

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
Suite 4, 346 Ferntree Gully Rd, Notting Hill VIC 3149. Tel: 03 9543 2211 Fax: 03 9543 4046

Our Ref: 3041/K.Z

1 March 2017

Xiamen Hopergy Photovoltaic Technology Co. Ltd.
No.630, Tonghong Road
Tongan District, Xiamen 361100
China

PV Array Frame Engineering Certification

Installation of Hopergy Roof Flush Mount Solar System on KlipLok 406 with HOP-SLR02 Rails

Gamcorp (Melbourne) Pty Ltd, being Structural Engineers within the meaning of Australian and New Zealand Building Regulations, have carried out a structural design check of Hopergy Roof Flush Mount Solar System installation on KlipLok 406 within Australia and New Zealand. The design check is based on the information and test report provided by Hopergy Australia (IMSOLAR).

We find the Installation of Hopergy Roof Flush Mount Solar System on KlipLok 406 for Australian and New Zealand use to be structurally sufficient based on the following conditions:

- Wind loads to AS/NZ1170.2:2011 Admt 3:2013
- Wind region A, B, C, D, W
- Wind terrain category 2 & 3
- Wind average recurrence interval of 500 years
- Maximum building height 20m
- The maximum PV panel dimensions to be 1670mm x 1000mm
- Maximum weight of the PV panel and array frame to be 15 kg/m²
- Rails to be HOP-SLR02
- The roof interface to be HOP-KLK406 as per test report 2017022101
- Each PV panel to be installed using 2 rails minimum in all circumstances
- Installation of PV array to be done in accordance with the PV installation manual
- The certification **excludes** assessment of roof structure and PV panels

Refer to attached summary table for interface spacing

NOTES:

- **The recommended spacing nominated in this certification is based on the capacity of the array frame, not the roof structure and PV panel. It is the responsibility of the installer to adopt the most critical spacing.**



Relationships built on trust



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
Suite 4, 346 Ferntree Gully Rd, Notting Hill VIC 3149. Tel: 03 9543 2211 Fax: 03 9543 4046

- **If any of the above conditions cannot be met, the structural engineer must be notified immediately.**

Construction is to be carried out strictly in accordance with the manufacturers instructions. This work was designed in accordance with the provisions of Australian and New Zealand Building Regulations and in accordance with sound, widely accepted engineering principles.

Yours faithfully,
Gamcorp (Melbourne) Pty Ltd

A handwritten signature in blue ink, appearing to read 'Martin Gamble', with a stylized flourish at the end.

Martin Gamble
Managing Director
MAICD

Structural Design Documentation

KlipLok 406 Flush Mount PV Racking System Interface Spacing Table According to AS/NZS 1170.2-2011 Amdt 3-2013 with HOP-SLR02 Rails within Australia and New Zealand Terrain Category 2 & 3

For: Xiamen Hopergy Photovoltaic
Technology Co. Ltd.



Job Number: 3041
Date: 1 March 2017

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.



Suite 4/ 346 Ferntree Gully Rd
Notting Hill VIC 3168
Tel: 03 9543 2211
Fax: 03 9543 4046
melbourne@gamcorp.com.au
www.gamcorp.com.au

ISO 9001:2008 Registered Firm
Certificate No: AU1222

Job No: 3041

Client: Xiamen Hopergy Photovoltaic Technology Co. Ltd.

Project: Flush Mount Interface Spacing Table for KlipLok 406

Address: within Australia and New Zealand

Australian and New Zealand Standards

AS/NZS 1170. 2011 – Structural Design Actions

Part 0 – General Principles

Part 1 – Permanent imposed and other actions

Part 2 – Wind Actions

AS/NZS 1252 – High Strength Structural Bolting

AS 4055 – Wind Loads for Housing

AS/NZS 1664 – Aluminium Structures

AS 4100 – Steel Structures

AS/NZS 4600 – Cold-Formed Steel Structures

Wind Terrain Category: WTC 2 & 3

Designed: K.Z

Date: Mar-17

Client: **Xiamen Hopergy Photovoltaic Technology Co. Ltd.**
 Project: **Flush Mount Interface Spacing Table for KlipLok 406**
 Address: **within Australia and New Zealand**
 Designed: **K.Z**

Job: **3041**
 Date: **Mar-17**

Checked:

Flush Mount Interface Spacing Table for KlipLok 406

Type of Rail: HOP-SLR02
 Type of Interface: HOP-KLK406
 Solar Panel Dimension: 1.67m x 1.0m
Terrain category: 2

Roof Angle (Φ) – $0^\circ \leq \Phi < 5^\circ$

Wind Region	Roof Angle (°)	Building Height – H (m)							
		H≤10			10<H≤15			15<H≤20	
		D.W & U.W	Central		D.W & U.W	Central		D.W & U.W	Central
A		959	1179		865	1063		815	1001
B		584	715		528	646		498	609
C		389	475		352	430		332	405
D		242	295		219	267		207	252
W		737	903		665	815		627	768

Roof Angle (Φ) – $5^\circ \leq \Phi \leq 30^\circ$

Wind Region	Building Height – H (m)								
		H≤10			10<H≤15			15<H≤20	
		D.W & U.W	Central		D.W & U.W	Central		D.W & U.W	Central
A		959	1393		865	1253		815	1180
B		584	841		528	759		498	715
C		389	557		352	503		332	475
D		242	345		219	312		207	295
W		737	1064		665	959		627	904

D.W & U.W – Downwind and Upwind refer to note 3.



