

Our Ref: 11573-R-000

STRUCTURAL REPORT

Solar Panel Support System

JIANGYIN TITANERGY CO.,LTD

AS/NZS 1170.2:2011 AMDT No.2 DEC 2012

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ISSUED BY:	Robert Cilia
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SUMMARY

Our Ref: 11573-R-000

December 2014

Jiangyin Titanergy Co.,Ltd.

Re: Solar Panel Support System

Dear Sir,

This report is the structural check for solar panel support systems based on the up-dated
WIND ACTIONS: AS/NZS 1170.2:2011 ADMT No.2 DEC 2012

As requested, we have reviewed the Installation manual provided to us:

1. Roof Mounting System Installation Manual	Version 1.0	Dated December 2014
2 Adjustable Tilt Legs System Installation Manual	Version 1.0	Dated December 2014
3 Klip-Lok Interface Installation Manual	Version 1.0	Dated December 2014

The check included a review of Australia wide loading conditions including Cyclonic conditions.

The Racking System complies with the following provisions of the regulations**
AS4100-1998, AS1170.0-2011, AS1170.1-2011, AS1170.2-2011, AS4600-2005

The general arrangement of the rails and supports for regions throughout Australia was based
on the above Installation Manual

It is assumed that the Klip-Lok 406 and Klip-Lok 700 have been tested to withstand the required loads

The review has determined that the components were found to be acceptable.

WIND ANALYSIS

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A1 - South of 30° (excluding Tasmania and Bass Strait islands), Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.01kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A1 - South of 30° (excluding Tasmania and Bass Strait)
Region = A
Sub region = 1

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
Cyclonic = N (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years
Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 45 m/s For a 1:500 APE - Cl 3.2, Table 3.1
Serv. regional wind speed (VR.s) = 37 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
Factor for reg. C or D (F) = 1.00 Cl 3.4
Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	38.9	0.91	0.61	NE	36.9	0.81	0.55
S	38.9	0.91	0.61	SW	41.0	1.01	0.68
E	32.8	0.64	0.44	SE	34.8	0.73	0.49
W	41.0	1.01	0.68	NW	41.0	1.01	0.68

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.90	40.5	5.0	2.0	0.91	1.00	1.00	36.9	0.81
NE	0.80	36.0	5.0	2.0	0.91	1.00	1.00	32.8	0.64
E	0.80	36.0	5.0	2.0	0.91	1.00	1.00	32.8	0.64
SE	0.80	36.0	5.0	2.0	0.91	1.00	1.00	32.8	0.64
S	0.85	38.3	5.0	2.0	0.91	1.00	1.00	34.8	0.73
SW	0.95	42.8	5.0	2.0	0.91	1.00	1.00	38.9	0.91
W	1.00	45.0	5.0	2.0	0.91	1.00	1.00	41.0	1.01
NW	0.95	42.8	5.0	2.0	0.91	1.00	1.00	38.9	0.91

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A1 - South of 30° (excluding Tasmania and Bass Strait islands), Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.22kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A1 - South of 30° (excluding Tasmania and Bass Strait)
Region = A
Sub region = 1

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
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Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	42.8	1.10	0.74	NE	40.5	0.98	0.67
S	42.8	1.10	0.74	SW	45.0	1.22	0.82
E	36.0	0.78	0.53	SE	38.3	0.88	0.59
W	45.0	1.22	0.82	NW	45.0	1.22	0.82

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.90	40.5	10.0	2.0	1.00	1.00	1.00	40.5	0.98
NE	0.80	36.0	10.0	2.0	1.00	1.00	1.00	36.0	0.78
E	0.80	36.0	10.0	2.0	1.00	1.00	1.00	36.0	0.78
SE	0.80	36.0	10.0	2.0	1.00	1.00	1.00	36.0	0.78
S	0.85	38.3	10.0	2.0	1.00	1.00	1.00	38.3	0.88
SW	0.95	42.8	10.0	2.0	1.00	1.00	1.00	42.8	1.10
W	1.00	45.0	10.0	2.0	1.00	1.00	1.00	45.0	1.22
NW	0.95	42.8	10.0	2.0	1.00	1.00	1.00	42.8	1.10

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A1 - South of 30° (excluding Tasmania and Bass Strait islands), Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.34kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A1 - South of 30° (excluding Tasmania and Bass Strait)
Region = A
Sub region = 1

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
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Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	44.9	1.21	0.82	NE	42.5	1.09	0.73
S	44.9	1.21	0.82	SW	47.3	1.34	0.91
E	37.8	0.86	0.58	SE	40.2	0.97	0.65
W	47.3	1.34	0.91	NW	47.3	1.34	0.91

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.90	40.5	15.0	2.0	1.05	1.00	1.00	42.5	1.09
NE	0.80	36.0	15.0	2.0	1.05	1.00	1.00	37.8	0.86
E	0.80	36.0	15.0	2.0	1.05	1.00	1.00	37.8	0.86
SE	0.80	36.0	15.0	2.0	1.05	1.00	1.00	37.8	0.86
S	0.85	38.3	15.0	2.0	1.05	1.00	1.00	40.2	0.97
SW	0.95	42.8	15.0	2.0	1.05	1.00	1.00	44.9	1.21
W	1.00	45.0	15.0	2.0	1.05	1.00	1.00	47.3	1.34
NW	0.95	42.8	15.0	2.0	1.05	1.00	1.00	44.9	1.21

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A1 - South of 30° (excluding Tasmania and Bass Strait islands), Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.42kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A1 - South of 30° (excluding Tasmania and Bass Strait)
Region = A
Sub region = 1

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
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Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	46.2	1.28	0.86	NE	43.7	1.15	0.78
S	46.2	1.28	0.86	SW	48.6	1.42	0.96
E	38.9	0.91	0.61	SE	41.3	1.02	0.69
W	48.6	1.42	0.96	NW	48.6	1.42	0.96

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.90	40.5	20.0	2.0	1.08	1.00	1.00	43.7	1.15
NE	0.80	36.0	20.0	2.0	1.08	1.00	1.00	38.9	0.91
E	0.80	36.0	20.0	2.0	1.08	1.00	1.00	38.9	0.91
SE	0.80	36.0	20.0	2.0	1.08	1.00	1.00	38.9	0.91
S	0.85	38.3	20.0	2.0	1.08	1.00	1.00	41.3	1.02
SW	0.95	42.8	20.0	2.0	1.08	1.00	1.00	46.2	1.28
W	1.00	45.0	20.0	2.0	1.08	1.00	1.00	48.6	1.42
NW	0.95	42.8	20.0	2.0	1.08	1.00	1.00	46.2	1.28

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A2 - East coast below 30°, to 50km inland, Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.01kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A2 - East coast below 30°, to 50km inland
Region = A
Sub region = 2

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
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Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	38.9	0.91	0.61	NE	32.8	0.64	0.44
S	38.9	0.91	0.61	SW	41.0	1.01	0.68
E	38.9	0.91	0.61	SE	38.9	0.91	0.61
W	41.0	1.01	0.68	NW	41.0	1.01	0.68

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.80	36.0	5.0	2.0	0.91	1.00	1.00	32.8	0.64
NE	0.80	36.0	5.0	2.0	0.91	1.00	1.00	32.8	0.64
E	0.80	36.0	5.0	2.0	0.91	1.00	1.00	32.8	0.64
SE	0.95	42.8	5.0	2.0	0.91	1.00	1.00	38.9	0.91
S	0.90	40.5	5.0	2.0	0.91	1.00	1.00	36.9	0.81
SW	0.95	42.8	5.0	2.0	0.91	1.00	1.00	38.9	0.91
W	1.00	45.0	5.0	2.0	0.91	1.00	1.00	41.0	1.01
NW	0.95	42.8	5.0	2.0	0.91	1.00	1.00	38.9	0.91

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A2 - East coast below 30°, to 50km inland, Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.22kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A2 - East coast below 30°, to 50km inland
Region = A
Sub region = 2

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
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Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	42.8	1.10	0.74	NE	36.0	0.78	0.53
S	42.8	1.10	0.74	SW	45.0	1.22	0.82
E	42.8	1.10	0.74	SE	42.8	1.10	0.74
W	45.0	1.22	0.82	NW	45.0	1.22	0.82

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.80	36.0	10.0	2.0	1.00	1.00	1.00	36.0	0.78
NE	0.80	36.0	10.0	2.0	1.00	1.00	1.00	36.0	0.78
E	0.80	36.0	10.0	2.0	1.00	1.00	1.00	36.0	0.78
SE	0.95	42.8	10.0	2.0	1.00	1.00	1.00	42.8	1.10
S	0.90	40.5	10.0	2.0	1.00	1.00	1.00	40.5	0.98
SW	0.95	42.8	10.0	2.0	1.00	1.00	1.00	42.8	1.10
W	1.00	45.0	10.0	2.0	1.00	1.00	1.00	45.0	1.22
NW	0.95	42.8	10.0	2.0	1.00	1.00	1.00	42.8	1.10

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

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Pressures: Wu.max = 1.34kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A2 - East coast below 30°, to 50km inland
Region = A
Sub region = 2

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Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	44.9	1.21	0.82	NE	37.8	0.86	0.58
S	44.9	1.21	0.82	SW	47.3	1.34	0.91
E	44.9	1.21	0.82	SE	44.9	1.21	0.82
W	47.3	1.34	0.91	NW	47.3	1.34	0.91

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.80	36.0	15.0	2.0	1.05	1.00	1.00	37.8	0.86
NE	0.80	36.0	15.0	2.0	1.05	1.00	1.00	37.8	0.86
E	0.80	36.0	15.0	2.0	1.05	1.00	1.00	37.8	0.86
SE	0.95	42.8	15.0	2.0	1.05	1.00	1.00	44.9	1.21
S	0.90	40.5	15.0	2.0	1.05	1.00	1.00	42.5	1.09
SW	0.95	42.8	15.0	2.0	1.05	1.00	1.00	44.9	1.21
W	1.00	45.0	15.0	2.0	1.05	1.00	1.00	47.3	1.34
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Location - Fig 3.1(A), 3.1(B)

Location = Region A2 - East coast below 30°, to 50km inland
Region = A
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Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	46.2	1.28	0.86	NE	38.9	0.91	0.61
S	46.2	1.28	0.86	SW	48.6	1.42	0.96
E	46.2	1.28	0.86	SE	46.2	1.28	0.86
W	48.6	1.42	0.96	NW	48.6	1.42	0.96

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.80	36.0	20.0	2.0	1.08	1.00	1.00	38.9	0.91
NE	0.80	36.0	20.0	2.0	1.08	1.00	1.00	38.9	0.91
E	0.80	36.0	20.0	2.0	1.08	1.00	1.00	38.9	0.91
SE	0.95	42.8	20.0	2.0	1.08	1.00	1.00	46.2	1.28
S	0.90	40.5	20.0	2.0	1.08	1.00	1.00	43.7	1.15
SW	0.95	42.8	20.0	2.0	1.08	1.00	1.00	46.2	1.28
W	1.00	45.0	20.0	2.0	1.08	1.00	1.00	48.6	1.42
NW	0.95	42.8	20.0	2.0	1.08	1.00	1.00	46.2	1.28

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A3 - Tasmania & Bass Straight islands & East coast below 30°, 50km to 200km inland, Non-temporary
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.01kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A3 - Tasmania & Bass Straight islands & East coast be
Region = A
Sub region = 3

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
Cyclonic = N (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years
Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 45 m/s For a 1:500 APE - Cl 3.2, Table 3.1
Serv. regional wind speed (VR.s) = 37 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
Factor for reg. C or D (F) = 1.00 Cl 3.4
Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	41.0	1.01	0.68	NE	34.8	0.73	0.49
S	34.8	0.73	0.49	SW	36.9	0.81	0.55
E	32.8	0.64	0.44	SE	32.8	0.64	0.44
W	41.0	1.01	0.68	NW	41.0	1.01	0.68

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.85	38.3	5.0	2.0	0.91	1.00	1.00	34.8	0.73
NE	0.80	36.0	5.0	2.0	0.91	1.00	1.00	32.8	0.64
E	0.80	36.0	5.0	2.0	0.91	1.00	1.00	32.8	0.64
SE	0.80	36.0	5.0	2.0	0.91	1.00	1.00	32.8	0.64
S	0.80	36.0	5.0	2.0	0.91	1.00	1.00	32.8	0.64
SW	0.85	38.3	5.0	2.0	0.91	1.00	1.00	34.8	0.73
W	0.90	40.5	5.0	2.0	0.91	1.00	1.00	36.9	0.81
NW	1.00	45.0	5.0	2.0	0.91	1.00	1.00	41.0	1.01

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A3 - Tasmania & Bass Straight islands & East coast below 30°, 50km to 200km inland, Non-temporary
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.22kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A3 - Tasmania & Bass Straight islands & East coast be
Region = A
Sub region = 3

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
Cyclonic = N (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years
Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 45 m/s For a 1:500 APE - Cl 3.2, Table 3.1
Serv. regional wind speed (VR.s) = 37 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
Factor for reg. C or D (F) = 1.00 Cl 3.4
Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	45.0	1.22	0.82	NE	38.3	0.88	0.59
S	38.3	0.88	0.59	SW	40.5	0.98	0.67
E	36.0	0.78	0.53	SE	36.0	0.78	0.53
W	45.0	1.22	0.82	NW	45.0	1.22	0.82

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.85	38.3	10.0	2.0	1.00	1.00	1.00	38.3	0.88
NE	0.80	36.0	10.0	2.0	1.00	1.00	1.00	36.0	0.78
E	0.80	36.0	10.0	2.0	1.00	1.00	1.00	36.0	0.78
SE	0.80	36.0	10.0	2.0	1.00	1.00	1.00	36.0	0.78
S	0.80	36.0	10.0	2.0	1.00	1.00	1.00	36.0	0.78
SW	0.85	38.3	10.0	2.0	1.00	1.00	1.00	38.3	0.88
W	0.90	40.5	10.0	2.0	1.00	1.00	1.00	40.5	0.98
NW	1.00	45.0	10.0	2.0	1.00	1.00	1.00	45.0	1.22

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A3 - Tasmania & Bass Straight islands & East coast below 30°, 50km to 200km inland, Non-temporary
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.34kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A3 - Tasmania & Bass Straight islands & East coast be
Region = A
Sub region = 3

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
Cyclonic = N (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years
Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 45 m/s For a 1:500 APE - Cl 3.2, Table 3.1
Serv. regional wind speed (VR.s) = 37 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
Factor for reg. C or D (F) = 1.00 Cl 3.4
Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	47.3	1.34	0.91	NE	40.2	0.97	0.65
S	40.2	0.97	0.65	SW	42.5	1.09	0.73
E	37.8	0.86	0.58	SE	37.8	0.86	0.58
W	47.3	1.34	0.91	NW	47.3	1.34	0.91

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.85	38.3	15.0	2.0	1.05	1.00	1.00	40.2	0.97
NE	0.80	36.0	15.0	2.0	1.05	1.00	1.00	37.8	0.86
E	0.80	36.0	15.0	2.0	1.05	1.00	1.00	37.8	0.86
SE	0.80	36.0	15.0	2.0	1.05	1.00	1.00	37.8	0.86
S	0.80	36.0	15.0	2.0	1.05	1.00	1.00	37.8	0.86
SW	0.85	38.3	15.0	2.0	1.05	1.00	1.00	40.2	0.97
W	0.90	40.5	15.0	2.0	1.05	1.00	1.00	42.5	1.09
NW	1.00	45.0	15.0	2.0	1.05	1.00	1.00	47.3	1.34

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A3 - Tasmania & Bass Straight islands & East coast below 30°, 50km to 200km inland, Non-temporary
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.42kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A3 - Tasmania & Bass Straight islands & East coast be
Region = A
Sub region = 3

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
Cyclonic = N (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years
Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 45 m/s For a 1:500 APE - Cl 3.2, Table 3.1
Serv. regional wind speed (VR.s) = 37 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
Factor for reg. C or D (F) = 1.00 Cl 3.4
Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	48.6	1.42	0.96	NE	41.3	1.02	0.69
S	41.3	1.02	0.69	SW	43.7	1.15	0.78
E	38.9	0.91	0.61	SE	38.9	0.91	0.61
W	48.6	1.42	0.96	NW	48.6	1.42	0.96

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.85	38.3	20.0	2.0	1.08	1.00	1.00	41.3	1.02
NE	0.80	36.0	20.0	2.0	1.08	1.00	1.00	38.9	0.91
E	0.80	36.0	20.0	2.0	1.08	1.00	1.00	38.9	0.91
SE	0.80	36.0	20.0	2.0	1.08	1.00	1.00	38.9	0.91
S	0.80	36.0	20.0	2.0	1.08	1.00	1.00	38.9	0.91
SW	0.85	38.3	20.0	2.0	1.08	1.00	1.00	41.3	1.02
W	0.90	40.5	20.0	2.0	1.08	1.00	1.00	43.7	1.15
NW	1.00	45.0	20.0	2.0	1.08	1.00	1.00	48.6	1.42

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A4 - North of 30°, Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 0.91kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A4 - North of 30°
Region = A
Sub region = 4

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
Cyclonic = N (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years
Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 45 m/s For a 1:500 APE - Cl 3.2, Table 3.1
Serv. regional wind speed (VR.s) = 37 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
Factor for reg. C or D (F) = 1.00 Cl 3.4
Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	36.9	0.81	0.55	NE	36.9	0.81	0.55
S	38.9	0.91	0.61	SW	38.9	0.91	0.61
E	36.9	0.81	0.55	SE	38.9	0.91	0.61
W	38.9	0.91	0.61	NW	38.9	0.91	0.61

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.90	40.5	5.0	2.0	0.91	1.00	1.00	36.9	0.81
NE	0.85	38.3	5.0	2.0	0.91	1.00	1.00	34.8	0.73
E	0.90	40.5	5.0	2.0	0.91	1.00	1.00	36.9	0.81
SE	0.90	40.5	5.0	2.0	0.91	1.00	1.00	36.9	0.81
S	0.95	42.8	5.0	2.0	0.91	1.00	1.00	38.9	0.91
SW	0.95	42.8	5.0	2.0	0.91	1.00	1.00	38.9	0.91
W	0.95	42.8	5.0	2.0	0.91	1.00	1.00	38.9	0.91
NW	0.90	40.5	5.0	2.0	0.91	1.00	1.00	36.9	0.81

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A4 - North of 30°, Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.10kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A4 - North of 30°
Region = A
Sub region = 4

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
Cyclonic = N (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years
Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 45 m/s For a 1:500 APE - Cl 3.2, Table 3.1
Serv. regional wind speed (VR.s) = 37 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
Factor for reg. C or D (F) = 1.00 Cl 3.4
Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	40.5	0.98	0.67	NE	40.5	0.98	0.67
S	42.8	1.10	0.74	SW	42.8	1.10	0.74
E	40.5	0.98	0.67	SE	42.8	1.10	0.74
W	42.8	1.10	0.74	NW	42.8	1.10	0.74

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.90	40.5	10.0	2.0	1.00	1.00	1.00	40.5	0.98
NE	0.85	38.3	10.0	2.0	1.00	1.00	1.00	38.3	0.88
E	0.90	40.5	10.0	2.0	1.00	1.00	1.00	40.5	0.98
SE	0.90	40.5	10.0	2.0	1.00	1.00	1.00	40.5	0.98
S	0.95	42.8	10.0	2.0	1.00	1.00	1.00	42.8	1.10
SW	0.95	42.8	10.0	2.0	1.00	1.00	1.00	42.8	1.10
W	0.95	42.8	10.0	2.0	1.00	1.00	1.00	42.8	1.10
NW	0.90	40.5	10.0	2.0	1.00	1.00	1.00	40.5	0.98

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A4 - North of 30°, Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.21kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A4 - North of 30°
Region = A
Sub region = 4

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
Cyclonic = N (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years
Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 45 m/s For a 1:500 APE - Cl 3.2, Table 3.1
Serv. regional wind speed (VR.s) = 37 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
Factor for reg. C or D (F) = 1.00 Cl 3.4
Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	42.5	1.09	0.73	NE	42.5	1.09	0.73
S	44.9	1.21	0.82	SW	44.9	1.21	0.82
E	42.5	1.09	0.73	SE	44.9	1.21	0.82
W	44.9	1.21	0.82	NW	44.9	1.21	0.82

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.90	40.5	15.0	2.0	1.05	1.00	1.00	42.5	1.09
NE	0.85	38.3	15.0	2.0	1.05	1.00	1.00	40.2	0.97
E	0.90	40.5	15.0	2.0	1.05	1.00	1.00	42.5	1.09
SE	0.90	40.5	15.0	2.0	1.05	1.00	1.00	42.5	1.09
S	0.95	42.8	15.0	2.0	1.05	1.00	1.00	44.9	1.21
SW	0.95	42.8	15.0	2.0	1.05	1.00	1.00	44.9	1.21
W	0.95	42.8	15.0	2.0	1.05	1.00	1.00	44.9	1.21
NW	0.90	40.5	15.0	2.0	1.05	1.00	1.00	42.5	1.09

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A4 - North of 30°, Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.28kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A4 - North of 30°
Region = A
Sub region = 4

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
Cyclonic = N (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years
Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 45 m/s For a 1:500 APE - Cl 3.2, Table 3.1
Serv. regional wind speed (VR.s) = 37 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
Factor for reg. C or D (F) = 1.00 Cl 3.4
Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	43.7	1.15	0.78	NE	43.7	1.15	0.78
S	46.2	1.28	0.86	SW	46.2	1.28	0.86
E	43.7	1.15	0.78	SE	46.2	1.28	0.86
W	46.2	1.28	0.86	NW	46.2	1.28	0.86

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.90	40.5	20.0	2.0	1.08	1.00	1.00	43.7	1.15
NE	0.85	38.3	20.0	2.0	1.08	1.00	1.00	41.3	1.02
E	0.90	40.5	20.0	2.0	1.08	1.00	1.00	43.7	1.15
SE	0.90	40.5	20.0	2.0	1.08	1.00	1.00	43.7	1.15
S	0.95	42.8	20.0	2.0	1.08	1.00	1.00	46.2	1.28
SW	0.95	42.8	20.0	2.0	1.08	1.00	1.00	46.2	1.28
W	0.95	42.8	20.0	2.0	1.08	1.00	1.00	46.2	1.28
NW	0.90	40.5	20.0	2.0	1.08	1.00	1.00	43.7	1.15

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A5 - Within 70km of Melbourne GPO, Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.01kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A5 - Within 70km of Melbourne GPO
Region = A
Sub region = 5

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
Cyclonic = N (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years
Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 45 m/s For a 1:500 APE - Cl 3.2, Table 3.1
Serv. regional wind speed (VR.s) = 37 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
Factor for reg. C or D (F) = 1.00 Cl 3.4
Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	41.0	1.01	0.68	NE	41.0	1.01	0.68
S	36.9	0.81	0.55	SW	41.0	1.01	0.68
E	34.8	0.73	0.49	SE	34.8	0.73	0.49
W	41.0	1.01	0.68	NW	41.0	1.01	0.68

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	1.00	45.0	5.0	2.0	0.91	1.00	1.00	41.0	1.01
NE	0.85	38.3	5.0	2.0	0.91	1.00	1.00	34.8	0.73
E	0.80	36.0	5.0	2.0	0.91	1.00	1.00	32.8	0.64
SE	0.80	36.0	5.0	2.0	0.91	1.00	1.00	32.8	0.64
S	0.85	38.3	5.0	2.0	0.91	1.00	1.00	34.8	0.73
SW	0.90	40.5	5.0	2.0	0.91	1.00	1.00	36.9	0.81
W	1.00	45.0	5.0	2.0	0.91	1.00	1.00	41.0	1.01
NW	0.95	42.8	5.0	2.0	0.91	1.00	1.00	38.9	0.91

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A5 - Within 70km of Melbourne GPO, Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.22kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A5 - Within 70km of Melbourne GPO
Region = A
Sub region = 5

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
Cyclonic = N (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years
Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 45 m/s For a 1:500 APE - Cl 3.2, Table 3.1
Serv. regional wind speed (VR.s) = 37 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
Factor for reg. C or D (F) = 1.00 Cl 3.4
Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	45.0	1.22	0.82	NE	45.0	1.22	0.82
S	40.5	0.98	0.67	SW	45.0	1.22	0.82
E	38.3	0.88	0.59	SE	38.3	0.88	0.59
W	45.0	1.22	0.82	NW	45.0	1.22	0.82

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	1.00	45.0	10.0	2.0	1.00	1.00	1.00	45.0	1.22
NE	0.85	38.3	10.0	2.0	1.00	1.00	1.00	38.3	0.88
E	0.80	36.0	10.0	2.0	1.00	1.00	1.00	36.0	0.78
SE	0.80	36.0	10.0	2.0	1.00	1.00	1.00	36.0	0.78
S	0.85	38.3	10.0	2.0	1.00	1.00	1.00	38.3	0.88
SW	0.90	40.5	10.0	2.0	1.00	1.00	1.00	40.5	0.98
W	1.00	45.0	10.0	2.0	1.00	1.00	1.00	45.0	1.22
NW	0.95	42.8	10.0	2.0	1.00	1.00	1.00	42.8	1.10

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A5 - Within 70km of Melbourne GPO, Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.34kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A5 - Within 70km of Melbourne GPO
Region = A
Sub region = 5

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
Cyclonic = N (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years
Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 45 m/s For a 1:500 APE - Cl 3.2, Table 3.1
Serv. regional wind speed (VR.s) = 37 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
Factor for reg. C or D (F) = 1.00 Cl 3.4
Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	47.3	1.34	0.91	NE	47.3	1.34	0.91
S	42.5	1.09	0.73	SW	47.3	1.34	0.91
E	40.2	0.97	0.65	SE	40.2	0.97	0.65
W	47.3	1.34	0.91	NW	47.3	1.34	0.91

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	1.00	45.0	15.0	2.0	1.05	1.00	1.00	47.3	1.34
NE	0.85	38.3	15.0	2.0	1.05	1.00	1.00	40.2	0.97
E	0.80	36.0	15.0	2.0	1.05	1.00	1.00	37.8	0.86
SE	0.80	36.0	15.0	2.0	1.05	1.00	1.00	37.8	0.86
S	0.85	38.3	15.0	2.0	1.05	1.00	1.00	40.2	0.97
SW	0.90	40.5	15.0	2.0	1.05	1.00	1.00	42.5	1.09
W	1.00	45.0	15.0	2.0	1.05	1.00	1.00	47.3	1.34
NW	0.95	42.8	15.0	2.0	1.05	1.00	1.00	44.9	1.21

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.05

Dome Consulting Aust

Design: (Wind Analysis WA01) Region A5 - Within 70km of Melbourne GPO, Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.42kPa, Ws/Wu = 0.68

Location - Fig 3.1(A), 3.1(B)

Location = Region A5 - Within 70km of Melbourne GPO
Region = A
Sub region = 5

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
Design working life = 50 Years AS1170.0 Cl F3
Cyclonic = N (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years
Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 45 m/s For a 1:500 APE - Cl 3.2, Table 3.1
Serv. regional wind speed (VR.s) = 37 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
Factor for reg. C or D (F) = 1.00 Cl 3.4
Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
Minimum Ultimate speed (Vdes,θ) = 30 m/s
Ratio VR.s / VR = 0.82
Ratio Ws / Wu = 0.68 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	48.6	1.42	0.96	NE	48.6	1.42	0.96
S	43.7	1.15	0.78	SW	48.6	1.42	0.96
E	41.3	1.02	0.69	SE	41.3	1.02	0.69
W	48.6	1.42	0.96	NW	48.6	1.42	0.96

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	1.00	45.0	20.0	2.0	1.08	1.00	1.00	48.6	1.42
NE	0.85	38.3	20.0	2.0	1.08	1.00	1.00	41.3	1.02
E	0.80	36.0	20.0	2.0	1.08	1.00	1.00	38.9	0.91
SE	0.80	36.0	20.0	2.0	1.08	1.00	1.00	38.9	0.91
S	0.85	38.3	20.0	2.0	1.08	1.00	1.00	41.3	1.02
SW	0.90	40.5	20.0	2.0	1.08	1.00	1.00	43.7	1.15
W	1.00	45.0	20.0	2.0	1.08	1.00	1.00	48.6	1.42
NW	0.95	42.8	20.0	2.0	1.08	1.00	1.00	46.2	1.28

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.02

Dome Consulting Aust

Design: (Wind Analysis WA01) Region B, Non-temporary structure
Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years
Pressures: Wu.max = 1.46kPa, Ws/Wu = 0.47

Location - Fig 3.1(A), 3.1(B)

Location = Region B
 Region = B

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom
 Design working life = 50 Years AS1170.0 Table F2
 Cyclonic = N (Y)es, (N)o Major element = Y (Y)es, (N)o
 Annual prob. of exceedance (APE) = 500 years
 Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 57 m/s For a 1:500 APE - Cl 3.2, Table 3.1
 Serv. regional wind speed (VR.s) = 39 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1
 Factor for reg. C or D (F) = 1.00 Cl 3.4
 Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)
 Minimum Ultimate speed (Vdes,θ) = 30 m/s Cl 2.3
 Ratio VR.s / VR = 0.68
 Ratio Ws / Wu = 0.47 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	49.3	1.46	0.68	NE	49.3	1.46	0.68
S	49.3	1.46	0.68	SW	49.3	1.46	0.68
E	49.3	1.46	0.68	SE	49.3	1.46	0.68
W	49.3	1.46	0.68	NW	49.3	1.46	0.68

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.95	54.2	5.0	2.0	0.91	1.00	1.00	49.3	1.46
NE	0.95	54.2	5.0	2.0	0.91	1.00	1.00	49.3	1.46
E	0.95	54.2	5.0	2.0	0.91	1.00	1.00	49.3	1.46
SE	0.95	54.2	5.0	2.0	0.91	1.00	1.00	49.3	1.46
S	0.95	54.2	5.0	2.0	0.91	1.00	1.00	49.3	1.46
SW	0.95	54.2	5.0	2.0	0.91	1.00	1.00	49.3	1.46
W	0.95	54.2	5.0	2.0	0.91	1.00	1.00	49.3	1.46
NW	0.95	54.2	5.0	2.0	0.91	1.00	1.00	49.3	1.46

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.02

Dome Consulting Aust

Design: (Wind Analysis WA01) Region B, Non-temporary structure

Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years

Pressures: Wu.max = 1.76kPa, Ws/Wu = 0.47

Location - Fig 3.1(A), 3.1(B)

Location = Region B

Region = B

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom

Design working life = 50 Years AS1170.0 Table F2

Cyclonic = N (Y)es, (N)o Major element = Y (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years

Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 57 m/s For a 1:500 APE - Cl 3.2, Table 3.1

Serv. regional wind speed (VR.s) = 39 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1

Factor for reg. C or D (F) = 1.00 Cl 3.4

Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)

Minimum Ultimate speed (Vdes,θ) = 30 m/s Cl 2.3

Ratio VR.s / VR = 0.68

Ratio Ws / Wu = 0.47 Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	54.2	1.76	0.82	NE	54.2	1.76	0.82
S	54.2	1.76	0.82	SW	54.2	1.76	0.82
E	54.2	1.76	0.82	SE	54.2	1.76	0.82
W	54.2	1.76	0.82	NW	54.2	1.76	0.82

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.95	54.2	10.0	2.0	1.00	1.00	1.00	54.2	1.76
NE	0.95	54.2	10.0	2.0	1.00	1.00	1.00	54.2	1.76
E	0.95	54.2	10.0	2.0	1.00	1.00	1.00	54.2	1.76
SE	0.95	54.2	10.0	2.0	1.00	1.00	1.00	54.2	1.76
S	0.95	54.2	10.0	2.0	1.00	1.00	1.00	54.2	1.76
SW	0.95	54.2	10.0	2.0	1.00	1.00	1.00	54.2	1.76
W	0.95	54.2	10.0	2.0	1.00	1.00	1.00	54.2	1.76
NW	0.95	54.2	10.0	2.0	1.00	1.00	1.00	54.2	1.76

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.02

Dome Consulting Aust

Design: (Wind Analysis WA01) Region B, Non-temporary structure

Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years

Pressures: Wu.max = 1.94kPa, Ws/Wu = 0.47

Location - Fig 3.1(A), 3.1(B)

Location = Region B

Region = B

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom

Design working life = 50 Years AS1170.0 Table F2

Cyclonic = N (Y)es, (N)o

Major element = Y (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years

Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 57 m/s For a 1:500 APE - Cl 3.2, Table 3.1

Serv. regional wind speed (VR.s) = 39 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1

Factor for reg. C or D (F) = 1.00 Cl 3.4

Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)

Minimum Ultimate speed (Vdes,θ) = 30 m/s Cl 2.3

Ratio VR.s / VR = 0.68

Ratio Ws / Wu = 0.47

Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	56.9	1.94	0.91
S	56.9	1.94	0.91
E	56.9	1.94	0.91
W	56.9	1.94	0.91

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
NE	56.9	1.94	0.91
SW	56.9	1.94	0.91
SE	56.9	1.94	0.91
NW	56.9	1.94	0.91

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.95	54.2	15.0	2.0	1.05	1.00	1.00	56.9	1.94
NE	0.95	54.2	15.0	2.0	1.05	1.00	1.00	56.9	1.94
E	0.95	54.2	15.0	2.0	1.05	1.00	1.00	56.9	1.94
SE	0.95	54.2	15.0	2.0	1.05	1.00	1.00	56.9	1.94
S	0.95	54.2	15.0	2.0	1.05	1.00	1.00	56.9	1.94
SW	0.95	54.2	15.0	2.0	1.05	1.00	1.00	56.9	1.94
W	0.95	54.2	15.0	2.0	1.05	1.00	1.00	56.9	1.94
NW	0.95	54.2	15.0	2.0	1.05	1.00	1.00	56.9	1.94

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.02

Dome Consulting Aust

Design: (Wind Analysis WA01) Region B, Non-temporary structure

Importance: All other structures not included in 1,3, or 4, Life = 50 years, Non-Cyclonic, APE = 500 years, APE.Serv = 25 years

Pressures: Wu.max = 2.05kPa, Ws/Wu = 0.47

Location - Fig 3.1(A), 3.1(B)

Location = Region B

Region = B

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom

Design working life = 50 Years AS1170.0 Table F2

Cyclonic = N (Y)es, (N)o

Major element = Y (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years

Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 57 m/s For a 1:500 APE - Cl 3.2, Table 3.1

Serv. regional wind speed (VR.s) = 39 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1

Factor for reg. C or D (F) = 1.00 Cl 3.4

Factor for reg. C or D (F.s) = 1.00 (R < 50 yrs)

Minimum Ultimate speed (Vdes,θ) = 30 m/s Cl 2.3

Ratio VR.s / VR = 0.68

Ratio Ws / Wu = 0.47

Crane W20 = 0.24 kPa

Design wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	58.5	2.05	0.96
S	58.5	2.05	0.96
E	58.5	2.05	0.96
W	58.5	2.05	0.96

Dir (b)	Vdes.θ m/s	Wu kPa	Ws kPa
NE	58.5	2.05	0.96
SW	58.5	2.05	0.96
SE	58.5	2.05	0.96
NW	58.5	2.05	0.96

Site wind data for non-cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.95	54.2	20.0	2.0	1.08	1.00	1.00	58.5	2.05
NE	0.95	54.2	20.0	2.0	1.08	1.00	1.00	58.5	2.05
E	0.95	54.2	20.0	2.0	1.08	1.00	1.00	58.5	2.05
SE	0.95	54.2	20.0	2.0	1.08	1.00	1.00	58.5	2.05
S	0.95	54.2	20.0	2.0	1.08	1.00	1.00	58.5	2.05
SW	0.95	54.2	20.0	2.0	1.08	1.00	1.00	58.5	2.05
W	0.95	54.2	20.0	2.0	1.08	1.00	1.00	58.5	2.05
NW	0.95	54.2	20.0	2.0	1.08	1.00	1.00	58.5	2.05

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.02

Dome Consulting Aust

Design: (Wind Analysis WA01) Region C, Non-temporary structure

Importance: All other structures not included in 1,3, or 4, Life = 50 years, Cyclonic, APE = 500 years, APE.Serv = 25 years

Pressures: Wu.max = 2.33kPa, Ws/Wu = 0.46

Location - Fig 3.1(A), 3.1(B)

Location = Region C

Region = C

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom

Design working life = 50 Years AS1170.0 Table F2

Cyclonic = Y (Y)es, (N)o

Major element = Y (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years

Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 69 m/s

For a 1:500 APE - Cl 3.2, Table 3.1

Serv. regional wind speed (VR.s) = 47 m/s

For a 1:25 APE.s - Cl 3.2, Table 3.1

Factor for reg. C or D (Fc) = 1.05 Cl 3.4

Factor for reg. C or D (Fc.s) = 1.00 (R < 50 yrs)

