



GRACE SOLAR

The Leader of PV Mounting System



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XIAMEN GRACE SOLAR TECHNOLOGY CO.,LTD.

About Grace Solar

The Leader of PV Mounting System

Xiamen Grace Solar Technology Co.,Ltd. is a high-tech enterprise in the field of solar PV with leading technology and excellent services. Specializing in solar PV products, Grace Solar members devote to research and develop, manufacture and market the steadiest, most trustable and cost-efficient solar mounting system solutions. As one of the largest PV solar products exporter in China, the pioneer Grace Solar products have been installed in more than 100 countries and regions since the foundation.

RESEARCH AND DEVELOPMENT

Grace Solar insist Profession and Innovation on products research and development, offering good guarantee to customers with Profession, and cultivating better value with Innovation.

Grace Solar set up the international and professional Research and Development team with the oversea educated leader, emphasizing elite personnel and advanced equipment application, which keep our design and performance taking road of PV solar. Grace Solar acquire Intellectual Property and software Copyrights protect for high-tech products including Ground Mounting System, Roof Mounting System, and the Micro-Inverter.

MANAGEMENT CONCEPTS

Grace Solar bring forward the standardized and internationalized management concept at the beginning of establishment, positively implementing ISO quality system in all phases of management and apply APQP, FMEA, CP Control Plan, MSA, SPC five rools in the stages of R&D, manufacturing, marketing and service. Furthermore, Grace Solar take importance to international authority certification for the products, actively studying with international and domestic certification institutions such as UL, TUV, CE, CQC, SAA, AS/NZS 1170 and Golden Sun.

SERVICE NETWORKS

Due to long term fast feedbacks for reliable qualified products and services, Grace Solar win trust from worldwide System Integration Company, installers and distributors. Cooperating with several strong facilitators in different areas, Grace Solar create global service networks to offer quick and efficient services.



