

Mounting Systems

Tilt Kit Installation Guide

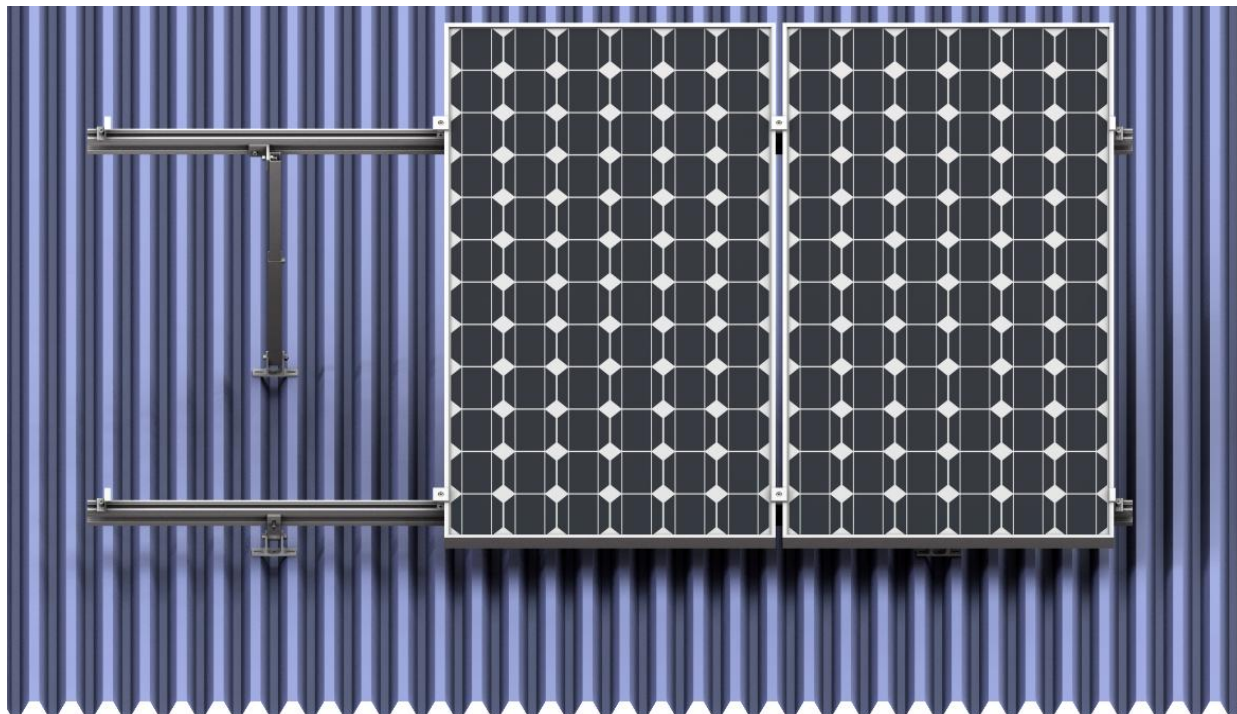


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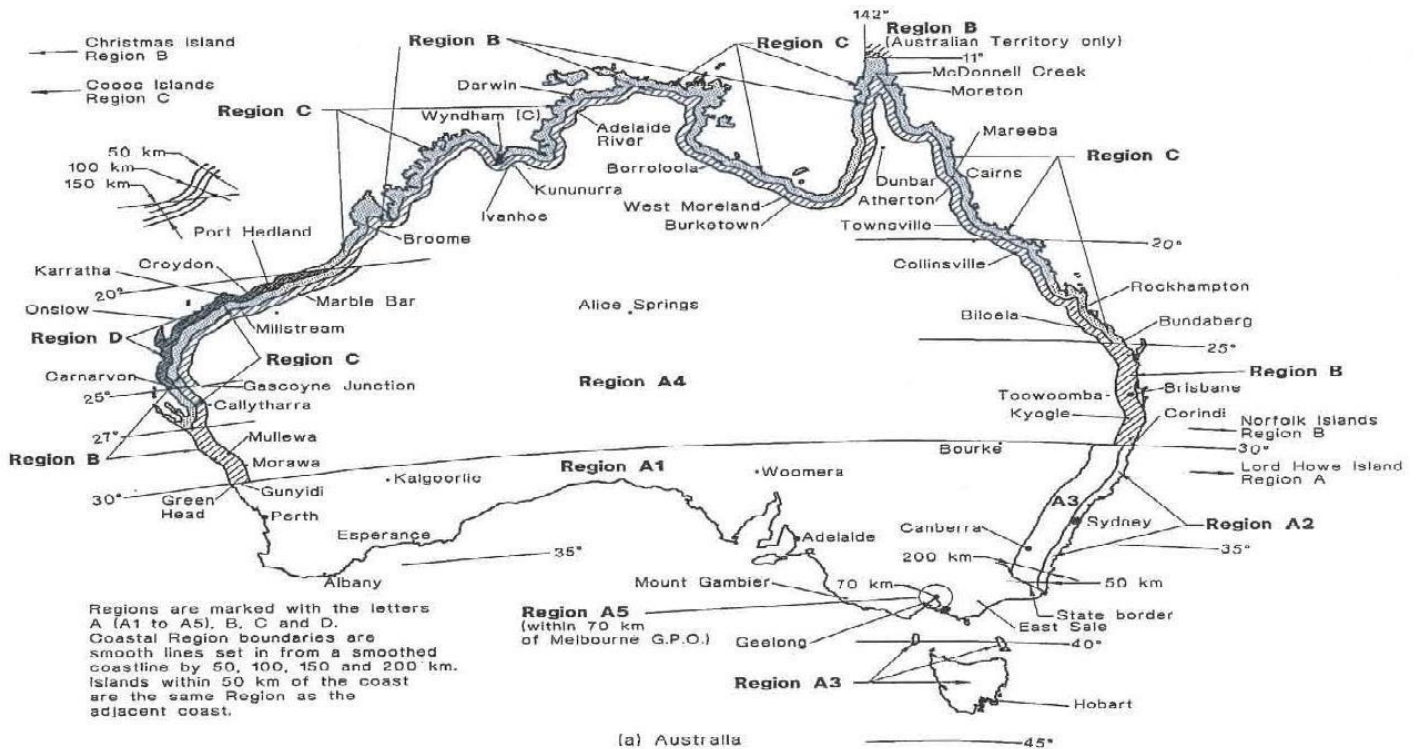
Compliant Planning and Installation with Australia AS/NZS1170

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I. Preparing

1. Determine the wind region of your installation site

Wind Regions Extract from AS1170.2 (Australia only)



Region Definition:

Wind regions are pre defined for all of Australia by Australian Standard 1170. The Wind Region has nothing to do with surrounding topography or buildings.