Minimum Ultimate speed (Vdes,θ) = 30 m/s

Cl 2.3

Ratio VR.s / VR = 0.68

Ratio Ws / Wu = 0.46

Crane W20 = 0.24 kPa

Design wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	62.3	2.33	1.08
S	62.3	2.33	1.08
E	62.3	2.33	1.08
W	62.3	2.33	1.08

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
NE	62.3	2.33	1.08
SW	62.3	2.33	1.08
SE	62.3	2.33	1.08
NW	62.3	2.33	1.08

Site wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.95	65.6	5.0	2.0	0.95	1.00	1.00	62.3	2.33
NE	0.95	65.6	5.0	2.0	0.95	1.00	1.00	62.3	2.33
E	0.95	65.6	5.0	2.0	0.95	1.00	1.00	62.3	2.33
SE	0.95	65.6	5.0	2.0	0.95	1.00	1.00	62.3	2.33
S	0.95	65.6	5.0	2.0	0.95	1.00	1.00	62.3	2.33
SW	0.95	65.6	5.0	2.0	0.95	1.00	1.00	62.3	2.33
W	0.95	65.6	5.0	2.0	0.95	1.00	1.00	62.3	2.33
NW	0.95	65.6	5.0	2.0	0.95	1.00	1.00	62.3	2.33

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.02

Dome Consulting Aust

Design: (Wind Analysis WA01) Region C, Non-temporary structure

Importance: All other structures not included in 1,3, or 4, Life = 50 years, Cyclonic, APE = 500 years, APE.Serv = 25 years

Pressures: Wu.max = 2.58kPa, Ws/Wu = 0.46

Location - Fig 3.1(A), 3.1(B)

Location = Region C

Region = C

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom

Design working life = 50 Years AS1170.0 Table F2

Cyclonic = Y (Y)es, (N)o

Major element = Y (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years

Annual prob. of exceed. Serv. (APE.s) = 25 years

Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 69 m/s

For a 1:500 APE - Cl 3.2, Table 3.1

Serv. regional wind speed (VR.s) = 47 m/s

For a 1:25 APE.s - Cl 3.2, Table 3.1

Factor for reg. C or D (Fc) = 1.05 Cl 3.4

Factor for reg. C or D (Fc.s) = 1.00 (R < 50 yrs)

Minimum Ultimate speed (Vdes,θ) = 30 m/s

Cl 2.3

Ratio VR.s / VR = 0.68

Ratio Ws / Wu = 0.46

Crane W20 = 0.24 kPa

Design wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	65.6	2.58	1.20
S	65.6	2.58	1.20
E	65.6	2.58	1.20
W	65.6	2.58	1.20

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
NE	65.6	2.58	1.20
SW	65.6	2.58	1.20
SE	65.6	2.58	1.20
NW	65.6	2.58	1.20

Site wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.95	65.6	10.0	2.0	1.00	1.00	1.00	65.6	2.58
NE	0.95	65.6	10.0	2.0	1.00	1.00	1.00	65.6	2.58
E	0.95	65.6	10.0	2.0	1.00	1.00	1.00	65.6	2.58
SE	0.95	65.6	10.0	2.0	1.00	1.00	1.00	65.6	2.58
S	0.95	65.6	10.0	2.0	1.00	1.00	1.00	65.6	2.58
SW	0.95	65.6	10.0	2.0	1.00	1.00	1.00	65.6	2.58
W	0.95	65.6	10.0	2.0	1.00	1.00	1.00	65.6	2.58
NW	0.95	65.6	10.0	2.0	1.00	1.00	1.00	65.6	2.58

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.02

Dome Consulting Aust

Design: (Wind Analysis WA01) Region C, Non-temporary structure

Importance: All other structures not included in 1,3, or 4, Life = 50 years, Cyclonic, APE = 500 years, APE.Serv = 25 years

Pressures: Wu.max = 2.95kPa, Ws/Wu = 0.46

Location - Fig 3.1(A), 3.1(B)

Location = Region C

Region = C

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom

Design working life = 50 Years AS1170.0 Table F2

Cyclonic = Y (Y)es, (N)o Major element = Y (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years

Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 69 m/s For a 1:500 APE - Cl 3.2, Table 3.1

Serv. regional wind speed (VR.s) = 47 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1

Factor for reg. C or D (Fc) = 1.05 Cl 3.4

Factor for reg. C or D (Fc.s) = 1.00 (R < 50 yrs)

Minimum Ultimate speed (Vdes,θ) = 30 m/s Cl 2.3

Ratio VR.s / VR = 0.68

Ratio Ws / Wu = 0.46 Crane W20 = 0.24 kPa

Design wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	70.1	2.95	1.37	NE	70.1	2.95	1.37
S	70.1	2.95	1.37	SW	70.1	2.95	1.37
E	70.1	2.95	1.37	SE	70.1	2.95	1.37
W	70.1	2.95	1.37	NW	70.1	2.95	1.37

Site wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.95	65.6	15.0	2.0	1.07	1.00	1.00	70.1	2.95
NE	0.95	65.6	15.0	2.0	1.07	1.00	1.00	70.1	2.95
E	0.95	65.6	15.0	2.0	1.07	1.00	1.00	70.1	2.95
SE	0.95	65.6	15.0	2.0	1.07	1.00	1.00	70.1	2.95
S	0.95	65.6	15.0	2.0	1.07	1.00	1.00	70.1	2.95
SW	0.95	65.6	15.0	2.0	1.07	1.00	1.00	70.1	2.95
W	0.95	65.6	15.0	2.0	1.07	1.00	1.00	70.1	2.95
NW	0.95	65.6	15.0	2.0	1.07	1.00	1.00	70.1	2.95

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.02

Dome Consulting Aust

Design: (Wind Analysis WA01) Region C, Non-temporary structure

Importance: All other structures not included in 1,3, or 4, Life = 50 years, Cyclonic, APE = 500 years, APE.Serv = 25 years

Pressures: Wu.max = 3.29kPa, Ws/Wu = 0.46

Location - Fig 3.1(A), 3.1(B)

Location = Region C

Region = C

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom

Design working life = 50 Years AS1170.0 Table F2

Cyclonic = Y (Y)es, (N)o Major element = Y (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years

Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 69 m/s For a 1:500 APE - Cl 3.2, Table 3.1

Serv. regional wind speed (VR.s) = 47 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1

Factor for reg. C or D (Fc) = 1.05 Cl 3.4

Factor for reg. C or D (Fc.s) = 1.00 (R < 50 yrs)

Minimum Ultimate speed (Vdes,θ) = 30 m/s Cl 2.3

Ratio VR.s / VR = 0.68

Ratio Ws / Wu = 0.46 Crane W20 = 0.24 kPa

Design wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	74.1	3.29	1.53	NE	74.1	3.29	1.53
S	74.1	3.29	1.53	SW	74.1	3.29	1.53
E	74.1	3.29	1.53	SE	74.1	3.29	1.53
W	74.1	3.29	1.53	NW	74.1	3.29	1.53

Site wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.95	65.6	20.0	2.0	1.13	1.00	1.00	74.1	3.29
NE	0.95	65.6	20.0	2.0	1.13	1.00	1.00	74.1	3.29
E	0.95	65.6	20.0	2.0	1.13	1.00	1.00	74.1	3.29
SE	0.95	65.6	20.0	2.0	1.13	1.00	1.00	74.1	3.29
S	0.95	65.6	20.0	2.0	1.13	1.00	1.00	74.1	3.29
SW	0.95	65.6	20.0	2.0	1.13	1.00	1.00	74.1	3.29
W	0.95	65.6	20.0	2.0	1.13	1.00	1.00	74.1	3.29
NW	0.95	65.6	20.0	2.0	1.13	1.00	1.00	74.1	3.29

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.02

Dome Consulting Aust

Design: (Wind Analysis WA01) Region D, Non-temporary structure

Importance: All other structures not included in 1,3, or 4, Life = 50 years, Cyclonic, APE = 500 years, APE.Serv = 25 years

Pressures: Wu.max = 3.78kPa, Ws/Wu =0.36

Location - Fig 3.1(A), 3.1(B)

Location = Region D

Region = D

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom

Design working life = 50 Years AS1170.0 Table F2

Cyclonic = Y (Y)es, (N)o

Major element = Y (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years

Annual prob. of exceed. Serv. (APE.s) = 25 years

Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 88 m/s

For a 1:500 APE - Cl 3.2, Table 3.1

Serv. regional wind speed (VR.s) = 53 m/s

For a 1:25 APE.s - Cl 3.2, Table 3.1

Factor for reg. C or D (Fd) = 1.10 Cl 3.4

Factor for reg. C or D (Fd.s) = 1.00 (R < 50 yrs)

Minimum Ultimate speed (Vdes,θ) = 30 m/s

Cl 2.3

Ratio VR.s / VR = 0.60

Ratio Ws / Wu = 0.36

Crane W20 = 0.24 kPa

Design wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	79.4	3.78	1.37
S	79.4	3.78	1.37
E	79.4	3.78	1.37
W	79.4	3.78	1.37

Dir (b)	Vdes.θ m/s	Wu kPa	Ws kPa
NE	79.4	3.78	1.37
SW	79.4	3.78	1.37
SE	79.4	3.78	1.37
NW	79.4	3.78	1.37

Site wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.95	83.6	5.0	2.0	0.95	1.00	1.00	79.4	3.78
NE	0.95	83.6	5.0	2.0	0.95	1.00	1.00	79.4	3.78
E	0.95	83.6	5.0	2.0	0.95	1.00	1.00	79.4	3.78
SE	0.95	83.6	5.0	2.0	0.95	1.00	1.00	79.4	3.78
S	0.95	83.6	5.0	2.0	0.95	1.00	1.00	79.4	3.78
SW	0.95	83.6	5.0	2.0	0.95	1.00	1.00	79.4	3.78
W	0.95	83.6	5.0	2.0	0.95	1.00	1.00	79.4	3.78
NW	0.95	83.6	5.0	2.0	0.95	1.00	1.00	79.4	3.78

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.02

Dome Consulting Aust

Design: (Wind Analysis WA01) Region D, Non-temporary structure

Importance: All other structures not included in 1,3, or 4, Life = 50 years, Cyclonic, APE = 500 years, APE.Serv = 25 years

Pressures: Wu.max = 4.19kPa, Ws/Wu = 0.36

Location - Fig 3.1(A), 3.1(B)

Location = Region D

Region = D

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom

Design working life = 50 Years AS1170.0 Table F2

Cyclonic = Y (Y)es, (N)o Major element = Y (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years

Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 88 m/s For a 1:500 APE - Cl 3.2, Table 3.1

Serv. regional wind speed (VR.s) = 53 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1

Factor for reg. C or D (Fd) = 1.10 Cl 3.4

Factor for reg. C or D (Fd.s) = 1.00 (R < 50 yrs)

Minimum Ultimate speed (Vdes,θ) = 30 m/s Cl 2.3

Ratio VR.s / VR = 0.60

Ratio Ws / Wu = 0.36 Crane W20 = 0.24 kPa

Design wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	83.6	4.19	1.52	NE	83.6	4.19	1.52
S	83.6	4.19	1.52	SW	83.6	4.19	1.52
E	83.6	4.19	1.52	SE	83.6	4.19	1.52
W	83.6	4.19	1.52	NW	83.6	4.19	1.52

Site wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.95	83.6	10.0	2.0	1.00	1.00	1.00	83.6	4.19
NE	0.95	83.6	10.0	2.0	1.00	1.00	1.00	83.6	4.19
E	0.95	83.6	10.0	2.0	1.00	1.00	1.00	83.6	4.19
SE	0.95	83.6	10.0	2.0	1.00	1.00	1.00	83.6	4.19
S	0.95	83.6	10.0	2.0	1.00	1.00	1.00	83.6	4.19
SW	0.95	83.6	10.0	2.0	1.00	1.00	1.00	83.6	4.19
W	0.95	83.6	10.0	2.0	1.00	1.00	1.00	83.6	4.19
NW	0.95	83.6	10.0	2.0	1.00	1.00	1.00	83.6	4.19

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.02

Dome Consulting Aust

Design: (Wind Analysis WA01) Region D, Non-temporary structure

Importance: All other structures not included in 1,3, or 4, Life = 50 years, Cyclonic, APE = 500 years, APE.Serv = 25 years

Pressures: Wu.max = 4.80kPa, Ws/Wu = 0.36

Location - Fig 3.1(A), 3.1(B)

Location = Region D

Region = D

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom

Design working life = 50 Years AS1170.0 Table F2

Cyclonic = Y (Y)es, (N)o

Major element = Y (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years

Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 88 m/s For a 1:500 APE - Cl 3.2, Table 3.1

Serv. regional wind speed (VR.s) = 53 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1

Factor for reg. C or D (Fd) = 1.10 Cl 3.4

Factor for reg. C or D (Fd.s) = 1.00 (R < 50 yrs)

Minimum Ultimate speed (Vdes,θ) = 30 m/s Cl 2.3

Ratio VR.s / VR = 0.60

Ratio Ws / Wu = 0.36

Crane W20 = 0.24 kPa

Design wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	89.5	4.80	1.74
S	89.5	4.80	1.74
E	89.5	4.80	1.74
W	89.5	4.80	1.74

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
NE	89.5	4.80	1.74
SW	89.5	4.80	1.74
SE	89.5	4.80	1.74
NW	89.5	4.80	1.74

Site wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.95	83.6	15.0	2.0	1.07	1.00	1.00	89.5	4.80
NE	0.95	83.6	15.0	2.0	1.07	1.00	1.00	89.5	4.80
E	0.95	83.6	15.0	2.0	1.07	1.00	1.00	89.5	4.80
SE	0.95	83.6	15.0	2.0	1.07	1.00	1.00	89.5	4.80
S	0.95	83.6	15.0	2.0	1.07	1.00	1.00	89.5	4.80
SW	0.95	83.6	15.0	2.0	1.07	1.00	1.00	89.5	4.80
W	0.95	83.6	15.0	2.0	1.07	1.00	1.00	89.5	4.80
NW	0.95	83.6	15.0	2.0	1.07	1.00	1.00	89.5	4.80

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind V4.02

Dome Consulting Aust

Design: (Wind Analysis WA01) Region D, Non-temporary structure

Importance: All other structures not included in 1,3, or 4, Life = 50 years, Cyclonic, APE = 500 years, APE.Serv = 25 years

Pressures: Wu.max = 5.35kPa, Ws/Wu = 0.36

Location - Fig 3.1(A), 3.1(B)

Location = Region D

Region = D

Importance All other structures not included in 1,3, or 4

Importance level = 2 1,2,3,4,(C)ustom

Design working life = 50 Years AS1170.0 Table F2

Cyclonic = Y (Y)es, (N)o Major element = Y (Y)es, (N)o

Annual prob. of exceedance (APE) = 500 years

Annual prob. of exceed. Serv. (APE.s) = 25 years Ref. AS1170.0 - App C

Design wind speed (Vdes,q) - Cl 2.3

Ultimate regional wind speed (VR) = 88 m/s For a 1:500 APE - Cl 3.2, Table 3.1

Serv. regional wind speed (VR.s) = 53 m/s For a 1:25 APE.s - Cl 3.2, Table 3.1

Factor for reg. C or D (Fd) = 1.10 Cl 3.4

Factor for reg. C or D (Fd.s) = 1.00 (R < 50 yrs)

Minimum Ultimate speed (Vdes,θ) = 30 m/s Cl 2.3

Ratio VR.s / VR = 0.60

Ratio Ws / Wu = 0.36 Crane W20 = 0.24 kPa

Design wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa	Dir (b)	Vdes,θ m/s	Wu kPa	Ws kPa
N	94.5	5.35	1.94	NE	94.5	5.35	1.94
S	94.5	5.35	1.94	SW	94.5	5.35	1.94
E	94.5	5.35	1.94	SE	94.5	5.35	1.94
W	94.5	5.35	1.94	NW	94.5	5.35	1.94

Site wind data for cyclonic areas with APE of 1:500 years

Dir (b)	Md (*1)	VR*Md	Ave. Ht (z) m	Cat	Mz	Ms	Mt	Vsit,β m/s	Wu kPa
N	0.95	83.6	20.0	2.0	1.13	1.00	1.00	94.5	5.35
NE	0.95	83.6	20.0	2.0	1.13	1.00	1.00	94.5	5.35
E	0.95	83.6	20.0	2.0	1.13	1.00	1.00	94.5	5.35
SE	0.95	83.6	20.0	2.0	1.13	1.00	1.00	94.5	5.35
S	0.95	83.6	20.0	2.0	1.13	1.00	1.00	94.5	5.35
SW	0.95	83.6	20.0	2.0	1.13	1.00	1.00	94.5	5.35
W	0.95	83.6	20.0	2.0	1.13	1.00	1.00	94.5	5.35
NW	0.95	83.6	20.0	2.0	1.13	1.00	1.00	94.5	5.35

*1 - Refer to Table 3.2 and Cl 3.3, TC interpolated

Wind Pressure Summary

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
10	-1.22	-1.76	-2.58	-4.19
15	-1.34	-1.94	-2.95	-4.80
20	-1.42	-2.05	-3.29	-5.35

TABLE D11

AERODYNAMIC SHAPE FACTOR (C_{fe}) FOR CALCULATING NET PRESSURES ACTING NORMAL TO PANELS MOUNTED PARALLEL TO A ROOF SURFACE WITH A GAP OF $s = 50$ TO 300 mm

Wind direction	Array position	Aerodynamic shape factor (C_{fe})			
		$\alpha < 5^\circ$	$5^\circ \leq \alpha < 10^\circ$	$10^\circ \leq \alpha < 20^\circ$	$20^\circ \leq \alpha \leq 30^\circ$
$\theta = 0^\circ$	Upwind end	-1.7, +0.4	-1.1, +0.8	-1.1, +0.6	-1.0, +0.6
	Upwind central	-1.4, +0.5	-0.8, +0.5	-0.7, +0.3	-0.8, +0.3
	Downwind end	-1.3, +0.5	-1.1, +0.5	-1.4, +0.4	-1.3, +0.5
	Downwind central	-1.4, +0.5	-0.8, +0.4	-1.0, +0.4	-1.1, +0.4
		$5^\circ \leq \alpha \leq 30^\circ$			
$\theta = 90^\circ$	Upwind end	-1.7, +0.4	-1.7, +0.4		
	Central	-1.4, +0.5	-1.2, +0.5		
	Downwind end	-1.3, +0.5	-1.1, +0.5		

Note:

Aerodynamic Shape Factor C_{fig}

For Central Zone : $C_{fig} = 1.2$ For End Zone : $C_{fig} = 1.7$

Building Height (m)	Region A Wu (kPa)		Region B Wu (kPa)		Region C Wu (kPa)		Region D Wu (kPa)	
	Central	End	Central	End	Central	End	Central	End
5	-1.21	-1.72	-1.75	-2.48	-2.8	-3.96	-4.54	-6.43
10	-1.46	-2.07	-2.11	-2.99	-3.1	-4.39	-5.03	-7.12
15	-1.61	-2.28	-2.33	-3.3	-3.54	-5.02	-5.76	-8.16
20	-1.7	-2.41	-2.46	-3.49	-3.95	-5.59	-6.42	-9.1

Wind Pressure Summary

Terrain Category 2

Building Height (m)	Region A Ws (kPa)	Region B Ws (kPa)	Region C Ws (kPa)	Region D Ws (kPa)
5	-0.69	-0.68	-1.08	-1.37
10	-0.83	-0.82	-1.20	-1.52
15	-0.91	-0.91	-1.37	-1.74
20	-0.97	-0.96	-1.53	-1.94

TABLE D11

AERODYNAMIC SHAPE FACTOR (C_{pe}) FOR CALCULATING NET PRESSURES ACTING NORMAL TO PANELS MOUNTED PARALLEL TO A ROOF SURFACE WITH A GAP OF $s = 50$ TO 300 mm

Wind direction	Array position	Aerodynamic shape factor (C_{pe})			
		$\alpha < 5^\circ$	$5^\circ \leq \alpha < 10^\circ$	$10^\circ \leq \alpha < 20^\circ$	$20^\circ \leq \alpha \leq 30^\circ$
$\theta = 0^\circ$	Upwind end	-1.7, +0.4	-1.1, +0.8	-1.1, +0.6	-1.0, +0.6
	Upwind central	-1.4, +0.5	-0.8, +0.5	-0.7, +0.3	-0.8, +0.3
	Downwind end	-1.3, +0.5	-1.1, +0.5	-1.4, +0.4	-1.3, +0.5
	Downwind central	-1.4, +0.5	-0.8, +0.4	-1.0, +0.4	-1.1, +0.4
$\theta = 90^\circ$			$5^\circ \leq \alpha \leq 30^\circ$		
	Upwind end	-1.7, +0.4	-1.7, +0.4		
	Central	-1.4, +0.5	-1.2, +0.5		
	Downwind end	-1.3, +0.5	-1.1, +0.5		

Note:

Aerodynamic Shape Factor C_{fig}

For Central Zone : $C_{fig} = 1.2$ For End Zone : $C_{fig} = 1.7$

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
	Central End	Central End	Central End	Central End
5	-0.82 -1.17	-0.82 -1.16	-1.3 -1.84	-1.64 -2.33
10	-1 -1.41	-0.98 -1.39	-1.44 -2.04	-1.82 -2.58
15	-1.09 -1.55	-1.09 -1.55	-1.64 -2.33	-2.09 -2.96
20	-1.16 -1.64	-1.15 -1.63	-1.84 -2.6	-2.33 -3.3

Wind Pressure Summary

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
10	-0.84	-1.21	-2.04	-3.32
15	-0.96	-1.39	-2.33	-3.78
20	-1.07	-1.55	-2.84	-4.62

TABLE D11

AERODYNAMIC SHAPE FACTOR (C_{fe}) FOR CALCULATING NET PRESSURES ACTING NORMAL TO PANELS MOUNTED PARALLEL TO A ROOF SURFACE WITH A GAP OF $s = 50$ TO 300 mm

Wind direction	Array position	Aerodynamic shape factor (C_{fe})			
		$\alpha < 5^\circ$	$5^\circ \leq \alpha < 10^\circ$	$10^\circ \leq \alpha < 20^\circ$	$20^\circ \leq \alpha \leq 30^\circ$
$\theta = 0^\circ$	Upwind end	-1.7, +0.4	-1.1, +0.8	-1.1, +0.6	-1.0, +0.6
	Upwind central	-1.4, +0.5	-0.8, +0.5	-0.7, +0.3	-0.8, +0.3
	Downwind end	-1.3, +0.5	-1.1, +0.5	-1.4, +0.4	-1.3, +0.5
	Downwind central	-1.4, +0.5	-0.8, +0.4	-1.0, +0.4	-1.1, +0.4
$\theta = 90^\circ$		$5^\circ \leq \alpha \leq 30^\circ$			
	Upwind end	-1.7, +0.4	-1.7, +0.4		
	Central	-1.4, +0.5	-1.2, +0.5		
	Downwind end	-1.3, +0.5	-1.1, +0.5		

Note:

Aerodynamic Shape Factor C_{fig}

For Central Zone : $C_{fig} = 1.2$ For End Zone : $C_{fig} = 1.7$

Building Height (m)	Region A Wu (kPa)		Region B Wu (kPa)		Region C Wu (kPa)		Region D Wu (kPa)	
	Central	End	Central	End	Central	End	Central	End
5	-1.01	-1.43	-1.45	-2.06	-1.98	-2.81	-3.22	-4.56
10	-1.01	-1.43	-1.45	-2.06	-2.45	-3.47	-3.98	-5.64
15	-1.15	-1.63	-1.67	-2.36	-2.8	-3.96	-4.54	-6.43
20	-1.28	-1.82	-1.86	-2.64	-3.41	-4.83	-5.54	-7.85

Wind Pressure Summary

Terrain Category 3

Building Height (m)	Region A Ws (kPa)	Region B Ws (kPa)	Region C Ws (kPa)	Region D Ws (kPa)
5	-0.57	-0.57	-0.77	-0.97
10	-0.57	-0.57	-0.95	-1.20
15	-0.65	-0.65	-1.08	-1.37
20	-0.73	-0.73	-1.32	-1.68

TABLE D11

AERODYNAMIC SHAPE FACTOR (C_{fe}) FOR CALCULATING NET PRESSURES ACTING NORMAL TO PANELS MOUNTED PARALLEL TO A ROOF SURFACE WITH A GAP OF $s = 50$ TO 300 mm

Wind direction	Array position	Aerodynamic shape factor (C_{fe})			
		$\alpha < 5^\circ$	$5^\circ \leq \alpha < 10^\circ$	$10^\circ \leq \alpha < 20^\circ$	$20^\circ \leq \alpha \leq 30^\circ$
$\theta = 0^\circ$	Upwind end	-1.7, +0.4	-1.1, +0.8	-1.1, +0.6	-1.0, +0.6
	Upwind central	-1.4, +0.5	-0.8, +0.5	-0.7, +0.3	-0.8, +0.3
	Downwind end	-1.3, +0.5	-1.1, +0.5	-1.4, +0.4	-1.3, +0.5
	Downwind central	-1.4, +0.5	-0.8, +0.4	-1.0, +0.4	-1.1, +0.4
		$5^\circ \leq \alpha \leq 30^\circ$			
$\theta = 90^\circ$	Upwind end	-1.7, +0.4	-1.7, +0.4		
	Central	-1.4, +0.5	-1.2, +0.5		
	Downwind end	-1.3, +0.5	-1.1, +0.5		

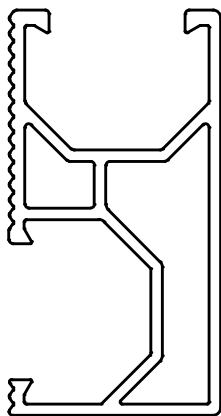
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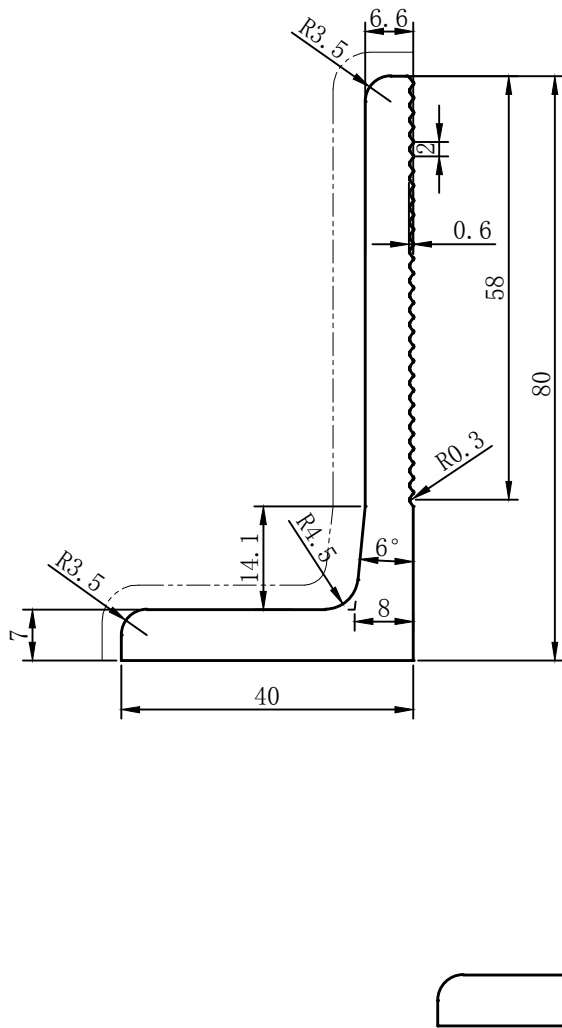
Aerodynamic Shape Factor C_{fe}

For Central Zone : $C_{fe} = 1.2$ For End Zone : $C_{fe} = 1.7$

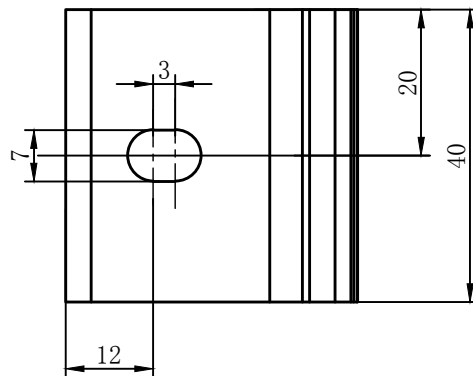
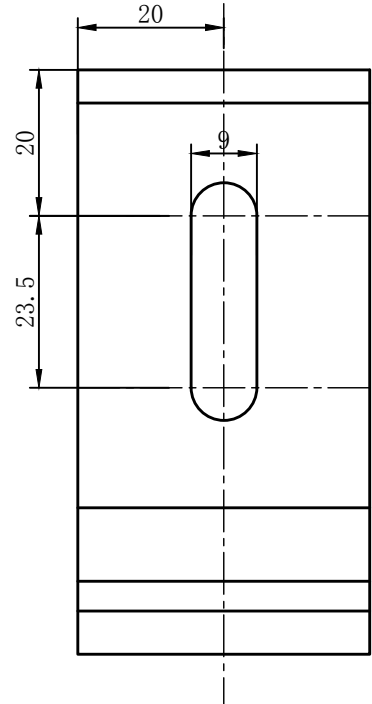
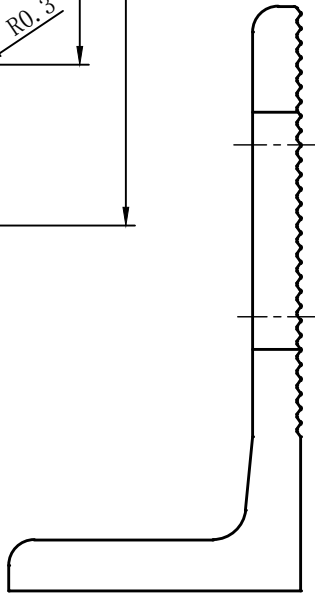
Building Height (m)	Region A Wu (kPa)		Region B Wu (kPa)		Region C Wu (kPa)		Region D Wu (kPa)	
	Central	End	Central	End	Central	End	Central	End
5	-0.69	-0.97	-0.68	-0.97	-0.92	-1.31	-1.16	-1.65
10	-0.69	-0.97	-0.68	-0.97	-1.14	-1.62	-1.44	-2.04
15	-0.78	-1.11	-0.78	-1.11	-1.3	-1.84	-1.64	-2.33
20	-0.87	-1.24	-0.88	-1.24	-1.58	-2.24	-2.02	-2.86

COMPONENT DETAILS





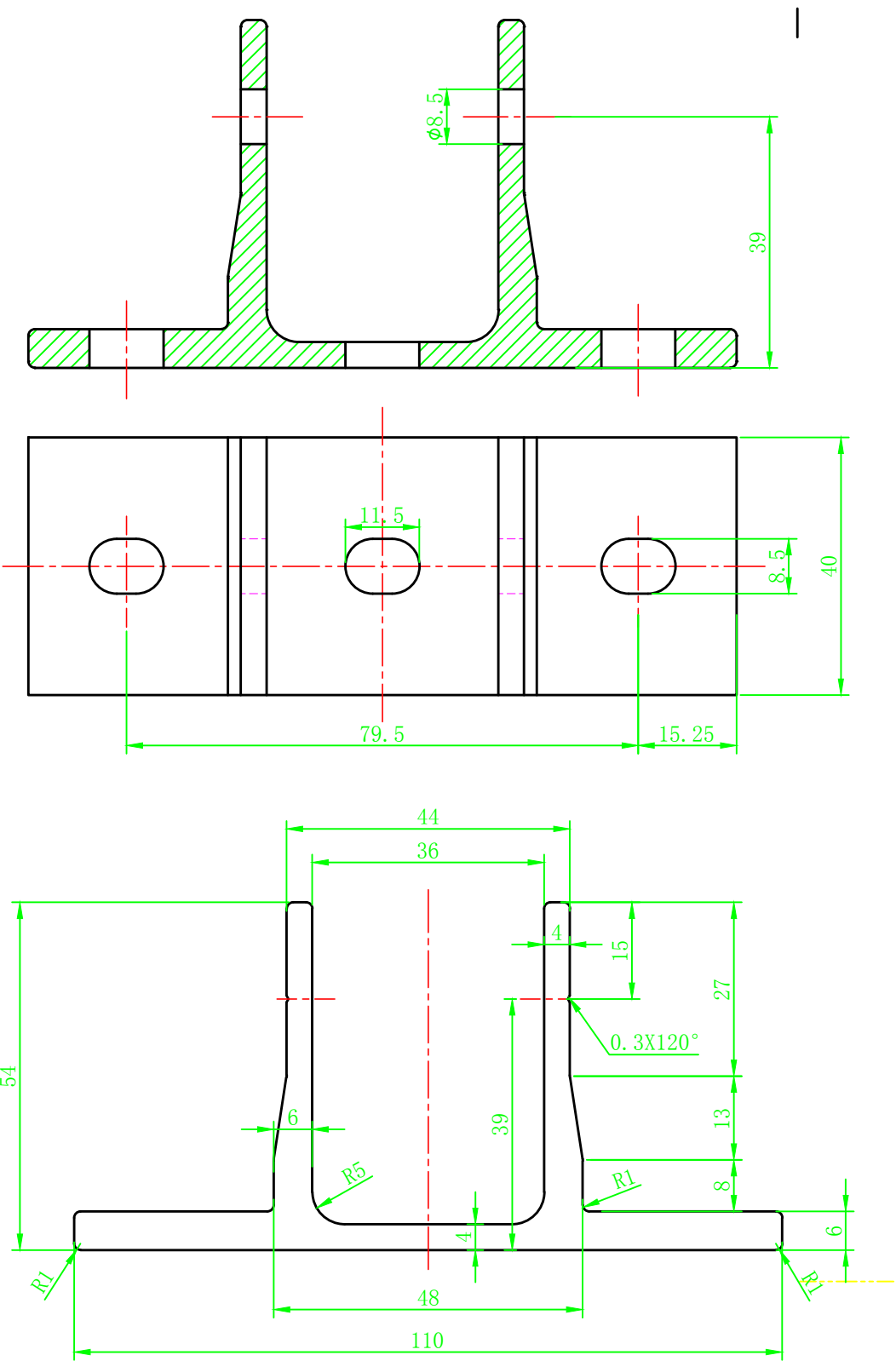
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>10-15	±0.17
>15-30	±0.21
>30-45	±0.26
>45-60	±0.31
>60-100	±0.52



Technical information:

- 1.No deformaed, no serious scratches on the non-machined surface.
un-noted surface roughness is Ra6.3, no burr and sharp edges:
- 2.no-noted corner is R0.5icC0.5
- 3.Finish: clean anodized

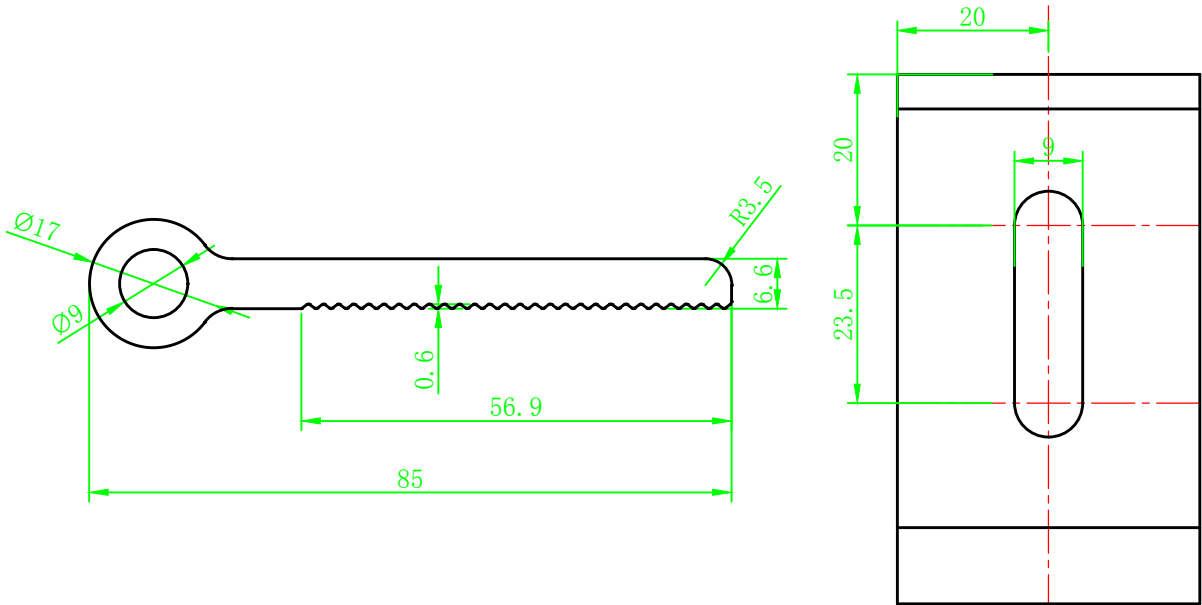
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Weight	0.075KG	Part Name	L feet		
Date	2014.12.04	Rev.	1.0		
Jiangyin Titanergy Co.Ltd			TEL:	+86-510-86610877	
			FAX:	+86-510-86610877	



