

General Certification for Titanergy Solar Flush Mounted System on Concealed Fix Roof with Titan Solar TT Rail

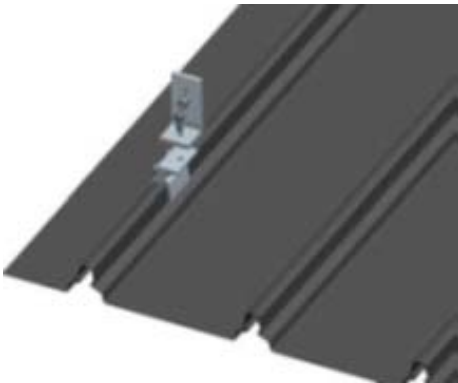
For: JIANGYIN TITANERGY CO. LTD
No.11 Wuxiang Road
Yunting Street, Jiangyin
China 214422

Job No.: 11323-RM01
Date: 28/06/2022

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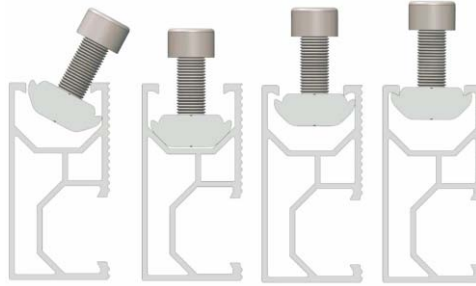
Installation

Install on Tin Roof	
1. Connect KlipLok Interface to the roof tightly. ※ Torsion:23-25N.m	
2. Fix Tin roof hook/Front leg/Rear leg/ Triangle on KlipLok ※ Kliplok406:using 1pc bolts and nuts ※ Torsion:23-25N.m	

Install The TT -Rail

3. D-Module quick mount.

Four steps to quick mount the D-Module into TT -Rail channel.
Move the assembly to it's desired final position, and fastens firmly in place by torque bolt to 10Nm.



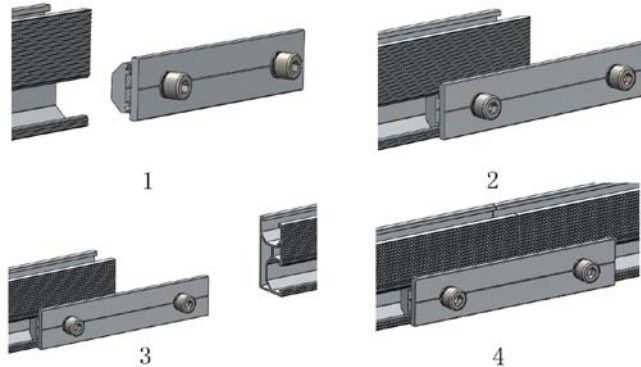
4. Connect the tin roof hook with the TT Rail.

- Insert the D-Module into the side channel of the TT Rail as the step 3 shown.
 - Adjust the TT Rail to be level.
 - Fasten the bolt.
- ※ Torsion:23-25N.m



5. TT Rail connect (with toothed gears)

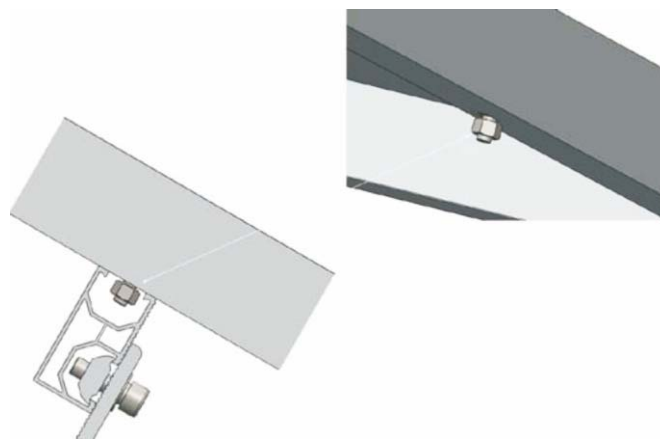
- a. Put the TT Rail Splice into the side channel of the TT Rail about 75mm, then fasten the M8 Bolt.
 - b. Put the other TT Rail into the other side of the TT Rail Splice and fasten the other M8 bolt.
- ※ Torsion:23-25N.m



Install the module

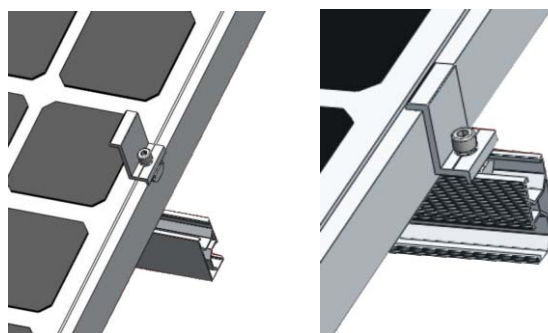
6. Installing anti-slip protection

- The anti-slip protection is only necessary on the lowermost row of modules. At first, fit two bolts M6*20 and nuts into the lower holes of each module. Then place the first module of the bottom row so that the anti-slip protection sits in the rail channel of the lowest row of rails
- ※ Torsion:23-25N.m



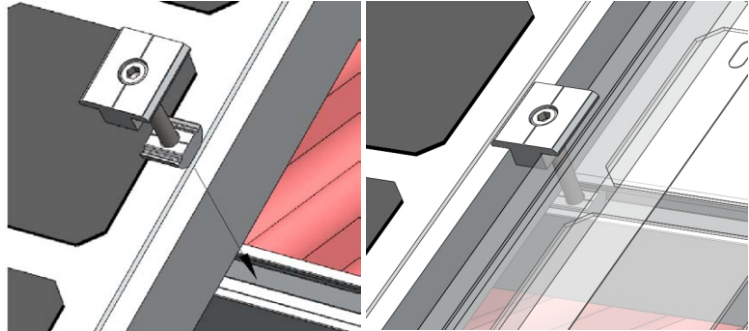
7. Fixing the outer modules by End clamp.

- a. Put the end clamp kit into the top channel of the TT -Rail as the step 3.
 - b. Push the side of module to firmly against the end clamp and then fasten the bolt.
- ※ Torsion:23-25N.m

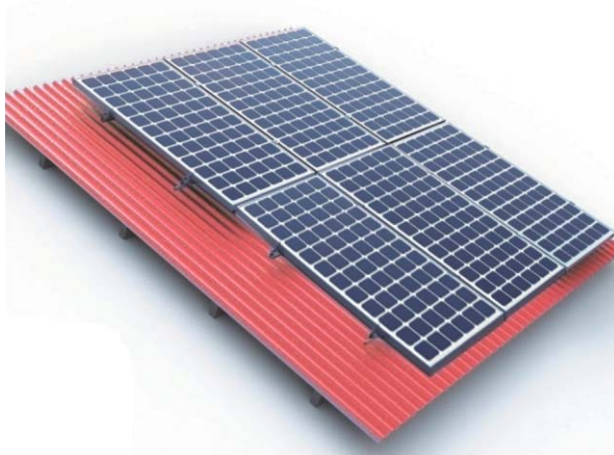


8. Fixing the inter modules by inter clamp.
 - a. Put the inter clamp kit into the top channel of the TT -Rail as the step 3.
 - b. Push the Inter-module clamp firmly against the already fixed module.
 - c. Push the next module against the other side of the module-inter clamp.
 - d. Tighten the bolt

※ Torsion:23-25N.m



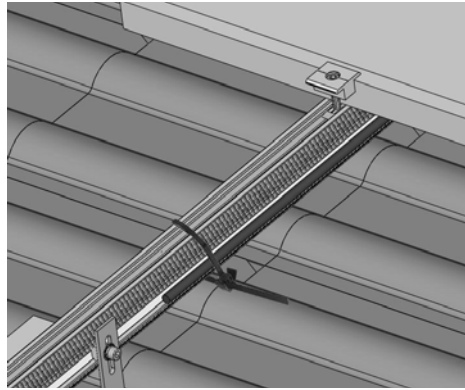
9. Installing the further rows of modules



Cable tie and Grounding

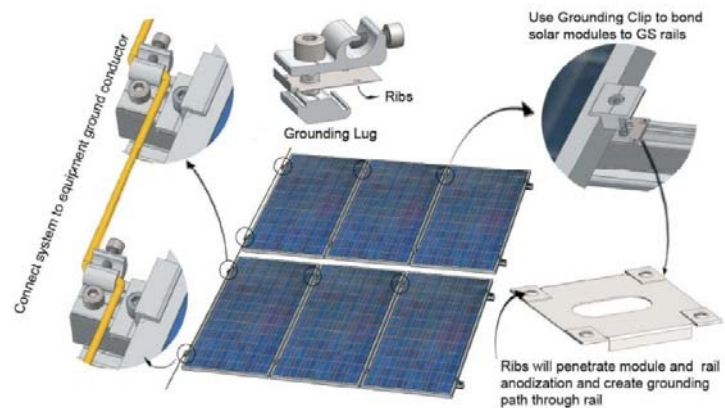
10. Tie cable with the rail

- a. Tie the cable with the rail using the zip tie



11. Grounding

Please see the Titan Solar Grounding System Installation Guide.



