



# Professional PV mounting systems

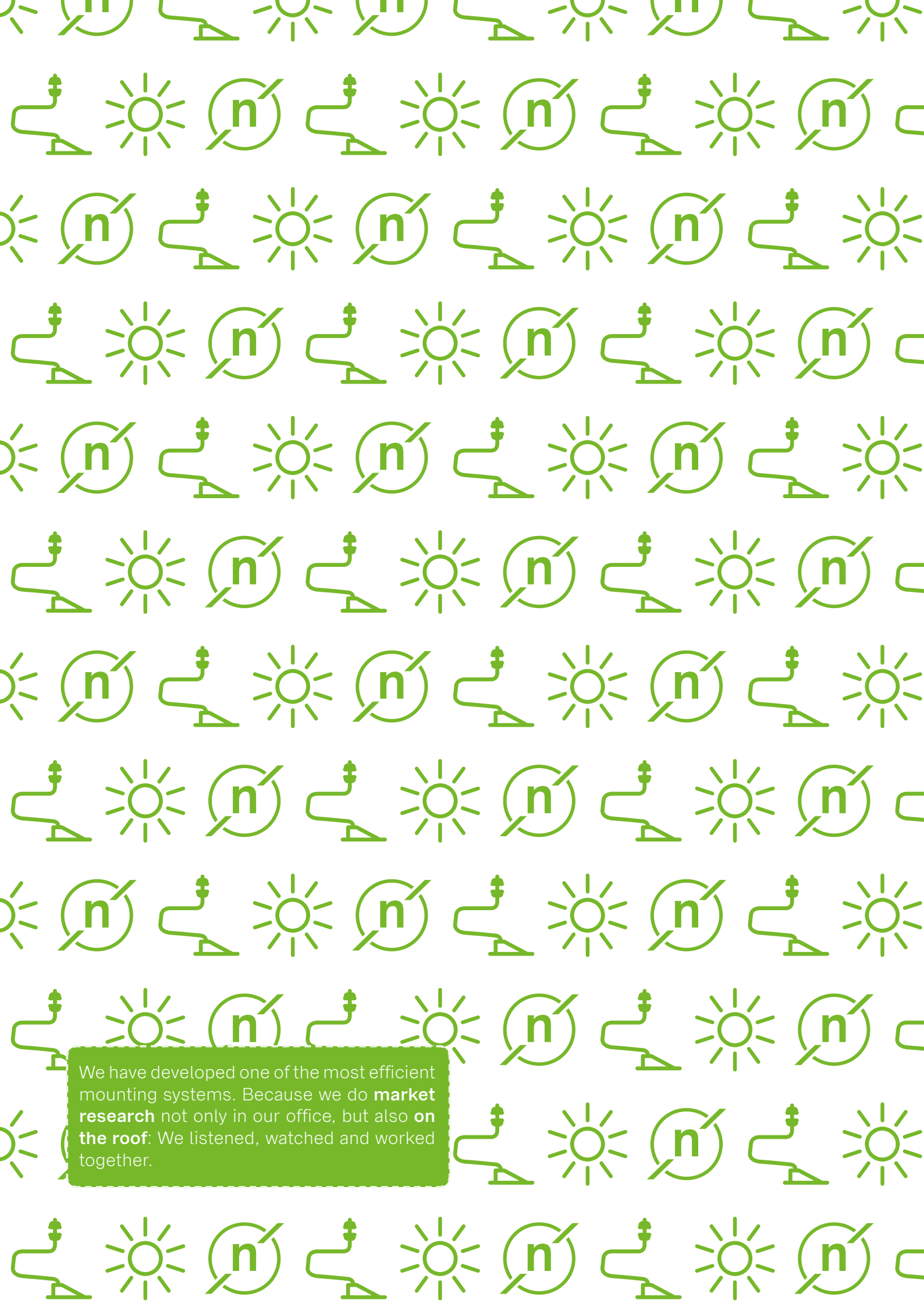
The perfect solution for every roof!



System catalogue

2024/2025





We have developed one of the most efficient mounting systems. Because we do **market research** not only in our office, but also **on the roof**: We listened, watched and worked together.

# Our commitment, The perfect solution for every roof.

We have been successful on the market with our photovoltaic mounting system for many years - and worldwide.

Here at **novotegra GmbH**, we manufacture our own mounting systems, specially developed for photovoltaic installations. We sell our diverse product portfolio exclusively via the BayWa r.e. distribution network and have always stood for safe and efficient solutions.

**Experience built in as standard.** We are able to draw on more than two decades of experience in the development of mounting systems. Our solutions were already being used successfully in the 1990s and have been officially marketed under our own name since 2006. Since novotegra GmbH was founded in 2021, we have grown into an independent company and are now represented throughout Europe with our pioneering concepts.

**The perfect solution for every roof.** We offer solutions for practically all roof types, from standard pitched roofs to flat roofs and special solutions. Whether bitumen, trapezoidal metal or metal tile roofs, our flexible systems are versatile and tailored in detail to the respective roof type.

**Market research on the roof, not in the office.** The basis for the development of our installation system is close cooperation with the installers. Out on the construction sites, we familiarize ourselves with the installers' work down to the last detail. Whether it's technical service, purchasing or marketing, almost everyone at our company has been on a roof and installed something themselves. This valuable experience helps us to improve our products, and we pay particular attention to making working with our components as easy as possible.

*„We do a lot to ensure the success of our customers. High-quality products and optimal service are crucial here.“*

**Thomas Pfaff & Stefan Krokowski**  
Managing Director

**Uncompromising quality.** We test our systems on our in-house test bench as well as at numerous test facilities throughout Europe. Our aim is to match all components perfectly to the needs of our customers and the local conditions. To achieve this, all our departments work hand in hand. Strict quality controls also ensure that our customers can rely on precisely manufactured, durable and high-quality products.

**Foundation** (novotegra GmbH)

**2021**

**Employees** (2024)

**80**





# Our 360° service, be more than just a manufacturer.

Technical innovations and well thought-out products alone are not enough. We are there to support our customers, from planning to installation.

**Initial mounting support**

(2023)

52

**Field work** (since 2021)

85

**A partnership-based working model.** In addition to providing the perfect equipment, we also share our comprehensive know-how with the installer. We provide advice already in the planning stage of an installation. Whether in person or digitally, our technical service is happy to help. If you are installing novotegra for the first time, you can take advantage of our initial mounting support or pick up tips and tricks online in advance.

**Stay on top of things.** Since the world of photovoltaics is constantly evolving, we make sure that everything stays up to date. With seminars, webinars and information events, we provide our customers with the latest knowledge about our mounting systems as well as general market developments. In this way, we ensure that we and our customers are always at the cutting edge of technology.

## + Training, seminars, webinars

The right training is the key to success. Our training courses, seminars and webinars are an important key to building knowledge and developing skills. Our experienced technicians and experts are happy to provide valuable tips and advice on our systems. In this way, we pass on our know-how and respond to the individual needs of our customers. As a result, we are in constant communication with our customers and are always in touch with the latest developments.

## + Partner programme

Our direct line to the installer. In our partner programme, not only we enjoy the proximity to the installer, our partners also benefit from us. Whether it is new products or the latest news, our partners are among the first to hear about news from the novotegra world. To this end, we have set up a special partner portal with information and offers tailored to the needs of our closest partners.



## + Initial mounting support

Practice makes perfect - if you are using one of our novotegra mounting systems for the first time and need support, our experts will be happy to provide you with active on-site assistance for a whole day. Our enthusiastic technicians have already completed several trips and are happy to provide valuable tips and advice. Together with the installers, we can achieve success as quickly as possible. Whether installation or structural calculations with Solar-Planit, we are happy to help and get our customers on track in no time at all.



# Our locations, where our customers need us.

Sales are handled by the BayWa r.e. trading companies throughout Europe. As a result, we are very close everywhere and provide local support.



**Available throughout Europe.** Our customers can find everything they need to install their systems in our wholesalers' warehouses. Together with a well-organized logistics network, a very high availability of our components is guaranteed, even for less common roof types. In close cooperation with international forwarding agents, our sales partners ensure that all orders arrive at the construction site on time, guaranteeing short delivery routes.

**Close by — everywhere.** Together with our sales partners, we have built up a Europe-wide network, so we are always there where our customers need us. Whether Scandinavia or southern Italy, Brittany or the Baltic - our competent team of experts is on hand with help and advice.



## Head office

Tübingen, Germany



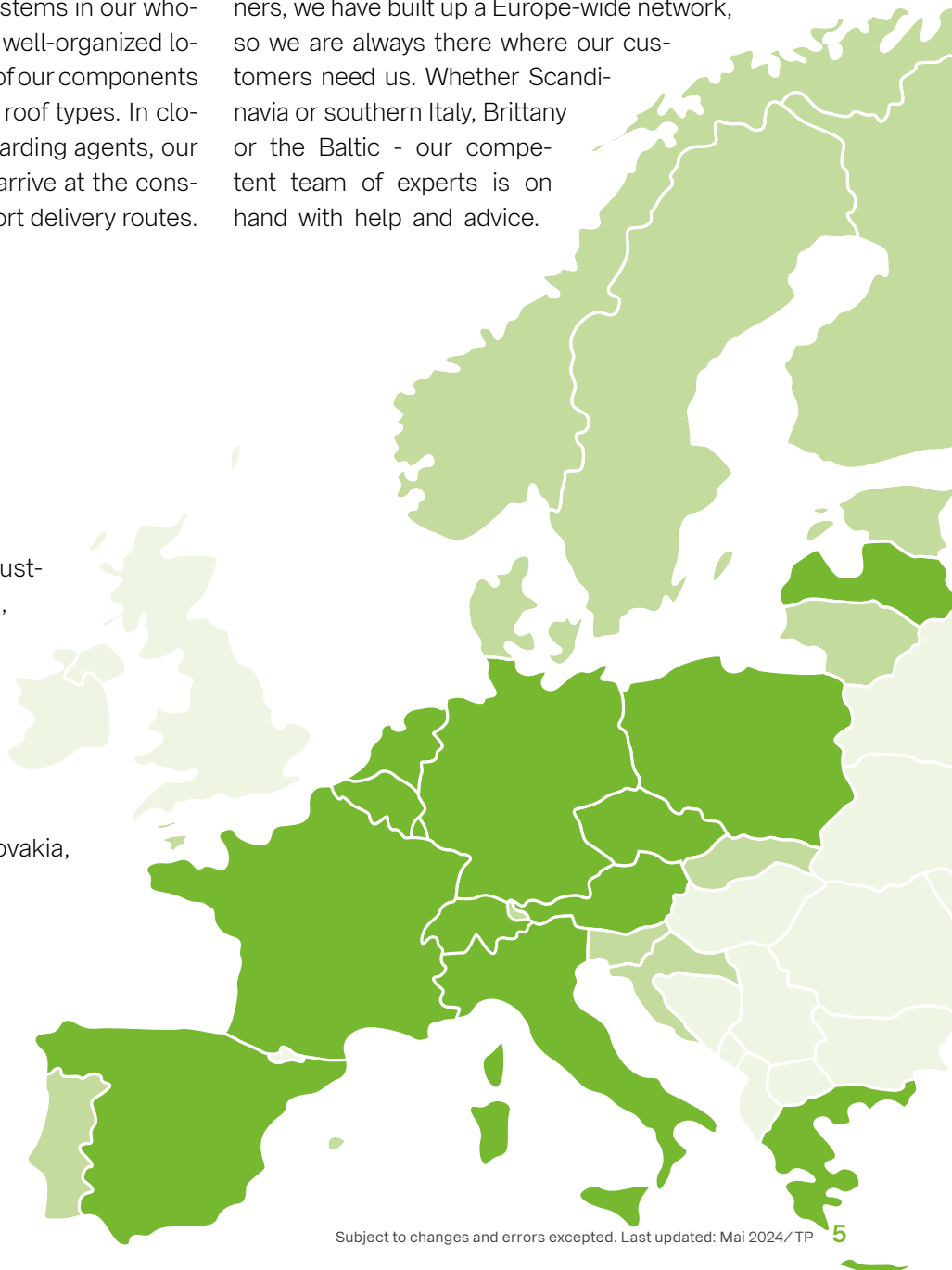
## BayWa wholesaler

BeNeLux, Germany, France, Greece, Italy, Latvia, Austria, Poland, Switzerland, Spain, Czech Republic



## Market support

Bulgaria, Denmark, Estonia, Finland, Croatia, Liechtenstein, Lithuania, Norway, Portugal, Sweden, Slovakia, Slovenia

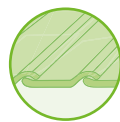


# Our systems, Robust, maintenance-free, versatile.

Quality made in Germany with our systems for all common roof types.  
You provide the challenge - we provide the solution.

**Prepared for the future.** In the future, we can expect more extreme weather events, whether it is strong winds, heavy rain, or snow. Our novotgera systems are already well-prepared for this. We have designed them to be as robust as possible, so they can withstand heavy snow loads and won't lift off the roof during extreme winds.

**Be spoilt for choice.** Fixed module attachment using a clamping system or floating, stress-free using an insertion system. Both our clamping systems and our insertion systems are available in top-fix or side-fix variants. In other words, the installation of the aluminum rails can be done from either the top or the side.



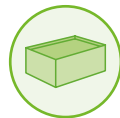
## **Tile and beaver tail roof**

clamping systems, insertion systems,  
top-fix, side-fix



## **Corrugated & sandwich roof**

clamping systems,  
insertion systems



## **Flat roof & Green roof**

Flat roof I, Flat roof II,  
Flat roof III, Green roof, Gravel roof



## **Trapezoidal metal roof**

clamping systems, insertion systems,  
elevation, trapezoidal bracket, short rail



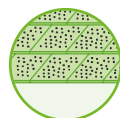
## **Metal tile roof**

clamping systems  
portrait & landscape



## **Seamed metal roof**

clamping systems,  
insertion systems



## **Bitumen roof**

direct fixing,  
portrait & landscape



## **Facade-PV**

insertion systems  
direct fixing

# Our certificates, Robust, maintenance-free, versatile.

Quality made in Germany with our systems for all common roof types.  
You provide the challenge - we provide the solution.

**Everything from one source.** We offer all the components required for the substructure of a photovoltaic system. From roof hooks and seam clamps to our high-quality aluminum rails, which are available in different profile heights and lengths. Our customers can also find tools, installation aids and the right accessories from us.



## CE marking

The in-house monitoring for the mounting system by novotegra 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 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



## 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 laws 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.



## Certification according ISO 9001:2015

Quality does not come by itself - it must be planned, controlled and monitored. Well-designed workflows and customer-oriented processes contribute greatly to the quality of our mounting system. In a monitoring audit by TÜV SÜD, we were now able to prove the successful implementation of this quality management standard.



## Certification according ISO 14001:2015

We not only deal intensively with the topic of sustainability in the form of our business field, but the topic also plays an omnipresent role in our everyday work and our business processes. TÜV SÜD has now confirmed that we are already on the right track!



# Pitched roof mounting systems

## Overview



Tile and beavertail roof



Corrugated and sandwich roof



Seamed metal roof



Module attachment



Clamping and insertion system

● black & blank



Profile rail



C-N-rail

● black & blank



C-rail

● black & blank



Roof attachment



Roof hook

side-fix



Roof hook

top-fix



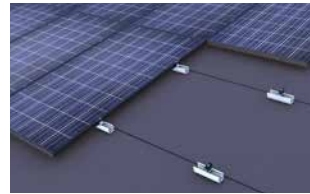
Stock screws



Seam clamp



Trapezoidal metal roof



Bitumen roof



Insertion system

● black & blank



Clamping system

● black & blank



Module attachment

Profile rail



Trapezoidal sheet bracket



Short rail

Roof attachment



Installed here:

Clamping system top-fix



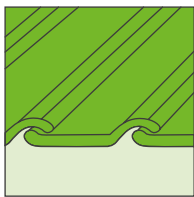
# Tile roof systems

## Robust, maintenance-free, versatile.

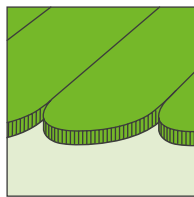
Quality made in Germany with our systems for all standard tiled roofs.

For the installation of PV systems on tiled roofs, we recommend our clamping or insertion system, depending on the requirements, whereby both systems are available as top-fix and side-fix variants. We offer a wide range of roof hooks that can be installed quickly and easily. With our insertion system, you create an elegant and beautiful solution: For a uniform image, the insertion rail can be selected in a colour that matches the module frame.

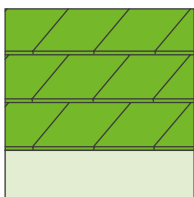
### Suitable tile types:



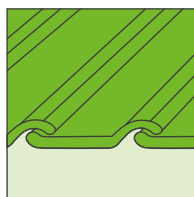
Clay tiles



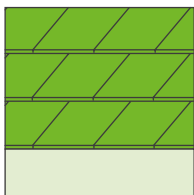
Beavertail



Flat tile



Concrete roof tile



In-roof system  
on request

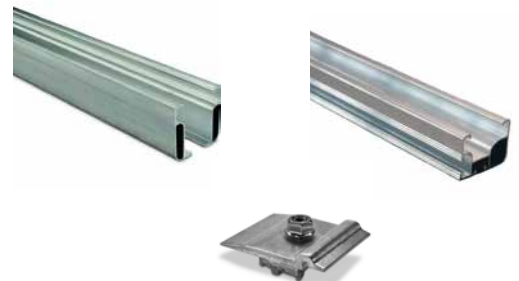
### Module attachment

#### Module clamps & insertion rails



### Profile rail

#### C-rails, C-N-rails & cross layer system



### Roof attachment

#### Roof hooks, screws & stock screws



# Tile roof Clamping system

## Portrait & landscape

### + Cost-effective, flexible solution

- Material-saving - 1-layer structure for portrait installation
- Cross rails are mounted directly onto the roof hooks
- Fastening the modules via module clamps
- Flexible - landscape mounting in cross connection possible
- Additional vertical rails are mounted on the cross rails using cross connectors
- Mounting in the quarter point also possible with landscape-mounted modules

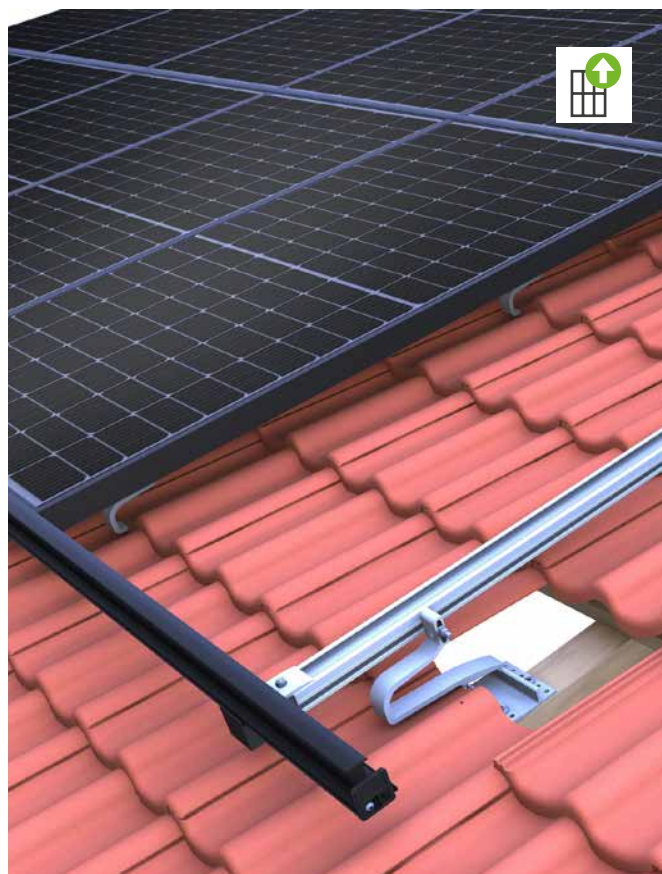


# Tile roof Insertion system

## Portrait & landscape

### + Module-friendly solution with high-quality optics

- Installation of vertical rails with following installation of horizontal insertion rails in a cross connector
- Module landscape or portrait mounting possible
- Quick, gentle installation - modules can be inserted without tools
- Fixing of the modules tension-free over the entire length of the frame instead of point clamping
- Replacement of individual modules possible without dismounting of surrounding modules



## top-fix



### + Unique three-way adjustable roof hook

- Fine height adjustment on the base profile
- Continuous height adjustment to the rail to compensate roof irregularities
- Big cantilever of the bottom plate on the rafter due to wide base profile
- Minimal tile processing due to the narrow brackets
- Centric load introduction – minimal leverage effect, thus no risk of tile breakage

### + C-rail & module clamps universally applicable

- Open rail usable as a cable channel
- Mounting the rail on the hook from above in the visible area
- Accessible during installation (from C-47)
- For the assembly of modules with frame heights of 30-42 mm
- Clamp locked in the C-rail
- Flush finish with the profile rail is possible

## side-fix



### + Versatile roof hooks for use in various applications

- Tile overlaps up to 110 mm
- Continuous height adjustment of the rail with corrugation for compensation of roof irregularities
- Optimized for the installation of vertical or cross rails
- Flexible positioning of the hook is possible thanks to click technology after screwing (ZD 30 N35)

### + C-N-rail & module clamps universally applicable

- Open rail can be utilized as a cable channel
- Rail with continuous side groove channel for flexible connection to the roof hook
- Attachment of the rail to the roof hook at the side via slot nut
- Clamp locked in the C-N-rail
- Flush finish with the profile rail is possible



# Our roof hooks stable, flexible, long-lasting.

 top-fix



## + Three-way adjustability

- Fine-step height adjustment of the hook on the basic profile, no need for shimming
- Continuous height adjustment to the rail to compensate roof irregularities
- Big cantilever of the bottom plate on the rafter due to wide base profile for optimum positioning in the wave trough

## + Unique design

- Solid stainless steel roof hook in combination with aluminum base profile
- Slim bracket shape: Enables tile gap of only 15 mm width
- Minimal processing of the tiles
- Installation is possible at almost all clay and concrete roof tiles, even for strongly corrugated tile shapes
- Almost invisible hooks give the module field a floating appearance
- Connection of the rail from above enables installation of vertical and cross rails with the same hook

## + Centric load distribution

- Rail connection centered above the base profile
- Load is transferred to the base profile with minimal leverage
- Almost no bending of the hook even under heavy loads - no tile breakage
- Minimum load on the fastening screws in the rafters

## side-fix

### + The new one: ZD 30 N35

- Easy connection from the side
- Quick roof hook installation thanks to click technology
- For mounting horizontal and vertical rails
- Rail-roof hook connection height-adjustable in slotted hole with ribbing up to approx. 20 mm
- For tile overlaps up to 110 mm



### + The tried and trusted: ZD 544 / ZD 533

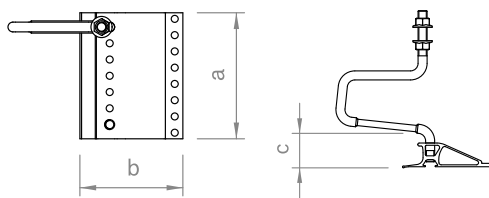
### + The variable: ZD 633

	ZD 30 M12		ZD 40 M12		ZD 30 M12 lang		ZD 40 M12 lang		BS 30 M12		flex 18 M10	flex 30 M10	flex 30 M12	flex 40 M10	ZD 30 N35 horizontal	ZD 544 horizontal	ZD 533 vertikal	ZD 633 vertikal	
Clay tile			+						+								+		
Beavertail tile			-						+								-		
Concrete tile			+						+								+		
Horizontal rail			+						+						+	+	-	-	
Vertical rail			+						+						+	-	+	+	
Load capacity			+						+						+	+	+	+	
Height adjustment basic profile	43-49mm	57-63mm	43-49mm	57-63mm					42-48mm		23-47mm	40-52mm	50-62mm		ab 45mm + Unterlegplatten			41-56mm	
Height adjustment Rail connection	35mm								35mm		30mm			20mm	26mm				
Tile overlap [mm]	95mm		135mm						-		95mm			110mm	100mm				
min. Rafter width [mm]	48mm								36mm		36mm			46mm					
Rafter insulation			+						-						+	+	+	-	

# Tile roof

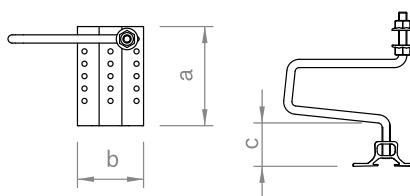
## Single article

### Roof attachment



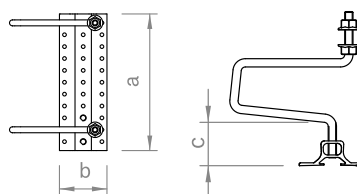
Roof hooks for mounting C-rails as vertical and horizontal rails, rail-roof hook connection height-adjustable up to 35 mm, roof hook-base profile connection height-adjustable for 24 – 30 mm or 31 – 40 mm batten, for tile overlap up to approx. 95 mm, depending on tile type. For the roof hook long up to approx. 95 mm or depending on the type of crucible up to approx. 135 mm.