Autodesk

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					Name			
Jiangyin Titanergy					Autodesk			

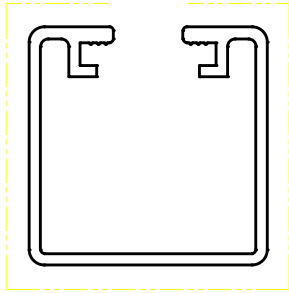


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Jiangyin Titanergy					Autodesk			

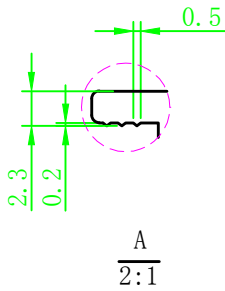
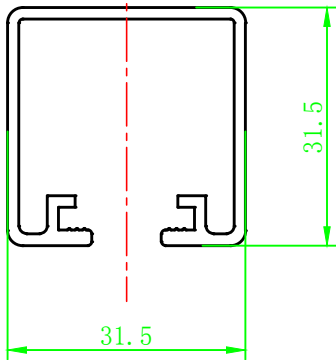
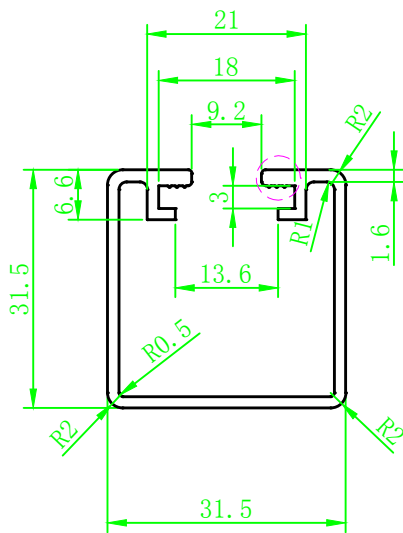
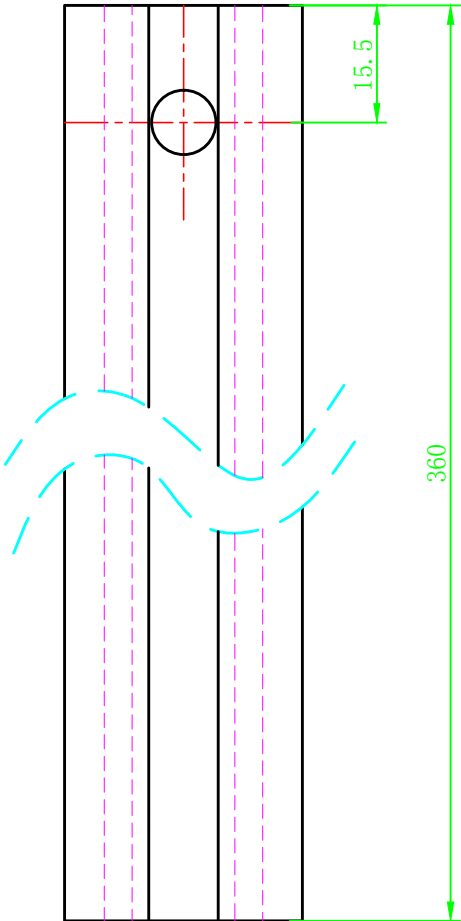
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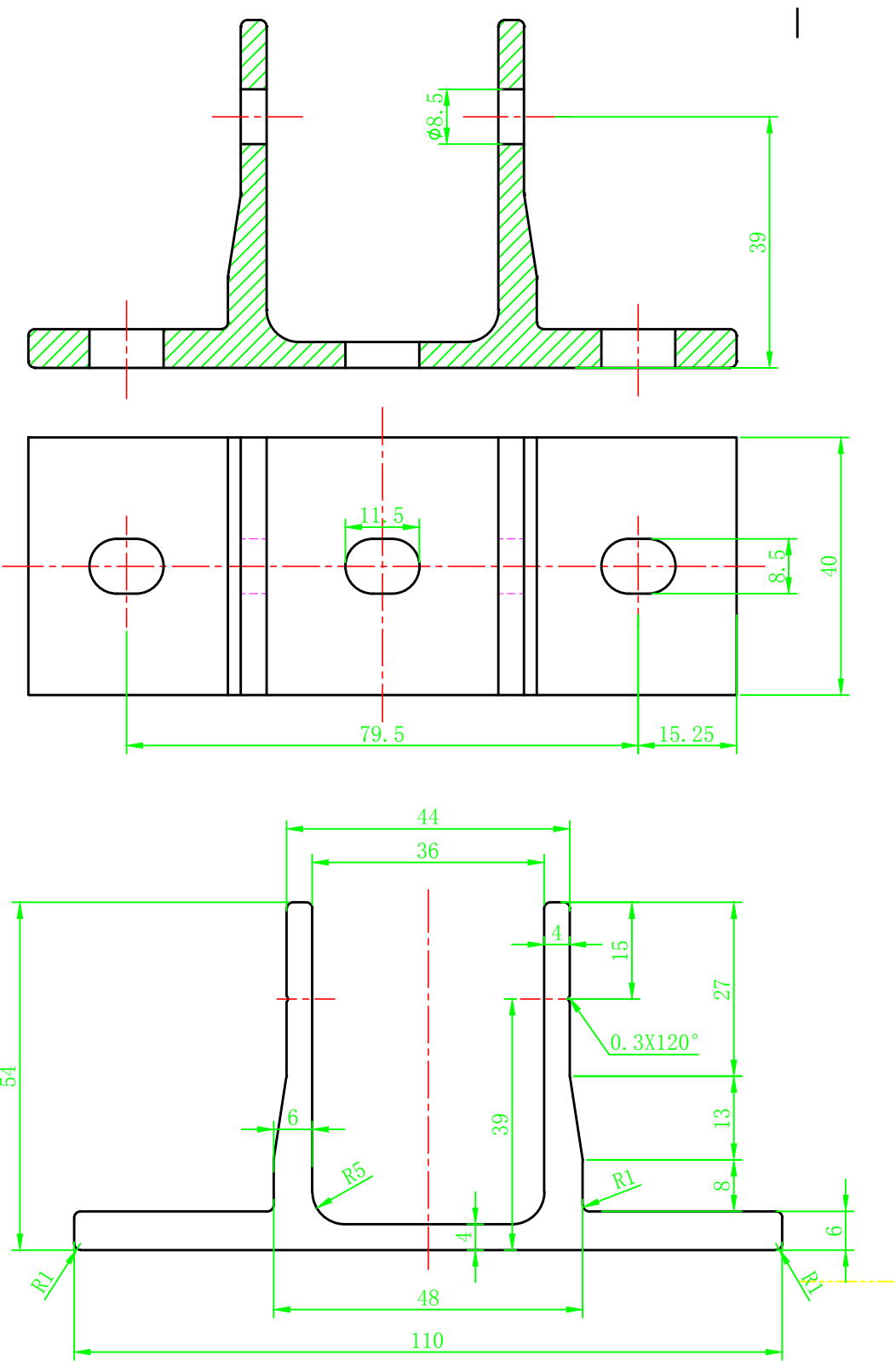
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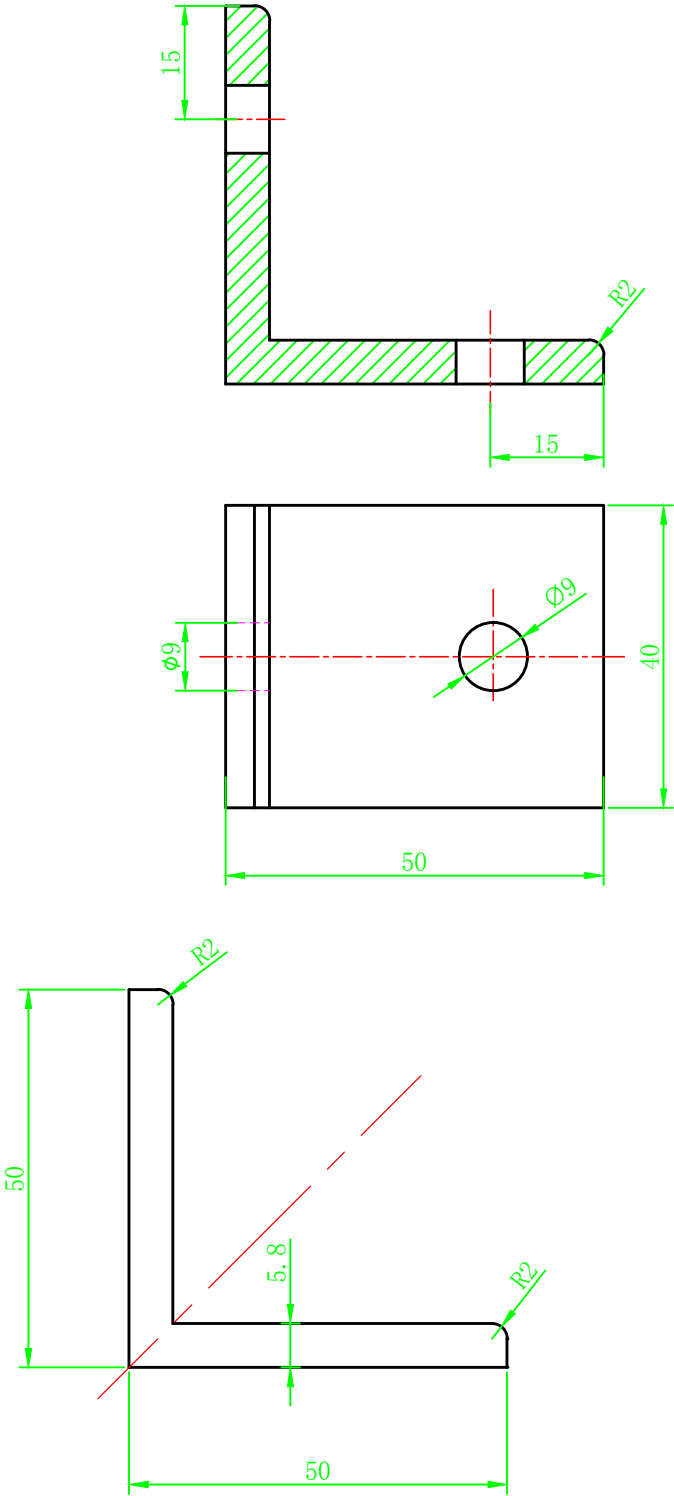
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Jiangyin Titanergy					Autodesk			



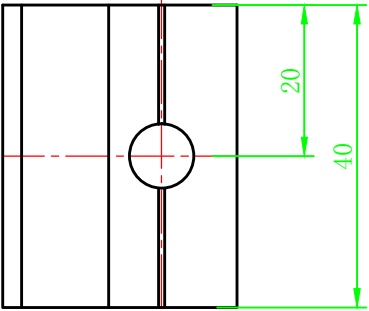
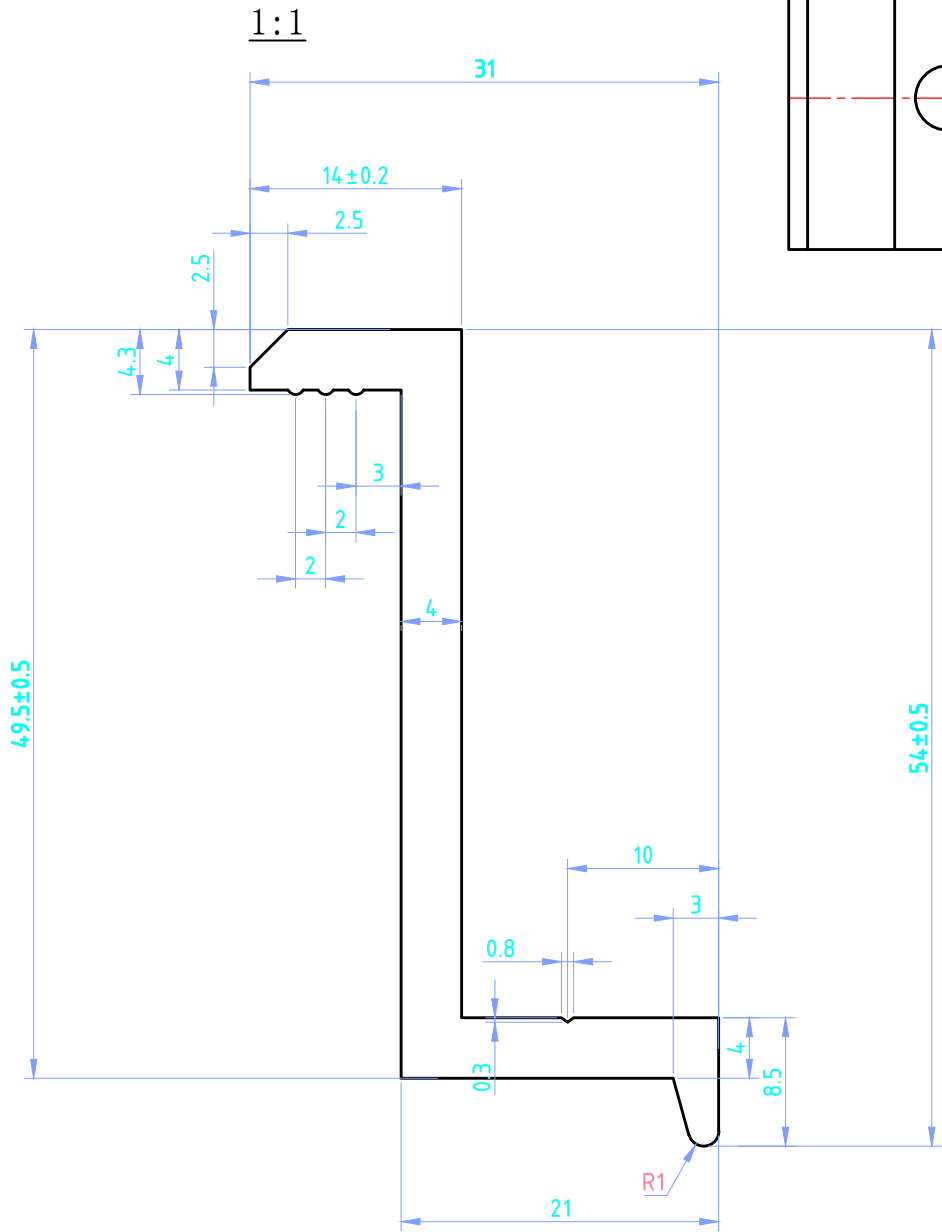
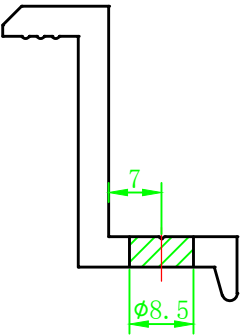
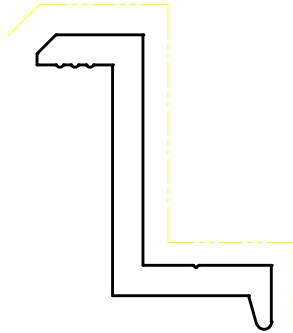
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					Name				
Jiangyin Titanergy					Autodesk				



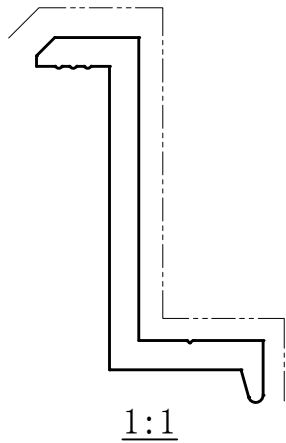
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						Name			
Jiangyin Titanergy					Autodesk				



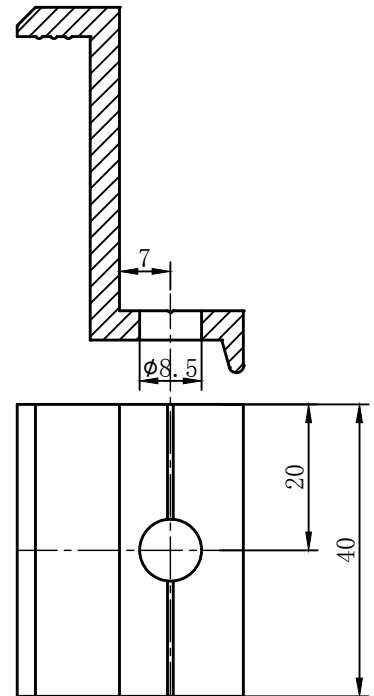
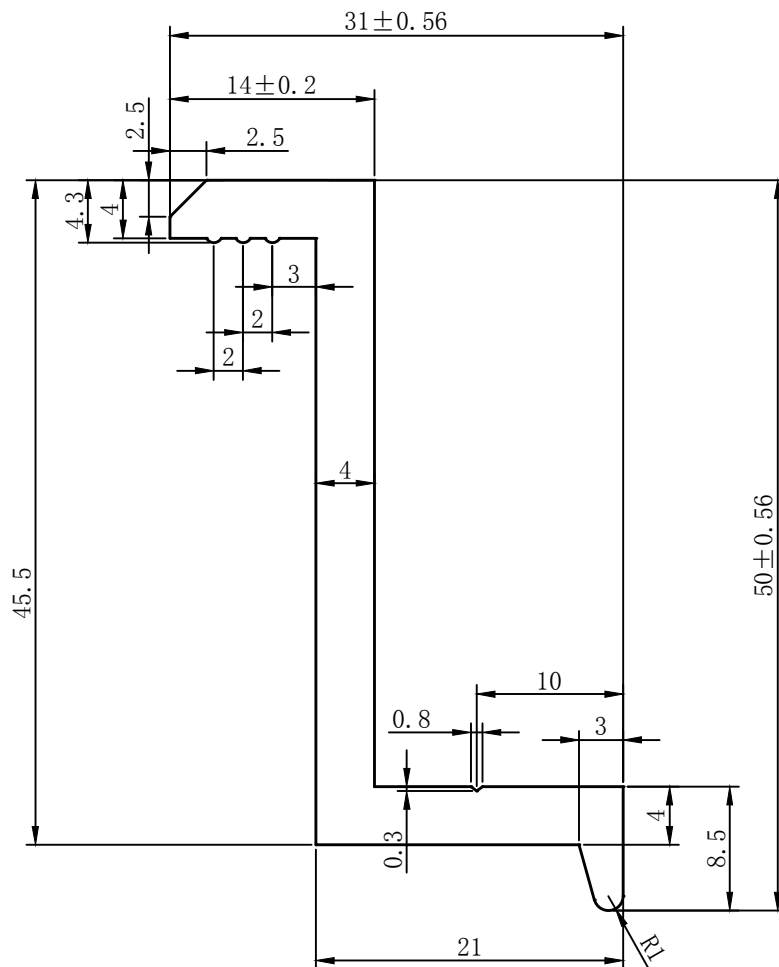
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Material: AL6005-T5					PIC No.				
					Name	End Clamp 50			
Jiangyin Titanergy					Autodesk				



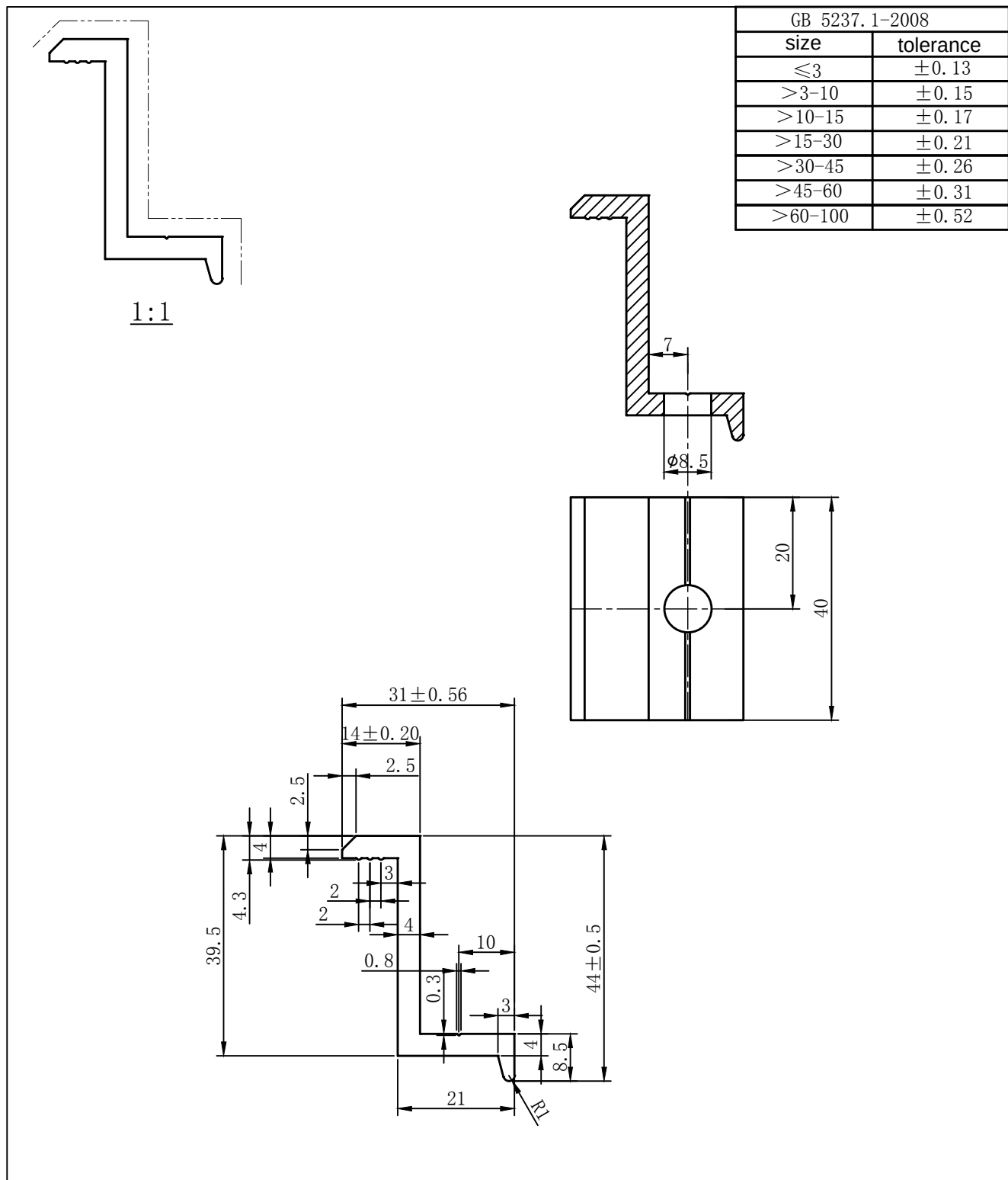
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>10-15	±0.17
>15-30	±0.21
>30-45	±0.26
>45-60	±0.31
>60-100	±0.52



Technical information:

- 1.No deformaed, no serious scratches on the non-machined surface.
un-noted surface roughness is Ra6.3, no burr and sharp edges:
- 2.no-noted corner is R0.5icC0.5
- 3.Finish: clean anodized

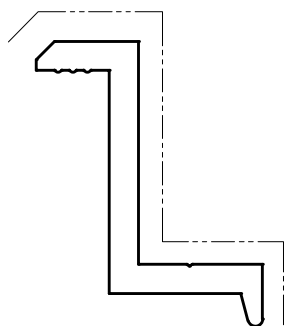
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Date	2014. 12. 04	Rev.	1.0			
Jiangyin Titanergy Co.Ltd			TEL:	+86-510-86610877		
			FAX:	+86-510-86610877		



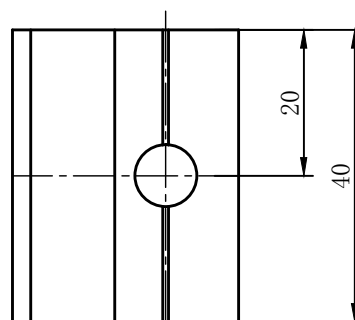
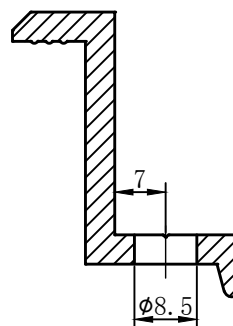
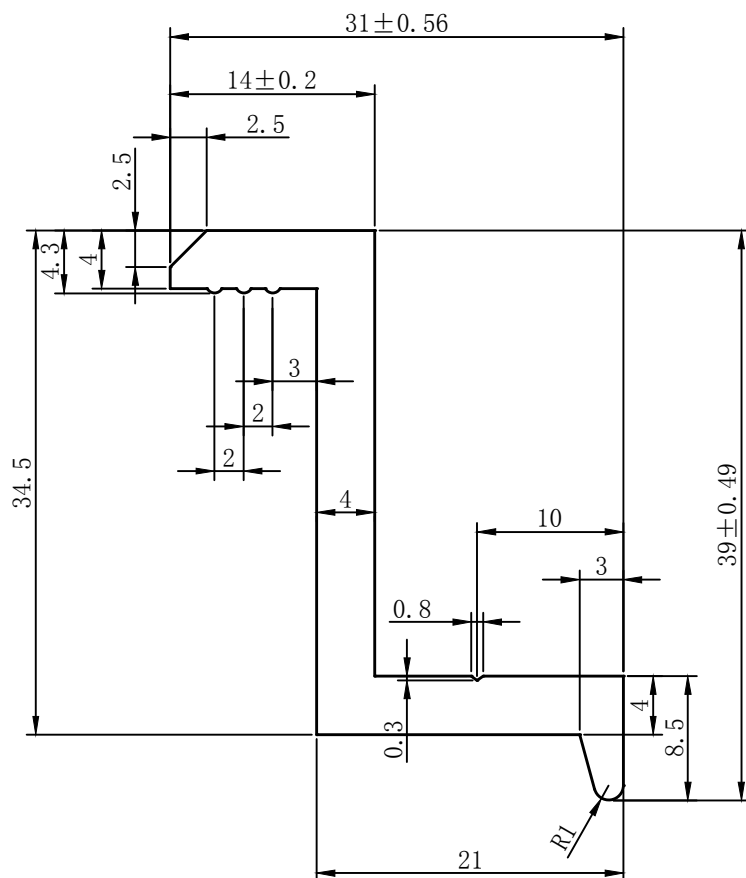
Technical information:

- 1.No deformaed, no serious scratches on the non-machined surface.
un-noted surface roughness is Ra6.3, no burr and sharp edges:
- 2.no-noted corner is R0.5icC0.5
- 3.Finish: clean anodized

Material	6005-T5	Part Number	XL2483B			
Weight	0.075KG	Part Name	End Clamp 40			
Date	2014. 12. 04	Rev.	1.0			
Jiangyin Titanergy Co.Ltd			TEL:	+86-510-86610877		
			FAX:	+86-510-86610877		



1:1

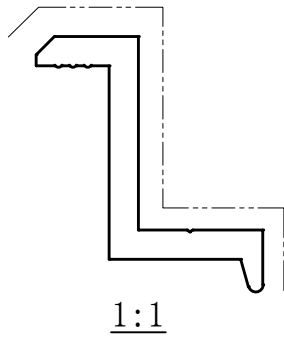


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>60-100	±0.52

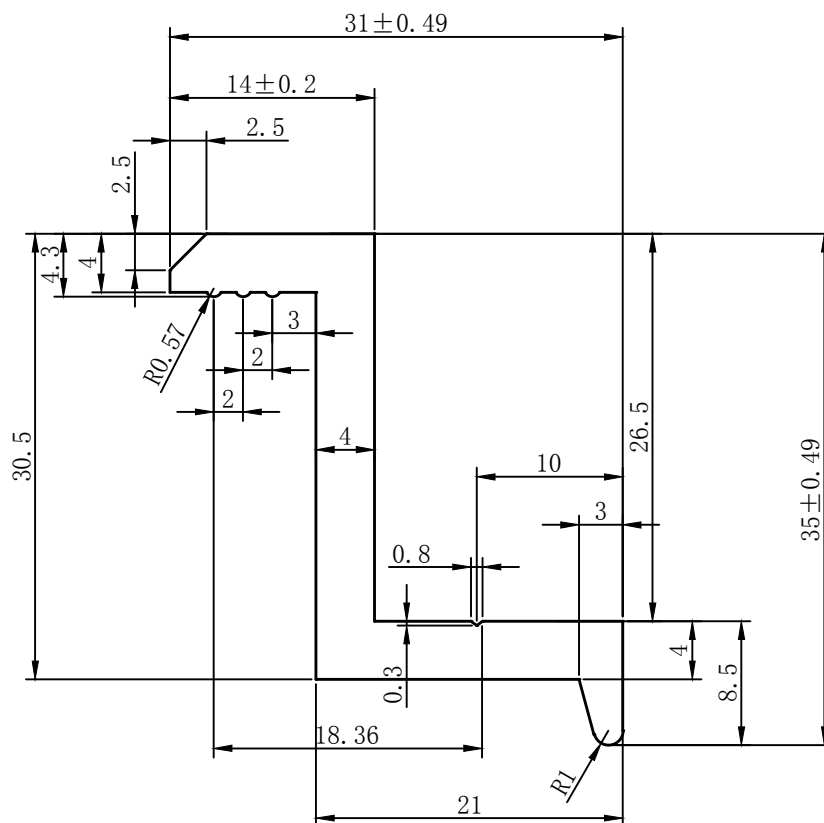
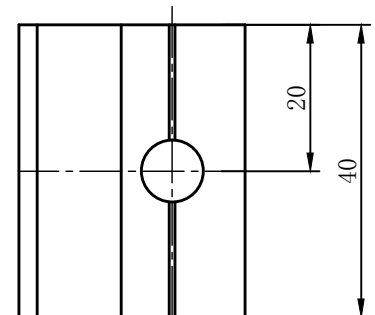
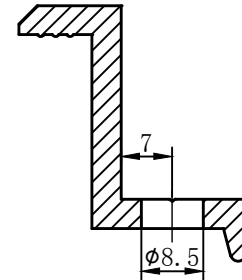
Technical information:

- 1.No deformaed, no serious scratches on the non-machined surface.
un-noted surface roughness is Ra6.3, no burr and sharp edges:
- 2.no-noted corner is R0.5icC0.5
- 3.Finish: clean anodized

Material	6005-T5	Part Number	XL2483A			
Weight	0.029KG	Part Name	End Clamp 35			
Date	2014. 12. 04	Rev.	1.0			
Jiangyin Titanergy Co.Ltd			TEL:	+86-510-86610877		
			FAX:	+86-510-86610877		



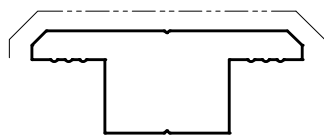
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>3-10	±0.15
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>15-30	±0.21
>30-45	±0.26
>45-60	±0.31
>60-100	±0.52



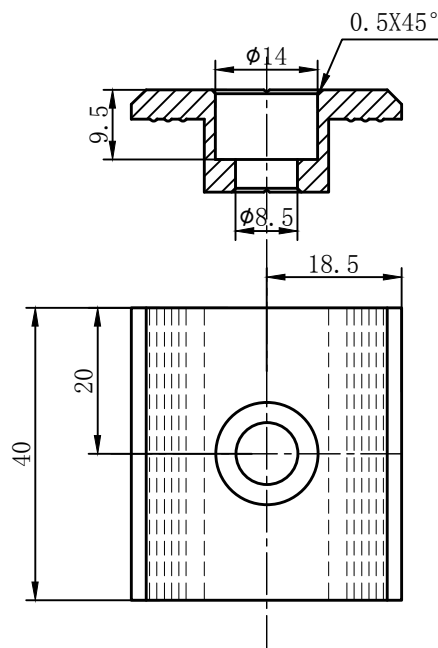
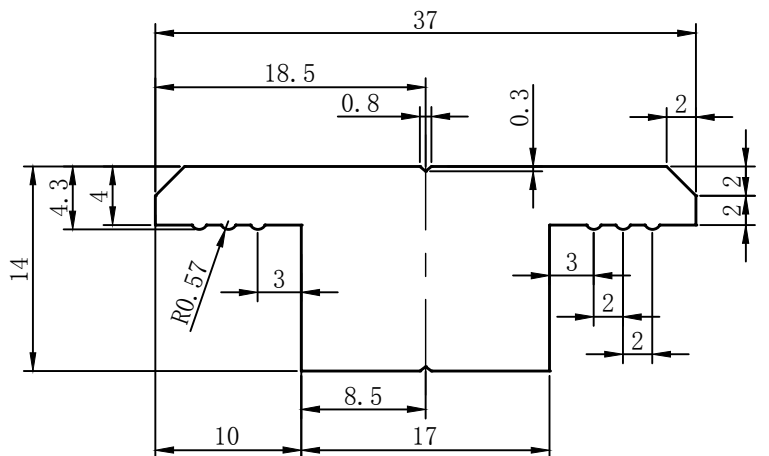
Technical information:

- 1.No deformaed, no serious scratches on the non-machined surface.
un-noted surface roughness is Ra6.3, no burr and sharp edges:
- 2.no-noted corner is R0.5icC0.5
- 3.Finish: clean anodized

Material	6005-T5	Part Number	XL2483C			
Weight	0.029KG	Part Name	End Clamp 30			
Date	2014. 12. 04	Rev.	1.0			
Jiangyin Titanergy Co.Ltd			TEL :	+86-510-86610877		
			FAX:	+86-510-86610877		



1:1



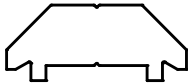
GB 5237.1-2008

size	tolerance
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>3-10	±0.15
>10-15	±0.17
>15-30	±0.21
>30-45	±0.26
>45-60	±0.31
>60-100	±0.52

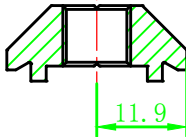
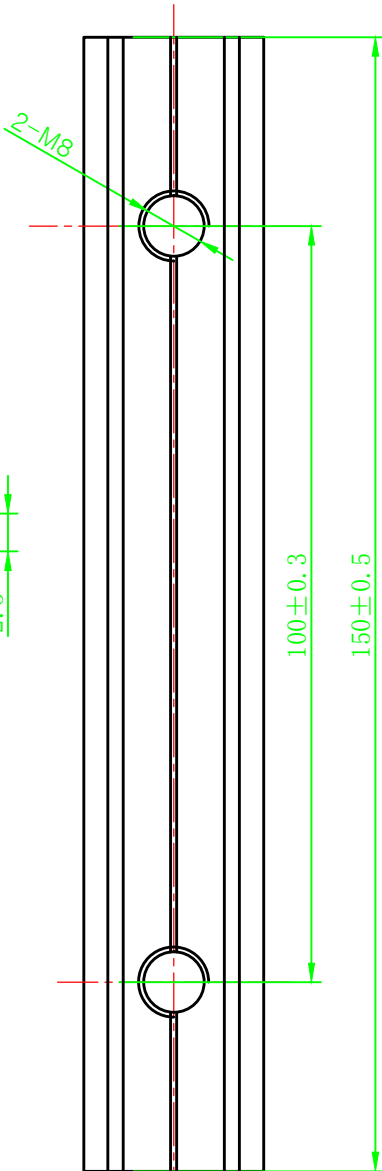
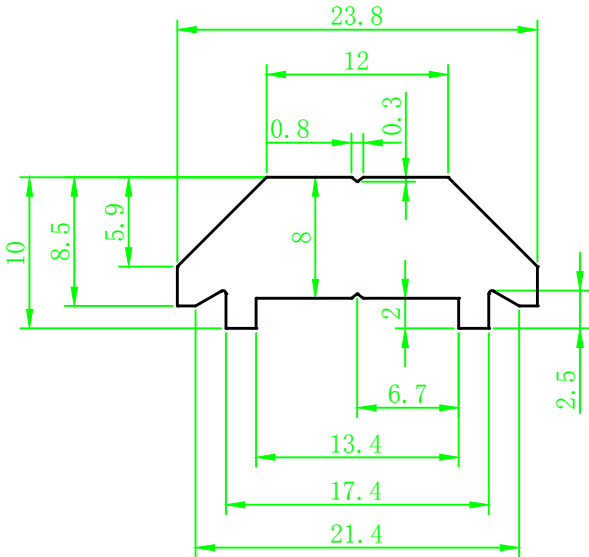
Technical information:

- 1.No deformaed, no serious scratches on the non-machined surface.
un-noted surface roughness is Ra6.3, no burr and sharp edges:
- 2.no-noted corner is R0.5icC0.5
- 3.Finish: clean anodized

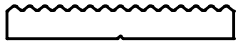
Material	6005-T5	Part Number	XL2482		
Weight	0.029KG	Part Name	Inter Clamp		
Date	2014.12.04	Rev.	1.0		
Jiangyin Titanergy Co.Ltd			TEL: +86-510-86610877		
			FAX: +86-510-86610877		



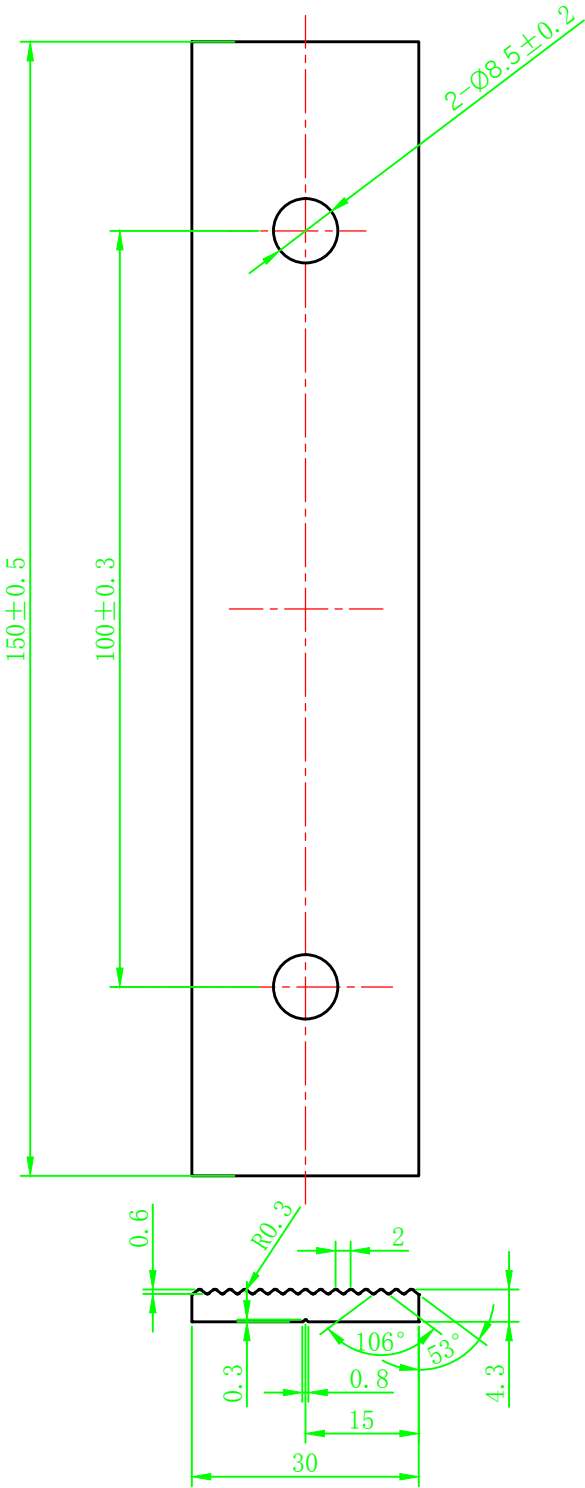
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Material: AL6005-T5						PIC No.		
						Name	Rail JoinerB	
Jiangyin Titanergy					Autodesk			



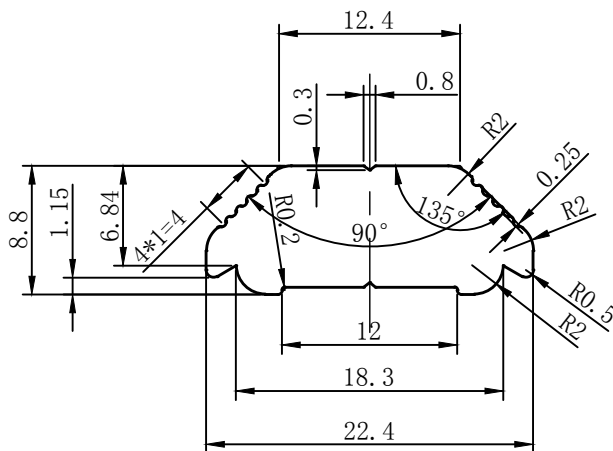
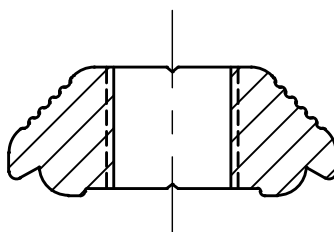
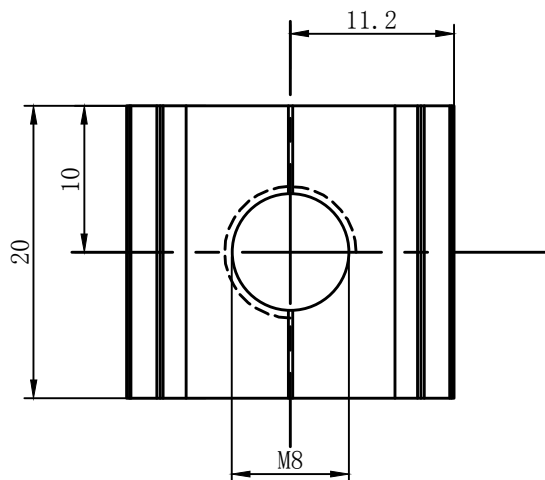
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Material: AL6005-T5						PIC No.			
						Name	Rail JoinerA		
Jiangyin Titanergy					Autodesk				



1:1



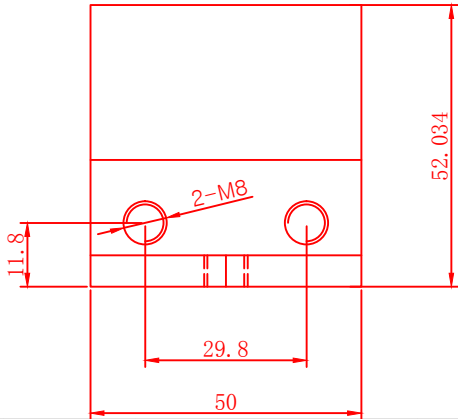
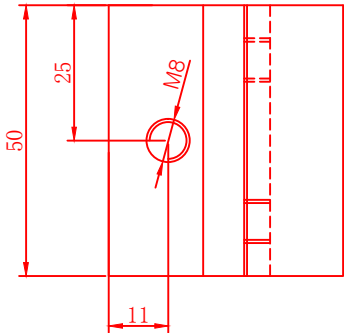
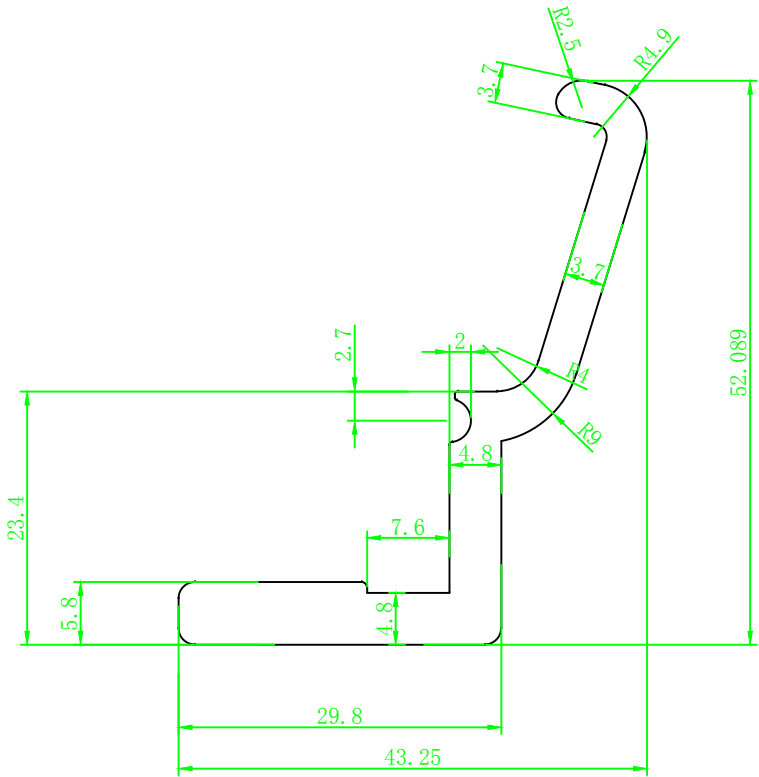
GB 5237.1-2008	
size	tolerance
≤3	±0.13
>3-10	±0.15
>10-15	±0.17
>15-30	±0.21
>30-45	±0.26
>45-60	±0.31
>60-100	±0.52

Technical information:

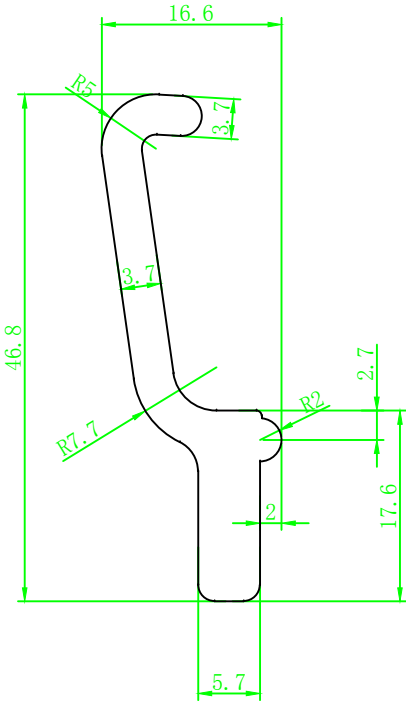
- 1.No deformaed, no serious scratches on the non-machined surface.
un-noted surface roughness is Ra6.3, no burr and sharp edges:
- 2.no-noted corner is R0.5icC0.5
- 3.Finish: clean anodized

Material	6005-T5	Part Number	XL2484			
Weight	0.0083KG	Part Name	Nut Module			
Date	2014.12.04	Rev.	1.0			
Jiangyin Titanergy Co.Ltd			TEL:	+86-510-86610877		
			FAX:	+86-510-86610877		

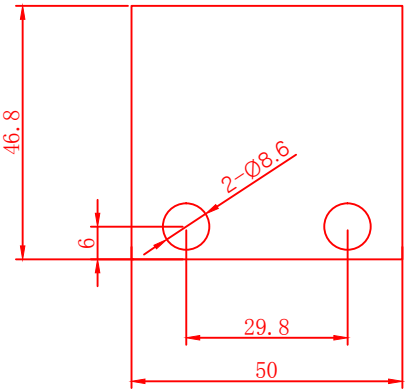
Autodesk



Material: AL6005-T5									
						PIC No.			
						Name	Cliplok 406 B		
Jiangyin Titanergy									Page 60 of 162



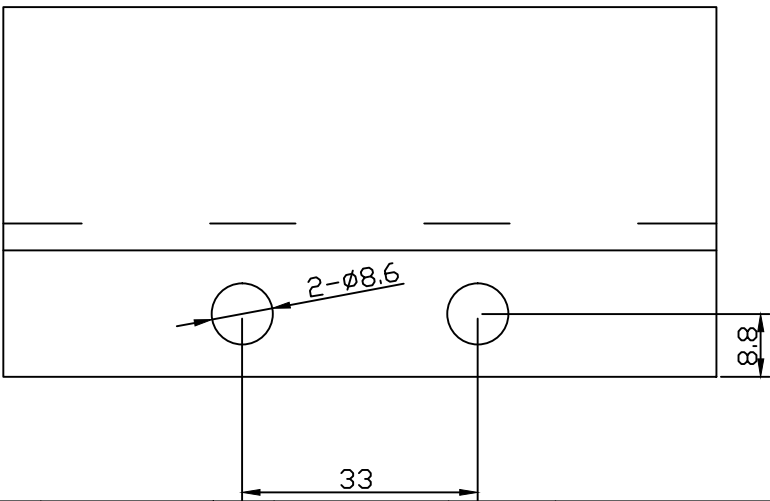
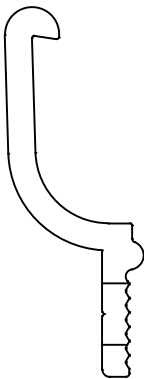
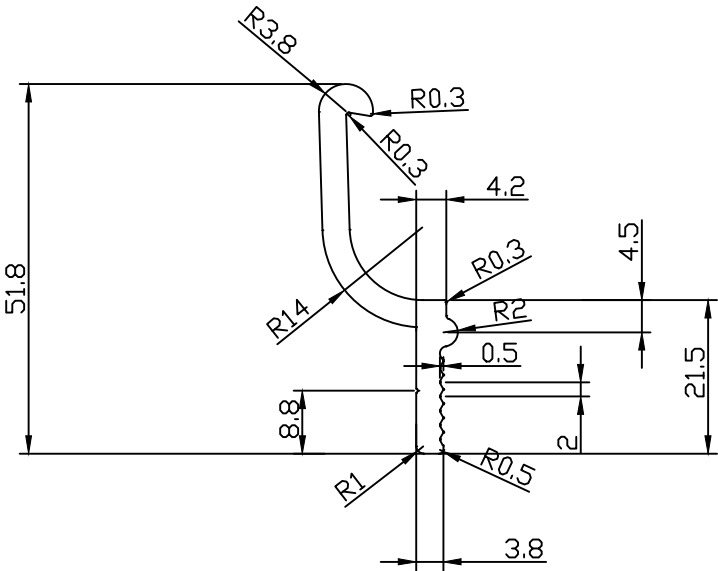
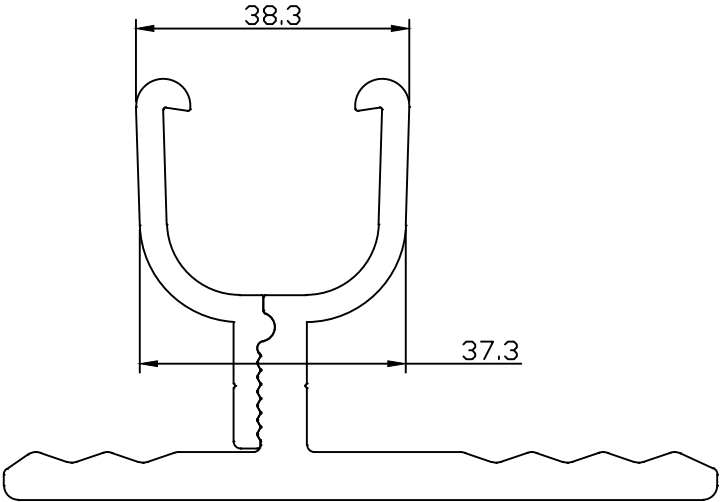
Autodesk



Material: AL6005-T5						PIC No.			
							Cliplok 406 A		
						Name			
Jiangyin Titanergy									Page 61 of 162



奉泰铝业



Material:
AL6005-T5

PIC
No.

Cliplok700 A

Autodesk

COMPONENT DESIGN

Jiangyin Titanergy Co. Ltd

Roof Mounting System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data - Roof Mounting

Panel 1640 x 808 x 35 mm
Rails 2.00

Cfig **1.20** central
Cfig **1.70** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.21	-1.75	-2.80	-4.54
End	-1.72	-2.48	-3.96	-6.43
10	-1.22	-1.76	-2.58	-4.19
Central	-1.46	-2.11	-3.10	-5.03
End	-2.07	-2.99	-4.39	-7.12
15	-1.34	-1.94	-2.95	-4.80
Central	-1.61	-2.33	-3.54	-5.76
End	-2.28	-3.30	-5.02	-8.16
20	-1.42	-2.05	-3.29	-5.35
Central	-1.70	-2.46	-3.95	-6.42
End	-2.41	-3.49	-5.59	-9.10

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
1.53	1.06	0.66	0.41
1.08	0.75	0.47	0.29
1.27	0.88	0.60	0.37
0.89	0.62	0.42	0.26
1.15	0.80	0.52	0.32
0.81	0.56	0.37	0.23
1.09	0.75	0.47	0.29
0.77	0.53	0.33	0.20

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.01	-1.45	-1.98	-3.22
End	-1.43	-2.06	-2.81	-4.56
10	-0.84	-1.21	-2.04	-3.32
Central	-1.01	-1.45	-2.45	-3.98
End	-1.43	-2.06	-3.47	-5.64
15	-0.96	-1.39	-2.33	-3.78
Central	-1.15	-1.67	-2.80	-4.54
End	-1.63	-2.36	-3.96	-6.43
20	-1.07	-1.55	-2.84	-4.62
Central	-1.28	-1.86	-3.41	-5.54
End	-1.82	-2.64	-4.83	-7.85

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
-1.84	-1.28	-0.94	-0.58
-1.30	-0.90	-0.66	-0.41
-1.84	-1.28	-0.76	-0.47
-1.30	-0.90	-0.53	-0.33
-1.61	-1.11	-0.66	-0.41
-1.14	-0.78	-0.47	-0.29
-1.44	-1.00	-0.54	-0.33
-1.02	-0.70	-0.38	-0.24

Jiangyin Titanergy Co. Ltd

Roof Mounting System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data - Roof Mounting

Panel	1640 x 808 x 35 mm
# Rails	2.00
Cfig	1.20 central
Cfig	1.70 end
Adopt	4,300 N Pullout Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.21	-1.75	-2.80	-4.54
End	-1.72	-2.48	-3.96	-6.43
10	-1.22	-1.76	-2.58	-4.19
Central	-1.46	-2.11	-3.10	-5.03
End	-2.07	-2.99	-4.39	-7.12
15	-1.34	-1.94	-2.95	-4.80
Central	-1.61	-2.33	-3.54	-5.76
End	-2.28	-3.30	-5.02	-8.16
20	-1.42	-2.05	-3.29	-5.35
Central	-1.70	-2.46	-3.95	-6.42
End	-2.41	-3.49	-5.59	-9.10

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.33	2.99	1.88	1.16
3.05	2.11	1.32	0.82
3.58	2.48	1.69	1.04
2.53	1.75	1.20	0.74
3.26	2.25	1.48	0.91
2.30	1.59	1.05	0.64
3.08	2.13	1.33	0.82
2.17	1.50	0.94	0.58

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.01	-1.45	-1.98	-3.22
End	-1.43	-2.06	-2.81	-4.56
10	-0.84	-1.21	-2.04	-3.32
Central	-1.01	-1.45	-2.45	-3.98
End	-1.43	-2.06	-3.47	-5.64
15	-0.96	-1.39	-2.33	-3.78
Central	-1.15	-1.67	-2.80	-4.54
End	-1.63	-2.36	-3.96	-6.43
20	-1.07	-1.55	-2.84	-4.62
Central	-1.28	-1.86	-3.41	-5.54
End	-1.82	-2.64	-4.83	-7.85

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
5.20	3.61	2.65	1.63
3.67	2.55	1.87	1.15
5.20	3.61	2.14	1.32
3.67	2.55	1.51	0.93
4.55	3.14	1.88	1.16
3.21	2.22	1.32	0.82
4.08	2.82	1.54	0.95
2.88	1.99	1.09	0.67

Tin Roof

Roof Mounting System

For Up To 1640mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installtion Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1474	1038	1019	718		640	446	388	272
10 m	1222	863	844	592		572	407	349	252
15 m	1116	786	766	543		504	349	310	213
20 m	1048	737	728	514		446	320	272	194

Spans may be increase 35% should 0.75mm batten exist

Tile Roof

Roof Mounting System

For Up To 1640mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installtion Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	2794	1969	2415	1707		1814	1280	1116	786
10 m	2309	1630	1998	1416		1639	1154	1009	708
15 m	2105	1484	1814	1280		1436	1009	883	621
20 m	1989	1397	1717	1213		1280	902	786	553

Jiangyin Titanergy Co. Ltd

Roof Mounting System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data - Roof Mounting

Panel 1970 x 808 x 35 mm
Rails 2.00

Cfig **1.20** central
Cfig **1.70** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.21	-1.75	-2.80	-4.54
End	-1.72	-2.48	-3.96	-6.43
10	-1.22	-1.76	-2.58	-4.19
Central	-1.46	-2.11	-3.10	-5.03
End	-2.07	-2.99	-4.39	-7.12
15	-1.34	-1.94	-2.95	-4.80
Central	-1.61	-2.33	-3.54	-5.76
End	-2.28	-3.30	-5.02	-8.16
20	-1.42	-2.05	-3.29	-5.35
Central	-1.70	-2.46	-3.95	-6.42
End	-2.41	-3.49	-5.59	-9.10

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
1.27	0.88	0.55	0.34
0.90	0.62	0.39	0.24
1.05	0.73	0.50	0.31
0.74	0.52	0.35	0.22
0.96	0.66	0.44	0.27
0.68	0.47	0.31	0.19
0.91	0.63	0.39	0.24
0.64	0.44	0.28	0.17

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.01	-1.45	-1.98	-3.22
End	-1.43	-2.06	-2.81	-4.56
10	-0.84	-1.21	-2.04	-3.32
Central	-1.01	-1.45	-2.45	-3.98
End	-1.43	-2.06	-3.47	-5.64
15	-0.96	-1.39	-2.33	-3.78
Central	-1.15	-1.67	-2.80	-4.54
End	-1.63	-2.36	-3.96	-6.43
20	-1.07	-1.55	-2.84	-4.62
Central	-1.28	-1.86	-3.41	-5.54
End	-1.82	-2.64	-4.83	-7.85

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
-1.53	-1.06	-0.78	-0.48
-1.08	-0.75	-0.55	-0.34
-1.53	-1.06	-0.63	-0.39
-1.08	-0.75	-0.44	-0.27
-1.34	-0.93	-0.55	-0.34
-0.95	-0.65	-0.39	-0.24
-1.20	-0.83	-0.45	-0.28
-0.85	-0.59	-0.32	-0.20

Jiangyin Titanergy Co. Ltd

Roof Mounting System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data - Roof Mounting

Panel	1970 x 808 x 35 mm		
# Rails	2.00		
Cfig	1.20	central	
Cfig	1.70	end	
Adopt	4,300	N Pullout	Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.21	-1.75	-2.80	-4.54
End	-1.72	-2.48	-3.96	-6.43
10	-1.22	-1.76	-2.58	-4.19
Central	-1.46	-2.11	-3.10	-5.03
End	-2.07	-2.99	-4.39	-7.12
15	-1.34	-1.94	-2.95	-4.80
Central	-1.61	-2.33	-3.54	-5.76
End	-2.28	-3.30	-5.02	-8.16
20	-1.42	-2.05	-3.29	-5.35
Central	-1.70	-2.46	-3.95	-6.42
End	-2.41	-3.49	-5.59	-9.10

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
3.60	2.49	1.56	0.96
2.54	1.76	1.10	0.68
2.98	2.07	1.41	0.87
2.10	1.46	1.00	0.61
2.71	1.88	1.23	0.76
1.92	1.32	0.87	0.53
2.56	1.77	1.11	0.68
1.81	1.25	0.78	0.48

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.01	-1.45	-1.98	-3.22
End	-1.43	-2.06	-2.81	-4.56
10	-0.84	-1.21	-2.04	-3.32
Central	-1.01	-1.45	-2.45	-3.98
End	-1.43	-2.06	-3.47	-5.64
15	-0.96	-1.39	-2.33	-3.78
Central	-1.15	-1.67	-2.80	-4.54
End	-1.63	-2.36	-3.96	-6.43
20	-1.07	-1.55	-2.84	-4.62
Central	-1.28	-1.86	-3.41	-5.54
End	-1.82	-2.64	-4.83	-7.85

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.33	3.01	2.20	1.36
3.06	2.12	1.56	0.96
4.33	3.01	1.78	1.10
3.06	2.12	1.26	0.77
3.79	2.62	1.56	0.96
2.67	1.85	1.10	0.68
3.40	2.35	1.28	0.79
2.40	1.66	0.90	0.56

Tin Roof

Roof Mounting System

For Up To 1970mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installtion Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1232	863	854	601		534	369	330	233
10 m	1019	718	708	495		475	340	291	204
15 m	922	650	640	446		417	291	252	175
20 m	873	611	601	427		378	262	233	155

Spans may be increase 35% should 0.75mm batten exist

Tile Roof

Roof Mounting System

For Up To 1970mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installtion Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	2328	1639	2008	1416		1513	1067	931	650
10 m	1921	1358	1668	1174		1368	960	834	592
15 m	1746	1232	1513	1067		1193	844	728	514
20 m	1649	1164	1426	1009		1067	757	650	456

Jiangyin Titanergy Co. Ltd

Fold Tri-angle System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data $10^\circ < \alpha < 15^\circ$

Panel 1640 x 808 x 35 mm
Rails 2.00

Cfig **1.30** central
Cfig **1.80** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
1.41	0.98	0.61	0.38
1.02	0.71	0.44	0.27
1.17	0.81	0.55	0.34
0.84	0.59	0.40	0.25
1.06	0.73	0.48	0.30
0.77	0.53	0.35	0.21
1.00	0.70	0.43	0.27
0.73	0.50	0.31	0.19

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
-1.70	-1.18	-0.86	-0.53
-1.23	-0.85	-0.62	-0.38
-1.70	-1.18	-0.70	-0.43
-1.23	-0.85	-0.50	-0.31
-1.49	-1.03	-0.61	-0.38
-1.07	-0.74	-0.44	-0.27
-1.33	-0.92	-0.50	-0.31
-0.96	-0.66	-0.36	-0.22

Jiangyin Titanergy Co. Ltd

Fold Tri-angle System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data 10° < a < 15°

Panel	1640 x 808 x 35 mm
# Rails	2.00
Cfig	1.30 central
Cfig	1.80 end
Adopt	4,300 N Pullout Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
3.99	2.76	1.73	1.07
2.88	2.00	1.25	0.77
3.31	2.29	1.56	0.96
2.39	1.66	1.13	0.70
3.01	2.08	1.37	0.84
2.17	1.50	0.99	0.61
2.84	1.97	1.23	0.75
2.05	1.42	0.89	0.54

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.80	3.33	2.44	1.51
3.47	2.41	1.77	1.09
4.80	3.33	1.98	1.21
3.47	2.41	1.43	0.88
4.20	2.90	1.73	1.07
3.03	2.10	1.25	0.77
3.77	2.60	1.42	0.87
2.72	1.88	1.03	0.63

Tin Roof

$$10^\circ < \alpha < 15^\circ$$

Fold Tri-angle System

For Up To 1640mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1368	980	941	679		592	427	359	262
10 m	1125	815	786	563		534	378	330	233
15 m	1028	737	708	514		466	330	281	204
20 m	970	698	669	485		417	301	252	184

Spans may be increase 35% should 0.75mm batten exist

Jiangyin Titanergy Co. Ltd

Fold Tri-angle System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data $10^\circ < \alpha < 15^\circ$

Panel 1970 x 808 x 35 mm
Rails 2.00

Cfig **1.30** central
Cfig **1.80** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity
Based on 1.52kN pullout capacity

1.18	0.81	0.51	0.31
0.85	0.59	0.37	0.23
0.97	0.67	0.46	0.28
0.70	0.49	0.33	0.20
0.89	0.61	0.40	0.25
0.64	0.44	0.29	0.18
0.84	0.58	0.36	0.22
0.60	0.42	0.26	0.16

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity
Based on 1.52kN pullout capacity

-1.41	-0.98	-0.72	-0.44
-1.02	-0.71	-0.52	-0.32
-1.41	-0.98	-0.58	-0.36
-1.02	-0.71	-0.42	-0.26
-1.24	-0.85	-0.51	-0.31
-0.89	-0.62	-0.37	-0.23
-1.11	-0.77	-0.42	-0.26
-0.80	-0.55	-0.30	-0.19

Jiangyin Titanergy Co. Ltd

Fold Tri-angle System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data 10° < a < 15°

Panel	1970 x 808 x 35 mm		
# Rails	2.00		
Cfig	1.30	central	
Cfig	1.80	end	
Adopt	4,300	N Pullout	Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
3.32	2.30	1.44	0.89
2.40	1.66	1.04	0.64
2.75	1.91	1.30	0.80
1.99	1.38	0.94	0.58
2.51	1.73	1.14	0.70
1.81	1.25	0.82	0.51
2.36	1.64	1.02	0.63
1.71	1.18	0.74	0.45

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.00	2.78	2.04	1.25
2.89	2.00	1.47	0.90
4.00	2.78	1.65	1.01
2.89	2.00	1.19	0.73
3.50	2.42	1.44	0.89
2.53	1.74	1.04	0.64
3.14	2.17	1.18	0.73
2.27	1.56	0.85	0.52

Tin Roof

$$10^\circ < \alpha < 15^\circ$$

Fold Tri-angle System

For Up To 1970mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1135	815	786	563		485	349	301	213
10 m	941	679	650	466		446	320	272	194
15 m	854	611	592	427		388	281	233	165
20 m	805	582	553	398		349	252	213	155

Spans may be increase 35% should 0.75mm batten exist

Jiangyin Titanergy Co. Ltd

Fold Tri-angle System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data $15^\circ < \alpha < 30^\circ$

Panel 1640 x 808 x 35 mm
Rails 2.00

Cfig **1.20** central
Cfig **1.70** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.21	-1.75	-2.80	-4.54
End	-1.72	-2.48	-3.96	-6.43
10	-1.22	-1.76	-2.58	-4.19
Central	-1.46	-2.11	-3.10	-5.03
End	-2.07	-2.99	-4.39	-7.12
15	-1.34	-1.94	-2.95	-4.80
Central	-1.61	-2.33	-3.54	-5.76
End	-2.28	-3.30	-5.02	-8.16
20	-1.42	-2.05	-3.29	-5.35
Central	-1.70	-2.46	-3.95	-6.42
End	-2.41	-3.49	-5.59	-9.10

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
1.53	1.06	0.66	0.41
1.08	0.75	0.47	0.29
1.27	0.88	0.60	0.37
0.89	0.62	0.42	0.26
1.15	0.80	0.52	0.32
0.81	0.56	0.37	0.23
1.09	0.75	0.47	0.29
0.77	0.53	0.33	0.20

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.01	-1.45	-1.98	-3.22
End	-1.43	-2.06	-2.81	-4.56
10	-0.84	-1.21	-2.04	-3.32
Central	-1.01	-1.45	-2.45	-3.98
End	-1.43	-2.06	-3.47	-5.64
15	-0.96	-1.39	-2.33	-3.78
Central	-1.15	-1.67	-2.80	-4.54
End	-1.63	-2.36	-3.96	-6.43
20	-1.07	-1.55	-2.84	-4.62
Central	-1.28	-1.86	-3.41	-5.54
End	-1.82	-2.64	-4.83	-7.85

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
-1.84	-1.28	-0.94	-0.58
-1.30	-0.90	-0.66	-0.41
-1.84	-1.28	-0.76	-0.47
-1.30	-0.90	-0.53	-0.33
-1.61	-1.11	-0.66	-0.41
-1.14	-0.78	-0.47	-0.29
-1.44	-1.00	-0.54	-0.33
-1.02	-0.70	-0.38	-0.24

Jiangyin Titanergy Co. Ltd

Fold Tri-angle System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data 15° < a < 30°

Panel	1640 x 808 x 35 mm
# Rails	2.00
Cfig	1.20 central
Cfig	1.70 end
Adopt	4,300 N Pullout Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.21	-1.75	-2.80	-4.54
End	-1.72	-2.48	-3.96	-6.43
10	-1.22	-1.76	-2.58	-4.19
Central	-1.46	-2.11	-3.10	-5.03
End	-2.07	-2.99	-4.39	-7.12
15	-1.34	-1.94	-2.95	-4.80
Central	-1.61	-2.33	-3.54	-5.76
End	-2.28	-3.30	-5.02	-8.16
20	-1.42	-2.05	-3.29	-5.35
Central	-1.70	-2.46	-3.95	-6.42
End	-2.41	-3.49	-5.59	-9.10

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.33	2.99	1.88	1.16
3.05	2.11	1.32	0.82
3.58	2.48	1.69	1.04
2.53	1.75	1.20	0.74
3.26	2.25	1.48	0.91
2.30	1.59	1.05	0.64
3.08	2.13	1.33	0.82
2.17	1.50	0.94	0.58

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.01	-1.45	-1.98	-3.22
End	-1.43	-2.06	-2.81	-4.56
10	-0.84	-1.21	-2.04	-3.32
Central	-1.01	-1.45	-2.45	-3.98
End	-1.43	-2.06	-3.47	-5.64
15	-0.96	-1.39	-2.33	-3.78
Central	-1.15	-1.67	-2.80	-4.54
End	-1.63	-2.36	-3.96	-6.43
20	-1.07	-1.55	-2.84	-4.62
Central	-1.28	-1.86	-3.41	-5.54
End	-1.82	-2.64	-4.83	-7.85

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
5.20	3.61	2.65	1.63
3.67	2.55	1.87	1.15
5.20	3.61	2.14	1.32
3.67	2.55	1.51	0.93
4.55	3.14	1.88	1.16
3.21	2.22	1.32	0.82
4.08	2.82	1.54	0.95
2.88	1.99	1.09	0.67

Tin Roof

$$15^\circ < \alpha < 30^\circ$$

Fold Tri-angle System

For Up To 1640mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1474	1038	1019	718		640	446	388	272
10 m	1222	863	844	592		572	407	349	252
15 m	1116	786	766	543		504	349	310	213
20 m	1048	737	728	514		446	320	272	194

Spans may be increase 35% should 0.75mm batten exist

Jiangyin Titanergy Co. Ltd

Fold Tri-angle System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data $15^\circ < \alpha < 30^\circ$

Panel 1970 x 808 x 35 mm
Rails 2.00

Cfig **1.20** central
Cfig **1.70** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.21	-1.75	-2.80	-4.54
End	-1.72	-2.48	-3.96	-6.43
10	-1.22	-1.76	-2.58	-4.19
Central	-1.46	-2.11	-3.10	-5.03
End	-2.07	-2.99	-4.39	-7.12
15	-1.34	-1.94	-2.95	-4.80
Central	-1.61	-2.33	-3.54	-5.76
End	-2.28	-3.30	-5.02	-8.16
20	-1.42	-2.05	-3.29	-5.35
Central	-1.70	-2.46	-3.95	-6.42
End	-2.41	-3.49	-5.59	-9.10

Maximum spans based on bolt capacity
Based on 1.52kN pullout capacity

1.27	0.88	0.55	0.34
0.90	0.62	0.39	0.24
1.05	0.73	0.50	0.31
0.74	0.52	0.35	0.22
0.96	0.66	0.44	0.27
0.68	0.47	0.31	0.19
0.91	0.63	0.39	0.24
0.64	0.44	0.28	0.17

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.01	-1.45	-1.98	-3.22
End	-1.43	-2.06	-2.81	-4.56
10	-0.84	-1.21	-2.04	-3.32
Central	-1.01	-1.45	-2.45	-3.98
End	-1.43	-2.06	-3.47	-5.64
15	-0.96	-1.39	-2.33	-3.78
Central	-1.15	-1.67	-2.80	-4.54
End	-1.63	-2.36	-3.96	-6.43
20	-1.07	-1.55	-2.84	-4.62
Central	-1.28	-1.86	-3.41	-5.54
End	-1.82	-2.64	-4.83	-7.85

Maximum spans based on bolt capacity
Based on 1.52kN pullout capacity

-1.53	-1.06	-0.78	-0.48
-1.08	-0.75	-0.55	-0.34
-1.53	-1.06	-0.63	-0.39
-1.08	-0.75	-0.44	-0.27
-1.34	-0.93	-0.55	-0.34
-0.95	-0.65	-0.39	-0.24
-1.20	-0.83	-0.45	-0.28
-0.85	-0.59	-0.32	-0.20

Jiangyin Titanergy Co. Ltd

Fold Tri-angle System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data 15° < a < 30°