Catalogue



PITCHED ROOF RACKING SYSTEM 01



FLAT ROOF RACKING SYSTEM 17



BALLASTED MOUNTING SYSTEM 23



UB-GROUND MOUNTING SYSTEM 25



PILE-GROUND MOUNTING SYSTEM 29



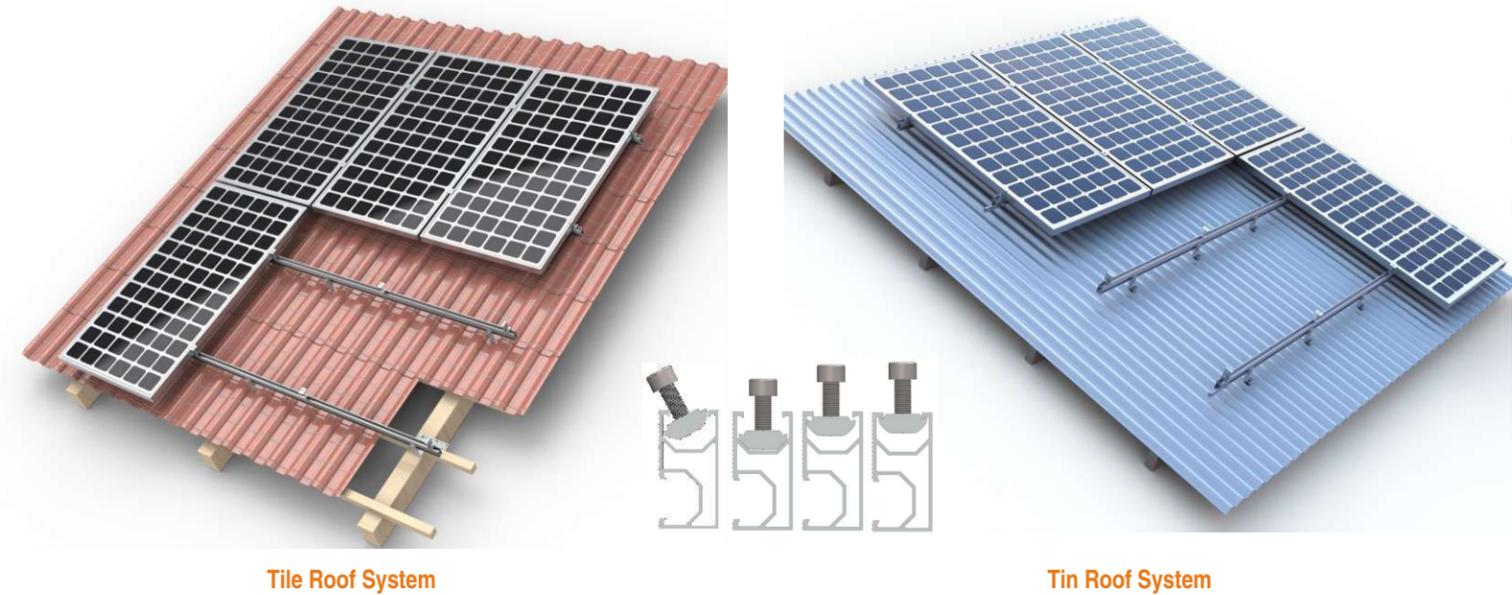
AI-GROUND MOUNTING SYSTEM 27



POLE MOUNTING SYSTEM 35



GROUND SCREWS 39



Tile Roof System

Tin Roof System

PITCHED ROOF RACKING SYSTEM



Introduce

GS Pitched Roof Racking System designs with great flexibility both for commercial and residential roof solar system. it is suitable for installing framed and frameless modules flushed to the pitched roof. GS series product have the innovated design of GD Rail and D module make the installation more easily and quickly. High pre-assembly parts and customized solution to save your install time and money. Grace Solar have the excellent engineer team and quality management system to provide the perfect service. Grace Solar, your best choice.

Benefits

EasInstallationy

D-module can be put into GD Rail from any position. so the parts can be pre-assembled on factory to save your install time on site.

Flexibility and Compatible

GD Rail and its accessories can be installed with the most solar panels on the difference condition.

Safety and Reliability

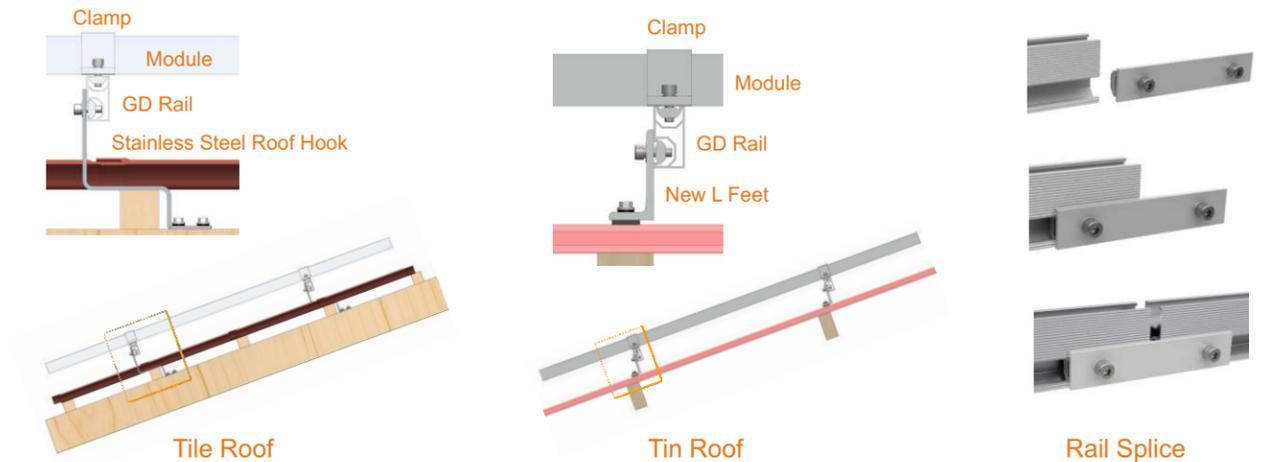
The racking systems can stand up to the extreme weather complied with the AS/NZS 1170 and other international structure load standards by skilled engineers. The main support components have also been tested to guarantee its structure and load-carrying capacity.