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Document ID		11323-RM01/BL		Job No.	11323	
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Client		JIANGYIN TITANERGY CO. LTD		Client Contact	Tina Nie	
Rev	Date	Revision Details	Prepared By	Author	Verifier	Approver
0	28/06/2022	First Issue	BL	BL	AA	LvS
Current Revision		0				

Approval			
Author Signature	<i>baincaliu</i>	Approver Signature	
Name	Bianca Liu	Name	L. Van Spaandonk
Title	Structural Engineer	Title	Principal Engineer

Our Ref: 11323-RM01/BL
28 June 2022

JIANGYIN TITANERGY CO. LTD

No.11 Wuxiang Road
Yunting Street, Jiangyin
China 214422

RE: General Certification for Titanergy Solar Flush Mounted System on Concealed Fix Roof (Lysaght Klip Lok 406, Lysaght Klip Lok 700 Classic, Lysaght Klip Lok 700 Hi-Strength, Stramit Speed Deck Ultra 700) with Titan Solar TT Rail

Gamcorp (Melbourne) Pty Ltd, being Structural Engineers within the meaning of Australian Building Regulations, have carried out a structural design check of Concealed Fix Roof Mount Flush Array Frame System installation within Australia. The design check has been based on the information and test reports provided by JIANGYIN TITANERGY CO. LTD.

Components of the system covered in this certificate shown in the table below:

Component	Part No.
Rail	Titan Solar TT Rail
Roof Clamp	Titan Solar Cliplok 406 & 700
Mid Clamp	Titan Solar Mid Clamp Kit 40mm
End Clamp	Titan Solar End Clamp Kit 40mm

This certificate is **only valid** for Titanergy Solar Flush Mounted System on the Concealed Fix Roof (Lysaght Klip Lok 406, Lysaght Klip Lok 700 Classic, Lysaght Klip Lok 700 Hi-Strength, Stramit Speed Deck Ultra 700) with Titan Solar TT rail. The roof structure or the building structure shall be assessed separately and accordingly.

This certificate is **only valid** when roof clamp fixing to the full rib of roof sheeting on the top of the purlins. If the fixing condition is different from those conditions, interface spacing shall be reviewed and validated. For the indicative location of **full rib** in the roof sheeting, please see **Figure 1**.

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 the Concealed Fix Roof (Lysaght Klip Lok 406, Lysaght Klip Lok 700 Classic, Lysaght Klip Lok 700 Hi-Strength, Stramit Speed Deck Ultra 700) for Australian use to be structurally sufficient based on the following conditions:

- Wind loads to **AS/NZS1170.2:2021**
- Wind region **A, B1, B2, C & D**
- Wind terrain category **2 & 3**
- Wind average recurrence interval of **200 years**
- Maximum building height **20m**
- The PV panel dimensions to be **1800mm x 1100mm, 2000mm x 1100mm, 2200mm x 1200mm, 2400mm x 1200mm**
- Maximum weight of the PV panel and array frame to be **15 kg / m²**
- Rails to be **Titan Solar TT** rails
- Roof clamp to be **Cliplok 406** and **700**
- Material of rails and other components to be **AL/6005-T5 UNO**

- 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 ($50\text{mm} \leq s \leq 300\text{mm}$)
- 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 capacity of roof clamp was obtained from test report no. 10038/Acha, dated 16th July 2020 and provided by Gamcorp (Melbourne) Pty Ltd.
- The spacing shown in the interface tables shall be adjusted based on the assessment and requirement of the roof structures.

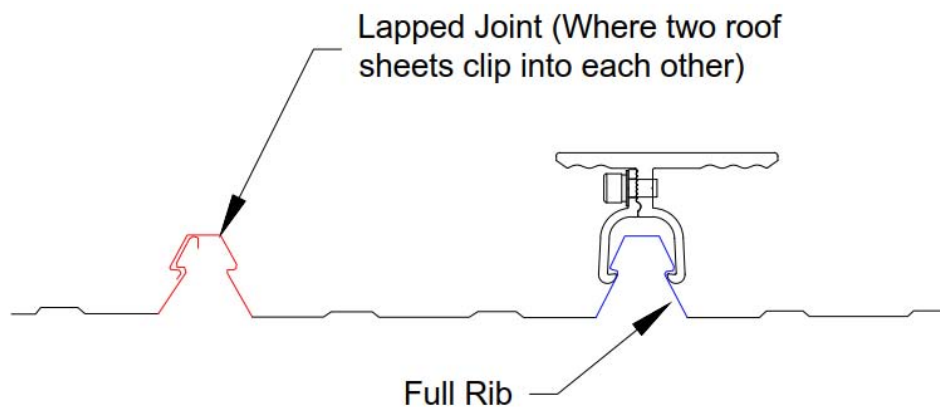


Figure 1 – Full Rib Location For Indicative

Construction is to be carried out strictly in accordance with the manufacturer's 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 certification is only valid till **30/06/2024**. Gamcorp should be contacted for future validation. Contact Gamcorp for a customised system or if the site conditions are not covered by this assessment.

Yours faithfully,
Gamcorp (Melbourne) Pty Ltd



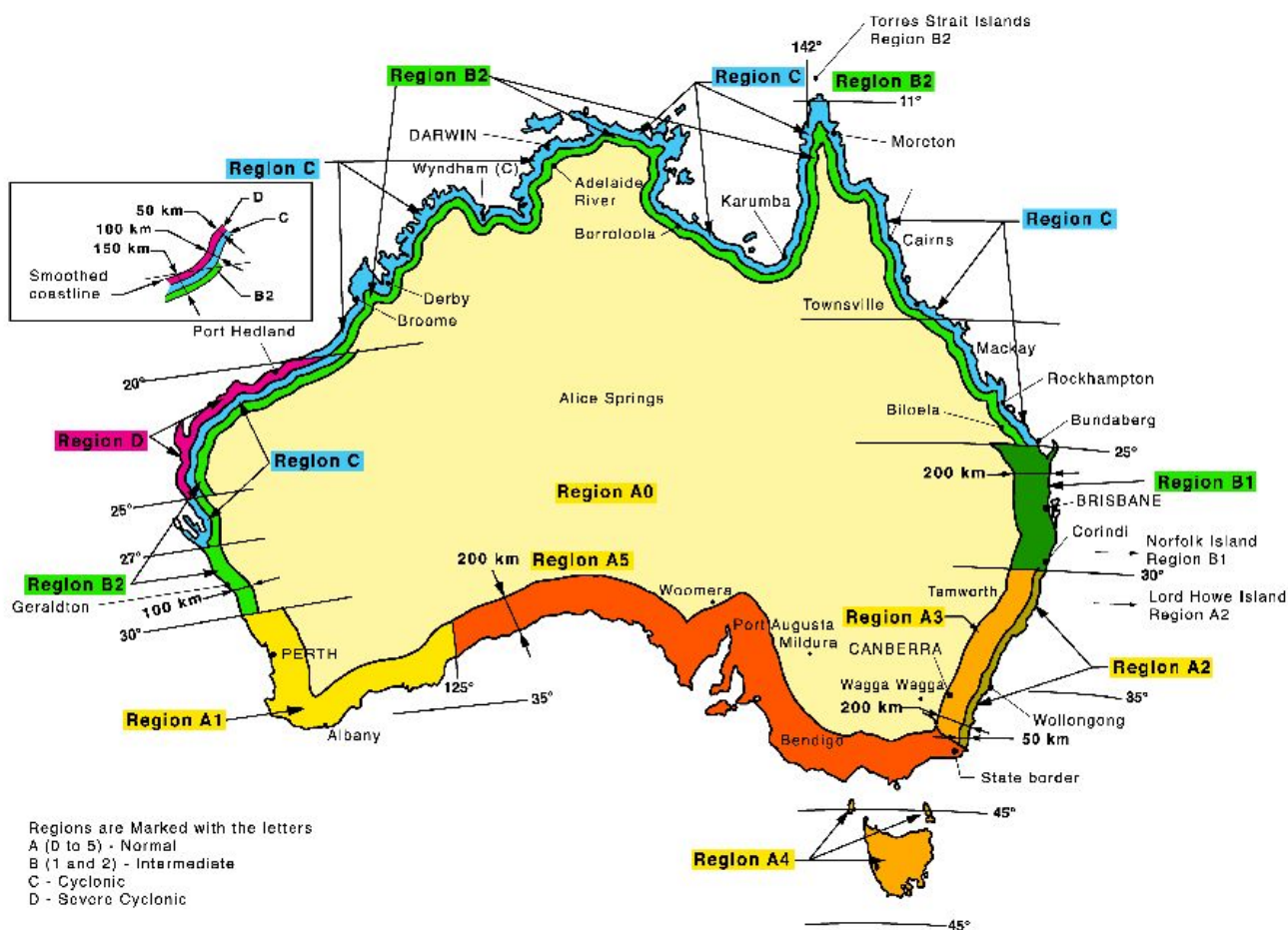
L. Van Spaandonk

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

Attachments:

- Summary table for interface spacing - flush mount installation on Lysaght Klip Lok 406 roof with Titan Solar TT rail
- Summary table for interface spacing - flush mount installation on Lysaght Klip Lok 700 Classic roof with Titan Solar TT rail
- Summary table for interface spacing - flush mount installation on Lysaght Klip Lok 700 Hi-Strength roof with Titan Solar TT rail
- Summary table for interface spacing - flush mount installation on Stramit Speed Deck Ultra 700 roof with Titan Solar TT rail

Wind regions for Australia according to As/NZS 1170.2:2021



Structural Design Documentation

Flush Array Frame System Spacing Table

According to AS/NZS 1170.2-2021

with Titan Solar TT Rail – LYSAGHT Klip-Lok 406 Roof
within Australia
Terrain Category 2 & 3

For: Jiangyin Titanergy Co. Ltd
No.11 Wuxiang Road
Yunting Street, Jiangyin
China 214422

Job Number: 11323-RM01a
Date: 27 June 2022



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Tel: +61 3 9543 2211



Job No: 11323-RM01a
Client: Jiangyin Titanergy Co. Ltd
Project: Flush Array Frame System Spacing Table
with Titan Solar TT Rail – LYSAGHT Klip-Lok 406 Roof
Address: within Australia
Wind Terrain Category: Terrain Category 2 & 3

Australian / New Zealand 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 1170.2:2021	Structural design actions Part 2: Wind actions
AS/NZS 1664.1:1997 (R2020)	Aluminium structures Part 1: Limit state design
AS/NZS 4600:2018	Cold-formed steel structures
AS 4100:2020	Steel structures

Designed: BL
Checked: AA
Date: Jun-22

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 406 Roof
Address: **within Australia**

Job: **11323-RM01a**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 406 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 406
Solar Panel Dimension: 1.8mx1.1m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	675	1050	1450	2000	675	1050	1450	2000	580	895	1235	1980	515	800	1095	1745
B1	500	775	1060	1685	500	775	1060	1685	430	665	905	1430	385	595	810	1265
B2	405	625	850	1335	405	625	850	1335	--	535	730	1140	--	480	650	1010
C	--	445	600	935	--	445	600	935	--	385	520	805	--	--	465	715
D	--	--	425	655	--	--	425	655	--	--	365	560	--	--	--	500

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	455	700	960	1515	455	700	960	1515	395	605	820	1290	--	540	730	1145
B1	--	520	710	1105	--	520	710	1105	--	450	610	945	--	400	545	840
B2	--	425	575	885	--	425	575	885	--	360	495	760	--	--	440	675
C	--	--	410	625	--	--	410	625	--	--	--	540	--	--	--	480
D	--	--	--	445	--	--	--	445	--	--	--	380	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 406 Roof
Address: **within Australia**

Job: **11323-RM01a**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 406 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 406
Solar Panel Dimension: 1.8mx1.1m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	555	860	1180	1885	455	700	955	1505	410	625	855	1345	385	595	810	1265
B1	410	635	865	1355	--	520	705	1100	--	470	635	985	--	440	595	925
B2	--	510	695	1085	--	420	570	880	--	380	515	795	--	310	485	745
C	--	365	495	765	--	--	405	625	--	--	365	560	--	--	--	530
D	--	--	--	535	--	--	--	440	--	--	--	395	--	--	--	375

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	375	575	785	1230	--	470	640	995	--	425	575	890	--	400	545	840
B1	--	430	580	900	--	--	475	735	--	--	430	660	--	--	405	620
B2	--	--	470	725	--	--	385	595	--	--	--	535	--	--	--	505
C	--	--	--	515	--	--	--	420	--	--	--	380	--	--	--	355
D	--	--	--	360	--	--	--	--	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 406 Roof
Address: **within Australia**

Job: **11323-RM01a**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 406 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 406
Solar Panel Dimension: 2mx1.1m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	$h \leq 5$				$5 < h \leq 10$				$10 < h \leq 15$				$15 < h \leq 20$			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	605	945	1305	2000	605	945	1305	2000	520	805	1110	1785	465	720	985	1570
B1	450	695	955	1515	450	695	955	1515	390	600	815	1285	--	535	725	1140
B2	360	560	765	1205	360	560	765	1205	--	485	660	1025	--	430	585	910
C	--	400	540	840	--	400	540	840	--	--	470	720	--	--	415	640
D	--	--	385	590	--	--	385	590	--	--	--	505	--	--	--	450

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	$h \leq 5$				$5 < h \leq 10$				$10 < h \leq 15$				$15 < h \leq 20$			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	410	630	865	1365	410	630	865	1365	--	545	740	1160	--	485	660	1030
B1	--	470	640	995	--	470	640	995	--	405	550	850	--	360	490	760
B2	--	380	515	800	--	380	515	800	--	--	445	685	--	--	395	610
C	--	--	365	565	--	--	365	565	--	--	--	485	--	--	--	435
D	--	--	--	400	--	--	--	400	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

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Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 406 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 406
Solar Panel Dimension: 2.4mx1.2m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	415	645	885	1415	--	525	715	1130	--	470	640	1005	--	445	605	950
B1	--	475	645	1015	--	--	530	825	--	--	475	740	--	--	445	695
B2	--	--	520	815	--	--	425	660	--	--	--	595	--	--	--	560
C	--	--	--	575	--	--	--	465	--	--	--	420	--	--	--	395
D	--	--	--	400	--	--	--	--	--	--	--	--	--	--	--	--

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	--	430	590	925	--	--	480	745	--	--	430	670	--	--	410	630
B1	--	--	435	675	--	--	--	550	--	--	--	495	--	--	--	465
B2	--	--	--	545	--	--	--	445	--	--	--	400	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

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Address: **within Australia**

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Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 406 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 406
Solar Panel Dimension: 2mx1.1m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	500	770	1060	1695	410	630	860	1355	365	565	770	1210	--	535	725	1140
B1	370	570	775	1220	--	465	635	990	--	420	570	885	--	395	535	835
B2	--	460	625	975	--	380	510	795	--	--	465	715	--	--	435	670
C	--	--	445	690	--	--	360	560	--	--	--	505	--	--	--	475
D	--	--	--	480	--	--	--	395	--	--	--	--	--	--	--	--

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	520	705	1105	--	425	575	895	--	380	520	800	--	360	490	760
B1	--	385	525	810	--	--	430	660	--	--	385	595	--	--	360	560
B2	--	--	425	650	--	--	--	535	--	--	--	480	--	--	--	455
C	--	--	--	465	--	--	--	380	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

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Project: **Flush Array Frame System Spacing Table**
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Address: **within Australia**

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Date: **Jun-22**
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Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 406 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 406
Solar Panel Dimension: 2.2mx1.2m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	550	855	1185	1925	550	855	1185	1925	475	735	1010	1620	425	655	895	1425
B1	410	635	865	1380	410	635	865	1380	--	545	740	1170	--	485	660	1035
B2	--	510	695	1095	--	510	695	1095	--	440	600	935	--	390	530	825
C	--	--	490	765	--	--	490	765	--	--	425	655	--	--	--	585
D	--	--	--	535	--	--	--	535	--	--	--	460	--	--	--	410

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	575	785	1240	--	575	785	1240	--	495	670	1055	--	440	600	935
B1	--	425	580	905	--	425	580	905	--	--	500	775	--	--	445	690
B2	--	--	470	725	--	--	470	725	--	--	405	620	--	--	--	555
C	--	--	--	510	--	--	--	510	--	--	--	440	--	--	--	390
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 406 Roof
Address: **within Australia**

Job: **11323-RM01a**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

General Notes

Note 1 Following components are satisfied to use according to AS/NZS 1170.2:2021

Components	Part Number	Description
Rail	Titan Solar TT Rail	As per drawing or test report provided by client
Mid Clamp	Mid Clamp Kit 40mm	
End Clamp	End Clamp Kit 40mm	
Roof Clamp	Titan Solar Cliplok 406	

Note 2 Spacing calculated based on the roof clamp test results.

Note 3 Maximum uplift wind pressure is limited to 5kPa.

Note 4 Deflection is limited to Minimum of L/120 and 15mm.

Note 5 Panels to be installed parallel to roof surface.

Note 6 "--" states NOT SUITABLE FOR INSTALLATION.

Note 7 Refer section 4.2.1 of AS/NZS 1170.2:2021 for terrain category definition.

Note 8 Wind regions are shown in Figure 3.1(A) of AS/NZS 1170.2:2021.

Note 9 Building height is average roof height of structure above ground. Refer Figure 1 for definition of h, d and b.

