

Our Ref: 21170

January 2019

Fujian Antai New Energy Tech. Co., Ltd.

NEWAY Roof Mounting System for use within Australia - Type V Rail

Dome Consulting (Aust) Pty Ltd have carried out a structural design check of the Fujian Antai New Energy Tech. Co., Ltd. Adjustable Tilt Legs System for use in Australia. The design check has been based on the information provided by Mortec Industries

Australian Standards

AS 1170. 2011 – Structural Design Actions

Part 0 – General Principles

Part 1 – Permanent imposed and other actions

Part 2 – Wind Actions

Part 3 – Snow and Ice Actions

AS 1664.1 – Aluminium structures - Limit state design

Following design criteria has been used for the structural verification

Wind Region A, B, C, D

Wind Terrain Category 2 & 3

Wind average recurrence interval of 100 years

Maximum Building height 20 m

Max. Solar Panel Dimensions 2000×1000

The design and documentation has determined that all supporting componentry in the above mentioned documentation was found to be acceptable.

Refer to attached summary table for interface spacing.

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

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Structural Design Summary Table

Roof Mounting System with Type V Rail

For

Fujian Antai New Energy Tech. Co., Ltd.
in accordance to AS1170.2 2011 Amdt 5 - June 2017

Terrain Category 3

Tile Roof 5° < a < 10° TG.3 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1804	1626	1625	1314		1179	823	727	514
15 m	1722	1559	1556	1116		1006	704	627	445
20 m	1664	1422	1424	985		890	626	555	397

Tile Roof 10° < a < 20° TG.3 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1676	1436	1468	993		916	632	572	399
15 m	1605	1217	1247	851		782	542	491	345
20 m	1553	1074	1098	754		696	484	437	308

Tile Roof 20° < a < 30° TG.3 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1626	1544	1314	1081		823	684	514	431
15 m	1559	1328	1116	923		704	588	445	374
20 m	1422	1171	985	819		626	525	397	333

Tile Roof 30° < a < 60° TG.3 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1638	1495	1550	1168		1162	832	813	526
15 m	1600	1346	1436	1046		1037	719	701	454
20 m	1570	1235	1323	955		948	638	624	402

Tin Roof $5^\circ < a < 10^\circ$ TG.3 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1804	1626	1625	1477		1432	1307	1262	1155
15 m	1722	1559	1556	1419		1377	1258	1213	1115
20 m	1664	1509	1506	1375		1333	1223	1178	1083

Tin Roof $10^\circ < a < 20^\circ$ TG.3 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1676	1512	1518	1378		1345	1226	1187	1086
15 m	1605	1451	1457	1325		1293	1179	1144	1046
20 m	1553	1407	1413	1285		1255	1145	1109	1017

Tin Roof $20^\circ < a < 30^\circ$ TG.3 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1626	1544	1477	1407		1307	1249	1155	1106
15 m	1559	1483	1419	1352		1258	1203	1115	1066
20 m	1509	1436	1375	1311		1223	1168	1083	1038

Tin Roof $30^\circ < a < 60^\circ$ TG.3 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1638	1527	1550	1433		1426	1313	1299	1161
15 m	1576	1486	1509	1392		1385	1266	1250	1121
20 m	1570	1457	1480	1363		1356	1229	1213	1089