Item no.	Designation	a [mm]	b [mm]	c [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
03-001723	Roof hook set ZD 30 M12 lang	155	126	43–49	Alu / A2SS
03-001725	Roof hook set ZD 40 M12 lang	155	126	57–63	Alu/A2SS



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 – 24 mm, 24 – 30 mm or 31 – 40 mm batten, for tile overlap up to approx. 95 mm, depending on tile type.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001109	Roof hook set flex 18 M10	120	80	23–47	Alu / A2SS
03-001149	Roof hook set flex 30 M10	120	80	40–52	Alu / A2SS
03-001151	Roof hook set flex 40 M10	120	80	50–62	Alu / A2SS



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 batten, for beavertail double tile formation.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000258	Roof hook set BS 30 M12	160	95	42–48	Alu / A2SS





Roof hooks for mounting C-rails as horizontal rails, optimised for heavy loads, rail-roof hook connection height-adjustable up to 35<sup>®</sup>mm, roof hook-base profile connection height-adjustable for 24 – 30 mm or 31 – 40 mm batten, for tile overlap up to approx. 95mm, depending on tile type.

Item no.	Designation	a [mm]	b [mm]	c [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
03-001724	Double roof hook set ZD 30 M12 lang	245	125	43–49	Alu / A2SS
03-001726	Double roof hook set ZD 40 M12 lang	245	125	57–63	Alu / A2SS



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. 95 mm, depending on tile type.

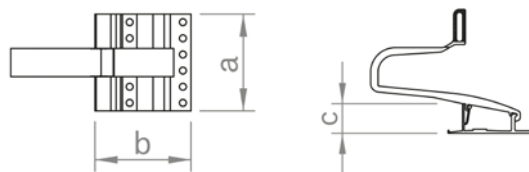
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001150	Double roof hook set flex 30 M10	230	80	40–52	Alu / A2SS
03-001152	Double roof hook set flex 40 M10	230	80	50–62	Alu / A2SS



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 batten, for beavertail double tile formation.

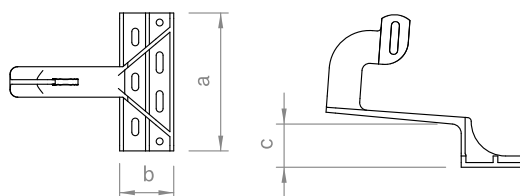
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000267	Double roof hook set BS 30 M12	260	95	42–48	Alu / A2SS

## Roof attachment



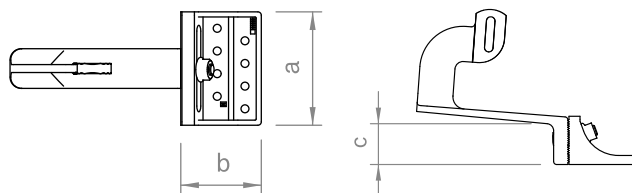
Roof hooks for mounting C-N-rails and N-rails as vertical and horizontal rails, rail-roof hook connection height-adjustable in slot with fluting up to approx. 20 mm, for tile overlap up to approx. 110 mm.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001349	Roof hook set ZD 30 N35 v+h	120	119	45	Alu / A2SS



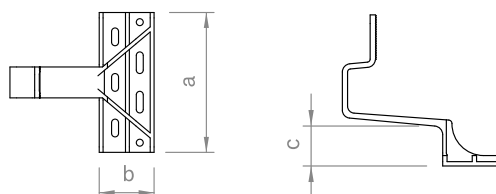
Roof hooks for mounting C-N-rails as vertical rails, rail-roof hook connection height-adjustable in slot 8.5 × 35 mm with fluting up to 26 mm, for tile overlap up to approx. 100 mm and 30 mm roof battens.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000731	Roof hook ZD 533 vertical	181	71	46	Alu cast



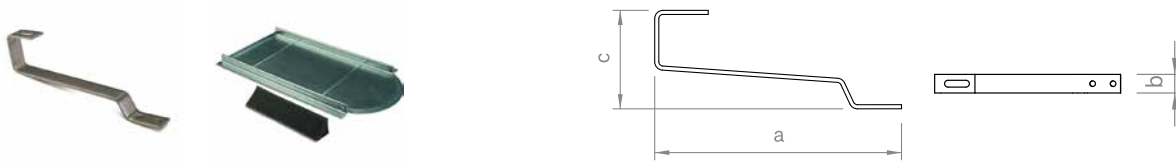
Roof hooks for mounting C-N-rails as vertical rails, rail-roof hook connection height-adjustable in slot 8.5 × 35 mm up to 26 mm, brackets on both sides 32.5 mm, in height 15 mm in slot adjustable, tile overlap up to approx. 100 mm for 30 mm roof battens.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000756	Roof hook adjustable 633 vertical	100	70	41–56	Alu cast/ A2SS



Roof hooks for mounting C-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.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000611	Roof hook ZD 544 horizontal	181	71	46	Alu cast



Roof hooks for mounting C-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.

Item no.	Designation	a [mm]	b [mm]	c [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
03-000412	Metal sheet zinc-plated, for plain tile	300	30	120	A2SS



Roof hooks for mounting C-N-rails or C-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 or as a set with round-head screw M10, with flat foot area.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000694	Roof hook S C-shape A2SS	250	30	70	A2SS
03-001219	Roof hook set S C-shape A2SS M10	250	30	70	A2SS



Shim for side-fix roof hooks for height compensation between the roof hook and the roof batten.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000979	Shim for roof hook PP blue, 2mm	180	71	2	PP
03-000980	Shim for roof hook PP grey, 5mm	180	71	5	PP



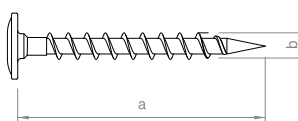
Shim for side-fix roof hooks for height compensation between the roof hook and the roof batten.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001338	Shim for roof hook ZD 30 N35, 2mm	120	121	2	PP
03-001339	Shim for roof hook ZD 30 N35, 5mm	120	121	5	PP



## Roof attachment

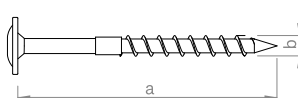
Ø  
6 mm



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

Item no.	Designation	a [mm]	b [mm]	Material
03-000268	Roof hook mounting screw 6 × 30	30	6	St. galv.
03-000269	Roof hook mounting screw 6 × 60	60	6	St. galv.
03-000271	Roof hook mounting screw 6 × 90	90	6	St. galv.
03-000272	Roof hook mounting screw 6 × 120	120	6	St. galv.
03-000273	Roof hook mounting screw 6 × 150	150	6	St. galv.
03-000270	Roof hook mounting screw 6 × 30 A2SS	30	6	A2SS
03-000274	Roof hook mounting screw 6 × 60 A2SS	60	6	A2SS
03-000278	Roof hook mounting screw 6 × 90 A2SS	90	6	A2SS
03-000279	Roof hook mounting screw 6 × 120 A2SS	120	6	A2SS
03-000280	Roof hook mounting screw 6 × 150 A2SS	150	6	A2SS

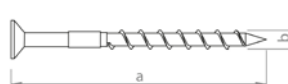
Ø  
8 mm



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

Item no.	Designation	a [mm]	b [mm]	Material
03-000281	Roof hook mounting screw 8 × 100	100	8	St. galv.
03-000282	Roof hook mounting screw 8 × 140	140	8	St. galv.
03-000283	Roof hook mounting screw 8 × 180	180	8	St. galv.
03-000303	Roof hook mounting screw 8 × 220	220	8	St. galv.
03-000304	Roof hook mounting screw 8 × 260	260	8	St. galv.
03-000305	Roof hook mounting screw 8 × 300	300	8	St. galv.
03-000306	Roof hook mounting screw 8 × 340	340	8	St. galv.

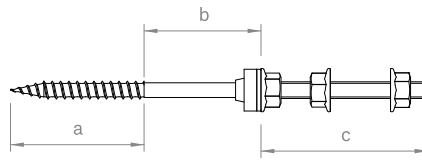
Ø  
6 mm



Wood screw countersunk with AW drive 30, can be used for roof hook S C-shape.

Item no.	Designation	a [mm]	b [mm]	Material
03-000486	Roof hook mounting screw 6 x 80 countersunk	80	6	A2SS

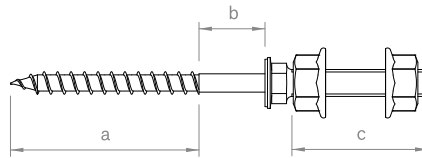
Ø  
M10/M12



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

Item no.	Designation	a [mm]	b [mm]	c [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

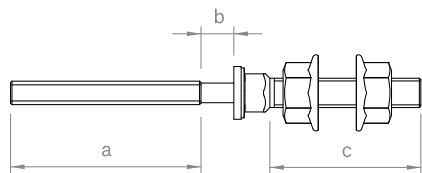
Ø  
M10



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

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000894	Stock screw set (for wood) 8.4-M10 160 mm	70	10	70	A2SS
03-000895	Stock screw set (for wood) 8.4-M10 190 mm	90	20	70	A2SS
03-000940	Stock screw set (for wood) 8.4-M10 210 mm	100	30	70	A2SS
03-000941	Stock screw set (for wood) 8.4-M10 240 mm	120	40	70	A2SS
03-000942	Stock screw set (for wood) 8.4-M10 260 mm	130	50	70	A2SS

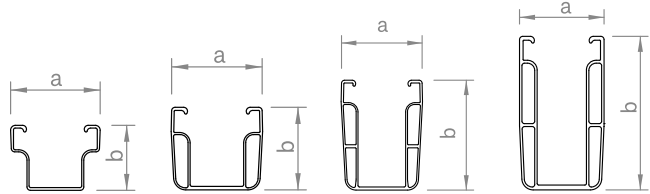
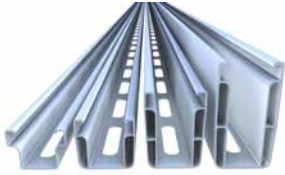
Ø  
M10



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

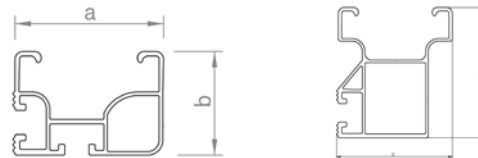
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000199	Stock screw set (for steel) 8.0-M10 140 mm	65	10	50	A2SS
03-000202	Stock screw set (for steel) 8.0-M10 185 mm	65	55	50	A2SS
03-000203	Stock screw set (for steel) 8.0-M10 220 mm	65	90	50	A2SS
03-000943	Stock screw set (for steel) 8.0-M10 260 mm	65	130	50	A2SS

## Profile 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, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	Material
03-001362	C-rail 38-1,6 2.20 m	52	38	Alu
03-001661	C-rail 38-1,6 5.90 m	52	38	Alu
03-001366	C-rail 47-2 2.20 m	52	47	Alu
03-001441	C-rail 47-2 2.40 m	52	47	Alu
03-001774	C-rail 47-2 3.60 m	52	47	Alu
03-001664	C-rail 47-2 4.80 m	52	47	Alu
03-001666	C-rail 47-2 5.90 m	52	47	Alu
03-001668	C-rail 71-2 5.90 m	52	71	Alu
03-001669	C-rail 95-3 5.90 m	52	95	Alu
03-001660	C-rail 38-1,6 2.40 m black	52	38	Anodized aluminum
03-001662	C-rail 38-1,6 5.90 m black	52	38	Anodized aluminum
03-001367	C-rail 47-2 2.20 m black	52	47	Anodized aluminum
03-001667	C-rail 47-2 5.90 m black	52	47	Anodized aluminum



Mounting rail with cable channel and groove, for use as a module support rail in clamping systems or as a cross rail, side groove with fluting for easy fixing from the side, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	Material
03-001413	C-N-rail 37 2.20 m	52	37	Alu
03-001670	C-N-rail 37 5.90 m	52	37	Alu
03-001728	C-N-rail 60 5.90 m	52	60	Alu
03-001673	C-N-rail 37 2.40 m black	52	37	Anodized aluminum
03-001671	C-N-rail 37 5.90 m black	52	37	Anodized aluminum
03-001730	C-N-rail 60 5.90 m black	52	60	Anodized aluminum

## Profile connectors and expansion joints



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

Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-001105	Rail connector set C38	35	28.5	50	325	Alu / A2SS
03-001106	Expansion joint C38	35	28.5	50	325	Alu / A2SS

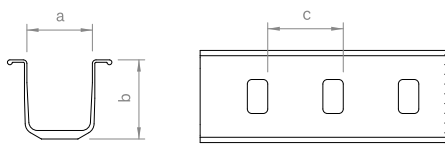


Connector C-rail 47, with two round-head screws and locking nuts with 18 AF hexagon drive, available as expansion joint construction with four round-head screws.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-000001	Rail connector set C47	52	40	50	325	Alu / A2SS
03-000138	Expansion joint C47	52	40	50	325	Alu / A2SS

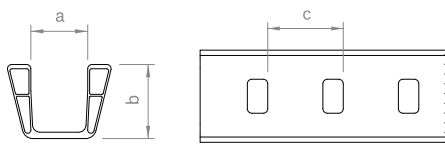


## Profile connectors and expansion joints



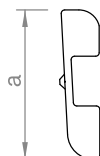
Connector C-rail 71 with four round-head screws, washers and locking nuts with 18 AF hexagon drive, available as expansion joint construction.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-000151	Rail connector set C71	52	67	50	490	Alu / A2SS
03-000265	Expansion joint C71	52	67	50	490	Alu / A2SS



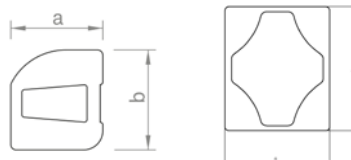
Connector C-rail 95 with four round-head screws, washers and locking nuts with 18 AF hexagon drive, available as expansion joint construction.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-000130	Rail connector set C95	52	70	50	500	Alu / A2SS
03-000173	Expansion joint C95	52	70	50	500	Alu / A2SS



Connector C-rail 47 screw connection with four self-drilling screws with 8 AF hexagon drive.

Item no.	Designation	a [mm]	Length in mm	Material
03-000925	Rail connector set C47 S	30	200	Alu / A2SS



Connector C-N-rail 37 screw connection with two thin sheet screws with 8 AF hexagon drive.

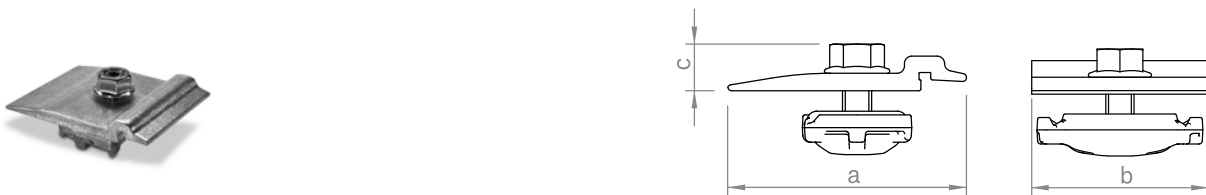
Item no.	Designation	a [mm]	b [mm]	Length in mm	Material
03-001347	Rail connector set C-N 37 S	17.5	19	250	Alu / A2SS
03-001729	Rail connector set C-N 60 S	27	32	250	Alu / A2SS



Connector N-rail screw connection with two self-drilling screws with 8 AF hexagon drive.

Item no.	Designation	a [mm]	b [mm]	Length 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

## Cross rail connector



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

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000321	Cross rail connector set C ES M8	66	50	13	Alu / A2SS



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

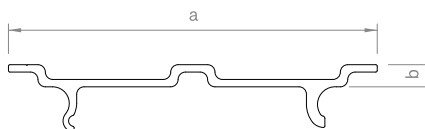
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000226	Cross rail connector set C M14	30	46	34	Alu / A2SS



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

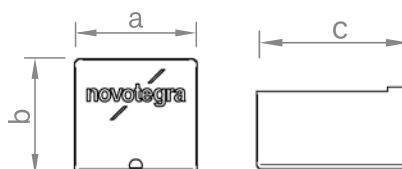
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000409	Cross rail connector set N ES M8	66	50	13	Alu / A2SS

## Module protection and rail top cover



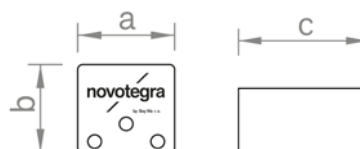
Cover to clip on to the C-rail and C-N-rail if using as cable channel, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	Material
03-000134	Top cover C-rail / C-N-rail 2.000mm	50	3	Alu
03-001469	Top cover C-rail / C-N-rail 2.000mm black	50	3	Alu



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

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001523	End cap C38 black	57	52	80	PP
03-001522	End cap C47 black	57	63	80	PP



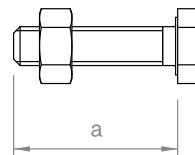
End cap in black for C-N-rail 37, UV and weather resistant.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001343	End cap C-N 37 black	57	52	80	PP



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

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000259	Slip guard/ End cap set C47	53	80	80	Alu / A2SS
03-000261	Slip guard/ End cap set C71	53	100	80	Alu / A2SS
03-000263	Slip guard/ End cap set C95	53	130	80	Alu / A2SS
03-000260	Slip guard/ End cap set C47 black	53	80	80	Alu / A2SS
03-000262	Slip guard/ End cap set C71 black	53	100	80	Alu / A2SS
03-000264	Slip guard/ End cap set C95 black	53	130	80	Alu / A2SS

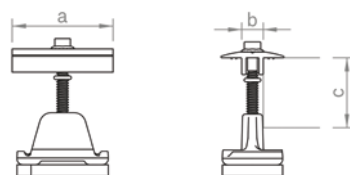


Slip guard for fixing modules with and without mounting holes for mounting modules in portrait.

Item no.	Designation	a [mm]	Material
03-000006	Module slip guard set M6	25	A2SS
03-000007	Module slip guard set M8	25	A2SS

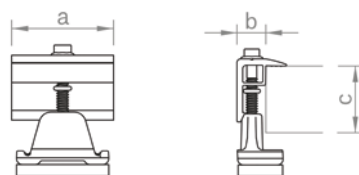


## Module attachment



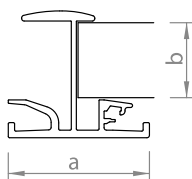
Middle clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30–42 mm or 43–52 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001345	Middle clamp 30-42 Set C	52	11.4	30–42	Alu / A2SS / PE
03-000285	Middle clamp 43-52 Set C	52	11.4	43–52	Alu / A2SS / PE
03-001346	Middle clamp 30-42 Set C black	52	11.4	30–42	Alu / A2SS / PE
03-000286	Middle clamp 43-52 Set C black	52	11.4	43–52	Alu / A2SS / PE



End clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30–42 mm or 43–52 mm, available in blank or black anodised variations.

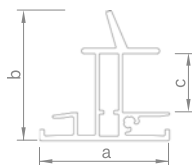
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001236	End clamp 30-42 Set C	52	14	30–42	Alu / A2SS / PE
03-000287	End clamp 43-52 Set C	52	14	43–52	Alu / A2SS / PE
03-001237	End clamp 30-42 Set C black	52	14	30–42	Alu / A2SS / PE
03-000288	End clamp 43-52 Set C black	52	14	43–52	Alu / A2SS / PE



Insertion rail for inserting framed modules with a frame height of 30 - 50 mm, available in blank or black anodised variations. The actual frame height of the module corresponds to the specified dimension b minus 1.3 mm.

**Insertion rails for other frame heights on request.**

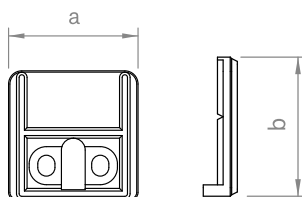
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001697	Insertion rail 30 2.40 m	56	31.3	50	Alu
03-001416	Insertion rail 30 5.40 m	56	31.3	50	Alu
03-001695	Insertion rail 35 2.40 m	56	33.3	52	Alu
03-001379	Insertion rail 35 5.40m	56	36.3	55	Alu
03-001698	Insertion rail 30 2.40m black	56	31.3	50	Alu
03-001417	Insertion rail 30 5.40m black	56	31.3	50	Alu
03-001696	Insertion rail 35 2.40m black	56	36.3	55	Alu
03-001380	Insertion rail 35 5.40m black	56	36.3	55	Alu



Insertion rail for inserting framed modules with a frame height of 30mm, 35 mm or 40 mm for heavy snow loads, with integrated snow guard system. The measurement c indicates the frame height of the module, the insertion rail has an additional 1.3 mm space to insert the module.

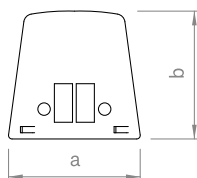
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001617	Insertion rail snow guard 30 5.40 m	69	69	31.3	Alu
03-001618	Insertion rail snow guard 35 5.40m	69	74	36.3	Alu
03-001619	Insertion rail snow guard 40 5.40m	69	79	41.3	Alu
03-001620	Insertion rail snow guard 30 5.40m black	69	69	31.3	Alu
03-001621	Insertion rail snow guard 35 5.40m black	69	74	36.3	Alu
03-001622	Insertion rail snow guard 40 5.40m black	69	79	41.3	Alu

## Module attachment



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

Item no.	Designation	a [mm]	b [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 for insertion rails snow stop, fixing with tapping screw Torx 30 drive, optionally available blank or black anodised.