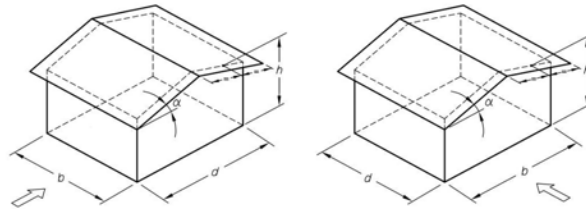
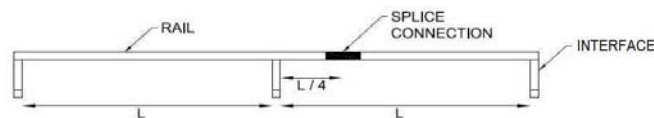


Figure 1 – h, d and b definition

Note 10 Rail splice connection must be placed a quarter length of the spacing of interface. No Splice connection should be placed at the centre of spacing or over the interface.



Note 11 Refer Figure 2 for definition of roof zones.

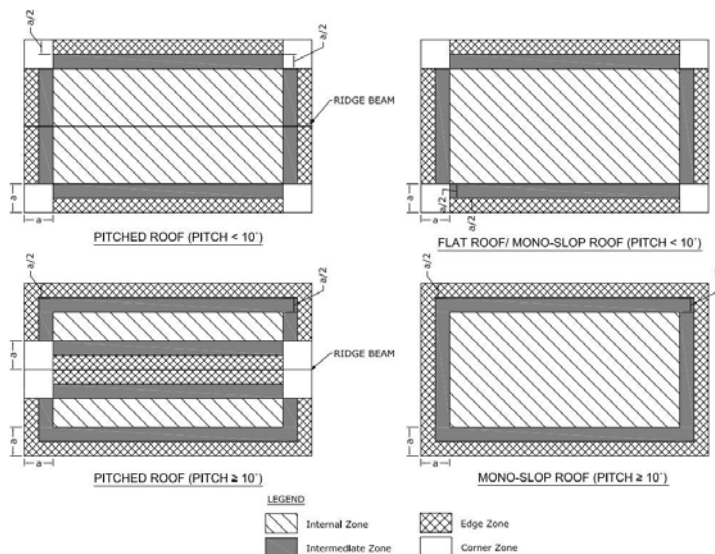


Figure2- Roof Zones Definition

In Figure 2, the value of dimension "a" is the minimum of 0.2b or 0.2d, if (h/b) or (h/d) ≥ 0.2; or 2h if both (h/b) and (h/d) < 0.2 (b & d are building dimensions and h is average roof height, see Figure 1)

Client: **Jiangyin Titanergy Co. Ltd**
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Address: **within Australia**

Job: **11323-RM01a**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 406 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 406
Solar Panel Dimension: 2.2mx1.2m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	455	700	965	1540	--	570	780	1235	--	515	700	1100	--	485	660	1035
B1	--	520	705	1110	--	425	575	900	--	--	520	805	--	--	490	755
B2	--	420	570	885	--	--	465	720	--	--	420	650	--	--	390	610
C	--	--	405	625	--	--	--	510	--	--	--	460	--	--	--	435
D	--	--	--	440	--	--	--	--	--	--	--	--	--	--	--	--

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	470	645	1005	--	--	525	815	--	--	470	730	--	--	445	690
B1	--	--	475	735	--	--	340	600	--	--	--	540	--	--	--	510
B2	--	--	--	595	--	--	--	485	--	--	--	435	--	--	--	410
C	--	--	--	420	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 406 Roof
Address: **within Australia**

Job: **11323-RM01a**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 406 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 406
Solar Panel Dimension: 2.4mx1.2m
Terrain category: **3**

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	505	785	1090	1765	505	785	1090	1765	435	670	925	1485	--	600	820	1310
B1	--	580	795	1260	--	580	795	1260	--	500	680	1070	--	445	605	950
B2	--	470	640	1000	--	470	640	1000	--	405	550	855	--	--	485	760
C	--	--	450	700	--	--	450	700	--	--	340	600	--	--	--	535
D	--	--	--	490	--	--	--	490	--	--	--	420	--	--	--	--

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	--	525	720	1135	--	525	720	1135	--	450	615	965	--	405	550	855
B1	--	365	530	830	--	365	530	830	--	--	455	710	--	--	410	630
B2	--	--	430	665	--	--	430	665	--	--	--	570	--	--	--	505
C	--	--	--	470	--	--	--	470	--	--	--	405	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Structural Design Documentation

Flush Array Frame System Spacing Table

According to AS/NZS 1170.2-2021

with Titan Solar TT Rail – LYSAGHT Klip-Lok Classic 700 Roof
within Australia
Terrain Category 2 & 3

For: Jiangyin Titanergy Co. Ltd
No.11 Wuxiang Road
Yunting Street, Jiangyin
China 214422

Job Number: 11323-RM01b
Date: 27 June 2022



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Job No: 11323-RM01b
Client: Jiangyin Titanergy Co. Ltd
Project: Flush Array Frame System Spacing Table
with Titan Solar TT Rail – LYSAGHT Klip-Lok Classic 700 Roof
Address: within Australia
Wind Terrain Category: Terrain Category 2 & 3

Australian / New Zealand 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 1170.2:2021	Structural design actions Part 2: Wind actions
AS/NZS 1664.1:1997 (R2020)	Aluminium structures Part 1: Limit state design
AS/NZS 4600:2018	Cold-formed steel structures
AS 4100:2020	Steel structures

Designed: BL
Checked: AA
Date: Jun-22

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok Classic 700 Roof
Address: **within Australia**

Job: **11323-RM01b**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok Classic 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 1.8mx1.1m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	950	1475	1820	2000	950	1475	1820	2000	815	1265	1725	1985	730	1125	1545	1910
B1	705	1090	1495	2000	705	1090	1495	2000	610	935	1280	1980	545	835	1140	1785
B2	575	880	1200	1885	575	880	1200	1885	495	755	1030	1605	440	675	915	1425
C	410	625	850	1315	410	625	850	1315	--	540	735	1130	--	485	655	1005
D	--	445	600	920	--	445	600	920	--	385	515	790	--	--	460	705

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	640	990	1350	1840	640	990	1350	1840	555	850	1160	1755	495	760	1030	1610
B1	480	735	1000	1560	480	735	1000	1560	415	635	860	1330	--	565	765	1185
B2	390	595	810	1250	390	595	810	1250	--	515	695	1075	--	460	620	955
C	--	425	575	885	--	425	575	885	--	--	500	765	--	--	445	680
D	--	--	410	625	--	--	410	625	--	--	--	540	--	--	--	480

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok Classic 700 Roof
Address: **within Australia**

Job: **11323-RM01b**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok Classic 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 1.8mx1.1m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	780	1210	1660	1955	640	985	1345	1840	575	885	1205	1780	545	835	1140	1735
B1	580	890	1215	1910	480	730	995	1550	430	660	895	1390	405	620	840	1305
B2	470	720	980	1530	390	590	805	1240	--	535	725	1120	--	505	680	1050
C	--	515	700	1075	--	425	570	880	--	385	515	790	--	--	490	745
D	--	--	495	755	--	--	405	620	--	--	--	560	--	--	--	530

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	530	815	1105	1720	435	665	905	1400	395	600	810	1255	--	565	765	1185
B1	395	605	820	1265	--	500	670	1035	--	450	605	930	--	425	570	875
B2	--	490	665	1020	--	405	545	835	--	--	495	755	--	--	465	710
C	--	--	475	725	--	--	390	595	--	--	--	540	--	--	--	510
D	--	--	--	515	--	--	--	420	--	--	--	380	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok Classic 700 Roof
Address: **within Australia**

Job: **11323-RM01b**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok Classic 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2mx1.1m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	855	1330	1765	2000	855	1330	1765	2000	735	1135	1565	1930	655	1010	1390	1860
B1	635	980	1345	2000	635	980	1345	2000	550	840	1150	1810	490	750	1025	1605
B2	515	790	1080	1695	515	790	1080	1695	445	680	925	1445	400	610	825	1280
C	370	565	765	1185	370	565	765	1185	--	485	660	1020	--	435	590	905
D	--	400	540	830	--	400	540	830	--	--	465	710	--	--	415	635

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	580	890	1215	1795	580	890	1215	1795	500	765	1040	1635	445	685	930	1450
B1	435	660	900	1400	435	660	900	1400	375	570	775	1200	--	510	690	1065
B2	--	535	725	1125	--	535	725	1125	--	465	625	965	--	415	560	860
C	--	385	520	795	--	385	520	795	--	--	450	685	--	--	400	610
D	--	--	370	560	--	--	370	560	--	--	--	485	--	--	--	430

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok Classic 700 Roof
Address: **within Australia**

Job: **11323-RM01b**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok Classic 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2mx1.1m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	705	1085	1495	1900	575	885	1210	1790	520	795	1085	1705	490	750	1025	1605
B1	525	805	1095	1720	430	660	895	1395	390	595	805	1250	365	560	755	1175
B2	425	650	885	1375	--	535	720	1115	--	480	650	1005	--	455	615	945
C	--	465	630	970	--	380	515	790	--	--	465	710	--	--	440	670
D	--	--	445	680	--	--	360	555	--	--	--	505	--	--	--	475