Panel	1970 x 808 x 35 mm		
# Rails	2.00		
Cfig	1.20	central	
Cfig	1.70	end	
Adopt	4,300	N Pullout	Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.21	-1.75	-2.80	-4.54
End	-1.72	-2.48	-3.96	-6.43
10	-1.22	-1.76	-2.58	-4.19
Central	-1.46	-2.11	-3.10	-5.03
End	-2.07	-2.99	-4.39	-7.12
15	-1.34	-1.94	-2.95	-4.80
Central	-1.61	-2.33	-3.54	-5.76
End	-2.28	-3.30	-5.02	-8.16
20	-1.42	-2.05	-3.29	-5.35
Central	-1.70	-2.46	-3.95	-6.42
End	-2.41	-3.49	-5.59	-9.10

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
3.60	2.49	1.56	0.96
2.54	1.76	1.10	0.68
2.98	2.07	1.41	0.87
2.10	1.46	1.00	0.61
2.71	1.88	1.23	0.76
1.92	1.32	0.87	0.53
2.56	1.77	1.11	0.68
1.81	1.25	0.78	0.48

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.01	-1.45	-1.98	-3.22
End	-1.43	-2.06	-2.81	-4.56
10	-0.84	-1.21	-2.04	-3.32
Central	-1.01	-1.45	-2.45	-3.98
End	-1.43	-2.06	-3.47	-5.64
15	-0.96	-1.39	-2.33	-3.78
Central	-1.15	-1.67	-2.80	-4.54
End	-1.63	-2.36	-3.96	-6.43
20	-1.07	-1.55	-2.84	-4.62
Central	-1.28	-1.86	-3.41	-5.54
End	-1.82	-2.64	-4.83	-7.85

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.33	3.01	2.20	1.36
3.06	2.12	1.56	0.96
4.33	3.01	1.78	1.10
3.06	2.12	1.26	0.77
3.79	2.62	1.56	0.96
2.67	1.85	1.10	0.68
3.40	2.35	1.28	0.79
2.40	1.66	0.90	0.56

Tin Roof

$$15^\circ < \alpha < 30^\circ$$

Fold Tri-angle System

For Up To 1970mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1232	863	854	601		534	369	330	233
10 m	1019	718	708	495		475	340	291	204
15 m	922	650	640	446		417	291	252	175
20 m	873	611	601	427		378	262	233	155

Spans may be increase 35% should 0.75mm batten exist

Jiangyin Titanergy Co. Ltd

Fold Tri-angle System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data $30^\circ < \alpha < 60^\circ$

Panel 1640 x 808 x 35 mm
Rails 2.00

Cfig **1.30** central
Cfig **1.80** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity
Based on 1.52kN pullout capacity

1.41	0.98	0.61	0.38
1.02	0.71	0.44	0.27

1.17	0.81	0.55	0.34
0.84	0.59	0.40	0.25

1.06	0.73	0.48	0.30
0.77	0.53	0.35	0.21

1.00	0.70	0.43	0.27
0.73	0.50	0.31	0.19

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity
Based on 1.52kN pullout capacity

-1.70	-1.18	-0.86	-0.53
-1.23	-0.85	-0.62	-0.38

-1.70	-1.18	-0.70	-0.43
-1.23	-0.85	-0.50	-0.31

-1.49	-1.03	-0.61	-0.38
-1.07	-0.74	-0.44	-0.27

-1.33	-0.92	-0.50	-0.31
-0.96	-0.66	-0.36	-0.22

Jiangyin Titanergy Co. Ltd

Fold Tri-angle System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data 30° < a < 60°

Panel	1640 x 808 x 35 mm
# Rails	2.00
Cfig	1.30 central
Cfig	1.80 end
Adopt	4,300 N Pullout Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
3.99	2.76	1.73	1.07
2.88	2.00	1.25	0.77
3.31	2.29	1.56	0.96
2.39	1.66	1.13	0.70
3.01	2.08	1.37	0.84
2.17	1.50	0.99	0.61
2.84	1.97	1.23	0.75
2.05	1.42	0.89	0.54

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.80	3.33	2.44	1.51
3.47	2.41	1.77	1.09
4.80	3.33	1.98	1.21
3.47	2.41	1.43	0.88
4.20	2.90	1.73	1.07
3.03	2.10	1.25	0.77
3.77	2.60	1.42	0.87
2.72	1.88	1.03	0.63

Tin Roof

$$30^\circ < \alpha < 60^\circ$$

Fold Tri-angle System

For Up To 1640mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1368	980	941	679		592	427	359	262
10 m	1125	815	786	563		534	378	330	233
15 m	1028	737	708	514		466	330	281	204
20 m	970	698	669	485		417	301	252	184

Spans may be increase 35% should 0.75mm batten exist

Jiangyin Titanergy Co. Ltd

Fold Tri-angle System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data $30^\circ < \alpha < 60^\circ$

Panel 1970 x 808 x 35 mm
Rails 2.00

Cfig **1.30** central
Cfig **1.80** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
1.18	0.81	0.51	0.31
0.85	0.59	0.37	0.23
0.97	0.67	0.46	0.28
0.70	0.49	0.33	0.20
0.89	0.61	0.40	0.25
0.64	0.44	0.29	0.18
0.84	0.58	0.36	0.22
0.60	0.42	0.26	0.16

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
-1.41	-0.98	-0.72	-0.44
-1.02	-0.71	-0.52	-0.32
-1.41	-0.98	-0.58	-0.36
-1.02	-0.71	-0.42	-0.26
-1.24	-0.85	-0.51	-0.31
-0.89	-0.62	-0.37	-0.23
-1.11	-0.77	-0.42	-0.26
-0.80	-0.55	-0.30	-0.19

Jiangyin Titanergy Co. Ltd

Fold Tri-angle System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data 30° < a < 60°

Panel	1970 x 808 x 35 mm		
# Rails	2.00		
Cfig	1.30	central	
Cfig	1.80	end	
Adopt	4,300	N Pullout	Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
3.32	2.30	1.44	0.89
2.40	1.66	1.04	0.64
2.75	1.91	1.30	0.80
1.99	1.38	0.94	0.58
2.51	1.73	1.14	0.70
1.81	1.25	0.82	0.51
2.36	1.64	1.02	0.63
1.71	1.18	0.74	0.45

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.00	2.78	2.04	1.25
2.89	2.00	1.47	0.90
4.00	2.78	1.65	1.01
2.89	2.00	1.19	0.73
3.50	2.42	1.44	0.89
2.53	1.74	1.04	0.64
3.14	2.17	1.18	0.73
2.27	1.56	0.85	0.52

Tin Roof

$$30^\circ < \alpha < 60^\circ$$

Fold Tri-angle System

For Up To 1970mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1135	815	786	563		485	349	301	213
10 m	941	679	650	466		446	320	272	194
15 m	854	611	592	427		388	281	233	165
20 m	805	582	553	398		349	252	213	155

Spans may be increase 35% should 0.75mm batten exist

Jiangyin Titanergy Co. Ltd

Adjustable Racking System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data $10^\circ < \alpha < 15^\circ$

Panel 1640 x 808 x 35 mm
Rails 2.00

Cfig **1.30** central
Cfig **1.80** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity
Based on 1.52kN pullout capacity

1.41	0.98	0.61	0.38
1.02	0.71	0.44	0.27

1.17	0.81	0.55	0.34
0.84	0.59	0.40	0.25

1.06	0.73	0.48	0.30
0.77	0.53	0.35	0.21

1.00	0.70	0.43	0.27
0.73	0.50	0.31	0.19

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity
Based on 1.52kN pullout capacity

-1.70	-1.18	-0.86	-0.53
-1.23	-0.85	-0.62	-0.38

-1.70	-1.18	-0.70	-0.43
-1.23	-0.85	-0.50	-0.31

-1.49	-1.03	-0.61	-0.38
-1.07	-0.74	-0.44	-0.27

-1.33	-0.92	-0.50	-0.31
-0.96	-0.66	-0.36	-0.22

Jiangyin Titanergy Co. Ltd

Adjustable Racking System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data 10° < α < 15°

Panel	1640 x 808 x 35 mm
# Rails	2.00
Cfig	1.30 central
Cfig	1.80 end
Adopt	4,300 N Pullout Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
3.99	2.76	1.73	1.07
2.88	2.00	1.25	0.77
3.31	2.29	1.56	0.96
2.39	1.66	1.13	0.70
3.01	2.08	1.37	0.84
2.17	1.50	0.99	0.61
2.84	1.97	1.23	0.75
2.05	1.42	0.89	0.54

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.80	3.33	2.44	1.51
3.47	2.41	1.77	1.09
4.80	3.33	1.98	1.21
3.47	2.41	1.43	0.88
4.20	2.90	1.73	1.07
3.03	2.10	1.25	0.77
3.77	2.60	1.42	0.87
2.72	1.88	1.03	0.63

Tin Roof

$$10^{\circ} < \alpha < 15^{\circ}$$

Adjustable Racking System

For Up To 1640mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1368	980	941	679		592	427	359	262
10 m	1125	815	786	563		534	378	330	233
15 m	1028	737	708	514		466	330	281	204
20 m	970	698	669	485		417	301	252	184

Spans may be increase 35% should 0.75mm batten exist

Jiangyin Titanergy Co. Ltd

Adjustable Racking System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data $10^\circ < \alpha < 15^\circ$

Panel 1970 x 808 x 35 mm
Rails 2.00

Cfig **1.30** central
Cfig **1.80** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity
Based on 1.52kN pullout capacity

1.18	0.81	0.51	0.31
0.85	0.59	0.37	0.23
0.97	0.67	0.46	0.28
0.70	0.49	0.33	0.20
0.89	0.61	0.40	0.25
0.64	0.44	0.29	0.18
0.84	0.58	0.36	0.22
0.60	0.42	0.26	0.16

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity
Based on 1.52kN pullout capacity

-1.41	-0.98	-0.72	-0.44
-1.02	-0.71	-0.52	-0.32
-1.41	-0.98	-0.58	-0.36
-1.02	-0.71	-0.42	-0.26
-1.24	-0.85	-0.51	-0.31
-0.89	-0.62	-0.37	-0.23
-1.11	-0.77	-0.42	-0.26
-0.80	-0.55	-0.30	-0.19

Jiangyin Titanergy Co. Ltd

Adjustable Racking System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data 10° < a < 15°

Panel	1970 x 808 x 35 mm
# Rails	2.00
Cfig	1.30 central
Cfig	1.80 end
Adopt	4,300 N Pullout Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
3.32	2.30	1.44	0.89
2.40	1.66	1.04	0.64
2.75	1.91	1.30	0.80
1.99	1.38	0.94	0.58
2.51	1.73	1.14	0.70
1.81	1.25	0.82	0.51
2.36	1.64	1.02	0.63
1.71	1.18	0.74	0.45

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.00	2.78	2.04	1.25
2.89	2.00	1.47	0.90
4.00	2.78	1.65	1.01
2.89	2.00	1.19	0.73
3.50	2.42	1.44	0.89
2.53	1.74	1.04	0.64
3.14	2.17	1.18	0.73
2.27	1.56	0.85	0.52

Tin Roof

$$10^\circ < \alpha < 15^\circ$$

Adjustable Racking System

For Up To 1970mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1135	815	786	563		485	349	301	213
10 m	941	679	650	466		446	320	272	194
15 m	854	611	592	427		388	281	233	165
20 m	805	582	553	398		349	252	213	155

Spans may be increase 35% should 0.75mm batten exist

Jiangyin Titanergy Co. Ltd

Adjustable Racking System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data $15^\circ < \alpha < 30^\circ$

Panel 1640 x 808 x 35 mm
Rails 2.00

Cfig **1.20** central
Cfig **1.70** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.21	-1.75	-2.80	-4.54
End	-1.72	-2.48	-3.96	-6.43
10	-1.22	-1.76	-2.58	-4.19
Central	-1.46	-2.11	-3.10	-5.03
End	-2.07	-2.99	-4.39	-7.12
15	-1.34	-1.94	-2.95	-4.80
Central	-1.61	-2.33	-3.54	-5.76
End	-2.28	-3.30	-5.02	-8.16
20	-1.42	-2.05	-3.29	-5.35
Central	-1.70	-2.46	-3.95	-6.42
End	-2.41	-3.49	-5.59	-9.10

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
1.53	1.06	0.66	0.41
1.08	0.75	0.47	0.29
1.27	0.88	0.60	0.37
0.89	0.62	0.42	0.26
1.15	0.80	0.52	0.32
0.81	0.56	0.37	0.23
1.09	0.75	0.47	0.29
0.77	0.53	0.33	0.20

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.01	-1.45	-1.98	-3.22
End	-1.43	-2.06	-2.81	-4.56
10	-0.84	-1.21	-2.04	-3.32
Central	-1.01	-1.45	-2.45	-3.98
End	-1.43	-2.06	-3.47	-5.64
15	-0.96	-1.39	-2.33	-3.78
Central	-1.15	-1.67	-2.80	-4.54
End	-1.63	-2.36	-3.96	-6.43
20	-1.07	-1.55	-2.84	-4.62
Central	-1.28	-1.86	-3.41	-5.54
End	-1.82	-2.64	-4.83	-7.85

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
-1.84	-1.28	-0.94	-0.58
-1.30	-0.90	-0.66	-0.41
-1.84	-1.28	-0.76	-0.47
-1.30	-0.90	-0.53	-0.33
-1.61	-1.11	-0.66	-0.41
-1.14	-0.78	-0.47	-0.29
-1.44	-1.00	-0.54	-0.33
-1.02	-0.70	-0.38	-0.24

Jiangyin Titanergy Co. Ltd

Adjustable Racking System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data 15° < a < 30°

Panel	1640 x 808 x 35 mm
# Rails	2.00
Cfig	1.20 central
Cfig	1.70 end
Adopt	4,300 N Pullout Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.21	-1.75	-2.80	-4.54
End	-1.72	-2.48	-3.96	-6.43
10	-1.22	-1.76	-2.58	-4.19
Central	-1.46	-2.11	-3.10	-5.03
End	-2.07	-2.99	-4.39	-7.12
15	-1.34	-1.94	-2.95	-4.80
Central	-1.61	-2.33	-3.54	-5.76
End	-2.28	-3.30	-5.02	-8.16
20	-1.42	-2.05	-3.29	-5.35
Central	-1.70	-2.46	-3.95	-6.42
End	-2.41	-3.49	-5.59	-9.10

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.33	2.99	1.88	1.16
3.05	2.11	1.32	0.82
3.58	2.48	1.69	1.04
2.53	1.75	1.20	0.74
3.26	2.25	1.48	0.91
2.30	1.59	1.05	0.64
3.08	2.13	1.33	0.82
2.17	1.50	0.94	0.58

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.01	-1.45	-1.98	-3.22
End	-1.43	-2.06	-2.81	-4.56
10	-0.84	-1.21	-2.04	-3.32
Central	-1.01	-1.45	-2.45	-3.98
End	-1.43	-2.06	-3.47	-5.64
15	-0.96	-1.39	-2.33	-3.78
Central	-1.15	-1.67	-2.80	-4.54
End	-1.63	-2.36	-3.96	-6.43
20	-1.07	-1.55	-2.84	-4.62
Central	-1.28	-1.86	-3.41	-5.54
End	-1.82	-2.64	-4.83	-7.85

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
5.20	3.61	2.65	1.63
3.67	2.55	1.87	1.15
5.20	3.61	2.14	1.32
3.67	2.55	1.51	0.93
4.55	3.14	1.88	1.16
3.21	2.22	1.32	0.82
4.08	2.82	1.54	0.95
2.88	1.99	1.09	0.67

Tin Roof

$$15^\circ < \alpha < 30^\circ$$

Adjustable Racking System

For Up To 1640mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1474	1038	1019	718		640	446	388	272
10 m	1222	863	844	592		572	407	349	252
15 m	1116	786	766	543		504	349	310	213
20 m	1048	737	728	514		446	320	272	194

Spans may be increase 35% should 0.75mm batten exist

Jiangyin Titanergy Co. Ltd

Adjustable Racking System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data $15^\circ < \alpha < 30^\circ$

Panel 1970 x 808 x 35 mm
Rails 2.00

Cfig **1.20** central
Cfig **1.70** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.21	-1.75	-2.80	-4.54
End	-1.72	-2.48	-3.96	-6.43
10	-1.22	-1.76	-2.58	-4.19
Central	-1.46	-2.11	-3.10	-5.03
End	-2.07	-2.99	-4.39	-7.12
15	-1.34	-1.94	-2.95	-4.80
Central	-1.61	-2.33	-3.54	-5.76
End	-2.28	-3.30	-5.02	-8.16
20	-1.42	-2.05	-3.29	-5.35
Central	-1.70	-2.46	-3.95	-6.42
End	-2.41	-3.49	-5.59	-9.10

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
1.27	0.88	0.55	0.34
0.90	0.62	0.39	0.24
1.05	0.73	0.50	0.31
0.74	0.52	0.35	0.22
0.96	0.66	0.44	0.27
0.68	0.47	0.31	0.19
0.91	0.63	0.39	0.24
0.64	0.44	0.28	0.17

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.01	-1.45	-1.98	-3.22
End	-1.43	-2.06	-2.81	-4.56
10	-0.84	-1.21	-2.04	-3.32
Central	-1.01	-1.45	-2.45	-3.98
End	-1.43	-2.06	-3.47	-5.64
15	-0.96	-1.39	-2.33	-3.78
Central	-1.15	-1.67	-2.80	-4.54
End	-1.63	-2.36	-3.96	-6.43
20	-1.07	-1.55	-2.84	-4.62
Central	-1.28	-1.86	-3.41	-5.54
End	-1.82	-2.64	-4.83	-7.85

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
-1.53	-1.06	-0.78	-0.48
-1.08	-0.75	-0.55	-0.34
-1.53	-1.06	-0.63	-0.39
-1.08	-0.75	-0.44	-0.27
-1.34	-0.93	-0.55	-0.34
-0.95	-0.65	-0.39	-0.24
-1.20	-0.83	-0.45	-0.28
-0.85	-0.59	-0.32	-0.20

Jiangyin Titanergy Co. Ltd

Adjustable Racking System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data 15° < a < 30°

Panel	1970 x 808 x 35 mm		
# Rails	2.00		
Cfig	1.20	central	
Cfig	1.70	end	
Adopt	4,300	N Pullout	Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.21	-1.75	-2.80	-4.54
End	-1.72	-2.48	-3.96	-6.43
10	-1.22	-1.76	-2.58	-4.19
Central	-1.46	-2.11	-3.10	-5.03
End	-2.07	-2.99	-4.39	-7.12
15	-1.34	-1.94	-2.95	-4.80
Central	-1.61	-2.33	-3.54	-5.76
End	-2.28	-3.30	-5.02	-8.16
20	-1.42	-2.05	-3.29	-5.35
Central	-1.70	-2.46	-3.95	-6.42
End	-2.41	-3.49	-5.59	-9.10

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
3.60	2.49	1.56	0.96
2.54	1.76	1.10	0.68
2.98	2.07	1.41	0.87
2.10	1.46	1.00	0.61
2.71	1.88	1.23	0.76
1.92	1.32	0.87	0.53
2.56	1.77	1.11	0.68
1.81	1.25	0.78	0.48

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.01	-1.45	-1.98	-3.22
End	-1.43	-2.06	-2.81	-4.56
10	-0.84	-1.21	-2.04	-3.32
Central	-1.01	-1.45	-2.45	-3.98
End	-1.43	-2.06	-3.47	-5.64
15	-0.96	-1.39	-2.33	-3.78
Central	-1.15	-1.67	-2.80	-4.54
End	-1.63	-2.36	-3.96	-6.43
20	-1.07	-1.55	-2.84	-4.62
Central	-1.28	-1.86	-3.41	-5.54
End	-1.82	-2.64	-4.83	-7.85

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.33	3.01	2.20	1.36
3.06	2.12	1.56	0.96
4.33	3.01	1.78	1.10
3.06	2.12	1.26	0.77
3.79	2.62	1.56	0.96
2.67	1.85	1.10	0.68
3.40	2.35	1.28	0.79
2.40	1.66	0.90	0.56

Tin Roof

$$15^\circ < \alpha < 30^\circ$$

Adjustable Racking System

For Up To 1970mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1232	863	854	601		534	369	330	233
10 m	1019	718	708	495		475	340	291	204
15 m	922	650	640	446		417	291	252	175
20 m	873	611	601	427		378	262	233	155

Spans may be increase 35% should 0.75mm batten exist

Jiangyin Titanergy Co. Ltd

Adjustable Racking System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data $30^\circ < \alpha < 60^\circ$

Panel 1640 x 808 x 35 mm
Rails 2.00

Cfig **1.30** central
Cfig **1.80** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
1.41	0.98	0.61	0.38
1.02	0.71	0.44	0.27
1.17	0.81	0.55	0.34
0.84	0.59	0.40	0.25
1.06	0.73	0.48	0.30
0.77	0.53	0.35	0.21
1.00	0.70	0.43	0.27
0.73	0.50	0.31	0.19

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity Based on 1.52kN pullout capacity			
-1.70	-1.18	-0.86	-0.53
-1.23	-0.85	-0.62	-0.38
-1.70	-1.18	-0.70	-0.43
-1.23	-0.85	-0.50	-0.31
-1.49	-1.03	-0.61	-0.38
-1.07	-0.74	-0.44	-0.27
-1.33	-0.92	-0.50	-0.31
-0.96	-0.66	-0.36	-0.22

Jiangyin Titanergy Co. Ltd

Adjustable Racking System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data 30° < a < 60°

Panel	1640 x 808 x 35 mm
# Rails	2.00
Cfig	1.30 central
Cfig	1.80 end
Adopt	4,300 N Pullout Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
3.99	2.76	1.73	1.07
2.88	2.00	1.25	0.77
3.31	2.29	1.56	0.96
2.39	1.66	1.13	0.70
3.01	2.08	1.37	0.84
2.17	1.50	0.99	0.61
2.84	1.97	1.23	0.75
2.05	1.42	0.89	0.54

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.80	3.33	2.44	1.51
3.47	2.41	1.77	1.09
4.80	3.33	1.98	1.21
3.47	2.41	1.43	0.88
4.20	2.90	1.73	1.07
3.03	2.10	1.25	0.77
3.77	2.60	1.42	0.87
2.72	1.88	1.03	0.63

Tin Roof

$30^\circ < \alpha < 60^\circ$

Adjustable Racking System

For Up To 1640mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1368	980	941	679		592	427	359	262
10 m	1125	815	786	563		534	378	330	233
15 m	1028	737	708	514		466	330	281	204
20 m	970	698	669	485		417	301	252	184

Spans may be increase 35% should 0.75mm batten exist

Jiangyin Titanergy Co. Ltd

Adjustable Racking System

Buildex - M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520	**
G550 0.75 Batten	2,480	
G450 1.2 Purlin	3,280	
G450 1.5 Purlin	5,240	
G450 1.9 Purlin	5,940	

Design Data $30^\circ < \alpha < 60^\circ$

Panel 1970 x 808 x 35 mm
Rails 2.00

Cfig **1.30** central
Cfig **1.80** end

Adopt **1,520** N Pullout Tin

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity
Based on 1.52kN pullout capacity

1.18	0.81	0.51	0.31
0.85	0.59	0.37	0.23
0.97	0.67	0.46	0.28
0.70	0.49	0.33	0.20
0.89	0.61	0.40	0.25
0.64	0.44	0.29	0.18
0.84	0.58	0.36	0.22
0.60	0.42	0.26	0.16

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity
Based on 1.52kN pullout capacity

-1.41	-0.98	-0.72	-0.44
-1.02	-0.71	-0.52	-0.32
-1.41	-0.98	-0.58	-0.36
-1.02	-0.71	-0.42	-0.26
-1.24	-0.85	-0.51	-0.31
-0.89	-0.62	-0.37	-0.23
-1.11	-0.77	-0.42	-0.26
-0.80	-0.55	-0.30	-0.19

Jiangyin Titanergy Co. Ltd

Adjustable Racking System

M6-11 Roof Zips® Crest Fixing Roofing Screw
Timber values are at 35 mm embedment

Pullout Values:

G550 0.55 Batten	1,520
G550 0.75 Batten	2,480
G450 1.2 Purlin	3,280
G450 1.5 Purlin	5,240
G450 1.9 Purlin	5,940
F7 (Pine) Timber (N)	4,300 **
F17 (Hardwood) Timber (N)	6,570

Design Data 30° < a < 60°

Panel	1970 x 808 x 35 mm
# Rails	2.00
Cfig	1.30 central
Cfig	1.80 end
Adopt	4,300 N Pullout Timber

Terrain Category 2

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-1.01	-1.46	-2.33	-3.78
Central	-1.31	-1.90	-3.03	-4.91
End	-1.82	-2.63	-4.19	-6.80
10	-1.22	-1.76	-2.58	-4.19
Central	-1.59	-2.29	-3.35	-5.45
End	-2.20	-3.17	-4.64	-7.54
15	-1.34	-1.94	-2.95	-4.80
Central	-1.74	-2.52	-3.84	-6.24
End	-2.41	-3.49	-5.31	-8.64
20	-1.42	-2.05	-3.29	-5.35
Central	-1.85	-2.67	-4.28	-6.96
End	-2.56	-3.69	-5.92	-9.63

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
3.32	2.30	1.44	0.89
2.40	1.66	1.04	0.64
2.75	1.91	1.30	0.80
1.99	1.38	0.94	0.58
2.51	1.73	1.14	0.70
1.81	1.25	0.82	0.51
2.36	1.64	1.02	0.63
1.71	1.18	0.74	0.45

Terrain Category 3

Building Height (m)	Region A Wu (kPa)	Region B Wu (kPa)	Region C Wu (kPa)	Region D Wu (kPa)
5	-0.84	-1.21	-1.65	-2.68
Central	-1.09	-1.57	-2.15	-3.48
End	-1.51	-2.18	-2.97	-4.82
10	-0.84	-1.21	-2.04	-3.32
Central	-1.09	-1.57	-2.65	-4.32
End	-1.51	-2.18	-3.67	-5.98
15	-0.96	-1.39	-2.33	-3.78
Central	-1.25	-1.81	-3.03	-4.91
End	-1.73	-2.50	-4.19	-6.80
20	-1.07	-1.55	-2.84	-4.62
Central	-1.39	-2.02	-3.69	-6.01
End	-1.93	-2.79	-5.11	-8.32

Maximum spans based on bolt capacity Based on 4.3kN pullout capacity			
4.00	2.78	2.04	1.25
2.89	2.00	1.47	0.90
4.00	2.78	1.65	1.01
2.89	2.00	1.19	0.73
3.50	2.42	1.44	0.89
2.53	1.74	1.04	0.64
3.14	2.17	1.18	0.73
2.27	1.56	0.85	0.52

Tin Roof

$$30^\circ < \alpha < 60^\circ$$

Adjustable Racking System

For Up To 1970mm Long Panels (2 Rails) Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
5 m	1135	815	786	563		485	349	301	213
10 m	941	679	650	466		446	320	272	194
15 m	854	611	592	427		388	281	233	165
20 m	805	582	553	398		349	252	213	155

Spans may be increase 35% should 0.75mm batten exist

SUMMARY - T.C. 2 for Regions A, B, C

Roof Interface Bracket Spacing (mm) Across for PV – Tripod and Adjustable Tilting System

Fixing anywhere on the Roofing sheet

Two Cliplok per frame

Design Data

KlipLok Type	Capacity kN
Lysaght 406	0.40
Lysaght 700	0.87
Fielders 700	0.43

Panel 'L' 1970



WIND REGION	A							
qu (K Pa)	0.68	0.84	0.82	0.92	0.91	1.11	0.96	1.18
hz	5 m		10 m		15 m		20 m	
Angle	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30
KlipLok 406	540	430	450	400	400	330	380	310
KlipLok 700	1180	950	970	870	880	720	830	680
KingKlip 700	580	470	480	430	430	350	410	330
Force (kN/m)	0.74	0.91	0.89	1.00	0.99	1.20	1.04	1.28

WIND REGION	B							
qu (K Pa)	0.87	1.15	1.05	1.38	1.15	1.52	1.22	1.61
hz	5 m		10 m		15 m		20 m	
Angle	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30
KlipLok 406	420	320	350	260	320	240	300	220
KlipLok 700	920	690	760	580	690	520	650	490
KingKlip 700	450	340	370	280	340	260	320	240
Force (kN/m)	0.94	1.25	1.14	1.50	1.25	1.65	1.32	1.74

WIND REGION	C							
qu (K Pa)	1.33	2.29	1.61	2.54	1.77	2.79	1.88	2.95
hz	5 m		10 m		15 m		20 m	
Angle	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30
KlipLok 406	270	160	220	N/A	200	N/A	190	N/A
KlipLok 700	600	350	490	310	450	280	420	270
KingKlip 700	290	170	240	150	220	N/A	210	N/A
Force (kN/m)	1.44	2.48	1.74	2.75	1.92	3.02	2.04	3.20

1. Roof Interface bracket spacing in the above table for panel length of 1.97 m.
2. The table prepared based on GD Rail capacity and Cliplok bracket pull-out capacity
3. This tables refer to using Cliplok type interface with Adjustable Tilt Leg using 2-M8 bolts for the connection and also with single Tripod using 2-M8 bolts for connection.
4. Max. distance allowed from the end of the single Tripod base to fixing of the Cliplok bracket is 225 mm.
- 5 The above mentioned spacing table is for Roof Interface Bracket fixing including edge of the roof.
6. On purlin means that distance from the purlin to the Cliplok type bracket(centre to centre) is not more than 100mm
7. Angle refers to tilt angle between roof and panels – not to horizontal.
8. For panels ranging in length 1580 to 1700mm increase spacings by 11.5%
9. For panels ranging in length 1700 to 1800mm increase spacings by 9.0%
10. For panels ranging in length 1800 to 1970mm adopt tabulated spacings

SUMMARY - T.C. 2 for Regions A, B, C

Roof Interface Bracket Spacing (mm) Across for PV – Tripod and Adjustable Tilting System

Fixing on purlin on the Roofing sheet

Two Cliplok per frame

Design Data

KlipLok Type	Capacity kN
Lysaght 406	1.37
Lysaght 700	1.17
Fielders 700	0.50

Panel 'L' 1970



WIND REGION	A							
qu (K Pa)	0.68	0.84	0.82	0.92	0.91	1.11	0.96	1.18
hz	5 m		10 m		15 m		20 m	
Angle	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30
KlipLok 406	1850	1500	1540	1370	1380	1130	1310	1070
KlipLok 700	1580	1280	1310	1170	1180	970	1120	910
KingKlip 700	670	540	560	500	500	410	480	390
Force (kN/m)	0.74	0.91	0.89	1.00	0.99	1.20	1.04	1.28

WIND REGION	B							
qu (K Pa)	0.87	1.15	1.05	1.38	1.15	1.52	1.22	1.61
hz	5 m		10 m		15 m		20 m	
Angle	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30
KlipLok 406	1450	1090	1200	910	1090	830	1030	780
KlipLok 700	1240	930	1020	780	930	710	880	670
KingKlip 700	530	400	430	330	400	300	370	280
Force (kN/m)	0.94	1.25	1.14	1.50	1.25	1.65	1.32	1.74

WIND REGION	C							
qu (K Pa)	1.33	2.29	1.61	2.54	1.77	2.79	1.88	2.95
hz	5 m		10 m		15 m		20 m	
Angle	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30
KlipLok 406	950	550	780	490	710	450	670	420
KlipLok 700	810	470	670	420	610	380	570	360
KingKlip 700	340	200	280	180	260	160	240	150
Force (kN/m)	1.44	2.48	1.74	2.75	1.92	3.02	2.04	3.20

1. Roof Interface bracket spacing in the above table for panel length of 1.97 m.
2. The table prepared based on GD Rail capacity and Cliplok bracket pull-out capacity
3. This tables refer to using Cliplok type interface with Adjustable Tilt Leg using 2-M8 bolts for the connection and also with single Tripod using 2-M8 bolts for connection.
4. Max. distance allowed from the end of the single Tripod base to fixing of the Cliplok bracket is 225 mm.
- 5 The above mentioned spacing table is for Roof Interface Bracket fixing including edge of the roof.
6. On purlin means that distance from the purlin to the Cliplok type bracket(centre to centre) is not more than 100mm
7. Angle refers to tilt angle between roof and panels – not to horizontal.
8. For panels ranging in length 1580 to 1700mm increase spacings by 11.5%
9. For panels ranging in length 1700 to 1800mm increase spacings by 9.0%
10. For panels ranging in length 1800 to 1970mm adopt tabulated spacings

SUMMARY - T.C. 3 for Regions A, B, C

Roof Interface Bracket Spacing (mm) Across for PV – Tripod and Adjustable Tilting System

Fixing anywhere on the Roofing sheet

Two Cliplok per frame

Design Data

KlipLok Type	Capacity kN
Lysaght 406	0.40
Lysaght 700	0.87
Fielders 700	0.43

Panel 'L' 1970



WIND REGION	A							
qu (K Pa)	0.65	0.80	0.75	0.84	0.84	1.02	0.90	1.10
hz	5 m		10 m		15 m		20 m	
Angle	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30
KlipLok 406	560	460	490	430	430	360	410	330
KlipLok 700	1230	1000	1070	950	950	780	890	720
KingKlip 700	610	490	520	470	470	380	440	360
Force (kN/m)	0.70	0.87	0.81	0.91	0.91	1.11	0.98	1.19

WIND REGION	B							
qu (K Pa)	0.83	1.09	0.96	1.26	1.06	1.40	1.14	1.50
hz	5 m		10 m		15 m		20 m	
Angle	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30
KlipLok 406	440	330	380	290	340	260	320	240
KlipLok 700	960	730	830	630	750	570	700	530
KingKlip 700	470	360	410	310	370	280	340	260
Force (kN/m)	0.90	1.18	1.04	1.37	1.15	1.52	1.24	1.63

WIND REGION	C							
qu (K Pa)	1.27	2.19	1.47	2.31	1.63	2.57	1.75	2.75
hz	5 m		10 m		15 m		20 m	
Angle	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30
KlipLok 406	290	160	250	150	220	N/A	210	N/A
KlipLok 700	630	360	540	340	490	310	450	290
KingKlip 700	310	180	260	170	240	150	220	N/A
Force (kN/m)	1.38	2.37	1.59	2.50	1.77	2.78	1.90	2.98

1. Roof Interface bracket spacing in the above table for panel length of 1.97 m.
2. The table prepared based on GD Rail capacity and Cliplok bracket pull-out capacity
3. This tables refer to using Cliplok type interface with Adjustable Tilt Leg using 2-M8 bolts for the connection and also with single Tripod using 2-M8 bolts for connection.
4. Max. distance allowed from the end of the single Tripod base to fixing of the Cliplok bracket is 225 mm.
- 5 The above mentioned spacing table is for Roof Interface Bracket fixing including edge of the roof.
6. On purlin means that distance from the purlin to the Cliplok type bracket(centre to centre) is not more than 100mm
7. Angle refers to tilt angle between roof and panels – not to horizontal.
8. For panels ranging in length 1580 to 1700mm increase spacings by 11.5%
9. For panels ranging in length 1700 to 1800mm increase spacings by 9.0%
10. For panels ranging in length 1800 to 1970mm adopt tabulated spacings

SUMMARY - T.C. 3 for Regions A, B, C

Roof Interface Bracket Spacing (mm) Across for PV – Tripod and Adjustable Tilting System

Fixing on purlin on the Roofing sheet

Two Cliplok per frame

Design Data

KlipLok Type	Capacity kN
Lysaght 406	1.37
Lysaght 700	1.17
Fielders 700	0.50

Panel 'L' 1970



WIND REGION	A							
qu (K Pa)	0.65	0.80	0.75	0.84	0.84	1.02	0.90	1.10
hz	5 m		10 m		15 m		20 m	
Angle	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30
KlipLok 406	1940	1580	1680	1500	1500	1230	1400	1140
KlipLok 700	1660	1340	1430	1280	1280	1050	1190	980
KingKlip 700	700	570	610	540	540	450	510	410
Force (kN/m)	0.70	0.87	0.81	0.91	0.91	1.11	0.98	1.19

WIND REGION	B							
qu (K Pa)	0.83	1.09	0.96	1.26	1.06	1.40	1.14	1.50
hz	5 m		10 m		15 m		20 m	
Angle	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30
KlipLok 406	1520	1160	1310	1000	1190	900	1100	840
KlipLok 700	1300	990	1120	850	1010	770	940	710
KingKlip 700	550	420	480	360	430	320	400	300
Force (kN/m)	0.90	1.18	1.04	1.37	1.15	1.52	1.24	1.63

WIND REGION	C							
qu (K Pa)	1.27	2.19	1.47	2.31	1.63	2.57	1.75	2.75
hz	5 m		10 m		15 m		20 m	
Angle	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30	≤ 15	≤ 30
KlipLok 406	990	570	860	540	770	490	720	450
KlipLok 700	850	490	730	460	660	420	610	390
KingKlip 700	360	210	310	190	280	170	260	160
Force (kN/m)	1.38	2.37	1.59	2.50	1.77	2.78	1.90	2.98

1. Roof Interface bracket spacing in the above table for panel length of 1.97 m.
2. The table prepared based on GD Rail capacity and Cliplok bracket pull-out capacity
3. This tables refer to using Cliplok type interface with Adjustable Tilt Leg using 2-M8 bolts for the connection and also with single Tripod using 2-M8 bolts for connection.
4. Max. distance allowed from the end of the single Tripod base to fixing of the Cliplok bracket is 225 mm.
- 5 The above mentioned spacing table is for Roof Interface Bracket fixing including edge of the roof.
6. On purlin means that distance from the purlin to the Cliplok type bracket(centre to centre) is not more than 100mm
7. Angle refers to tilt angle between roof and panels – not to horizontal.
8. For panels ranging in length 1580 to 1700mm increase spacings by 11.5%
9. For panels ranging in length 1700 to 1800mm increase spacings by 9.0%
10. For panels ranging in length 1800 to 1970mm adopt tabulated spacings

INSTALLATION MANUAL / GUIDE

ROOF MOUNTING SYSTEM INSTALLATION MANUAL



Jiangyin Titanergy Co., Ltd

► Introduction

The Titan Solar Roof Mounting System has been developed as a universal PV-mounting system for roof-mounting on pitched and flat roofs. The use of patented aluminium base rails, the Z-Module technology and the telescopic mounting technology eliminates custom cutting and enables particularly fast installation.