Technical Information

Install Site	Pitched Roof
Tilt Angle	Flushed with the roof, up to 60deg
Building Height	up to 20m
Max Wind Speed	up to 60m/s
Snow Load	up to 1.4KN/m ²
Standards	AS/NZS 1170 & DIN 1055 & Other
Material	Aluminum alloy & Stainless steel
Color	Natural
Anti-corrosive	Anodized
Warranty	Ten years warranty
Duration	More than 20 years

COMPONENTS

System Overview



Tile Roof

Tin Roof

Rail Splice

Rail

Item No.	Description
Standard	
GS-DR-2560	GD Rail with a standard length of 2560 mm Designed to mount 3 modules (width 808~826mm)
GS-DR-3405	GD Rail with a standard length of 3405 mm Designed to mount 4 modules (width 808~826mm)
GS-DR-4200	GD Rail with a standard length of 4200 mm Designed to mount 4 modules (width 990~996mm)
Customized Length	
GS-DR-	GD Rail with a customized length
GS-HR-	GH Rail with a customized length -Have top and bottom channel
GS-DR-SP	GD Rail splice kit



GS-DR



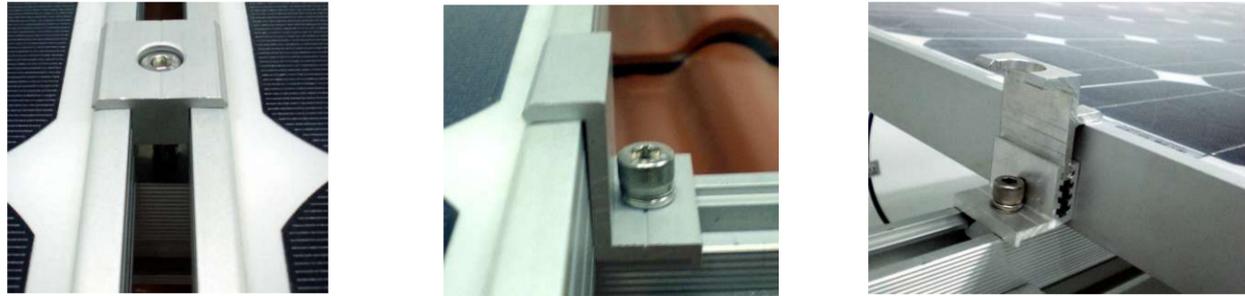
GS-HR



GS-DR-SP

COMPONENTS

Framed Module Clamp



Item No.	Description
Inter Clamp Kit	
GS-IC-F30	Grasol Inter Clamp Kit 30mm
GS-IC-F35	Grasol Inter Clamp Kit 35mm
GS-IC-F40	Grasol Inter Clamp Kit 40mm
GS-IC-F46	Grasol Inter Clamp Kit 46mm
GS-IC-F50	Grasol Inter Clamp Kit 50mm
GS-IC-F57	Grasol Inter Clamp Kit 57mm
End Clamp Kit	
GS-EC-F30	Grasol End Clamp Kit 30mm
GS-EC-F35	Grasol End Clamp Kit 35mm
GS-EC-F40	Grasol End Clamp Kit 40mm
GS-EC-F46	Grasol End Clamp Kit 46mm
GS-EC-F50	Grasol End Clamp Kit 50mm
GS-EC-F57	Grasol End Clamp Kit 57mm



GS-IC-F



GS-EC-F

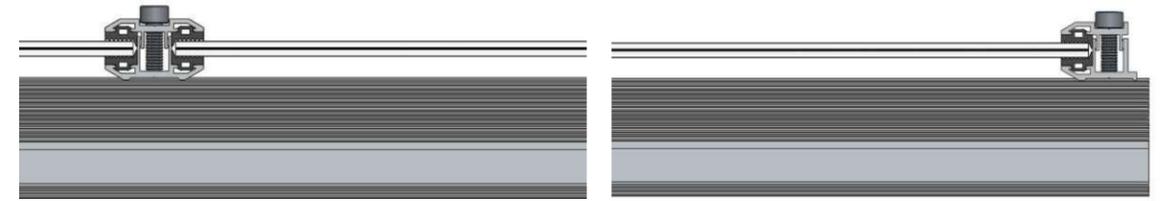


GS-EC-A40

GS-EC-A40 Grasol Adjustable End Clamp Kit
-For the module thickness from 25~60mm

COMPONENTS

Frameless Module Clamp



Item No.	Description
GS-IC-L80	Thin Film Module Inter Clamp
GS-EC-L80	Thin Film Module Inter Clamp
GS-RC-D	GD Rail Clamp



