



ALLSTAR

PRODUCT MANUAL

ALLSTAR SOLUTIONS AUSTRALIA

About Allstar

Allstar Solutions is an internationally certified manufacturer of premium PV solar panel mounting systems. All our mounting systems have been carefully designed and innovated by our very own PV research and development team.

We take pride in creating quality products that have been not only designed by industry experts but are manufactured in state-of-the-art facilities. With a dedicated global sales and installation team, you can rest assured that Allstar has the solution no matter your mounting and installation needs. Tried and tested by our technical team with over 20 years' experience, Allstar have developed products that you will be able to rely on now and into the future.

Here at Allstar Solutions our company philosophy is to create value for our clients, by providing them with technical expertise, high-quality and easy-to-install products that they can use to win the future. This is a sentiment which all our employees pursue daily.

Since Allstar established, we are focused on creating mounting systems that are;

- Easy to install:** Being pre-assembled before shipment means the hard work has already been done, which saves you on installation time.
- High Quality:** Allstar Solutions mounting systems are all strictly tested and adhere to Australian and New Zealand Standards. AS/NZS 1170.2:2011(Amdt 2016)
- Robust:** Our expert team focus on creating robust products with 6005-T5 Alloy extrusion and SUS304 components.
- Warranty:** With our 10-year warranty, our Anodized systems are built for corrosion and rust resistance.
- Support:** We provide you with our technical expertise that spans over 20 years in engineering mounting systems.
- Global Distribution:** Allstar Solutions currently export to markets all over the world, including Europe, United States of America, Australia, and South-East Asia.

Here at Allstar Solutions we are focused on taking the hassle out of everyday solar installations.

By providing a service that does the hard work for you;

- 1. Design & Quotation:** Based on your project needs, we design a custom project scope with a quotation, so you know exactly what is required for the job at hand, and the costs associated.
- 2. Approval of project & production:** Once the project has been agreed upon, we will arrange the production plan immediately, ensuring timely delivery, to help you get the project underway as-soon-as-possible.
- 3. Delivery of Goods & Installation Guide:** Not only are our products pre-assembled to suit your project needs, but also come with a detailed installation manual to help you cut down on installation time. This means you can complete more jobs in one day increasing your profitability and work capacity.

Contents

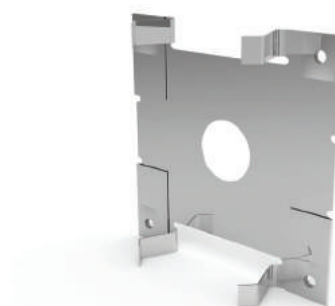
Allstar Components	4
Allstar Mounting Kits	6
1.0 General Information	7
1.1 Materials Used in Allstar Mounting System	7
1.2 Safety Instructions and Responsibilities	7
2.0 Technical Specifications	8
Caution	8
2.1 Applications	8
2.2 Features	8
3.0 Australian Wind Map	9
4.0 Product Description	10
4.1 Components for Standard Installation	10
5.0 Hooks, Brackets and Screws	11
6.0 System Overview	12
7.0 Designing the Module Field	13
8.0 Certified Installation Area	14
8.1 Determine the height of installation	14
8.2 Determine Roof Installation Areas	14
8.3 How to Determine Rail Support	14
8.4 Verify Acceptable Rail End Overhang	15
8.5 Determine Roof Slope	15
9.0 Disclaimer & Limited Warranty Terms	16
10.0 Compliance	19