Most of Australia is designated Region A which indicates a Regional Ultimate Basic Wind Velocity of 45msec.

Some areas are designated Region B (57msec). Local authorities will advise if this applies in your area.

Region C areas (66msec) are generally referred to as Cyclonic and are generally limited to northern coastal areas. Most Region C zones end 100km inland.

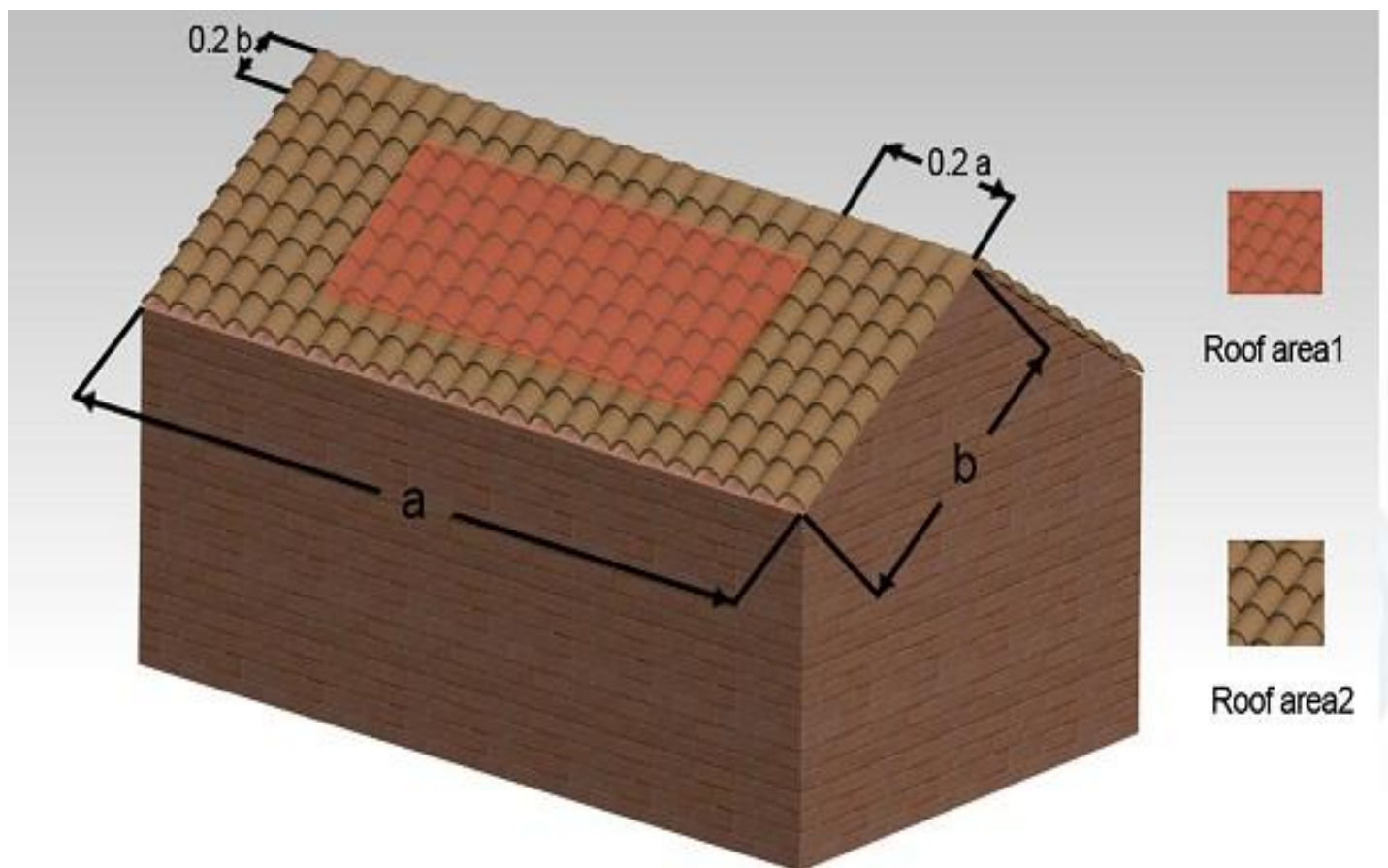
Region D (80msec) Australia's worst Cyclonic Region between Carnarvon and Pardoo in Western Australia.

2. Determine the installation area on the roof

Chiko Mounting system may be installed anywhere on a roof but fixing centres are required to be reduced at ridges and edges. The diagram below shows the area of higher wind within a (minimum of $0.2a$ and $0.2b$) of a roof edge or ridge (where b and d are the plan dimension of the building).

The following table will help you determine the maximum rail support spacing for your project.

Also note that if the roof slope is less than 10 degree the reduction on spacing does not apply.



3. Determine the height of the of your installation site

This document provides sufficient information for Roof system installation height less than 20 meters. If your installation site is more than 20 meters in height, please contact Chiko Solar to obtain engineering data to support your installation.

4. Determine the Maximum Rail Support Spacing

Please use the following table to determine the base rail support spacing for Tilt kit installations to metal sheet roof.

- * Each row of solar panels shall have minimum of two rows of railing fixed to the roof framing.
- * The spacing of the rail fixing shall not exceed the recommended spacing, and shall be reduced to match the location of the roof rafter.

The table below is based on solar modules length of 1600-1960mm:
Spacing (mm) of Tilt kit for angle of Tilt 15deg

Installation Height	Region A & B Spacing(mm)	Region C & D Spacing(mm)
5 Meters	700	390
10 Meters	590	350
15 Meters	535	310
20 Meters	505	280

The table below is based on solar modules length of 1600-1960mm:
Spacing (mm) of Tilt kit for angle of Tilt 30deg

Installation Height	Region A & B Spacing(mm)	Region C & D Spacing(mm)
5 Meters	555	310
10 Meters	460	280
15 Meters	415	240
20 Meters	390	220

The table below is based on solar modules length of 1600-1960mm:
Spacing (mm) of Tilt kit for angle of Tilt 60deg

Installation Height	Region A & B Spacing(mm)	Region C & D Spacing(mm)
5 Meters	875	430
10 Meters	720	390
15 Meters	650	340
20 Meters	615	300

The Tilt kit hooks should be fixed to the purlin using two gauge 14 screws minimum.
the screws used to attach the railing to the roof framing shall conform to AS3566, ISO3506.1

The Cold formed steel purlins to support railing shall have minium base material thickness 1.2mm in Regions A&B, and 1.9mm in regions C&D.