GS-IC-L80



GS-EC-L80



GS-RC-D



Rail Cross Connect

COMPONENTS

Roman Tile Roof Hook



GS-IK-01



GS-IK-06



GS-IK-12



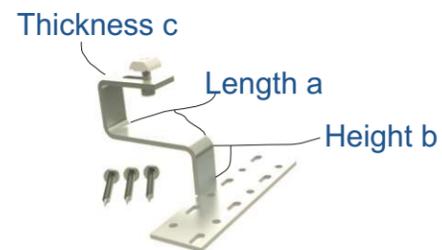
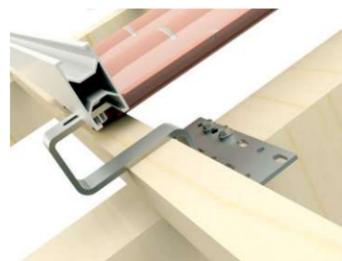
GS-IK-09



GS-IK-03



GS-IK-14



GS-IK-10

Item No.	Description	Weather Condition	Dimension (mm)		
			a	b	c
GS-IK-01	Stainless Steel Hook 1# Kit	Normal	101	46	5
GS-IK-03	Stainless Steel Hook 3# Kit	Normal	101	46	5
GS-IK-06	Stainless Steel Hook 6# Kit	Normal	101	46	5
GS-IK-09	Stainless Steel Hook 9# Kit	Heavy Snow Load	101	46	8
GS-IK-10	Stainless Steel Hook 10# Kit	Normal	101	46	5
GS-IK-12	Adjustable Stainless Steel Hook 12# Kit	Normal	101	38~50	5
GS-IK-14	Stainless Steel Hook 14# Kit	Normal	101	----	5

COMPONENTS

Flat Tile Roof Hook



GS-IK-02



GS-IK-02-A



GS-IK-02-B



Item No.	Description	Weather Condition	Dimension (mm)		
			a	b	c
GS-IK-02	Stainless Steel Hook 2#	Normal	190	30	5
GS-IK-02-A	Stainless Steel Hook 2# A type	Normal	190	30	5
GS-IK-02-B	Stainless Steel Hook 2# B type	Normal	190	30	5

Shingle Tile Roof Hook



GS-IK-04



GS-IK-04-A



GS-IK-04-B



Item No.	Description	Weather Condition	Dimension (mm)		
			Length	Width	Thickness
GS-IK-04	Stainless Steel Hook 4#	Normal	200	30	5
GS-IK-04-A	Stainless Steel Hook 4# A type	Normal	200	30	5
GS-IK-04-B	Stainless Steel Hook 4# B type	Normal	200	30	5

GS-IK-FR FB Rail Hook



GS-IK-FR

COMPONENTS

Tin Roof Hook



GS-IK-05

GS-IK-H01
GS-IK-H02
GS-IK-H03

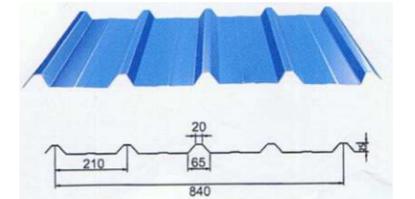
GS-IK-H04

GS-IK-H05
GS-IK-H06
GS-IK-H07

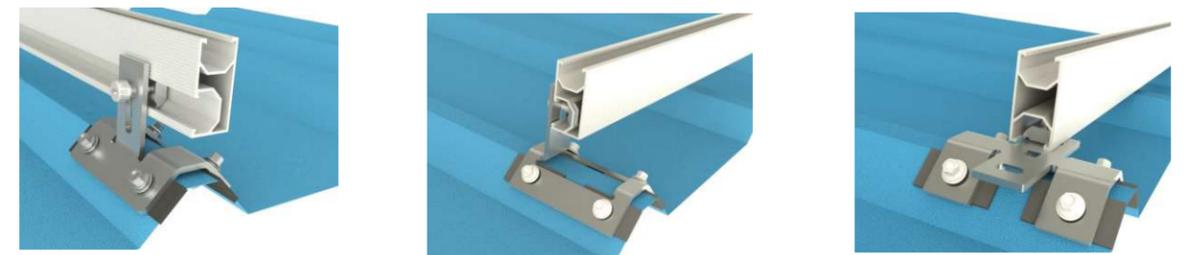
Item No.	Description	Accessories
GS-IK-05	Aluminum Tin Interface Kit 5#	Wood Screw M6.3x80
GS-IK-H01	Hanger Bolt Hook 1#	Hanger bolt M10x200
GS-IK-H02	Hanger Bolt Hook 2#	Hanger bolt M12x200
GS-IK-H03	Hanger Bolt Hook 3#	Hanger bolt M12x300
GS-IK-H04	Hanger Bolt Hook 4#	Hanger bolt M10x200 & L Feet
GS-IK-H05	Hanger Bolt Hook 5#	Hanger bolt M10x200
GS-IK-H06	Hanger Bolt Hook 6#	Hanger bolt M12x200
GS-IK-H07	Hanger Bolt Hook 7#	Hanger bolt M12x300