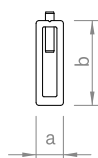
Item no.	Designation	a [mm]	b [mm]	Material
03-000691	Edge stop set IR snow guard	49	49	Alu / A2SS
03-000693	Edge stop set IR snow guard black	49	49	Alu / A2SS

## Rail connector



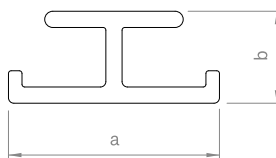
Connector insertion rail for framed modules, l = 150 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	Material
03-000648	Rail connector set IR	65	18	Alu / A2SS
03-000499	Rail connector set IR black	65	18	Alu / A2SS



Connector insertion rail snow guard, l = 200 mm.

Item no.	Designation	a [mm]	b [mm]	Material
03-000471	Rail connector set IR snow guard	10	30	Alu

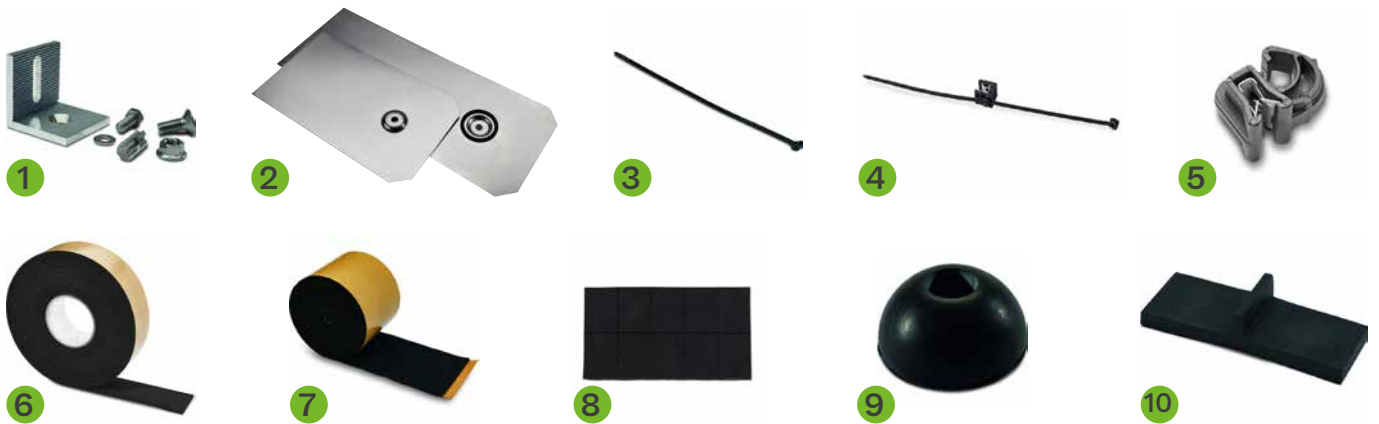


Support rail to brace modules between the insertion rails of a module row in case of heavy snow loads.

Item no.	Designation	a [mm]	b [mm]	Material
03-001442	Support rail IR 5.40m	39	17	Alu



## Accessories and optional components



Pic	Item no.	Designation	Material	Description
1	03-000530	L adapter set C-N rail to C-shaped hooks	Alu / A2SS	L adapter set for fixing C-N rails to C-shaped hooks.
2	03-000535	Metal shingle 280 x 230 mm, with sealing	Alu / EPDM	Aluminium metal shingle with sealing, on shingle coverings such as bitumen or slate, in combination with stock screws.
2	03-000536	Metal shingle 390 x 230 mm, with sealing	Alu / EPDM	
2	03-000537	Metal shingle 580 x 230 mm, with sealing	Alu / EPDM	
2	03-001693	Metal shingle 720 x 230 mm, with sealing	Alu / EPDM	
3	03-000504	Cable-tie black 140 mm	PP	Black polyamide plastic, UV-resistant for tool-free fastening on rails, for 1-3 mm or 3-6 mm metal flange.
3	03-000505	Cable-tie black 200 mm	PP	
3	03-000506	Cable-tie black 280 mm	PP	
3	03-000507	Cable-tie black 360 mm	PP	
4	03-000508	Cable-tie clip for profile flange 1 - 3 mm	PP	
4	03-000509	Cable-tie clip for profile flange 3 - 6 mm	PP	
5	03-000099	Cable clip d=10 mm	PA	Cable clip, for cable bundle up to 10 mm diameter, with clip to connect to the module frame or similar.
6	03-000082	EPDM sealant strip for C-rail 50 x 35 mm	EPDM	EPDM sealant stripe as a safety and sealant layer below the C-rail on trapezoidal roofs.
7	03-000627	EPDM tape 10.000 x 54 x 3 mm IR	EPDM	EPDM tape as a protection layer below insertion rails on trapezoidal. To use in combination with trapezoidal sheet bracket.
8	03-000633	EPDM sealant strip 70 x 28 x 2 mm IR	EPDM	EPDM tape as a protection layer below insertion rails on trapezoidal, 100 pcs per roll.
9	03-000184	EPDM round seal d = 25mm	EPDM	EPDM round sealant for use with stock screw set HP 8.4-M10 or stock screw set SP 8.0-M10.
10	03-000631	EPDM-T protection IR	EPDM	EPDM T-protection for fixing modules in insertion rails with minimal module slope (< 10°), for framed or frameless modules. Can be used as anti-theft protection. 84 x 17 mm.



Pic	Item no.	Designation	Material	Description
1	03-000329	Mounting Set C-Rail M8	Alu/A2SS	Connector set for fixing parts as optimizers to the C-rail, C-N-rail or short rail.
2	03-000373	Plate 50 x 50 x 3 D8,5 Alu	Alu	
3	03-000682	Slot bolt M8 with serrated locking nut l = 22 mm	A2SS	For connecting C-N-rails or N-rails to the roof hook side-fix.
3	03-001658	Slot bolt M8 N35h with serrated locking nut, l = 32 mm	A2SS	
3	03-001657	Slot bolt M8 N35v with serrated locking nut, l = 52mm	A2SS	
4	03-001185	Contact latch module clamp	A2SS	Contact latch for equipotential bonding / lightning current carrying capacity between module frame and mounting system. Suitable for all middle clamps of pitched roof and Flat roof II & III.
5	03-001768	Contact latch Insertion rail	A2SS	Contact latch for equipotential bonding. Suitable for all insertion rails.
6	03-000012	Grounding connector C-rail	A2SS	Grounding connector set sufficient for clamping cables of 6-16 mm <sup>2</sup> or wire with diameter 6-10mm.
7	03-001529	Grounding connector C-rail (new)	A2SS	
8	03-001437	Grounding connector C-N-rail / N-rail	A2SS	Grounding connector set sufficient for clamping cables of 6 - 50 mm <sup>2</sup> or wire with diameter 2.8 - 8 mm.





Installed here:

Insertion system portrait



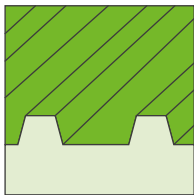
# Trapezoidal metal roof systems

## Efficient, simple, versatile.

Quality made in Germany with our systems for all common roof types.  
You provide the challenge - we provide the solution.

We offer a wide range of mounting systems for attaching photovoltaic systems to trapezoidal metal roofs. We differentiate between roof-parallel applications and elevated variants. A highlight is our system with a slight elevation of 5°, with which we can significantly increase module efficiency.

### Suitable roof types:



Trapezoidal sheet metal

#### Module attachment

### Module clamps & insertion rails



### Profiles, elevation pairs & cross layer system



#### Roof attachment

### Short profiles, trapezoidal brackets & sheet screws



# Trapezoidal metal roof Clamping system

## Portrait & landscape

### + Clamping system with direct fixing

- Fastening with building authority-approved thin sheet screws
- Low logistical effort on the construction site
- Different profile heights available
- Excellent module rear ventilation
- Quick mounting from above with easily graspable components
- C-clamps can be used across all systems



# Trapezoidal metal roof Clamping system

## Light elevation

### + Clamping system with direct fixing and elevated modules

- Module portrait or landscape mounting
- Higher module efficiency thanks to 5° elevation angle
- Extension of the clamping system with just two components
- Improved self-cleaning effect of the modules



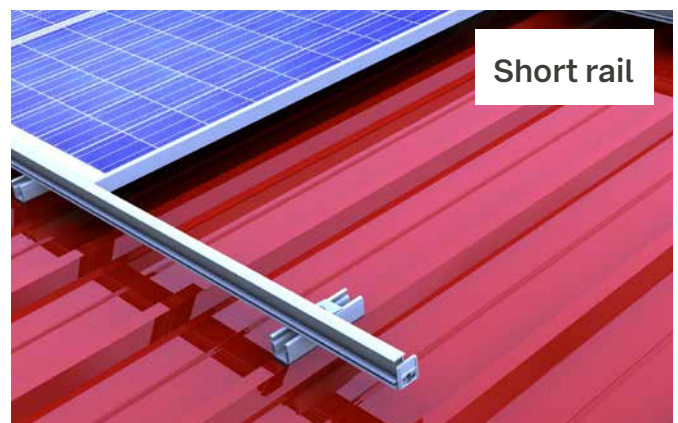
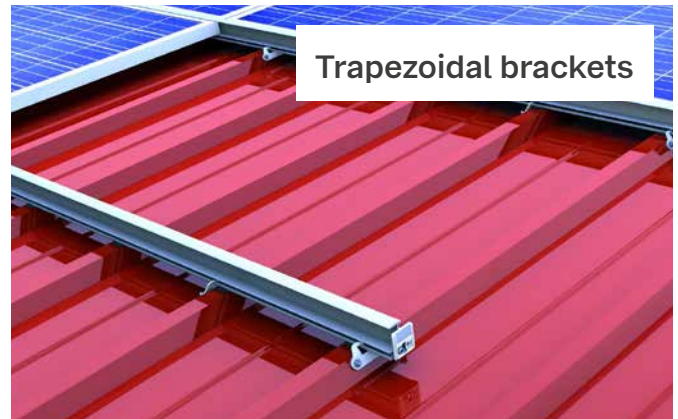


# Trapezoidal metal roof Insertion system

## Portrait & landscape

### + Insertion system with direct fixing

- Only a handful of components
- Insertion rail is fixed directly to the trapezoidal sheet via trapezoidal sheet bracket or short profile with cross rail connector mounted on it
- High-end installation aesthetics and timeefficient mounting thanks to insertion technology
- Tension-free and floating module mounting
- Available with snow stop for high snow loads
- Fixing with building authority-approved thin sheet metal screws



# Trapezoidal metal roof

## Top products



### + Trapezoidal brackets

- Fixing with building authority-approved thin sheet metal screws
- Pre-assembled with EPDM sealant strips
- Can be installed at a small distance from the roof

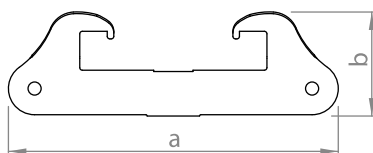
### + Short rail

- Quick mounting from above with easily graspable components
- Fixing with building authority-approved thin sheet metal screws
- Rail sections usable as cable channels at the same time
- Pre-assembled with EPDM sealant strips



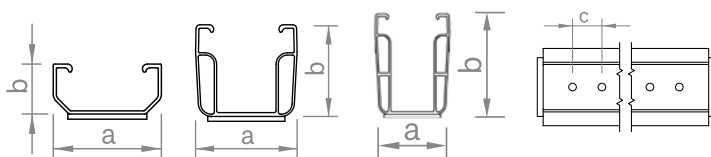
# Trapezoidal metal roof single items

## Roof attachment



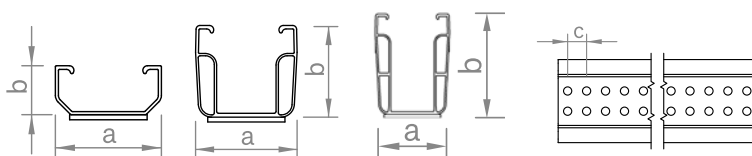
Bracket with EPDM seal for fixing insertion rails on trapezoidal sheet, with two thin sheet screws with 8 AF hexagon drive, for bead heights from 25 mm or 35 mm, for framed or frameless module insertion rails.

Item no.	Designation	a [mm]	b [mm]	Material
03-000459	Trapezoidal sheet bracket IR set 40 × 126 mm	126	40	A2SS
03-000451	Trapezoidal sheet bracket IR snow guard 45 × 141 mm	141	45	A2SS



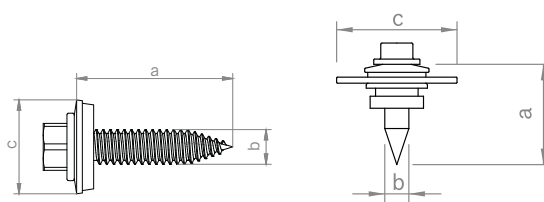
Short rail with 5.2 mm perforation and pre-assembled sealant strip for mounting modules in landscape on trapezoidal sheet. Chipless mounting is accomplished using the trapezoidal sheet mounting screw.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000841	Short rail C24 with EPDM 125mm	52	24	20	Alu / EPDM
03-001108	Short rail C47 with EPDM 200mm	52	47	20	Alu / EPDM
03-001702	Short rail C71 with EPDM 200mm	52	71	20	Alu / EPDM



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

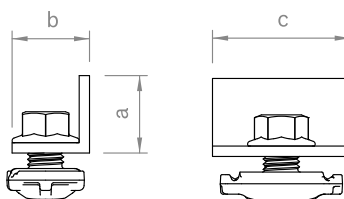
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001081	Short rail C24 with EPDM 385mm	52	24	12	Alu / EPDM
03-000873	Short rail C47 with EPDM 385mm	52	47	12	Alu / EPDM
03-001740	Short rail C71 with EPDM 385mm	52	71	12	Alu / EPDM



Thin sheet screw for chipless attachment of 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.

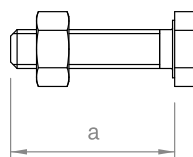
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000880	Trapez. mounting screw cl 6.0 x 25 E16	25	6	16	A2SS
03-000893	Trapez. mounting screw cl 5.5 x 25 E11	25	5,5	11	A2SS
03-000197	C-rail direct mounting set cl	25	6	30	A2SS / EPDM

## Module protection



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

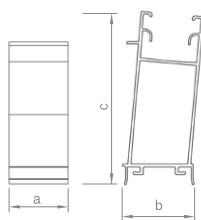
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000233	Slip guard set for short rail profile M14	30	30	53	Alu / A2SS



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

Item no.	Designation	a [mm]	Material
03-000006	Module slip guard set M6	25	A2SS
03-000007	Module slip guard set M8	25	A2SS

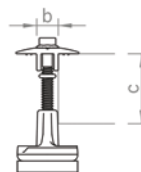
## Light elevation



Rear module support for light elevation on trapezoidal sheet, for insertion in short profi les 385mm.

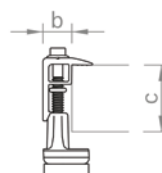
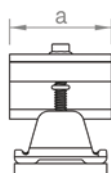
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001516	Module support 5° high	60	58	140	Alu
03-001517	Module support 5° low	60	58	65	Alu

## Module bracket



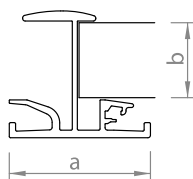
Middle clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30–42 mm or 43–52 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001345	Middle clamp 30-42 Set C	52	11.4	30–42	Alu / A2SS / PE
03-000285	Middle clamp 43-52 Set C	52	11.4	43–52	Alu / A2SS / PE
03-001346	Middle clamp 30-42 Set C black	52	11.4	30–42	Alu / A2SS / PE
03-000286	Middle clamp 43-52 Set C black	52	11.4	43–52	Alu / A2SS / PE



End clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30–42 mm or 43–52 mm, available in blank or black anodised variations.

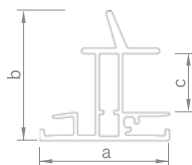
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001236	End clamp 30-42 Set C	52	14	30–42	Alu / A2SS / PE
03-000287	End clamp 43-52 Set C	52	14	43–52	Alu / A2SS / PE
03-001237	End clamp 30-42 Set C black	52	14	30–42	Alu / A2SS / PE
03-000288	End clamp 43-52 Set C black	52	14	43–52	Alu / A2SS / PE



Insertion rail for inserting framed modules with a frame height of 30 - 50 mm, available in blank or black anodised variations. The actual frame height of the module corresponds to the specified dimension b minus 1.3 mm.

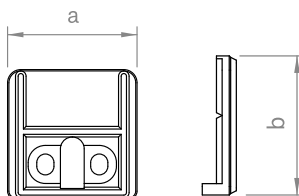
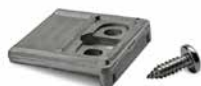
**Insertion rails for other frame heights on request.**

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001697	Insertion rail 30 2.40 m	56	31.3	50	Alu
03-001416	Insertion rail 30 5.40 m	56	31.3	50	Alu
03-001695	Insertion rail 35 2.40 m	56	33.3	52	Alu
03-001379	Insertion rail 35 5.40m	56	36.3	55	Alu
03-001698	Insertion rail 30 2.40m black	56	31.3	50	Alu
03-001417	Insertion rail 30 5.40m black	56	31.3	50	Alu
03-001696	Insertion rail 35 2.40m black	56	36.3	55	Alu
03-001380	Insertion rail 35 5.40m black	56	36.3	55	Alu



Insertion rail for inserting framed modules with a frame height of 30mm, 35 mm or 40 mm for heavy snow loads, with integrated snow guard system. The measurement c indicates the frame height of the module, the insertion rail has an additional 1.3 mm space to insert the module.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001617	Insertion rail snow guard 30 5.40 m	69	69	31.3	Alu
03-001618	Insertion rail snow guard 35 5.40m	69	74	36.3	Alu
03-001619	Insertion rail snow guard 40 5.40m	69	79	41.3	Alu
03-001620	Insertion rail snow guard 30 5.40m black	69	69	31.3	Alu
03-001621	Insertion rail snow guard 35 5.40m black	69	74	36.3	Alu
03-001622	Insertion rail snow guard 40 5.40m black	69	79	41.3	Alu

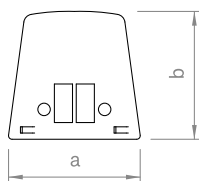


Edge stop for insertion rails, fixing with tapping screw Torx drive 30.

Item no.	Designation	a [mm]	b [mm]	Material
03-000691	Edge stop set IR	49	49	Alu / A2SS
03-000693	Edge stop set IR black	49	49	Alu / A2SS



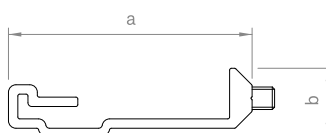
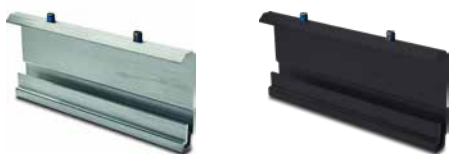
## Module bracket



Edge stop for insertion rails snow stop, fixing with tapping screw Torx 30 drive, optionally available blank or black anodised.

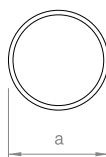
Item no.	Designation	a [mm]	b [mm]	Material
03-000691	Edge stop set IR snow guard	49	49	Alu / A2SS
03-000693	Edge stop set IR snow guard black	49	49	Alu / A2SS

## Rail connector



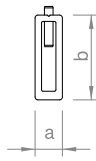
Connector insertion rail for framed modules, l = 150 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	Material
03-000648	Rail connector set IR	65	18	Alu / A2SS
03-000499	Rail connector set IR black	65	18	Alu / A2SS



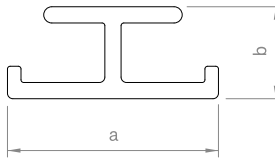
Connector insertion rail for framed modules, l = 100mm, for direct mounting on trapezoidal sheet metal.

Art.-Nr.	Bezeichnung	a [mm]	Material
03-000647	Rail connector IR 5 x 100 A2SS	5	A2SS



Connector insertion rail snow guard, l = 200 mm.

Item no.	Designation	a [mm]	b [mm]	Material
03-000471	Rail connector set IR snow guard	10	30	Alu



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

Item no.	Designation	a [mm]	b [mm]	Material
03-001442	Support rail IR 5.40m	39	17	Alu

## Accessories and optional components



Pic	Item no.	Designation	Material	Description
1	03-000099	Cable clip d=10 mm	PA	Clip for fixing module or string cables to a flange (rail, module, etc.).
2	03-000508	Cable-tie clip for profile flange 1 - 3 mm	PP	Black polyamide plastic, UV-resistant for tool-free fastening on rails, for 1-3 mm or 3-6 mm metal flange.
3	03-000631	EPDM-T protection IR	EPDM	EPDM T protection for fixing modules in insertion rails with minimal module inclination (< 10°), for framed or frameless modules. Can be used as anti-theft protection. 84 x 17 mm.



Installed here:

Clamping system cross-layer landscape

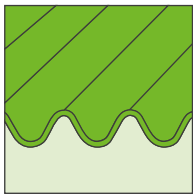


# Corrugated & sandwich roof systems simply quickly installed.

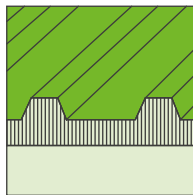
Quality made in Germany with our systems for corrugated & sandwich roofs.

With corrugated and sandwich roofs, PV systems are installed directly in the purlins of the roof structure using stock screws. Our mounting systems with suitable hanger bolts for wooden or steel purlins offer a secure solution for roof coverings with corrugated fibre cement or sandwich elements. The solution is available as a clamping or insertion system.