Please review this manual thoroughly before installing roof mounting. This manual provides (1) supporting documents for building permit applications relating to Roof Mounting Universal PV Module Mounting System, and (2) planning and installation instructions.

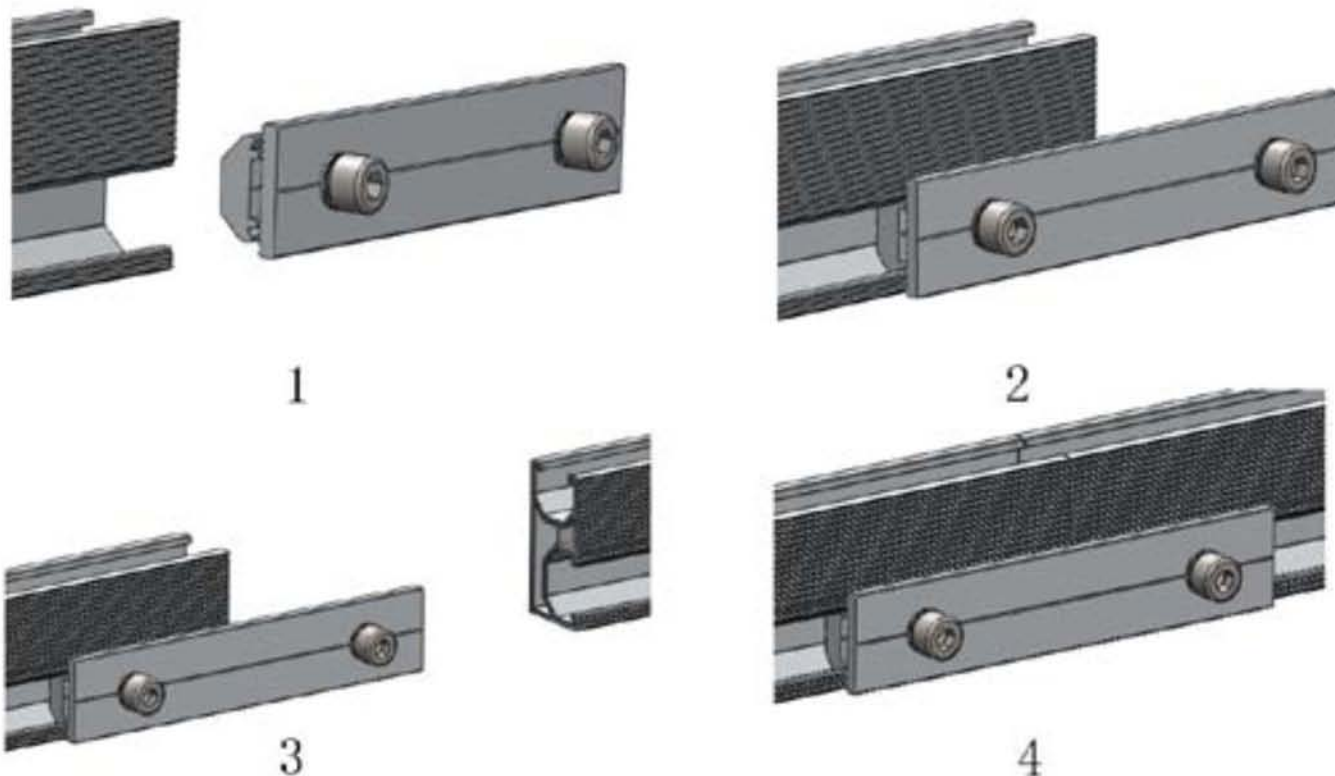
The roof mounting system parts, when installed in accordance with this guide, will be structurally adequate and will meet the AS/NZS1170.2: 2011 Admt 2-2012 standard. During installation and especially when working on the roof please comply with the appropriate occupational health and safety regulations. Please also pay attention to other relevant regulations of your local region. Please check that you are using the latest version of the installation manual, which you can do by contacting Titan Solar via email on info@titanenergy.com, or contacting your local distributor in Australia.



1. Titan Solar's innovative assembly method is fast, convenient and secure. Attach clamps, and brackets to rails in one motion with ease.



2. Using the special splice kits to connect aluminum rail makes installation easier, more flexible and convenient. Rails can be extended indefinitely improving efficiency, minimizing wastage and reducing the overall cost of installation. Splice kits may be fixed to the top or side of the rails.



 3. Excellent Material Selection. We choose to use Aluminum 6005-T5 on all our Aluminum products and stainless steel SUS304 on all our Tile hooks, bolts, nuts etc.

 4. Our designs are compliant with the following standards:

*GB50009-2001

*GB50011-2001

*GB/T 13912-92

*GBT 14846-2008

*GB-T 6892-2006

*GB50429-2007

*GB50017-2003

*AS NZS 1170

*ASCE/SEI 7-05

*ASCE/SEI 7-010

*2007 California Administrative Code

*IBC 2006

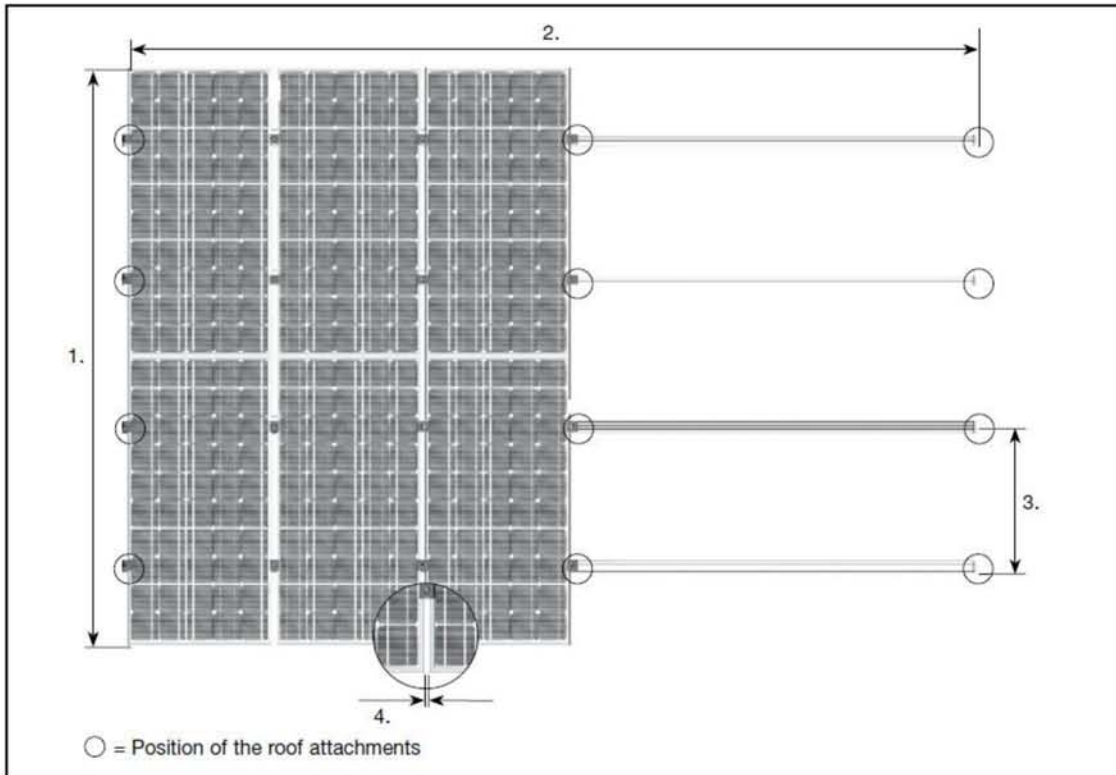
*Euro Code 8

*DIN1055

*EN 1991-1-3 - Snow Load

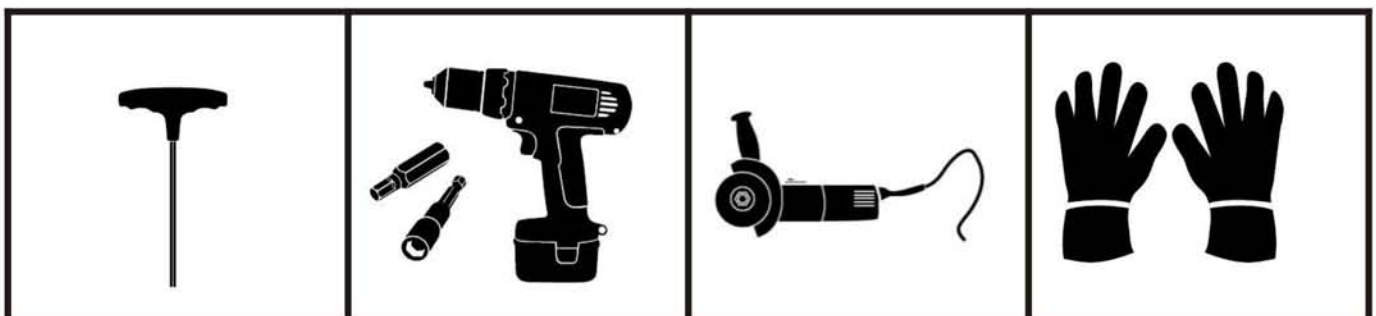
*EN 1991-1-4 - Wind Actions

► Planning the Array Layout



Planning the array layout

1. Array height = number of modules in the vertical direction x module height
2. Array width = number of modules in the horizontal direction x (module width + 11/16 in (18 mm)) + 1-1/4 in (32 mm)
3. Vertical spacing between the roof fixings for the supporting rail = approx. . of module height
4. Distance between the modules = 11/16 in (18 mm)



► Determine the wind region of your installation site

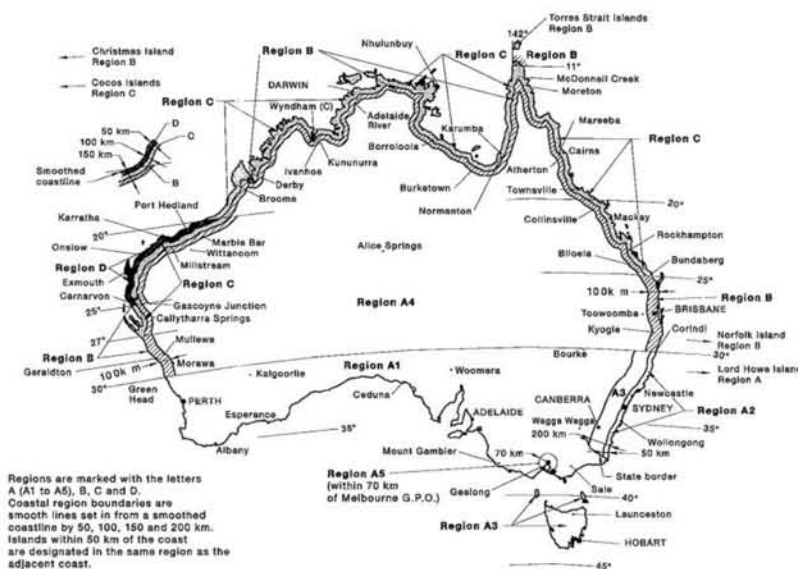


FIGURE 3.1(A) WIND REGIONS

Region Definition:

Wind regions are pre-defined for all of Australia by the Australian Standard 1170.2. The Wind Region is an independent factor of surrounding topography or buildings.

- Most of Australia is designated Region A which indicates a Regional Ultimate Basic Wind Velocity of 45m/s.
- Some areas are designated Region B (57m/s). Local authorities will advise if this applies in your area.
- Regions C areas (66m/s) are generally referred to as Cyclonic and are generally limited to northern coastal areas. Most Region C zones end 100km inland.
- Region D (80m/s) Australia's worst Cyclonic Region between Carnarvon and Pardoo in Western Australia.

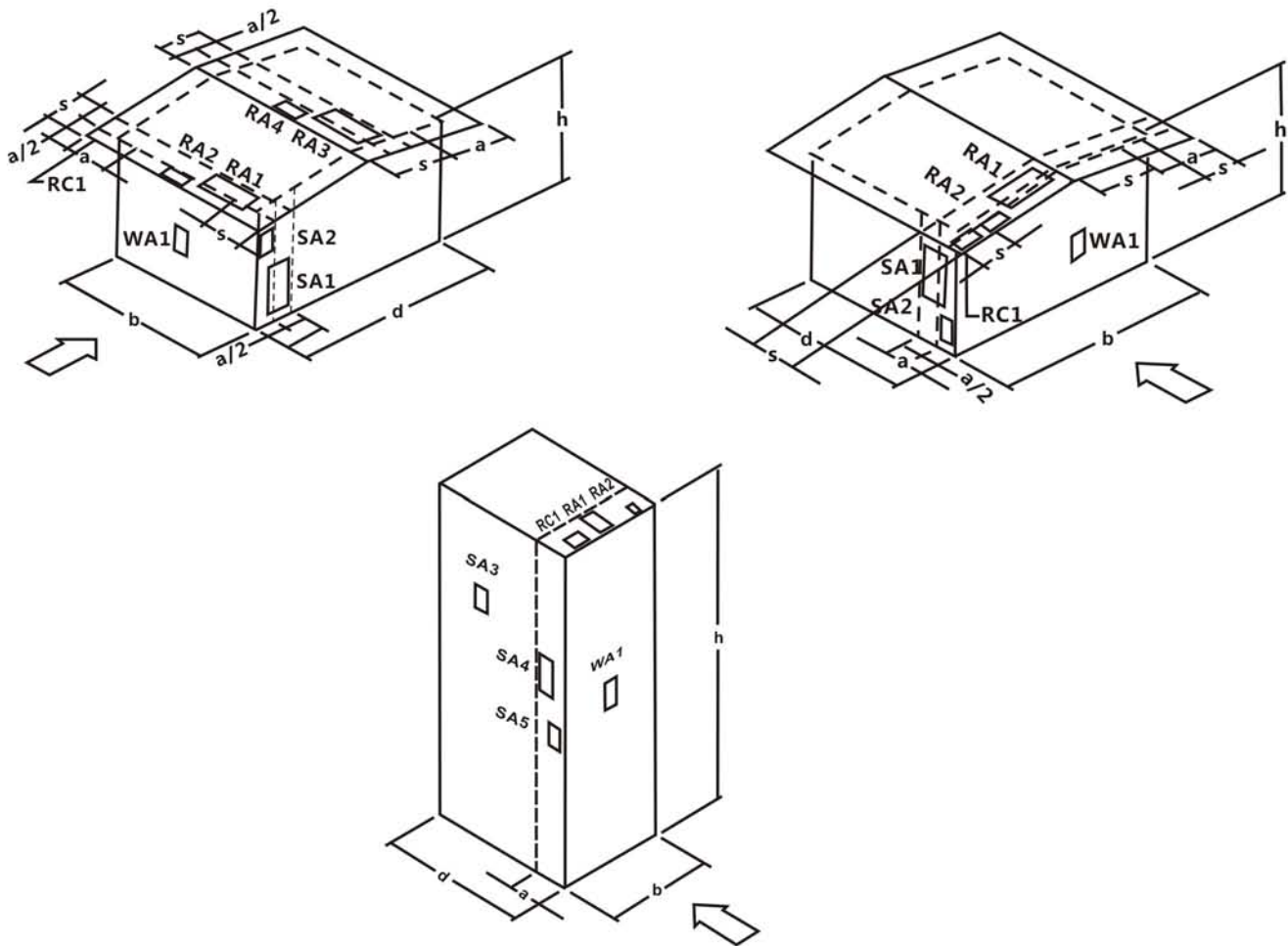
Determine the height of your installation site

This document provides sufficient information for the Titan Solar roof mounting system installation up to 20 meter height. If your installations site is more than 20 meters please contact Titan Solar to obtain additional engineering certificate to support your installation.

Determine the roof slope

The Titan Solar roof mounting system can be used for roof slope up to 60 degrees. Please verify that the Installation site roof slope is between 0 and 60 degrees.

► Determine the installation area on the roof



a = edge zone

The value of dimension a is the minimum of $0.2b$, $0.2d$ and h

This work was designed in accordance with the provisions of Australian Building Regulations and in accordance with sound, widely accepted engineering principles.

Determine the Maximum Rail Support Spacing

a) Tile Roof

Please use the following table to determine the base rail support spacing for tile roof installations for Australia A,B,C and D wind zones:

Max PV panel dimension: 2000mm*1000mm. Max panel weight: 15kg/m²

Tile Roof

Roof Mounting System

For Up To 1600mm Long Panel (2Rails)								
Max. Support Spacing (mm)								
Installation	Region A		RegionB		RegionC		RegionD	
Height(m)	Center	Edge	Center	Edge	Center	Edge	Center	Edge
5 m	2400	1950	2400	1700	1800	1275	1100	775
10 m	2300	1625	1975	1400	1625	1150	1000	700
15m	2100	1475	1800	1275	1425	1000	875	600
20m	1975	1375	1700	1200	1275	900	775	550

Tile Roof

Roof Mounting System

For Up To 1960mm Long Panel (2Rails)								
Max. Support Spacing (mm)								
Installation	Region A		RegionB		RegionC		RegionD	
Height(m)	Center	Edge	Center	Edge	Center	Edge	Center	Edge
5 m	2325	1625	2000	1400	1500	1050	925	625
10 m	1900	1350	1650	1150	1350	950	825	575
15 m	1725	1225	1500	1050	1175	825	725	500
20 m	1625	1150	1425	1000	1050	750	625	450

Notes for Tile Roof

- Please contact Titan Solar for installing PV modules with a greater length then 2000mm or heathier than 15kg/m²
- Maximum spans not to exceed 2400mm
- Minimum 35mm embedment length into timber
- In case the wooden rafters/trusses you wish to mount on are too thin and the screws would be too close to the edge of the rafters please pre-drill with a 3-4mm pilot hole in order to avoid the splitting of the timber (or use the side mount roof hook ER-I-26).

b) Tin Roof

Please use the following table to determine the base rail support spacing for metal sheet roof installations for Australia A,B,C and D wind zones:

Max PV panel length: 2000mm, Max panel weight: 15kg/m²

Tin Roof

Roof Mounting System

For Up To 1600mm Long Panel (2Rails)								
Max. Support Spacing (mm)								
Installation	Region A		RegionB		RegionC		RegionD	
Height(m)	Center	Edge	Center	Edge	Center	Edge	Center	Edge
5 m	1450	1025	1000	700	625	425	375	N/A
10 m	1200	850	825	575	550	400	325	N/A
15m	1100	775	750	525	500	325	300	N/A
20m	1025	725	725	500	425	300	N/A	N/A

Tin Roof

Roof Mounting System

For Up To 1960mm Long Panel (2Rails)								
Max. Support Spacing (mm)								
Installation	Region A		RegionB		RegionC		RegionD	
Height(m)	Center	Edge	Center	Edge	Center	Edge	Center	Edge
5 m	1225	850	850	600	525	350	325	N/A
10 m	1000	700	700	475	475	325	N/A	N/A
15 m	900	625	625	425	400	N/A	N/A	N/A
20 m	850	600	600	425	375	N/A	N/A	N/A

- Please contact Titan Solar for installing PV modules with a greater length then 2000mm.
- Each foot should be fixed to the purlins using at least 2-12g(6mm) screw through sheet metal roofs with gasket.
- Please note that the screws provided with our products are designed for mounting in to wooden structures (10TPI). Titan Solar recommend using 12G 14TPI screws (or M6 Buildex RoofZip®) to fix to steel purlins.
- Maximum spans not to exceed 2400mm
- Minimum 35mm embedment length into timber
- Minimum metal purlins/ battens 0.55mm
- Spacings may be increased by 35% if 0.75mm metal battens and 45% into 35mm min timber battens

► General Notes

- Recommended screws

Metal Purlins/ Battens	Fasteners to use
0.55mm – 1.5mm	M6- 11 TPI Roof Zips
1.9mm	M6- 11 TPI Roof Zips or 12g- 14 TPI Teks screws
2.4mm and above	12g- 14 TPI Teks screws

Wood Purlins and Rafter	Fasteners to use
Pine and Hardwood (35mm embedment and above)	M6 (12g) with 10 TPI

Components List

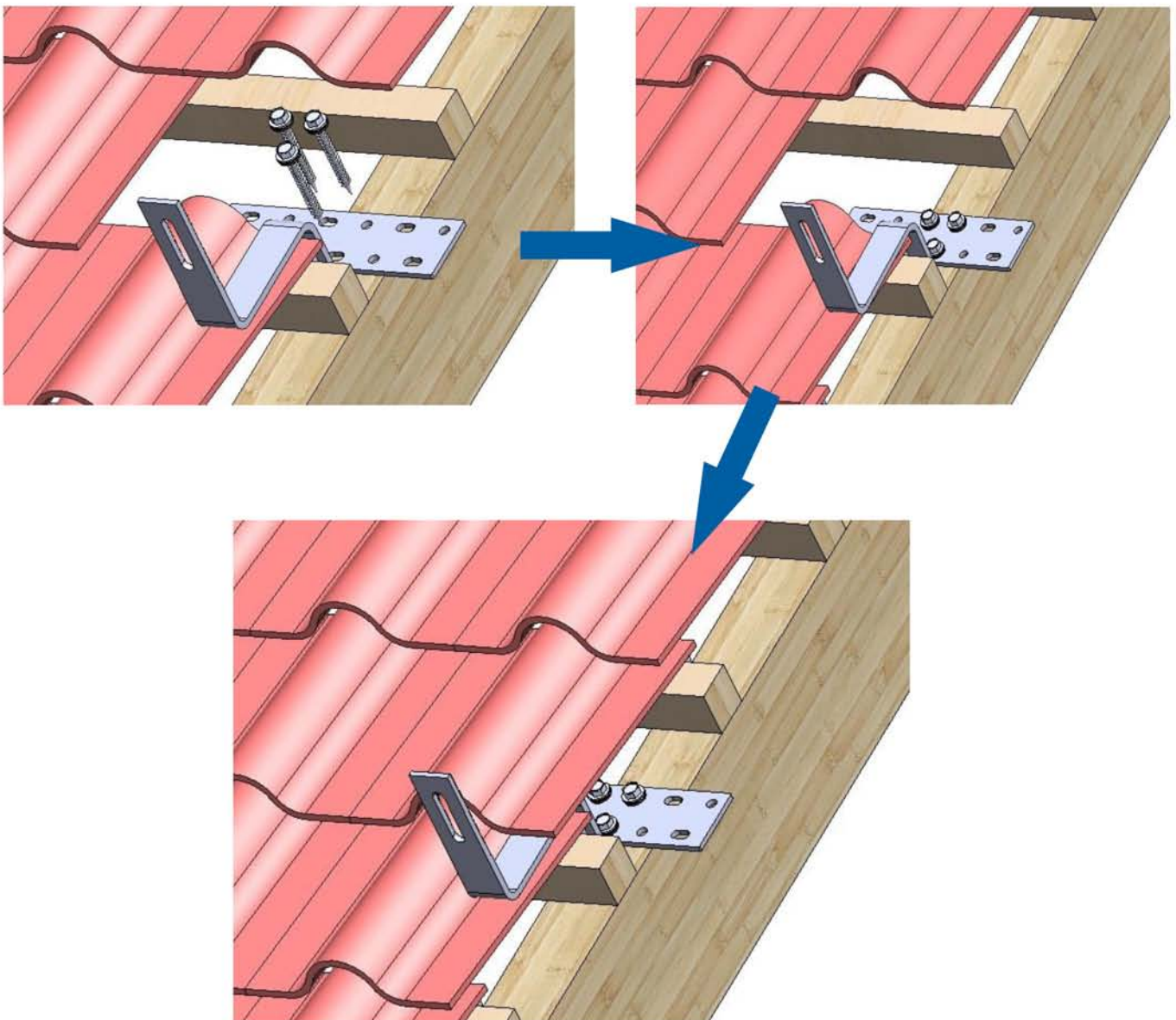
Overview of system components for Tile Roof		
		
Aluminium rail	Rail Splice kit	Inter Clamp
		
End Clamp	Tile Roof Hook	Wood Screw 6*80mm

Overview of system components for Tin Roof		
		
Aluminium rail	Rail Splice	Inter Clamp
		
End Clamp	Tin Roof Hook	Wood Screw 6*90mm

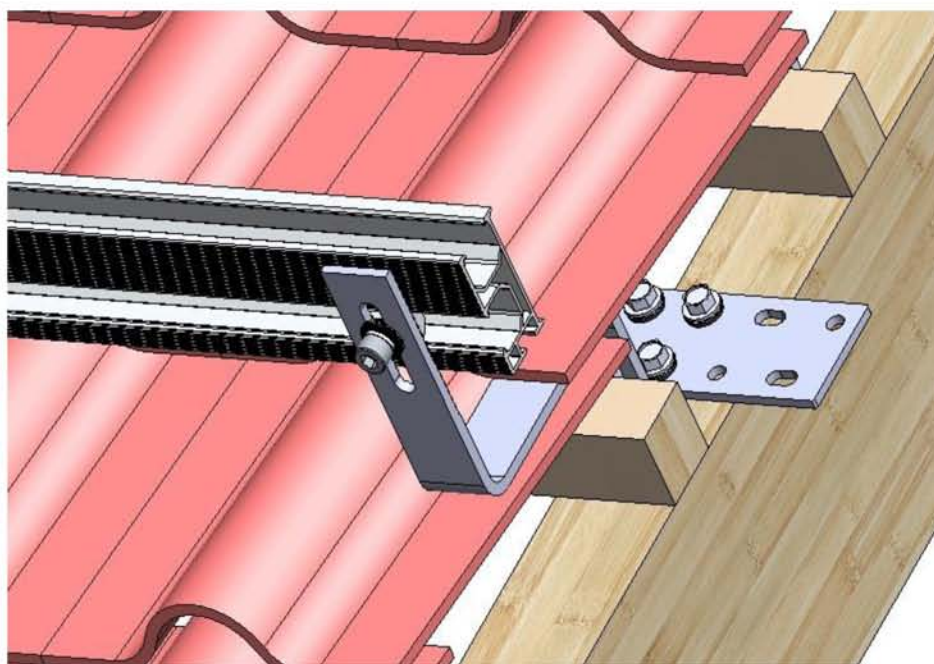
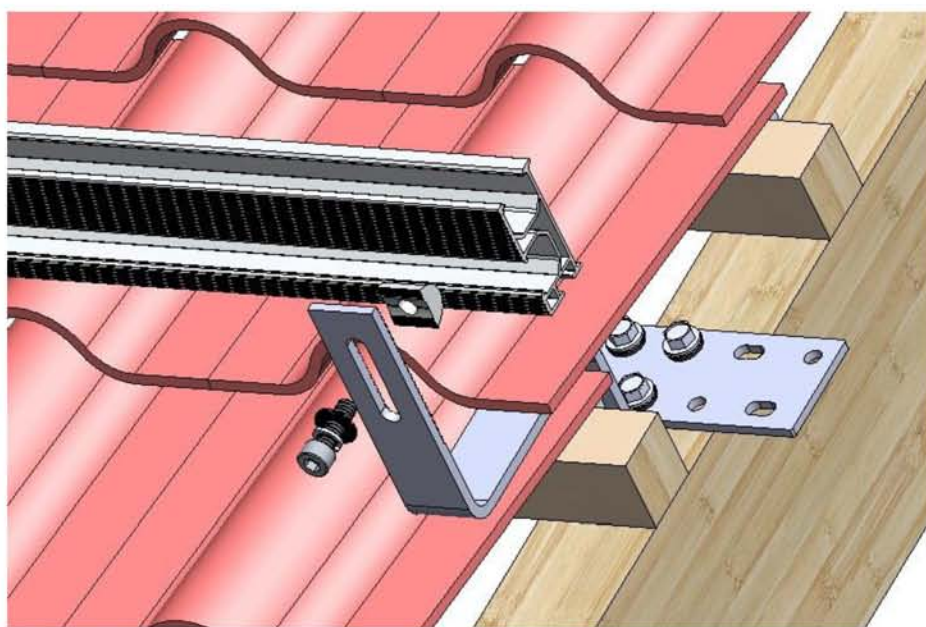
► Installation Steps

a) Tile Roof

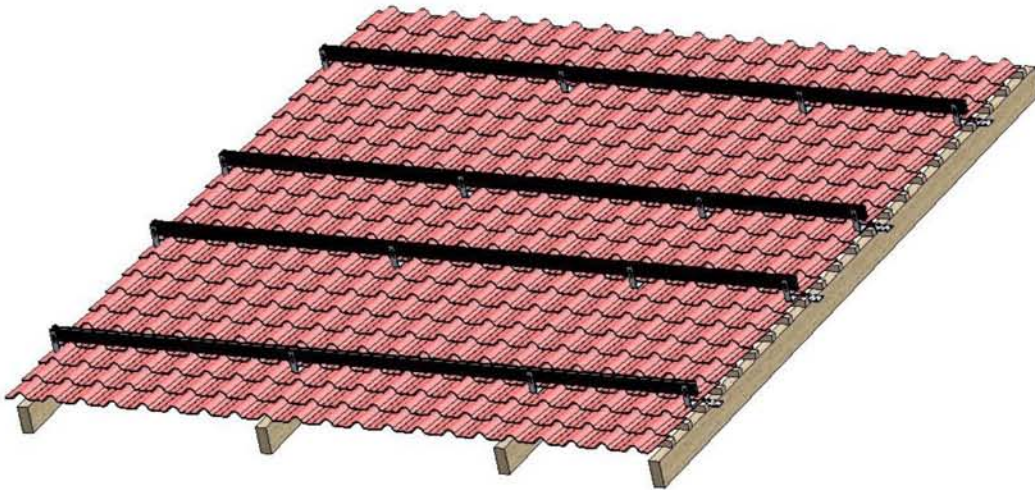
1. Remove or slide the tile from the roof girder slightly, and place the roof hook on the wooden rafter (refer to the picture below), Fix the roof hooks using three 6*80 wood screws. Grind tile as required and replace.



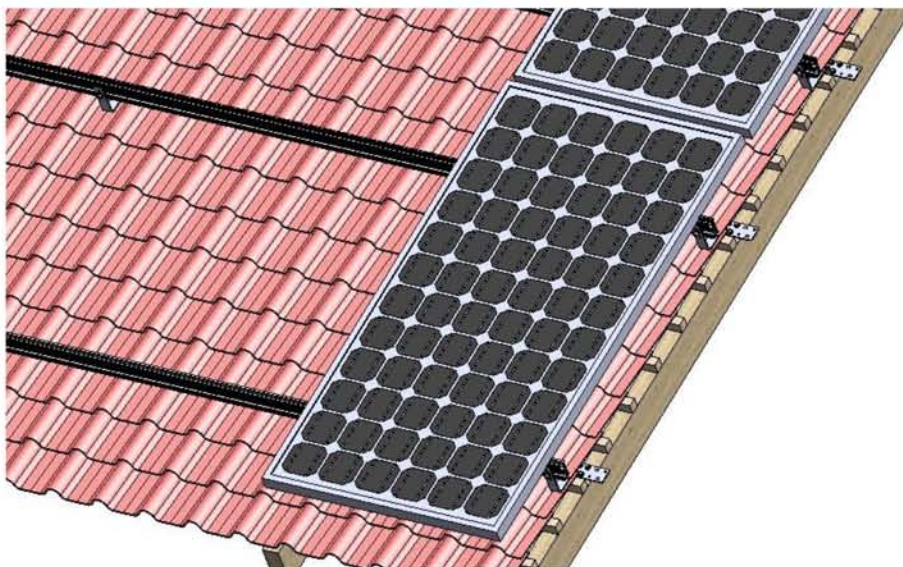
2. Use the M8*25 Hexagon screw, M8 spring washer, M8 antiskid washer and fixing nut to connect the rail to the tile roof hook.



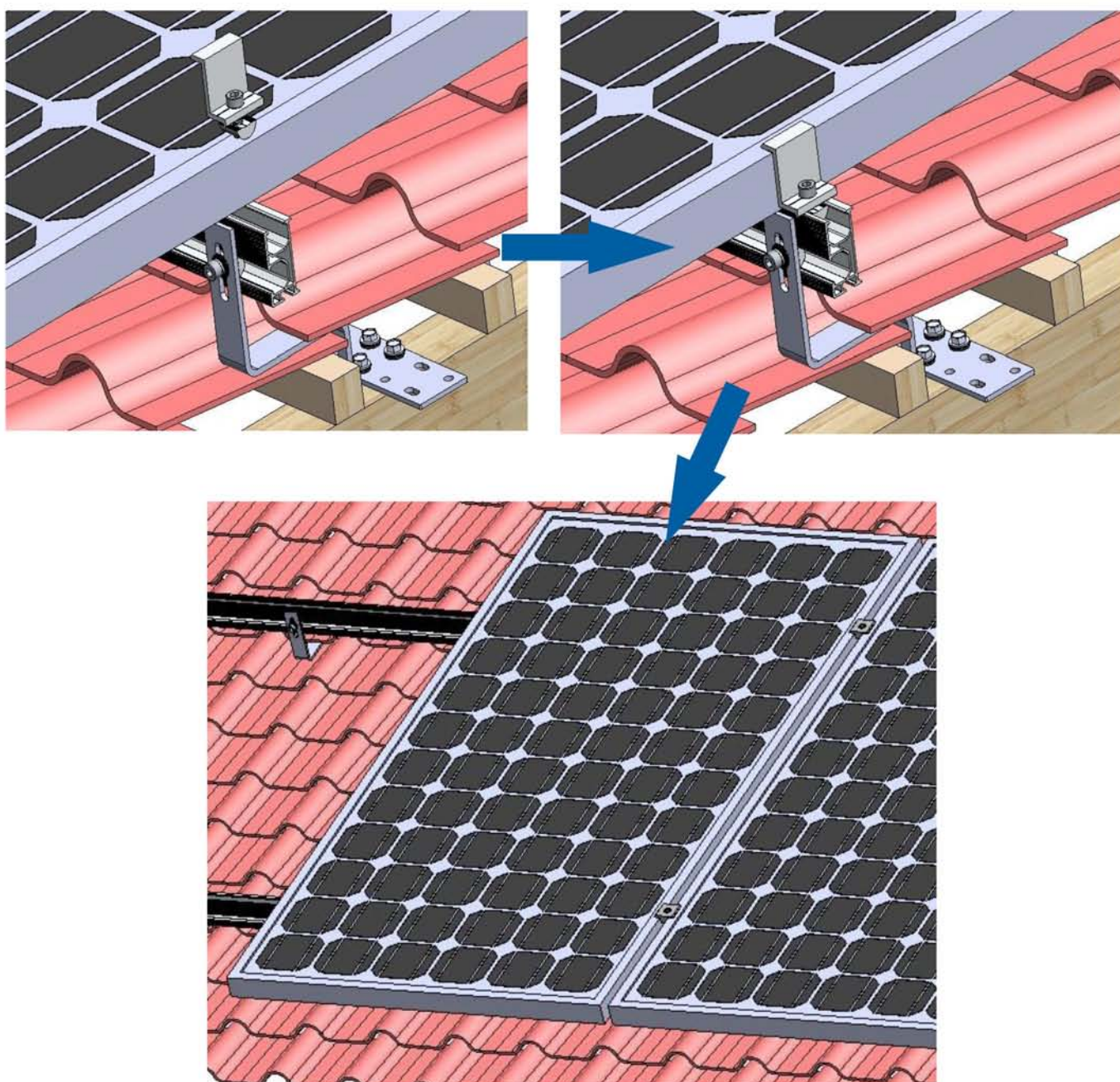
3. Repeat the tile roof hook installation in accordance with the planned layout.