Allstar Components



Installation Bracket for Metal Roofs

Item No	03-ASL 18
Description	Aluminium Tin Interface Kit
Material	AL6005-T5



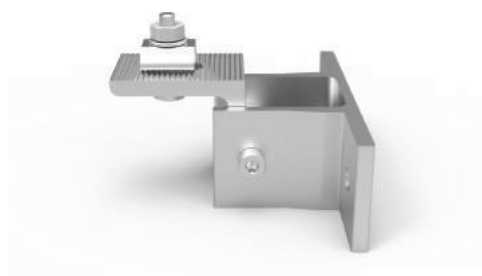
Grounding Clip

Item No	17-ASB04
Description	Grounding Clip
Material	SUS304



Earthing Clamp

Item No	03-ASL 15
Description	Grounding Lug
Material	AL6005-T5



Adjustable Front Leg

Item No	03-ASL 19
Description	Adjustable Front Leg
Material	AL6005-T5



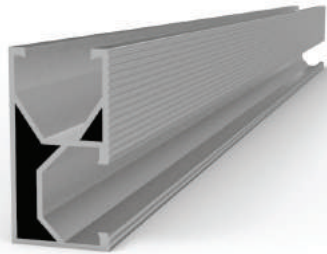
Adjustable Back Leg

Item No	03-ASL 21, 03-ASL 52
Description	15-30 & 30-60 Degree
Material	AL6005-T5



Bonding Jumper

Item No	03-ASL 35
Description	Bonding Jumper
Material	SUS304



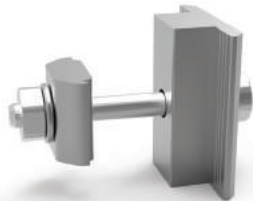
Rail

Item No	03-ASL 01
Description	4200MM Rail
Material	AL6005-T5



End Clamp

Item No	03-ASL 10
Description	End Clamp 35/40
Material	AL6005-T5, SS A2-70



Mid Clamp

Item No	03-ASL 06
Description	Mid Clamp 35/40
Material	AL6005-T5, SS A2-70



Rail Splice

Item No	03-ASL 16
Description	Rail Splice
Material	AL6005-T5, SS A2-70



Klip Lok Clamp

Item No	03-ASL 38
Description	Klip Lok Clamp S07
Material	AL6005-T5

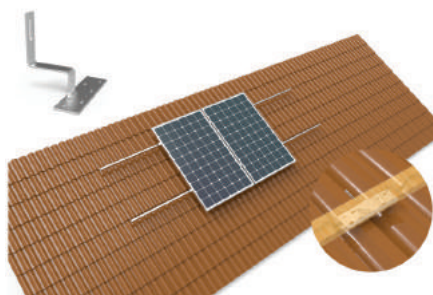


Hook for Sloped Tile Roofs

Item No	03-ASL 17
Description	Hook (Universal)
Material	SUS304

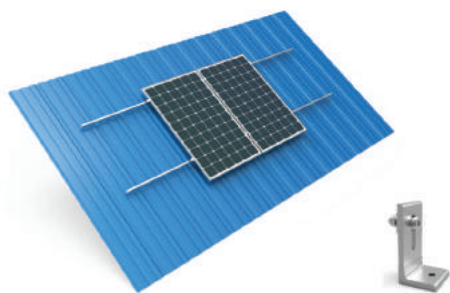
Allstar Solutions Mounting Kits

Mounting Kits For Tile Roof



Product Code	Description	03-ASB01	03-ASB04
		1.5kw Tile (35/40mm)	2.0kw Tile (35/40mm)
03-ASL17	Tile Hook Kit (3 screws)	12	14
03-ASL06	Mid Clamp (35/40mm)	10	14
03-ASL10	End Clamp (35/40mm)	4	8
03-ASL15	Grounding Lug	2	2
03-ASL16	Rail splicer	2	2
17-ASB04	Grounding Clip	5	7
03-ASL01	4200MM RAIL	3	4

Mounting Kits For Metal (Tin) Roof



Product Code	Description	03-ASB02	03-ASB05
		1.5kw Tin (35/40mm)	2.0kw Tin (35/40mm)
03-ASL18	Tin Feet Set (1 screw)	12	16
03-ASL06	Mid Clamp (35/40mm)	10	14
03-ASL10	End Clamp (35/40mm)	4	8
03-ASL15	Grounding Lug	2	2
03-ASL16	Rail splicer	2	2
17-ASB04	Grounding Clip	5	7
03-ASL01	4200MM RAIL	3	4

Mounting Kits For Metal Flat Roof (Tilt)



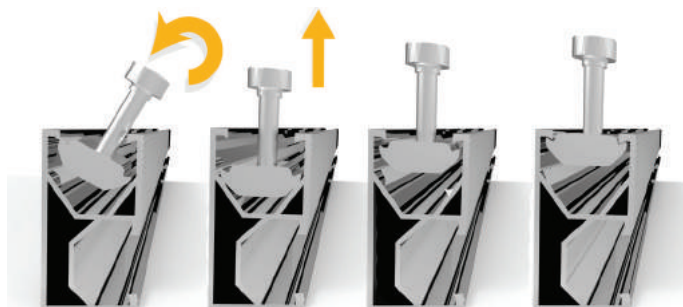
Product Code	Description	03-ASB03	03-ASB06
		1.5kw Tilt (35/40mm)	2.0kw Tilt (35/40mm)
03-ASL19	Tilt Arm Front	6	8
03-ASL21	Tilt Arm Rear 15/30	6	8
03-ASL06	Mid Clamp (35/40mm)	10	14
03-ASL10	End Clamp (35/40mm)	4	8
03-ASL15	Grounding Lug	2	2
03-ASL16	Rail splicer	2	2
17-ASB04	Grounding Clip	5	7
03-ASL01	4200MM RAIL	3	4

1.0 General Information

Thank you for choosing Allstar Solutions Solar Mounting System. Made from custom built aluminium extrusions and components, Allstars innovative design and improved frame strength, greatly simplify solar panel installation.

Our easy four step installation ensures that the D-modules can be put into the D-rail position quickly. The D-modules are pre-assembled with the clamp to save you on installation time.

Each component attaches to the rail with our unique 'Tilt-In Module' design which cuts down on installation time. 'Tilt-In Module' is illustrated (right);



1.1 Materials Used in Allstar Mounting System

Description	Materials
Aluminium Parts/Components	6005-T5 Aluminium Extruded
Tile Brackets	SUS304 Stainless Steel
Bolts	SUS304 Stainless Steel
Washers, Rings & Clips	SUS304 Stainless Steel
Wood Screws	SUS410 Stainless Steel (Chromium Coated)
Finishing on Aluminium Parts/Components	Anodized 12um Clear*

*03-ASL01 4200MM Rail may not be anodized subject to supply. Non-anodized surface will not cause damage by corrosion to the product and shorten the lifespan with 6005A Aluminum material.