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	480	730	995	1560	390	600	810	1260	--	540	730	1130	--	510	690	1065
B1	--	545	735	1140	--	450	605	930	--	405	545	840	--	380	515	790
B2	--	440	595	920	--	360	490	750	--	--	445	680	--	--	415	640
C	--	--	430	655	--	--	--	535	--	--	--	485	--	--	--	455
D	--	--	--	460	--	--	--	380	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok Classic 700 Roof
Address: **within Australia**

Job: **11323-RM01b**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok Classic 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2.2mx1.2m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	775	1205	1670	1980	775	1205	1670	1980	670	1035	1425	1885	595	920	1260	1820
B1	580	890	1220	1940	580	890	1220	1940	500	765	1045	1645	445	685	930	1460
B2	470	720	980	1540	470	720	980	1540	405	620	840	1315	--	550	750	1165
C	--	510	695	1075	--	510	695	1075	--	445	600	925	--	390	535	820
D	--	--	490	755	--	--	490	755	--	--	425	645	--	--	--	575

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	525	810	1105	1735	525	810	1105	1735	455	695	945	1485	405	620	845	1315
B1	390	600	815	1275	390	600	815	1275	--	520	705	1090	--	465	630	970
B2	--	485	660	1020	--	485	660	1020	--	420	570	875	--	--	510	780
C	--	--	470	720	--	--	470	720	--	--	405	625	--	--	--	555
D	--	--	--	510	--	--	--	510	--	--	--	440	--	--	--	390

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok Classic 700 Roof
Address: **within Australia**

Job: **11323-RM01b**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok Classic 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2.2mx1.2m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	640	990	1360	1860	525	805	1100	1735	470	725	985	1550	445	685	930	1460
B1	475	730	995	1565	390	600	815	1265	--	540	730	1135	--	510	690	1065
B2	--	590	800	1250	--	485	655	1015	--	440	595	915	--	410	555	860
C	--	420	570	880	--	--	470	720	--	--	425	645	--	--	395	610
D	--	--	405	620	--	--	--	505	--	--	--	455	--	--	--	430

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	435	665	905	1420	--	545	740	1145	--	490	665	1025	--	465	630	970
B1	--	495	670	1035	--	405	550	845	--	--	495	760	--	--	465	715
B2	--	400	545	835	--	--	445	685	--	--	405	615	--	--	--	580
C	--	--	--	595	--	--	--	485	--	--	--	440	--	--	--	415
D	--	--	--	420	--	--	--	--	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok Classic 700 Roof
Address: **within Australia**

Job: **11323-RM01b**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok Classic 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2.4mx1.2m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	710	1105	1530	1935	710	1105	1530	1935	610	945	1305	1845	545	845	1155	1775
B1	530	815	1120	1775	530	815	1120	1775	455	700	960	1510	410	625	855	1335
B2	430	660	900	1410	430	660	900	1410	--	565	770	1205	--	505	685	1070
C	--	470	635	985	--	470	635	985	--	405	550	850	--	--	490	755
D	--	--	450	690	--	--	450	690	--	--	--	595	--	--	--	530

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	480	740	1015	1600	480	740	1015	1600	415	635	870	1360	--	570	775	1205
B1	--	550	750	1170	--	550	750	1170	--	475	645	1000	--	425	575	890
B2	--	445	605	935	--	445	605	935	--	--	520	805	--	--	465	715
C	--	--	430	660	--	--	430	660	--	--	--	570	--	--	--	510
D	--	--	--	465	--	--	--	465	--	--	--	405	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok Classic 700 Roof
Address: **within Australia**

Job: **11323-RM01b**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok Classic 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2.4mx1.2m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	585	905	1245	1815	480	735	1005	1590	430	660	905	1420	410	625	855	1335
B1	435	670	910	1430	--	550	745	1160	--	495	670	1040	--	465	630	975
B2	--	540	735	1145	--	445	600	930	--	400	545	840	--	--	510	785
C	--	--	525	805	--	--	430	660	--	--	--	595	--	--	--	560
D	--	--	--	565	--	--	--	465	--	--	--	420	--	--	--	390

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	395	610	830	1300	--	500	675	1050	--	450	610	940	--	425	575	890
B1	--	455	615	950	--	--	505	775	--	--	455	700	--	--	430	655
B2	--	--	495	765	--	--	410	625	--	--	--	565	--	--	--	530
C	--	--	--	545	--	--	--	445	--	--	--	405	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok Classic 700 Roof
Address: **within Australia**

Job: **11323-RM01b**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

General Notes

Note 1 Following components are satisfied to use according to AS/NZS 1170.2:2021

Components	Part Number	Description
Rail	Titan Solar TT Rail	As per drawing or test report provided by client
Mid Clamp	Mid Clamp Kit 40mm	
End Clamp	End Clamp Kit 40mm	
Roof Clamp	Titan Solar Cliplok 700	

Note 2 Spacing calculated based on the roof clamp test results.

Note 3 Maximum uplift wind pressure is limited to 5kPa.

Note 4 Deflection is limited to Minimum of L/120 and 15mm.

Note 5 Panels to be installed parallel to roof surface.

Note 6 "--" states NOT SUITABLE FOR INSTALLATION.

Note 7 Refer section 4.2.1 of AS/NZS 1170.2:2021 for terrain category definition.

Note 8 Wind regions are shown in Figure 3.1(A) of AS/NZS 1170.2:2021.

Note 9 Building height is average roof height of structure above ground. Refer Figure 1 for definition of h, d and b.

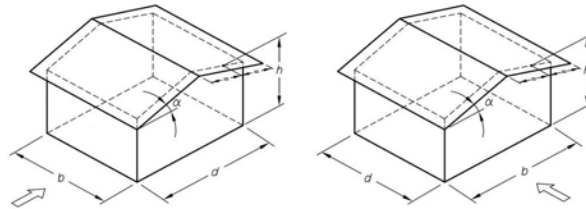
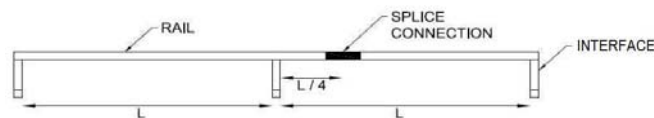


Figure 1 – h, d and b definition

Note 10 Rail splice connection must be placed a quarter length of the spacing of interface. No Splice connection should be placed at the centre of spacing or over the interface.



Note 11 Refer Figure 2 for definition of roof zones.

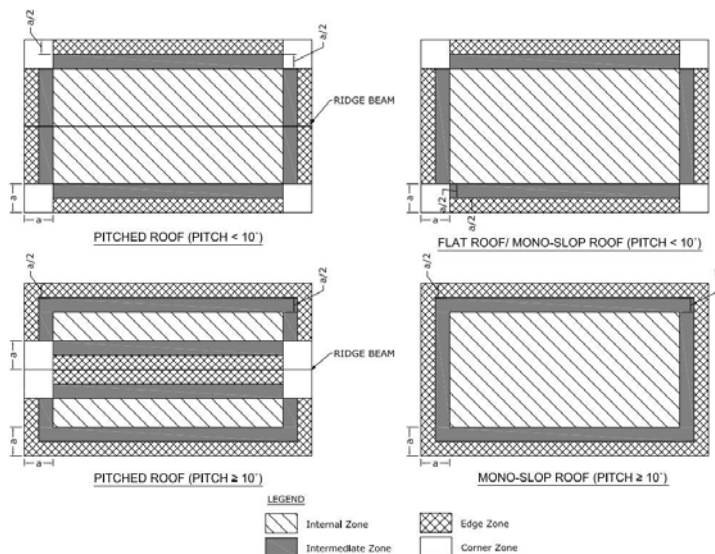


Figure2- Roof Zones Definition

In Figure 2, the value of dimension "a" is the minimum of 0.2b or 0.2d, if (h/b) or (h/d) ≥ 0.2; or 2h if both (h/b) and (h/d) < 0.2 (b & d are building dimensions and h is average roof height, see Figure 1)

Structural Design Documentation

Flush Array Frame System Spacing Table

According to AS/NZS 1170.2-2021

with Titan Solar TT Rail – LYSAGHT Klip-Lok 700 Hi-Strength Roof
within Australia
Terrain Category 2 & 3

For: Jiangyin Titanergy Co. Ltd
No.11 Wuxiang Road
Yunting Street, Jiangyin
China 214422

Job Number: 11323-RM01c
Date: 27 June 2022



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Job No: 11323-RM01c
Client: Jiangyin Titanergy Co. Ltd
Project: Flush Array Frame System Spacing Table
with Titan Solar TT Rail – LYSAGHT Klip-Lok 700 Hi-Strength Roof
Address: within Australia
Wind Terrain Category: Terrain Category 2 & 3

Australian / New Zealand 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 1170.2:2021	Structural design actions Part 2: Wind actions
AS/NZS 1664.1:1997 (R2020)	Aluminium structures Part 1: Limit state design
AS/NZS 4600:2018	Cold-formed steel structures
AS 4100:2020	Steel structures