Predrilled holes shall be used for all screw fixings into timber. The width of Timber purlins shall not be less than 35mm. The minimum embedment for each screw shall be 70mm.

Timber with Joint Type classification J5 and J6 are excluded unless tested for Screw capacity.

Please consult Chiko Solar for installing solar modules greater than length of 1960mm and weight of 27KG.

5. Verify acceptable Rail End Overhang

Rail End Overhang must equal 50 percent or less of the adjacent spacing of the installed fixing. Thus if fixing spacing is 1200mm, the Rail End Overhang can be up to 600mm. The panel overhang shall not exceed 30% of panel length,(ex 480mm for 1600mm long)

6. Determine Roof slope

Solar Roof system can be used for roof slope up to 60 degrees. Please verify the Installation site roof slope should be between 0 degrees and 60 degrees.

7. Installation tools

6 mm Allen key;
Cordless drill;
Open-end spanner set 9, 10, 17, 19 mm (required only for mounting with hanger bolts);
Torx-30 (AW 30) bit;
Angle grinder with stone disk;
Power Cord; If necessary, timber to shim the roof hooks.

8. Installation Rule

The installation of the framing shall conform to relevant Australia Standards, Manufacturer's specifications and good building practice. The roofing to which the panels are to be installed shall conform to the relevant Australia Standards including AS1684, AS4440, AS1720, AS4100, and AS4600.

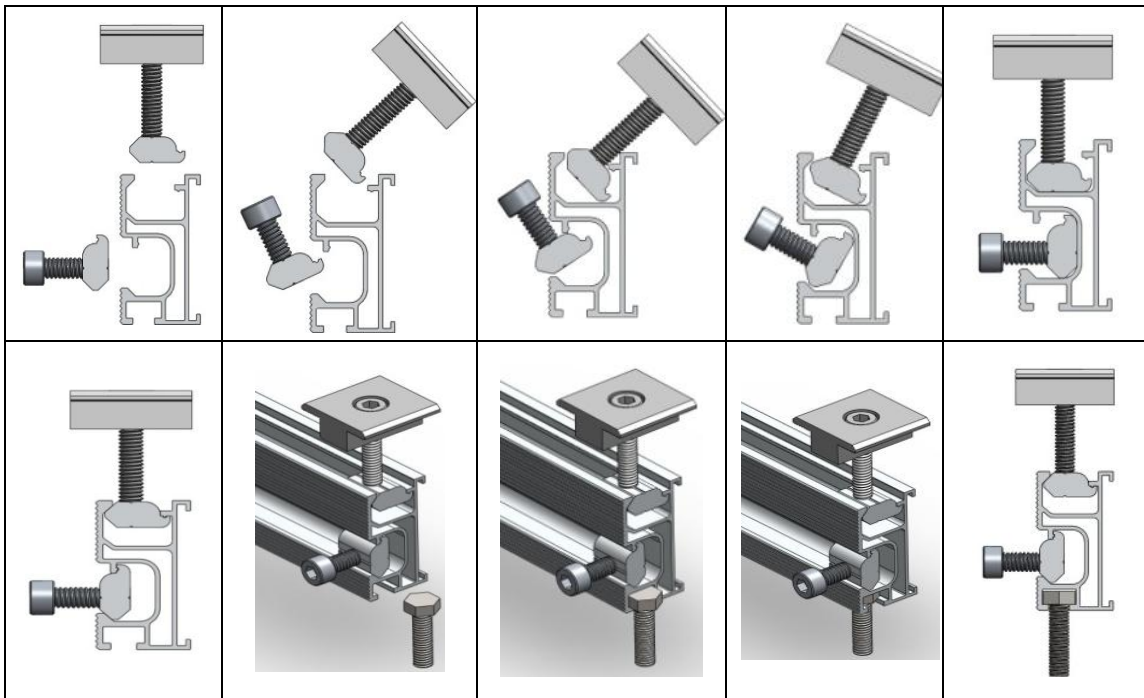
9. Installation attention

If our racking material aluminium fix into material roof (zinc coated), pls use a suitable inert material (ex EPDM) to separated them to prevent galvanic corrosion. Pls refer to the aluminium material.

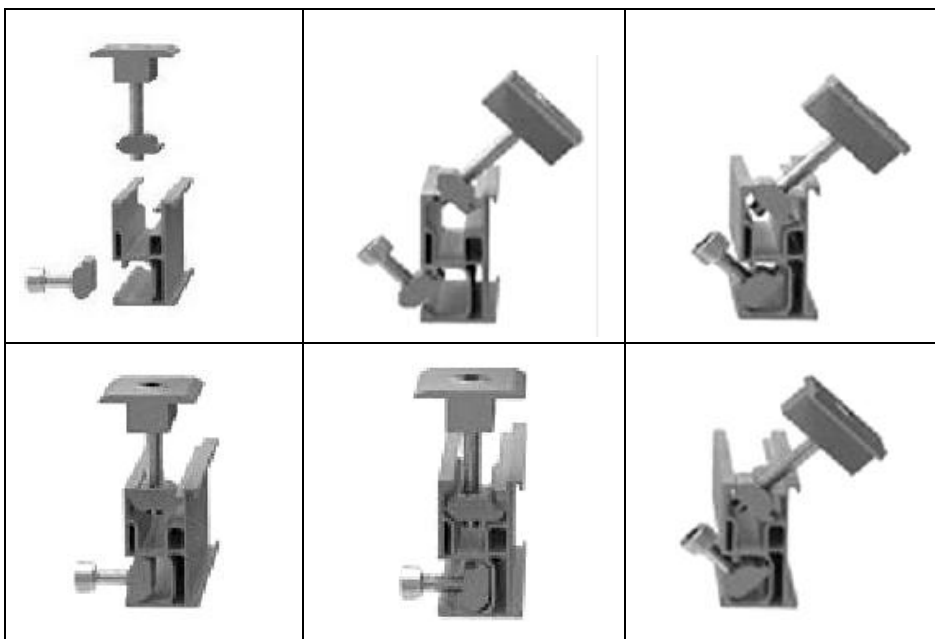
II. Feature of the Rail and the Module

1. Rails and modules can be installed through the top and sides, the bottom rail can be fixed by M8 hex bolts(three directions can be fixed). Module can be installed from the end to slide to the middle of the rail, also you can directly install from any part of the rail. This can effectively improve the installation efficiency.