1.2 Safety Instructions and Responsibilities

- It is critically important that safety practises are observed when installing, such as your surroundings, installation conditions and safety harness use, when working at height.
- Do not throw or roughly handle any Allstar Solutions components.
- Do not bring Allstar mounting systems into contact with sharp or heavy objects.
- Do not modify any Allstar components in any way. The exchange of bolts, drilling of holes, bending or any other physical changes not described in standard installation procedure will void the warranty and may cause substantial damages to the roof structure, and also the mounting system.
- It is the installer's responsibility to verify the integrity of the structure to which Allstar components are fixed. Roofs or structures will void the warranty, and could result in death or serious injury.
- After installing the system, it is important to check all the drilling points to the roof structure are sealed from water leakage.

2.0 Technical Specifications

2.1 Applications

- Commercial and residential buildings.
- Marine applications and remote areas.

2.2 Features

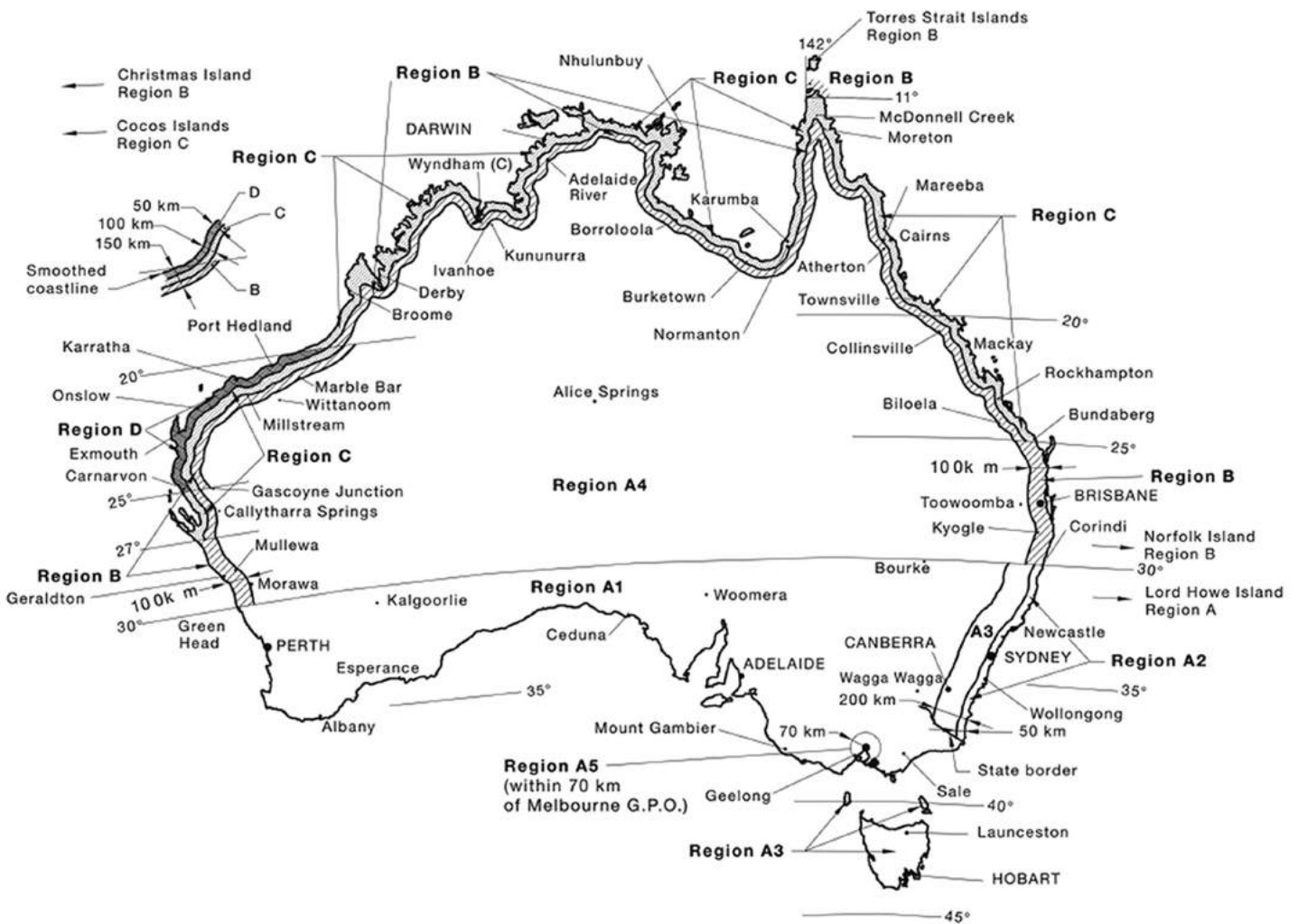
- 6005-T5 Aluminium extrusion.
- Innovative D-module design, which can be pre-assembled with the clamp to make the installation quick and easy.
- Suitable for different conditions and for most solar panels on the market.
- Significantly higher strength-to-weight ratio than other framing products. Meaning improved efficiency due to greater frame spans.
- Inherent corrosion resistance, resulting in low maintenance during the products lifetime.
- Anodized finish*

Caution

Failure to correctly establish the requirement of the proposed installation site is dangerous and will void the framing warranty. Installation of this product is to be performed only by professionally trained installers. Any attempt by an unqualified person to install this product could result in death or serious injury.

