu/A2SS

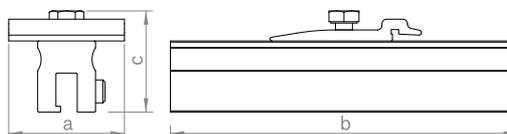
## Standing seam clamps



Clamp with grub screw for standing seam roofs and an 18 AF locking nut for fixing C-rails, optionally with stainless steel saddle for mounting on copper roofs.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000219	Standing seam clamp set M8	25	30	48	Alu/A2SS
03-000369	Standing seam clamp set M8 for copper	25	30	48	Alu/A2SS

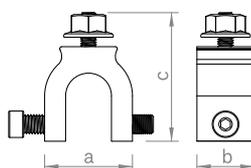
## Standing seam clamp insertion system



Clamp with grub screws for standing seam roofs, grub screw with hexagon AF 5 drive, pre-assembled with cross rail connector IR and hexagon screw AF 13 for direct fixing of insertion rails.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-001028	Standing seam clamp set 150 M8 IR	50	150	48	Alu/A2SS

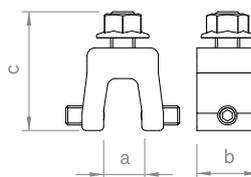
## Rounded seam clamp



Clamp with grub screw and cylinder head screw with hexagon drive AF 5 for round seam roofs and an 18 AF locking nut for fixing C-rails.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-001069	Rounded seam clamp set M8	45	30	65	Alu/A2SS

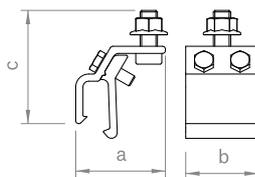
## Profiled metal sheet clamp for Zambelli and Domico metal sheets



Clamp for Zambelli RibRoof 465 or Domico GBS metal profile roofs, with two grub screws for attaching the clamp to the profile sheet as well as an 18 AF locking nut for fixing C-rails, an additional stainless steel saddle is required for sheet thickness  $\leq 0.7$  mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-001059	Profiled metal sheet clamp set ZD M8	18.8	30	55	Alu/A2SS
03-000198	A2SS-saddle f.profiled metal sheet clamp	16	30	26	A2SS

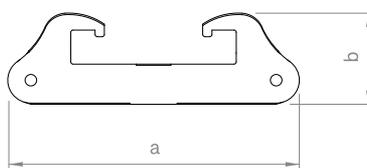
## Profiled metal sheet clamp for Zambelli metal sheets



Clamp for Zambelli RibRoof 500 metal profile roofs, with two screws for attaching the clamp to the profile sheet with 13 AF hexagon drives as well as an 18 AF locking nut for fixing C-rails.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000201	Profiled metal sheet clamp set Z M12	62	50	80	Alu/A2SS

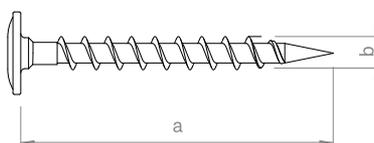
## Trapezoidal sheet brackets



Bracket with EPDM seal for fixing on the trapezoidal sheet, with two thin sheet screws with 8 AF hexagon drive, for bead heights from 25 mm or 35 mm, for framed or frameless module insertion rails.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000459	Trapezoidal sheet bracket IR set 40 × 126 mm	126	40		A2SS
03-000451	Trapezoidal sheet bracket IR FL set 45 × 141 mm	141	45		A2SS

## Roof hook mounting screws

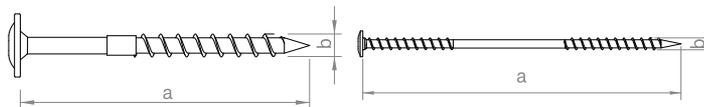


6mm wood screw with Torx drive 25, can be used for various roof hooks.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000268	Roof hook mounting screw 6x30	30	6		St. galv.
03-000269	Roof hook mounting screw 6x60	60	6		St. galv.
03-000271	Roof hook mounting screw 6x90	90	6		St. galv.
03-000272	Roof hook mounting screw 6x120	120	6		St. galv.
03-000273	Roof hook mounting screw 6x150	150	6		St. galv.
03-000270	Roof hook mounting screw 6x30 A2SS	30	6		A2SS
03-000274	Roof hook mounting screw 6x60 A2SS	60	6		A2SS
03-000278	Roof hook mounting screw 6x90 A2SS	90	6		A2SS
03-000279	Roof hook mounting screw 6x120 A2SS	120	6		A2SS
03-000280	Roof hook mounting screw 6x150 A2SS	150	6		A2SS



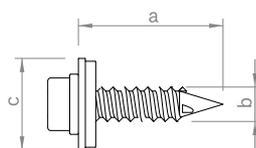
## Roof hook mounting screws



8 mm wood screw with Torx drive 40, can be used for various roof hooks, with underhead thread for lengths longer than 180 mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000281	Roof hook mounting screw 8x100	100	8		St. galv.
03-000282	Roof hook mounting screw 8x140	140	8		St. galv.
03-000283	Roof hook mounting screw 8x180	180	8		St. galv.
03-000303	Roof hook mounting screw 8x220	220	8		St. galv.
03-000304	Roof hook mounting screw 8x260	260	8		St. galv.
03-000305	Roof hook mounting screw 8x300	300	8		St. galv.
03-000306	Roof hook mounting screw 8x340	340	8		St. galv.

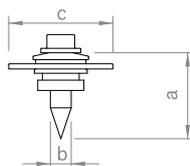
## Direct mounting screws trapezoidal sheet



Thin sheet screw for chipless attachment of 385 mm short rails on the trapezoidal sheet, with 16 mm or 11 mm sealing washer depending on the fixing variation on the raised bead, 8 AF hexagon drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000880	Trapez. mounting screw cl 6.0x25 E16	25	6	16	A2SS
03-000893	Trapez. mounting screw cl 5.5x25 E11	25	5.5	11	A2SS

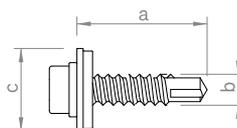
## Direct mounting set trapezoidal sheet



Mounting set for chipless fixing of 200 mm short rails or C-rails on the trapezoidal sheet, pre-assembled thin sheet screw with washer and EPDM seal, 8 AF hexagon drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000197	C-rail direct mounting set cl	25	6	30	A2SS/EPDM

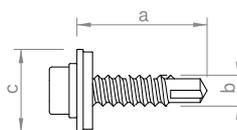
## Direct mounting set trapezoidal sheet



Mounting set consisting of 2 self-drilling screws with 8 AF hexagon drive and an EPDM sealant strip 130 × 45 mm for fixing base profiles on the trapezoidal sheet.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000062	Direct base profile mounting set	25	6	16	A2SS/EPDM

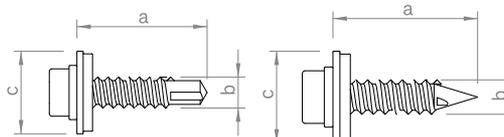
## Indirect mounting set base profile



Mounting set consisting of 4 self-drilling screws with 8 AF hexagon drive for fixing the base profile on the C-rail.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000065	Indirect mounting set for base profile	25	6	16	A2SS

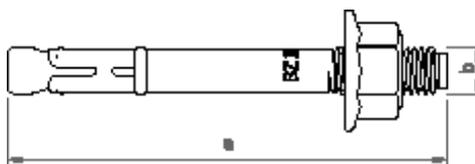
## Flat roof mounting screws



Self-drilling screw or thin sheet screw with 8 AF hexagon drive for connecting flat roof components.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000132	Flat roof mounting screw	25	6	16	A2SS
03-000383	Flat roof mounting screw cl	25	5.5	16	A2SS

## Fixing anchor mounting triangle

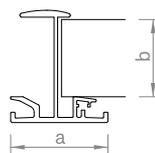


Stainless steel anchor with an 18 AF locking nut for cracked and uncracked concrete, fixing height of 15–35 or 50–70 mm, total dowel length of 95 or 130 mm, for fixing of mounting triangles.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000968	Fixing anchor 15-35 95 mm A4SS for concrete	95	10		A4SS
03-000592	Fixing anchor 50-70 130 mm A4SS for concrete	130	10		A4SS



## Insertion rails framed modules

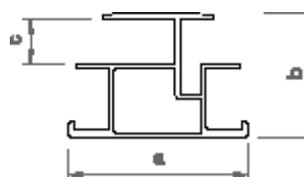


Insertion rail for inserting framed modules with a frame height of 32–50 mm, available in blank or black anodised variations.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-001146	Insertion rail 32 6.00m	56	32		Alu
03-000720	Insertion rail 33 6.00m	56	33		Alu
03-000489	Insertion rail 35 6.00m	56	35		Alu
03-000522	Insertion rail 36 6.00m	56	36		Alu
03-000491	Insertion rail 38 6.00m	56	38		Alu
03-000492	Insertion rail 40 6.00m	56	40		Alu
03-000515	Insertion rail 41 6.00m	56	41		Alu
03-000516	Insertion rail 42 6.00m	56	42		Alu
03-000962	Insertion rail 43 6.00m	56	43		Alu
03-000517	Insertion rail 45 6.00m	56	45		Alu
03-000518	Insertion rail 46 6.00m	56	46		Alu
03-000519	Insertion rail 50 6.00m	56	50		Alu
03-001146	Insertion rail 32 6.00m black	56	32		Alu
03-000721	Insertion rail 33 6.00m black	56	33		Alu
03-000521	Insertion rail 35 6.00m black	56	35		Alu
03-000490	Insertion rail 36 6.00m black	56	36		Alu
03-000539	Insertion rail 38 6.00m black	56	38		Alu
03-000540	Insertion rail 40 6.00m black	56	40		Alu
03-000541	Insertion rail 41 6.00m black	56	41		Alu
03-000542	Insertion rail 42 6.00m black	56	42		Alu
03-000543	Insertion rail 43 6.00m black	56	43		Alu
03-000544	Insertion rail 45 6.00m black	56	45		Alu
03-000545	Insertion rail 46 6.00m black	56	46		Alu
03-000963	Insertion rail 50 6.00m black	56	50		Alu



