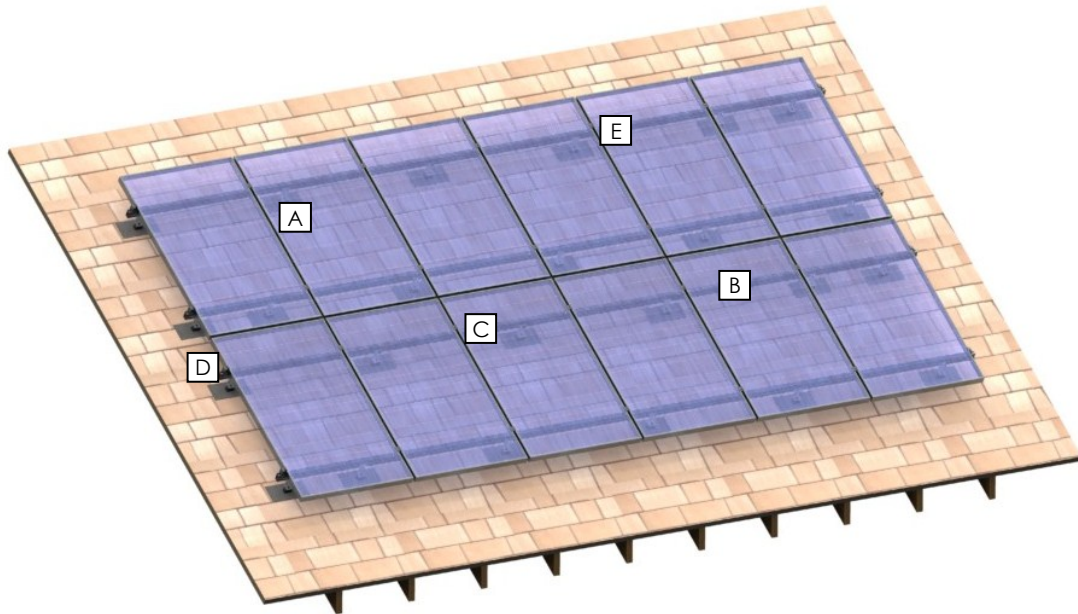


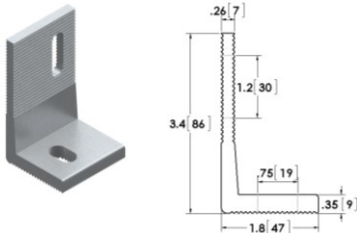
# Installation Instructions:

Pitched Roof Mounting System  
 \*for framed PV-Modules in portrait mode

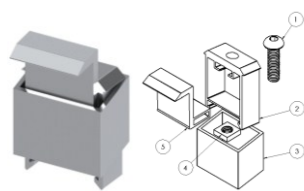


## System Component List:

**A Angle Bracket**  
 For fastening rail to standoff

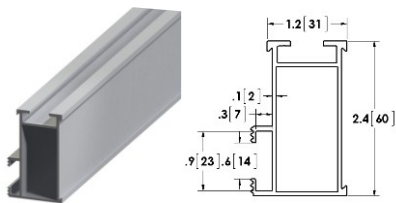


**D End Clamp**  
 For clamping module to rail

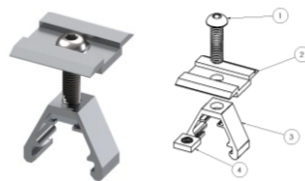


- [1] M8 x 30mm Socket Head Screw, 18-8 Stainless Steel
- [2] H Extrusion, Aluminum
- [3] Box Extrusion, Aluminum
- [4] M8 Square Nut, 18-8 Stainless Steel
- [5] Rail Clamp, Aluminum

**B 13/60 Rail**  
 For mounting solar modules

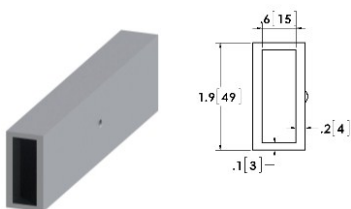


**E Mid Clamp**  
 For clamping module to rail



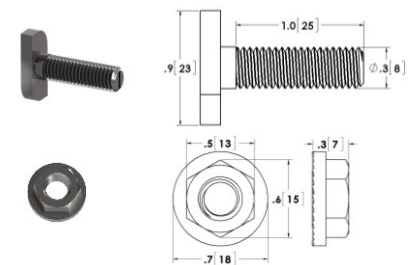
- [1] M8 x 30mm Socket Head Screw, 18-8 Stainless Steel
- [2] Module Clamp, Aluminum
- [3] Rail Clamp, Aluminum
- [4] M8 Square Nut, 18-8 Stainless Steel

**C 13/60 Rail Splice**  
 For connecting rails

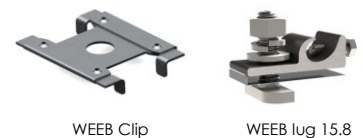


## Hardware:

**M8 T-bolt and serrated flange nut**  
 For connecting L-bracket to rail



**WEEB (optional)**  
 For electrical grounding of the system



## Tool Requirements:

**Open Ended Wrench**



**Metric Allen Wrench**



**Cordless Screwdriver (Optional)**



**Other requirements:**

Approved flashing system or standoff device for attachment of the system to the roof.