● **CK-FZ-R Installation**



● **CK-FA-R(CK-300N1) Installation**



2. The design of the corrugated surface of the Rail with the corrugated surface of the hook linked closely, effectively increasing in friction and anti-slip effect. Closed loop design of the internal rails ensures the overall strength and the reasonable force distribution.

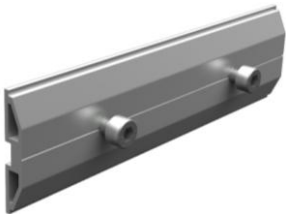
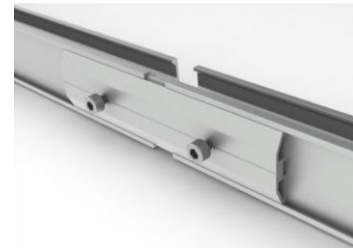
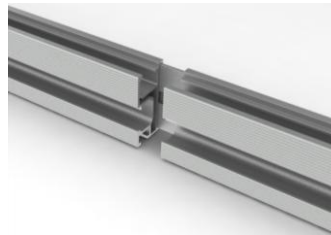
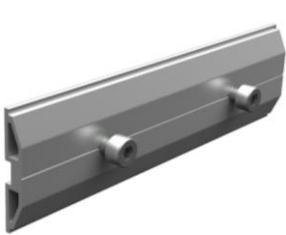


CK-FZ-R



CK-FA-R

3. Two rails can be connected by rail splice, saving every section of tailings, so that the rails of different lengths can be continuously extended, not only can reduce the waste tailings, but also can reduce the production of rails troubled by the length of the limit.



4. 35-50mm depth solar panel frame can be installed by CHIKO adjustable mid clamp and adjustable end clamp, more convenient, more strong.



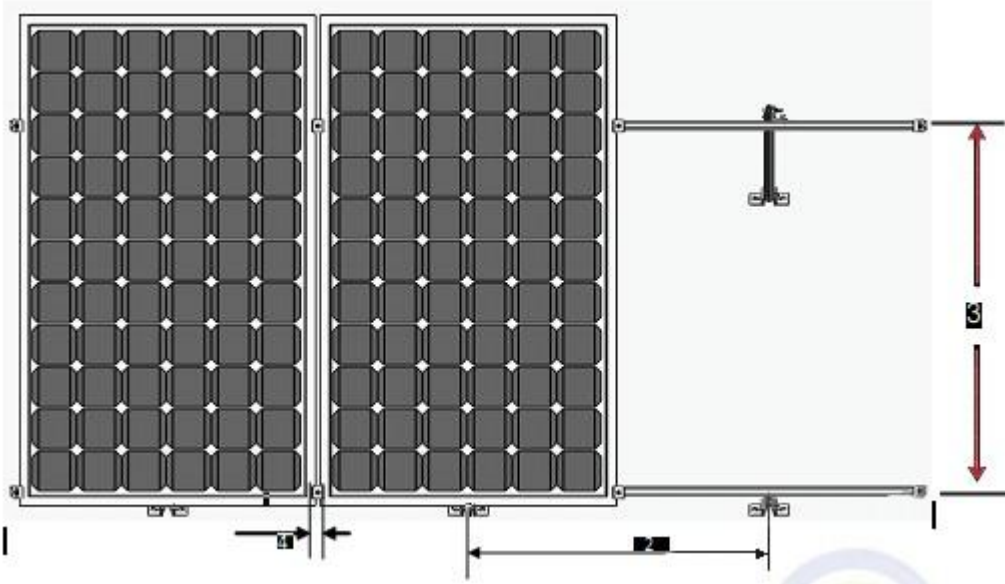
35mm depth

40mm depth

45mm depth

50mm depth

III. Planning the array layout



Planning the array layout

1. Array width = number of modules in horizontal direction
x (solar module width + 11/16 in (18 mm)) + 1-1/4 in (32 mm)
2. spacing of tilt kit for various angle (refer to talbe1, table2 and table3)

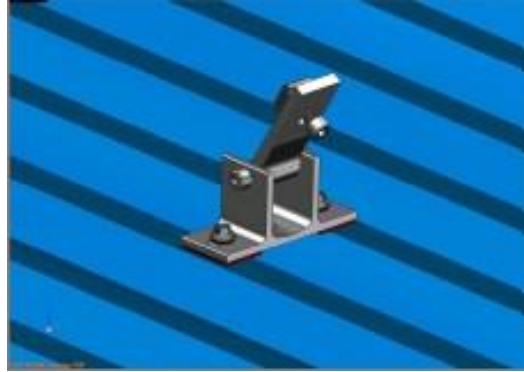
3. distance between front leg and back leg shall not exceed the distance given on table below
Maximum distance (mm) between purlins supporting front and back leg

Tilt Angle	Region A&B	Region C&D
15	1800	1400
30	1800	1200
60	1800	900

4. Distance between the solar modules: 11/16 in (18 mm)

IV. Installation instruction

1. Fix up the front leg, rubber pad to the roof by two 6.3*90mm wood screws



2. Fix up the rail to the front leg by the module on the front leg.



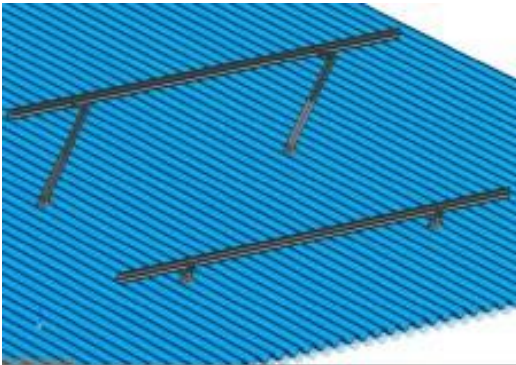
3. Fix up the back leg, rubber pad to the roof by two 6.3*90 wood screws.



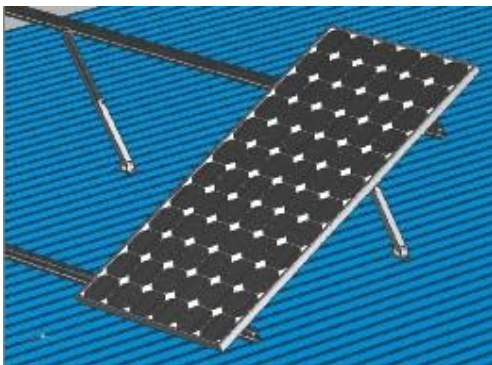
4. Fix up the rail to the back leg by the L-type module on the back leg.