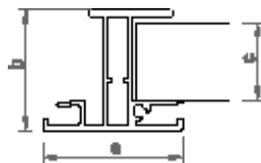
## Insertion rail frameless modules



Insertion rail for inserting frameless modules with a glass thickness of approx. 7 mm, EPDM T-pieces are also required for securing laminated modules.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000626	Insertion rail FL 6.05m	69	48	17	Alu

## Insertion rails plus snowguard

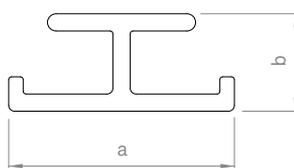


Insertion rail for inserting framed modules with a frame height of 35 mm or 40 mm for heavy snow loads, with the option of attaching a snow guard system.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000973	Insertion rail Plus 35 6.00m	69	55	35	Alu
03-000624	Insertion rail Plus 40 6.00m	69	60	40	Alu



## Support rail module insertion system

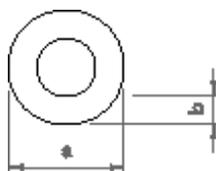


Support rail to brace modules between the insertion rails of a module row in case of heavy snow loads.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000555	Support rail IR 6.00m	39	17		Alu



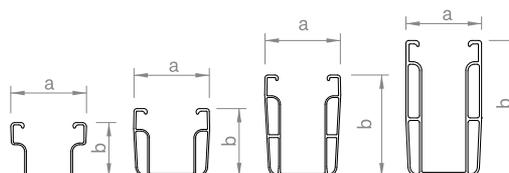
## Snowguard insertion system



Round pipe in combination with the mounting set snowguard for use on insertion rail Plus as a snow stop system.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000406	Snowguard IR 20 × 5 Alu round pipe 6.00m	20	5		Alu
03-000408	Snowguard IR 20 × 5 Alu round pipe 0.80m	20	5		Alu

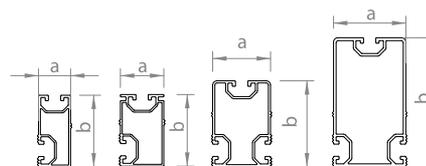
## C-rails



Mounting rail with cable channel, for use as a module support rail in clamping systems or as a cross rail, available in different dimensions for various spans and loads depending on structural requirements, rail bottom with slots 75 x 15 mm in 100 mm grid for easy fixing from above.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-001113	C-rail 38-1,6 2.10 m	52	38		Alu
03-001074	C-rail 38-1,6 6.12 m	52	38		Alu
03-000882	C-rail 47-2 2.10 m	52	47		Alu
03-000293	C-rail 47-2 3.06 m	52	47		Alu
03-000292	C-rail 47-2 4.20 m	52	47		Alu
03-000291	C-rail 47-2 6.12 m	52	47		Alu
03-000147	C-rail 71-2 6.12 m	52	71		Alu
03-000025	C-rail 95-3 6.12 m	52	95		Alu

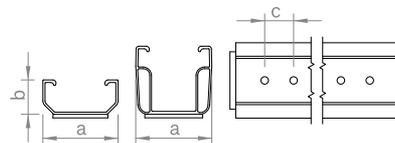
## N-rails



Mounting rail with groove, for use as a module support rail in clamping systems or as a cross rail, available in different dimensions for various spans and loads depending on structural requirements, side groove with fluting for easy fixing from the side.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000679	N-rail Eco 22 x 50 6.00 m	22	50		Alu
03-000965	N-rail Standard 20 x 50 6.00 m	30	50		Alu
03-000680	N-rail Premium 40 x 60 6.00 m	40	60		Alu
03-000681	N-rail L 50 x 90 6.00 m	50	90		Alu

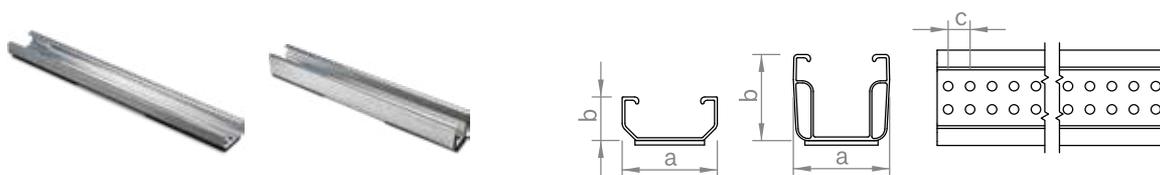
## Short rails trapezoidal module landscape



Short rail with 5.2mm perforation and pre-assembled sealant strip for mounting modules in landscape on trapezoidal sheet. Chipless mounting is accomplished using the trapezoidal sheet mounting screw.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000841	Short rail C24 with EPDM 125 mm	52	24	20	Alu
03-001108	Short rail C47 with EPDM 200 mm	52	47	20	Alu/EPDM

## Short rail 385 trapezoidal module portrait



Short rail with 5.2mm perforation and pre-assembled sealant strip for mounting modules in portrait on trapezoidal sheet. Chipless mounting is accomplished using the trapezoidal sheet mounting screw.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-001081	Short rail C24 with EPDM 385 mm	52	24	12	Alu/EPDM
03-000873	Short rail C47 with EPDM 385 mm	52	47	12	Alu/EPDM

## Elevation profile pairs



Articulated jointed rail pairs as foot and head rails, for variable module elevation at an angle of approx. 3-18° by combining two rail pairs.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000646	Elevation profile pair H45 6.00 m	56	45		Alu
03-000470	Elevation profile pair H136 6.00 m	56	136		Alu

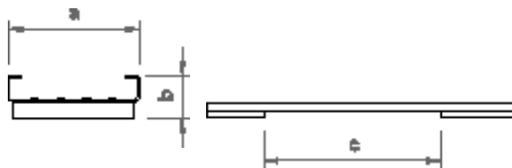
## Base troughs flat roof



Base trough for flat roof elevations for click-fit of the base feet and module supports (flat roof system II) or for fixing the base profile (flat roof system I) and inserting the ballast. Constructed as a base trough without or with a pre-assembled separation layer.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000711	Grundschiene 150-30 3,00 m	150	30	120	Alu
03-000087	Base trough 150-30 6.00 m	150	30	120	Alu
03-000988	Base trough 150-30 w/protection layer 3.00m	150	30	120	Alu/PE
03-000989	Base trough 150-30 w/protection layer 6.00m	150	30	120	Alu/PE

## Base troughs cross drainage flat roof

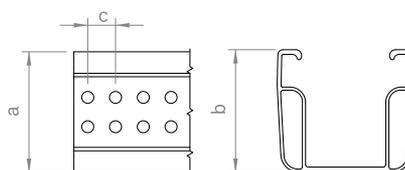


Base trough for flat roof elevations for click-fit of the base foots and module supports (flat roof s at roof system I) and inserting the ballast. Pre-assembled with PE pads, grid 610 mm, as separation or drainage layer when placed transversely to the roof pitch.

at roof system I) and inserting

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000920	Base trough 150-30 w/cross drainage 3.00m	150	50	610	Alu/PE
03-000879	Base trough 150-30 w/cross drainage 6.00m				

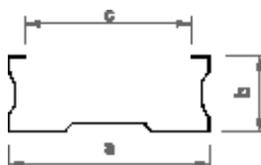
## Coupling profile



Coupling profile for reducing the ballast of adjacent module fields with expansion gaps in between on flat roof elevations through coupling of the bordering base troughs.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000929	Coupling profile C47 385mm	52	47	12	Alu

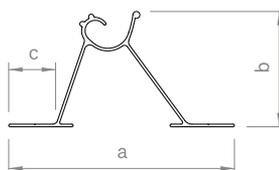
## Gravel base trough



Base trough for flat roof elevations to fix the base profiles and for ballasting with existing gravel.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000092	Base trough 230-90 6.00 m	230	90	190	Alu

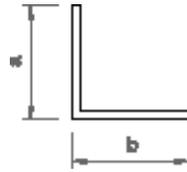
## Base profile elevation



Module support rail for module elevation on flat roofs as well as for trapezoidal sheet, corrugated and sandwich roofs.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000193	Base profile 6.12 m	130	67	27	Alu
03-000194	Base profile 5.06 m	130	67	27	Alu
03-000195	Base profile 3.37 m	130	67	27	Alu

## Support brace east-west II



Support brace for load transfer, fixed on the flat roof module support sets east-west II.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000314	Support brace 20x20x1.5 5.15m	20	20		Alu
03-000722	Support brace 20x20x1.5 1.75m	20	20		Alu

## Rail connector insertion rail



Connector insertion rail for framed modules, l = 150 mm, available in blank or black anodised variations.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000648	Rail connector set IR	65	18		Alu/A2SS
03-000499	Rail connector set IR black	65	18		Alu/A2SS

## Rail connector insertion rail trapezoidal



Connector insertion rail for framed modules, l = 100 mm, for direct mounting on trapezoidal sheet.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000647	Rail connector IR 5 × 100 A2SS	5			A2SS

## Rail connector insertion rail frameless modules



Connector insertion rail for frameless modules, l = 150 mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000649	Rail connector set IR FL	78	31		Alu/A2SS

## Rail connector insertion rail plus



Connector insertion rail Plus for framed modules, l = 200 mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000471	Rail connector set IR Plus	10	30		Alu



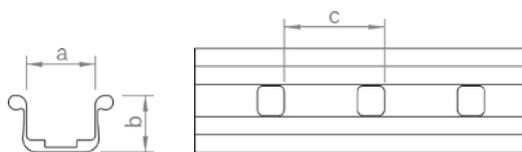
## Rail connector snowguard insertion rail plus



Connector for snow stop IR 20 × 5, l = 200 mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000494	Rail connector set snowguard IR	8			Alu

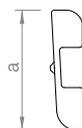
## Rail connector C-rail 38



Connector C-rail 38, l = 325 mm, with two round-head screws and locking nuts with 18 AF hexagon drive, available as expansion joint construction with four round-head screws.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-001105	Rail connector set C47	35	28.5	50	Alu/A2SS
03-001106	Expansion joint C47	35	28.5	50	Alu/V2A