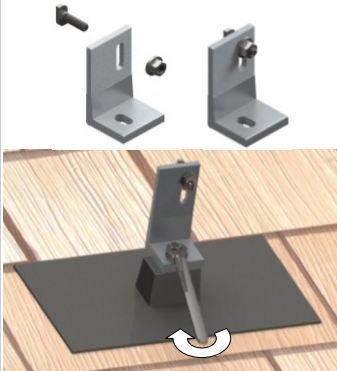
# Installation Instructions:

Pitched Roof Mounting System  
\*for framed PV-Modules in portrait mode



## Step 1: Flashing/Standoff and L-bracket

Würth Canada's pitched roof systems must be attached to an approved and properly installed standoff or flashing system of the installer's choice.

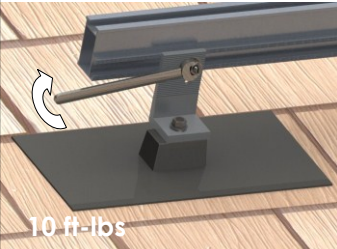


Insert T-bolt into Angle Bracket **A** and loosely fasten with nut.

Install approved flashing or standoff devices for the installation of mounting rails. It is recommended that the standoff/flashing devices be staggered for better distribution of weight over the joists.

Fasten the Angle Bracket **A** to the flashing or standoff device.  
**Torque: Per mfg. requirements**

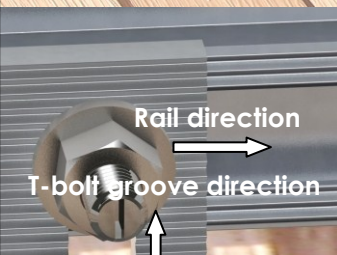
## Step 2: Mounting rail to Angle Bracket



Attach the 13/60 Rail **B** to the Angle Bracket **A**. Insert the T-bolt on the Angle-Bracket into the C-channel on the rail. Turn the T-bolt clockwise until it stops (approx. ¼ turn.)

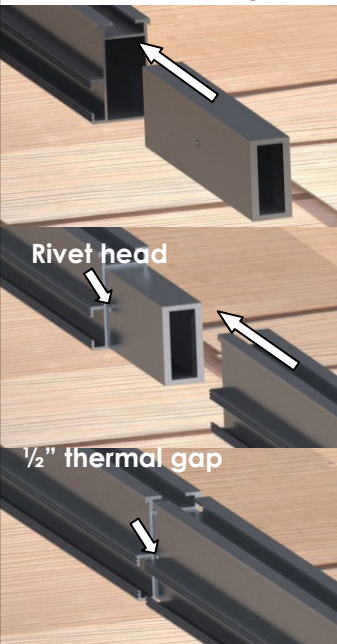
Properly align the T-bolt by ensuring the groove on the bottom of the T-bolt is perpendicular to the direction of the rail (see picture). Tighten T-bolt nut.

**Torque: 10 ft-lbs (14 N-m)**



10 ft-lbs

## Step 3: Connecting Rails



Continue fastening all the rails to the Angle Brackets until the system is completely attached to roof.

A 13/60 Rail Splice **C** is required to connect rails together. Slide the rail splice into the first rail until the rivet head stops the splice.

Slide the second rail over the rail splice until the rivet head stops the rail.

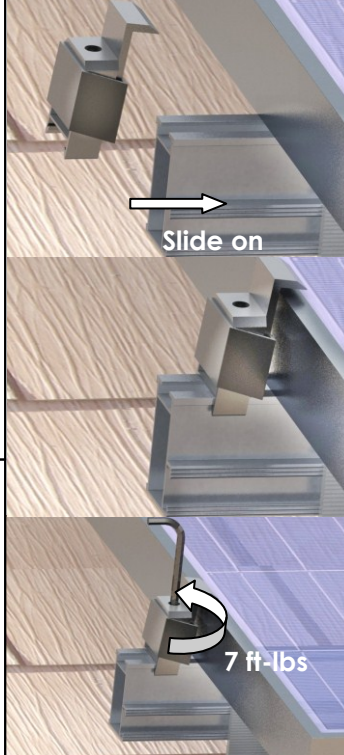
**Note: Allow a ½ inch gap between the rails for thermal expansion. For details on thermal breaks, please refer to Thermal Break Instructions, available online at [www.wurthcanada.com](http://www.wurthcanada.com) or by request.**

**Note: No through bolt is required for the splice connection.**

Rivet head

½" thermal gap

## Step 4: Module Installation, End Clamps



These mounting instructions reflect the state of technology and our experience in how to install our systems on site. Due to the individual characteristics of each roof, we highly recommend commissioning a professional assessment before beginning the installation.