*03-ASL01 4200MM Rail may not be anodized subject to supply. Non-anodized surface will not cause damage by corrosion to the product and shorten the lifespan with 6005A Aluminum material.

3.0 Australian Wind Map



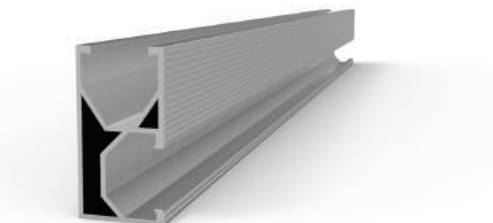
Regions are marked with the letters A (A1 to A5), B, C and D. Coastal region boundaries are smooth lines set in from a smoothed coastline by 50, 100, 150 and 200 km. Islands within 50 km of the coast are designated in the same region as the adjacent coast.

4.0 Product Description

4.1 Components for Standard Installation

Rail

- ✓ Support of solar panels on the roof by footings & brackets
- ✓ 4200MM Railing



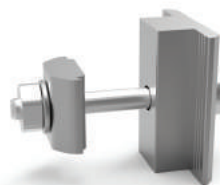
Rail Splice

- ✓ Connect and bonding two rails of the same row
- ✓ Provide continuous earthing of two joint rails
- ✓ Extra washer provided for anodize finish penetration



Mid Clamp (35/40mm)

- ✓ Clamps to hold panel frames on the railing in between panels
- ✓ Sizes available - 35MM - 40MM - 46MM - 50MM



End Clamp (35/40mm)

- ✓ Clamps to hold panel frames on the railing at each end of the row
- ✓ Sizes available - 35MM - 40MM - 46MM - 50MM



Grounding Clip

- ✓ Bonding the earthing of panel frame and railing
- ✓ Installed under the panel frame in each Mid Clamp between the railing



Earthing Clamp

- ✓ Earthing clamp for each row of railing
- ✓ Earth cable to be used connecting each clamp to bond the earthing of each row and the hold PV system.



Bonding Jumper

- ✓ Provide extra earthing bonded between each rail
- ✓ Connect earthing of two rails
- ✓ Optional part if earthing is adequate



5.0 Hooks, Brackets and Screws

Hook for Sloped Tile Roofs

- ✓ Fixed on battern or rafter
- ✓ Support of the 4200MM Rail joining with Tilt-In Module Adapter
- ✓ 3x 80MM Timber screw provided



Aluminium Hook for Metal Roof

- ✓ Fixed on purlin
- ✓ Support of the 4200MM Rail joining with Tilt-In Module Adapter
- ✓ 1 x 80MM Timber screws provided



Adjustable Front Leg for Metal Roof

- ✓ Fixed on purlin or Klip Lok bracket
- ✓ Support of the 4200MM Rail joining with Tilt-In Module Adapter for Front Row
- ✓ 2x 80MM Timer screws provided



Adjustable Rear Leg for Metal Roof

- ✓ Fixed on purlin or Klip Lok bracket
- ✓ Support of the 4200MM Rail joining with Tilt-In Module Adapter for Back Row
- ✓ 2x 80MM Timer screws provided