Notes

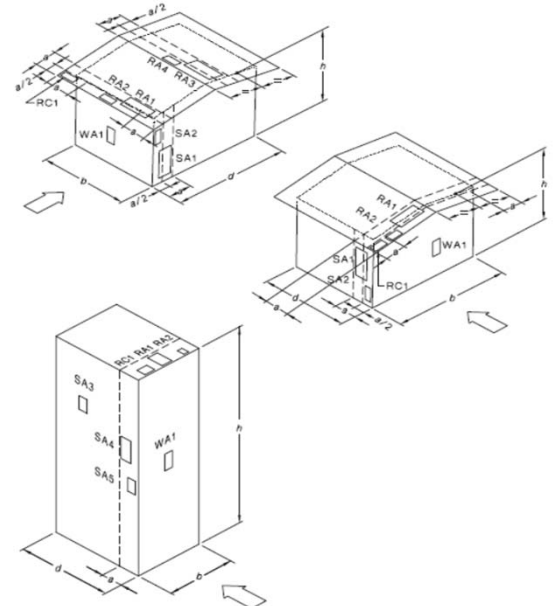
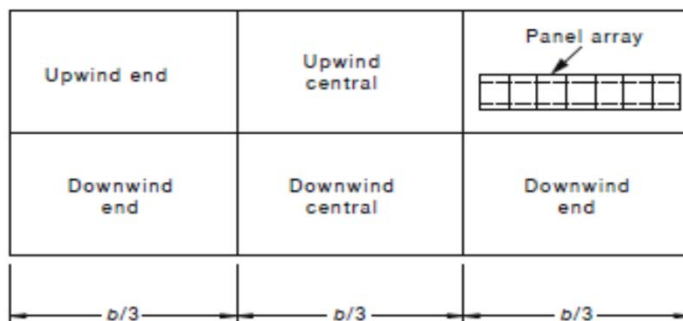
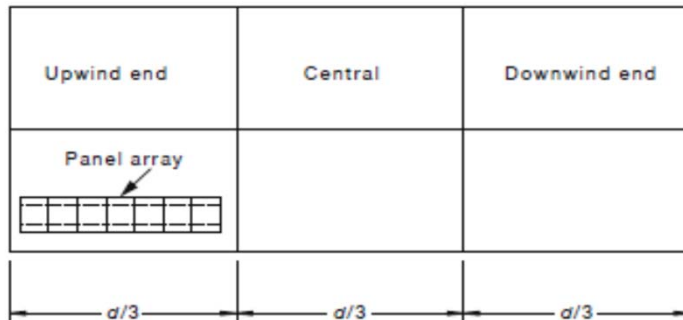
- * Minimum 35mm embedment length into timber
- * Please note that the screws provided with our products are designed for mounting in to wooden and metal structures. ANTAI Solar recommend using 13-11x50 RoofStars - Self Drilling Screws from ICONS® to fix to steel purlins.
- * Above spacing based on 1.9mm steel purlin or F17 Hardwood - Following reductions shall be applied

Material	Wind region C		Wind region C	
	Centre	Edge	Centre	Edge
0.55mm steel batten	22%	25%	30%	42%
0.75mm steel batten	n/a	n/a	10%	5%

- * Please consult ANTAI Solar for installing PV modules with a greater length than 2000mm.
- * For PV panels with length of 1700mm, increase the spacing by 15%.

Terrain Category 2 (TC2) Open terrain, including grassland, with well-scattered obstructions having heights generally from 1.5 m to 5 m, with no more than two obstructions per hectare, e.g. farmland and cleared subdivisions with isolated trees and uncut grass.

Terrain Category 3 (TC3) Terrain with numerous closely spaced obstructions having heights generally from 3 m to 10 m. The minimum density of obstructions shall be at least the equivalent of 10 house-size obstructions per hectare, e.g. suburban housing, light industrial estates or dense forests.



- NOTES:
- 1 The value of dimension a is the minimum of $0.2b$, $0.2d$ and h .
 - 2 The side ratio of any local pressure factor area on the roof shall not exceed 4.

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Structural Design Summary Table

Roof Mounting System with Type V Rail

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in accordance to AS1170.2 2011 Amdt 5 - June 2017

Terrain Category 2

Tile Roof $5^\circ < a < 10^\circ$ TG.2 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1600	1229	1232	859		774	548	486	348
15 m	1553	1100	1101	769		696	493	440	313
20 m	1492	1030	1031	725		655	464	414	296

Tile Roof $10^\circ < a < 20^\circ$ TG.2 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1375	934	955	658		609	423	385	270
15 m	1226	838	856	591		548	383	348	244
20 m	1150	788	804	556		516	359	328	230

Tile Roof $20^\circ < a < 30^\circ$ TG.2 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1229	1016	859	714		548	458	348	293
15 m	1100	911	769	641		493	414	313	264
20 m	1030	855	725	603		464	388	296	250

