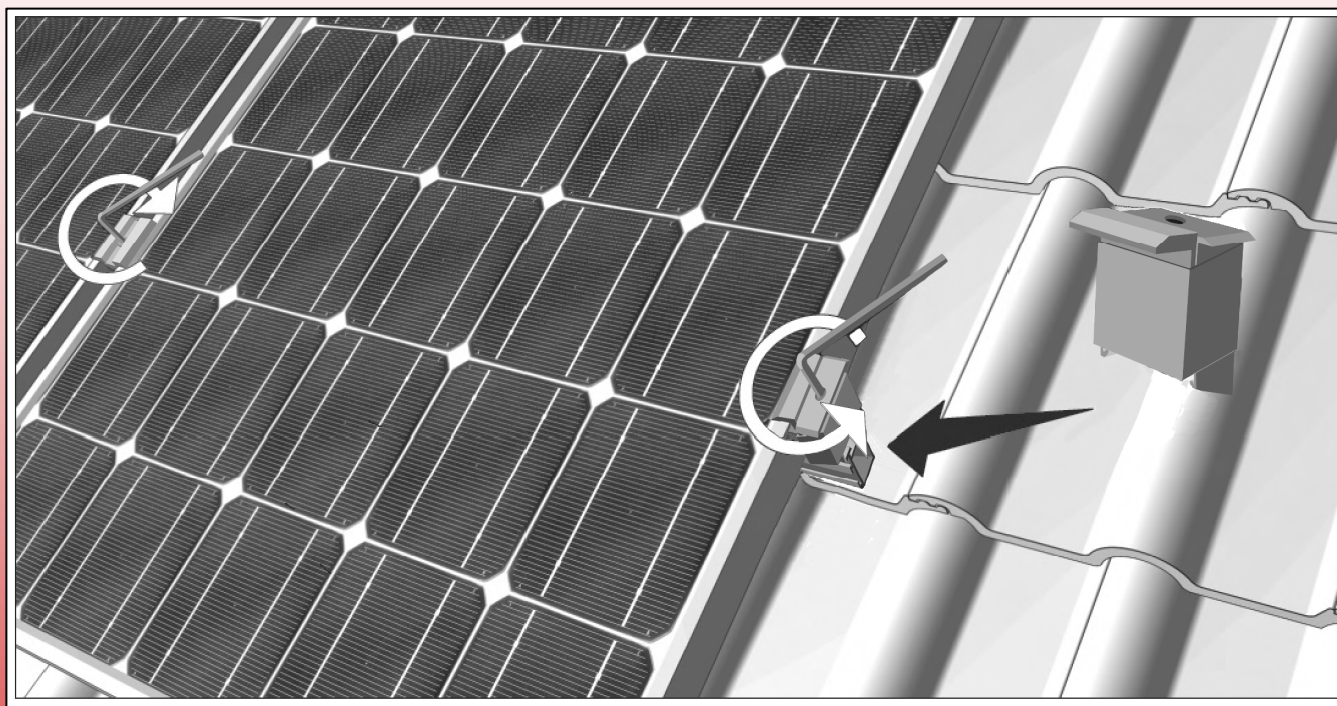


# **VARIOSOLE SE - Universal PV-Mounting Structure for Sloped Roofs**



**[www.ubbinksolar.com](http://www.ubbinksolar.com)**

**Ubbink Econergy Solar GmbH  
Köln**

# **VARIOSOLE SE - Universal PV-Mounting Structure for Sloped Roofs**



- **Reasonably priced**
- **Uncomplicated components**
- **Easy to mount**
- **“One size fits all !”**