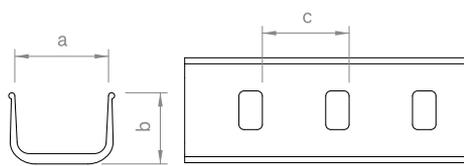
## Rail connector C-rail profile chambers



Connector C-rail 47, l = 200 mm, screw connection with four self-drilling screws with 8 AF hexagon drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000925	Rail connector set C47 S	30			Alu/A2SS

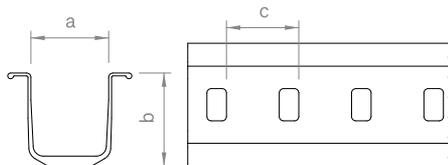
## Rail connector C-rail 47



Connector C-rail 47, l = 325 mm, with two round-head screws and locking nuts with 18 AF hexagon drive, available as expansion joint construction with four round-head screws.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000001	Rail connector set C47	52	40	50	Alu/A2SS
03-000138	Expansion joint C47	52	40	50	Alu/A2SS

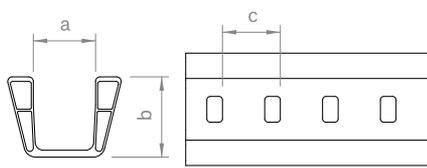
## Rail connector C-rail 71



Connector C-rail 71, l = 490 mm, with four round-head screws, washers and locking nuts with 18 AF hexagon drive, available as expansion joint construction.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000151	Rail connector set C71	52	67	50	Alu/A2SS
03-000265	Expansion joint C71	52	67	50	Alu/A2SS

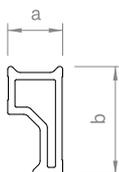
## Rail connector C-rail 95



Connector C-rail 95, l = 500 mm, with four round-head screws, washers and locking nuts with 18 AF hexagon drive, available as expansion joint construction.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000130	Rail connector set C95	52	70	50	Alu/A2SS
03-000173	Expansion joint C95	52	70	50	Alu/A2SS

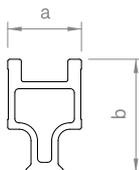
## Rail connector N-rail



Connector N-rail, l = 200 mm or l = 150 mm, screw connection with two self-drilling screws with 8 AF hexagon drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000500	Rail Connector set N Eco	19	38	200	Alu/A2SS
03-000524	Rail Connector set N Standard	27	41	150	Alu/A2SS

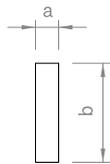
## Rail connector N-rail



Connector N-rail, l = 150 mm or l = 400 mm, screw connection with two or four self-drilling screws with 8 AF hexagon drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000523	Rail Connector set N Premium	36	56	150	Alu/A2SS
03-000501	Rail Connector set N L	45	85	400	Alu/A2SS

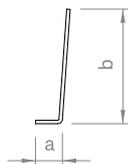
## Rail connector elevation profile pair H45



Connector elevation profile pair H45, l = 160 mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000496	Rail Connector set elevation profile pair H45	5	22		Alu

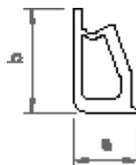
## Rail connector elevation profile pair H136



Connector elevation profile pair H136, l = 150 mm, screw connection with four thin sheet screws with 8 AF hexagon drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000525	Rail Connector set elevation profile pair H136	12	50		Alu/A2SS

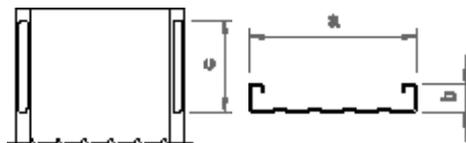
## Base trough connector 150-30 I



Connector Base trough 150-30, l = 380 mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000370	Base trough connector set 150-30 I	16	26		Alu

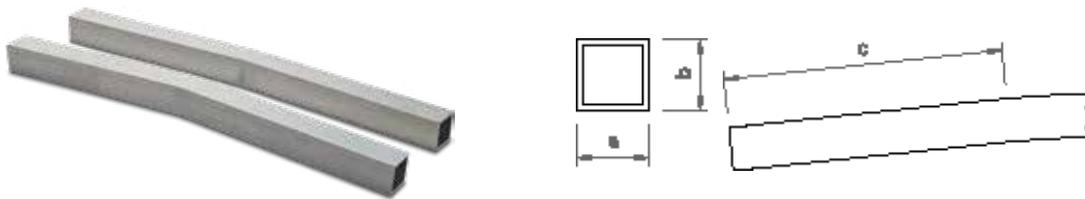
## Base trough expansion joint



Base trough expansion joint 150-30, l = 380 mm, single-sided with slots.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000128	Base trough expansion joint 150-30	150	25	80	Alu

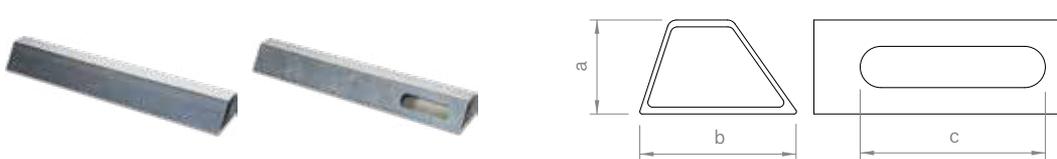
## Angled base trough connector 150-30



Connector base trough,  $l = 380$  mm, for ridge and throat formation  $2^\circ - 5^\circ$ .

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000161	Angled base trough connector 150-30 $3^\circ$	25	25	180	Alu

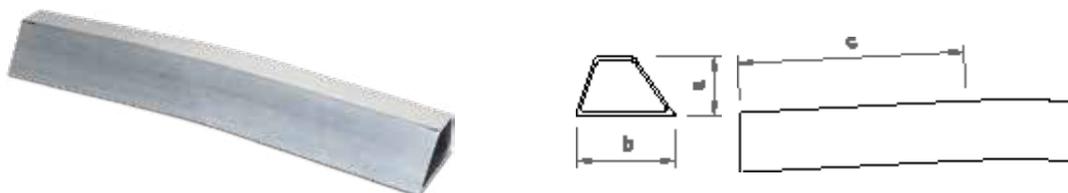
## Base profile connector



Connector base profile,  $l = 380$  mm, available as expansion joint construction single-sided with slots.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000021	Base profile connector	41	68		Alu
03-000129	Base profile expansion joint	41	68	80	Alu

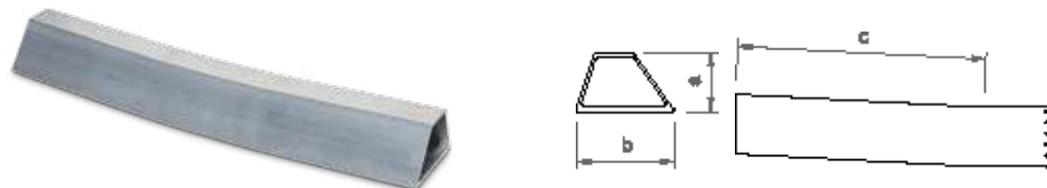
## Angled base profile connector (rise)



Connector base profile,  $l = 380$  mm, for ridge formation  $2^\circ - 5^\circ$ .

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000162	Angled base profile connector $3^\circ$ (rise)	41	68	150	Alu

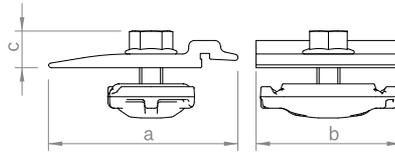
## Angled base profile connector (dip)



Connector base profile,  $l = 380$  mm, for throat formation  $2^\circ - 5^\circ$ .

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000163	Angled base profile connector $3^\circ$ (dip)	41	68	150	Alu

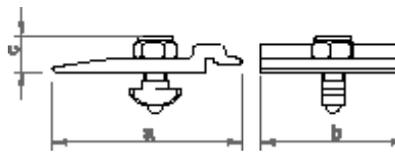
## Connection insertion rail on C-rail



Connector for fixing insertion rails on C-rails and mounting triangles, locking nut with 13 AF hexagon drive, completely pre-assembled.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000321	Cross rail connector set C IR M8	66	50	13	Alu/A2SS

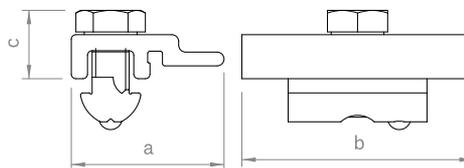
## Connection insertion rail on N-rail



Connector for fixing insertion rails on N-rails, slot bolt M8 and locking nut with 13 AF hexagon drive, completely pre-assembled.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000409	Cross rail connector set N IR M8	66	50	13	Alu/A2SS

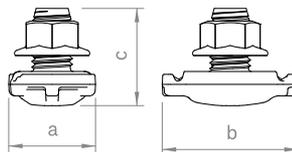
## Connection insertion rail on N-rail



Connector for fixing insertion rails on N-rails, high construction, slot bolt M8 13 AF hexagon drive and slot nut.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000461	Cross rail connector set N-h IR M8	33	50	15	Alu/A2SS

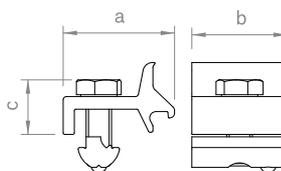
## Connection C-rail on C-rail



Connector for fixing C-rails to create a cross rail configuration, locking nut M14 with 18 AF hexagon drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000226	Cross rail connector set C M14	30	46	34	Alu/A2SS

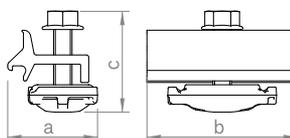
## Connection N-rail on N-rail



Connector for fixing N-rails to create a cross rail configuration, slot bolt M8 13 AF hexagon drive and slot nut, l = 30 mm or l = 65 mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000599	Cross rail connector set N 30 mm M8	35	30	22	Alu/A2SS
03-000904	Cross rail connector set N 65 mm M8	35	65	22	Alu/A2SS

## Connection N-rail on C-rail



Connector fixing N-rails on C-rails to create a cross rail configuration, locking nut with 13 AF hexagon drive, completely pre-assembled.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000919	Cross rail connector set NC M8	38	65	44	Alu/A2SS