Relationships built on trust

Client: **Xiamen Hopergy Photovoltaic Technology Co. Ltd.**
Project: **Flush Mount Interface Spacing Table for KlipLok 406**
Address: **within Australia and New Zealand**
Designed: **K.Z**

Job: **3041**
Date: **Mar-17**

Checked:

Roof Angle (Φ) – $30^\circ < \Phi \leq 60^\circ$

Wind Region	Building Height – H (m)								
		H≤10			10<H≤15			15<H≤20	
		Intermediate	Internal		Intermediate	Internal		Intermediate	Internal
A		1563	1858		1405	1822		1322	1801
B		940	1452		848	1306		799	1229
C		621	950		561	857		530	808
D		384	583		347	527		328	497
W		1191	1747		1073	1665		1010	1565

D.W & U.W – Downwind and Upwind refer to note 3.

Client: **Xiamen Hopergy Photovoltaic Technology Co. Ltd.**
 Project: **Flush Mount Interface Spacing Table for KlipLok 406**
 Address: **within Australia and New Zealand**
 Designed: **K.Z**

Job: **3041**
 Date: **Mar-17**

Checked:

Flush Mount Interface Spacing Table for KlipLok 406

Type of Rail: HOP-SLR02
 Type of Interface: HOP-KLK406
 Solar Panel Dimension: 1.67m x 1.0m
Terrain category: 3

Roof Angle (Φ) – $0^\circ \leq \Phi < 5^\circ$

Wind Region	Building Height – H (m)							
	H≤10		10<H≤15		15<H≤20			
	D.W & U.W	Central		D.W & U.W	Central		D.W & U.W	Central
A	1431	1771		1230	1518		1094	1348
B	863	1060		745	914		665	814
C	571	699		494	604		442	540
D	353	431		306	374		274	334
W	1092	1346		941	1158		839	1030

Roof Angle (Φ) – $5^\circ \leq \Phi \leq 30^\circ$

Wind Region	Building Height – H (m)							
	H≤10		10<H≤15		15<H≤20			
	D.W & U.W	Central		D.W & U.W	Central		D.W & U.W	Central
A	1431	1870		1230	1794		1094	1595
B	863	1250		745	1076		665	958
C	571	821		494	710		442	633
D	353	505		306	438		274	391
W	1092	1593		941	1367		839	1215

D.W & U.W – Downwind and Upwind refer to note 3.

Client: **Xiamen Hopergy Photovoltaic Technology Co. Ltd.**
 Project: **Flush Mount Interface Spacing Table for KlipLok 406**
 Address: **within Australia and New Zealand**
 Designed: **K.Z**

Job: **3041**
 Date: **Mar-17**

Checked:

Roof Angle (Φ) – $30^\circ < \Phi \leq 60^\circ$

Wind Region	Building Height – H (m)							
	H≤10		10<H≤15		15<H≤20			
	Intermediate	Internal	Intermediate	Internal	Intermediate	Internal	Intermediate	Internal
A	1846	1995	1794	1944	1754	1904		
B	1401	1957	1205	1830	1072	1663		
C	918	1417	792	1219	707	1084		
D	563	860	488	743	436	663		
W	1735	1885	1534	1833	1361	1793		

D.W & U.W – Downwind and Upwind refer to note 3.

Client: **Xiamen Hopergy Photovoltaic Technology Co. Ltd.**
 Project: **Flush Mount Interface Spacing Table for KlipLok 406**
 Address: **within Australia and New Zealand**
 Designed: **K.Z**

Job: **3041**
 Date: **Mar-17**

Checked:

General Notes

Note 1	Following components are satisfied to use according to AS/NZS 1170.2-2011 Amdt 3-2013		
	Components	Part Number	Description
	HOP-SLR02 Rail	1.01.SSR02.00000-00	
	HOP-KLK406 Clamp		as per test 2017022101
Note 2	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 obstruction per obstructions per hectare.		
	Terrain category 3(TC3) refers to numerous closely spaced obstructions having heights generally from 3 m to 10 m. For example suburban housing or light industrial estates. Refer clause 4.2.1 of AS/NZS 1170.2-2011 Amdt 3-2013 for definition of Terrain category 3.		
Note 3	For the definition of Downwind, Upwind end and central, refer figure D9 from AS/NZS 1170.2-2011 Amdt 3-2013.		