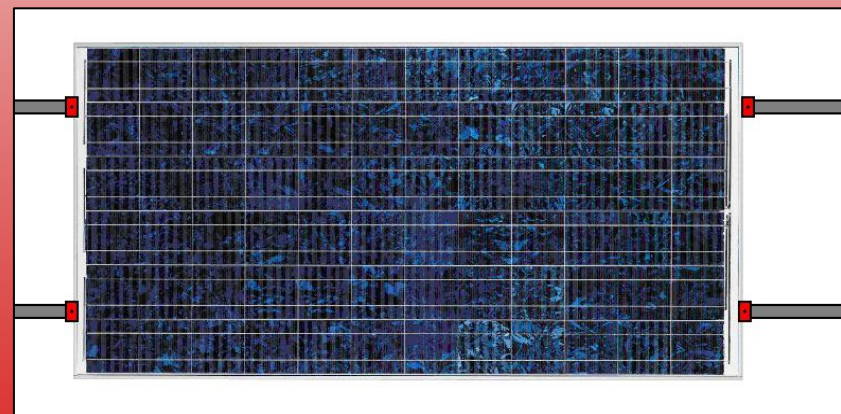
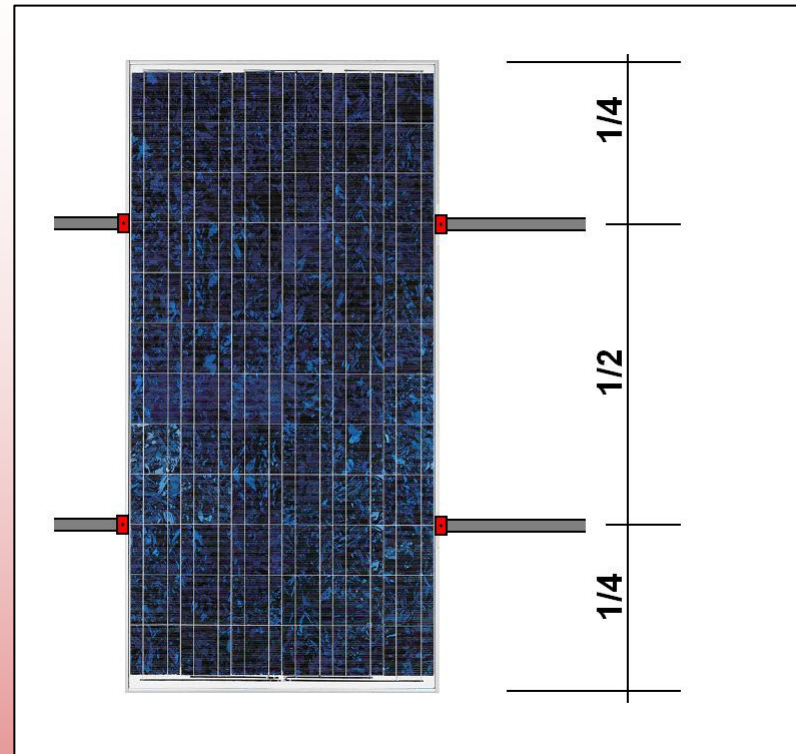
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# Planning:

**Module clamps should always be placed on the longer sides of the module.**

**Distance between mounting rails:  
ca. half the length  
of the module**

**This mounting  
solution is  
normally not  
allowed !**

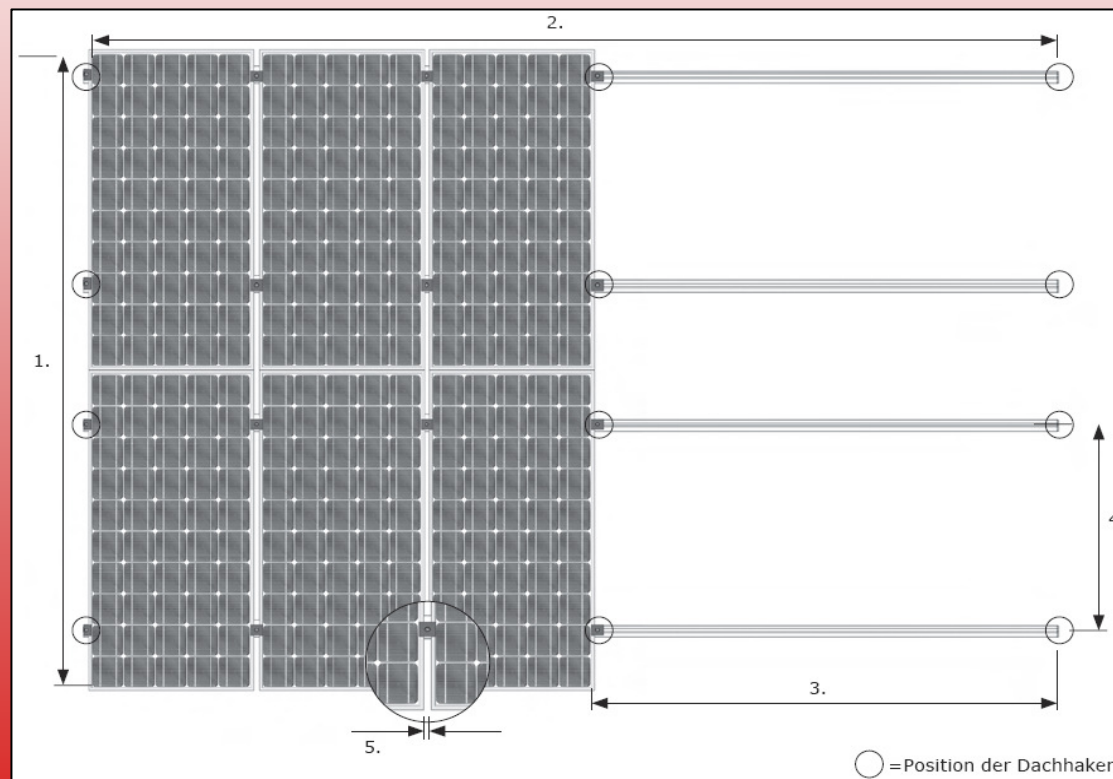




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# Planning:

- >> Distance between mounting rails must correspond to module size.
- >> Distance between rafters can differ from distance between mounting rails.
- >> If the mounting rail is mounted to the rafter, it must be mounted horizontally (crossways to the rafter).

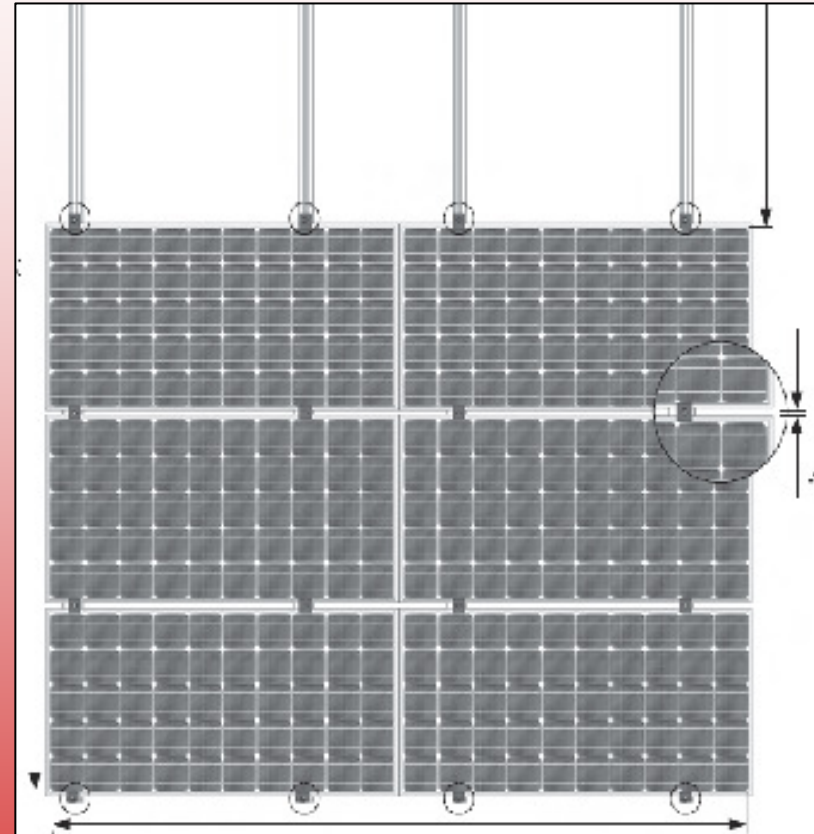




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# Planning:

- > **Distance between mounting rails must correspond to module size.**
- > **Distance between purlins can differ from distance between mounting rails.**
- > **If the mounting rail is mounted to the purlin, it must be mounted vertically (crossways to the purlin).**