## Edge stops insertion rail



Edge stop for insertion rails, fixing with tapping screw Torx drive 30.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000691	Edge stop set IR	49	49		Alu/A2SS
03-000693	Edge stop set IR black	49	49		Alu/A2SS

## Edge stop insertion rail frameless modules



Edge stop for insertion rail FL with EPDM seal, fixing with self-drilling screw 8 AF hexagon drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000692	Edge stop set IR FL	70	50	50	Alu/A2SS

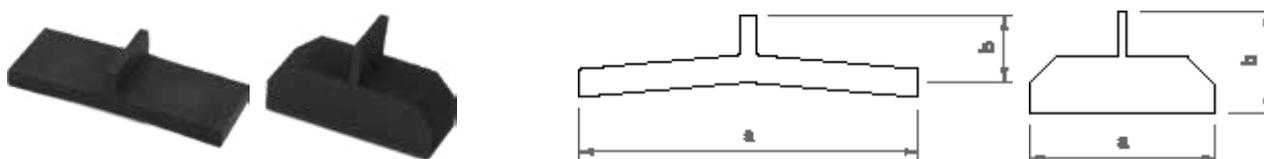
## Edge stop insertion rail plus



Edge stop for insertion rails Plus, fixing with self-drilling screw Torx drive 30.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000732	Edge stop set IR Plus	75	75		Alu/A2SS

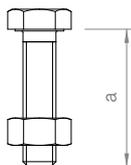
## Module protections insertion rail



EPDM-T protection for fixing modules in insertion rails with minimal module slope, for framed or unframed modules.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000631	EPDM-T protection IR	84	17		EPDM
03-000630	EPDM-T protection IR FL	40	22		EPDM

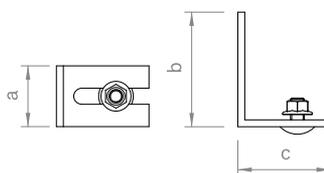
## Module slip guards portrait orientation



Slip guard for fixing modules with and without mounting holes for mounting modules in portrait.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000006	Module slip guard set M6	25			A2SS
03-000007	Module slip guard set M8	25			A2SS
03-000372	Module slip guard set box frame	20			A2SS

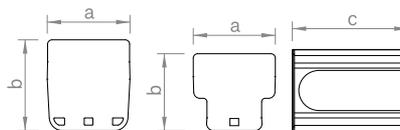
## Slip guards and end caps C-rail



Slip guard for fixing modules mounted in landscape or as an end cap for the C-rail, available in blank or black.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000259	Slip Guard/ End Cap Set C47	53	80	80	Alu/A2SS
03-000260	Slip guard/ End Cap Set C47 black	53	80	80	Alu/A2SS
03-000261	Slip Guard/ End cap C71	53	100	80	Alu/A2SS
03-000262	Slip guard/ End Cap Set C71 black	53	100	80	Alu/A2SS
03-000263	Slip Guard/ End Cap Set C95	53	130	80	Alu/A2SS
03-000264	Slip Guard/ End cap Set C95 black	53	130	80	Alu/A2SS

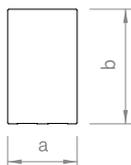
## End caps C-rail



End cap in black for C-rail 38 and C-rail 47, UV and weather resistant.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-001110	End cap C-rail C38 black	57	54	80	PP
03-001111	End cap C-rail C47 black	57	63	80	PP

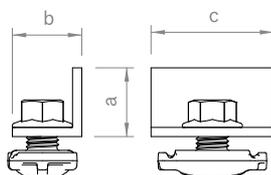
## End caps N-rail



End cap in black for N-rails, UV and weather resistant.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000527	End cap N-rail Eco	22	50		PA 6.6
03-000529	End cap N-rail Standard	30	50		PA 6.6
03-000528	End cap N-rail Premium	40	60		PA 6.6

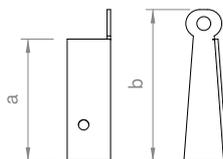
## Slip guard short profile trapezoidal



Slip guard with 18 AF locking nut for securing the modules mounted in landscape on short rails.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000233	Slip guard set for short profile M14	30	30	53	Alu/A2SS

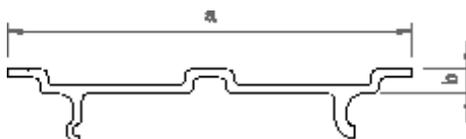
## Edge stop elevation profile pair



Edge stop for elevation profile pair H136, fixing with 8 AF hexagon drive thin sheet screw.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000593	Edge stop set elevation profile pair H136	71	88		Alu/A2SS

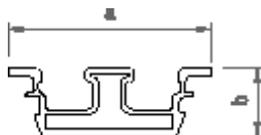
## Top cover C-rail



Cover to clip on to the C-rail if using as cable channel.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000134	Top cover C-rail 2.000 mm	50	3		Alu

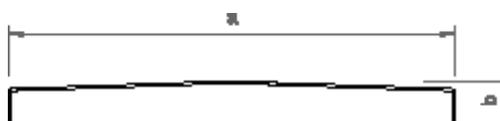
## Adapter top cover C-Rail



Adapter for the optional fixing of the C-rail top cover if using as cable channel.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000319	Adapter top cover C-Rail	50	17		Alu

## Top cover base trough



Cover for the base trough if using as cable channel.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000133	Top cover base trough 150-30 3.00 m	154	15		Alu

## Middle clamps C-rail



Middle clamp for fixing the modules on the C-rail. Clamping screw with 8 AF hexagon drive. For frame heights of 28–33 mm, 34–42 mm or 43–52 mm, available in blank or black anodised variations.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000302	Middle clamp 28-33 Set C black	52	33	28–33	Alu/A2SS
03-000301	Middle clamp 28-33 Set C	52	33	28–33	Alu/A2SS
03-000276	Middle clamp 34-42 Set C black	52	33	34–42	Alu/A2SS
03-000275	Middle clamp 34-42 Set C	52	33	34–42	Alu/A2SS
03-000286	Middle clamp 43-52 Set C black	52	33	43–52	Alu/A2SS
03-000285	Middle clamp 43-52 Set C	52	33	43–52	Alu/A2SS

## End clamps C-rail



End clamp for fixing the modules on the C-rail. Clamping screw with 8 AF hexagon drive. For frame heights of 28–33 mm, 34–42 mm or 43–52 mm, available in blank or black anodised variations.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000299	End clamp 28-33 Set C black	52	24	28–33	Alu/A2SS
03-000298	End clamp 28-33 Set C	52	24	28–33	Alu/A2SS
03-000284	End clamp 34-42 Set C black	52	24	34–42	Alu/A2SS
03-000277	End clamp 34-42 Set C	52	24	34–42	Alu/A2SS
03-000288	End clamp 43-52 Set C black	52	24	43–52	Alu/A2SS
03-000287	End clamp 43-52 Set C	52	24	43–52	Alu/A2SS

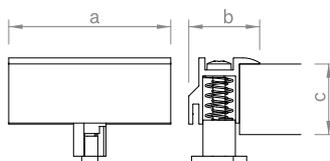
## Middle clamps N-rail



Middle clamp with spring mechanism for fixing the modules on the N-rail. Clamping screw with AW 30 drive. For frame heights of 31–40 mm or 41–50 mm, available in blank or black anodised variations.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000569	Middle clamp 31-40 Set N black	80	39	31–40	Alu/A2SS
03-000570	Middle clamp 31-40 Set N	80	39	31–40	Alu/A2SS
03-000571	Middle clamp 41-50 Set N black	80	39	41–50	Alu/A2SS
03-000572	Middle clamp 41-50 Set N	80	39	41–50	Alu/A2SS

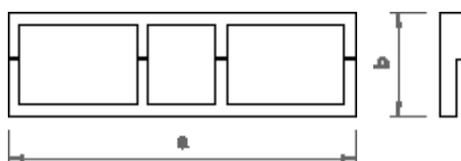
## End clamps N-rail



End clamp with spring mechanism for fixing the modules on the N-rail. Clamping screw with AW 30 drive. For frame heights of 31 – 40 mm or 41 – 50 mm, available in blank or black anodised variations.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000964	End clamp 31-40 Set N black	80	34	31 – 40	Alu/A2SS
03-000551	End clamp 31-40 Set N	80	34	31 – 40	Alu/A2SS
03-000552	End clamp 41-50 Set N black	80	34	41 – 50	Alu/A2SS
03-000553	End clamp 41-50 Set N	80	34	41 – 50	Alu/A2SS

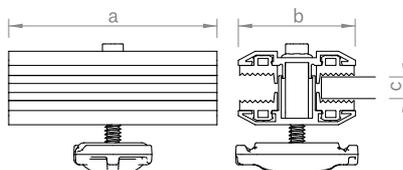
## Spacers end clamps N-rail



Spacer for the end clamps of the N-rail, height is dependent on the frame height.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000614	Spacer end clamp N 31-32 mm	60	11		PA 6.6
03-000615	Spacer end clamp N 33-35 mm	60	15		PA 6.6
03-000616	Spacer end clamp N 36-38 mm	60	18		PA 6.6
03-000617	Spacer end clamp N 39-40 mm	60	20		Alu
03-000618	Spacer end clamp N 41-42 mm	60	22		PA 6.6
03-000619	Spacer end clamp N 43-46 mm	60	25		PA 6.6
03-000620	Spacer end clamp N 47-48 mm	60	29		PA 6.6
03-000621	Spacer end clamp N 49-50 mm	60	30		Alu

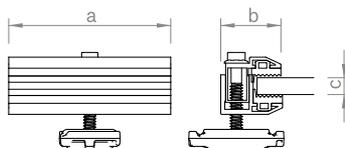
## Middle clamp frameless 6.8 – 8.0 C-rail



Middle clamp for fixing frameless modules on the C-rail, permissible glass thickness 6.8–8.0 mm, completely pre-assembled. Clamping screw with AF 8 hexagon drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000312	Middle clamp FL 6.8–8.0 mm Set C	80	43	6,8–8,0	Alu/EPDM