## Suitable roof types:



Corrugated



Sandwich

### Module attachment

#### Module clamps or insertion rails



### Profile rail

#### C-profiles, cross layers



### Roof attachment

#### Stock screws

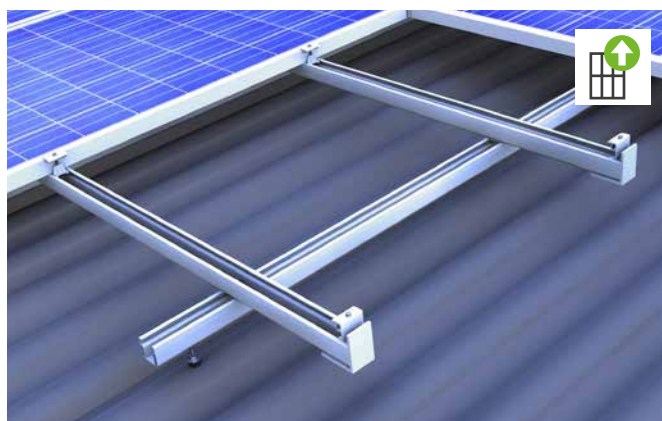


# Corrugated & sand- wich roof Clamping system

## Portrait & landscape

### + Clamping system with C-rails on stock screws

- Centric load application - Low leverage effect on the stock screws
- Big span lengths possible (C-rail 71-2 / C-rail 95-3)
- Solution for wooden and steel purlins
- C-clamp can be used across all systems

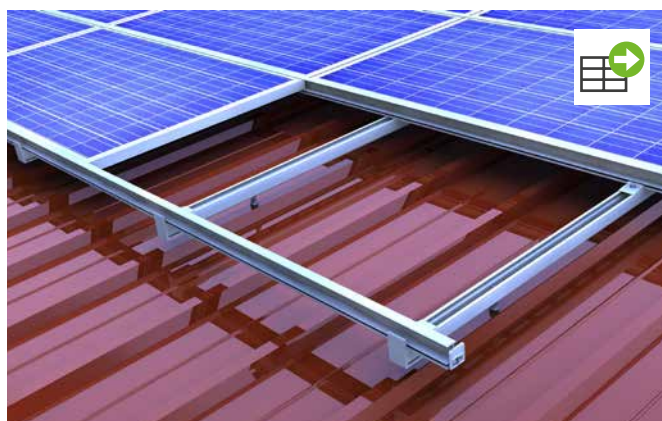


# Corrugated & sand- wich roof Insertion system

## Portrait & landscape

### + Insertion system with mounting on stock screws

- Tension-free module mounting
- Toolless mounting of the modules
- High-quality system optics
- Big span lengths possible (C-rail 71-2 / C-rail 95-3)
- Solution for wooden and steel purlins



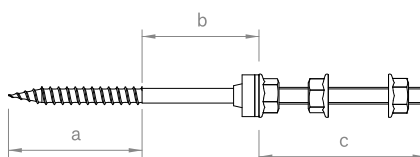


# Corrugated & sandwich roof

## single items

### Roof attachment

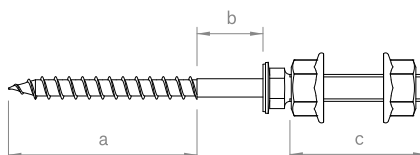
Ø  
M10/M12



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

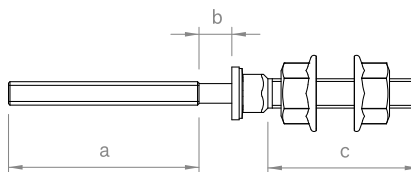
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000222	Stock screw set (for wood) M10 200 mm	75	25	100	A2SS/EPDM
03-000223	Stock screw set (for wood) M10 250 mm	75	75	100	A2SS/EPDM
03-000224	Stock screw set (for wood) M10 300 mm	75	75	150	A2SS/EPDM
03-000211	Stock screw set (for wood) M12 200 mm	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

Ø  
M10



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

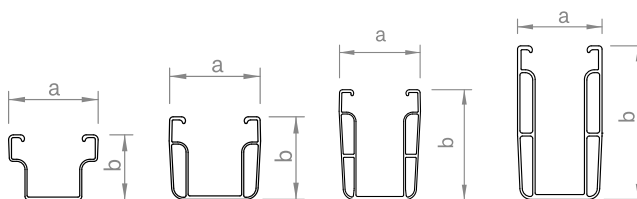
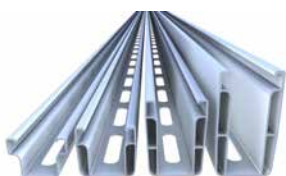
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000894	Stock screw set (for wood) 8,4-M10 160 mm	70	10	70	A2SS
03-000895	Stock screw set (for wood) 8,4-M10 190 mm	90	20	70	A2SS
03-000940	Stock screw set (for wood) 8,4-M10 210 mm	100	30	70	A2SS
03-000941	Stock screw set (for wood) 8,4-M10 240 mm	120	40	70	A2SS
03-000942	Stock screw set (for wood) 8,4-M10 260 mm	130	50	70	A2SS



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

Item no.	Designation	a [mm]	b [mm]	c [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

## Profile rail



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, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	Material
03-001362	C-rail 38-1,6 2.20 m	52	38	Alu
03-001661	C-rail 38-1,6 5.90 m	52	38	Alu
03-001366	C-rail 47-2 2.20 m	52	47	Alu
03-001441	C-rail 47-2 2.40 m	52	47	Alu
03-001774	C-rail 47-2 3.60 m	52	47	Alu
03-001664	C-rail 47-2 4.80 m	52	47	Alu
03-001666	C-rail 47-2 5.90 m	52	47	Alu
03-001668	C-rail 71-2 5.90 m	52	71	Alu
03-001669	C-rail 95-3 5.90 m	52	95	Alu
03-001660	C-rail 38-1,6 2.40 m black	52	38	Anodized aluminum
03-001662	C-rail 38-1,6 5.90 m black	52	38	Anodized aluminum
03-001367	C-rail 47-2 2.20 m black	52	47	Anodized aluminum
03-001667	C-rail 47-2 5.90 m black	52	47	Anodized aluminum

## Profile connectors and expansion joints



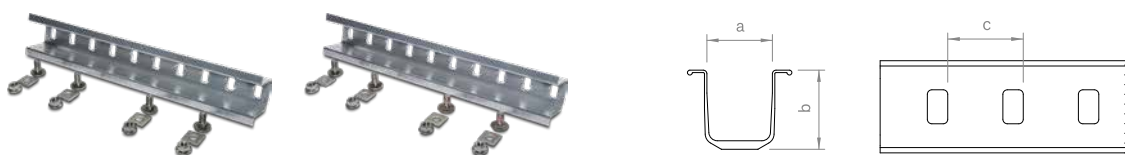
Connector C-rail 38, with two round-head screws and locking nuts with 18 AF hexagon drive, available as expansion joint construction with four round-head screws.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-001105	Rail connector set C38	35	28.5	50	325	Alu / A2SS
03-001106	Expansion joint C38	35	28.5	50	325	Alu / A2SS



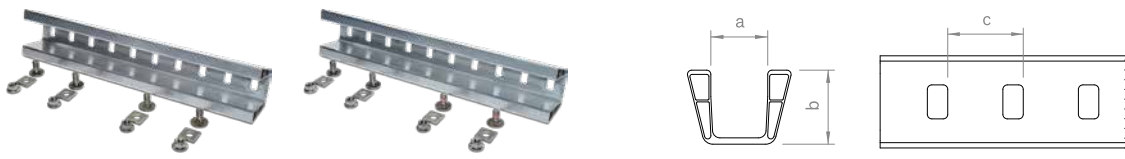
Connector C-rail 47, with two round-head screws and locking nuts with 18 AF hexagon drive, available as expansion joint construction with four round-head screws.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-000001	Rail connector set C47	52	40	50	325	Alu / A2SS
03-000138	Expansion joint C47	52	40	50	325	Alu / A2SS



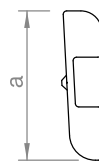
Connector C-rail 71 with four round-head screws, washers and locking nuts with 18 AF hexagon drive, available as expansion joint construction.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-000151	Rail connector set C71	52	67	50	490	Alu / A2SS
03-000265	Expansion joint C71	52	67	50	490	Alu / A2SS



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

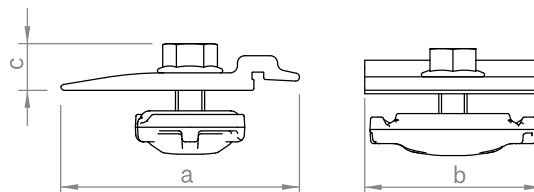
Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-000130	Rail connector set C95	52	70	50	500	Alu / A2SS
03-000173	Expansion joint C95	52	70	50	500	Alu / A2SS



Connector C-rail 47 screw connection with four self-drilling screws with 8 AF hexagon drive.

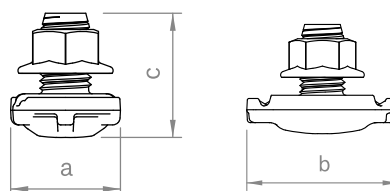
Item no.	Designation	a [mm]	Length in mm	Material
03-000925	Rail connector set C47 S	30	200	Alu / A2SS

## Cross rail connector



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

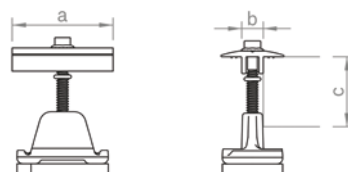
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000321	Cross rail connector set C ES M8	66	50	13	Alu / A2SS



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

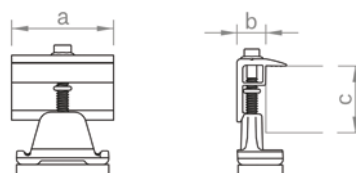
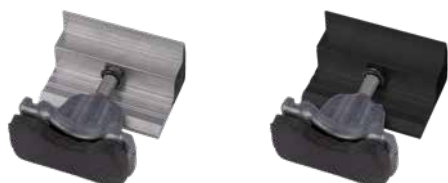
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000226	Cross rail connector set C M14	30	46	34	Alu / A2SS

## Module bracket



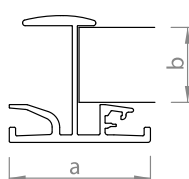
Middle clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30 – 42 mm or 43 – 52 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001345	Middle clamp 30-42 Set C	52	11.4	30–42	Alu / A2SS / PE
03-000285	Middle clamp 43-52 Set C	52	11.4	43–52	Alu / A2SS / PE
03-001346	Middle clamp 30-42 Set C black	52	11.4	30–42	Alu / A2SS / PE
03-000286	Middle clamp 43-52 Set C black	52	11.4	43–52	Alu / A2SS / PE



End clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30 – 42 mm or 43 – 52 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001236	End clamp 30-42 Set C	52	14	30–42	Alu / A2SS / PE
03-000287	End clamp 43-52 Set C	52	14	43–52	Alu / A2SS / PE
03-001237	End clamp 30-42 Set C black	52	14	30–42	Alu / A2SS / PE
03-000288	End clamp 43-52 Set C black	52	14	43–52	Alu / A2SS / PE

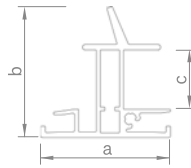


Insertion rail for inserting framed modules with a frame height of 30 - 50 mm, available in blank or black anodised variations. The actual frame height of the module corresponds to the specified dimension b minus 1.3 mm.

**Insertion rails for other frame heights on request.**

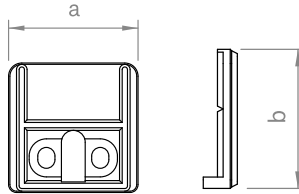
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001697	Insertion rail 30 2.40m	56	31.3	50	Alu
03-001416	Insertion rail 30 5.40m	56	31.3	50	Alu
03-001695	Insertion rail 35 2.40m	56	33.3	52	Alu
03-001379	Insertion rail 35 5.40m	56	36.3	55	Alu
03-001698	Insertion rail 30 2.40m black	56	31.3	50	Alu
03-001417	Insertion rail 30 5.40m black	56	31.3	50	Alu
03-001696	Insertion rail 35 2.40m black	56	36.3	55	Alu
03-001380	Insertion rail 35 5.40m black	56	36.3	55	Alu





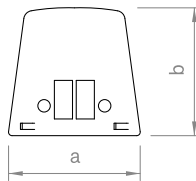
Insertion rail for inserting framed modules with a frame height of 30mm, 35 mm or 40 mm for heavy snow loads, with the option of attaching a snow guard system. The measurement c indicates the frame height of the module, the insertion rail has an additional 1.3 mm space to insert the module.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001617	Insertion rail snow guard 30 5.40m	69	69	31.3	Alu
03-001618	Insertion rail snow guard 35 5.40m	69	74	36.3	Alu
03-001619	Insertion rail snow guard 40 5.40m	69	79	41.3	Alu
03-001620	Insertion rail snow guard 30 5.40m black	69	69	31.3	Alu
03-001621	Insertion rail snow guard 35 5.40m black	69	74	36.3	Alu
03-001622	Insertion rail snow guard 40 5.40m black	69	79	41.3	Alu



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

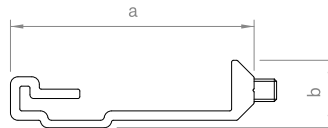
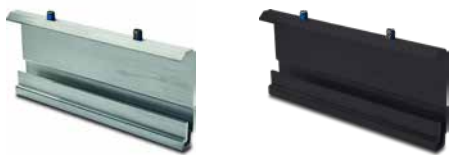
Item no.	Designation	a [mm]	b [mm]	Material
03-000691	Edge stop set IR	49	49	Alu / A2SS
03-000693	Edge stop set IR black	49	49	Alu / A2SS



Edge stop for insertion rails snow stop, fixing with tapping screw Torx 30 drive, optionally available blank or black anodised.

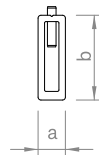
Item no.	Designation	a [mm]	b [mm]	Material
03-000691	Edge stop set IR snow guard	49	49	Alu / A2SS
03-000693	Edge stop set IR snow guard black	49	49	Alu / A2SS

## Rail connector



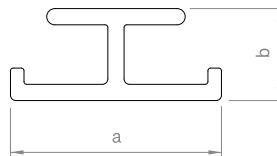
Connector insertion rail for framed modules, l = 150 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	Material
03-000648	Rail connector set IR	65	18	Alu / A2SS
03-000499	Rail connector set IR black	65	18	Alu / A2SS



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

Item no.	Designation	a [mm]	b [mm]	Material
03-000471	Rail connector set IR snow guard	10	30	Alu



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

Item no.	Designation	a [mm]	b [mm]	Material
03-001442	Support rail IR 5.40m	39	17	Alu

## Accessories and optional components



Pic	Item no.	Designation	Material	Description
1	03-000329	Mounting Set C M8	Alu/A2SS	Connector set for fixing parts as optimizers to the C-rail, C-N-rail or short rail.
2	03-000373	Plate 50 x 50 x 3 D8,5 Al	Alu	
3	03-001185	Contact latch module clamp	A2SS	Contact latch for equipotential bonding / lightning current carrying capacity between module frame and mounting system. Suitable for all middle clamps of pitched roof and Flat roof II & III.
4	03-000012	Grounding connector C-rail	A2SS	Grounding connector set sufficient for clamping cables of 6-16 mm <sup>2</sup> or wire with diameter 6-10mm.
5	03-001529	Grounding connector C-rail (new)	A2SS	



1



2



3



4

Pic	Item no.	Designation	Material	Description
1	03-000508	Cable-tie clip for profile flange 1 - 3 mm	PP	Black polyamide plastic, UV-resistant for tool-free fastening on rails, for 1-3 mm or 3-6 mm metal flange.
1	03-000509	Cable-tie clip for profile flange 3 - 6 mm	PP	
2	03-000099	Cable clip d=10 mm	PA	Cable clip, for cable bundle up to 10 mm diameter, with clip to connect to the module frame or similar.
3	03-000184	EPDM round seal d = 25mm	EPDM	EPDM round sealant d = 25mm in use with the stock screw set (for wood) 8.4 M10 respectively stock screw set (for steel) 8.0 M10.
4	03-000631	EPDM-T protection IR	EPDM	EPDM T protection for fixing modules in insertion rails with minimal module inclination (< 10°), for framed or frameless modules. Can be used as anti-theft protection. 84 x 17 mm.





Installed here:

**Clamping system Standing Seam**



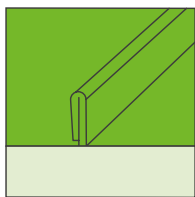
# Seamed metal roof systems

## Efficient, simple, versatile.

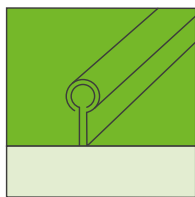
Quality made in Germany with our systems for sheet metal seam roofs. You provide the challenge - we provide the solution.

We offer both a clamping and an insertion system for seamed metal roofs. A variety of seamed clamps ensure secure, stable fastening on standing seam or round seam roofs. The PV system is mounted using our tried-and-tested clamping or insertion system, whereby the modules can be mounted portrait or landscape.

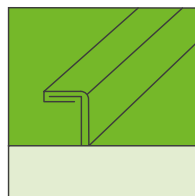
### Suitable seam types:



Standing seam



Round seam



Snap & angle fold

### Module attachment

#### Module clamps or insertion rails



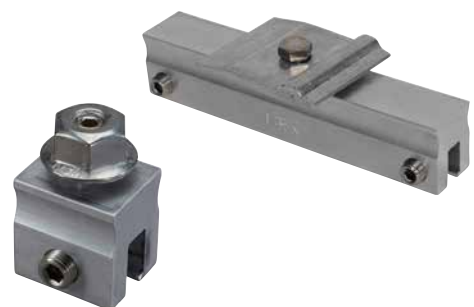
### Profile rail

#### C-rails



### Roof attachment

#### Seaming clamps



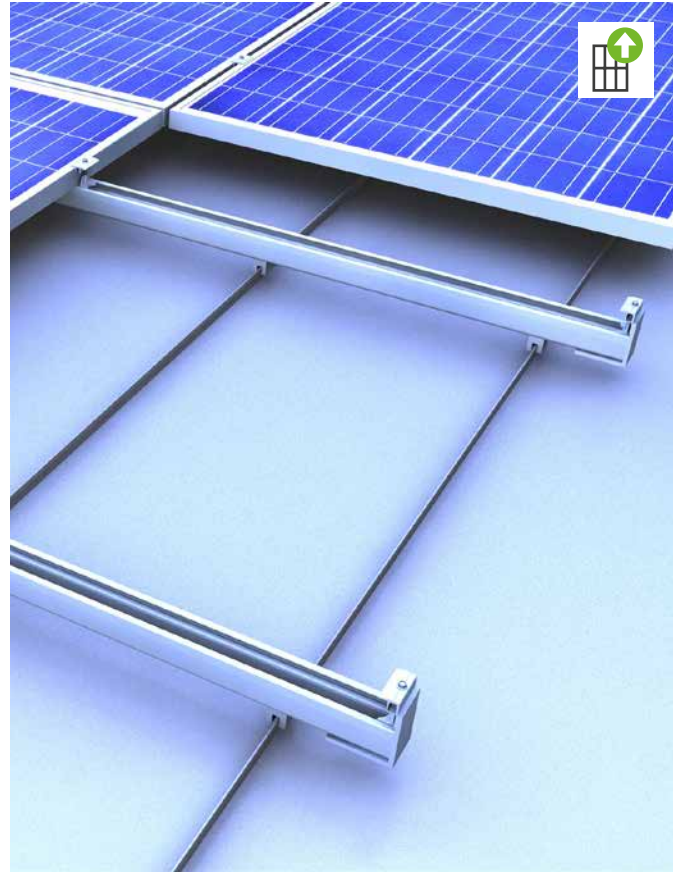
# Seamed metal roof

## Clamping systems

### Portrait

#### + Clamping system with modules installed in portrait

- Excellent module rear ventilation
- Installation-friendly clamps with a click-in mechanism
- Clamps for various seam types
- Centric load distribution – No leverage effect on the seam clamp
- Only a handful of components – entirely pre-assembled
- Quick mounting from above with easy-to-grip components



# Seamed metal roof

## Insertion systems

### Portrait & landscape

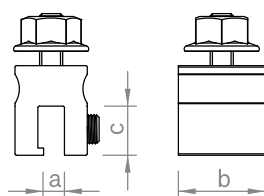
#### + Insertion system with portrait or landscape modules

- Clamping technology with clamping points on the seam flanging
- Also suitable for standing seam roofs made of copper
- Tension-free and floating module mounting
- Clamps for insertion system roof completely preassembled
- With cross rail connector
- Cost-optimised single-layer system



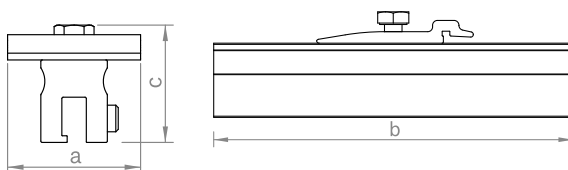
# Seamed metal roof single items

## Roof attachment



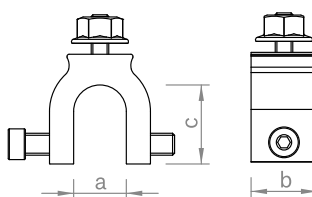
Clamp with grub screw for standing seam roofs and an 18 AF locking nut for fixing C-rails, optionally with stainless steel saddle for mounting on copper roofs.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000219	Standing seam clamp set M8	7.4	30	17	Alu / A2SS
03-000369	Standing seam clamp set M8 for copper	7.4	30	17	Alu / A2SS



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. An additional stainless steel saddle is required for mounting on copper roofs.

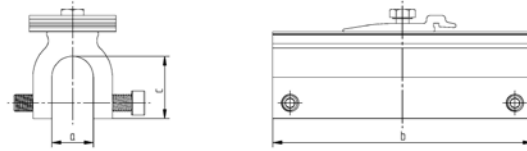
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001028	Standing seam clamp set 150 M8 IR	7.4	150	17	Alu / A2SS
03-001135	A2SS-saddle for standing seam clamp 150	7.4	150	17	A2SS
03-001466	Standing seam clamp set 150 IR M8 for copper	7.4	150	17	Alu / A2SS



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.

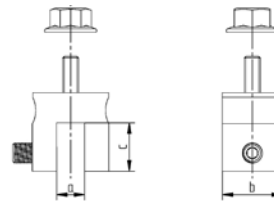
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001069	Rounded seam clamp set M8	24	30	36	Alu / A2SS

## Roof attachment



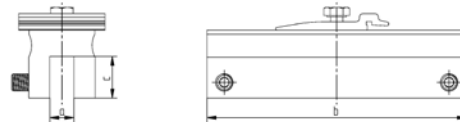
Clamp with grub screw for rounded seam roofs, grub screw with hexagon AF 5 drive, pre-assembled with cross rail connector IR and hexagon screw AF 13 for direct fixing of insertion rails.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001763	Rounded seam clamp set 150 IR M8	24	150	24	Alu / A2SS



Clamp with grub screw and cylinder head screw with 5 mm hexagon socket for snap and angled seam roofs and an 18 mm locking nut for fixing C-rails.

