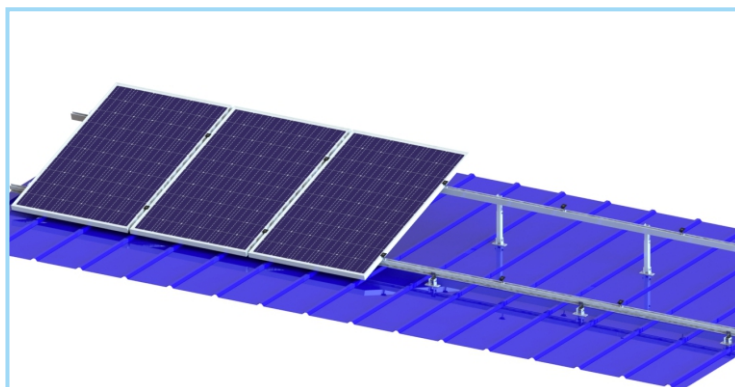


SOLAR ROOF MOUNTING SYSTEM INSTALLATION MANUAL

>>> **MODEL NAME: TT TILT ROOF SET**

JIANGYIN TITANERGY CO.,LTD.
Model Name:TT TILT ROOF SET

Phone:0086-510-86610879
Fax:0086-510-86610877

Web:www.titanergy.com
Mail:info@titanergy.com

Gamcorp (Melbourne) Pty Ltd A.C.N 141 076 904 A.B.N 73 015 060 240
www.gamcorp.com.au Email: melbourne@gamcorp.com.au
35 Butler Street, Richmond VIC 3121 Tel: 03 9543 2211

Our Ref: 10038-05-TT/BL
13 August 2021

JIANGYIN TITANERGY CO. LTD
No.11 Wuxiang Road
Yunting Street, Jiangyin
China 214422

PV Array Frame Engineering Certification

RE: AS/NZ 1170.2 Certification for Titanergy Tilt Mounted System on Tin Roof (Penetrative Fix Roof) with TT Rails

Gamcorp (Melbourne) Pty Ltd, being Structural Engineers within the meaning of Australian Building Regulations, have carried out a structural design check of Titanergy Flush Mounted System on Tin Roof (Penetrative Fix Roof) with TT rails within Australia. The design check is based on the information and test reports provided by Jiangyin Titanergy Co. LTD.

This certificate is **only valid** for Titanergy Flush Mounted System themselves. The roof structure or the building structure and PV panels shall be assessed separately and accordingly.

This certificate is **only valid** when fixing into minimum 1.9mm BMT steel or minimum JD4 seasoned timber. If the fixing condition is different from those conditions, interface spacing shall be reviewed and validated.

This certificate is **only valid** as a whole. Any information extracted from this certificate is not valid if standing alone.

We find the Installation of Flush Mounted System on these Penetrative Fix Roof for Australian use to be structurally sufficient based on the following conditions:

- Wind loads to AS/NZ1170.2:2011(R2016) Wind actions
- Wind region **A, B, C, D**
- Wind terrain category **2 & 3**
- Wind average recurrence interval of **200 years**
- Maximum building height **20m**
- The maximum assessed PV panel dimensions are **1800mm x 1100mm, 2000mm x 1100mm, 2200mm x 1200mm, 2400mm x 1200mm**
- Weight of the PV panel and array frame to be 15 kg/m²
- Rails to be **TT Rail**
- Material of Rails to be **AL6005-T5**
- The spacing are determined based on fixing into minimum JD4 seasoned timber with 35mm screw embedment length and 1.9mm thick steel purlins
- Each PV panel to be installed using **2 rails** minimum in all circumstances
- No PV panel to be installed within 2xs from edges and ridge. "s" is the maximum gap between the underside of the panel and the roof surface when installed on the roof (50mm≤s≤300mm)

ISO 9001:2015 Registered Firm
Certificate No: AU1222

10038-05-TT General Certificate - Tilt Mount Solar System on Tin Roof (Penetrative Fix Roof) with TT rails.odt

Gamcorp (Melbourne) Pty Ltd A.C.N 141 076 904 A.B.N 73 015 060 240
www.gamcorp.com.au Email: melbourne@gamcorp.com.au
35 Butler Street, Richmond VIC 3121 Tel: 03 9543 2211

- Installation of PV panels to be done in accordance with the PV panels installation manual
- The certification **excludes** assessment of roof structure and PV panels

Refer to attached summary table for interface spacing (Unit: mm)

NOTES:

- **The recommended spacing nominated in this certification is based on the capacity of the array frame and the fixing of array frames to the roof, not the roof structure and PV panels. It is the responsibility of the installer to adopt the most critical spacing.**
- **If any of the above conditions cannot be met, the structural engineer must be notified immediately.**
- **The spacing shown in the interface tables shall be adjusted based on the assessment and requirement of the roof structures.**

Construction is to be carried out strictly in accordance with the manufacturers instructions. This work was designed by **Bianca Liu** in accordance with the provisions of Australian Building Regulations and in accordance with sound, widely accepted engineering principles. This certificate is only valid till 20/08/2023. Gamcorp should be contacted for future validation. Contact Gamcorp for customised system or if the site conditions are not covered by this assessment.