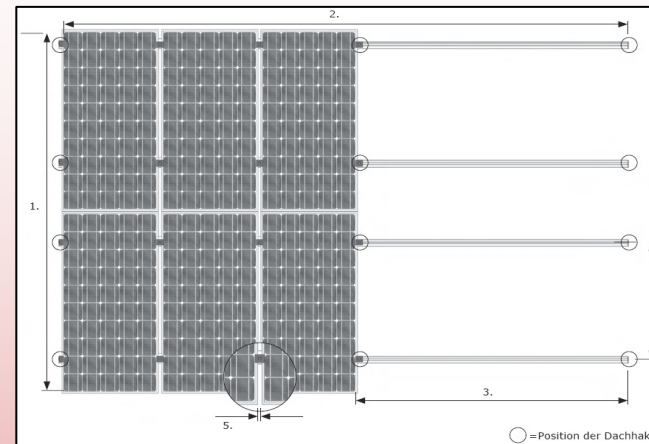


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# Planning:

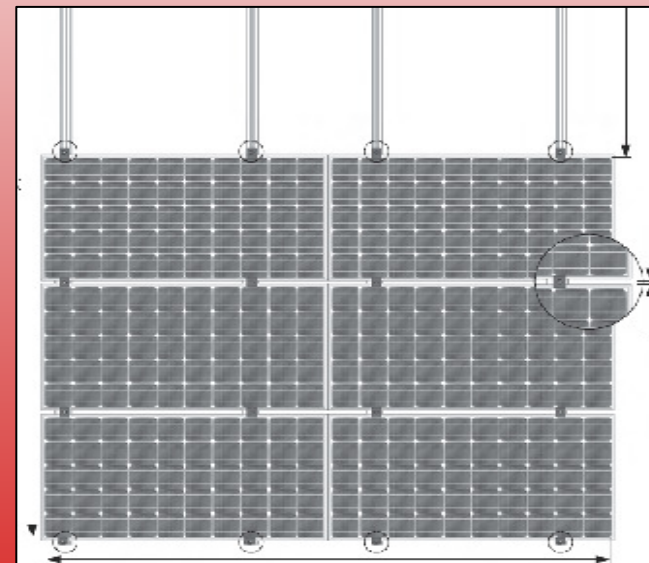
## Mounting to the rafter:

- >> Rails horizontal !
- >> Module vertical !



## Mounting to the purlin:

- >> Rails vertical !
- >> Module horizontal !



# Example:

## Calculating a mounting structure for 12 modules

1. Calculating rails and rail connectors
2. Calculating roof hooks and standard connections
3. Calculating module clamps



# Example:

## Calculating a mounting structure for 12 modules

### 1. Calculating rails and connectors:

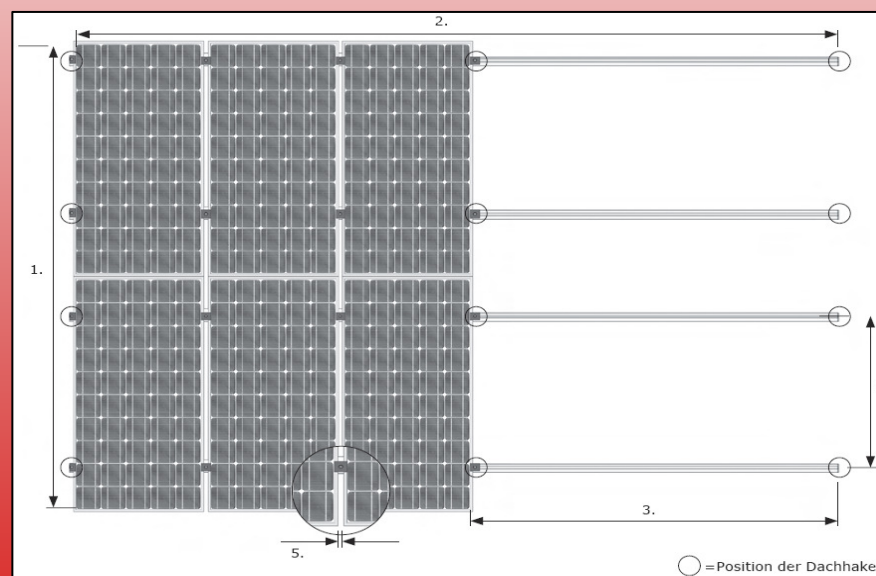
Dimensions module: 1620/810/40mm

- 6 modules: each 810mm wide	>>	<b>4860mm</b>
- 5 middle clamps: each 20mm wide	>>	<b>100mm</b>
- 2 end clamps: each 35mm wide	>>	<b><u>70mm</u></b>
<b>Total:</b>	<b>&gt;&gt;</b>	<b>5030mm</b>