5. As the requirement of Planning the array layout, Fix up front leg, back leg and rail on the roof.

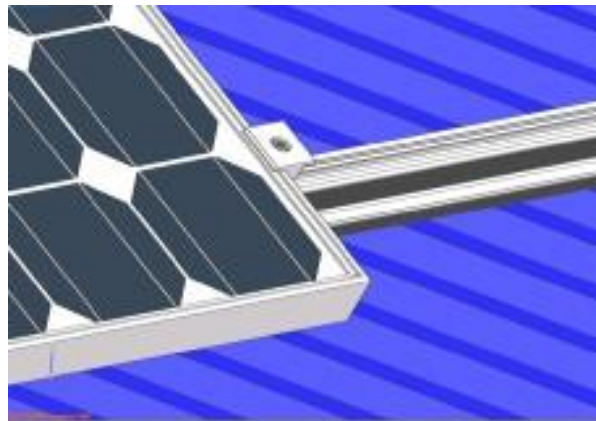
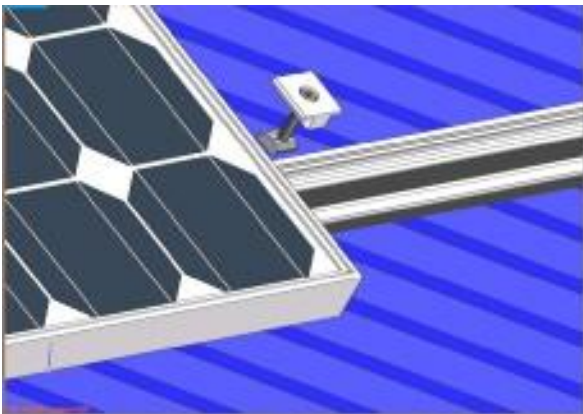
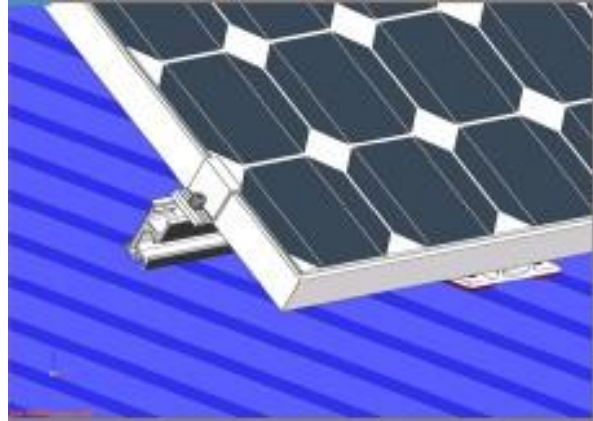
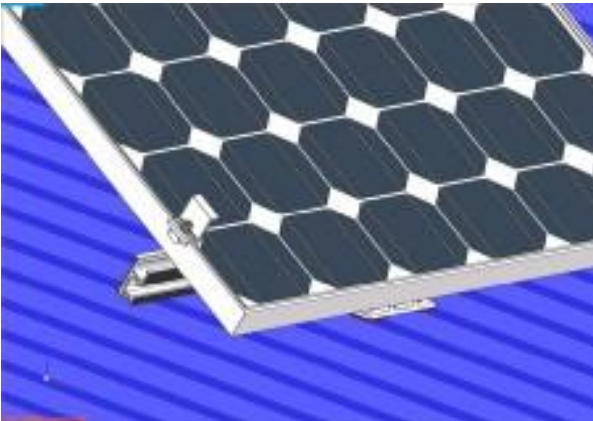


6. Fix up the solar panel on the rail

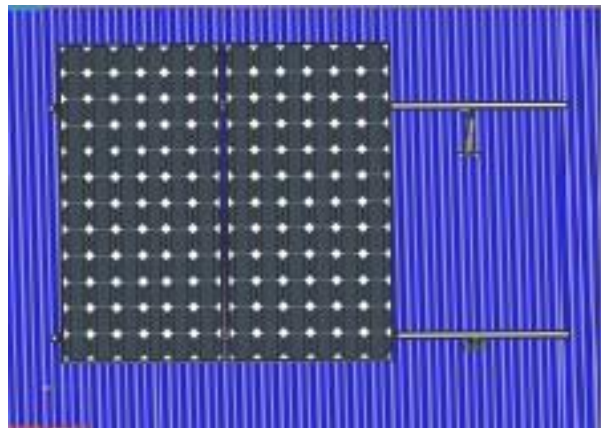


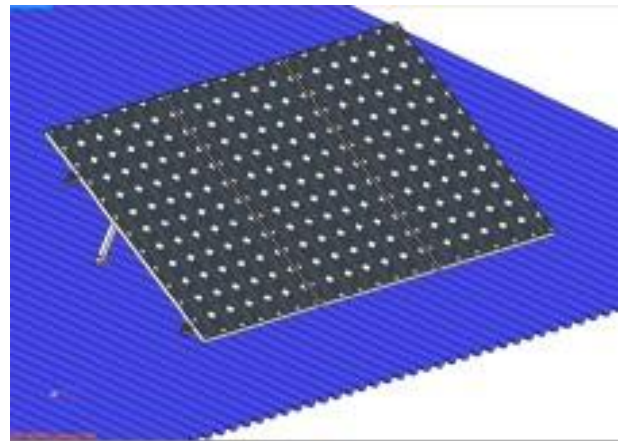
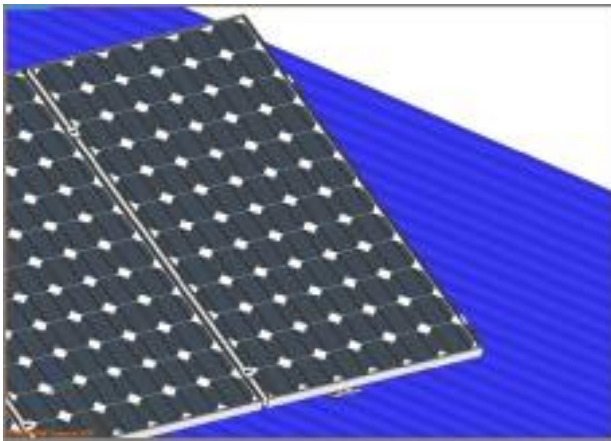
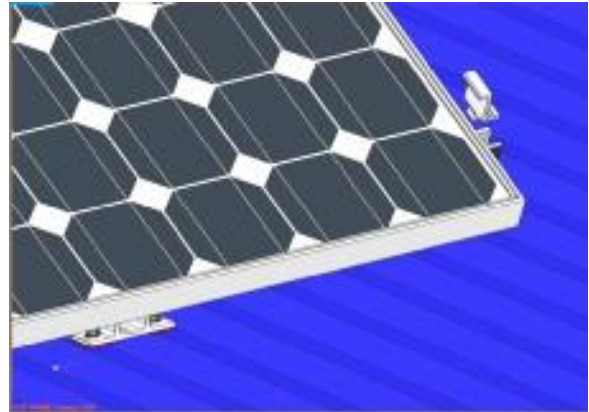
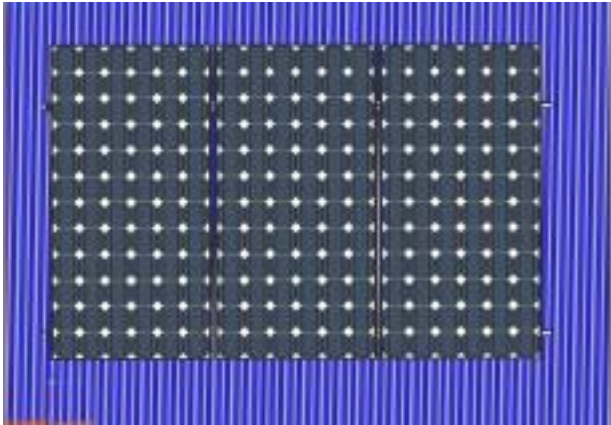
7. Install CHIKO normal mid clamp and end clamp