Designed: BL
Checked: AA
Date: Jun-22

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 700 Hi-Strength Roof
Address: **within Australia**

Job: **11323-RM01c**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 700 Hi-Strength Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 1.8mx1.1m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	905	1410	1820	2000	905	1410	1820	2000	780	1205	1660	1985	695	1075	1475	1910
B1	675	1040	1425	2000	675	1040	1425	2000	580	895	1220	1925	520	800	1085	1700
B2	545	840	1145	1800	545	840	1145	1800	475	725	985	1535	420	645	875	1360
C	390	595	810	1255	390	595	810	1255	--	515	700	1080	--	460	625	960
D	--	425	570	880	--	425	570	880	--	365	495	755	--	--	440	675

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	615	945	1290	1840	615	945	1290	1840	530	810	1105	1735	475	725	985	1535
B1	460	700	955	1490	460	700	955	1490	395	605	820	1270	--	540	735	1130
B2	375	570	770	1195	375	570	770	1195	--	490	665	1025	--	440	595	910
C	--	405	550	845	--	405	550	845	--	--	475	730	--	--	425	650
D	--	--	390	595	--	--	390	595	--	--	--	515	--	--	--	460

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 700 Hi-Strength Roof
Address: **within Australia**

Job: **11323-RM01c**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 700 Hi-Strength Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 1.8mx1.1m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	745	1155	1585	1955	610	940	1285	1840	550	845	1150	1780	520	800	1085	1700
B1	555	850	1160	1825	455	700	950	1480	410	630	855	1325	390	595	805	1245
B2	450	690	935	1460	370	565	765	1185	--	510	690	1065	--	480	650	1000
C	--	495	665	1030	--	405	545	840	--	365	495	755	--	--	465	715
D	--	--	470	720	--	--	390	590	--	--	--	535	--	--	--	505

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	505	775	1055	1655	415	635	860	1340	375	570	775	1200	--	540	735	1130
B1	380	575	780	1210	--	475	640	990	--	430	580	890	--	405	545	835
B2	--	470	635	975	--	385	520	800	--	--	470	720	--	--	445	675
C	--	--	455	695	--	--	375	570	--	--	--	515	--	--	--	485
D	--	--	--	490	--	--	--	405	--	--	--	360	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 700 Hi-Strength Roof
Address: **within Australia**

Job: **11323-RM01c**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 700 Hi-Strength Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2mx1.1m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	815	1270	1755	2000	815	1270	1755	2000	700	1085	1495	1930	625	965	1325	1860
B1	605	935	1285	2000	605	935	1285	2000	525	805	1100	1730	470	720	980	1530
B2	490	755	1030	1620	490	755	1030	1620	425	650	885	1380	380	580	785	1225
C	--	535	730	1130	--	535	730	1130	--	465	630	970	--	415	560	865
D	--	380	515	790	--	380	515	790	--	--	445	680	--	--	395	605

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	550	850	1160	1795	550	850	1160	1795	475	730	995	1560	425	650	885	1385
B1	415	630	860	1340	415	630	860	1340	--	545	740	1145	--	485	660	1020
B2	--	510	695	1075	--	510	695	1075	--	440	600	920	--	395	535	820
C	--	365	495	760	--	365	495	760	--	--	430	655	--	--	380	585
D	--	--	--	535	--	--	--	535	--	--	--	460	--	--	--	410

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanenergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 700 Hi-Strength Roof
Address: **within Australia**

Job: **11323-RM01c**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 700 Hi-Strength Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2mx1.1m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	670	1040	1425	1900	550	845	1155	1790	495	760	1035	1625	470	720	980	1530
B1	500	765	1045	1640	410	630	855	1330	370	565	770	1190	--	535	725	1120
B2	405	620	845	1315	--	510	690	1065	--	460	625	960	--	435	585	900
C	--	445	600	925	--	360	490	755	--	--	445	680	--	--	420	640
D	--	--	425	650	--	--	--	530	--	--	--	480	--	--	--	455

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	455	700	950	1490	375	570	775	1205	--	515	695	1080	--	485	660	1020
B1	--	520	705	1090	--	425	580	890	--	385	520	800	--	360	490	755
B2	--	420	570	880	--	--	470	720	--	--	425	650	--	--	400	610
C	--	--	410	625	--	--	--	510	--	--	--	460	--	--	--	435
D	--	--	--	440	--	--	--	360	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 700 Hi-Strength Roof
Address: **within Australia**

Job: **11323-RM01c**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 700 Hi-Strength Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2.2mx1.2m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	$h \leq 5$				$5 < h \leq 10$				$10 < h \leq 15$				$15 < h \leq 20$			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	740	1155	1595	1980	740	1155	1595	1980	635	985	1360	1885	570	880	1205	1820
B1	550	850	1165	1855	550	850	1165	1855	475	730	1000	1575	425	650	890	1390
B2	445	685	935	1470	445	685	935	1470	--	590	805	1255	--	525	715	1110
C	--	490	660	1025	--	490	660	1025	--	425	570	885	--	--	510	785
D	--	--	470	720	--	--	470	720	--	--	405	620	--	--	--	550

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	$h \leq 5$				$5 < h \leq 10$				$10 < h \leq 15$				$15 < h \leq 20$			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	500	770	1055	1665	500	770	1055	1665	430	665	905	1420	--	590	805	1255
B1	--	575	780	1215	--	575	780	1215	--	495	670	1040	--	445	600	925
B2	--	465	630	975	--	465	630	975	--	400	545	835	--	--	485	745
C	--	--	450	690	--	--	450	690	--	--	--	595	--	--	--	530
D	--	--	--	485	--	--	--	485	--	--	--	420	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 700 Hi-Strength Roof
Address: **within Australia**

Job: **11323-RM01c**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 700 Hi-Strength Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2.2mx1.2m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	$h \leq 5$				$5 < h \leq 10$				$10 < h \leq 15$				$15 < h \leq 20$			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	610	945	1300	1860	500	770	1050	1660	450	690	940	1480	425	650	890	1390
B1	455	695	950	1490	--	570	775	1210	--	515	700	1085	--	485	655	1020
B2	--	565	765	1195	--	460	625	970	--	420	565	875	--	390	530	820
C	--	405	545	840	--	--	445	685	--	--	405	620	--	--	--	585
D	--	--	--	590	--	--	--	485	--	--	--	435	--	--	--	410

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	$h \leq 5$				$5 < h \leq 10$				$10 < h \leq 15$				$15 < h \leq 20$			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	415	635	865	1355	--	520	705	1095	--	470	635	980	--	445	600	925
B1	--	470	640	990	--	--	525	810	--	--	475	725	--	--	445	685
B2	--	--	520	800	--	--	425	650	--	--	--	590	--	--	--	555
C	--	--	--	565	--	--	--	465	--	--	--	420	--	--	--	390
D	--	--	--	400	--	--	--	--	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 700 Hi-Strength Roof
Address: **within Australia**

Job: **11323-RM01c**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 700 Hi-Strength Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2.4mx1.2m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	680	1055	1465	1935	680	1055	1465	1935	585	905	1245	1845	520	805	1105	1760
B1	505	780	1070	1695	505	780	1070	1695	435	670	915	1440	340	600	815	1275
B2	410	630	860	1350	410	630	860	1350	--	540	735	1150	--	485	655	1020
C	--	450	605	940	--	450	605	940	--	--	525	810	--	--	465	720
D	--	--	430	660	--	--	430	660	--	--	--	565	--	--	--	505

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	460	705	965	1525	460	705	965	1525	395	610	830	1300	--	545	740	1150
B1	--	525	715	1115	--	525	715	1115	--	455	615	955	--	405	550	850
B2	--	425	580	895	--	425	580	895	--	--	500	770	--	--	445	685
C	--	--	410	630	--	--	410	630	--	--	--	545	--	--	--	485
D	--	--	--	445	--	--	--	445	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 700 Hi-Strength Roof
Address: **within Australia**

Job: **11323-RM01c**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for LYSAGHT Klip-Lok 700 Hi-Strength Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2.4mx1.2m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	560	865	1190	1815	455	705	960	1520	410	630	860	1355	340	600	815	1275
B1	415	640	870	1370	--	525	710	1110	--	470	640	995	--	445	600	935
B2	--	515	700	1095	--	425	575	890	--	--	520	800	--	--	485	750
C	--	--	500	770	--	--	410	630	--	--	--	565	--	--	--	535
D	--	--	--	540	--	--	--	445	--	--	--	400	--	--	--	--

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	--	580	790	1240	--	475	645	1005	--	430	580	900	--	405	550	850
B1	--	430	585	905	--	--	480	740	--	--	435	665	--	--	410	625
B2	--	--	475	730	--	--	340	600	--	--	--	540	--	--	--	505
C	--	--	--	520	--	--	--	425	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – LYSAGHT Klip-Lok 700 Hi-Strength Roof
Address: **within Australia**

Job: **11323-RM01c**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

General Notes

Note 1 Following components are satisfied to use according to AS/NZS 1170.2:2021

Components	Part Number	Description
Rail	Titan Solar TT Rail	As per drawing or test report provided by client
Mid Clamp	Mid Clamp Kit 40mm	
End Clamp	End Clamp Kit 40mm	
Roof Clamp	Titan Solar Cliplok 700	

Note 2 Spacing calculated based on the roof clamp test results.