### Results:

**4 mounting rails  
each 5030mm long**

- > 4 rails each 3000mm long
- > 4 rails each 2030mm long  
(custom-tailored)
- > 4 rail connectors



# Example:

## Calculating a mounting structure for 12 modules

2. Calculating roof hooks and standard connections:

**Length of rails: 4 x 5030mm**

**Distance between rafters: 60cm**

**Upper and lower rail is positioned in the edge area of the roof**

>> Attachment to each rafter >> 9 roof hooks per rail

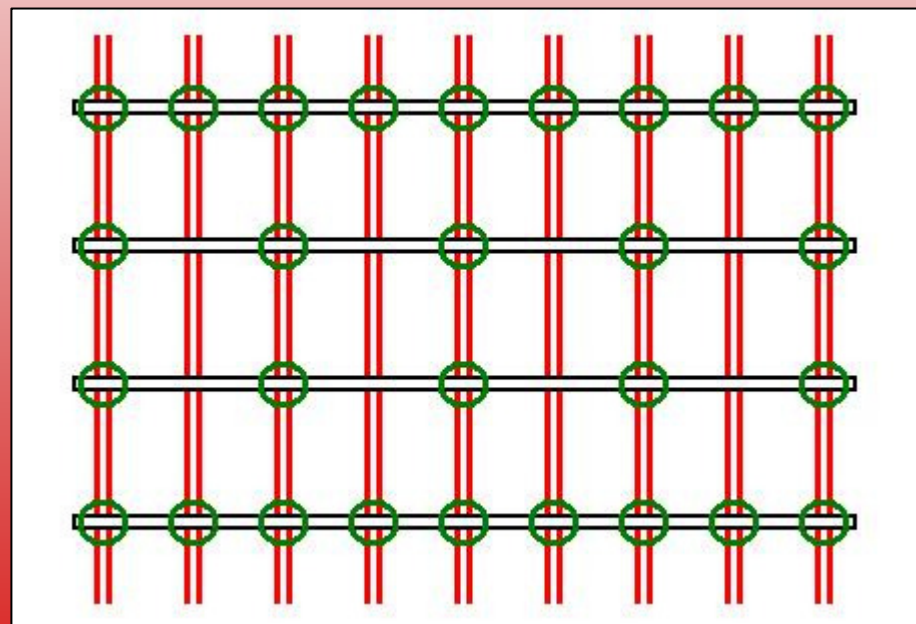
**Second and third rail not in the edge area of the roof**