Place the first module onto the rails and hold in place by method of installer's choice.

Slide the End Clamp **D** onto the end of the mounting rail and up to the edge of the module frame.

An End Clamp must be attached at each end of the rail on every module row.

**Note: Rows must be interrupted every 40 feet with an End-Clamp to allow for thermal expansion.**

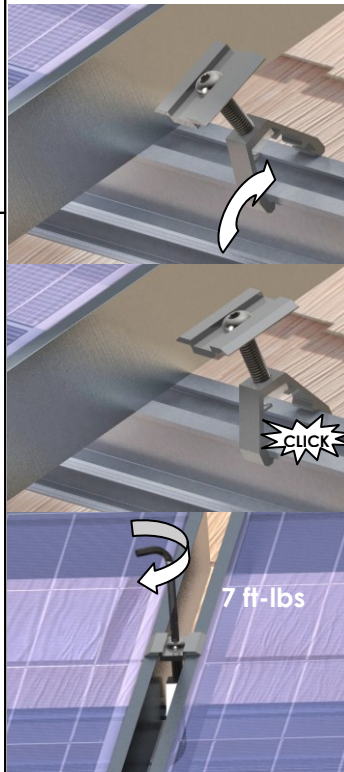
Tighten the End Clamp **D** by turning the bolt counterclockwise.

**Torque: 7 ft-lbs (9 N-m)**

Slide on

7 ft-lbs

## Step 5: Module Installation, Mid-Clamps



**Note: For the optional WEEB grounding system, see Installation Instructions: WEEB Grounding System, available online at [www.wurthcanada.com](http://www.wurthcanada.com) or by request.**

Attach the Mid Clamp **E** by clicking it onto the rail as

Slide the Mid Clamp **E** up to the module. Slide the next module up to the Mid-Clamp and tighten the clamp by turning the bolt clockwise.

**Torque: 7 ft-lbs (9 N-m)**

Continue the same process with the rest of the modules in the row.

CLICK

7 ft-lbs

## Step 6: Module Installation, End Clamps

Once all the modules in the row are installed, place an End Clamp **D** on the end of each mounting rail. **See step 4 for details.**



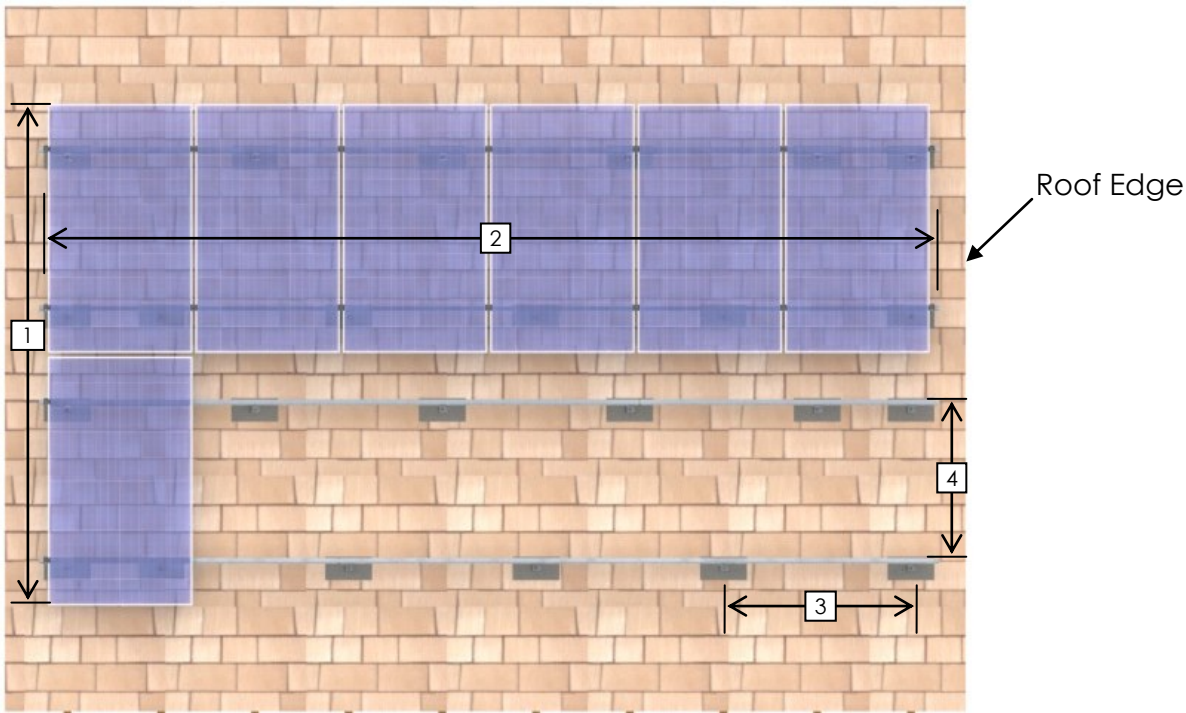
# Installation Instructions:

Pitched Roof Mounting System

\*for framed PV-Modules in portrait mode



## Layout View



- 1 Vertical module span: number of modules in vertical directions x (module length + 0.75" (for inner-module spacing))
- 2 Horizontal rail span: number of modules in horizontal directions x (module width + 0.75" (for inner-module spacing) + 3" (for rail overhang))
- 3 Standoff spacing or rail span varies per solar module mfg. and site conditions (see Table 1 below)
- 4 Rail spacing varies per solar module mfg.

**Table 1: Würth Canada 13/60 Rail Span Chart a,b,c,d,e,f,g,h,i,j,k,l**

WIND EXPOSURE	WIND SPEED (3-SEC GUST)	SNOW LOAD (POUND PER SQUARE FEET)						Note
		0 psf	10 psf	20 psf	30 psf	40 psf	50 psf	
CATEGORY B	85 MPH	7' - 10"	7' - 0"	6' - 1"	5' - 5"	4' - 9"	3' - 11"	
	90 MPH	7' - 6"	6' - 10"	5' - 11"	5' - 4"	4' - 8"	3' - 11"	
	95 MPH	7' - 2"	6' - 8"	5' - 10"	5' - 2"	4' - 6"	3' - 11"	
	100 MPH	6' - 10"	6' - 5"	5' - 8"	5' - 1"	4' - 5"	3' - 9"	
	110 MPH	6' - 3"	6' - 1"	5' - 5"	4' - 10"	4' - 1"	3' - 7"	
	120 MPH	5' - 10"	5' - 9"	5' - 2"	4' - 6"	3' - 10"	3' - 5"	
	130 MPH	5' - 5"	5' - 5"	4' - 11"	4' - 2"	3' - 7"	3' - 2"	
	140 MPH	5' - 1"	5' - 1"	4' - 6"	3' - 10"	3' - 5"	3' - 0"	
150 MPH	5' - 8"	5' - 8"	5' - 5"	5' - 1"	4' - 6"	4' - 1"	See note j below for this row	
CATEGORY C	85 MPH	6' - 11"	6' - 5"	5' - 9"	5' - 2"	4' - 5"	3' - 10"	
	90 MPH	6' - 7"	6' - 4"	5' - 7"	5' - 0"	4' - 3"	3' - 8"	
	95 MPH	6' - 4"	6' - 1"	5' - 5"	4' - 10"	4' - 1"	3' - 7"	
	100 MPH	6' - 0"	5' - 11"	5' - 3"	4' - 8"	4' - 0"	3' - 6"	
	110 MPH	5' - 6"	5' - 6"	5' - 0"	4' - 3"	3' - 8"	3' - 3"	
	120 MPH	5' - 1"	5' - 1"	4' - 6"	3' - 11"	3' - 5"	3' - 0"	
	130 MPH	5' - 8"	5' - 8"	5' - 5"	5' - 1"	4' - 6"	4' - 1"	See note j below for this row
	140 MPH	5' - 3"	5' - 3"	5' - 2"	4' - 8"	4' - 2"	3' - 9"	See note j below for this row
150 MPH	4' - 10"	4' - 10"	4' - 10"	4' - 4"	3' - 10"	3' - 6"	See note j below for this row	

- a. This table does not include roof capacity check or standoff connection check. Installer to check lag screw pull-out capacity or roof connection and roof joist capacity.
- b. Maximum building mean roof height is 24 feet.
- c. Maximum roof slope is 30 degrees.
- d. ST-AK 13/60 rails are installed parallel to roof and perpendicular to roof joists.
- e. Maximum solar module length dimension is 77" and 40" wide.
- f. Roof wind zone 1 installations only. Zones 2 and 3 near building edges are excluded.
- g. The width of zones 2 and 3 from roof edges is 3' - 6" for the least horizontal building dimension of 35 feet.
- h. Maximum end cantilever span is 35 percent of adjacent interior end span.
- i. No rail splices permitted within the middle 1/2 of the span.
- j. Provide (3) ST-AK 13/60 rails at (0.35 x Module Length) on center. Installer to check with module manufacturer for additional panel supports when wind speed is more than 110 mile per hour or snow load exceeds 45 pound per square feet.
- k. Rails installed in two-span continuous condition minimum.
- l. Installation is away from topographic effects (Kzt = 1.0)



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