Note 3 Maximum uplift wind pressure is limited to 5kPa.

Note 4 Deflection is limited to Minimum of L/120 and 15mm.

Note 5 Panels to be installed parallel to roof surface.

Note 6 "--" states NOT SUITABLE FOR INSTALLATION.

Note 7 Refer section 4.2.1 of AS/NZS 1170.2:2021 for terrain category definition.

Note 8 Wind regions are shown in Figure 3.1(A) of AS/NZS 1170.2:2021.

Note 9 Building height is average roof height of structure above ground. Refer Figure 1 for definition of h, d and b.

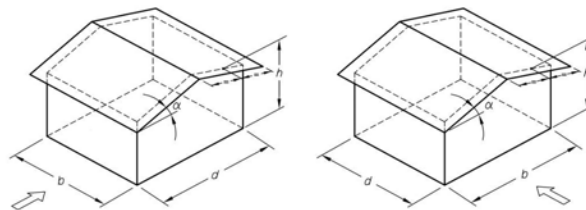
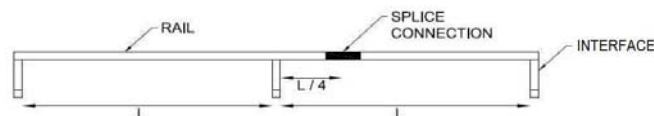


Figure 1 – h, d and b definition

Note 10 Rail splice connection must be placed a quarter length of the spacing of interface. No Splice connection should be placed at the centre of spacing or over the interface.



Note 11 Refer Figure 2 for definition of roof zones.

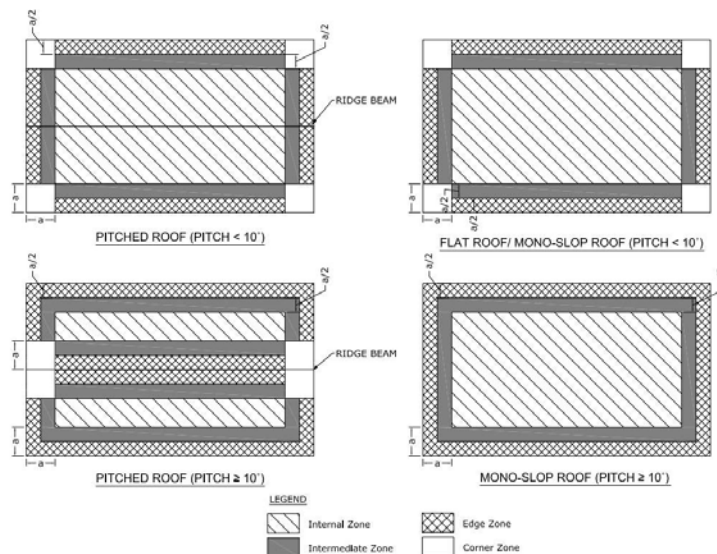


Figure2- Roof Zones Definition

In Figure 2, the value of dimension "a" is the minimum of 0.2b or 0.2d, if (h/b) or (h/d) ≥ 0.2; or 2h if both (h/b) and (h/d) < 0.2 (b & d are building dimensions and h is average roof height, see Figure 1)

Structural Design Documentation

Flush Array Frame System Spacing Table

According to AS/NZS 1170.2-2021

with Titan Solar TT Rail – STRAMIT Speed Deck Ultra 700 Roof
within Australia
Terrain Category 2 & 3

For: Jiangyin Titanergy Co. Ltd
No.11 Wuxiang Road
Yunting Street, Jiangyin
China 214422

Job Number: 11323-RM01d
Date: 27 June 2022



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Relationships built on trust



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Job No: 11323-RM01d
Client: Jiangyin Titanergy Co. Ltd
Project: Flush Array Frame System Spacing Table
with Titan Solar TT Rail – STRAMIT Speed Deck Ultra 700 Roof
Address: within Australia
Wind Terrain Category: Terrain Category 2 & 3

Australian / New Zealand 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 1170.2:2021	Structural design actions Part 2: Wind actions
AS/NZS 1664.1:1997 (R2020)	Aluminium structures Part 1: Limit state design
AS/NZS 4600:2018	Cold-formed steel structures
AS 4100:2020	Steel structures

Designed: BL
Checked: AA
Date: Jun-22

Relationships built on trust

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – STRAMIT Speed Deck Ultra 700 Roof
Address: **within Australia**

Job: **11323-RM01d**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for STRAMIT Speed Deck Ultra 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 1.8mx1.1m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	990	1535	1820	2000	990	1535	1820	2000	850	1315	1725	1985	760	1170	1610	1910
B1	735	1135	1555	2000	735	1135	1555	2000	635	975	1330	1980	570	870	1185	1855
B2	595	915	1250	1940	595	915	1250	1940	515	790	1070	1675	460	705	955	1485
C	425	650	885	1370	425	650	885	1370	--	565	765	1180	--	505	680	1045
D	--	465	625	960	--	465	625	960	--	400	540	825	--	--	480	735

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	670	1030	1405	1840	670	1030	1405	1840	575	885	1205	1755	515	790	1075	1675
B1	500	765	1040	1625	500	765	1040	1625	435	660	895	1385	--	590	800	1235
B2	405	620	840	1300	405	620	840	1300	--	535	725	1115	--	480	645	995
C	--	445	600	920	--	445	600	920	--	--	520	795	--	--	465	705
D	--	--	425	650	--	--	425	650	--	--	--	560	--	--	--	500

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – STRAMIT Speed Deck Ultra 700 Roof
Address: **within Australia**

Job: **11323-RM01d**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for STRAMIT Speed Deck Ultra 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 1.8mx1.1m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	815	1260	1695	1955	665	1025	1400	1840	600	920	1255	1780	570	870	1185	1735
B1	605	930	1265	1955	500	760	1035	1610	450	685	930	1445	425	645	875	1355
B2	490	750	1020	1590	405	615	835	1290	--	560	755	1165	--	525	710	1090
C	--	540	730	1120	--	440	595	915	--	400	540	825	--	--	510	775
D	--	--	515	785	--	--	425	645	--	--	--	580	--	--	--	550

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	555	845	1155	1720	455	695	940	1460	410	625	845	1305	--	590	800	1235
B1	415	630	855	1320	--	520	700	1080	--	470	630	970	--	440	595	910
B2	--	510	690	1065	--	420	570	870	--	--	515	785	--	--	485	740
C	--	--	495	755	--	--	405	620	--	--	--	560	--	--	--	530
D	--	--	--	535	--	--	--	440	--	--	--	395	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – STRAMIT Speed Deck Ultra 700 Roof
Address: **within Australia**

Job: **11323-RM01d**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for STRAMIT Speed Deck Ultra 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2mx1.1m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	$h \leq 5$				$5 < h \leq 10$				$10 < h \leq 15$				$15 < h \leq 20$			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	890	1385	1765	2000	890	1385	1765	2000	765	1185	1630	1930	685	1055	1445	1860
B1	660	1020	1400	2000	660	1020	1400	2000	570	875	1200	1885	510	785	1065	1670
B2	535	825	1125	1765	535	825	1125	1765	465	710	965	1505	415	635	860	1335
C	385	585	795	1230	385	585	795	1230	--	510	685	1060	--	455	610	940
D	--	415	560	865	--	415	560	865	--	355	485	740	--	--	430	660

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	$h \leq 5$				$5 < h \leq 10$				$10 < h \leq 15$				$15 < h \leq 20$			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	600	925	1265	1795	600	925	1265	1795	520	795	1085	1695	465	710	965	1510
B1	450	690	935	1460	450	690	935	1460	390	595	805	1250	--	530	720	1110
B2	365	560	755	1170	365	560	755	1170	--	480	650	1005	--	430	580	895
C	--	400	540	825	--	400	540	825	--	--	465	715	--	--	415	635
D	--	--	385	585	--	--	385	585	--	--	--	505	--	--	--	450

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – STRAMIT Speed Deck Ultra 700 Roof
Address: **within Australia**

Job: **11323-RM01d**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for STRAMIT Speed Deck Ultra 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2mx1.1m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	730	1130	1555	1900	600	920	1260	1790	540	830	1130	1715	510	785	1065	1670
B1	545	835	1140	1790	450	685	930	1450	405	620	840	1300	380	580	790	1220
B2	445	675	920	1430	360	555	750	1165	--	500	680	1050	--	470	640	985
C	--	485	655	1010	--	400	535	825	--	355	485	740	--	--	455	700
D	--	--	465	710	--	--	380	580	--	--	--	525	--	--	--	495