>> Attachment to every 2nd rafter >> 5 roof hooks per rail

### Results:

> 28 roof hooks needed

> 28 standard connections  
needed



# Example:

## Calculating a mounting structure for 12 modules

### 3. Calculating module clamps:

- 6 modules side by side

>>

5 middle clamps per rail

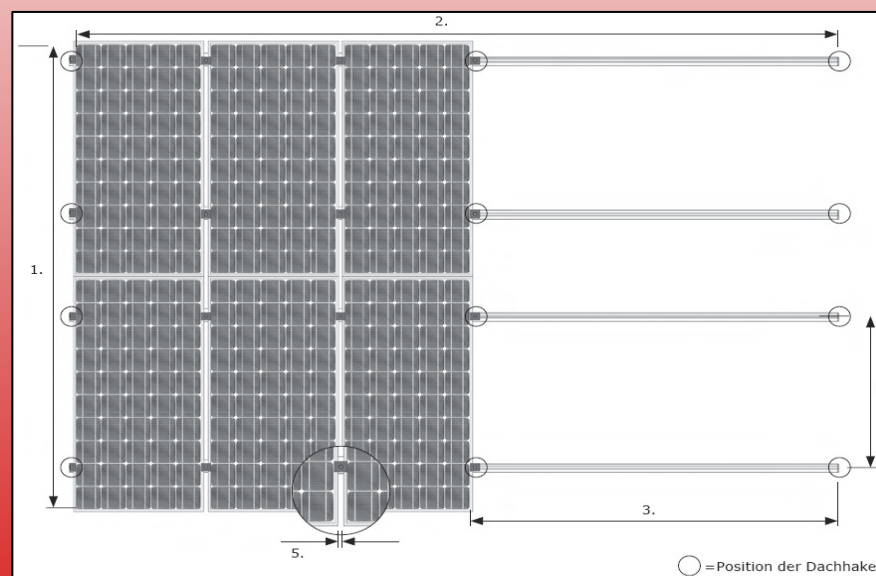
>>

2 end clamps per rail

### Results:

> 20 middle clamps

> 8 end clamps

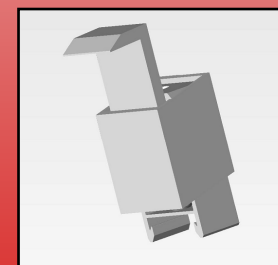
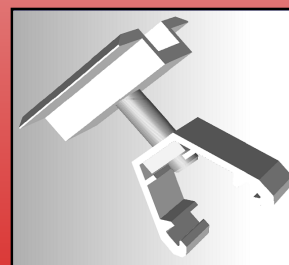
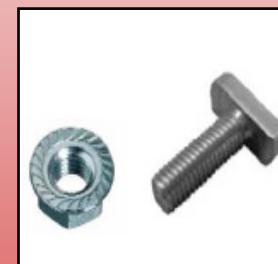
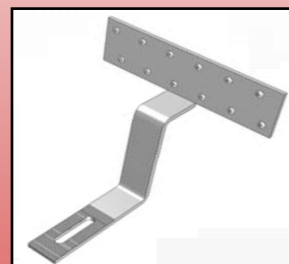
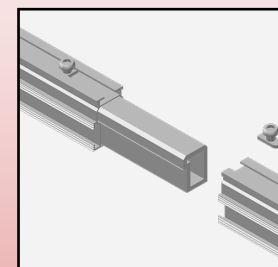
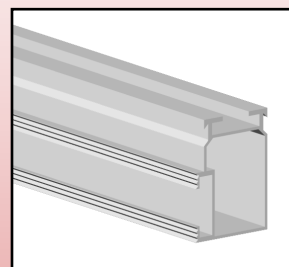


# Example:

## Calculating a mounting structure for 12 modules

### Order:

- > 4 rails each 3000mm long
- > 4 rails each 2030mm long  
(custom-tailored)
- > 4 rail connectors
  
- > 28 standard roof hooks complete
- > 28 kits:  
standard connection rail - roof hook
  
- > 20 middle clamps
- > 8 end clamps



# Example:

## Calculating a mounting structure for 12 modules

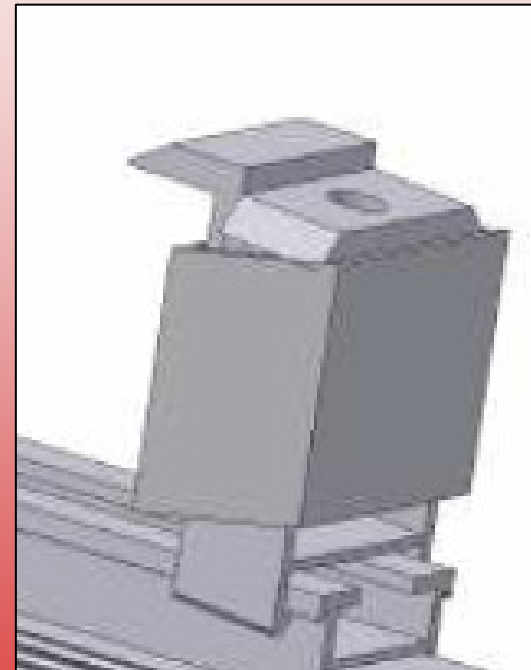
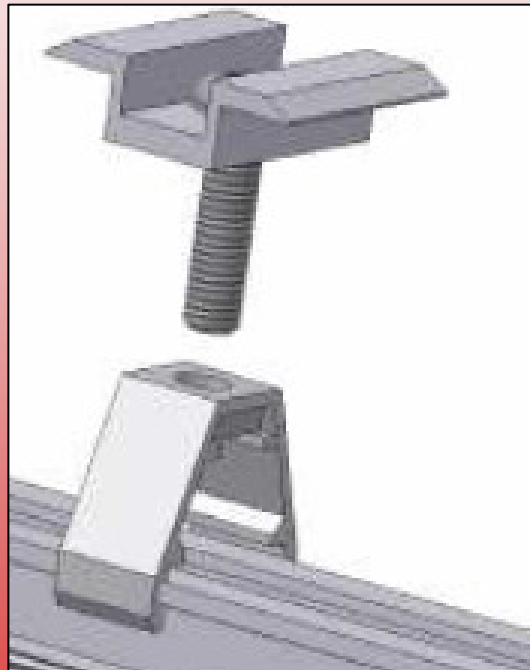
### Delivery note:

Art.-Nr.	Text	Anzahl	
<b>Schienen</b>			
960100	Grundschiene VARIOSOLE SE 3m lang	8	Stück
960110	Verbinderprofil VARIOSOLE SE	4	Stück
950146	Klemme SE für Schienenverbinder	9	Stück
<b>Dachhaken/Stockschrauben</b>			
960120	Dachhaken Standard	28	Stück
960130	Holzschraube 6x80 A2 Linsenkopf	87	Stück
950141	Stockschraube M12 komplett ohne Winkel	0	Stück
960140	Winkel f. Stockschraube 12 x 300 V. SE	0	Stück
950101	Hammerkopfschraube M 8 x 20	29	Stück
960150	6-Kantmutter M8 mit Flansch+Sperrverz	29	Stück
<b>Modulklemmen</b>			
950130	Endhalter RH 34 - 50mm	8	Stück
950138	Modulhalter RH 34 - 50mm	20	Stück
<b>Installationsanweisung</b>			
960101	Installationsanweisung Deutsch	1	Stück

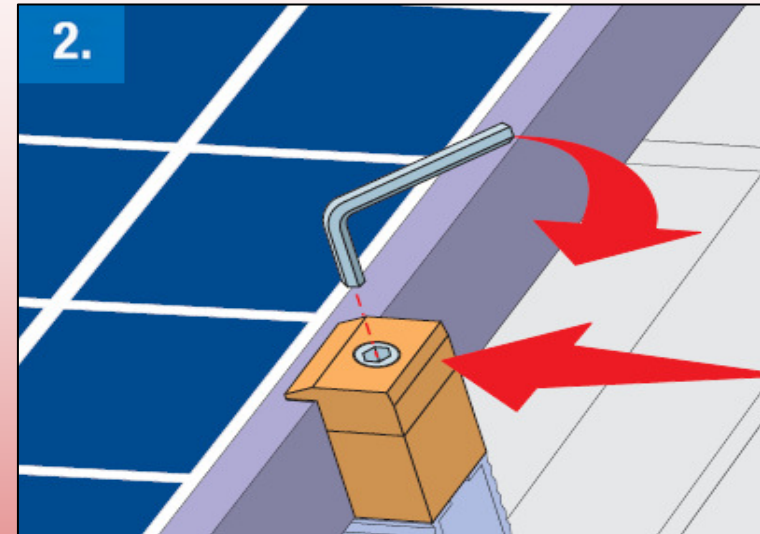
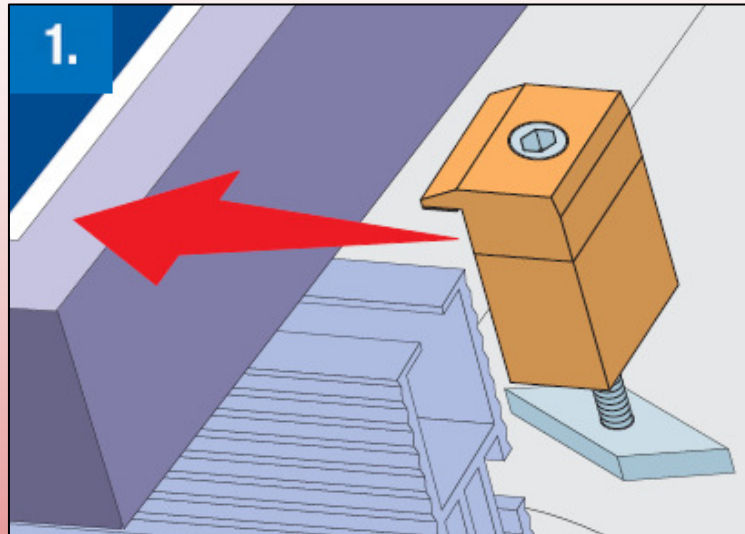