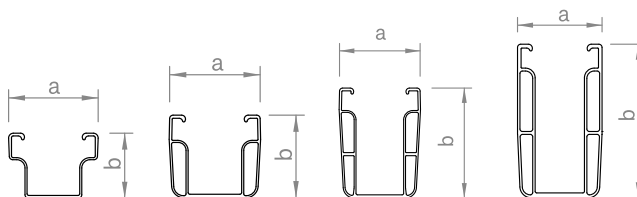
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001764	Snap/angled seam clamp set M8	14	30	24	Alu / A2SS



Clamp with grub screws for snap and angled seam roofs, hexagon socket set screw drive SW 5, pre-assembled with cross rail connector ES and hexagon screw SW 13 for direct fixing of insertion rails.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001765	Snap/angled seam clamp set 150 ES M8	14	150	24	Alu / A2SS

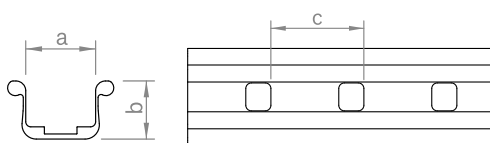
## Profile rail



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, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	Material
03-001362	C-rail 38-1,6 2.20 m	52	38	Alu
03-001661	C-rail 38-1,6 5.90 m	52	38	Alu
03-001366	C-rail 47-2 2.20 m	52	47	Alu
03-001441	C-rail 47-2 2.40 m	52	47	Alu
03-001774	C-rail 47-2 3.60 m	52	47	Alu
03-001664	C-rail 47-2 4.80 m	52	47	Alu
03-001666	C-rail 47-2 5.90 m	52	47	Alu
03-001668	C-rail 71-2 5.90 m	52	71	Alu
03-001669	C-rail 95-3 5.90 m	52	95	Alu
03-001660	C-rail 38-1,6 2.40 m black	52	38	Anodized aluminum
03-001662	C-rail 38-1,6 5.90 m black	52	38	Anodized aluminum
03-001367	C-rail 47-2 2.20 m black	52	47	Anodized aluminum
03-001667	C-rail 47-2 5.90 m black	52	47	Anodized aluminum

## Profile connectors and expansion joints

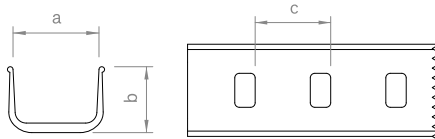


Connector C-rail 38, with two round-head screws and locking nuts with 18 AF hexagon drive, available as expansion joint construction with four round-head screws.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-001105	Rail connector set C38	35	28.5	50	325	Alu / A2SS
03-001106	Expansion joint C38	35	28.5	50	325	Alu / A2SS

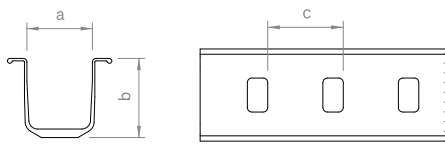


## Profile connectors and expansion joints



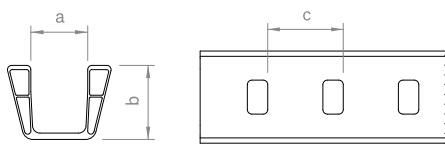
Connector C-rail 47, with two round-head screws and locking nuts with 18 AF hexagon drive, available as expansion joint construction with four round-head screws.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-000001	Rail connector set C47	52	40	50	325	Alu / A2SS
03-000138	Expansion joint C47	52	40	50	325	Alu / A2SS



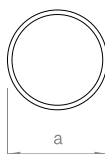
Connector C-rail 71 with four round-head screws, washers and locking nuts with 18 AF hexagon drive, available as expansion joint construction.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-000151	Rail connector set C71	52	67	50	490	Alu / A2SS
03-000265	Expansion joint C71	52	67	50	490	Alu / A2SS



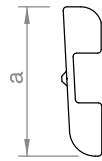
Connector C-rail 95 with four round-head screws, washers and locking nuts with 18 AF hexagon drive, available as expansion joint construction.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-000130	Rail connector set C95	52	70	50	500	Alu / A2SS
03-000173	Expansion joint C95	52	70	50	500	Alu / A2SS



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

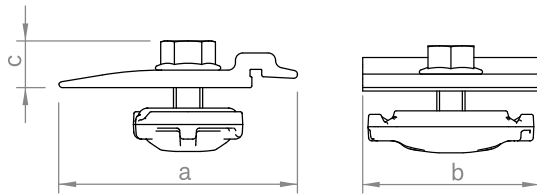
Art.-Nr.	Bezeichnung	a [mm]	Material
03-000647	Rail connector IR 5 x 100 A2SS	5	A2SS



Connector C-rail 47 screw connection with four self-drilling screws with 8 AF hexagon drive.

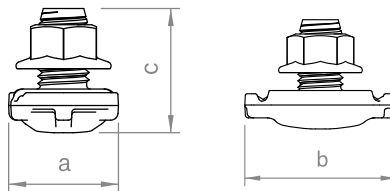
Item no.	Designation	a [mm]	Length in mm	Material
03-000925	Rail connector set C47 S	30	200	Alu / A2SS

## Cross rail connector



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

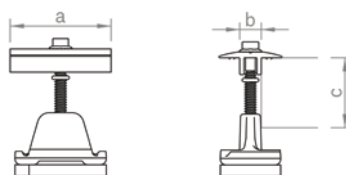
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000321	Cross rail connector set C ES M8	66	50	13	Alu / A2SS



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

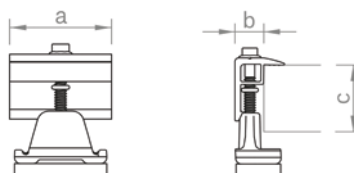
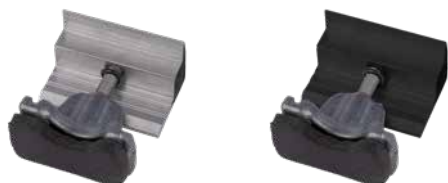
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000226	Cross rail connector set C M14	30	46	34	Alu / A2SS

## Module bracket



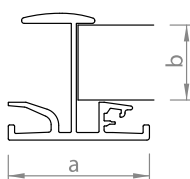
Middle clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30 – 42 mm or 43 – 52 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001345	Middle clamp 30-42 Set C	52	11.4	30–42	Alu / A2SS / PE
03-000285	Middle clamp 43-52 Set C	52	11.4	43–52	Alu / A2SS / PE
03-001346	Middle clamp 30-42 Set C black	52	11.4	30–42	Alu / A2SS / PE
03-000286	Middle clamp 43-52 Set C black	52	11.4	43–52	Alu / A2SS / PE



End clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30 – 42 mm or 43 – 52 mm, available in blank or black anodised variations.

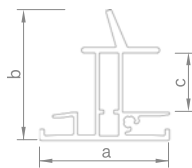
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001236	End clamp 30-42 Set C	52	14	30–42	Alu / A2SS / PE
03-000287	End clamp 43-52 Set C	52	14	43–52	Alu / A2SS / PE
03-001237	End clamp 30-42 Set C black	52	14	30–42	Alu / A2SS / PE
03-000288	End clamp 43-52 Set C black	52	14	43–52	Alu / A2SS / PE



Insertion rail for inserting framed modules with a frame height of 30 - 50 mm, available in blank or black anodised variations. The actual frame height of the module corresponds to the specified dimension b minus 1.3 mm.

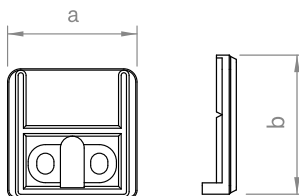
**Insertion rails for other frame heights on request.**

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001697	Insertion rail 30 2.40m	56	31.3	50	Alu
03-001416	Insertion rail 30 5.40m	56	31.3	50	Alu
03-001695	Insertion rail 35 2.40m	56	33.3	52	Alu
03-001379	Insertion rail 35 5.40m	56	36.3	55	Alu
03-001698	Insertion rail 30 2.40m black	56	31.3	50	Alu
03-001417	Insertion rail 30 5.40m black	56	31.3	50	Alu
03-001696	Insertion rail 35 2.40m black	56	36.3	55	Alu
03-001380	Insertion rail 35 5.40m black	56	36.3	55	Alu



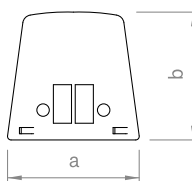
Insertion rail for inserting framed modules with a frame height of 30mm, 35 mm or 40 mm for heavy snow loads, with the option of attaching a snow guard system. The measurement c indicates the frame height of the module, the insertion rail has an additional 1.3 mm space to insert the module.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001617	Insertion rail snow guard 30 5.40m	69	69	31.3	Alu
03-001618	Insertion rail snow guard 35 5.40m	69	74	36.3	Alu
03-001619	Insertion rail snow guard 40 5.40m	69	79	41.3	Alu
03-001620	Insertion rail snow guard 30 5.40m black	69	69	31.3	Alu
03-001621	Insertion rail snow guard 35 5.40m black	69	74	36.3	Alu
03-001622	Insertion rail snow guard 40 5.40m black	69	79	41.3	Alu



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

Item no.	Designation	a [mm]	b [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 for insertion rails snow stop, fixing with tapping screw Torx 30 drive, optionally available blank or black anodised.

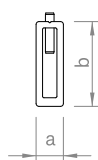
Item no.	Designation	a [mm]	b [mm]	Material
03-000691	Edge stop set IR snow guard	49	49	Alu / A2SS
03-000693	Edge stop set IR snow guard black	49	49	Alu / A2SS

## Rails connectors



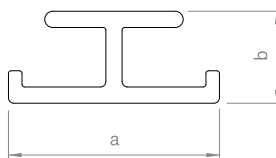
Connector insertion rail for framed modules, l = 150 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	Material
03-000648	Rail connector set IR	65	18	Alu / A2SS
03-000499	Rail connector set IR black	65	18	Alu / A2SS



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

Item no.	Designation	a [mm]	b [mm]	Material
03-000471	Rail connector set IR snow guard	10	30	Alu



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

Item no.	Designation	a [mm]	b [mm]	Material
03-001442	Support rail IR 5.40m	39	17	Alu



## Accessories and optional components



Pic	Item no.	Designation	Material	Description
1	03-000329	Mounting Set C M8	Alu/A2SS	Connector set for fixing parts as optimizers to the C-rail, C-N-rail or short rail.
2	03-000373	Plate 50 x 50 x 3 D8,5 Al	Alu	
3	03-001185	Contact latch module clamp	A2SS	Contact latch for equipotential bonding / lightning current carrying capacity between module frame and mounting system. Suitable for all middle clamps of pitched roof and Flat roof II & III.
4	03-000012	Grounding connector C-rail	A2SS	Grounding connector set sufficient for clamping cables of 6-16 mm <sup>2</sup> or wire with diameter 6-10mm.
5	03-001529	Grounding connector C-rail (new)	A2SS	
6	03-000508	Cable-tie clip for profile flange 1 - 3 mm	PP	Black polyamide plastic, UV-resistant for tool-free fastening on rails, for 1-3 mm or 3-6 mm metal flange.
6	03-000509	Cable-tie clip for profile flange 3 - 6 mm	PP	
7	03-000099	Cable clip d=10 mm	PA	Cable clip, for cable bundle up to 10 mm diameter, with clip to connect to the module frame or similar.
8	03-000631	EPDM-T protection IR	EPDM	EPDM T protection for fixing modules in insertion rails with minimal module inclination (< 10°), for framed or frameless modules. Can be used as anti-theft protection. 84 x 17 mm.
9	03-000259	Slip guard/ End cap set C47	Alu / A2SS	Slip guard can be used to secure the modules for landscape or as a end cap for the C-rail, available in blank or black.
9	03-000260	Slip guard/ End cap set C47 black	Alu / A2SS	





Installed here:

Flat roof III east/west



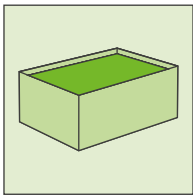
# Flat roof systems

## Efficient, simple, versatile.

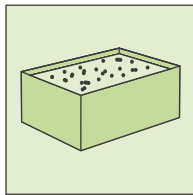
Quality made in Germany with our systems for flat roofs and green roofs. You provide the challenge - we provide the solution.

Our Flat roof systems cover all common applications: Whether bitumen, foil, concrete, gravel or green roofs - whether east-west or south-orientation - we have the right solution in our portfolio. Thanks to our latest Flat roof system, Flat Roof III „the shortcut“, installation is now even quicker and easier. Another highlight: our green roof system for extensive greenery, which provides sufficient distance between the modules and the roof surface - the perfect symbiosis between PV and greenery.

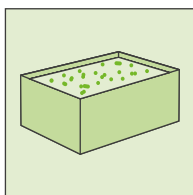
### Suitable roof types:



Flat roof



Gravel roof



Green roof

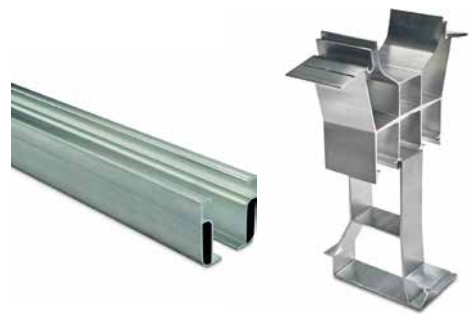
### Module attachment

#### Module clamps or module brackets



### Module supports, C-profiles, crossbar & support braces

#### Module supports, C-profiles, crossbar & support braces



### Roof attachment

#### Base profile & base trough



# Flat roof

## Overview systems



Flachdach III



Flachdach III Lange Seite

Flexibility	+	+
Bearing pressure	+	+
Mounting speed	+	+
Logistics	+	+
High Wind and snow loads	+	+
Large modules*	+	+
Bitumen/foil/concrete roof	+	+
Gravel	+	+
Module inclination	10°	10°
Max. Module field length	40 m	40 m
Roof pitch	0-5 °	0-5 °

\* Up to 2.6 m module length possible



Flachdach II



Flachdach I

		Flexibility
		Bearing pressure
		Mounting speed
		Logistics
		High Wind and snow loads
		Large modules*
		Bitumen/foil/concrete roof
		Gravel
10°	10°	Module inclination
40 m	40 m	Max. Module field length
0-5 °	0-5 °	Roof pitch

excellent

very good

good



# Flat roof System III

## the shortcut

### + Our system for an extremely quick and easy mounting

- Simple and quick installation due to high degree of pre-fabrication and tool-free click system
- Low logistical effort and optimal handling thanks to short components
- Use of our proven C-clamp
- Cross connections at module field edges for high stability
- Clamping on the short frame side



# Flat roof System III

## Long side

### + Clamping on the long frame side of the modules for maximum loads

- Clamping of the module in the optimum area of the long frame side for maximum wind and snow loads, especially with large modules
- Low logistical effort and optimal handling thanks to short components
- Simple and quick installation due to high degree of pre-fabrication and tool-free click system
- Wind tunnel tested aerodynamics
- Cross connections at module field edges for high stability



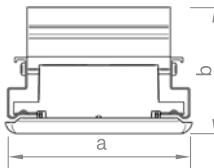
# Flat roof single items

## Roof attachment system III



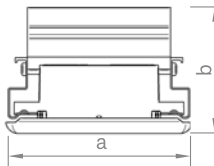
Base element for Flat roof system III e/w for click-fit of the module supports and connection of connector and edge closure sets. Compatible for module widths 995-1070mm or module widths 1071-1145mm

Item no.	Designation	a [mm]	b [mm]	Material
03-001536	Base element e/w 690mm	150	40	Alu / A2SS / PE
03-001537	Base element e/w 840mm	150	40	Alu / A2SS / PE



Connector set e/w for Flat roof system III with integrated base feet as front module support in installation middle areas.

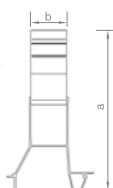
Item no.	Designation	a [mm]	b [mm]	Material
03-001533	Connector set e/w 1940mm	147	101	Alu / A2SS / PP



Edge closure set for Flat roof system III with integrated base foot as front module support at installation edges.

Item no.	Designation	a [mm]	b [mm]	Material
03-001532	Edge closure set 970mm	147	101	Alu / A2SS / PP

## Module support system III



Rear module support for Flat roof system III, to clip into the base element and to connect the crossbar and/or cable channel module support.

Item no.	Designation	a [mm]	b [mm]	Material
03-001539	Module support 10°	270	60	Alu

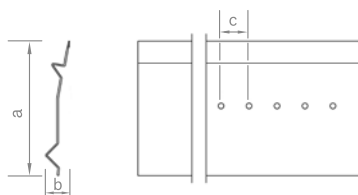


+ FR III Long side

Module support for Flat roof system III Long side for clipping into the base element and for connecting the cable channel module support.

Item no.	Designation	a [mm]	b [mm]	Material
03-001550	Module support 10° long side	289	60	Alu

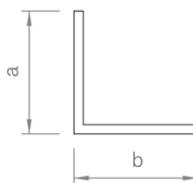
## Load transfer system III



Crossbar for load transfer, connected to the module supports of Flat roof system III.

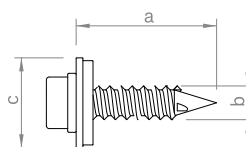
Item no.	Designation	a [mm]	b [mm]	Material
03-001649	Crossbar 2.00m	120	25	Alu
03-001679	Crossbar 2.40m	120	25	Alu

## Load transfer system III



Support brace for load transfer, fixed on the edge closure sets of Flat roof system III.

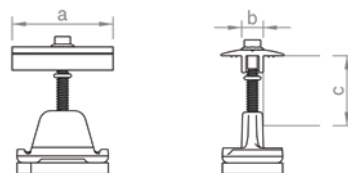
Item no.	Designation	a [mm]	b [mm]	Material
03-001680	Support brace 20x20x1,5 2.00m	20	20	Alu
03-001530	Support brace 20x20x1,5 2.40m	20	20	Alu



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

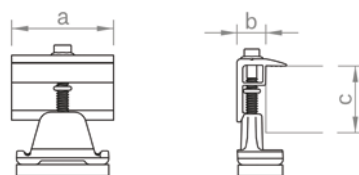
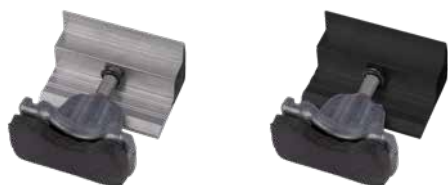
Art.-Nr.	Bezeichnung	a [mm]	b [mm]	c [mm]	Material
03-000383	Flat roof mounting screw cl 5.5	25	5.5	16	A2SS

## Module attachment System III



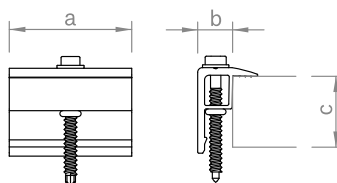
Middle clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30 – 42 mm or 43 – 52 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001345	Middle clamp 30-42 Set C	52	11.4	30–42	Alu / A2SS / PE
03-000285	Middle clamp 43-52 Set C	52	11.4	43–52	Alu / A2SS / PE
03-001346	Middle clamp 30-42 Set C black	52	11.4	30–42	Alu / A2SS / PE
03-000286	Middle clamp 43-52 Set C black	52	11.4	43–52	Alu / A2SS / PE



End clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30 – 42 mm or 43 – 52 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001236	End clamp 30-42 Set C	52	14	30–42	Alu / A2SS / PE
03-000287	End clamp 43-52 Set C	52	14	43–52	Alu / A2SS / PE
03-001237	End clamp 30-42 Set C black	52	14	30–42	Alu / A2SS / PE
03-000288	End clamp 43-52 Set C black	52	14	43–52	Alu / A2SS / PE



+ FR III Long side

End clamp for Flat roof system generation II, for fixing modules on the long side of the frame for example in the case of a third base trough. Clamping screw with 8 AF hexagon drive, for frame heights of 28 – 33 mm, 34 – 42 mm or 43 – 52 mm, completely pre-assembled.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000396	Flat roof end clamp 30–42	52	14	34–42	Alu / A2SS
03-000397	Flat roof end clamp 43–52	52	14	43–52	Alu / A2SS



## Accessories and optional components system III



Pic	Item no.	Designation	Material	Description
1	03-001681	Ballast trough 530mm	Alu / PE	Ballast trough for Flat roof system III to clip into the connector or edge sets and for the secure placement of large-format ballast.
2	03-001541	Ballast cantilever 650mm	Alu / PE	Ballast cantilever for Flat roof system III to redistribute ballast at the installation edges. Usable length 500mm and 1000mm.
2	03-001542	Ballast cantilever 1150mm	Alu / PE	
3	03-001569	Cable channel base element 1250mm	Alu	Cable channel for Flat roof system III to be connected to the base elements and to lay the cables in the lengthwise direction or to be connected to the module supports and to lay the cables in the crosswise direction.
3	03-001544	Cable channel module support 2.00m	Alu	
3	03-001686	Cable channel module support 2.40m	Alu	
4	03-001591	Cover cable channel 1250mm	Alu	Cover for cable channels of the Flat roof system III to protect the cables from UV radiation and the weather conditions.
5	03-001632	Surface extension 180x150mm	PP	Surface extension for Flat roof system III to increase the load surface.
6	03-000012	Grounding connector C-rail	A2SS	Grounding connector set sufficient for clamping cables of 6-16 mm <sup>2</sup> or wire with diameter 6-10mm.
7	03-000337	Mounting-set optimizer FR	Alu / A2SS	For mounting a module optimizer to the Flat roof supports (Flat roof II & III).
8	03-000929	Coupling profile C47 385 mm	Alu	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

# Flat roof System II

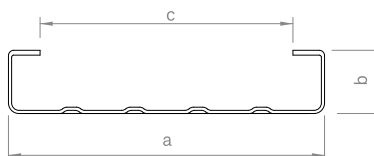
the allrounder

## + Our flexible solution for east-west or south orientation

- High flexibility thanks to individually selectable row distance
- Wide and continuous base trough for good load redistribution to prevent damage on the roof insulation
- Possible with a third base rail for extreme snow and wind loads
- Module supports and base feet with click-fit function – no screwing necessary

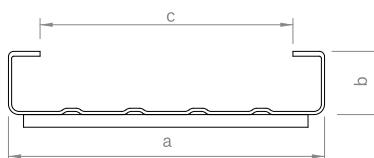


## Roof attachment system II



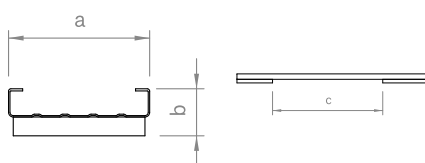
Base trough for Flat roof elevations for click-fit of the base feet and module supports (Flat roof system II) or for fixing the base profile (Flat roof system I) and inserting the ballast.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001407	Base trough 150-30 2.20 m	150	30	120	Alu
03-000087	Base trough 150-30 6.00 m	150	30	120	Alu



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 with a pre-assembled 6 mm separation layer.

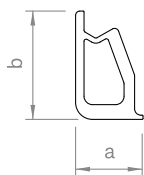
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001408	Base trough 150-30 w/protection layer 6 mm 2.20 m	150	30	120	Alu / PE
03-000989	Base trough 150-30 w/protection layer 6 mm 6.00 m	150	30	120	Alu / PE



Base trough with PE pads for Flat roof elevations for click-fitting the base feet and module supports (Flat roof systems II) or for fixing the base profiles (Flat roof system I) and for inserting the ballast. Covered with PE pads, 610 mm pitch, as a separating or drainage layer when laying across the roof pitch.