(1) Fix up the solar panel on the rail by the end clamp, M8*25 hexagonal head screw and module. Fix up the Adjacent two solar panels on the rail by middle clamp and M8 Hexagon head screw (The length of the Hexagon head screw is according to the thickness of solar panel).



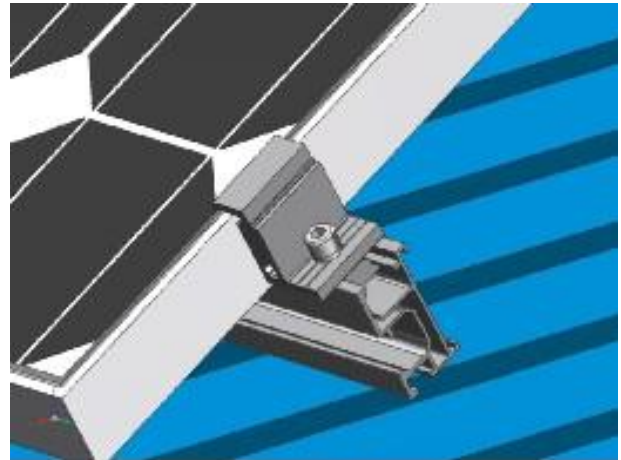
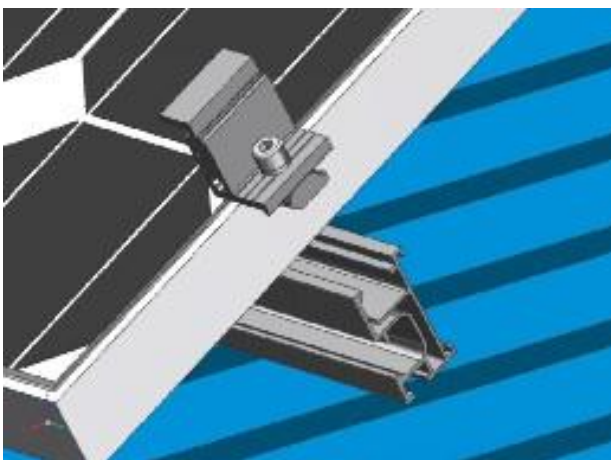
(2)The rest can be done in the same manner. Fix up all the solar panels on the rails.

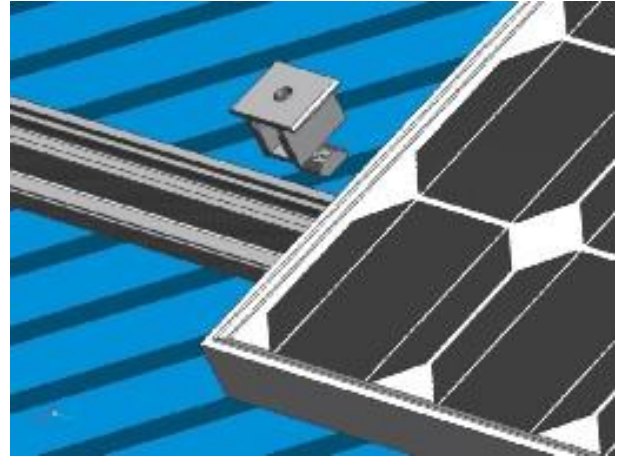
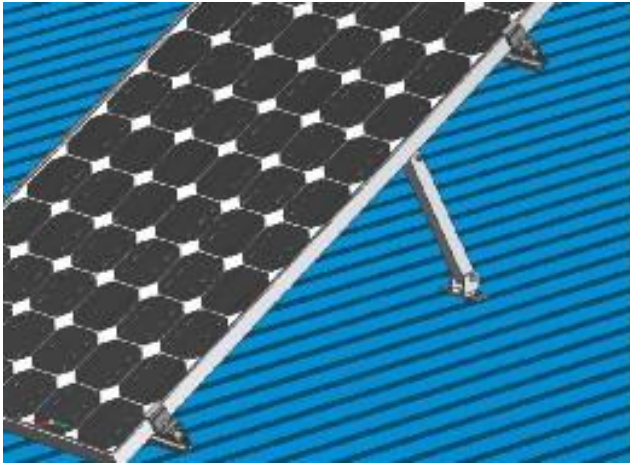