COMPONENTS

Trapezoid Metal Roof Hook



Standard Trapezoid Roof



Parallel

Vertical

Both



GS-IK-07



GS-IK-07-A



GS-IK-07-B

Item No.	Description
GS-IK-07	Stainless Steel Hook 7#
GS-IK-07-A	Stainless Steel Hook 7# A type
GS-IK-07-B	Stainless Steel Hook 7# B type

Note: Standard product is just fitted with the trapezoid roof as right figure shown other size must consider the mould cost

COMPONENTS

Standing Seam Roof Hook



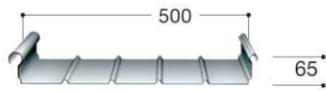
Butler-roof



GS-IK-S01



GS-IK-S04



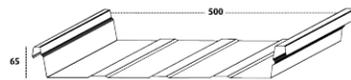
KalZip-roof



GS-IK-S02



GS-IK-S02-A



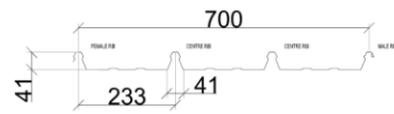
Zambelli Rib Roof Speed 500



GS-IK-S03



GS-IK-S03-A



Klip-lok 700



GS-IK-SK7



GS-IK-SK7-A

Item No.	Description	Roof Type
GS-IK-S01	Standing Seam Roof Hook 1#	Butler Roof
GS-IK-S04	Standing Seam Roof Hook 4#	Butler Roof
GS-IK-S02	Standing Seam Roof Hook 2#	KalZip- Bemo-roofs
GS-IK-S02-A	Standing Seam Roof Hook 2# A Type	KalZip- Bemo-roofs
GS-IK-S03	Standing Seam Roof Hook 3#	Zambelli RibRoof Speed 500
GS-IK-S03-A	Standing Seam Roof Hook 3# A Type	Zambelli RibRoof Speed 500
GS-IK-SK7	Standing Seam Roof Hook K7	Klip-Lok 700
GS-IK-SK7-A	Standing Seam Roof Hook K7 A Type	Klip-Lok 700