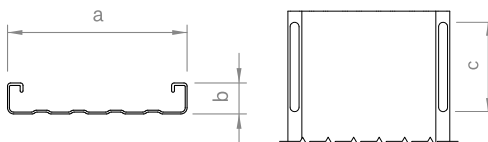
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001409	Base trough 150-30 w/cross drainage 2.20 m	150	50	610	Alu / PE
03-000879	Base trough 150-30 w/cross drainage 6.00 m	150	50	610	Alu / PE

## Rails connectors system II



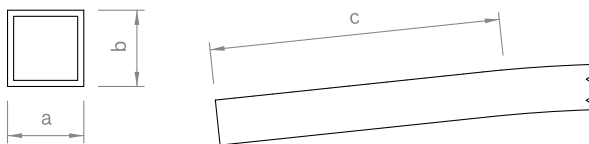
Connector base trough 150-30, l = 380 mm.

Item no.	Designation	a [mm]	b [mm]	Material
03-000370	Base trough connector set 150-30 I	16	26	Alu



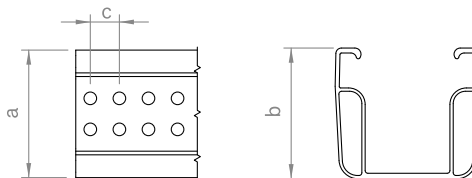
Base trough expansion joint 150-30, l = 380 mm, single-sided with slots.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000128	Base trough expansion joint 150-30	150	25	80	Alu



Connector base trough, l = 380 mm, for ridge and throat formation 2° – 5°.

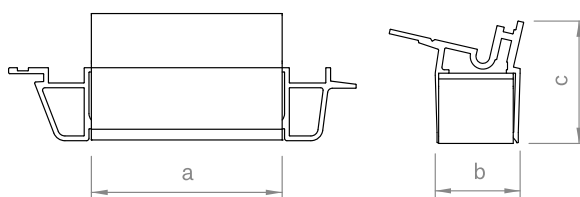
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000161	Angled base trough connector 150-30 G/K 3°	25	25	180	Alu



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 (Flat roof II).

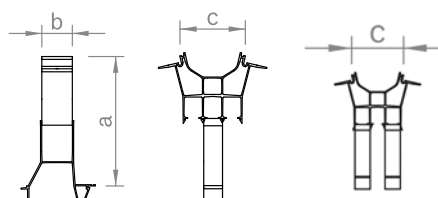
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000929	Coupling profile C47 385 mm	52	47	12	Alu

## Module support system II



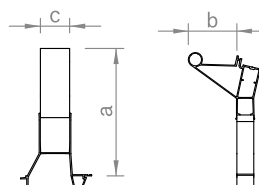
Front module support of the Flat roof system generation II, to clip into the base trough.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000343	Base foot set 13° 150–30	80	37	53	Alu



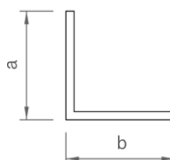
Rear module support for the Flat roof system closed II, to clip into the base trough and for the connection of the 13° wind deflector at the top.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001243	Module support set 13° 150-30 e/w single	260	104	60	Alu
03-001325	Module support set 13° 150-30 e/w double	255	60	125	Alu



Rear module support for the Flat roof system closed II, to clip into the base trough and for the connection of the 13° wind deflector at the top.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001243	Module support set 13° 150–30	260	104	60	Alu

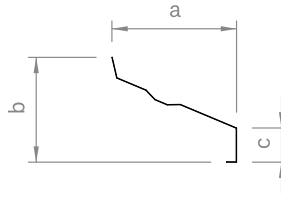


Support brace for load transfer, fixed on the Flat roof module support sets east-west II.

Item no.	Designation	a [mm]	b [mm]	Material
03-001474	Support brace 20 x 20 x 1,5 1.85m	20	20	Alu
03-001443	Support brace 20 x 20 x 1,5 4.45m	20	20	Alu
03-001490	Support brace 20 x 20 x 1,5 5.40m	20	20	Alu

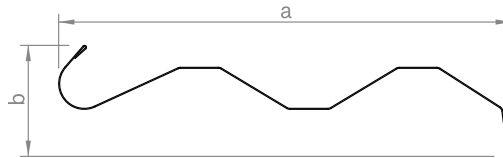


## Wind deflector system II



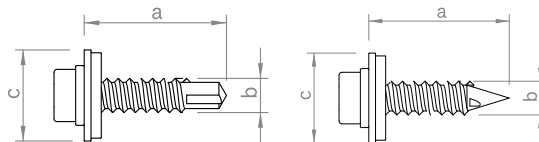
Wind deflector for Flat roof system east-west II for mounting areas with missing module due to obstacles..

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001465	Wind deflector 13° 2.35m Ost-West	241	175	65	Alu



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

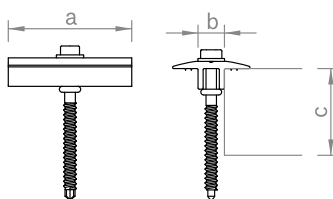
Item no.	Designation	a [mm]	b [mm]	Material
03-001281	Wind deflector 13° 1.95m	270	70	Alu
03-001439	Wind deflector 13° 2.35m	270	70	Alu



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

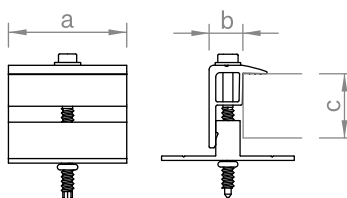
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000132	Flat roof mounting screw	25	6	16	A2SS
03-000383	Flat roof mounting screw cl 5.5	25	5.5	16	A2SS

## Module attachment system II



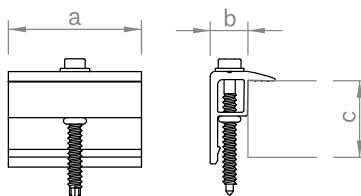
Middle clamp for Flat roof system generation II, for fixing modules to the short side of the frame. Clamping screw with 8 AF hexagon drive, completely pre-assembled.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000324	Flat roof mid clamp 30-42	52	11.4	28-42	Alu / A2SS
03-000323	Flat roof mid clamp 43-52	52	11.4	43-52	Alu / A2SS



End clamp with T-adaptor for flat roof system generation II, for fixing modules on the short side of the frame. Clamping screw with 8 AF hexagon drive completely pre-assembled.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000309	Flat roof end clamp (short side) 30-42	52	14	28-42	Alu / A2SS
03-000311	Flat roof end clamp (short side) 43-52	52	14	43-52	Alu / A2SS



End clamp for Flat roof system generation II, for fixing modules to the long side of the frame, e.g. when using a third base rail. Clamping screw drive, external hexagon SW 8, completely pre-assembled.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000396	Flat roof end clamp 30-42	52	14	28-42	Alu / A2SS
03-000397	Flat roof end clamp 43-52	52	14	43-52	Alu / A2SS

## Accessories and optional components system II



Pic	Item no.	Designation	Material	Description
1	03-000131	Ballast trough 120–30 530 mm	Alu	Ballast trough to clip into the base trough and securely place large-format ballast. Available as an unglued or pre-assembled ballast tray with separating layer or pads.
-	03-000977	Ballast trough 120–30 530 mm w/protection layer 6 mm	Alu / PE	
2	03-000910	Ballast trough 120–30 530 mm w/cross drainage	Alu / PE	
3	03-000099	Cable clip d=10 mm	PA	Cable clip, for cable bundle up to 10 mm diameter, with clip to connect to the module frame or similar.
4	03-000175	Base trough cable bracket	PP	Cable bracket for secure laying of cable in the base trough 150-30.
5	03-000828	PE-Pad 140 x 390 x 20 mm	PE	For gluing to base rails 150-30 cut on site for cross drainage.
6	03-000133	Top cover base trough 150-30 3.00m	Alu	Cover for the base trough if using as cable channel.



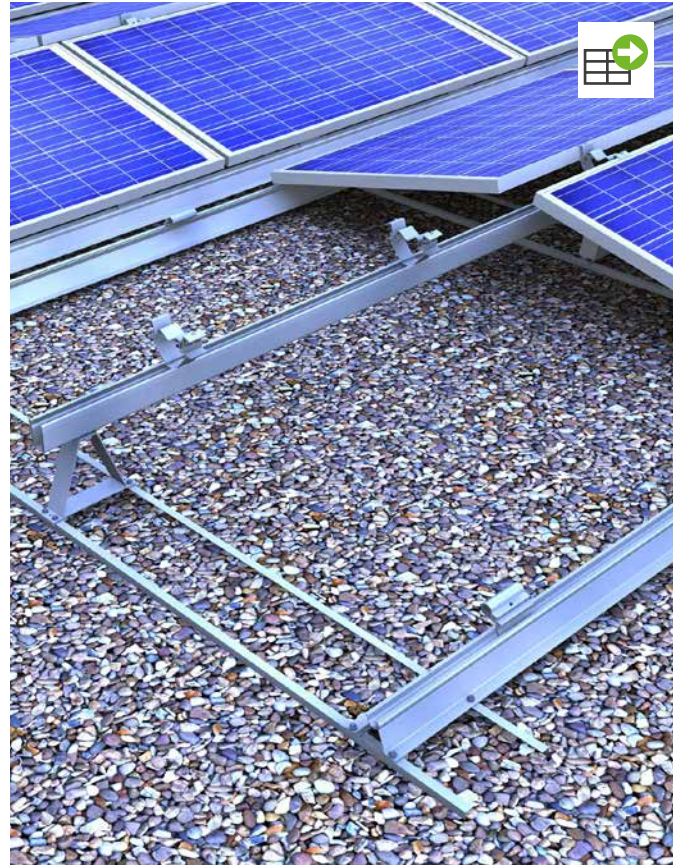
Pic	Item no.	Designation	Material	Description
1	03-000012	Grounding connector C-rail	A2SS	Grounding connector set sufficient for clamping cables of 6-16 mm <sup>2</sup> or wire with diameter 6-10mm.
2	03-000337	Mounting-set optimizer FR	Alu / A2SS	For mounting a module optimiser to the Flat roof supports (Flat roof II & III).
3	03-000407	Aluminium edge protector self-adhesive 250 x 50 mm	Alu	Aluminium edge protector, self-adhesive, to laminate base trough ends or sliced base trough connections.
4	03-001185	Contact latch module clamp	A2SS	Contact latch for equipotential bonding / lightning current carrying capacity between module frame and mounting system. Suitable for all middle clamps of pitched roof and Flat roof II & III.
5	03-000924	Perforated Alu-tape 10.000 x 20 x 1 mm	Alu	For strengthening Flat roof II mounting system components for lightning current carrying capacity or for additional fixation of the ballast.

# Flat roof System I

the rock

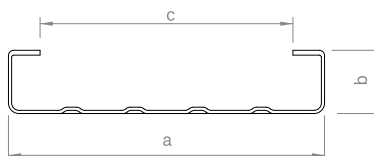
## + The cross rail system for maximum stability

- Stability and flexibility thanks to cross layer system (Suitable for extreme weather conditions)
- Base rail can be filled with gravel for ballasting
- Wide and continuous base trough for good load redistribution to prevent damage on the roof insulation
- High flexibility thanks to individually selectable row distance
- Cross connections at module field edges for high stability
- Clamping the modules at the optimum clamping position in the quarter point



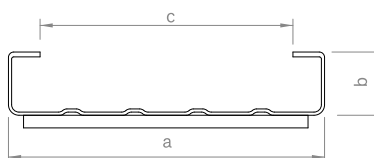


## Roof attachment System I



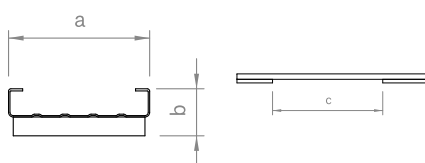
Base trough for Flat roof elevations for click-fit of the base feet and module supports (Flat roof system II) or for fixing the base profile (Flat roof system I) and inserting the ballast.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001407	Base trough 150-30 2.20 m	150	30	120	Alu
03-000087	Base trough 150-30 6.00 m	150	30	120	Alu



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 with a pre-assembled 6 mm separation layer.

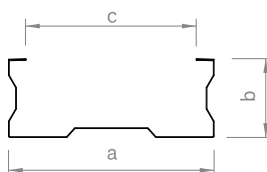
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001408	Base trough 150-30 w/protection layer 6 mm 2.20 m	150	30	120	Alu / PE
03-000989	Base trough 150-30 w/protection layer 6 mm 6.00 m	150	30	120	Alu / PE



Base trough with PE pads for Flat roof elevations for click-fitting the base feet and module supports (Flat roof systems II) or for fixing the base profiles (Flat roof system I) and for inserting the ballast. Covered with PE pads, 610 mm pitch, as a separating or drainage layer when laying across the roof pitch.

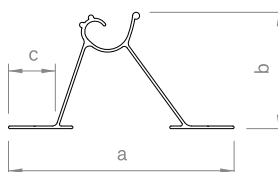
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001409	Base trough 150-30 w/cross drainage 2.20 m	150	50	610	Alu / PE
03-000879	Base trough 150-30 w/cross drainage 6.00 m	150	50	610	Alu / PE

## Roof attachment system I



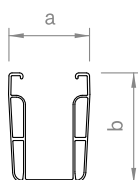
Base trough for Flat roof elevations to fix the base profiles and for ballasting with existing gravel (Flat roof I).

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000092	Base trough 230-90 6.00 m	230	90	190	Alu



Module support rail for module elevation on flat roofs (Flat roof I) as well as for trapezoidal sheet, corrugated and sandwich roofs.

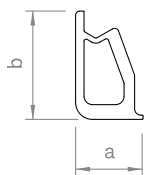
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000195	Base profile 3.37 m	130	67	27	Alu
03-000194	Base profile 5.06 m	130	67	27	Alu
03-000193	Base profile 6.12 m	130	67	27	Alu



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, available in blank or black anodised variations.

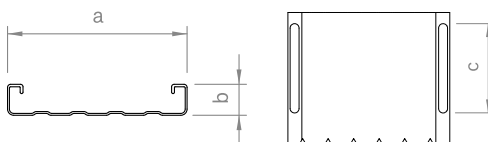
Item no.	Designation	a [mm]	b [mm]	Material
03-001668	C-rail 71-2 5.90 m	52	71	Alu

## Profile connectors system I



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

Item no.	Designation	a [mm]	b [mm]	Material
03-000370	Base trough connector set 150-30 I	16	26	Alu



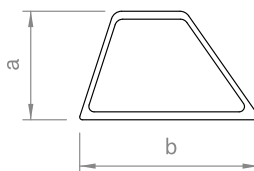
Base trough expansion joint 150-30, l = 380 mm, single-sided with slots.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000128	Base trough expansion joint 150-30	150	25	80	Alu



Connector base trough, l = 380 mm, for ridge and throat formation 2° – 5°.

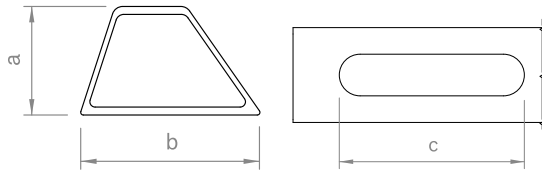
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000161	Angled base trough connector 150-30 G/K 3°	25	25	180	Alu



Connector base profile for Flat roof I, l = 380 mm.

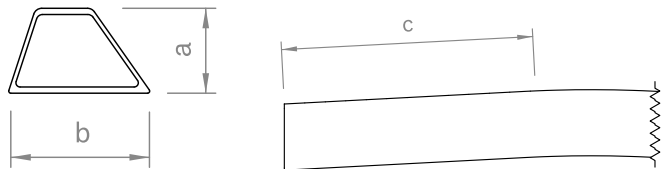
Item no.	Designation	a [mm]	b [mm]	Material
03-000021	Base profile connector	41	68	Alu

# Rails connectors system I



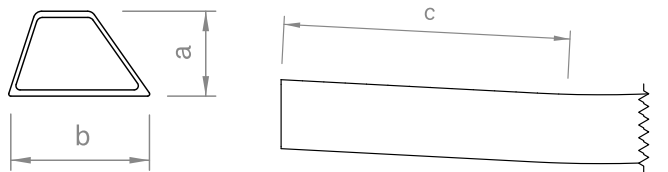
Expansion joint construction single-sided with slots, l = 380 mm

Item no.	Designation	a [mm]	b [mm]	Material
03-000129	Base profile expansion joint	41	68	Alu



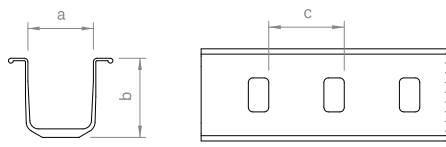
Connector base profile, l = 380 mm, for ridge formation 2° – 5°.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000162	Angled base profile connector 3° (rise)	41	68	150	Alu



Connector base profile for Flat roof I, l = 380 mm, for 2° - 5° throat formation.

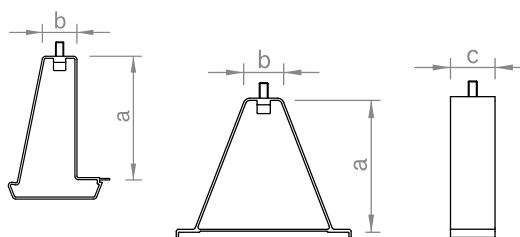
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000163	Angled base profile connector 3° (dip)	41	68	150	Alu



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.

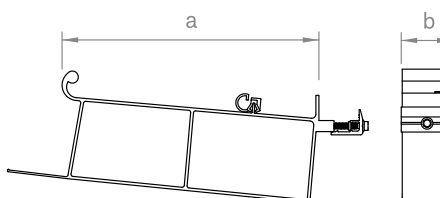
Item no.	Designation	a [mm]	b [mm]	c [mm]	Länge in mm	Material
03-000151	Rail connector set C71	52	67	50	490	Alu / A2SS
03-000265	Expansion joint C71	52	67	50	490	Alu / A2SS

## Module support system I



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

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000180	Module support set east-west 150	180	50	60	Alu / A2SS
03-000181	Module support set east-west 230	180	50	50	Alu / A2SS

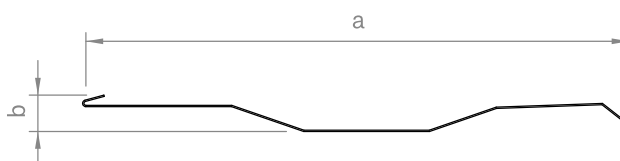
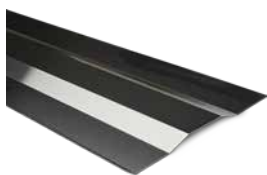


Module support for Flat roof system closed I, for fixed elevation of modules at an angle of 13° and to connect the wind deflector 13° on it, securing the modules on the long side of the frame, for frame heights 28 – 33 mm, 34 – 42 mm or 43 – 52 mm, completely pre-assembled.

Item no.	Designation	a [mm]	b [mm]	Material
03-000330	Module support set 13° 28 – 33 mm	255	50	Alu / A2SS
03-000030	Module support set 13° 34 – 42 mm	255	50	Alu / A2SS
03-000031	Module support set 13° 43 – 52 mm	255	50	Alu / A2SS



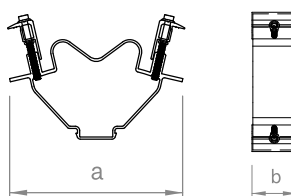
## Wind deflector system I



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

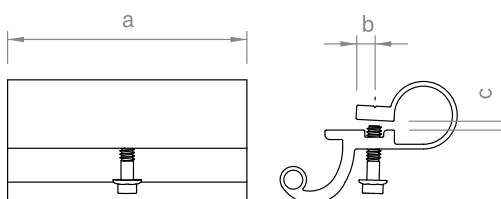
Item no.	Designation	a [mm]	b [mm]	Material
03-001464	Wind deflector 13° 2.35m	330	23	Alu

## Module bracket system I



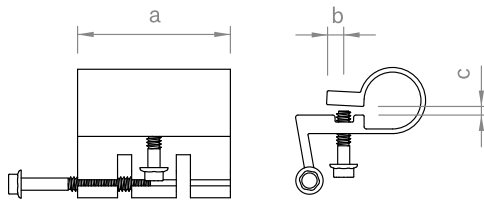
Module support for Flat roof system east-west I, to clip into the C-rail, fixing the modules on the long side of the frame, for frame heights 28 – 33 mm, 34 – 42 mm or 43 – 52 mm.

Item no.	Designation	a [mm]	b [mm]	Material
03-000322	Module bracket set back east-west 28–33 mm	159	52	Alu / A2SS
03-000098	Module bracket set back east-west 34–42 mm	159	52	Alu / A2SS
03-000095	Module bracket set back east-west 43–52 mm	159	52	Alu / A2SS



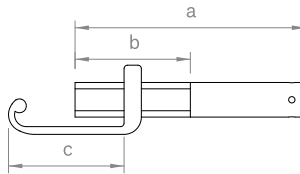
Front module support for Flat roof system generation I or elevation on pitched roof, to connect to the module frame holes, completely pre-assembled.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000078	Module bracket set front	100	8	4	Alu / A2SS



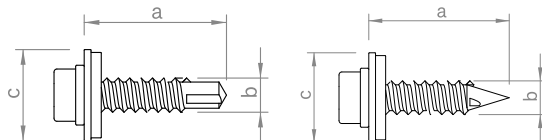
Rear module support for Flat roof system I open or elevation on pitched roof, to connect to the module frame holes, completely pre-assembled.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000061	Module bracket set back	65	8	4	Alu / A2SS



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

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000070	Module support set 200 mm	200	100	100	Alu
03-000071	Module support set 280 mm	280	100	100	Alu
03-000083	Module support set 360 mm	360	100	100	Alu
03-000022	Module support set 440 mm	440	100	100	Alu
03-000072	Module support set 520 mm	520	100	100	Alu



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

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000132	Flat roof mounting screw	25	6	16	A2SS
03-000383	Flat roof mounting screw cl 5.5	25	5.5	16	A2SS

## Accessories and optional components system I



Pic	Item no.	Designation	Material	Description
1	03-000133	Top cover base trough 150-30 3.00 m	Alu	Cover for the base trough if using as cable channel.
2	03-000131	Ballast trough 120-30 530 mm	Alu	Ballast trough to clip into the base trough and securely place large-format ballast. Available as an individual or pre-assembled ballast trough with separating layer or pads.
-	03-000977	Ballast trough 120-30 530 mm w/protection layer 6 mm	Alu / PE	
3	03-000910	Ballast trough w/cross drainage 120-30 530 mm	Alu / PE	
4	03-000337	Mounting-set optimizer FR	Alu / A2SS	For mounting a module optimiser to the Flat roof supports (Flat roof II & III).
4	03-000012	Grounding connector C-rail	A2SS	Grounding connector set sufficient for clamping cables of 6-16 mm <sup>2</sup> or wire with diameter 6-10mm.
8	03-000407	Aluminium edge protector self-adhesive 250 x 50 mm	Alu	Aluminium edge protector, self-adhesive, to laminate base trough ends or sliced base trough connections.
1	03-000175	Base trough cable bracket	PP	Cable bracket for secure laying of cable in the base trough 150-30.
2	03-000099	Cable clip d=10 mm	PA	Cable clip, for cable bundle up to 10 mm diameter, with clip to connect to the module frame or similar.