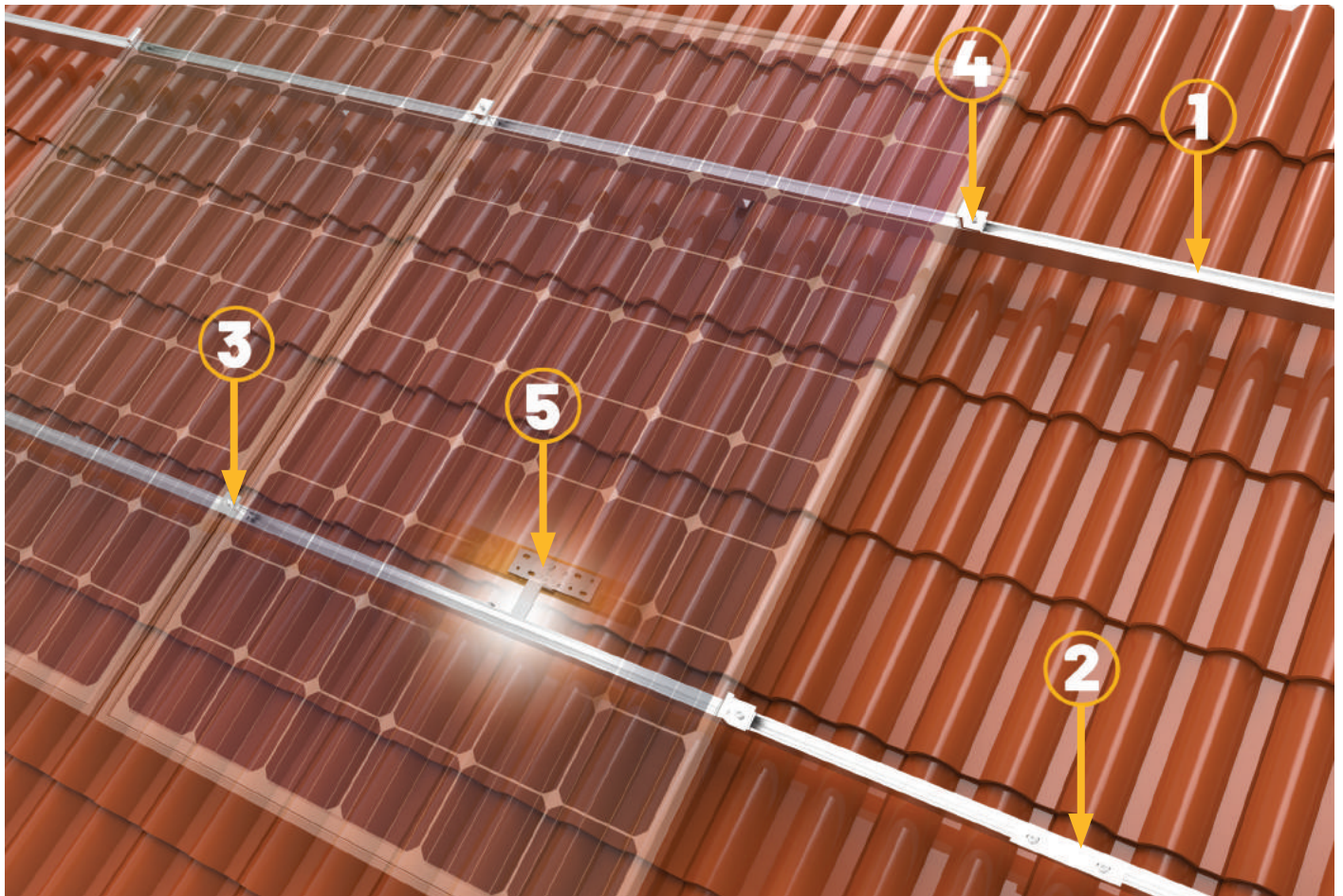


6.0 System Overview

All components of the system are listed below.

The version and quantities of the parts can vary depending on:

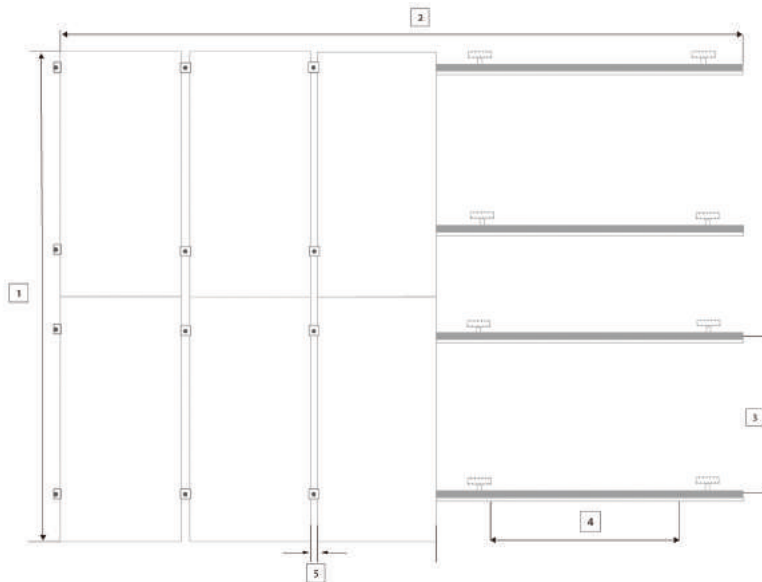
- Type of roof
- Type of module
- Number of Modules
- Site specifics



- ① Rail
- ② Rail Splice (optional)
- ③ Mid Clamp
- ④ End Clamp
- ⑤ Roof Hook

7.0 Designing the Module Field

Below is the distance between roof connection for a portrait installation specified. Clamp on roof hooks need to be installed in the specific distances, depending on the distance of rafters and the site-specific wind load conditions.



1. **Height of the module field:** module height x numbers of modules vertically.
2. **Width of module field:** number of modules horizontally x width of the module + 18mm + 32mm.
3. **Distance between roof connections vertically:** (according to the clamping points pre-defined by the module producer): Quarter-points of the modules, about $\frac{1}{2}$ module height.
4. **Distance between roof connections horizontally:** Depending on the distance between rafters and on the static requirements (refer to section 8 of this product manual).
5. **Distance between modules:** 17mm

When positioning the module please take into consideration;

- The dimensions of the tiles or other roof covering.
- The position of the rafters.
- Define the precise actual horizontal distance between roof connections.
- The distance between roof paths defines the precise actual vertical distance between roof connections.

8.0 Certified Installation Area

8.1 Determine the height of installation

This document provides enough information for Allstar system installation with a height that is less than 20 meters. If your installation site is more than 20 meters in height, please contact Allstar to obtain engineering data to support your installation needs.