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**One Size Fits All-  
Module clamps usable  
for all modules  
from 34 to 50mm frame thickness !**



# Conventional module clamps: (before)



**Module clamp could fit only one size.**

**ca. 25 different types of end clamp needed !**

**ca. 3 different types of middle clamp needed !**

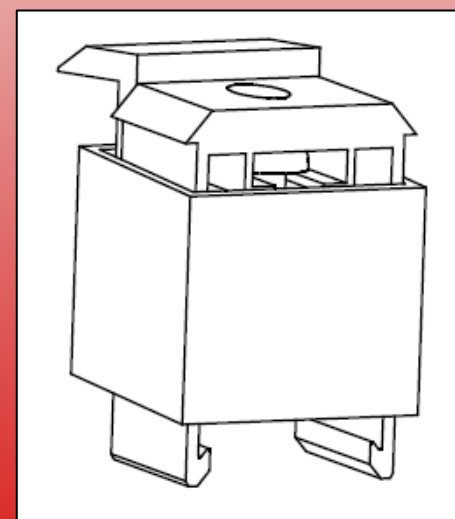
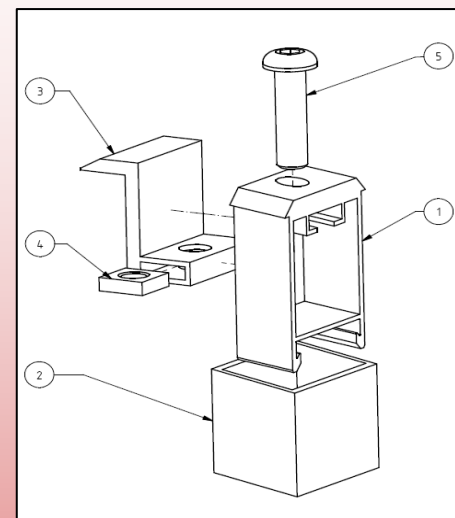


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## New: universal end clamp

### • Now

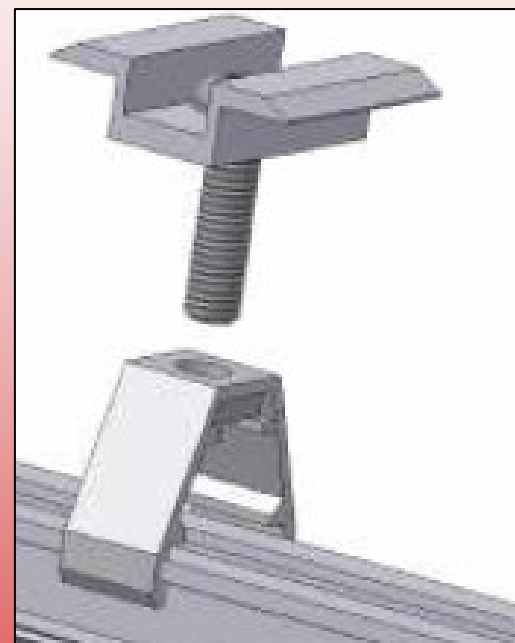
- Adjustable 34-50 mm
- Patented design ensures perfect fit



## **New: universal middle clamp**

- **Now**

- **Snap mechanism  
for easy mounting**
- **Adjustable 34-50 mm**

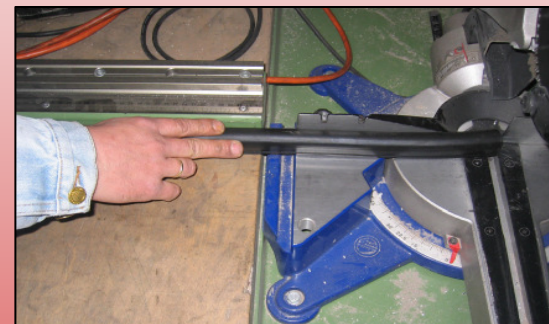


# Logistics



## Cost reductions:

- **Storage and delivery**
- **Order picking**
- **Packaging**



**Thank you for your kind attention !**

• **INTERSOLE**



• **CONSOLE**



• **VARIOSOLE**



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