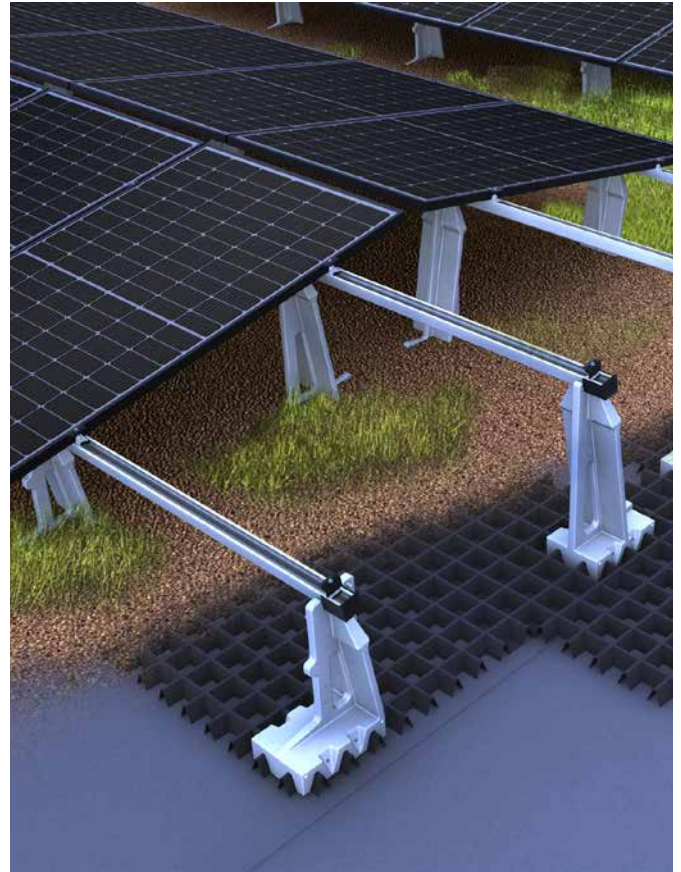
Pic	Item no.	Designation	Material	Description
1	03-000504	Cable-tie black 140 mm	PP	Black polyamide plastic, UV-resistant for tool-free fastening on rails, for 1-3 mm or 3-6 mm metal flange.
1	03-000505	Cable-tie black 200 mm	PP	
1	03-000506	Cable-tie black 280 mm	PP	
1	03-000507	Cable-tie black 360 mm	PP	
2	03-000508	Cable-tie clip for profile flange 1 - 3 mm	PP	
2	03-000509	Cable-tie clip for profile flange 3 - 6 mm	PP	
3	03-000778	Flat roof mounting screw cl 5.5	A2SS	For connecting Flat roof components with lightning current carrying capacity.
4	03-000828	PE-Pad 140 x 390 x 20 mm	PE	For gluing to base rails 150-30 cut on site for cross drainage.
5	03-000105	Protective roof mat 10.000 x 250 x 6 mm		For laying under the base troughs 230-90 as a protective layer for Flat roof elevations.
6	03-000113	Synthetic fibre strips 50.000 x 320 mm	Vlies	As a separating layer between building protection mats and roof waterproofing for Flat roof elevations.

# Flat roof Green roof system

## Portrait

### Clamping system with modules installed in portrait

- Suitable for a wide range of green roofs
- Retention effect: Time-delayed water run-off relieves the sewage system – especially during heavy rainfall
- Natural cooling of the ambient temperature and the PV system
- Sustainable production made in Europe from recycled plastic
- Efficient use of space thanks to 10° module inclination and portrait installation
- Sufficient distance from the roof surface for plant growth and sliding snow



## Other variants



**Green roof system**  
south\*

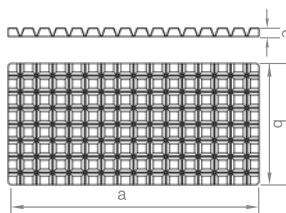
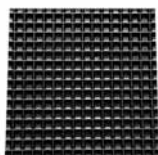


**Green roof system**  
Butterfly\*

\*not plannable with Solar-Planit

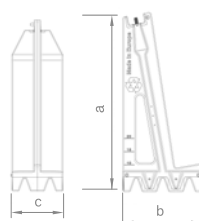


## Roof attachment Green roof



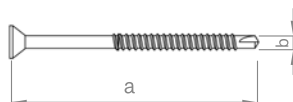
For the application of substrate for ballasting. Honeycomb structure in 10 cm grid for flexible positioning of supports. Made in Germany from recycled, UV-resistant plastic.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001507	Substrate plate green roof	1550	1550	52	Plastic
03-001508	Substrate plate 1/2 green roof	1550	750	52	Plastic



Module support at the front or back for the green roof system. Made in Germany from recycled, UV-resistant plastic. High stability due to positive fit with the substrate plate. With practical carrying handle and substrate height indicator.

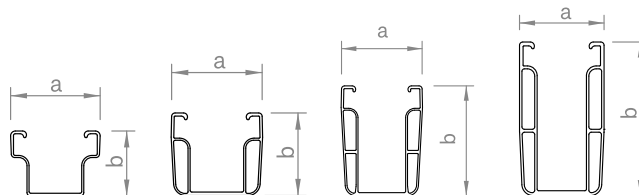
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001578	Module support high M12	625	300	200	Plastic / A2SS
03-001579	Module support low M12	462	300	200	Plastic / A2SS



Countersunk screw with Torx 25 drive for connecting substrate plate and module support.

Item no.	Designation	a [mm]	b [mm]	Material
03-001493	Module support mounting screw 6x80 green roof	80	6	St. galv.

## Profile rails Green roof



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, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	Material
03-001362	C-rail 38-1,6 2.20 m	52	38	Alu
03-001661	C-rail 38-1,6 5.90 m	52	38	Alu
03-001366	C-rail 47-2 2.20 m	52	47	Alu
03-001441	C-rail 47-2 2.40 m	52	47	Alu
03-001774	C-rail 47-2 3.60 m	52	47	Alu
03-001664	C-rail 47-2 4.80 m	52	47	Alu
03-001666	C-rail 47-2 5.90 m	52	47	Alu
03-001668	C-rail 71-2 5.90 m	52	71	Alu
03-001669	C-rail 95-3 5.90 m	52	95	Alu
03-001660	C-rail 38-1,6 2.40 m black	52	38	Anodized aluminum
03-001662	C-rail 38-1,6 5.90 m black	52	38	Anodized aluminum
03-001367	C-rail 47-2 2.20 m black	52	47	Anodized aluminum
03-001667	C-rail 47-2 5.90 m black	52	47	Anodized aluminum



Serrated self-locking flange nut M12, AF 18 for connection of the C-rail to the module supports green roof.

Item no.	Designation	Material
03-001280	Serrated self-locking flange nut M12	A2SS

## Profile connectors and expansion joints Green roof



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

Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-001105	Rail connector set C38	35	28.5	50	325	Alu / A2SS
03-001106	Expansion joint C38	35	28.5	50	325	Alu / A2SS



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

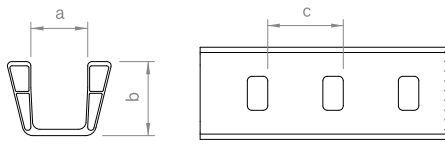
Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-000001	Rail connector set C47	52	40	50	325	Alu / A2SS
03-000138	Expansion joint C47	52	40	50	325	Alu / A2SS



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

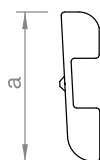
Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-000151	Rail connector set C71	52	67	50	490	Alu / A2SS
03-000265	Expansion joint C71	52	67	50	490	Alu / A2SS

## Profile connectors and expansion joints Green roof



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

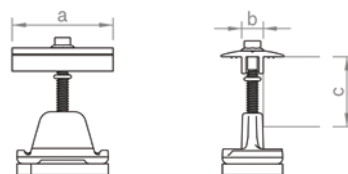
Item no.	Designation	a [mm]	b [mm]	c [mm]	Length in mm	Material
03-000130	Rail connector set C95	52	70	50	500	Alu / A2SS
03-000173	Expansion joint C95	52	70	50	500	Alu / A2SS



Connector C-rail 47 screw connection with four self-drilling screws with 8 AF hexagon drive.

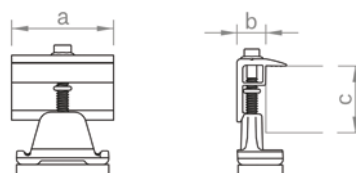
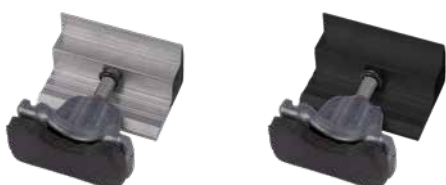
Item no.	Designation	a [mm]	Length in mm	Material
03-000925	Rail connector set C47 S	30	200	Alu / A2SS

## Modul bracket Green roof



Middle clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30–42 mm or 43–52 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001345	Middle clamp 30-42 Set C	52	11.4	30–42	Alu / A2SS / PE
03-000285	Middle clamp 43-52 Set C	52	11.4	43–52	Alu / A2SS / PE
03-001346	Middle clamp 30-42 Set C black	52	11.4	30–42	Alu / A2SS / PE
03-000286	Middle clamp 43-52 Set C black	52	11.4	43–52	Alu / A2SS / PE



End clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30–42 mm or 43–52 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001236	End clamp 30-42 Set C	52	14	30–42	Alu / A2SS / PE
03-000287	End clamp 43-52 Set C	52	14	43–52	Alu / A2SS / PE
03-001237	End clamp 30-42 Set C black	52	14	30–42	Alu / A2SS / PE
03-000288	End clamp 43-52 Set C black	52	14	43–52	Alu / A2SS / PE



## Accessories and optional components Green roof



Pic	Item no.	Designation	Material	Description
1	03-000329	Mounting Set C-Rail M8	Alu / A2SS	Connector set for fixing parts as optimizers to the C-rail, C-N-rail or short rail.
2	03-000373	Plate 50x50x3 D8,5 Alu	Alu	
3	03-000099	Cable clip d=10 mm	PA	Cable clip, for cable bundle up to 10 mm diameter, with clip to connect to the module frame or similar.



1



2



3

Pic	Item no.	Designation	Material	Description
1	03-000504	Cable-tie black 140 mm	PP	Black polyamide plastic, UV-resistant for tool-free fastening on rails, for 1-3 mm or 3-6 mm metal flange.
1	03-000505	Cable-tie black 200 mm	PP	
1	03-000506	Cable-tie black 280 mm	PP	
1	03-000507	Cable-tie black 360 mm	PP	
2	03-000508	Cable-tie clip for profile flange 1 - 3 mm	PP	
2	03-000509	Cable-tie clip for profile flange 3 - 6 mm	PP	
3	03-000099	Cable clip d=10 mm	PA	Cable clip, for cable bundle up to 10 mm diameter, with clip to connect to the module frame or similar.



Installed here:

Flat roof system II

Installed here:

Insertion system Trapezoidal brackets

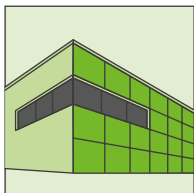
# Facade systems

## Efficient, simple, versatile.

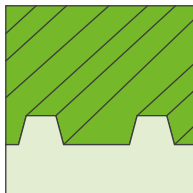
Quality made in Germany with our systems for all roof types.  
You provide the challenge - we provide the solution.

Vertical PV systems on facades offer an interesting addition or alternative to roof systems. Especially in industrial or commercial buildings with sheet metal covering, the large wall surfaces are ideal for the installation of solar modules. novotegra offers three solutions for PV wall mounting on sheet metal and concrete/brickwork facades.

### Suitable facades:



Brickwork/concrete



Sheet metal

Module attachment

### Module clamps & insertion rails



Roof attachment

### Sockets, short profiles & trapezoidal brackets





# Facade Insertion system

## Metal: Short profiles

### + Insertion system with short profiles and direct fixing

- Module portrait and landscape mounting possible
- Short profiles available in different heights
- Good module ventilation
- High-quality system appearance and quick installation thanks to insertion system
- High holding forces thanks to chipless direct fixing with building authority-approved thin sheet metal screws
- tension-free and floating module mounting

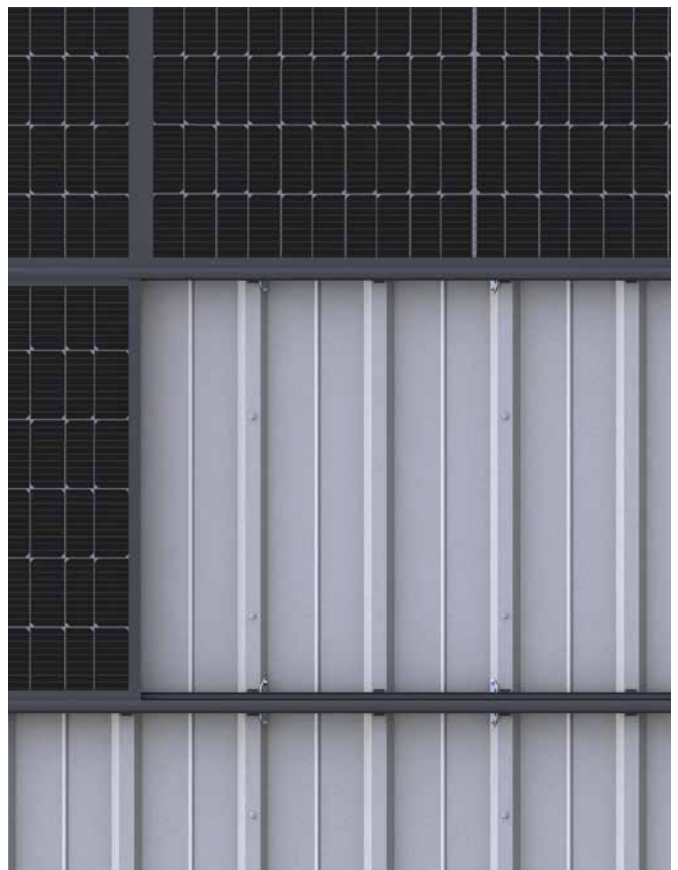


# Facade Insertion system

## Metal: Trapezoidal brackets

### + Insertion system with trapezoidal brackets and direct fixing

- Module portrait and landscape mounting possible
- Compatible with proven trapezoidal clamp
- high-end installation aesthetics and timeefficient mounting thanks to insertion technology
- High holding forces thanks to chipless direct fixing with building authorityapproved thin sheet metal screws
- tension-free and floating module mounting



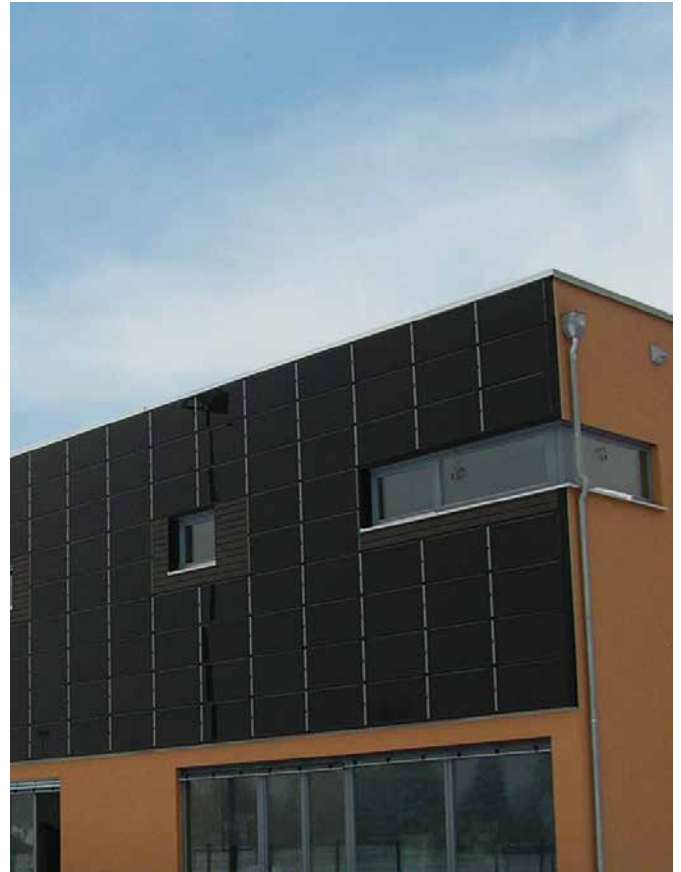


# Facade Insertion system

## Brickwork/concrete: Socket

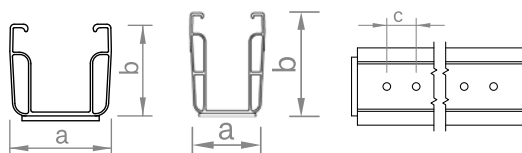
### + Insertion system with socket

- Module portrait and landscape mounting possible
- High-end installation aesthetics and time-efficient mounting thanks to insertion technology
- tension-free and floating module mounting
- flexible system size: From a single module to the entire facade surface
- a construction with excellent rear ventilation which hangs in front of the building but does not touch it



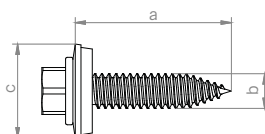
# Facades single items

## Connector



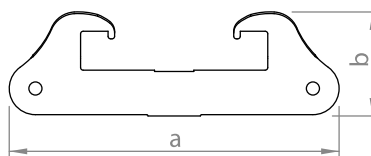
Short rail with 5.2 mm perforation and pre-assembled sealant strip for mounting modules in landscape on trapezoidal sheet. Chipless mounting is accomplished using the trapezoidal sheet mounting screw.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001108	Short rail C47 with EPDM 200 mm	52	47	20	Alu / EPDM
03-001702	Short rail C71 with EPDM 200mm	52	71	20	Alu / EPDM



Thin sheet screw for chipless attachment of 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.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000880	Trapez. mounting screw cl 6.0 x 25 E16	25	6	16	A2SS



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

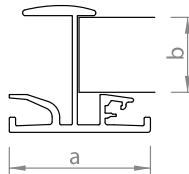
Item no.	Designation	a [mm]	b [mm]	Material
03-000459	Trapezoidal sheet bracket IR set 40 x 126 mm	126	40	A2SS



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

Item no.	Designation	a [mm]	b [mm]	c [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

## Module attachment

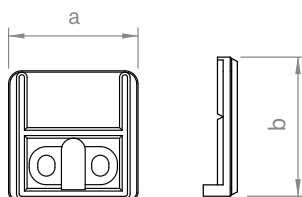


Insertion rail for inserting framed modules with a frame height of 30 - 50 mm, available in blank or black anodised variations. The actual frame height of the module corresponds to the specified dimension  $b$  minus 1.3 mm.

**Insertion rails for other frame heights on request.**

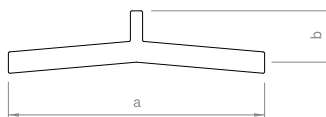
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001697	Insertion rail 30 2.40 m	56	31.3	50	Alu
03-001416	Insertion rail 30 5.40 m	56	31.3	50	Alu
03-001695	Insertion rail 35 2.40 m	56	33.3	52	Alu
03-001379	Insertion rail 35 5.40m	56	36.3	55	Alu
03-001698	Insertion rail 30 2.40m black	56	31.3	50	Alu
03-001417	Insertion rail 30 5.40m black	56	31.3	50	Alu
03-001696	Insertion rail 35 2.40m black	56	36.3	55	Alu
03-001380	Insertion rail 35 5.40m black	56	36.3	55	Alu

## Module attachment



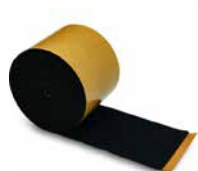
Edge stop for insertion rails, fixing with tapping screw Torx drive 30.

Item no.	Designation	a [mm]	b [mm]	Material
03-000691	Edge stop set IR	49	49	Alu / A2SS
03-000693	Edge stop set IR black	49	49	Alu / A2SS



EPDM T-protection for fixing modules in insertion rails with minimal module slope ( $< 10^\circ$ ), for framed or frameless modules. Can be used as anti-theft protection.

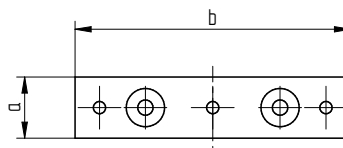
Item no.	Designation	a [mm]	b [mm]	Material
03-000631	EPDM-T protection IR	84	17	EPDM



EPDM tape as a protection layer below insertion rails on trapezoidal.

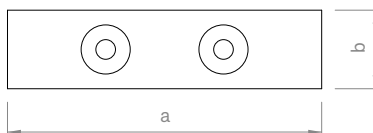
Item no.	Designation	Material
03-000633	EPDM sealant strip 70 x 28 x 2 mm IR	EPDM

## Module protection



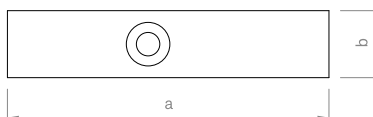
Slip guard set incl. screws to secure the insertion rail when installing with short profiles

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001785	Slip guard set facade black				
03-001786	Slip guard set facade				



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 Torx drive 25.

Item no.	Designation	a [mm]	b [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

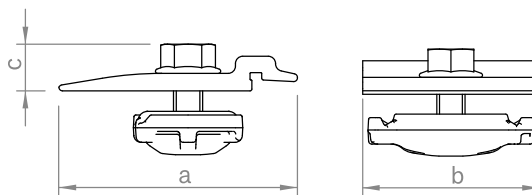


Adapter plate for lateral fixing of perforated sheets and as an edge stop for the modules. Prefabricated with a 7 mm drill hole for a countersunk head sheet screw with Torx drive 30 as well as two countersunk self-drilling screws with Torx drive 25.

Item no.	Designation	a [mm]	b [mm]	Material
03-000385	Adapter plate set 96 × 20 × 3 mm	96	20	Alu / A2SS

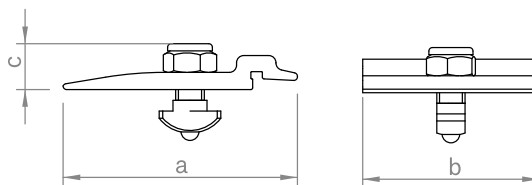


## Rail connector



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

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000321	Cross rail connector set C ES M8	66	50	13	Alu / A2SS



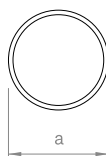
Connector for fixing insertion rails on N-rails, slot bolt M8 and locking nut with 13 AF hexagon drive, completely pre-assembled.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000409	Cross rail connector set N ES M8	66	50	13	Alu / A2SS



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

Item no.	Designation	a [mm]	b [mm]	Material
03-000648	Rail connector set ES	65	18	Alu / A2SS
03-000499	Rail connector set ES black	65	18	Alu / A2SS



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

Art.-Nr.	Bezeichnung	a [mm]	Material
03-000647	Rail connector IR 5 x 100 A2SS	5	A2SS

## Accessories and optional components



Pic	Item no.	Designation	Material	Description
1	03-000548	Perforated sheet 1500 × 120 mm 125°	St. galv.	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.
1	03-000549	Perforated sheet 1500 × 120 mm 125° black	St. galv.	
2	03-000497	Connector set Perforated sheet	Alu / A2SS	
3	03-000504	Cable-tie black 140 mm	PP	Black polyamide plastic, UV-resistant for tool-free fastening on rails, for 1-3 mm or 3-6 mm metal flange.
3	03-000505	Cable-tie black 200 mm	PP	
3	03-000506	Cable-tie black 280 mm	PP	
3	03-000507	Cable-tie black 360 mm	PP	
4	03-000508	Cable-tie clip for profile flange 1 - 3 mm	PP	
4	03-000509	Cable-tie clip for profile flange 3 - 6 mm	PP	
5	03-000099	Cable clip d=10 mm	PA	Cable clip, for cable bundle up to 10 mm diameter, with clip to connect to the module frame or similar.