Yours faithfully,
Gamcorp (Melbourne) Pty Ltd



L. Van Spaandonk
Principal Engineer
FIEAust CPEng NER 5038980
NT Registration: 244137ES
QLD Registration: 18703
VIC Registration: PE0001956
TAS Registration: CC7366

Attachments:

- Titanergy Tilt Array Frame System Spacing Tables on Tin Roof (Penetrative Fix Roof) with TT rail

ISO 9001:2015 Registered Firm
Certificate No: AU1222

10038-05-TT General Certificate - Tilt Mount Solar System on Tin Roof (Penetrative Fix Roof) with TT rails.odt



gamcorp

Relationships built on trust

Gamcorp (Melbourne) Pty Ltd
Consulting Structural & Civil Engineers
A.C.N 141 076 904
A.B.N 73 015 060 240
www.gamcorp.com.au
melbourne@gamcorp.com.au

Structural Design Documentation

Titanergy Tilt Array Frame System Spacing Table
According to AS/NZS 1170.2-2011 (R2016)
with TT Rail – Tin Roof (Penetrative Fix Roof)
within Australia
Terrain Category 2 & 3

For: JIANGYIN TITANERGY CO.,LTD
No.11 Wuxiang Road
Yunting Street, Jiangyin
China 214422

Job Number: 10038-05-TT
Date: Aug-21



COPYRIGHT: The concepts and information contained in this document are the property of Gamcorp (Melbourne) Pty Ltd. Use or copying of this document in whole or in part without the written permission of Gamcorp constitutes an infringement of copyright.

LIMITATION: This report has been prepared on behalf of and for the exclusive use of Gamcorp (Melbourne) Pty Ltd's Client, and is subject to and issued in connection with the provisions of the agreement between Gamcorp (Melbourne) Pty Ltd and its Client. Gamcorp (Melbourne) Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.



35 Butler Street
Richmond VIC 3121
Tel: 03 9543 2211
melbourne@gamcorp.com.au
www.gamcorp.com.au
ISO 9001:2015 Registered Firm
Certificate No: AU1222

Job No: 10038-05-TT
Client: JIANGYIN TITANERGY CO.,LTD
Project: Titanergy Tilt Array Frame System Spacing Table
with TT Rail – Tin Roof (Penetrative Fix Roof)
Address: within Australia

Australian Standards

AS/NZS 1170.0:2002 – Structural design actions, Part 0: General principles
AS/NZS 1170.1:2002 (R2016) – Structural design actions, Part 1: Permanent, imposed
and other actions
AS/NZS 1170.2:2011 (R2016) – Structural design actions, Part 2: Wind actions

AS/NZS 1252:1996 – High strength steel bolts
AS/NZS 1664.1:1997 – Aluminium structures - Limit state design
AS 4100:2020 – Steel Structures
AS/NZS 4600:2018 – Cold-Formed Steel Structures

Wind Terrain Category: WTC2 & 3

Designed: BL
Checked: AA

Date: Aug-21

Tilt Array Frame System Spacing Table for Tin Roof (Penetrative Fix Roof) Spacing – mm

Type of Roof: Tin Roof
Type of Rail: Titanergy TT Rail
Type of Interface: Tilt Roof Set
Solar Panel Dimension: 1800x1100
Terrain category: 3

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	740	1135	1555	1850	740	1135	1555	1850	640	980	1330	1765	570	875	1190	1690
B	--	760	1030	1595	--	760	1030	1595	--	655	890	1370	--	585	790	1220
C	--	--	600	920	--	--	600	920	--	--	520	795	--	--	--	705
D	--	--	--	590	--	--	--	590	--	--	--	510	--	--	--	--

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	595	805	1245	--	595	805	1245	--	515	695	1070	--	--	620	955
B	--	--	540	825	--	--	540	825	--	--	--	715	--	--	--	635
C	--	--	--	535	--	--	--	535	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $30^\circ < \alpha \leq 60^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	--	615	945	--	--	615	945	--	--	530	815	--	--	--	725
B	--	--	--	630	--	--	--	630	--	--	--	545	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table for Tin Roof (Penetrative Fix Roof) Spacing – mm

Type of Roof: Tin Roof
Type of Rail: Titanergy TT Rail
Type of Interface: Tilt Roof Set
Solar Panel Dimension: 1800x1100
Terrain category: 2