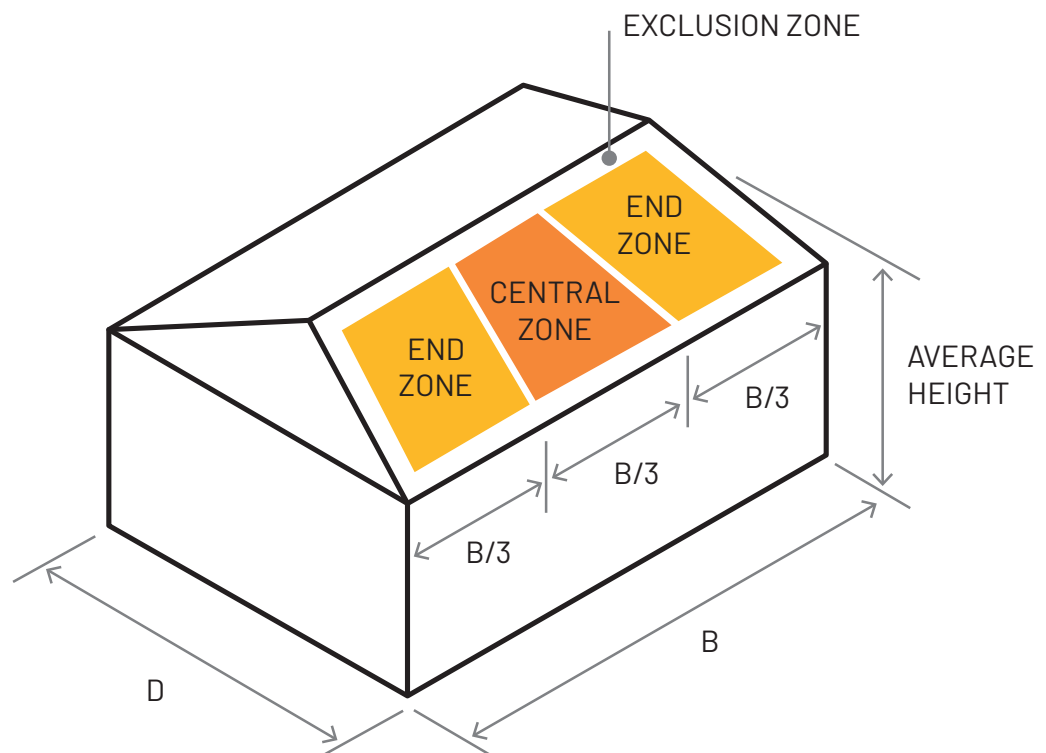
8.2 Determine Roof Installation Areas

Allstar systems can be installed anywhere on a roof, but fixing centres are required to reduce the risk of potential damage at ridges and edges. The diagram shows the area of higher wind loadings within $0.2A$ and $0.2B$ of a roof edge (where A and B are the planned dimensions of the building).

8.3 How to Determine Rail Support

- The above figures are based on module lengths of up to 1970mm, with a maximum weight of $15\text{kg}/\text{m}^2$.
- The above spacing applies for fixing through thin sheet purlins (greater than 0.75mm thickness) or a minimum embedment of 50mm into timber purlins.
- The L-shaped feet from the metal roof bracket should be fixed to the purlins with the usage of 12-gram mounting screws (M6 x 80mm) through sheet metal roofs with desk rubber.
- For 35mm embedment timber or fixing into 0.55mm thick steel the maximum panel length should be reducing to 1700mm and the maximum spacing reduced by 20%.

Please note that the screws provided with our products are designed for mounting into wooden structures.