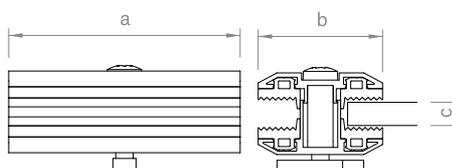
## End clamp frameless 6.8 – 8.0 C-rail



End clamp for fixing frameless modules on the C-rail, permissible glass thickness 6.8–8.0mm, completely pre-assembled. Clamping screw with AF 8 hexagon drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000317	End clamp FL 6.8 – 8.0mm Set C	80	43	6,8 – 8,0	Alu/EPDM

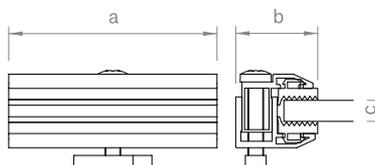
## Middle clamp frameless 6.8 – 8.0 N-rail



Middle clamp for fixing frameless modules on the N-rail, permissible glass thickness 6.8–8.0mm, completely pre-assembled. Clamping screw with AW 30 drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000547	Middle clamp FL 6.8 – 8.0mm Set N	80	43	6,8 – 8,0	Alu/EPDM

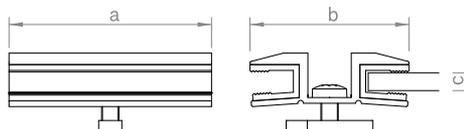
## End clamp frameless 6.8 – 8.0 N-rail



End clamp for fixing frameless modules on the N-rail, permissible glass thickness 6.8–8.0mm, completely pre-assembled. Clamping screw with AW 30 drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000532	End clamp FL 6.8 – 8.0mm Set N	80	29	6,8 – 8,0	Alu/EPDM

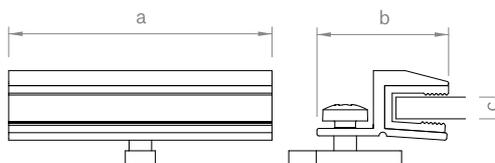
## Middle clamp frameless 6.8 – 6.9 N-rail



Middle clamp for fixing frameless modules on the N-rail, permissible glass thickness 6.8–6.9mm, completely pre-assembled. Clamping screw with AW 30 drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000533	Middle clamp FL 6.8 – 6.9mm Set N	70	54	6,8 – 6,9	Alu/EPDM

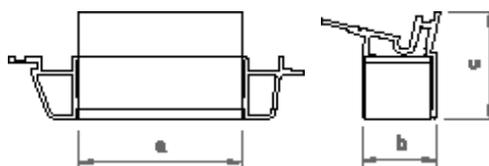
## End clamp frameless 6.8 – 6.9 N-rail



End clamp for fixing frameless modules on the N-rail, permissible glass thickness 6.8 – 6.9 mm, completely pre-assembled. Clamping screw with AW 30 drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000531	End clamp FL 6.8 – 6.9 mm Set N	70	34.5	6,8 – 6,9	Alu/EPDM

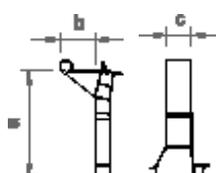
## Base foot



Front module support of the flat roof system generation II, to clip into the base trough.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000343	Base foot set 13° 150-30	80	37	53	Alu

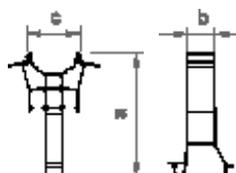
## Module support closed II



Rear module support of the closed flat roof system II, to clip into the base trough and to fix the wind deflector 13° on it.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000347	Module support set 13° 150-30	265	83	60	Alu

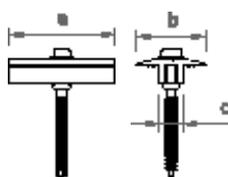
## Module support east-west II



Rear module support for flat roof system east-west II, to clip into the base trough and to connect the support brace, constructed as a one-hip or two-hip support.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000442	Module support set 13° 150-30 e/w single	281	60	120	Alu
03-000443	Module support set 13° 150-30 e/w double	281	60	120	Alu

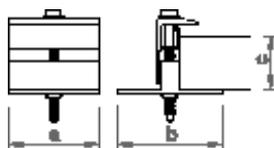
## Flat roof mid clamp (short side)



Middle clamp for flat roof system generation II, for fixing modules on the short side of the frame. Clamping screw with 8 AF hexagon drive, for frame heights of 28–42 mm or 43–52 mm, completely pre-assembled.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000324	Flat Roof Mid Clamp 28-42	52	33	11.4	Alu/A2SS
03-000323	Flat Roof Mid Clamp 43-52	52	33	11.4	Alu/A2SS

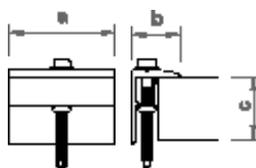
## Flat roof end clamp (short side)



End clamp with T-adapter for flat roof system generation II, for fixing modules on the short side of the frame. Clamping screw with 8 AF hexagon drive, for frame heights of 28–33 mm, 34–42 mm or 43–52 mm, completely pre-assembled.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000310	Flat Roof End Clamp (Short side) 28-33	52	60	28–33	Alu/A2SS
03-000309	Flat Roof End Clamp (Short side) 34-42	52	60	34–42	Alu/A2SS
03-000311	Flat Roof End Clamp (Short side) 43-52	52	60	43–52	Alu/A2SS

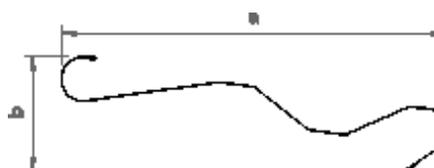
## Flat roof end clamp (long side)



End clamp for flat roof system generation II, for securing modules on the long side of the frame. Clamping screw with 8 AF hexagon drive, for frame heights of 28–33 mm, 34–42 mm or 43–52 mm, completely pre-assembled.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000326	Flat Roof End Clamp 28-33	52	24	28–33	Alu/A2SS
03-000396	Flat Roof End Clamp 34-42	52	24	34–42	Alu/A2SS
03-000397	Flat Roof End Clamp 43-52	52	24	43–52	Alu/A2SS

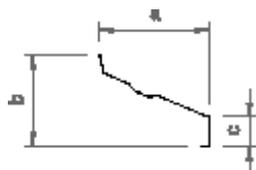
## Wind deflector closed II



Wind deflector for flat roof system closed II for wind deflection and ballast reduction.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000331	Wind Deflector 13° 1.85m	270	110		Alu

## Wind deflector east-west II



Wind deflector for flat roof system east-west II for mounting areas with missing module due to obstacles.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000786	Wind Deflector 13° 1.85m east-west	241	175	65	Alu

## Ballast troughs base trough



Ballast trough to clip into the base trough and secure placement of large format ballast. Constructed as a ballast trough without or with a pre-assembled separation layer.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000131	Ballast trough 120-30 530mm	144	32	120	Alu
#N/A	Ballast trough 530mm protection layer 6mm	144	32	120	Alu/PE
03-000910	Ballast trough QE 530mm	144	32	120	Alu/PE

## Module bracket front mounting hole



Front module support for flat roof system generation I or elevation on pitched roof, to connect to the module frame holes, completely pre-assembled.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000078	Module bracket set front	100	8	4	Alu/A2SS

## Module bracket set direct box frame



Front module support for flat roof system generation I or elevation on pitched roof, to directly connect to the module frame without frame holes, completely pre-assembled.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000239	Module bracket set front direct(box fr.)	50	36	5.5	Alu/A2SS

## Module bracket back mounting hole



Rear module support for flat roof system open or elevation on pitched roof, to connect to the module frame holes, completely pre-assembled.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000061	Module bracket set back	65	8	4	Alu/A2SS

## Module support 13° – 40° open



Rear module support for flat roof system open or elevation on pitched roof, in different lengths to elevate modules, continuous adjustable elevation angle, completely pre-assembled.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-00070	Module support set 200 mm	200	100	100	Alu
03-00071	Module support set 280 mm	280	100	100	Alu
03-00083	Module support set 360 mm	360	100	100	Alu
03-00022	Module support set 440 mm	440	100	100	Alu
03-00072	Module support set 520 mm	520	100	100	Alu

## Module support 13° open



Module support for open flat roof system or elevation on pitched roof, for fixed elevation of modules at an angle of 13°, fixing the modules on the long side of the frame, for frame heights 28 – 33 mm, 34 – 42 mm or 43 – 52 mm, completely pre-assembled.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000207	Module support set 13° 28-33mm open	255	50		Alu/A2SS
03-000221	Module support set 13° 34-42mm open	255	50		Alu/A2SS
03-000227	Module support set 13° 43-52mm open	255	50		Alu/A2SS

## Module support closed I



Module support for flat roof system closed I, for fixed elevation of modules at an angle of 13° and to connect the wind deflector 13° on it, securing the modules on the long side of the frame, for frame heights 28 – 33 mm, 34 – 42 mm or 43 – 52 mm, completely pre-assembled.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000330	Module Support Set 13° 28-33mm	255	50		Alu/A2SS
03-000030	Module support set 13° 34-42mm	255	50		Alu/A2SS
03-000031	Module support set 13° 43-52mm	255	50		Alu/A2SS

## Module support east-west I



Module support for flat roof system east-west I for placement and fixing of the C-rail 71, available for the base trough 150-30 or the base trough 230-90.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000181	Module support set east-west 230	190	50	60	Alu/A2SS
03-000180	Module support set east-west 150	210	50	50	Alu/A2SS

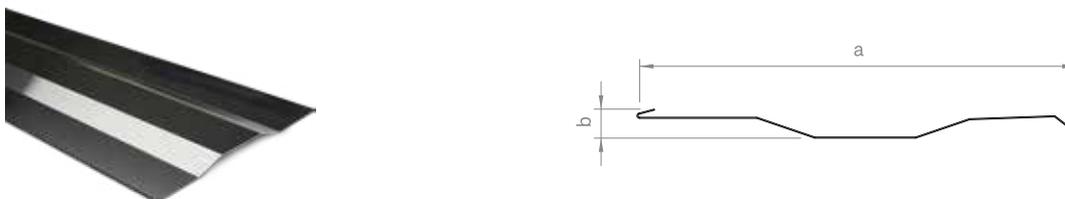
## Module bracket back east-west I



Module support for flat roof system east-west I, to clip into the C-rail, fixing the modules on the long side of the frame, for frame heights 28–33mm, 34–42mm or 43–52mm.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000322	Module bracket set back east-west 28-33mm	159	52		Alu/A2SS
03-000098	Module bracket set back east-west 34-42mm	159	52		Alu/A2SS
03-000095	Module bracket set back east-west 43-52mm	159	52		Alu/A2SS