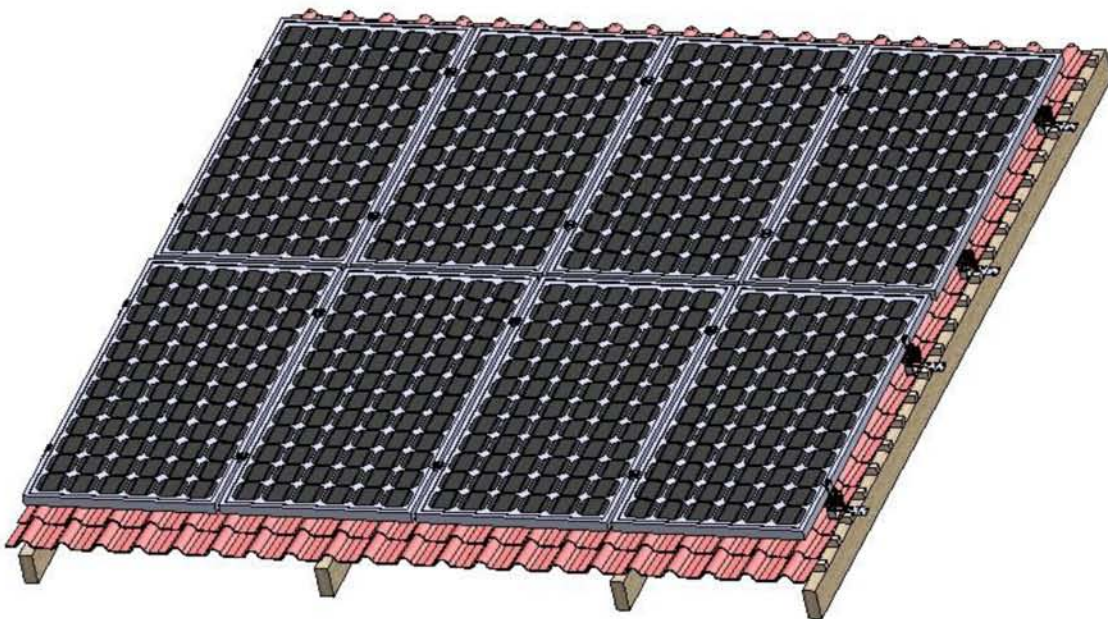
4. Place solar panels on the rails.



5. Using end clamps with M8*25 Hexagon screw and fixing nuts to attach solar panels to the rails. Adjacent solar panels are attached by using mid clamps with M8 Hexagon screws. (The hexagon screw length is determined by the solar panel's thickness)

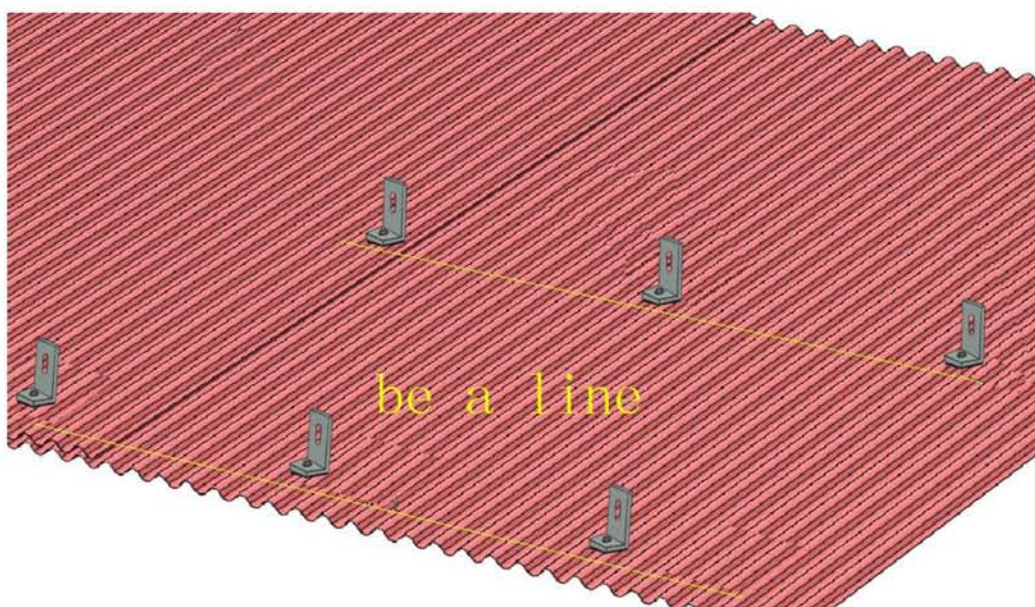
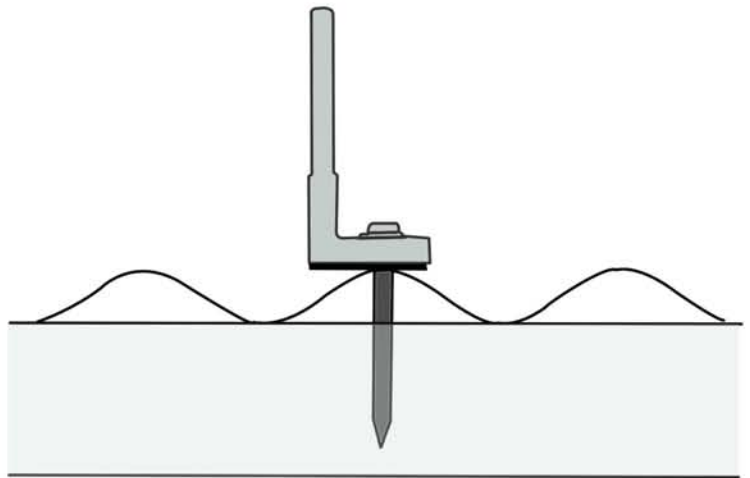
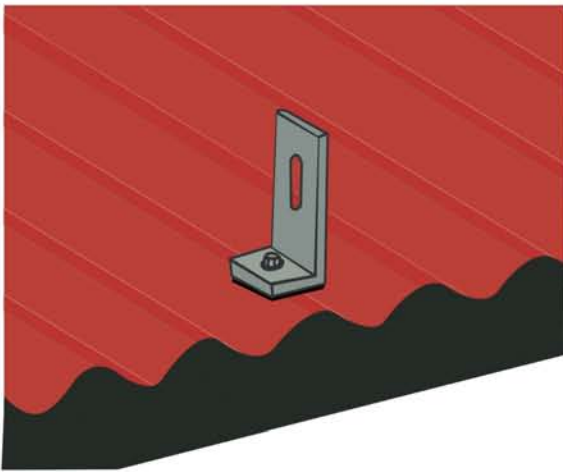


6. Repeat steps until installation is completed.



b) Tin Roof

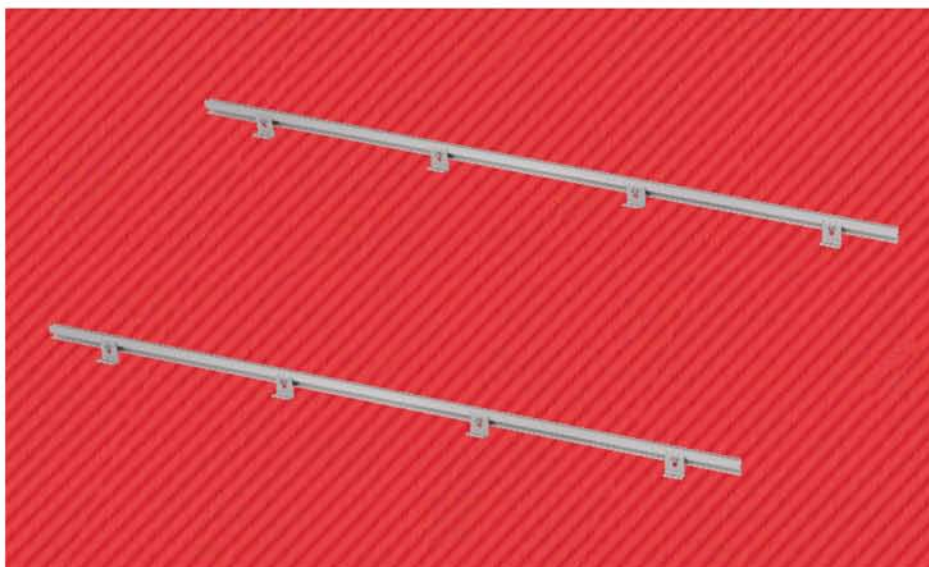
1. Fix the tin roof hook (L leg) to the rafter using a 6*90mm wood screw and rubber pad. Determine the positions of the L bracket according to your plans.



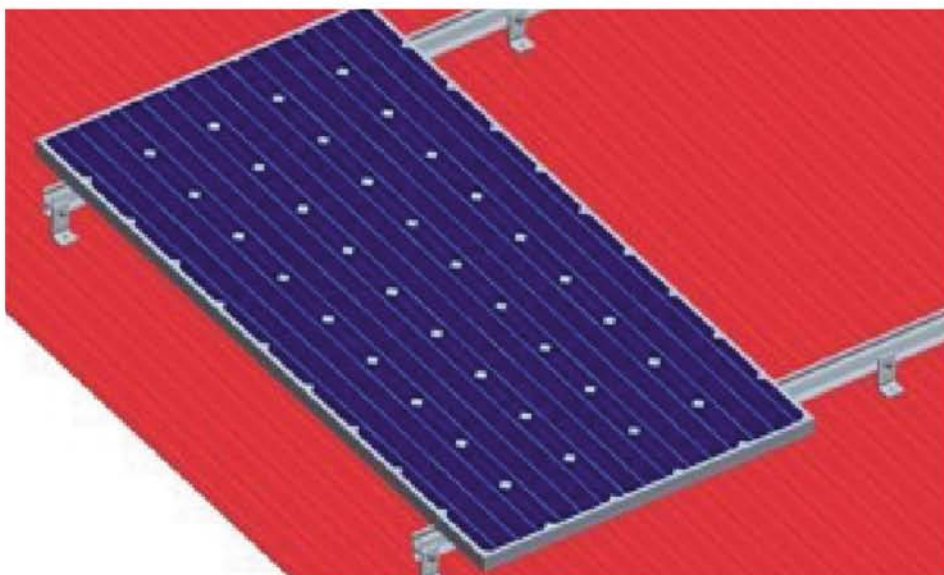
- 2. Use the M8*25 Hexagon screw, M8 spring washer, M8 antiskid washer and fixing nut to connect the rail to the tin roof hook.



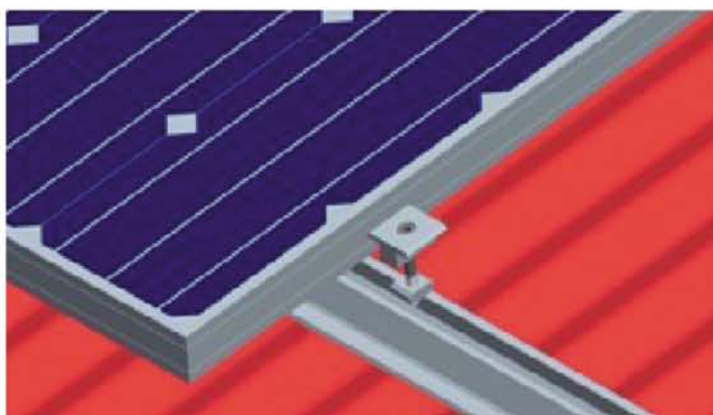
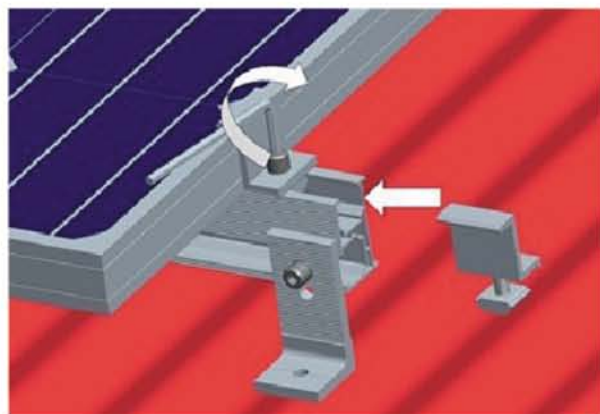
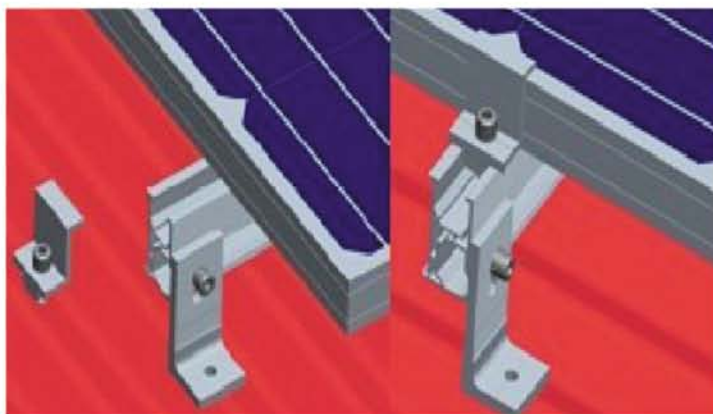
3. Repeat the tin roof hook installation in accordance with the planned layout.



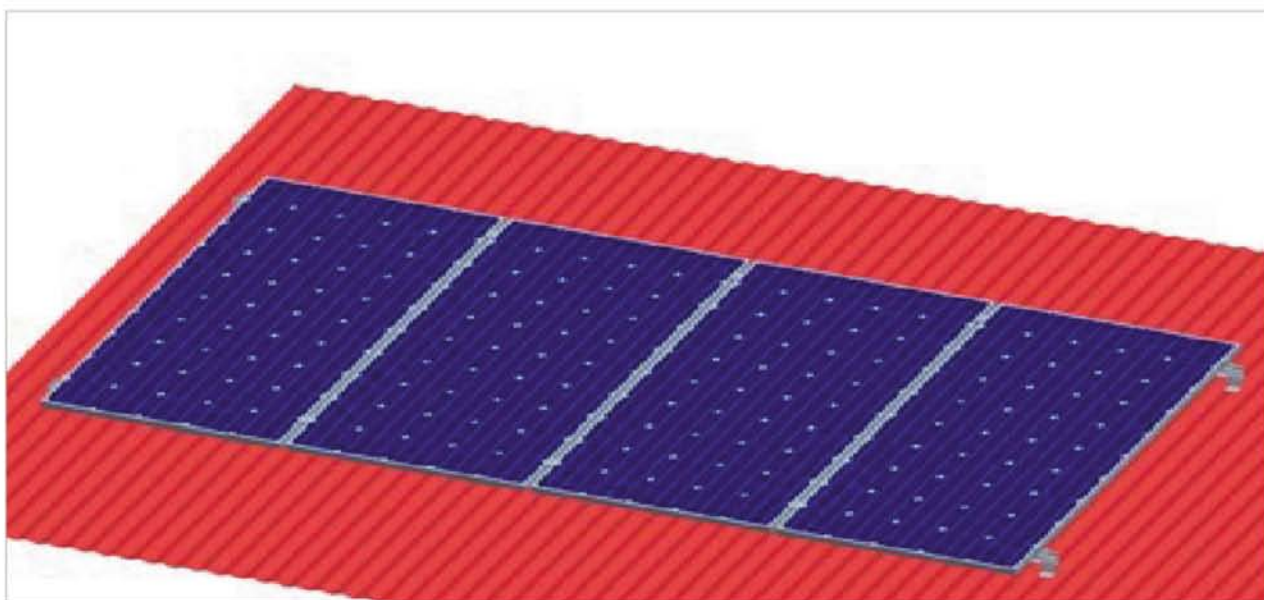
4. Place solar panels on the rails.

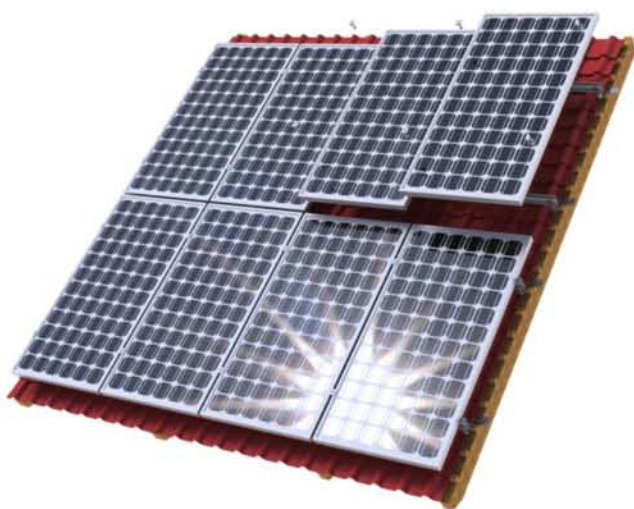


5. Use end clamps with M8*25 Hexagon screw and fixing nuts to attach solar panels to the rails. Adjacent solar panels are attached by using inter clamps with M8*25 Hexagon screws. (The hexagon screw length is determined by the solar panel's thickness.)



- 6. Repeat steps until installation is completed.





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FAX: +86-510-86610877 Website: www.titanenergy.com

ADJUSTABLE TILT LEGS SYSTEM INSTALLATION MANUAL



Jiangyin Titanergy Co., Ltd

► Introduction

The Titan Solar Adjustable Tilt Legs System has been developed as a universal PV-mounting system for roof-mounting on pitched and flat roofs. The use of patented aluminium base rails, the Z-Module technology and the telescopic mounting technology eliminates custom cutting and enables particularly fast installation.

Please review this manual thoroughly before installing adjustable tilt legs. This manual provides (1) supporting documents for building permit applications relating to Adjustable Tilt Legs Universal PV Module Mounting System, and (2) planning and installation instructions.

The adjustable tilt legs system parts, when installed in accordance with this guide, will be structurally adequate and will meet the AS/NZS1170.2: 2011 Admt 2-2012 standard. During installation and especially when working on the roof please comply with the appropriate occupational health and safety regulations. Please also pay attention to other relevant regulations of your local region. Please check that you are using the latest version of the installation manual, which you can do by contacting Titan Solar via email on info@titanenergy.com, or contacting your local distributor in Australia.



► Planning

Determine the wind region of your installation site

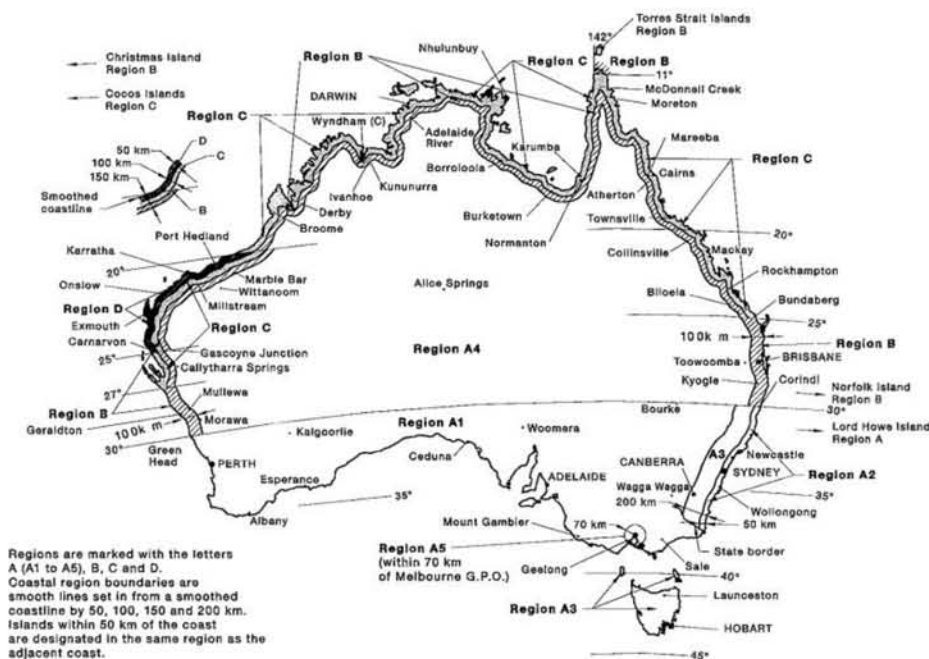


FIGURE 3.1(A) WIND REGIONS

Region Definition:

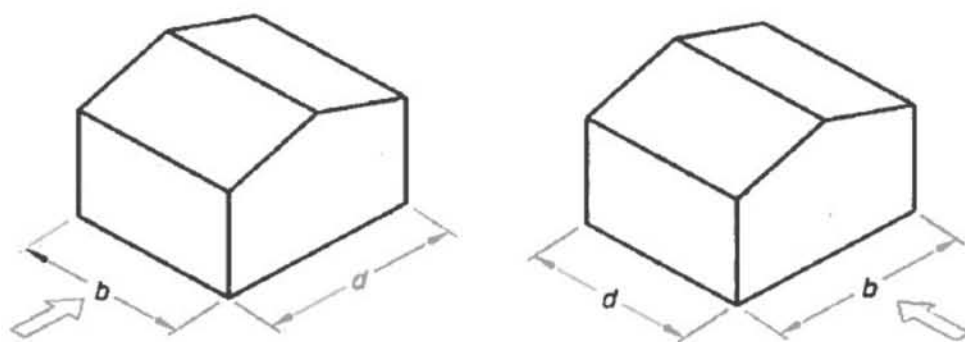
- Wind regions are pre-defined for all of Australia by the Australian Standard 1170.2. The Wind Region is an independent factor of surrounding topography or buildings.
- Most of Australia is designated Region A which indicates a Regional Ultimate Basic Wind Velocity of 45m/s. Some areas are designated Region B (57m/s). Local authorities will advise if this applies in your area.
- Regions C areas (66m/s) are generally referred to as Cyclonic and are generally limited to northern coastal areas. Most Region C zones end 100km inland.
- Region D (80m/s) Australia's worst Cyclonic Region between Carnarvon and Pardoo in Western Australia.

Determine the height of your installation site

This document provides sufficient information for the Titan Solar adjustable tilt legs system installation up 20 meter height. If your installations site is more than 20 meters please contact Titan Solar to obtain additional engineering certificate to support your installation.

Determine the installation area on the roof

Adjustable tilt legs may be installed anywhere on a roof but fixing centers are required to be reduced at ridges and edges. The diagram below shows the definition of "b" and "d" according to AS/NZS1170.2. The middle of the roof (Roof 1) is defined as a minimum of 0.2b and 0.2d from a roof edge or ridge (where "b" and "d" are the plan dimension of the building).



Roof (area) 1	Roof center- at least 0.2b and 0.2d from the edges
Roof (area) 2	Roof edges- within the 0.2b and 0.2d

Roof area 2 is exposed to higher wind load/pressure (as Roof 1), therefore on this section of the roof the spacing between interface (such as roof hooks) is generally reduced. The following table will help you determine the maximum rail support spacing for your project. Also note that if the roof slope is less than 10 degree the reduction on spacing does not apply.

Determine the Maximum Rail Support Spacing

Please use the following table to determine the base rail support spacing for tile roof installations for Australia A, B, C and D wind zones:

Max PV panel length: 2000mm. Max panel weight: 15kg/m²

Tin Roof $10^{\circ} < a < 15^{\circ}$ Adjustable Racking / Tilt Frame

For Up To 1640mm Long Panel (2Rails)								
Max. Support Spacing (mm)								
Installation	Region A		RegionB		RegionC		RegionD	
Height(m)	Center	Edge	Center	Edge	Center	Edge	Center	Edge
5 m	1350	975	925	675	575	425	350	N/A
10 m	1125	800	775	550	525	375	325	N/A
15 m	1025	725	700	500	450	325	N/A	N/A
20m	950	675	650	475	400	300	N/A	N/A

Tin Roof $10^{\circ} < a < 15^{\circ}$ Adjustable Racking / Tilt Frame

For Up To 1970mm Long Panel (2Rails)								
Max. Support Spacing (mm)								
Installation	Region A		RegionB		RegionC		RegionD	
Height(m)	Center	Edge	Center	Edge	Center	Edge	Center	Edge
5m	1125	800	775	550	475	325	300	N/A
10m	925	675	625	450	425	300	N/A	N/A
15m	850	600	575	425	375	N/A	N/A	N/A
20m	800	575	550	375	325	N/A	N/A	N/A

Tin Roof

$15^{\circ} < \alpha < 30^{\circ}$

Adjustable Racking / Tilt Frame

For Up To 1640mm Long Panel (2Rails)								
Max. Support Spacing (mm)								
Installation	Region A		RegionB		RegionC		RegionD	
Height(m)	Center	Edge	Center	Edge	Center	Edge	Center	Edge
5 m	1450	1025	1000	700	625	425	375	N/A
10 m	1200	850	825	575	550	400	325	N/A
15m	1100	775	750	525	500	325	300	N/A
20m	1025	725	725	500	425	300	N/A	N/A

Tin Roof

$10^{\circ} < \alpha < 15^{\circ}$

Adjustable Racking / Tilt Frame

For Up To 1970mm Long Panel (2Rails)								
Max. Support Spacing (mm)								
Installation	Region A		RegionB		RegionC		RegionD	
Height(m)	Center	Edge	Center	Edge	Center	Edge	Center	Edge
5 m	1225	850	850	600	525	350	325	N/A
10 m	1000	700	700	475	475	325	N/A	N/A
15m	900	625	625	425	400	N/A	N/A	N/A
20m	850	600	600	425	375	N/A	N/A	N/A

Tin Roof

$30^{\circ} < \alpha < 60^{\circ}$

Adjustable Racking / Tilt Frame

For Up To 1640mm Long Panel (2Rails)								
Max. Support Spacing (mm)								
Installation	Region A		RegionB		RegionC		RegionD	
Height(m)	Center	Edge	Center	Edge	Center	Edge	Center	Edge
5 m	1350	975	925	675	575	425	350	N/A
10 m	1125	800	775	550	525	375	325	N/A
15m	1025	725	700	500	450	325	N/A	N/A
20m	950	675	650	475	400	300	N/A	N/A

Tin Roof

$30^{\circ} < \alpha < 60^{\circ}$

Adjustable Racking / Tilt Frame

For Up To 1970mm Long Panel (2Rails)								
Max. Support Spacing (mm)								
Installation	Region A		RegionB		RegionC		RegionD	
Height(m)	Center	Edge	Center	Edge	Center	Edge	Center	Edge
5 m	1125	800	775	550	475	325	300	N/A
10 m	925	675	625	450	425	300	N/A	N/A
15m	850	600	575	425	375	N/A	N/A	N/A
20m	800	575	550	375	325	N/A	N/A	N/A

Note for Tin Roof

- Please contact Titan Solar for installing PV modules with a greater length then 2000mm.
- Each foot should be fixed to the purlins using at least 2-12g(6mm) screw through sheet metal roofs with gasket.
- Please note that the screws provided with our products are designed for mounting in to wooden structures (10TPI). Titan Solar recommend using 12G 14TPI screws (or M6 Buildex RoofZip®) to fix to steel purlins.
- Maximum spans not to exceed 2400mm
- Minimum 35mm embedment length into timber
- Minimum metal purlins/ battens 0.55mm
- Spacings may be increased by 35% if 0.75mm metal battens and 45% into 35mm min timber battens

General Notes

- Recommended screws

Metal Purlins/ Battens	Fasteners to use
0.55mm – 1.5mm	M6- 11 TPI Roof Zips
1.9mm	M6- 11 TPI Roof Zips or 12g- 14 TPI Teks screws
2.4mm and above	12g- 14 TPI Teks screws

Wood Purlins and Rafter	Fasteners to use
Pine and Hardwood (35mm embedment and above)	M6 (12g) with 10 TPI

- Screws minimum embedment length into timber 35mm
- For the adjustable tilt legs:
 - *Maximum rear leg angle to horizontal – 90°
 - *Minimum rear leg angle to horizontal – 30°

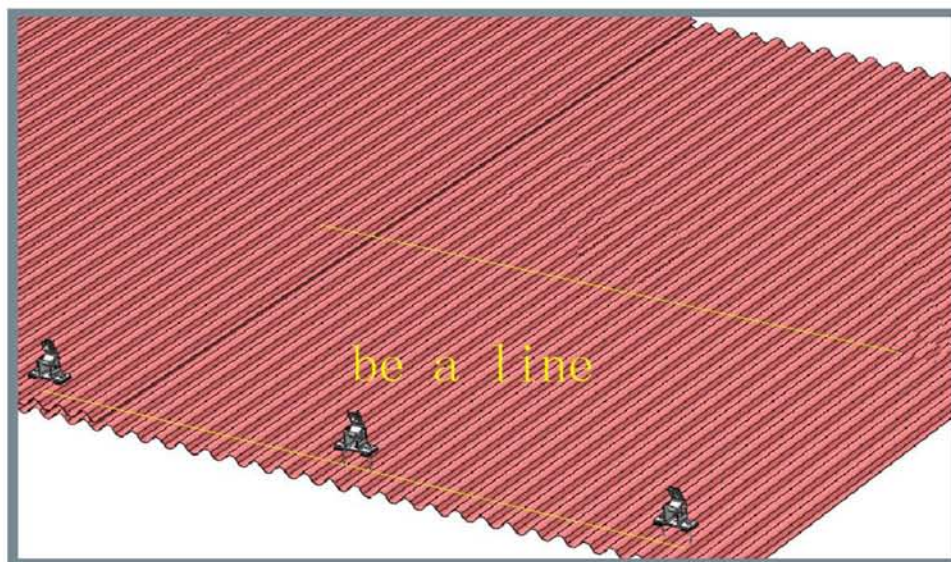
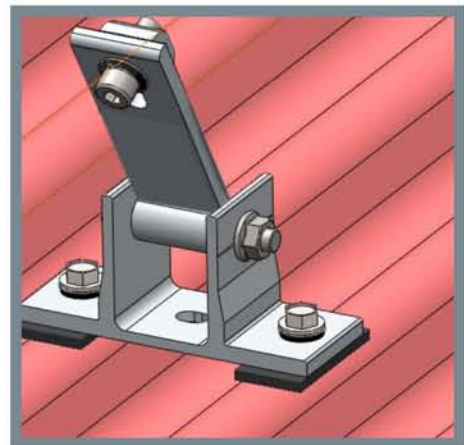
► COMPONENT LISTS

Overview of system components

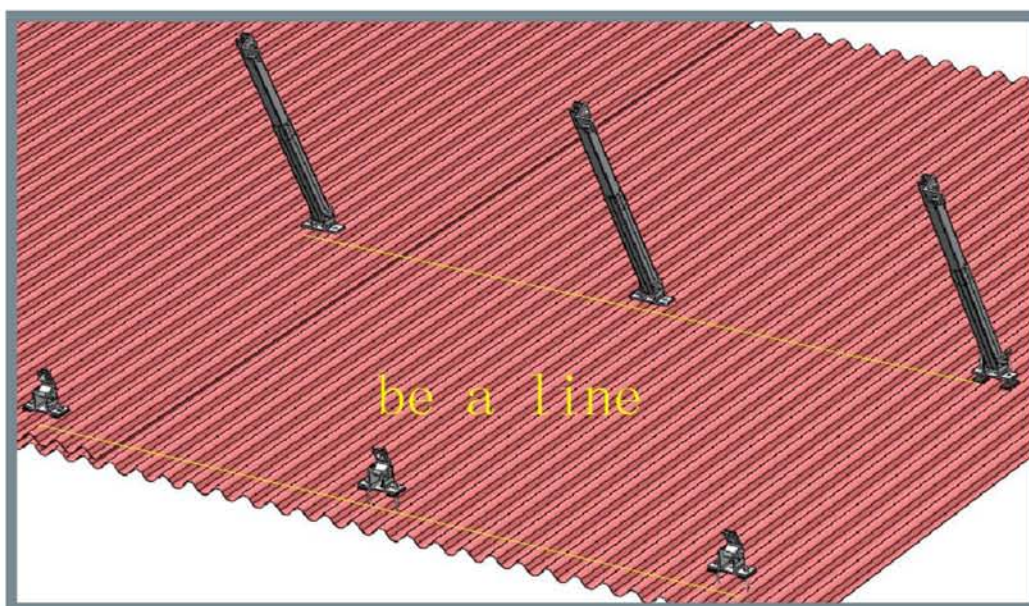
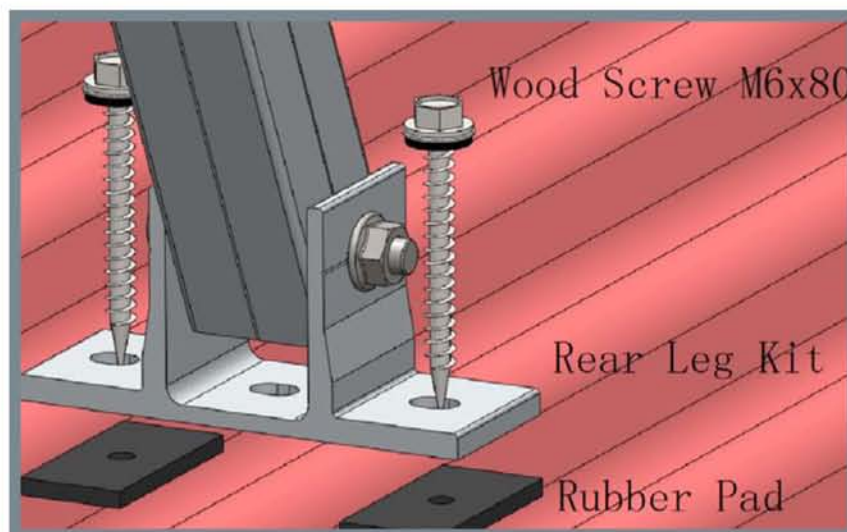
Part Name	Picture
Aluminium Rail	
Rail Splice kit	
Inter Clamp	
End Clamp	
Front Leg	
Rear Leg	
Bolts& Nuts	
Wood Screw	
Rubber Pad	

► Installation Steps

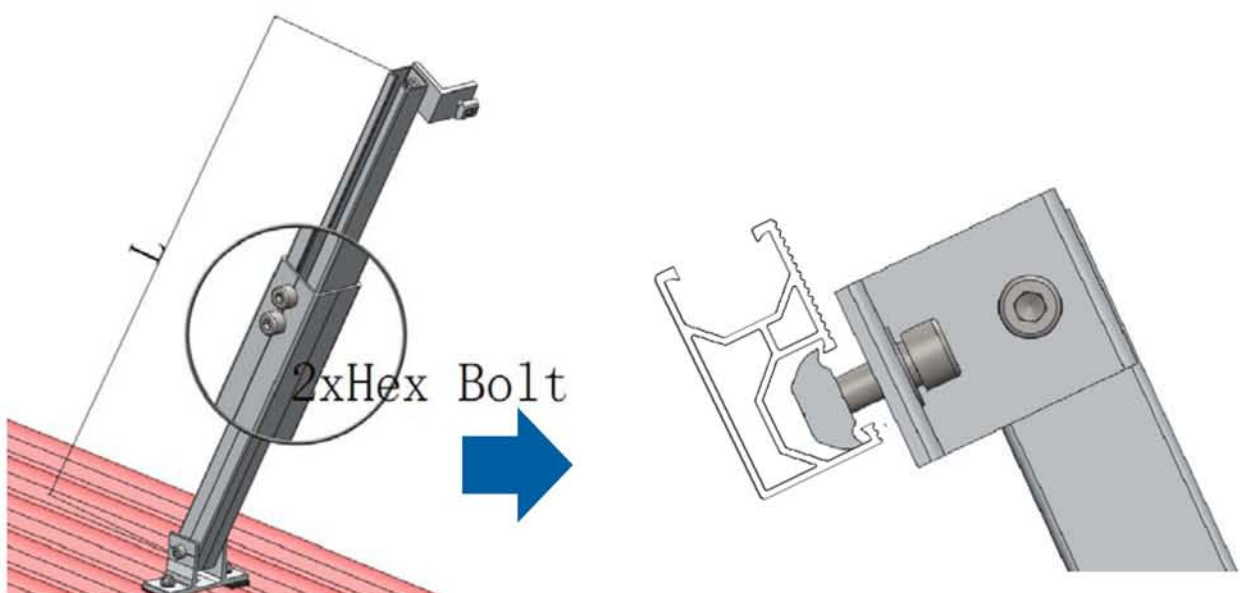
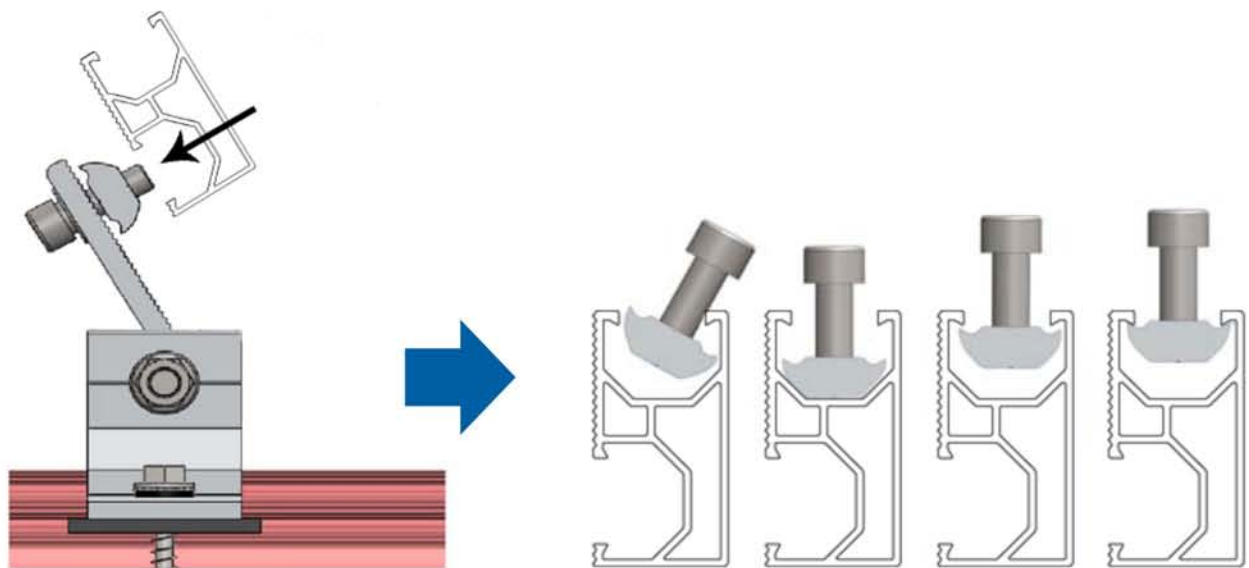
1. Fix the front leg (together with rubber pad) to the rafter using two 6*80 wood screws. Determine the positions of the front leg according to your plans.