Tile Roof $30^\circ < a < 60^\circ$ TG.2 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1530	1118	1200	859		855	559	546	354
15 m	1424	1033	1110	787		782	504	491	319
20 m	1363	987	1060	740		733	475	463	302

Tin Roof 5° < a < 10° TG.2 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1600	1454	1454	1328		1290	1182	1141	1049
15 m	1553	1413	1413	1290		1255	1151	1112	1023
20 m	1527	1392	1390	1273		1235	1133	1095	1006

Tin Roof 10° < a < 20° TG.2 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1495	1357	1363	1241		1211	1107	1075	986
15 m	1454	1322	1325	1209		1182	1081	1049	960
20 m	1430	1302	1305	1191		1162	1064	1032	946

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Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
10 m	1454	1387	1328	1267		1182	1130	1049	1003
15 m	1413	1349	1290	1235		1151	1101	1023	977
20 m	1392	1328	1273	1215		1133	1084	1006	966

Tin Roof 30° < a < 60° TG.2 Type V Rail Roof Mounting System

For Up To 2000m 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
10 m	1535	1422	1442	1328		1321	1188	1173	1052
15 m	1509	1392	1416	1299		1293	1156	1144	1026
20 m	1492	1375	1398	1279		1272	1139	1127	1012

Notes

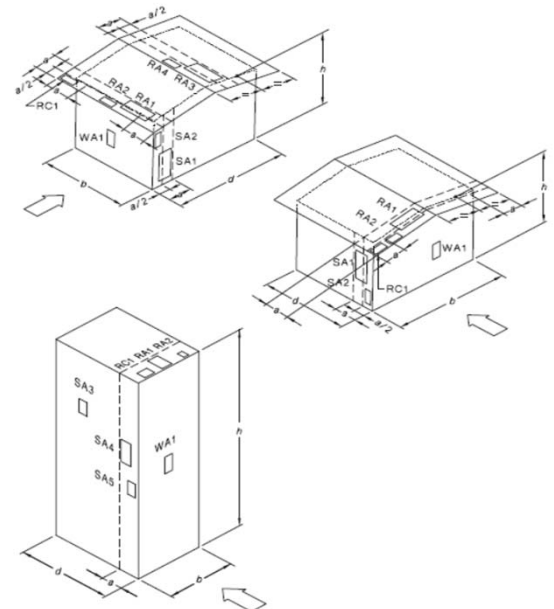
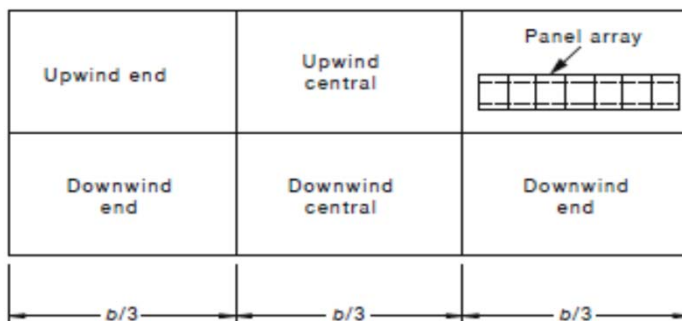
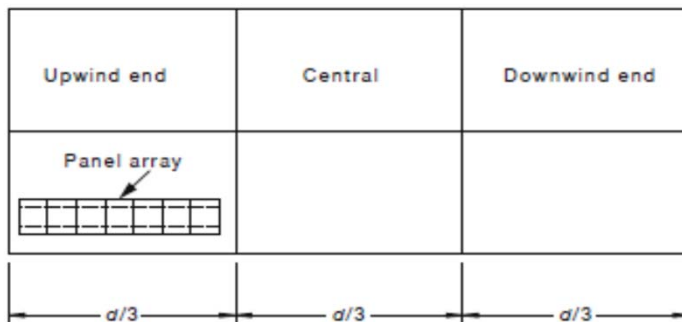
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