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	495	760	1035	1625	410	625	845	1315	370	560	760	1175	--	530	720	1110
B1	370	565	770	1190	--	465	630	970	--	420	570	870	--	395	535	820
B2	--	460	620	955	--	380	510	785	--	--	460	705	--	--	435	665
C	--	--	445	680	--	--	365	560	--	--	--	505	--	--	--	475
D	--	--	--	480	--	--	--	395	--	--	--	310	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – STRAMIT Speed Deck Ultra 700 Roof
Address: **within Australia**

Job: **11323-RM01d**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for STRAMIT Speed Deck Ultra 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2.2mx1.2m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	810	1255	1710	1980	810	1255	1710	1980	695	1075	1485	1885	620	960	1315	1820
B1	600	930	1270	1975	600	930	1270	1975	520	795	1090	1715	465	710	970	1520
B2	490	750	1020	1605	490	750	1020	1605	420	645	875	1370	--	575	780	1215
C	--	535	720	1120	--	535	720	1120	--	460	625	965	--	410	555	855
D	--	--	510	785	--	--	510	785	--	--	440	675	--	--	390	600

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	545	840	1150	1735	545	840	1150	1735	470	725	985	1545	420	645	880	1370
B1	410	625	850	1325	410	625	850	1325	--	540	730	1135	--	485	655	1010
B2	--	510	690	1065	--	510	690	1065	--	440	595	915	--	390	530	815
C	--	--	490	750	--	--	490	750	--	--	425	650	--	--	--	580
D	--	--	--	530	--	--	--	530	--	--	--	460	--	--	--	410

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – STRAMIT Speed Deck Ultra 700 Roof
Address: **within Australia**

Job: **11323-RM01d**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for STRAMIT Speed Deck Ultra 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2.2mx1.2m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	665	1030	1415	1860	545	835	1145	1735	490	755	1025	1610	465	710	970	1520
B1	495	760	1035	1625	405	625	845	1320	--	560	760	1180	--	530	715	1110
B2	400	615	835	1300	--	505	685	1055	--	455	615	950	--	430	580	895
C	--	440	595	915	--	--	485	750	--	--	440	675	--	--	415	635
D	--	--	420	645	--	--	--	530	--	--	--	475	--	--	--	450

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	450	695	945	1475	--	565	770	1195	--	510	690	1070	--	485	655	1010
B1	--	515	700	1080	--	425	575	880	--	--	515	795	--	--	485	745
B2	--	420	565	870	--	--	465	710	--	--	420	640	--	--	390	605
C	--	--	405	620	--	--	--	505	--	--	--	460	--	--	--	430
D	--	--	--	435	--	--	--	--	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – STRAMIT Speed Deck Ultra 700 Roof
Address: **within Australia**

Job: **11323-RM01d**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for STRAMIT Speed Deck Ultra 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Cliplok 700
Solar Panel Dimension: 2.4mx1.2m
Terrain category: 3

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	740	1155	1595	1935	740	1155	1595	1935	635	985	1360	1845	570	880	1205	1775
B1	550	850	1165	1850	550	850	1165	1850	475	730	995	1570	425	650	890	1390
B2	445	685	935	1470	445	685	935	1470	--	590	805	1255	--	525	715	1110
C	--	490	660	1025	--	490	660	1025	--	425	570	885	--	--	510	785
D	--	--	470	720	--	--	470	720	--	--	405	620	--	--	--	550

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	500	770	1055	1665	500	770	1055	1665	430	665	905	1420	--	590	805	1255
B1	--	575	780	1215	--	575	780	1215	--	495	670	1040	--	440	600	925
B2	--	465	630	975	--	465	630	975	--	400	545	835	--	--	485	745
C	--	--	450	690	--	--	450	690	--	--	--	595	--	--	--	530
D	--	--	--	485	--	--	--	485	--	--	--	420	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – STRAMIT Speed Deck Ultra 700 Roof
Address: **within Australia**

Job: **11323-RM01d**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

Flush Array Frame System Spacing Table for STRAMIT Speed Deck Ultra 700 Roof (mm)

Type of Rail: Titan Solar TT Rail
Type of Interface: Clielok 700
Solar Panel Dimension: 2.4mx1.2m
Terrain category: 2

$h/d \leq 0.5$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	610	945	1295	1815	500	770	1050	1655	450	690	940	1475	425	650	890	1390
B1	455	695	950	1490	--	570	775	1210	--	515	700	1085	--	485	655	1020
B2	--	565	765	1195	--	460	625	970	--	420	565	870	--	390	530	820
C	--	405	545	840	--	--	445	685	--	--	405	620	--	--	--	585
D	--	--	--	590	--	--	--	485	--	--	--	435	--	--	--	410

$h/d \geq 1.0$ *

Wind Region	Building Height – h (m)															
	h≤5				5<h≤10				10<h≤15				15<h≤20			
	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal	Corner	Edge	Intermed iate	Internal
A	415	635	865	1355	--	520	705	1095	--	465	635	980	--	440	600	925
B1	--	470	640	990	--	--	525	810	--	--	475	725	--	--	445	685
B2	--	--	520	800	--	--	425	650	--	--	--	590	--	--	--	555
C	--	--	--	565	--	--	--	465	--	--	--	420	--	--	--	390
D	--	--	--	400	--	--	--	--	--	--	--	--	--	--	--	--

* For intermediate values of h/d ratios, linear interpolation shall be used. Refer Note 9 for definition h and d.

Client: **Jiangyin Titanergy Co. Ltd**
Project: **Flush Array Frame System Spacing Table**
with Titan Solar TT Rail – STRAMIT Speed Deck Ultra 700 Roof
Address: **within Australia**

Job: **11323-RM01d**
Date: **Jun-22**
Designed: **BL**
Checked: **AA**

General Notes

Note 1 Following components are satisfied to use according to AS/NZS 1170.2:2021

Components	Part Number	Description
Rail	Titan Solar TT Rail	As per drawing or test report provided by client
Mid Clamp	Mid Clamp Kit 40mm	
End Clamp	End Clamp Kit 40mm	
Roof Clamp	Titan Solar Cliplok 700	

Note 2 Spacing calculated based on the roof clamp test results.

Note 3 Maximum uplift wind pressure is limited to 5kPa.

Note 4 Deflection is limited to Minimum of L/120 and 15mm.

Note 5 Panels to be installed parallel to roof surface.

Note 6 "--" states NOT SUITABLE FOR INSTALLATION.

Note 7 Refer section 4.2.1 of AS/NZS 1170.2:2021 for terrain category definition.

Note 8 Wind regions are shown in Figure 3.1(A) of AS/NZS 1170.2:2021.

Note 9 Building height is average roof height of structure above ground. Refer Figure 1 for definition of h, d and b.

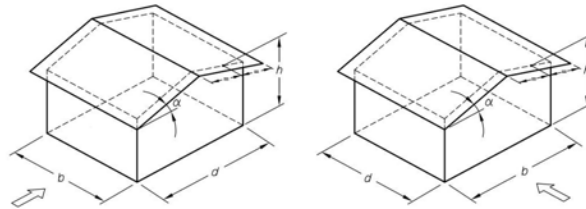
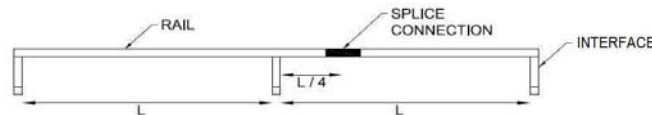


Figure 1 – h, d and b definition

Note 10 Rail splice connection must be placed a quarter length of the spacing of interface. No Splice connection should be placed at the centre of spacing or over the interface.



Note 11 Refer Figure 2 for definition of roof zones.

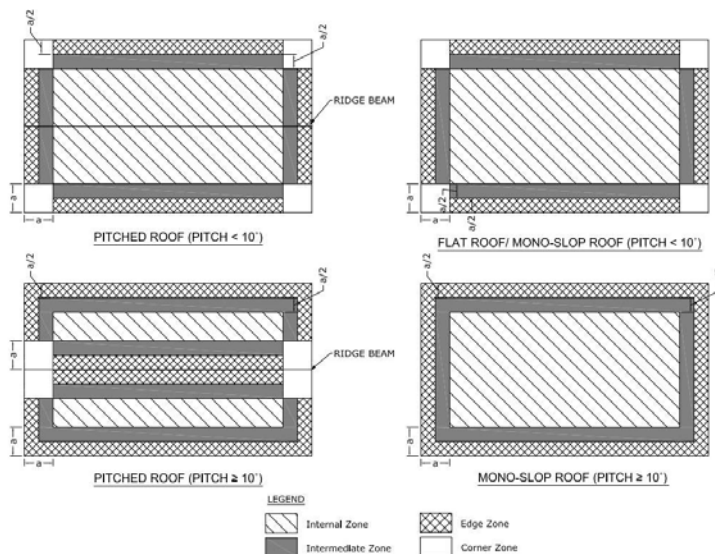


Figure2- Roof Zones Definition

In Figure 2, the value of dimension "a" is the minimum of 0.2b or 0.2d, if (h/b) or (h/d) ≥ 0.2; or 2h if both (h/b) and (h/d) < 0.2 (b & d are building dimensions and h is average roof height, see Figure 1)