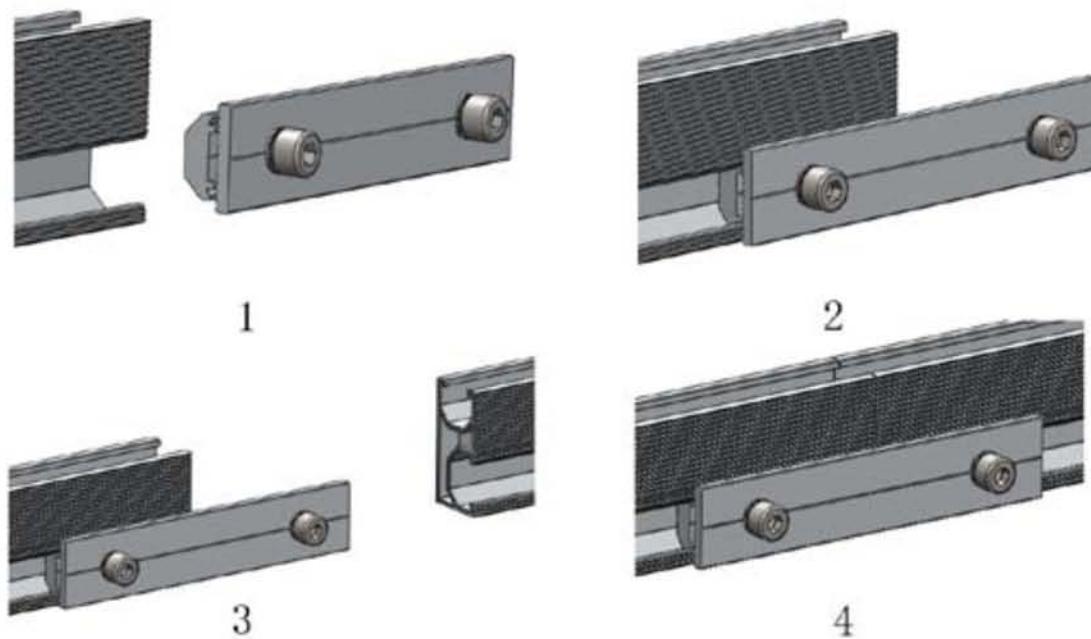
2. Fix the rear leg (together with rubber pad) to the rafter using two 6*80 wood screws. Determine the positions of the rear leg according to your plans.



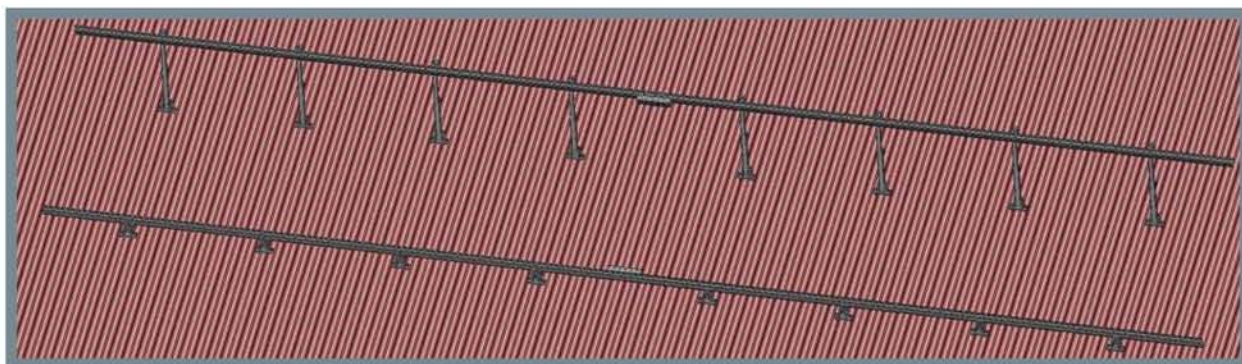
3. Use the M8*25 Hexagon screw, M8 spring washer, M8 antiskid washer and fixing nut to connect the rail with the front leg and the rear leg.



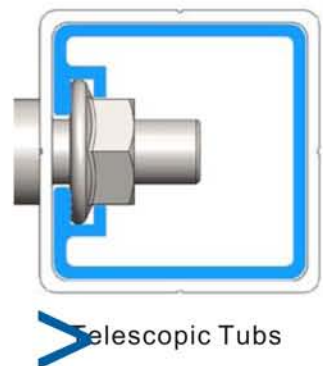
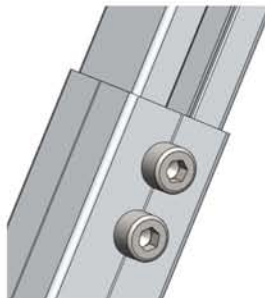
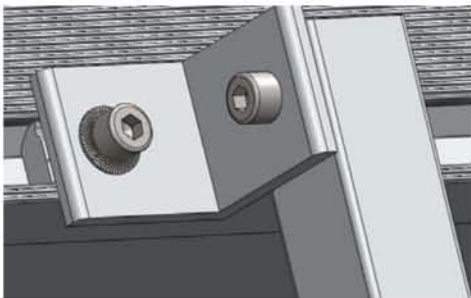
4. Use the rail splice kit to connect rails.



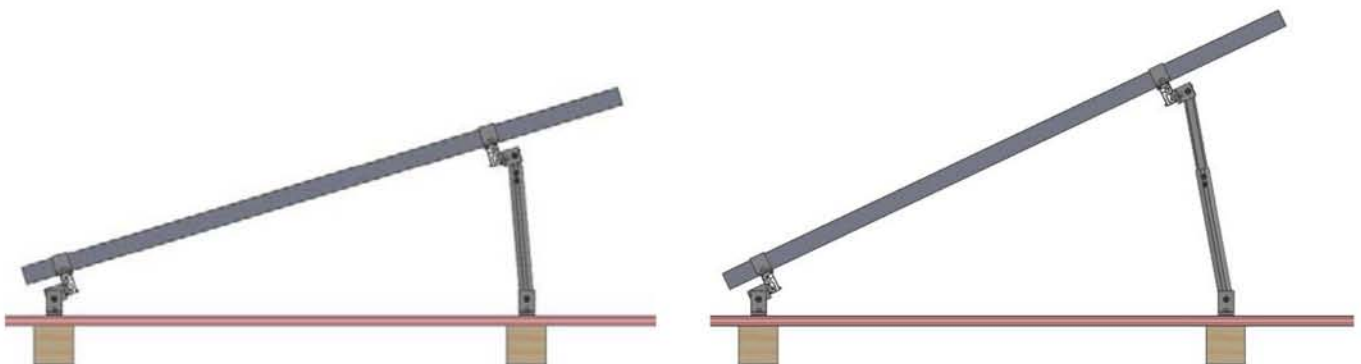
5. Repeat the above steps in accordance with the planned layout.



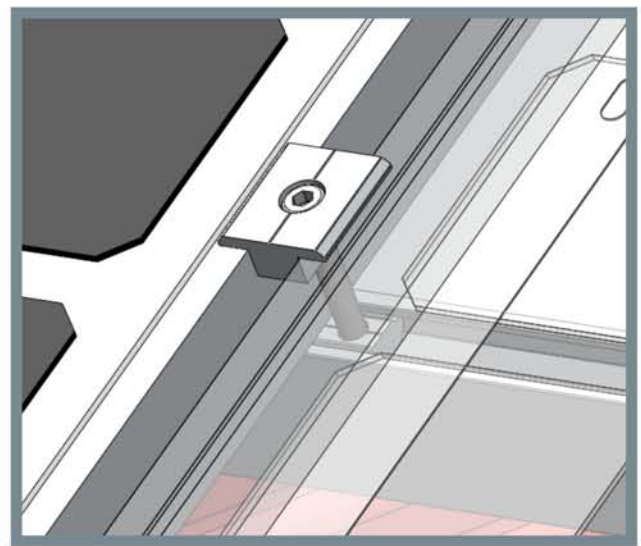
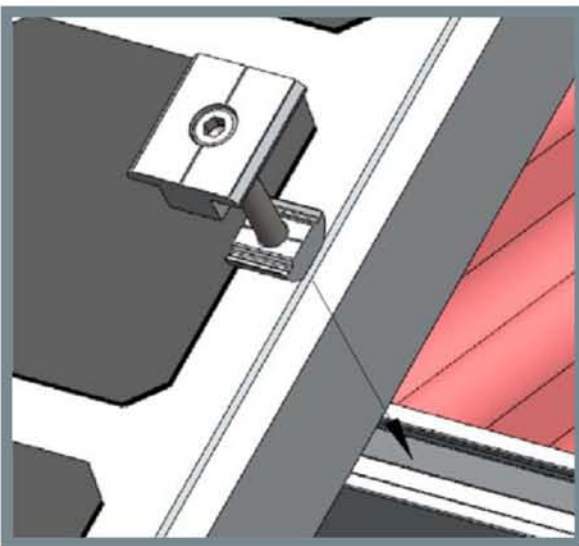
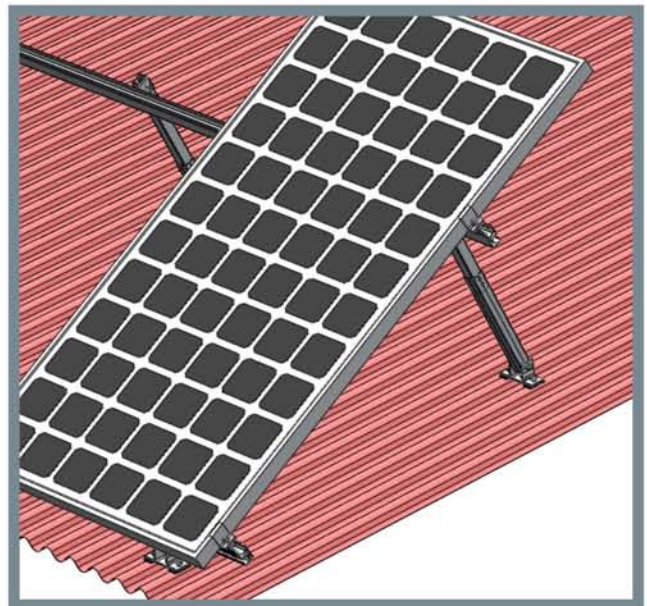
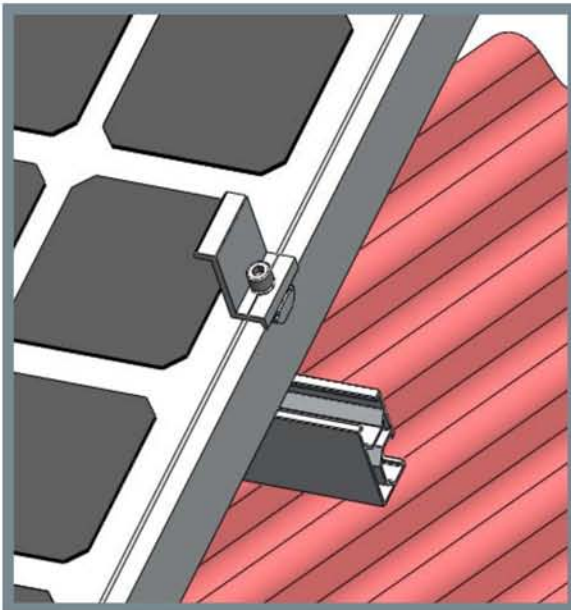
6. After finishing installation of whole system, adjust the lengths of rear legs to adjust the tilt angle of panels. Slowly unlock the screw on rear leg with a wrench and then unlock two screws on rear legs and adjust.



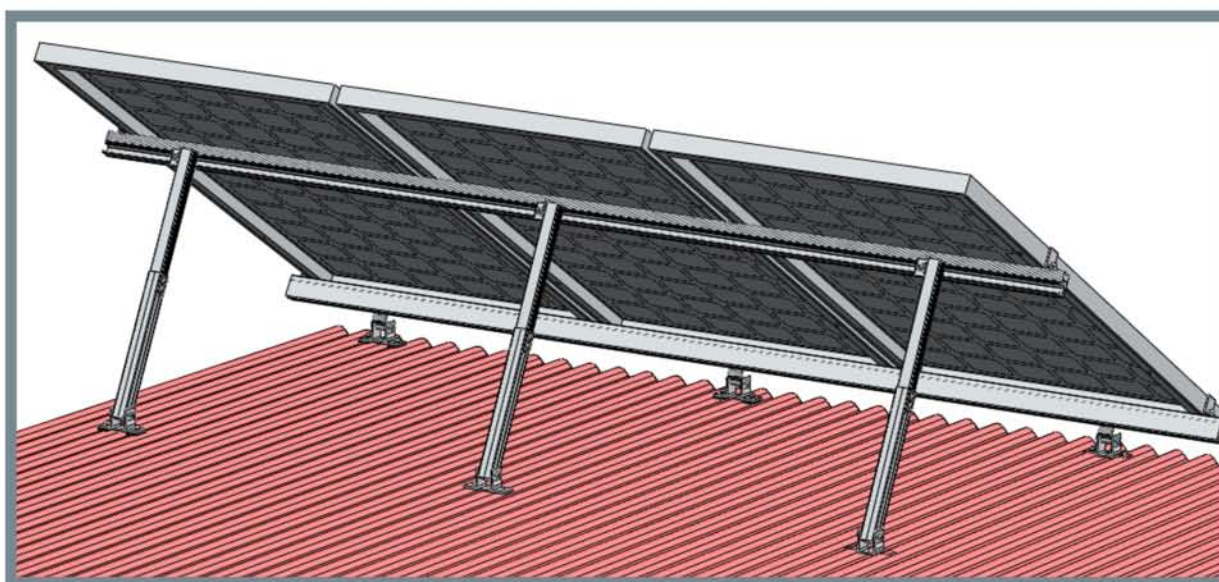
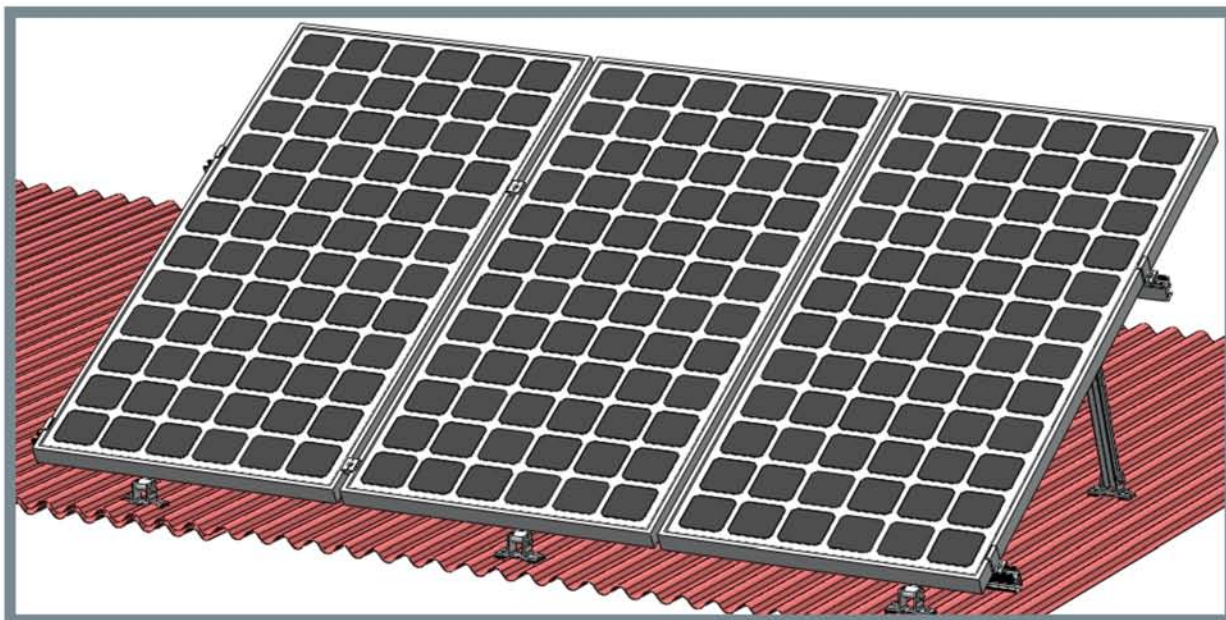
Calculate the suitable length of rear leg according to the required angle(for choice, 10° - 15° , 15° - 30° and 30° - 60° rear legs are available). Then stretch or shorten the rear leg tube and lock the two screws, assuring height of rear legs keeping in the same line. Angle differences shown as below:



7. Place solar panels on rails. Use end clamps with M8*25 Hexagon screw and fixing nuts to attach solar panels to the rails. Adjacent solar panels are attached by using inter clamps with M8*25 Hexagon screws. (The hexagon screw length is determined by the solar panel's thickness.)



8. Repeat steps until installation is completed.





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KLIP-LOK INTERFACE INSTALLATION MANUAL



Jiangyin Titanergy Co., Ltd

► Introduction

The Titan Solar Klip-Lok type interface has been developed as a non-penetrating solution for concealed roofs. The interface can be attached on different type of profiles of concealed roof to mount panels directly or in conjunction with L-leg, tilt legs or triangle frame.

Please review this manual thoroughly before installing Klip-Lok interface. This manual provides (1) supporting documents for building permit applications relating to Klip-Lok interface Universal PV Module Mounting System, and (2) planning and installation instructions.

The Klip-Lok interface parts, when installed in accordance with this guide, will be structurally adequate and will meet the AS/NZS1170.2: 2011 Admt 2-2012 standard. During installation and especially when working on the roof please comply with the appropriate occupational health and safety regulations. Please also pay attention to other relevant regulations of your local region. Please check that you are using the latest version of the installation manual, which you can do by contacting Titan Solar via email on info@titanenergy.com, or contacting your local distributor in Australia.



► Planning

Determine the wind region of your installation site

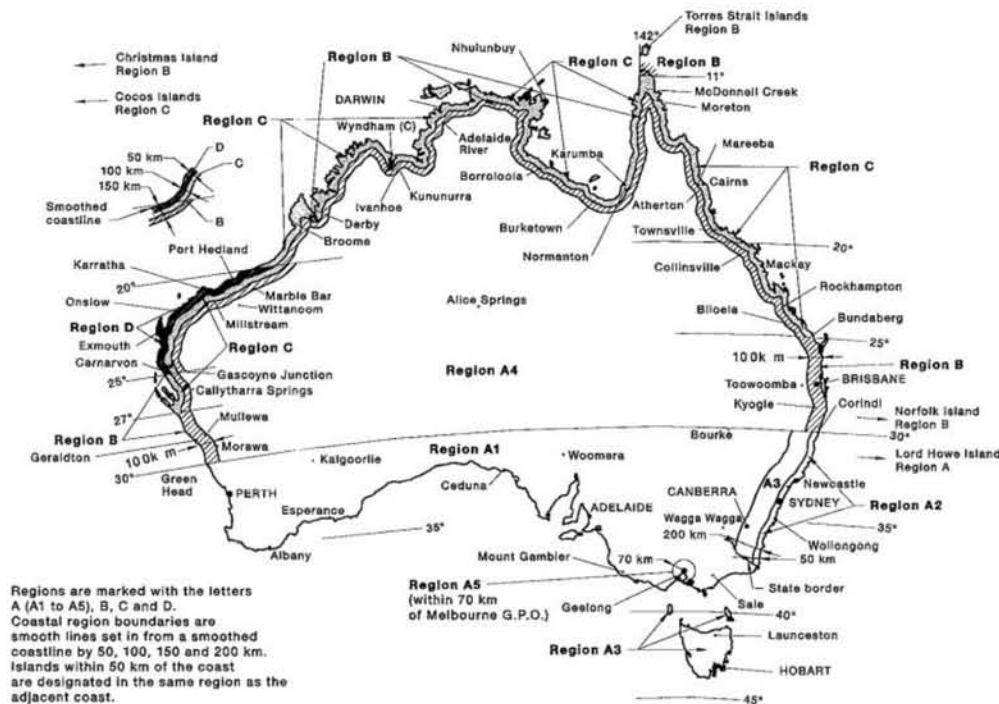


FIGURE 3.1(A) WIND REGIONS

Region Definition:

Wind regions are pre-defined for all of Australia by the Australian Standard 1170.2. The Wind Region is an independent factor of surrounding topography or buildings.

- Most of Australia is designated Region A which indicates a Regional Ultimate Basic Wind Velocity of 45m/s.
- Some areas are designated Region B (57m/s). Local authorities will advise if this applies in your area.
- Regions C areas (66m/s) are generally referred to as Cyclonic and are generally limited to northern coastal areas. Most Region C zones end 100km inland.
- Region D (80m/s) Australia's worst Cyclonic Region between Carnarvon and Pardoo in Western Australia.

Determine the Terrain Category

You will need to determine the terrain category that is most applicable to the installation.

- Terrain Category 1 (TC1) – very exposed open terrain with few or no obstructions and enclosed, limited-sized water surface at serviceability and ultimate wind speeds in all wind regions, e.g. flat, treeless, poorly grassed plains; rivers, canals and lakes; and enclosed bays extending less than 10km in the wind direction.
- Terrain Category 1.5 (TC1.5) - open water surfaces subjected to shoaling waves at serviceability and ultimate wind speeds in all wind regions, e.g. near –shore ocean water; larger unenclosed bays on seas and oceans; lakes; and enclosed bays extending greater than 10km in the wind direction. The terrain height multipliers for this terrain category shall be obtained by the linear interpolation between the values for the TC1 and TC2.
- Terrain Category 2 (TC2) – open terrain, including grassland, with well-scattered obstructions having heights generally from 1.5m to 5m, with no more than two obstructions per hectare, e.g. farmland and cleared subdivisions with isolated trees and uncut grass.
- Terrain Category 2.5 (TC2.5) – terrain with a few trees or isolated obstructions. This category is intermediate between TC2 and TC3 and represents the terrain in developing outer urban areas scattered houses, or larger acreage development with fewer than ten buildings per hectare. The terrain-height multipliers for this terrain category shall be obtained by linear interpolation between the values for the TC2 and TC3.
- Terrain Category 3 (TC3) – terrain with numerous closely spaced obstruction having heights generally from 3m to 10m. The minimum density of obstructions shall be at least the equivalent of 10 house sizes obstructions per hectare, e.g. suburban housing or light industrial estates.
- Terrain Category 4 (TC4) – terrain with numerous larger, high(10m to 30m tall) and closely-spaced constructions, such as large city centers and well-developed industrial complexes.

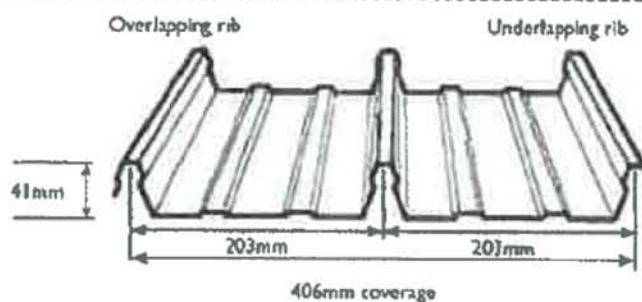
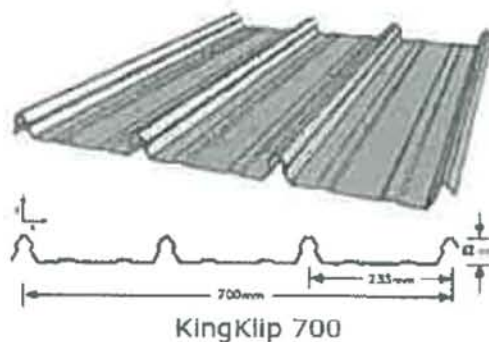
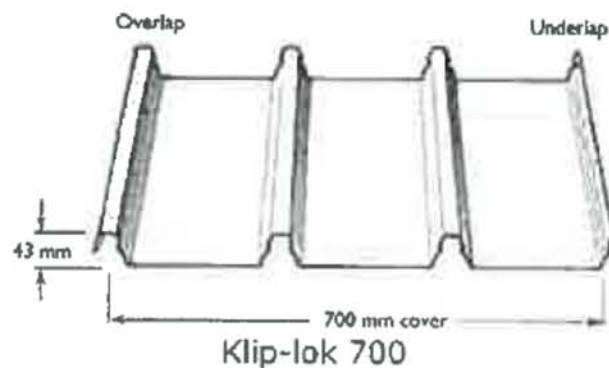
Note: In this installation manual we have used terrain category 3, if it is outside of this please refer to the accreditation letter.

Determine the type of concealed roof

The best way to identify the type of concealed roof installed is to check the label normally located underneath the roofing sheet.

Otherwise, you can contact the builder or check the building plan to find out the exact type of the roofing sheet.

WARNING! THE USE OF THE KLIP-LOK TYPE BRACKET IS NOT ACCREDITED ON ANY OTHER ROOF TYPES THAN THE THREE LISTED BELOW.



Determine the height of your installation site

This document provides sufficient information for the Titan Solar Klip-lok interface installation up to 20 meter height. If your installation site is more than 20 meters please contact Titan Solar to obtain additional engineering certificate to support your installation.

Determine the roof slope

The Titan Solar Klip-Lok interface can be used for roof slope up to 60 degrees. Please verify that the Installation site roof slope is between 0 and 60 degrees.

Determine the maximum Klip-Lok interface spacing

- a) Direct mounting or using Tin roof hook (L – leg) and rails



- b) Using Adjustable Tilt System



SUMMARY- T.C.3 for Regions A, B, C

Roof Interface Bracket Spacing (mm) Across for PV – Triangle frame and Adjustable Tilting System

Fixing anywhere on the roofing sheet

Two Klip-Loks per frame

Design Data

KlipLok	Capacity kN
Lysaght406	0.40
Lysaght700	0.87
Fielders700	0.43



WIND REGION	A							
qu (K Pa)	0.65	0.80	0.75	0.84	0.84	1.02	0.90	1.10
hz	5m		10m		15m		20m	
Angle	≤15	≤30	≤15	≤30	≤15	≤30	≤15	≤30
KlipLok 406	560	460	490	430	430	360	410	330
KlipLok 700	1230	1000	1070	950	950	780	890	720
KingKlip 700	610	490	520	470	470	380	440	360
Force(KN/m)	0.70	0.87	0.81	0.91	0.91	1.11	0.98	1.19

WIND REGION	B							
qu (K Pa)	0.83	1.09	0.96	1.26	1.06	1.40	1.14	1.50
hz	5m		10m		15m		20m	
Angle	≤15	≤30	≤15	≤30	≤15	≤30	≤15	≤30
KlipLok 406	440	330	380	290	340	260	320	240
KlipLok 700	960	730	830	630	750	570	700	530
KingKlip 700	470	360	410	310	370	280	340	260
Force(KN/m)	0.90	1.18	1.04	1.37	1.15	1.52	1.24	1.63

WIND REGION	C							
qu (K Pa)	1.27	2.19	1.47	2.31	1.63	2.57	1.75	2.75
hz	5m		10m		15m		20m	
Angle	≤15	≤30	≤15	≤30	≤15	≤30	≤15	≤30
KlipLok 406	290	160	250	150	220	N/A	210	N/A
KlipLok 700	630	360	540	340	490	310	450	290
KingKlip 700	310	180	260	170	240	150	220	N/A
Force(KN/m)	1.38	2.37	1.59	2.50	1.77	2.78	1.90	2.98

1. Roof interface bracket spacing in the above table for panel length of 1.97m.
2. The table prepared based on GD Rail capacity and KlipLok bracket pull-out capacity.
3. These tables refer to using KlipLok type interface with Adjustable Tilt Leg using 2-M8 bolts for the connection and also with single Triangle frame using 2-M8 bolts for connection.
4. Maximum distance allowed from the end of the single Triangle frame base to fixing of the KlipLok bracket is 225mm.
5. The above mentioned spacing table is for Roof Interface Bracket Fixing including edge of the roof.
6. On purlin means that distance from the purlin to the KlipLok type bracket (center to center) is not more than 100mm.
7. Angle refers to tilt angle between roof and panels – not to horizontal.
8. For panels ranging in length 1580 to 1700mm increase spacings by 11.5%
9. For panels ranging in length 1700 to 1800mm increase spacings by 9.0%
10. For panels ranging in length 1800 to 1970mm adopt tabulated spacings

SUMMARY- T.C.3 for Regions A, B, C

Roof Interface Bracket Spacing (mm) Across for PV – Triangle frame and Adjustable Tilting System

Fixing on the purlin on the roofing sheet

Two Klip-Loks per frame

Design Data

KlipLok	Capacity kN
Lysaght406	1.37
Lysaght700	1.17
Fielders700	0.50



WIND REGION	A							
qu (K Pa)	0.65	0.80	0.75	0.84	0.84	1.02	0.90	1.10
hz	5m		10m		15m		20m	
Angle	≤15	≤30	≤15	≤30	≤15	≤30	≤15	≤30
KlipLok 406	1490	1430	1470	1430	1450	1230	1400	1140
KlipLok 700	1420	1340	1430	1280	1280	1050	1190	980
KingKlip 700	700	570	610	540	540	450	510	410
Force(KN/m)	0.70	0.87	0.81	0.91	0.91	1.11	0.98	1.19

WIND REGION	B							
qu (K Pa)	0.83	1.09	0.96	1.26	1.06	1.40	1.14	1.50
hz	5m		10m		15m		20m	
Angle	≤15	≤30	≤15	≤30	≤15	≤30	≤15	≤30
KlipLok 406	1520	1160	1310	1000	1190	900	1100	840
KlipLok 700	1300	990	1120	850	1010	770	940	710
KingKlip 700	550	420	480	360	430	320	400	300
Force(KN/m)	0.90	1.18	1.04	1.37	1.15	1.52	1.24	1.63

WIND REGION	C							
qu (K Pa)	1.27	2.19	1.47	2.31	1.63	2.57	1.75	2.75
hz	5m		10m		15m		20m	
Angle	≤15	≤30	≤15	≤30	≤15	≤30	≤15	≤30
KlipLok 406	990	570	860	540	770	490	720	450
KlipLok 700	850	490	730	460	660	420	610	390
KingKlip 700	360	210	310	190	280	170	260	160
Force(KN/m)	1.38	2.37	1.59	2.50	1.77	2.78	1.90	2.98

1. Roof interface bracket spacing in the above table for panel length of 1.97m.
2. The table prepared based on GD Rail capacity and KlipLok bracket pull-out capacity.
3. These tables refer to using KlipLok type interface with Adjustable Tilt Leg using 2-M8 bolts for the connection and also with single Triangle frame using 2-M8 bolts for connection.
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6. On purlin means that distance from the purlin to the KlipLok type bracket (center to center) is not more than 100mm.
7. Angle refers to tilt angle between roof and panels – not to horizontal.
8. For panels ranging in length 1580 to 1700mm increase spacings by 11.5%
9. For panels ranging in length 1700 to 1800mm increase spacings by 9.0%
10. For panels ranging in length 1800 to 1970mm adopt tabulated spacings

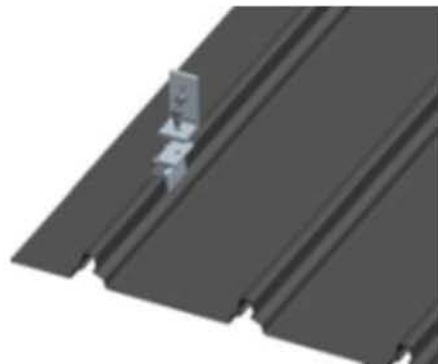
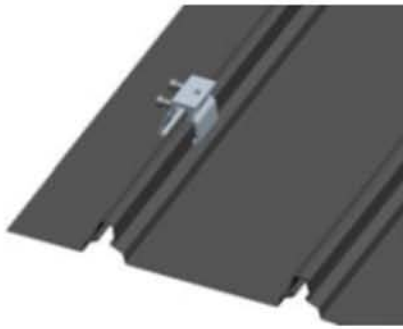
Component lists

Part Name	Picture	Part Name	Picture
Klip-Lok 700		Klip-Lok 406	
Tin Roof Hook (L leg)		Triangle Frame	
Adjustable Tilt Front Leg		Adjustable Tilt Rear Leg	
Inter Clamp		End Clamp	
Aluminium Rail		Rail Splice Kit	
Rail Clamp		Bolts & Nuts	

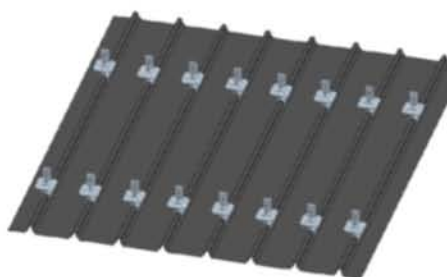
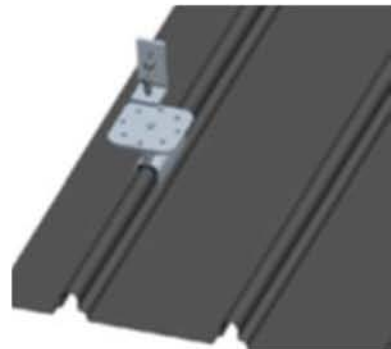
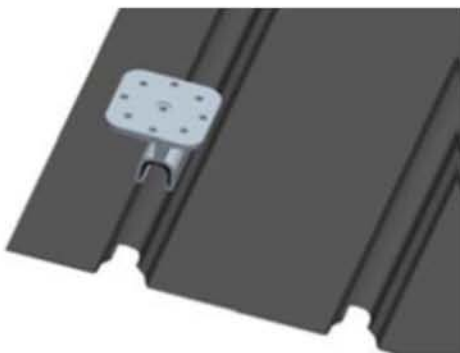
► Installation Steps

Connect KlipLok Interface to the roof tightly, and fix Tin roof hook on KlipLok using two M8 bolts.

a) KlipLok 406



b) KlipLoK 700



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