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	610	935	1275	1735	505	765	1040	1610	--	690	935	1445	--	655	885	1365
B	--	630	850	1310	--	515	695	1070	--	--	630	965	--	--	590	905
C	--	--	--	760	--	--	--	620	--	--	--	560	--	--	--	530
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	--	665	1020	--	--	545	835	--	--	--	750	--	--	--	710
B	--	--	--	680	--	--	--	560	--	--	--	505	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $30^\circ < \alpha \leq 60^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	--	510	780	--	--	--	640	--	--	--	575	--	--	--	545
B	--	--	--	520	--	--	--	--	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table for Tin Roof (Penetrative Fix Roof) Spacing – mm

Type of Roof: Tin Roof
Type of Rail: Titanergy TT Rail
Type of Interface: Tilt Roof Set
Solar Panel Dimension: 2000x1100
Terrain category: 3

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	700	1075	1465	1760	700	1075	1465	1760	605	925	1255	1665	540	825	1120	1590
B	--	715	970	1505	--	715	970	1505	--	620	840	1295	--	555	745	1150
C	--	--	--	770	--	--	--	770	--	--	--	665	--	--	--	590
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	--	675	1040	--	--	675	1040	--	--	580	895	--	--	520	795
B	--	--	--	690	--	--	--	690	--	--	--	595	--	--	--	530
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $30^\circ < \alpha \leq 60^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	--	515	790	--	--	515	790	--	--	--	680	--	--	--	610
B	--	--	--	530	--	--	--	530	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table for Tin Roof (Penetrative Fix Roof) Spacing – mm

Type of Roof: Tin Roof
Type of Rail: Titanergy TT Rail
Type of Interface: Tilt Roof Set
Solar Panel Dimension: 2000x1100
Terrain category: 2

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	510	785	1065	1635	--	640	870	1345	--	580	780	1205	--	545	740	1140
B	--	525	710	1095	--	--	580	895	--	--	525	805	--	--	--	755
C	--	--	--	635	--	--	--	520	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	--	555	855	--	--	--	700	--	--	--	630	--	--	--	595
B	--	--	--	570	--	--	--	--	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $30^\circ < \alpha \leq 60^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	--	--	650	--	--	--	535	--	--	--	--	--	--	--	--
B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table for Tin Roof (Penetrative Fix Roof) Spacing – mm

Type of Roof: Tin Roof
Type of Rail: Titanergy TT Rail
Type of Interface: Tilt Roof Set
Solar Panel Dimension: 2200x1200
Terrain category: 3

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	540	825	1130	1680	540	825	1130	1680	--	710	970	1515	--	635	865	1345
B	--	550	750	1160	--	550	750	1160	--	--	645	995	--	--	575	885
C	--	--	--	670	--	--	--	670	--	--	--	575	--	--	--	515
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	--	585	905	--	--	585	905	--	--	505	775	--	--	--	695
B	--	--	--	600	--	--	--	600	--	--	--	520	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $30^\circ < \alpha \leq 60^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	--	--	690	--	--	--	690	--	--	--	590	--	--	--	530
B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table for Tin Roof (Penetrative Fix Roof) Spacing – mm

Type of Roof: Tin Roof
Type of Rail: Titanergy TT Rail
Type of Interface: Tilt Roof Set
Solar Panel Dimension: 2200x1200
Terrain category: 2

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	–	680	925	1445	–	555	755	1170	–	–	680	1050	–	–	640	990
B	–	–	615	950	–	–	505	775	–	–	–	700	–	–	–	660
C	–	–	–	550	–	–	–	–	–	–	–	–	–	–	–	–
D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	–	–	–	745	–	–	–	605	–	–	–	545	–	–	–	515
B	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Tilt angle to roof surface (α) – $30^\circ < \alpha \leq 60^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	–	–	–	565	–	–	–	–	–	–	–	–	–	–	–	–
B	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Tilt Array Frame System Spacing Table for Tin Roof (Penetrative Fix Roof) Spacing – mm

Type of Roof: Tin Roof
Type of Rail: Titanergy TT Rail
Type of Interface: Tilt Roof Set
Solar Panel Dimension: 2400x1200
Terrain category: 3

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	510	780	1065	1650	510	780	1065	1650	--	675	915	1430	--	600	815	1270
B	--	520	705	1095	--	520	705	1095	--	--	610	940	--	--	545	835
C	--	--	--	635	--	--	--	635	--	--	--	545	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	--	555	855	--	--	555	855	--	--	--	735	--	--	--	655
B	--	--	--	570	--	--	--	570	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $30^\circ < \alpha \leq 60^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	655	885	1370	--	655	885	1370	--	565	765	1175	--	505	685	1050
B	--	--	595	910	--	--	595	910	--	--	515	785	--	--	--	700
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table for Tin Roof (Penetrative Fix Roof) Spacing – mm