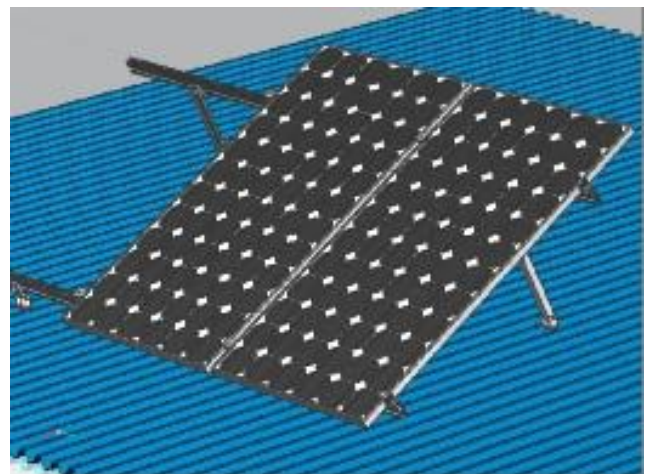
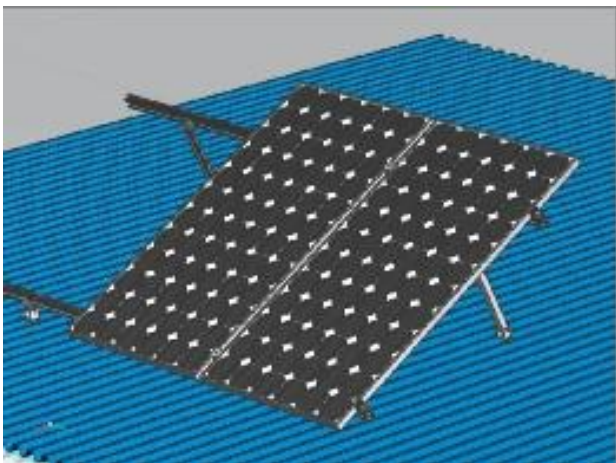
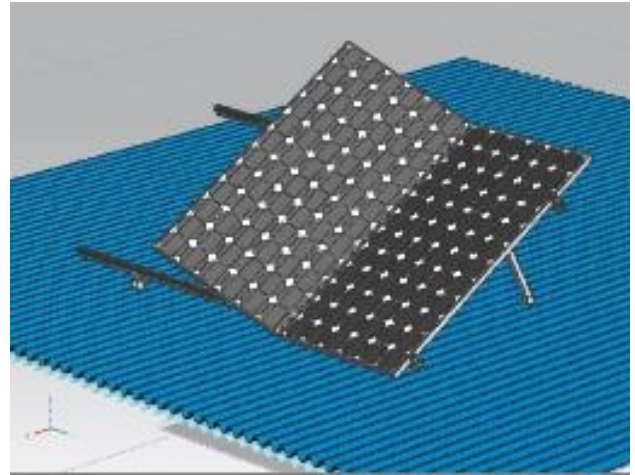
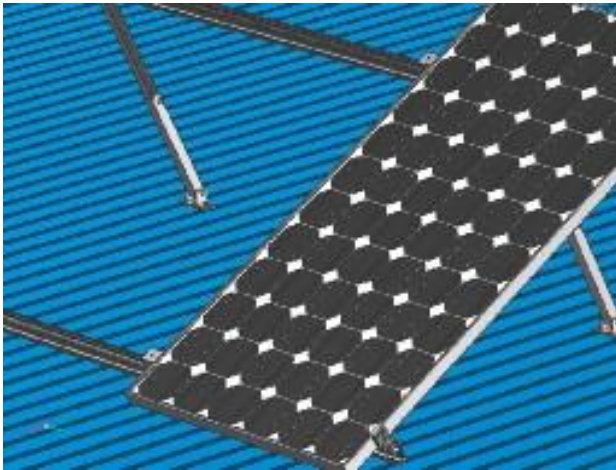
8 Install CHIKO adjustable mid clamp and adjustable end clamp

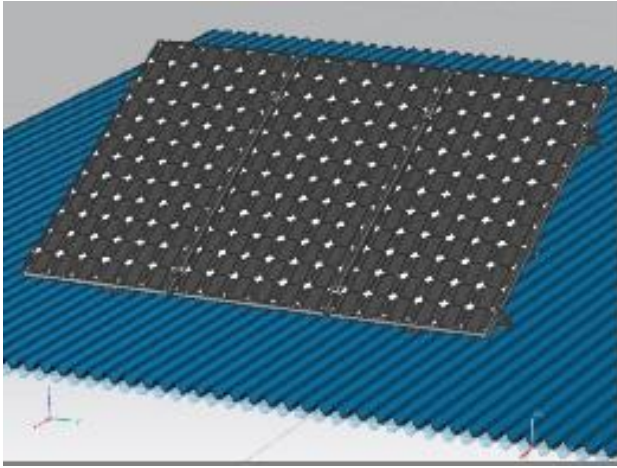
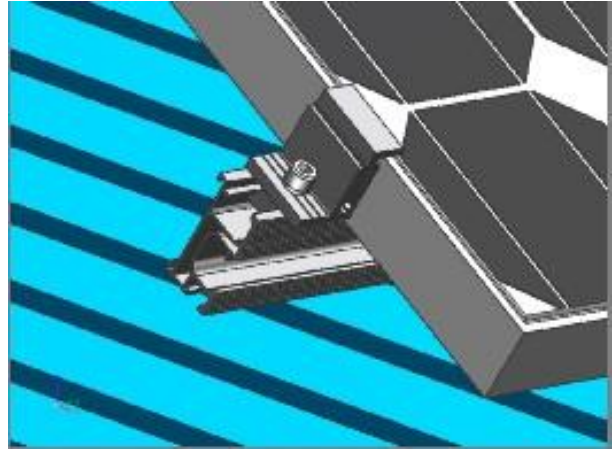
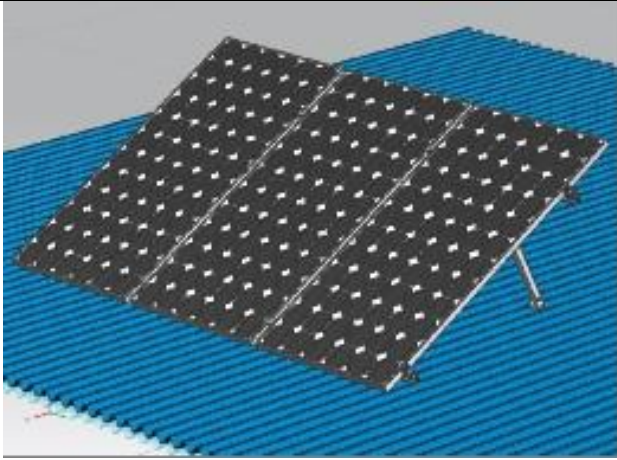
(1) Fix up the solar panel on the rail by the adjustable end clamp, M8*25 hexagonal head screw and module. Fix up the Adjacent two solar panels on the rail by adjustable middle clamp and M8 Hexagon head. The following show 35mm depth solar panel frame, 40mm, 45mm, 50mm, in the same way.