Installed here:

**In-roof system**

# Further solutions

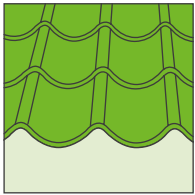
## Efficient, simple, versatile.

Quality made in Germany with our systems for all roof types.  
You provide the challenge - we provide the solution.

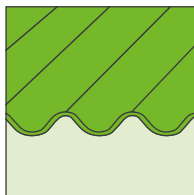
### Metal tile roof system

Two clamping systems with direct fixing are our solution for simple and cost-effective installation of PV modules on metal tile roofs. Both systems - portrait and landscape mounted - are characterised by their low material usage and the associated reduced effort and lower costs.

#### Suitable roof types:



Metal tile

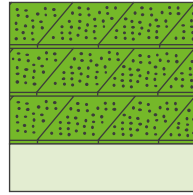


Corrugated

### Bitumen roof system

With our clamping system for bitumen roofs, we offer the option of direct fixing parallel to the roof on bitumen shingles and bitumen sheets on timber boarding. The modules can be mounted vertically or horizontally.

#### Suitable roof types:



Bitumen

### In-roof system

Stable blind modules, which are easily cut to size using a circular saw or jigsaw, ensure a closed roof surface and an aesthetic finish. Snow guard blind modules can also be used to integrate a snow guard system. The visually matching roof windows developed for the Arres in-roof system are available in various sizes and as double windows. The high-quality energy-saving windows, which are equipped with a supporting gas strut, consist of a wood and glass construction. Blind modules and windows can be fitted seamlessly into the module grid. For our in-roof mounting system, we offer modules in three different performance classes to suit every requirement. The choice is yours.

Further information on our website:

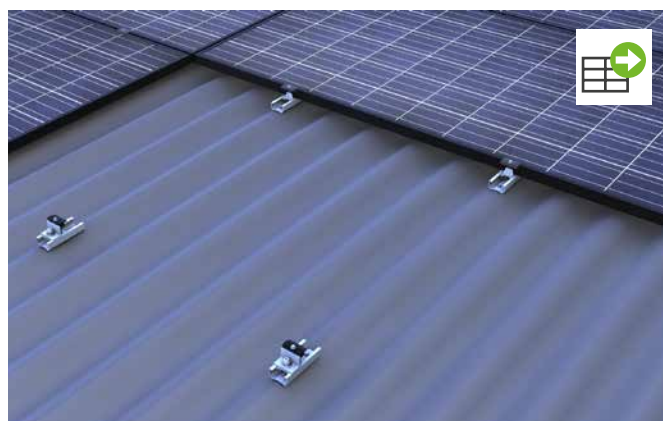
[www.novotegra.com](http://www.novotegra.com)

# Metal tile roof Clamping system

## Portrait & landscape

### + Clamping system with direct fixing

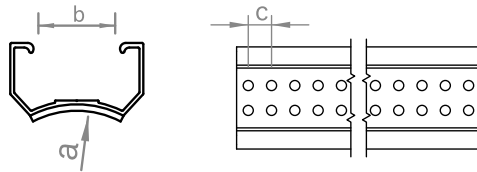
- Only a handful of components, entirely pre-assembled
- Low material costs and easy handling
- High holding forces thanks to chipless direct fixing with building authority-approved thin sheet screws
- Only one mounting tool necessary
- Most cost effective mounting option on metal tile roof
- Quick and efficient mounting from above





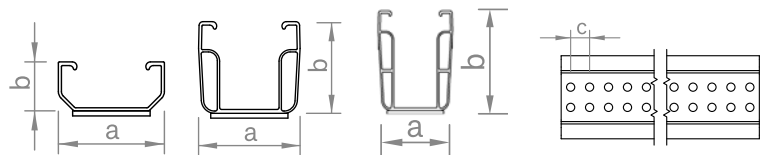
# Metal tile roof single items

## Roof attachment



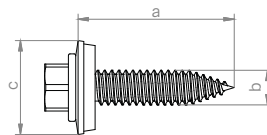
Short rail with 5.2 mm perforation and pre-assembled sealant strip for mounting modules in landscape on corrugated sheet, radius 39.4 mm. Chipless mounting is accomplished using the trapezoidal sheet mounting screw.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001223	Short rail C33 R39.4 with EPDM 125 mm	39.4	33	20	Alu / EPDM



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

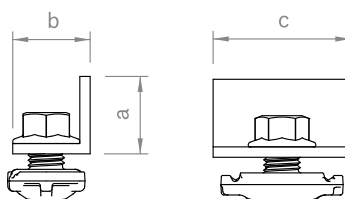
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001081	Short rail C24 with EPDM 385 mm	52	24	12	Alu / EPDM
03-000873	Short rail C47 with EPDM 385 mm	52	47	12	Alu / EPDM
03-001740	Short rail C71 with EPDM 385 mm	52	71	12	Alu / EPDM



Thin sheet screw for chipless attachment of 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.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000880	Trapez. mounting screw cl 6.0 x 25 E16	25	6	16	A2SS
03-000893	Trapez. mounting screw cl 5.5 x 25 E11	25	5.5	11	A2SS

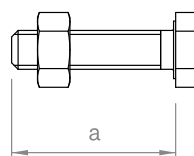
## Module protection



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

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000233	Slip guard set for short rail profile M14	30	30	53	Alu / A2SS

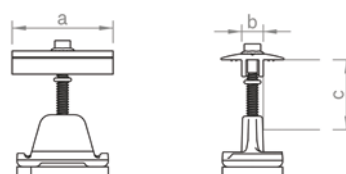
Ø  
M6/M8



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

Item no.	Designation	a [mm]	Material
03-000006	Module slip guard set M6	25	A2SS
03-000007	Module slip guard set M8	25	A2SS

## Module bracket



Middle clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30–42 mm or 43–52 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001345	Middle clamp 30-42 Set C	52	11.4	30–42	Alu / A2SS / PE
03-000285	Middle clamp 43-52 Set C	52	11.4	43–52	Alu / A2SS / PE
03-001346	Middle clamp 30-42 Set C black	52	11.4	30–42	Alu / A2SS / PE
03-000286	Middle clamp 43-52 Set C black	52	11.4	43–52	Alu / A2SS / PE



End clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30 – 42 mm or 43 – 52 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001236	End clamp 30-42 Set C	52	14	30–42	Alu / A2SS / PE
03-000287	End clamp 43-52 Set C	52	14	43–52	Alu / A2SS / PE
03-001237	End clamp 30-42 Set C black	52	14	30–42	Alu / A2SS / PE
03-000288	End clamp 43-52 Set C black	52	14	43–52	Alu / A2SS / PE

## Accessories and optional components



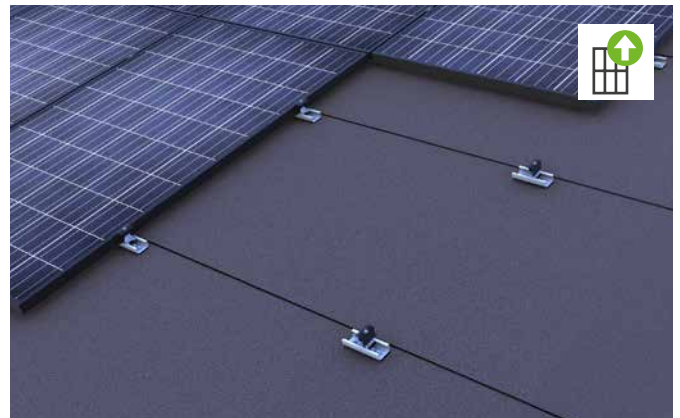
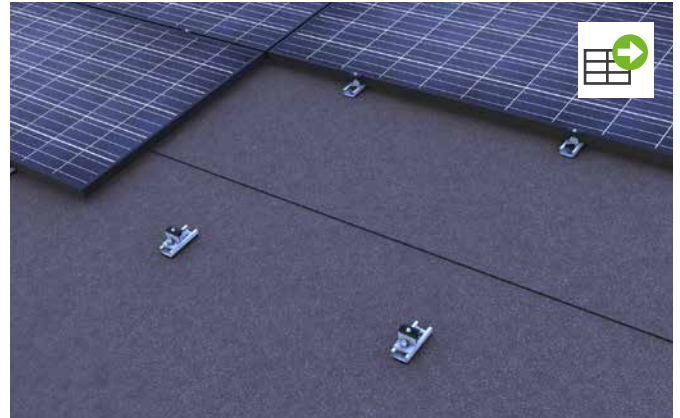
Pic	Item no.	Designation	Material	Description
1	03-000329	Mounting Set C M8	Alu/A2SS	Connector set for fixing parts as optimizers to the C-rail, C-N-rail or short rail.
2	03-000373	Plate 50 x 50 x 3 D8,5 Al	Alu	
3	03-001185	Contact latch module clamp	A2SS	Contact latch for equipotential bonding / lightning current carrying capacity between module frame and mounting system. Suitable for all middle clamps of pitched roof and Flat roof II & III.
4	03-000012	Grounding connector C-rail	A2SS	Grounding connector set sufficient for clamping cables of 6-16 mm <sup>2</sup> or wire with diameter 6-10mm.
5	03-001529	Grounding connector C-rail (new)	A2SS	
6	03-000508	Cable-tie clip for profile flange 1 - 3 mm	PP	Black polyamide plastic, UV-resistant for tool-free fastening on rails, for 1-3 mm or 3-6 mm metal flange.
6	03-000509	Cable-tie clip for profile flange 3 - 6 mm	PP	
7	03-000099	Cable clip d=10 mm	PA	Cable clip, for cable bundle up to 10 mm diameter, with clip to connect to the module frame or similar.

# Bitumen roof Clamping system

## Portrait & landscape

### + Clamping system with direct fixing

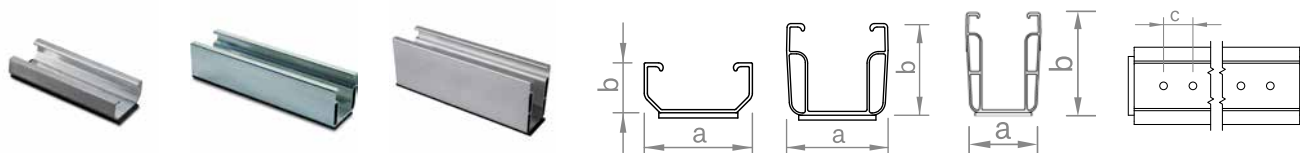
- Only a handful of components, entirely preassembled
- Low material costs and easy handling
- Direct fixing with building authority-approved mounting screws
- Only one mounting tool necessary
- Quick and efficient mounting from above
- Module clamping in the optimum clamping range
- Mounting modules in portrait or in landscape



# Bitumen roof

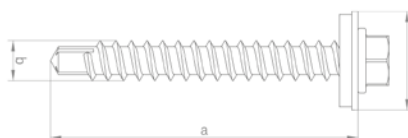
## Single item

### Roof attachment



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

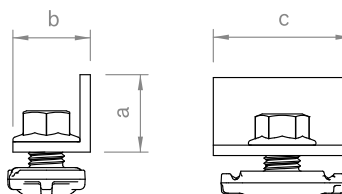
Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000841	Short rail C24 with EPDM 125mm	52	24	20	Alu / EPDM
03-001108	Short rail C47 with EPDM 200mm	52	47	20	Alu / EPDM
03-001702	Short rail C71 with EPDM 200mm	52	71	20	Alu / EPDM



Roof boarding wood mounting screw for attachment of short rails on bitumen roofs with wood boarding. With 16 mm sealing washer, 8 A/F hexagon drive.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001475	Roof boarding wood mounting screw 6.5 x 50 E16	50	6	16	A2SS

### Module protection



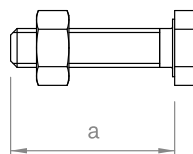
Slip guard with 18 AF locking nut for securing the modules mounted in landscape on short rails.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-000233	Slip guard set for short rail profile M14	30	30	53	Alu / A2SS



## Module protection

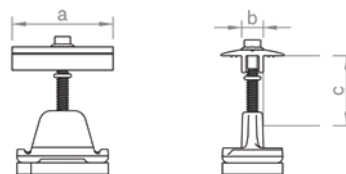
Ø  
M6/M8



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

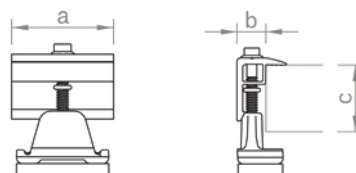
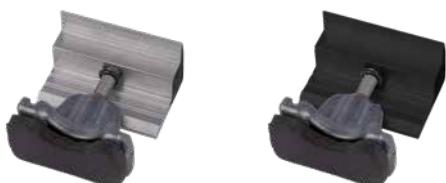
Item no.	Designation	a [mm]	Material
03-00006	Module slip guard set M6	25	A2SS
03-00007	Module slip guard set M8	25	A2SS

## Module bracket



Middle clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30–42 mm or 43–52 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001345	Middle clamp 30-42 Set C	52	11.4	30–42	Alu / A2SS / PE
03-000285	Middle clamp 43-52 Set C	52	11.4	43–52	Alu / A2SS / PE
03-001346	Middle clamp 30-42 Set C black	52	11.4	30–42	Alu / A2SS / PE
03-000286	Middle clamp 43-52 Set C black	52	11.4	43–52	Alu / A2SS / PE



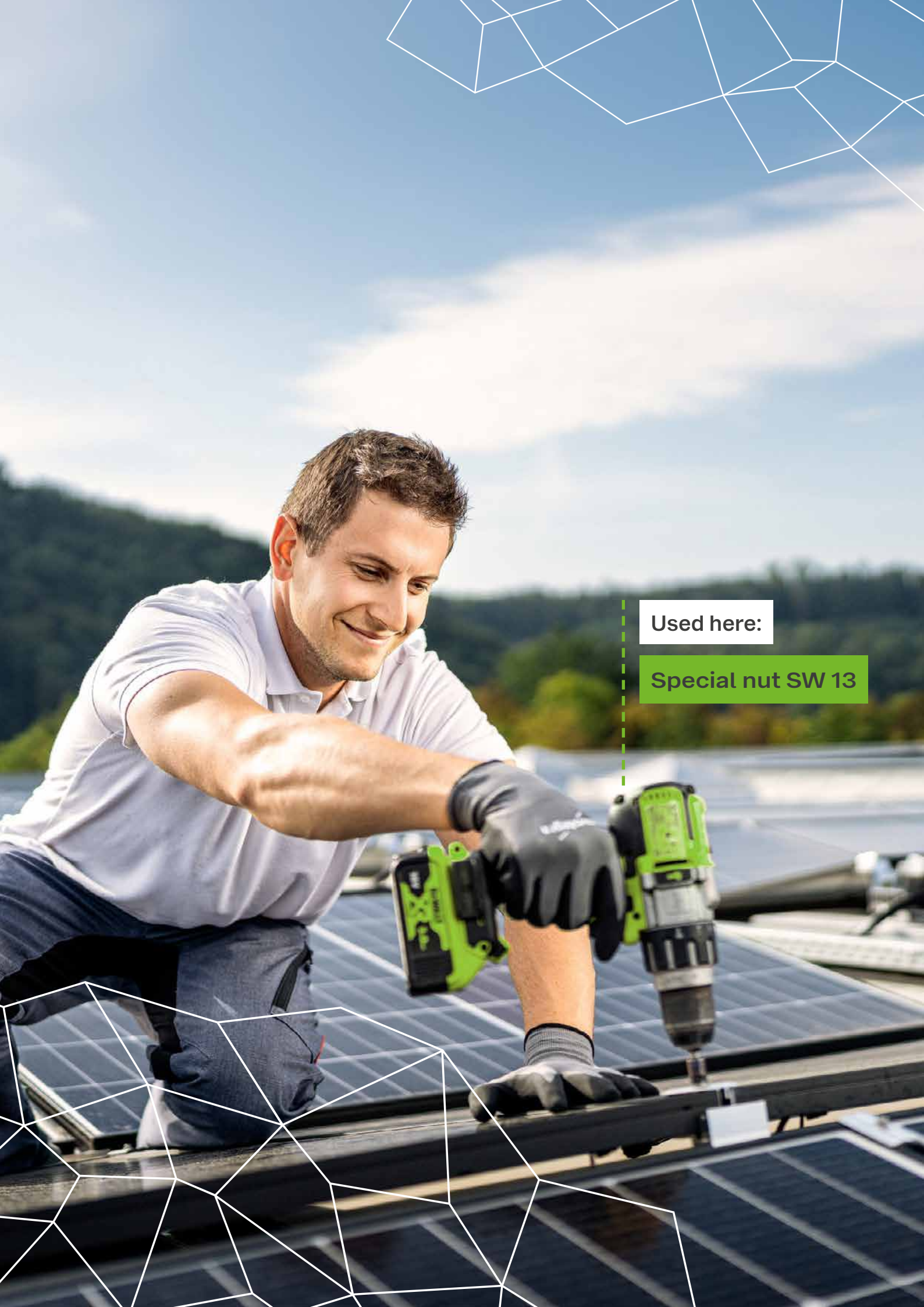
End clamp for fixing the modules on the C-rail or C-N-rail. Installation-friendly thanks to click-in mechanism. Clamping screw with 8 AF hexagon drive. For frame heights of 30–42 mm or 43–52 mm, available in blank or black anodised variations.

Item no.	Designation	a [mm]	b [mm]	c [mm]	Material
03-001236	End clamp 30-42 Set C	52	14	30–42	Alu / A2SS / PE
03-000287	End clamp 43-52 Set C	52	14	43–52	Alu / A2SS / PE
03-001237	End clamp 30-42 Set C black	52	14	30–42	Alu / A2SS / PE
03-000288	End clamp 43-52 Set C black	52	14	43–52	Alu / A2SS / PE

## Accessories and optional components



Pic	Item no.	Designation	Material	Description
1	03-000329	Mounting Set C M8	Alu/A2SS	Connector set for fixing parts as optimizers to the C-rail, C-N-rail or short rail.
2	03-000373	Plate 50 x 50 x 3 D8.5 Al	Alu	
3	03-001185	Contact latch module clamp	A2SS	Contact latch for equipotential bonding / lightning current carrying capacity between module frame and mounting system. Suitable for all middle clamps of pitched roof and Flat roof II & III.
4	03-000012	Grounding connector C-rail	A2SS	Grounding connector set sufficient for clamping cables of 6-16 mm <sup>2</sup> or wire with diameter 6-10mm.
5	03-001529	Grounding connector C-rail (new)	A2SS	
6	03-000508	Cable-tie clip for profile flange 1 - 3 mm	PP	Black polyamide plastic, UV-resistant for tool-free fastening on rails, for 1-3 mm or 3-6 mm metal flange.
6	03-000509	Cable-tie clip for profile flange 3 - 6 mm	PP	
7	03-000099	Cable clip d=10 mm	PA	Cable clip, for cable bundle up to 10 mm diameter, with clip to connect to the module frame or similar.



Used here:

Special nut SW 13

# Tools



Bild	Art.-Nr.	Bezeichnung	Dachart
1	03-000036	Torque wrench 1/4", 5-25 Nm	TR, FR, trapez, c/s, sr, MS,
1	03-000037	Torque wrench 1/2", 20–100 Nm	TR, FR, trapez, c/s, sr, MS, Facade
2	03-001470	Hexagon key 3 mm	TR, trapez, c/s, sr
3	03-000315	Torx drive TX-25 length = 70 mm	TR, Green roof, Bitumen, c/s, Facade
3	03-000104	Torx drive TX-40 length = 70 mm	TR, trapez, Bitumen, c/s, BF, MS, Facade
3	03-000316	Torx drive TX-30 length = 70 mm	TR, Bitumen, c/s
4	03-000038	Drive extension 305 mm	TR, trapez, Bitumen, c/s, sr, MS, Facade
5	03-000100	Special nut socket 8 mm	TR, FR, trapez, Bitumen, c/s, sr, MS, Facade
5	03-001471	Special nut socket 13	TR, FR III, trapez, Bitumen, c/s, sr, Facade
6	03-000011	Special long nut socket 18 mm	TR, FR, trapez, Bitumen, c/s, sr
7	03-000966	Threaded socket driver f. stock screw 6-kt M10	c/s
7	03-000930	Threaded socket driver f. stock screw 6-kt M12	c/s
8	03-000602	Nut adapter 1/4" 6kt – 1/2" 4kt	TR, FR, trapez, c/s, sr
9	03-000114	Drill bit 6.8 mm length 230 mm	c/s
9	03-000115	Drill bit 7.0 mm length 230 mm	c/s
9	03-000116	Drill bit 7.2 mm length 230 mm	c/s
9	03-000117	Drill bit 7.4 mm length 230 mm	c/s
9	03-000245	Drill bit 7.5 mm length 225 mm	c/s
9	03-000108	Drill bit 9.0 mm length 230 mm	c/s
9	03-000246	Drill bit 14 mm HSS short	c/s
9	03-000107	Drill bit 16 mm HSS short	c/s
10	03-000576	Assembling jig 800–1200 mm C-shaped	TR, FR, trapez, c/s, sr, Facade
10	03-000574	Assembling jig 1300–1700 mm C-shaped	TR, FR, trapez, c/s, sr, Facade
11	03-000577	Assembling jig 800–1200 mm bar type	TR, FR, trapez, c/s, sr, Facade
11	03-000575	Assembling jig 1300–1700 mm bar type	TR, FR, trapez, c/s, sr, Facade
12	03-000579	Assembling jig 800–1200 mm 2-piece	TR, FR, trapez, c/s, sr, Facade
12	03-000578	Assembling jig 1300–1700 mm 2-piece	TR, FR, trapez, c/s, sr, Facade
13	03-000462	Mounting tool trapezoidal sheet bracket IS	Trapez
-	03-000463	Mounting tool trapezoidal sheet bracket elevation profile pair	Trapez
14	03-001323	Removal tool roof hook ZD 30 N35	TR
15	03-000362	GS 150 - 30 installation/removal tool	FR
16	03-001675	Diamond joint cutter 125 mm	ZD

ZD = Tiled roof, FR = Flat roof, Trapez = Trapezoidal metal roof, W/S = Corrugated & sandwichroof, BF = Seamed metal roof, MZ = Metal tile roof



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