



EBULEN CONSULT

ANTAI GROUND MOUNTING KITS GENERAL ENGINEERING CERTIFICATE

Prepared for:

Antai Technology Co., Ltd.

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OVERVIEW

This engineering certificate is issued for the Antai Ground Mounting Kits based on information provided by Antai Technology Co., Ltd. The assessment is carried out using sound engineering methodologies. Assessment conditions and findings are given in the following sections.

AUSTRALIAN STANDARDS

- AS/NZS 1170.0:2002 – Structural design actions, Part 0: General principles
- AS/NZS 1170.1:2002 (R2016) – Structural design actions, Part 1: Permanent, imposed and other actions
- AS/NZS 1170.2:2021 – Structural design actions, Part 2: Wind actions
- AS/NZS 1664.1:1997 – Aluminium Structures
- AS 4100:2020 – Steel structures
- AS 2159:2009 – Piling – Design and Installation

ASSESSMENT CONDITIONS

The design checks have been based on the information and parameters provided by Antai Technology Co., Ltd., as listed below.

- Antai Ground Mounting Kits members:

Component Description	Part No.	Material
Racking Frame Top Beam	TYN188A	AL6005-T6
Racking Frame Bracing	NW019	AL6005-T6
Rail	CG001	AL6005-T6
Racking Frame Post	JZZ40	Q355B
Rail Clamp	CG002, TYN65	AL6005-T6
Connection for Post & Top Beam	NW039	AL6005-T6
Connection for Post & Bracing	TYN-346	AL6005-T6
Connection for Bracing & Top Beam	TYN-347	AL6005-T6

- Design Parameters:
 - Frama pitches = 20°, 25°, 30°.
 - Importance Level = 1
 - Design Life = 25 years
 - Annual Probability of Exceedance = 1:100
 - Wind regions A, B1 & B2.
 - Terrain Category = 2
 - Mt & Ms = 1.0
 - Self-weight of Solar Panels = 15kg/m²
 - Maximum Solar Panel Length = 2.3m

- Pile Foundation Types:
 - Driven steel piles
 - Pre-drilling (300mm diameter, full depth of pile embedment, backfilled with 5% stabilised sand)
- Ground Types:
 - Maximum of 200mm topsoil/organic top layer
 - Cohesive Soil: Firm to Stiff Clays, Very Stiff to Hard Clays
 - Non-cohesive Soil: Medium to Dense Sands, Compact Sands
 - Refer Table.1 for detailed soil design parameters adopted in this certificate.
- Services Near Proposed Antai Ground Mounting Kits Location:
 - Presence of any services (electrical, water, etc.) within the plan area of future proposed ground mounting system has not been considered in this certificate.
 - The installer/contractor is responsible for verifying services, conducting appropriate clash detection and liaising with service providers if applicable.
 - Construction of services trenches in close proximity (within 1500mm from piles of ground mounting system) will require a project specific design.
- Corrosivity Conditions:
 - The installer/contractor is responsible for verifying if project site conditions are suitable for the proposed ground mounting system installation in terms of corrosivity and durability.

Table 1 – Soil Design Parameters

Parameter	Values Adopted
Strength Reduction Factor	0.5
Cohesion of Firm to Stiff Clays	50kPa
Cohesion of Very Stiff to Hard Clays	100kPa
Depth of Soil Ignored	200mm
Diameter of Predrilled Piles	300mm
Angle of Internal Friction of Clays	10°
Angle of Internal Friction of Medium to Dense Sands	35°
Angle of Internal Friction of Compact Sands	40°

INSTALLATION RECOMMENDATIONS

Our recommendations for installation are listed based on the above-mentioned specifications.

Table 2 – Installation Guides

Region A Maximum Array Frame Spacing and Footing Options			
Tilt Angle (°)	20	25	30
Regional Wind Speed (m/s)	41		
Spacing (m)	3.6	3.3	3.3
Max Rail Overhang (m)	0.8	0.8	0.8
Max Vertical Upwards Reaction (kN)	14.8	14.95	14.23
Max Vertical Downwards Reaction (kN)	11.95	10.76	10.23
Max Horizontal Reaction (kN)	5.94	6.70	8.45
Max Moment at GL (kNm)	9.04	9.50	12.18
	Driven Post Minimum Embedment Depth (m)		
Firm to Stiff Clays	2.1	2.1	2.1
Stiff to Hard Clays	1.8	1.8	1.9
Medium Dense Sand	NA	NA	NA
Compact Sand	NA	NA	NA
	300mm Diameter Concrete Piers Minimum Embedment Depth (m)		
Firm to Stiff Clays	1.4	1.4	1.4
Stiff to Hard Clays	1.1	1.1	1.1
Medium Dense Sand	2.1	2.1	2.1
Compact Sand	1.8	1.8	1.8