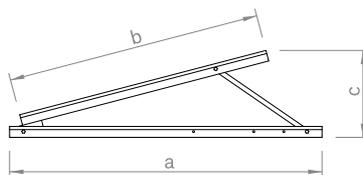
## Wind deflector closed I



Wind deflector for flat roof system closed I for wind deflection and ballast reduction.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000013	Wind deflector 13° 1.72 m	330	23		Alu

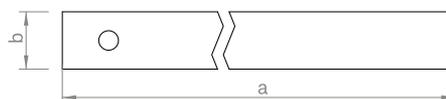
## Mounting triangles



Triangles in different sizes with four variable elevation angles, mountable on flat and pitched roofs, module fixation possible with module clamps or insertion rails.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000931	Mounting triangle 15/20/25/30° 1100	1350	1100	285 – 550	Alu/A2SS
03-000932	Mounting triangle 15/20/25/30° 1300	1600	1300	336 – 650	Alu/A2SS
03-000933	Mounting triangle 15/20/25/30° 1500	1900	1500	388 – 750	Alu/A2SS

## Cross bracing mounting triangles

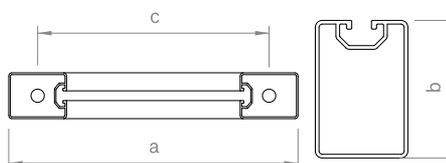


For cross bracing of mounting triangles, consisting of flat aluminium material 25 x 4, l = 1800 mm and two 8 AF hexagon drive self-drilling screws.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000685	Cross bracing set elevation triangle rack	1800	25		Alu/A2SS

# Facade

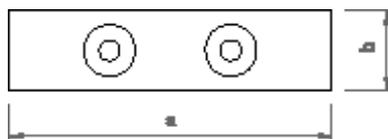
## Sockets insertion rail



Socket for fixing insertion rails on building facades, drill holes  $d = 11.5$  mm, delivered with two facade dowels and the matching screws.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000580	Socket set 250 mm 11.5	250	60	200	Alu/A2SS
03-000581	Socket set 250 mm 11.5 black	250	60	200	Alu/A2SS

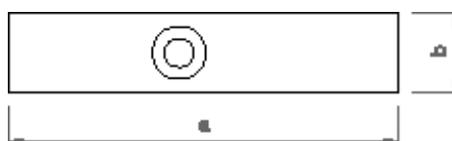
## Adapter plates module protection and perforated sheet fixing



Adapter plate for securing the modules against slipping and for fixing perforated sheets. Prefabricated with two 5 mm drill holes for attachment on the socket as well as two countersunk washers and four countersunk head self-drilling screws with AW 25 drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000384	Adapter plate set 80 × 20 × 8 mm	80	20		Alu/A2SS
03-000404	Adapter plate set 80 × 20 × 8 mm black	80	20		Alu/A2SS

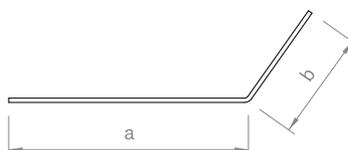
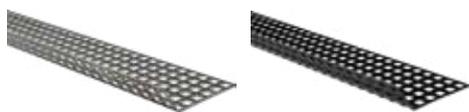
## Adapter plates edge stop and perforated sheet fixing



Adapter plate for lateral fixing of perforated sheets and as an edge stop for the modules. Prefabricated with a 7 mm drill hole for a countersunk head sheet screw with AW 30 drive as well as two countersunk self-drilling screws with AW 25 drive.

Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000385	Adapter plate set 96 × 20 × 3 mm	96	20		Alu/A2SS

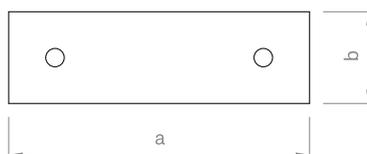
## Perforated sheets



Perforated sheet to close the gap between the facade and module, enables rear ventilation and quick access to the rear of the modules, available in blank or black.

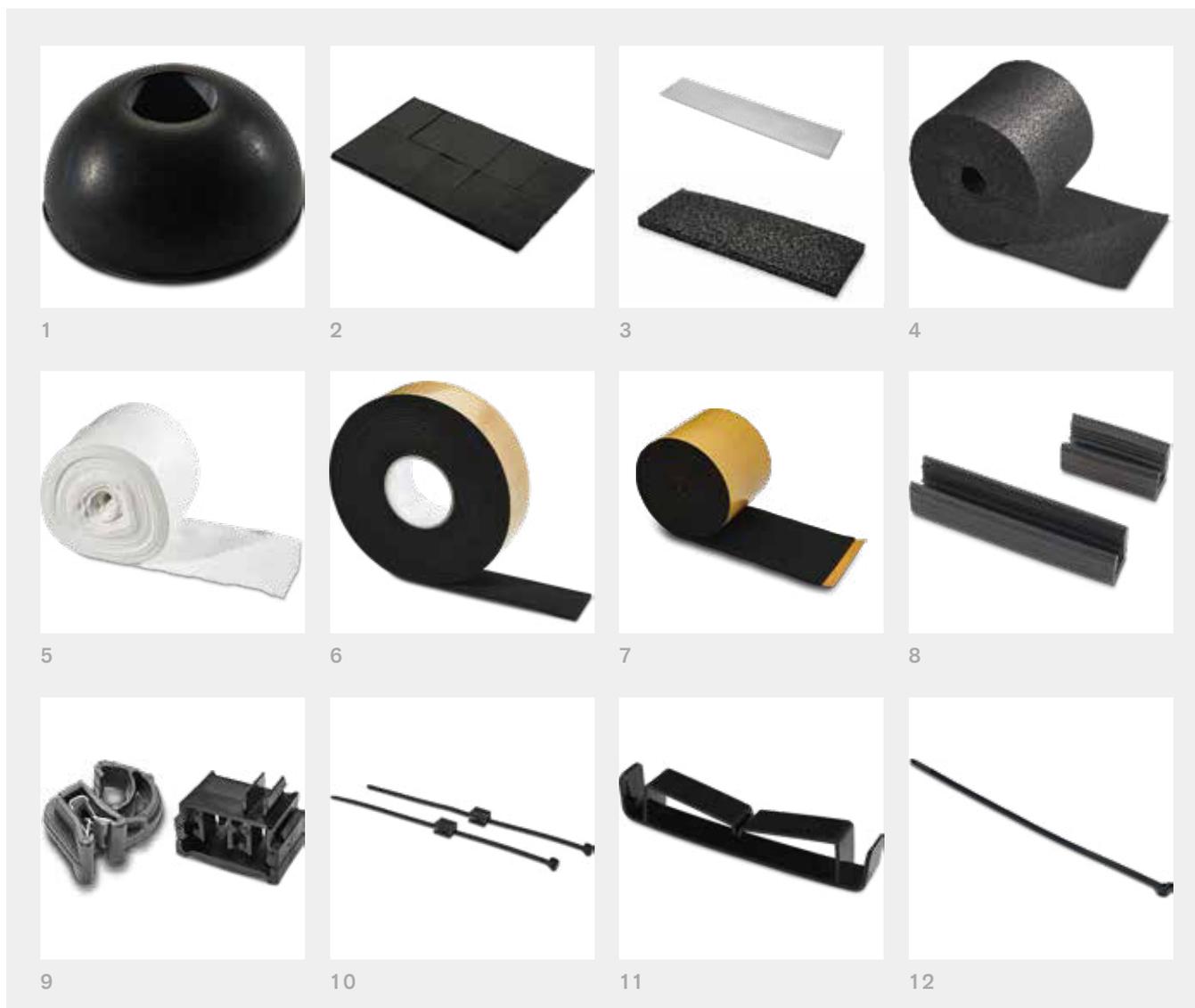
Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000548	Perforated sheet 1500 × 120 mm 125°	83	38		St. galv.
03-000549	Perforated sheet 1500 × 120 mm 125° black	83	38		St. galv.