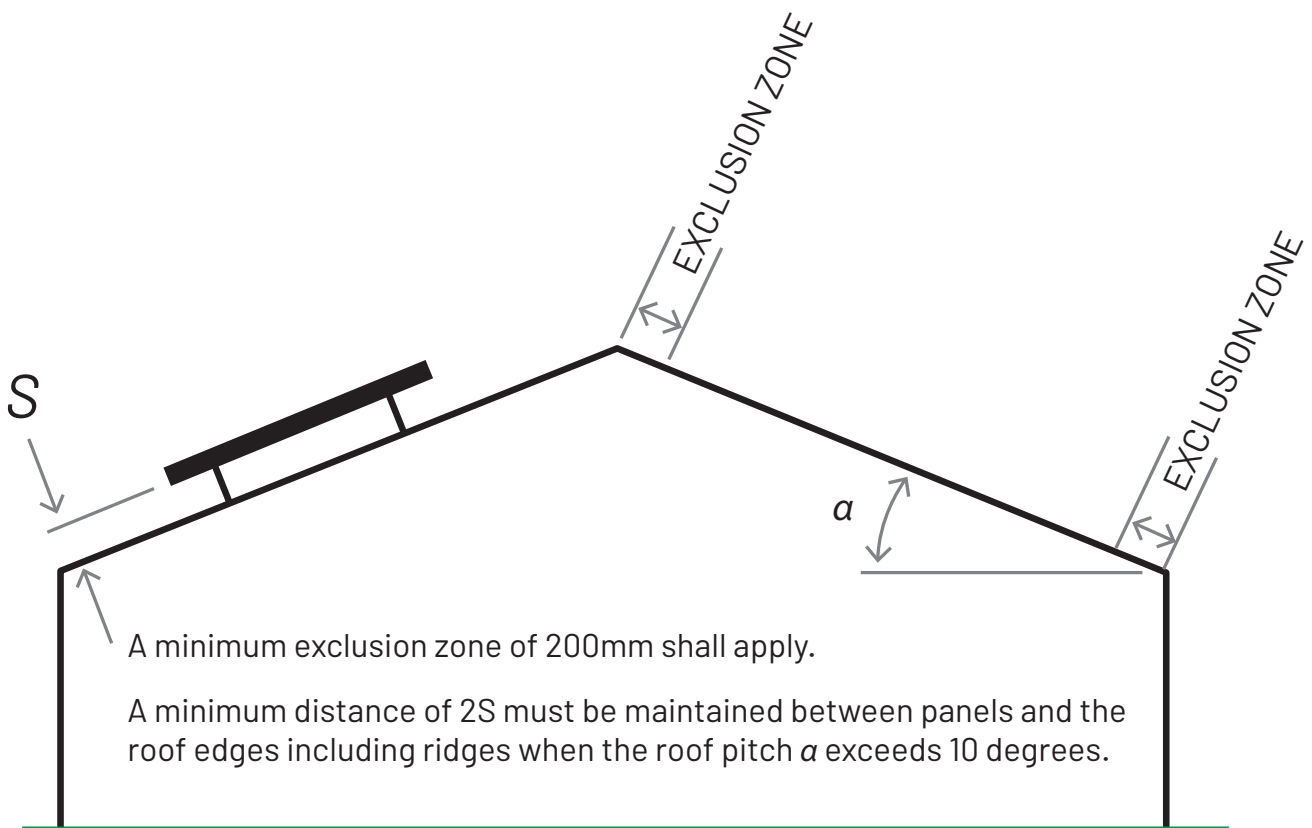
8.4 Verify Acceptable Rail End Overhang

The rail end overhang must equal 50 percent or less of foot spacing. Thus, if foot spacing is 1200mm, the rail end overhang can be up to 600mm. In this case, two feet can support a rail of as much as 2400mm (1200mm between the feet and 600mm of overhang at each end).

8.5 Determine Roof Slope

An Allstar mounting system can be used for roof slopes up to 60 degrees.

Please verify the installation site roof slope is between 0 and 60 degrees.



9.0 Disclaimer & Limited Warranty Terms

Allstar Solutions Pty Ltd (“Allstar” hereafter) warrants its solar mounting system (“mounting system”) is free from defects in material, and workmanship for ten (10) years from the date (“Starting Date”) which the mounting system is purchased from Allstar, or its Authorised Distributor(s) (“Distributor”) in Australia. The Warranty Terms set out in this paper should not overwrite the rights of consumers stated in Australian Consumer Law (“ACL”). Consumer has the right to seek available remedies from Allstar such as repair, replace or refund if major defect has been found on the product in its sole discretion.

1.0 General Terms

1.1 Starting Date

The warranty starting date is the date which is shown on proof of purchase issued by Allstar or its authorised distributor(s), such as the Invoice Date. Starting date should not be extended in any circumstances without written confirmation by Allstar.

1.2 Expiry Date

The expiry date is strictly on the same date of starting date (Clause 1.1) after ten (10) years, or 120 months. Expiry date shall not be extended or renewed in any circumstances unless approval granted by Allstar or its distributors.

1.3 Proof of Purchase

Proof of Purchase must be supplied to identify the starting date (Clause 1.1) or otherwise the warranty claim can be rejected.

Accepted form of Proof of Purchase:

- a) Invoice issued by Distributor;
- b) Other document issued by Distributor confirmed the date and site details

1.4 Application(s)

Application of the mounting system should be in accordance to its design and purpose as described and installed in accordance to its wind load capacity and spacing outlined in the Installation Manual based on the Zones where it is being installed. The guideline set out on the structural engineering certificate must be met so to compliant with AS/NZS1170.2 and relevant building code stated on the engineering certificate.

1.5 Qualified Installation

A qualified installation refers to installation which has been by a qualified and licensed person who has been or has experience in installing and assembling the mounting system following the instruction outlined in the Installation Manual.

1.6 Design Alternation

Alternation to the mounting system design which is not mentioned or in discrepancy to the Installation Manual must be approved and signed off by a qualified structural engineer complying with local Building Code and Council regulation, or it is deemed to be an improper installation otherwise. A copy of the signed off design should be kept for record and future reference. It is recommended that such design is also submitted to Allstar as record and confirmation.

2.0 Exclusions and Limitations

This warranty will not apply and exclude to any defect and damage to the mounting system caused directly, or indirectly due to –

- a) Failure to comply with Allstar Installation Manual;
- b) Installation and assembly was not completed or supervised by a qualified installer who was qualified and licenced under local regulation or permitted to work in the solar industry as an installer, at place of installation;
- c) Assembled with parts, or components which are not an Allstar product or not an approved compatible parts (refer to Product List);
- d) Shipment or storage of the mounting system;
- e) Improper installation and design, maintenance, repair or use of the mounting system;

- f) Normal wear and tear;
- g) Misuse, neglect, abuse, accidental damage or modification to the mounting system;
- h) Failure to observe the instructions set out in the installation manual;
- i) Power failure, power surges, lightning, fire, explosion, flood, extreme weather conditions, environmental disasters or other causes outside Allstar's control, as determined by Allstar in its sole discretion;
- j) Structures where the mounting system fixed on due to lack of engineering assessment;
- k) D.I.Y. assembly and installation (unqualified installation);
- l) Screws and fastener not fixed correctly and securely.