Table 3 – Installation Guides

Region B1 & B2 Maximum Array Frame Spacing and Footing Options			
Tilt Angle (°)	20	25	30
Regional Wind Speed (m/s)	48		
Spacing (m)	2.5	2.3	2.3
Max Rail Overhang (m)	0.7	0.7	0.7
Max Vertical Upwards Reaction (kN)	14.1	14.35	13.59
Max Vertical Downwards Reaction (kN)	13.7	12.37	11.78
Max Horizontal Reaction (kN)	6.25	7.04	8.9
Max Moment at GL (kNm)	9.28	9.84	12.65
	Driven Post Minimum Embedment Depth (m)		
Firm to Stiff Clays	2.3	2.3	2.4
Stiff to Hard Clays	2.0	2.0	2.1
Medium Dense Sand	NA	NA	NA
Compact Sand	NA	NA	NA
	300mm Diameter Concrete Piers Minimum Embedment Depth (m)		
Firm to Stiff Clays	1.6	1.6	1.7
Stiff to Hard Clays	1.3	1.3	1.4
Medium Dense Sand	2.3	2.3	2.4
Compact Sand	2.0	2.0	2.1

IMPORTANT NOTES

- ***This assessment only covers the Fix-tilted Double Brace Antai Ground Mounting Kits and its driven pile or concrete pile footing based on assumed geotechnical parameters. This assessment does not include the solar PV panel or specific site geotechnical conditions.***
- ***On site tests should be conducted for the geotechnical capacity of the driven post.***
- ***Construction is to be carried out strictly in accordance with the manufacturer's instruction manual.***

Certified by:



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APPENDIX A – ANTAI GROUND MOUNTING KITS DESIGN

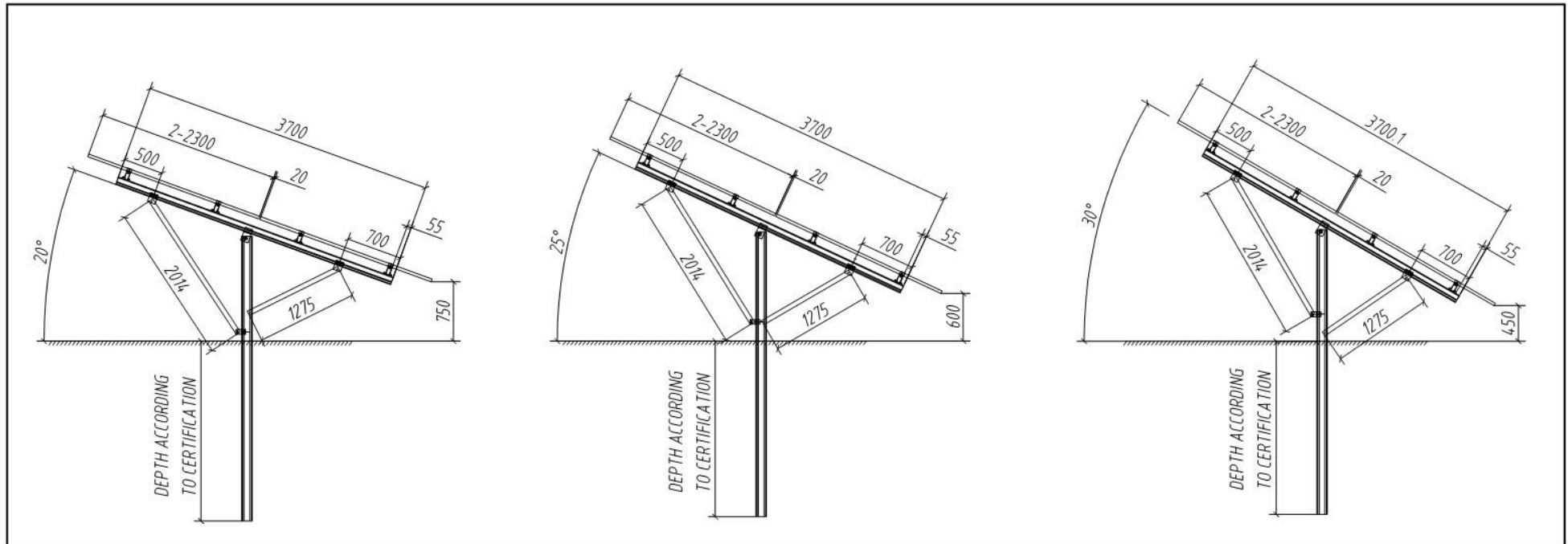


Figure A1 – Antai Ground Mounting Kits Elevation