Type of Roof: Tin Roof
Type of Rail: Titanergy TT Rail
Type of Interface: Tilt Roof Set
Solar Panel Dimension: 2400x1200
Terrain category: 2

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	–	645	875	1365	–	525	715	1105	–	–	645	990	–	–	610	940
B	–	–	585	900	–	–	–	735	–	–	–	660	–	–	–	620
C	–	–	–	520	–	–	–	–	–	–	–	–	–	–	–	–
D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	–	–	–	705	–	–	–	575	–	–	–	515	–	–	–	–
B	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Tilt angle to roof surface (α) – $30^\circ < \alpha \leq 60^\circ$

Wind Region	Building Height – H (m)															
	H $\leq$ 5				5<H $\leq$ 10				10<H $\leq$ 15				15<H $\leq$ 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	–	655	885	1370	–	655	885	1370	–	565	765	1175	–	505	685	1050
B	–	–	595	910	–	–	595	910	–	–	515	785	–	–	–	700
C	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

General Notes

Note 1 Following components are satisfied to use according to AS/NZS 1170.2-2011(R2016)

Components	Part number	Comments
Inter Clamp Kit	Inter Clamp Kit 25-50mm	as per drawing provided by client
End Clamp Kit	End Clamp Kit 25-50mm	as per drawing provided by client
Tilt Roof System	Tilt Roof System	as per drawing provided by client
TT Rail	TT Rail	as per drawing provided by client

Note 2 Maximum uplift wind pressure is limited to 5.0 KPa for panels of 1800x1100mm and 2000x1100mm
Maximum uplift wind pressure is limited to 4.37KPa for panel of 2200x1200mm
Maximum uplift wind pressure is limited to 3.6KPa for panel of 2400x1200mm

Note 3 Deflection is limited to minimum of L/120 and 15mm

Note 4 Spacing calculated based on at least 1.9mm thick steel purlin or 35mm screw embedment length into timber.

Note 5 Terrain Category 2 (TC2) refers to open terrain, including grassland, with well-scattered obstructions having heights generally from 1.5 m to 5 m, with no more than two obstructions per hectare, e.g. farmland and cleared subdivisions with isolated trees and uncut grass.
Terrain Category 3 (TC3) refers to terrain with numerous closely spaced obstructions having heights generally from 3 m to 10 m. The minimum density of obstructions shall be at least the equivalent of 10 house-size obstructions per hectare, e.g. suburban housing, light industrial estates or dense forests.

Note 6 Refer to Figure 1 for definition of h and d. Tilt angle is measured from roof surface.

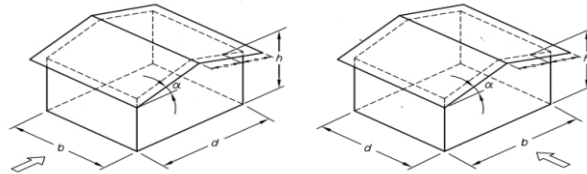
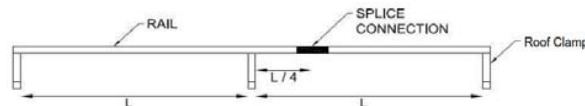


Figure 1 – h and d definition

Note 7 The optimised location of rail splice connection is at quarter length of the spacing of the interface. No Splice connection should be placed at the centre of spacing or over the interface.



Note 8 Refer Figure 2 for definition of roof zones.

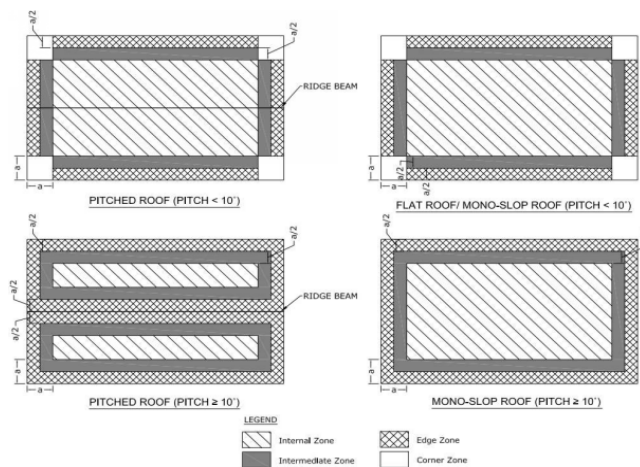


Figure 2 - Roof Zones Definition

In Figure 2, the value of dimension "a" is the minimum of 0.2b, 0.2d and h. (b & d are building dimensions and h is its height)