3.0 Rights and Remedies

- 3.1 Consumer has the right to seek remedies under ACL if the mounting system has deemed to have major defects which has been proven by a qualified person with relevant testing conducted. Allstar will in its sole discretion to offer a repair, replace, or refund on the products affected.
- 3.2 Remedies will not be available if such claim was approved under a commercial decision and has no relation to the product quality, or the cause of damage falls into any exclusion in Clause 2.0.
- 3.3 Remedies is only available for claims that have been approved by Allstar or Distributor(s) with relevant and required supporting documents.
- 3.4 Replace, repair or refund is only applicable on parts deemed to be defective.

4.0 Warranty Claim and Limitations

- 4.1 Warranty claim must be submitted and delivered to Allstar or Distributor in writing immediately after discovery of issue such as email, facsimile, letter specifying the alleged issue.

- 4.2 Any claim for breach of this Limited Warranty must be brought within one (1) month after discovery of breach.
- 4.3 The return of any defective product(s) will not be accepted unless written approval granted from Allstar or Distributor.
- 4.4 Allstar or Distributor may decline and reject any warranty claim if insufficient document can be supplied or the defect cannot be supported by qualified engineer.
- 4.5 This Limited Warranty only applies to Allstar products which already have been installed or fixed on the structure. For defective parts found before installation you should stop continue the use of parts and contact Allstar or Distributor immediately for return or replace.
- 4.6 Damages due to transportation, storage, mishandling, by human, normal wear and tear, are not considered as warranty related issue (Clause 2.0).
- 4.7 Rust and stain on aluminium and stainless steel finishing can be normal due to environmental factor, chemical reaction, or aging which are not covered under this Limited Warranty if the structure of the parts and expected lifetime are not affected as such effect is deemed to be superficial.
- 4.8 This Limited Warranty only applies to parts manufactured and supplied by Allstar in the Product List.

5.0 Force Majeure

Allstar and Distributor shall not be responsible or liable in any way to the Buyer for any non-performance or delay in performance under Limited Warranty due to occurrences of force majeure such as war, riots, strikes, and unavailability of suitable and sufficient labour, material, or capacity or technical yield failures and any unforeseen event beyond its control, including, without limitation, any technological or physical event or condition which is not reasonably known or understood at the time of the sale of the defective Product(s) or the notification of the relevant warranty claim under this Limited Warranty.

6.0 Disclaimer

- a) Replacement and repair parts are subject to availability in the location where the mounting system was installed. If parts are not available we will in our best to source a compatible parts to repair and replace the defective products.
- b) Allstar and Distributor shall not be liable and responsible to damages and loss on any property or any person or performance if the product is not at fault and the installation is not qualified.
- c) Allstar and Distributor shall not be liable and responsible to damages and injuries to any person who is installing and assembling the mounting system without protective equipment worn, correct use of tools and correct safety measurement on the installation environment.
- d) Damages and loss due to design alternation regardless the approval of qualified structural engineer and such damage and loss should be liable to the engineer.

7.0 Validity

- a) This Limited Warranty apply to mounting systems sold and despatched on and after 01 March 2018 until newer version issued by Allstar.

8.0 Explanation, Escalation and Objection

- a) Allstar will remain its right to the final explanation of the terms and contents written in this Limited Warranty, and such terms may subject to change without notice when newer version is issued.
- b) Any escalation and objection to the final decision of the Warranty Claim should be delivered to Allstar or Distributor in writing specifying the reason with supporting documents.

9.0 Miscellaneous

9.1 Qualified Person

- a) It is recommended that the Allstar mounting system is assembled and installed by a qualified person with experience and background in the solar installation and licenced to work as a solar designer and installer.
- b) If the person who is assembling and installing the mounting system the person should be supervised and the work should be signed off by a qualified person to ensure the installation is correct and no structural concern and risk of damages.
- c) Example of Qualified Person
 - CEC Designer and Installer
 - Structural Engineer
 - Solar Installation Contractor

10.0 Compliance

Allstar mounting systems are designed for a worldwide application and engineered to withstand different types of weather and wind conditions. For Australia the mounting system was reviewed and certified by SPAD Consulting Engineers in New South Wales.

By complying to the requirements set out in the SPAD Engineering Certificate your design and installation with Allstar Solutions will be certified in compliance with the Australian Building Codes outlined in the list below, relating to structural issues.

Code of Standard	Description
AS/NZS 1170.0-2002	Structural Design Actions Part 0: General Principles
AS/NZS 1170.2-2011(Amdt 2016)	Structural Design Action Part 2: Wind Actions
AS 1664.1-1997	Aluminium Structures Part 1: Limit State Design
AS/NZS 4673-2001	Cold Formed Stainless Steel
AS 1684.1-1991	Residential Timber – Framed Construction – Design Criteria
AS 1684.2-2010	Residential Timber – Framed Construction – Non-Cyclonic Areas
AS 1684.2-2010	Residential Timber – Framed Construction – Cyclonic Areas
AS 1720.1-2010	Timber Structures – Design Methods
AS 3566.1-2002	Self-Drilling screws for the building and construction industries
AS 3566.2-2002	Part 2: Corrosion Resistances Requirements
ISO 3506.1-2009	Mechanical Properties of Corrosion-Resistance Stainless Steel Fasteners



ALLSTAR

Allstar Solutions Australia

8 Longford Court, Springvale,
Victoria 3171 Australia

Manufacturer: Allstar Solutions China

Zhiqian Town Jintan, Changzhou Jiangsu,
China

allstarsolutions.com.au