## Connector perforated sheet

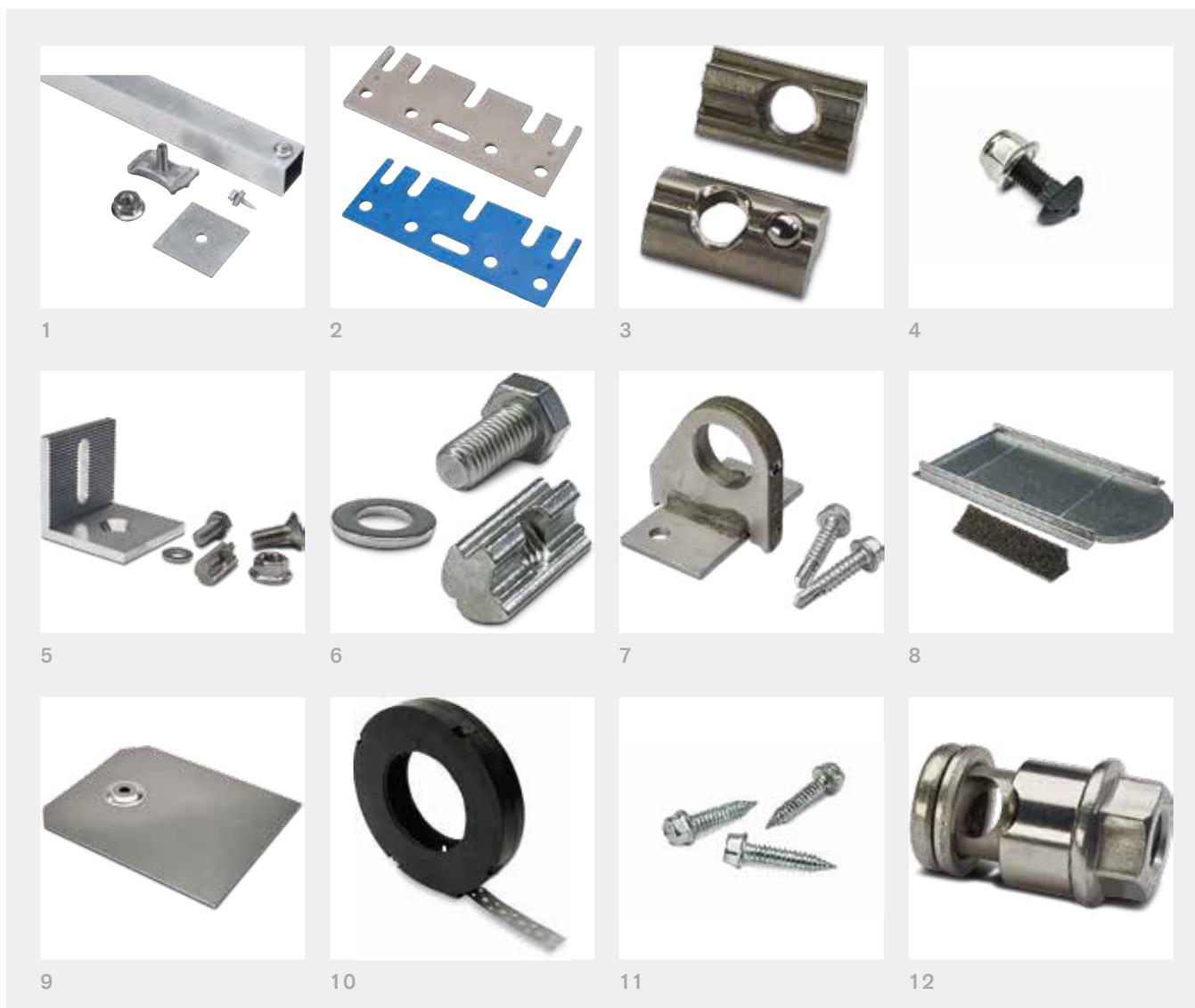


Connector for blank and black anodised perforated sheets, prefabricated with two drill holes, set with two countersunk washers and countersunk head self-drilling screws with AW 25 drive.

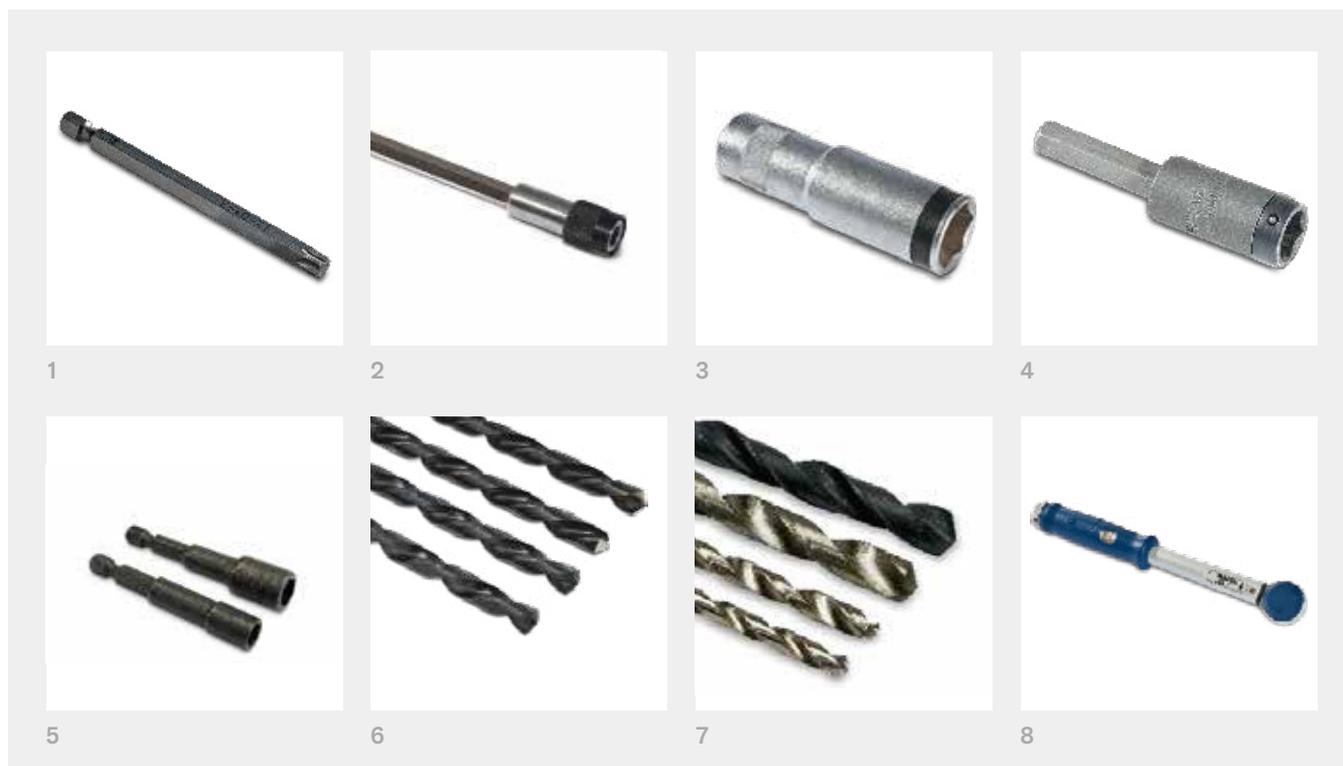
Art.-Nr.	Bezeichnung	a in mm	b in mm	c in mm	Material
03-000497	Connector set perforated sheet	65	20		Alu/A2SS



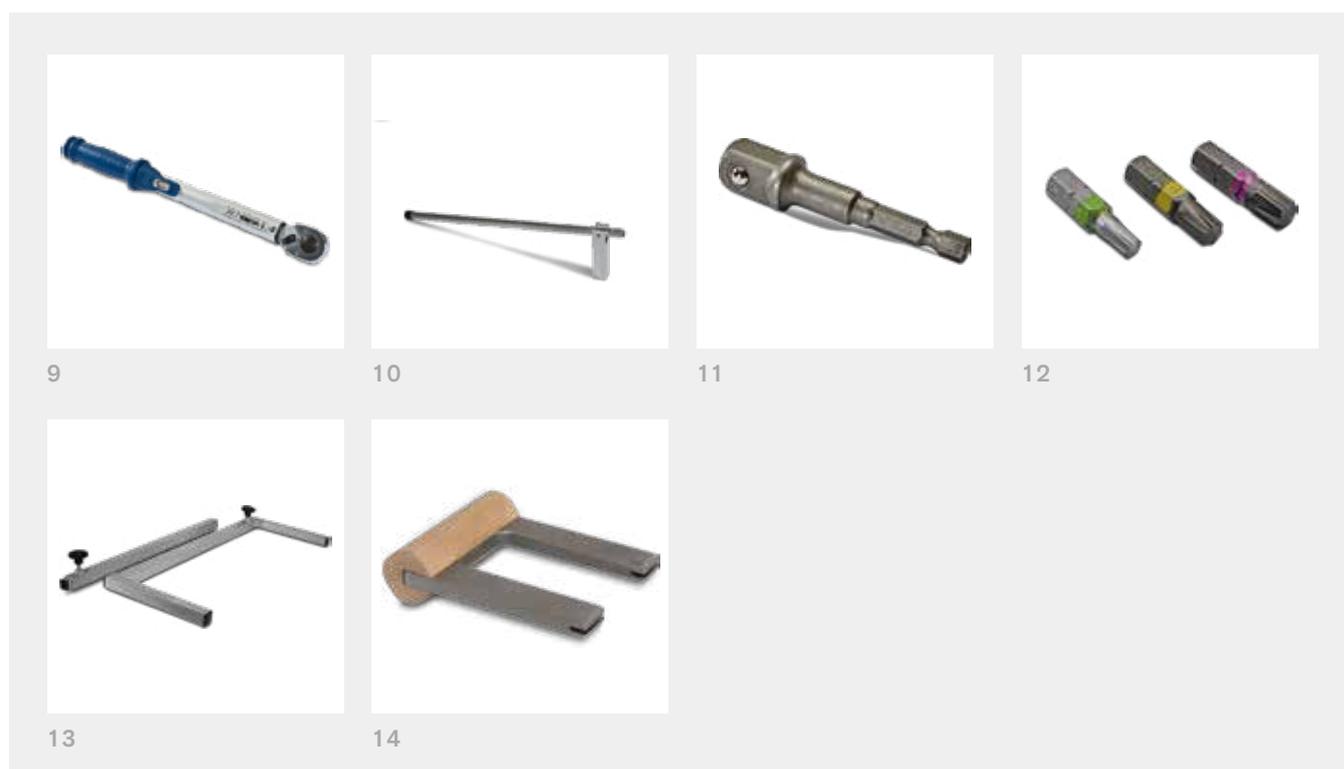
ARTICLE NUMBER	DESIGNATION	IMAGE NUMBER
03-000184	EPDM round seal d = 25mm	1
03-000082	EPDM sealant strip for C-rail 50 × 35 mm	2
03-000407	Aluminium edge protector self-adhesive	3
03-000831	PE-Pad 140 × 390 × 20 mm	3
03-000105	Protective roof mat 10,000 × 250 × 6 mm	4
03-000113	Synthetic fibre strips 50,000 × 320	5
03-000627	EPDM tape 10,000 × 54 × 3 mm IR	6
03-000633	EPDM sealant strip 70 × 28 × 2 mm IR	7
03-000628	EPDM edge protection 7 mm laminate, L 40	8
03-000629	EPDM edge protection 7 mm laminate, L 80	8
03-000099	Cable clip d = 10 mm	9
03-000510	Cable collector N-rail PA 4 cables	9
03-000508	Cable-tie clip for profile flange 1-3 mm	10
03-000509	Cable-tie clip for profile flange 3-6 mm	10
03-000175	Base trough cable bracket	11
03-000504	Cable tie black, 140 mm	12
03-000505	Cable tie black, 200 mm	12
03-000506	Cable tie black, 280 mm	12
03-000507	Cable tie black, 360 mm	12