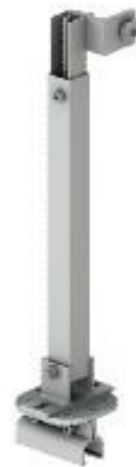


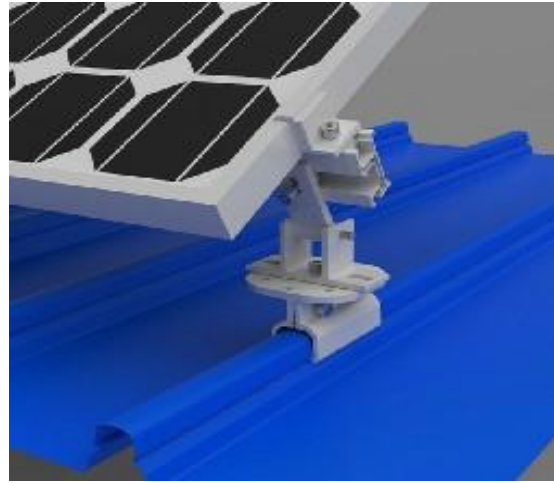
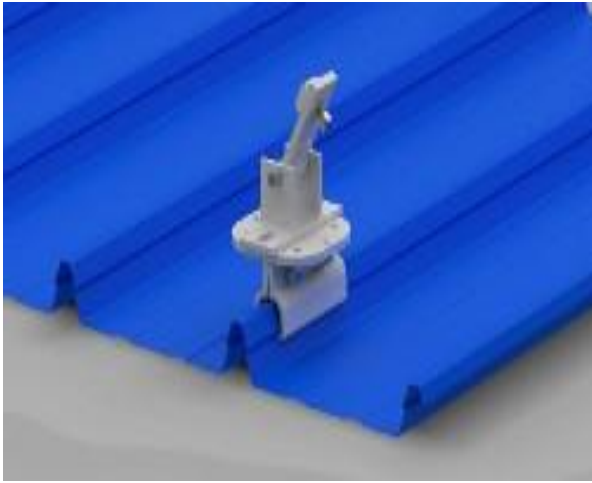
(2)The rest can be done in the same manner. Fix up all the solar panels on the rails.





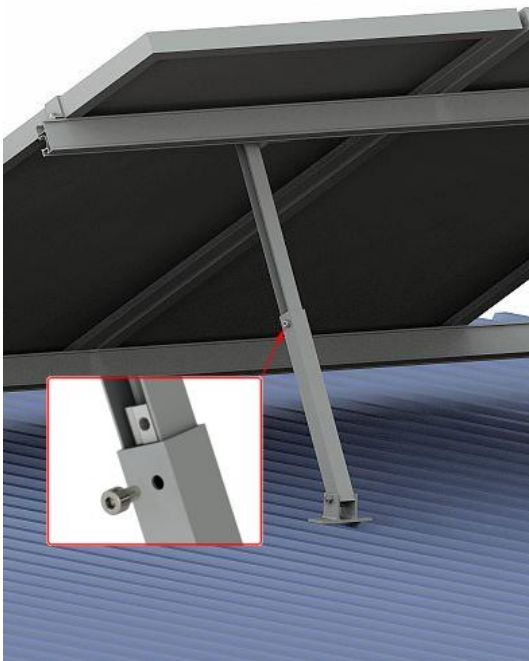
9. Fix Tilt kit while connected with Chiko Tin roof clamp foot (kliplock 406 & 700) will not cause any damages to tin roof, make the mount system more stonger.





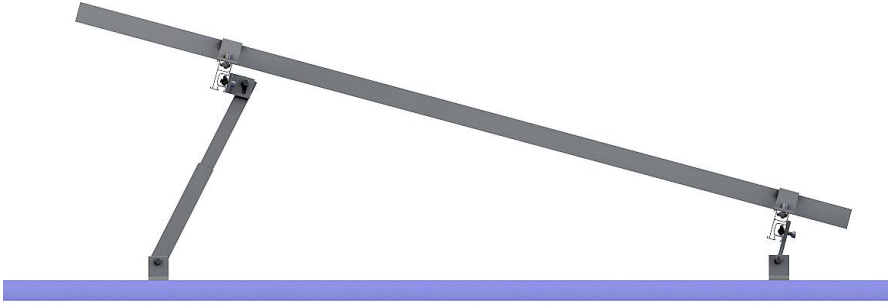
V. Angle Adjustment Description

Loose two M8 no head inner hex bolts on the back leg, adjust the length of back leg pipe, then fix up two M8 no head inner hex bolt to adjust the angle.



Adjustable Angle mounting systems: there are three types according to the angle scope

(1). 10-15 Adjustable angle Mounting System



(2) 15-30 Adjustable angle Mounting System



(3) 30-60 Adjustable angle Mounting System



VI. Warranty

10years limited product warranty, 5 years limited finish warranty

Chiko Solar Industry Co., Ltd. warrants to the original purchaser ("Purchaser") of product(s) that it manufactures ("Product") at the original installation site that the Product shall be free from defects in material and workmanship for a period of ten (10) years, except for the anodised finish, which finish shall be free from visible peeling, or cracking or chalking under normal atmospheric conditions for a period of five (5) years, from the earlier of 1) the date the installation of the Product is completed, or 2) 30 days after the purchase of the Product by the original Purchaser ("Finish Warranty").

The Finish Warranty does not apply to any foreign residue deposited on the finish. All installations in corrosive atmospheric conditions are excluded. The Finish Warranty is VOID if the practices specified by AAMA 609 & 610-02 – "Cleaning and Maintenance for Architecturally Finished Aluminum" (www.aamanet.org) are not followed by Purchaser. This Warranty does not cover damage to the Product that occurs during its shipment, storage, or installation.

This Warranty shall be VOID if installation of the Product is not performed in accordance with Chiko Solar's written installation instructions, or if the Product has been modified, repaired, or reworked in a manner not previously authorized by Chiko Solar IN WRITING, or if the Product is installed in an environment for which it was not designed. Chiko Solar shall not be liable for consequential, contingent or incidental damages arising out of the use of the Product by Purchaser under any circumstances.

If within the specified Warranty periods the Product shall be reasonably proven to be defective, then Chiko Solar shall repair or replace the defective Product, or any part thereof, at Chiko Solar's sole discretion. Such repair or replacement shall completely satisfy and discharge all of Chiko Solar's liability with respect to this limited Warranty. Under no circumstances shall Chiko Solar be liable for special, indirect or consequential damages arising out of or related to use by Purchaser of the Product.

Manufacturers of related items, such as solar modules and flashings, may provide written warranties of their own. Chiko Solar's limited Warranty covers only its Product, and not any related items.