ARTICLE NUMBER	DESIGNATION	IMAGE NUMBER
03-000329	Mounting Set C-Rail M8	1
03-000373	Plate 50 × 50 × 3 D8.5 Alu	1
03-000337	Mounting-Set Optimizer FR	1
03-000979	Shim for roof hook PP blue, 2mm	2
03-000980	Shim for roof hook PP grey, 5mm	2
03-000589	Slot nut A2SS with spring ball M8 30mm	3
03-000600	Slot nut Alu with spring ball M8 22mm	3
03-000682	Slot bolt M8 with serrated locking nut	4
03-000530	L adapter set N-rail to C-shape roof hook	5
03-000683	Slot nut set with screw M8x18 A2SS	6
03-000684	Slot nut set with screw M8x16 A2SS	6
03-000476	Mounting set snowguard IR	7
03-000412	Metal sheet zinc-plated, for plain tile	8
03-000535	Metal shingle 280x230mm, with sealing	9
03-000536	Metal shingle 390x230mm, with sealing	9
03-000537	Metal shingle 580x230mm, with sealing	9
03-000924	Perforated Alu-tape 10.000 × 20 × 1 mm	10
03-000778	Flat roof mounting screw cl 5.5	11
03-000012	Grounding connector set AF 18	12



ARTICLE NUMBER	DESIGNATION	IMAGE NUMBER
03-000315	Torx drive TX-25 length = 70 mm	1
03-000104	Torx drive TX-40 length = 70 mm	1
03-000316	Torx drive TX-30 length = 70 mm	1
03-000038	Torx extension 250 mm	2
03-000011	Special long nut socket 18 mn	3
03-000100	Special nut socket 8 mm	4
03-000966	Hexagon drive for stock screw M10	5
03-000930	Hexagon drive for stock screw M12	5
03-000114	Drill bit 6.8 mm length 230 mm	6
03-000115	Drill bit 7.0 mm length 230 mm	6
03-000116	Drill bit 7.2 mm length 230 mm	6
03-000117	Drill bit 7.4 mm length 230 mm	6
03-000245	Drill bit 7.5 mm length 225 mm	7
03-000108	Drill bit 9.0 mm length 230 mm	7
03-000246	Drill bit 14 mm HSS short	7
03-000107	Drill bit 16 mm HSS short	7
03-000036	Torque wrench 1/4", 4-20 Nm	8



ARTICLE NUMBER	DESIGNATION	IMAGE NUMBER
03-00037	Torque wrench 1/2", 20-100 Nm	9
03-000362	Mounting and removal tool 150-30	10
03-000602	Adapter 1/4fl hexagonal to 1/2fl square	11
03-000604	Bit for triple-square screws, size AW25	12
03-000603	Bit for triple-square screws, size AW30	12
03-000605	Bit for triple-square screws, size AW40	12
03-000576	Assembling jig 800-1200 mm, C-shaped	13
03-000574	Assembling jig 1300-1700 mm, C-shaped	13
03-000577	Assembling jig 800-1200 mm, bar type	13
03-000575	Assembling jig 1300-1700 mm, bar type	13
03-000579	Assembling jig set 800-1200 mm, 2-piece	13
03-000578	Assembling jig set 1300-1700 mm, 2-piece	13
03-000462	Mounting tool trapezoidal sheet bracket IR	14
03-000464	Mounting tool trapezoidal sheet bracket IR FL	14
03-000463	Mounting tool trapezoidal sheet bracket elevation profile pair	14

## Product Guarantee for the novotegra Mounting System from BayWa r.e. Solar Energy Systems GmbH

### Terms of Guarantee

Under the following conditions, BayWa r.e. Solar Energy Systems GmbH guarantees that under normal conditions of installation, application, operation and maintenance the components of the novotegra mounting system are free of construction, processing and material defects, for 10 years from the date of receipt.

Only BayWa r.e. Solar Energy Systems GmbH may approve the warranty claim, and only through an independent test on-site. In the case of an approved warranty claim the liability is effected solely through a replacement delivery of the defective component. An approved warranty claim does not lead to an extension of the guarantee period, nor restart it. Subsequent to an accepted warranty claim, no further commitments and liabilities for additional and subsequent damages for BayWa r.e. Solar Energy Systems GmbH exist. Thus a limitation of the legal warranty claims and the legal product liability is not given.

### Warranty Claim

In order to file a claim within 10 years, you must notify BayWa r.e. Solar Energy Systems GmbH in writing within two weeks of the detection of the fault and supply the purchase date, the original order confirmation and delivery note from BayWa r.e. Solar Energy Systems GmbH as proof of purchase. The guarantor is BayWa r.e. Solar Energy Systems GmbH, Eisenbahnstraße 150, 72072 Tübingen. The areas covered by this guarantee are based upon German law principles. Furthermore, our general terms and conditions apply in addition to this guarantee.

### Exclusions

#### Warranty claims under this guarantee cannot be made in the case of:

- Faulty or incorrect installation according to the installation instructions
  - Unauthorised modifications or repairs
  - Inappropriate installation or use of the mounting system.
- Inappropriate transportation, storage or handling of the components.
- Optical deficiencies in so far as the appearance does not have any influence on the performance of the component.
- Incorrect installation according to the static calculations, or installation instructions of other components (for example, the solar module)
  - Failure to comply with universally valid norms that have to be respected during installation
  - Damage through e.g. smoke, exceptional thermal stress, salt loading or other chemical products.
- Forces of nature (natural hazard), force majeure, vandalism, destruction through external influences and / or persons / animals.

The cost to BayWa r.e. Solar Energy Systems GmbH for the removal and return of the defective component as well as for the re-assembly of the delivered component are excluded from this guarantee.

# Hand-in-hand for your success

Are you looking for a mounting system for a flat roof with a low load reserve, or want to find out which modules combine best with a certain inverter?

We are happy to help you plan your installation and support you with our professional expertise.

## BayWa r.e. Solar Energy Systems GmbH

Eisenbahnstraße 150, 72072 Tübingen, Germany  
Phone: +49 7071 98987 0  
solarenergysystems@baywa-re.com

## Sales Office Tübingen

Eisenbahnstraße 150, 72072 Tübingen, Germany  
Phone: +49 7071 98987 300  
tue.solarenergysystems@baywa-re.com

## Sales Office Duisburg

Aakerfährstraße 40, 47058 Duisburg, Germany  
Phone: +49 203 298776 0  
dui.solarenergysystems@baywa-re.com

## Sales Office Nuremberg

Wiesentalstraße 32–34, 90419 Nuremberg, Germany  
Phone: +49 911 216646 0  
nue.solarenergysystems@baywa-re.com

## Sales Office Brunswick

Heinrich-Büssing-Ring 25, 38102 Braunschweig, Germany  
Phone: +49 531 12177 100  
bsg.solarenergysystems@baywa-re.com

## Sales Office Munich

Am Haag 10, 82166 Gräfelfing, Germany  
Phone: +49 89 383932-3680  
mue.solarenergysystems@baywa-re.com

## BayWa r.e. Solar Systems Danmark

Kullinggade 31E, 5700 Svendborg, Denmark  
Phone: +45 62 21 10 00  
solarsystemer@baywa-re.com

## BayWa r.e. Solar Systems Filial

Frihamnsallén 8, 211 20 Malmö, Sweden  
Phone: +45 62 21 10 00  
biuro.ses@baywa-re.com

## BayWa r.e. Solar Energy Systems GmbH s. z. o. o.

Krakowska 390, 32-080 Zabierzów, Poland  
Phone: +48 574 186 300  
biuro.ses@baywa-re.com

You can find all of our subsidiaries and sales offices on our website at [www.baywa-re.com](http://www.baywa-re.com) under "Locations".

## Imprint

### BayWa r.e. renewable energy GmbH

Herzog-Heinrich-Straße 9 | 80336 Munich | Phone: +49 89 38 39 32-0 | [info@baywa-re.com](mailto:info@baywa-re.com) | [www.baywa-re.com](http://www.baywa-re.com)

**Concept and text** BayWa r.e. Solar Energy Systems GmbH, Tübingen

**Design concept** Strichpunkt GmbH, Stuttgart | Berlin

**Graphics** mds Agenturgruppe GmbH

**Photography** Ben Wiesenfarth, Constance; Reiner Pfisterer, Ludwigsburg

**Reproduction** mds Agenturgruppe GmbH

**Printing** Mayer & Söhne Druck- und Mediengruppe GmbH & Co. KG, Aichach, Version CA-094.03

**Copyright** May 2018 BayWa r.e. renewable energy GmbH, Munich. Subject to changes and errors excepted.

Reproduction only permissible on an excerpt basis and with prior written consent from BayWa r.e. renewable energy GmbH.



# Remain Flexible with a Strong Network

## BAYWA R.E. RENEWABLE ENERGY

BayWa r.e. was founded as a fully owned subsidiary of BayWa AG in 2009. The company combines all of the Group's activities in the field of renewable energies: photovoltaic, wind, biomass and geothermal energy. Today, BayWa r.e. is one of the world's most stable project developers and system providers of PV plants and decentralized energy solutions. The company is currently active in Germany, numerous European countries, USA, Asia-Pacific and Africa.

## R.E.THINK ENERGY

BayWa r.e.'s goal is to promote the expansion of renewable energies worldwide. We develop innovative solutions that secure our quality of life. Thanks to the size, global network and financial strength of BayWa AG, we are optimally prepared to fulfill this mission.

## BAYWA AG: ACTING FOR THE FUTURE

BayWa is a group with worldwide operations in the core competencies of trading, logistics and services in the segments of Agriculture, Energy, and Building Materials. The head office of the parent company, which was founded in 1923, is located in Munich. The international activities focus on Europe as well as on the US and New Zealand. The company is SDAX listed. BayWa's goal is to shape the future of human needs in an innovative and lasting manner based on trust in its role as a strong partner.

---

---

BayWa r.e. Solar Energy Systems GmbH  
Eisenbahnstraße 150  
D-72072 Tübingen  
Phone +49 7071 98987-0  
Fax +49 7071 98987-10  
solarenergysystems@baywa-re.com



[www.baywa-re.com](http://www.baywa-re.com)  
[solarenergysystems.baywa-re.com](http://solarenergysystems.baywa-re.com)

---