COMPONENTS

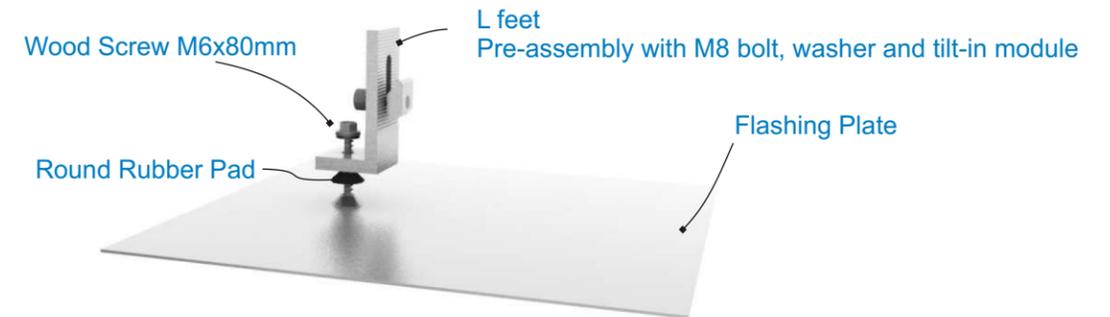
Flashing Hook



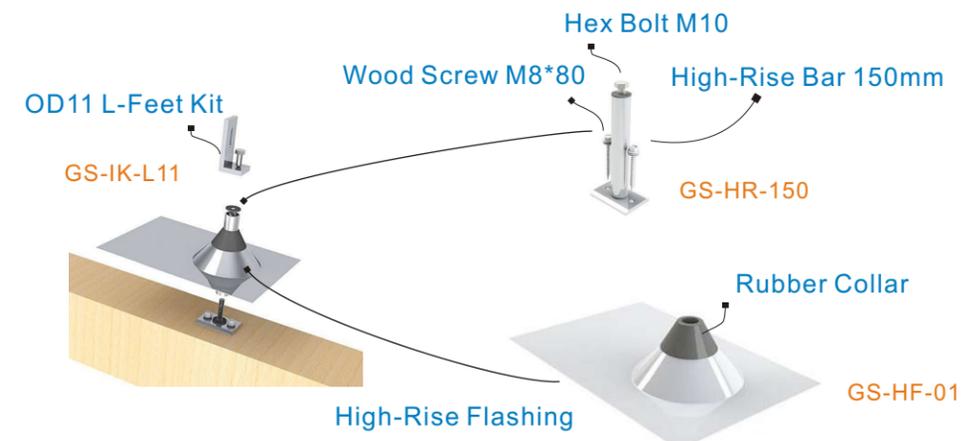
Features

- All-in-one waterproof flashing and mount to anchor photovoltaic racking systems
- Fit with in most composition and wood shingle roof systems
- Non-fading sealing collar
- Not for hot-mopped or built-up roofs
- Do not use paint or petroleum based products on rubber collars

Item No.	Description	Flashing Size
GS-FK-01	Shingle Roof Flashing Hook 1#	305x305x1mm
GS-FK-02	Shingle Roof Flashing Hook 2#	305x205x1mm



GS-HR-150	High-Rise Bar, Height is150mm -Height can be customized
GS-HF-01	High-Rise Flashing1#, 305x205x1mm
GS-IK-L11	OD11 L Feet Kit



COMPONENTS

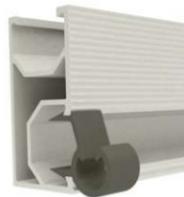
Accessories

GS-A-IC	Framed Module Inter Clamp
GS-A-EC30	Framed Module End Clamp 30
GS-A-EC35	Framed Module End Clamp 35
GS-A-EC40	Framed Module End Clamp 40
GS-A-EC46	Framed Module End Clamp 46
GS-A-EC50	Framed Module End Clamp 50
GS-A-EC57	Framed Module End Clamp 57



GS-A-DM	D-Module, -Width 20mm, M8 threaded hole
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GS-A-PC01	Plastic Cable Clip 1#
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GS-A-DRC	GD Rail Cap
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COMPONENTS

Fastener

Socket Head Screw-----Stainless Steel A2-70

GS-F-S820	Socket Head Screw M8x20
GS-F-S825	Socket Head Screw M8x25
GS-F-S828	Socket Head Screw M8x28
GS-F-S830	Socket Head Screw M8x30
GS-F-S835	Socket Head Screw M8x35
GS-F-S840	Socket Head Screw M8x40
GS-F-S845	Socket Head Screw M8x45
GS-F-S850	Socket Head Screw M8x50
GS-F-S855	Socket Head Screw M8x55
GS-F-S860	Socket Head Screw M8x60
GS-F-S865	Socket Head Screw M8x65



Anti-Thief Screw-----Stainless Steel A2-70

GS-F-AS820	Anti-Thief Screw M8x20
GS-F-AS825	Anti-Thief Screw M8x25
GS-F-AS828	Anti-Thief Screw M8x28
GS-F-AS830	Anti-Thief Screw M8x30
GS-F-AS835	Anti-Thief Screw M8x35
GS-F-AS840	Anti-Thief Screw M8x40
GS-F-AS845	Anti-Thief Screw M8x45
GS-F-AS850	Anti-Thief Screw M8x50
GS-F-AS855	Anti-Thief Screw M8x55
GS-F-AS860	Anti-Thief Screw M8x60
GS-F-AS865	Anti-Thief Screw M8x65



GS-F-AB08	Anti-Thief Screw Bit M8
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Nut-----Stainless Steel A2-70

GS-F-N108	Hexagon Nut, M8
GS-F-N208	Flange Nut With Locking Teeth, M8
GS-F-N210	Flange Nut With Locking Teeth, M10
GS-F-N212	Flange Nut With Locking Teeth, M12



COMPONENTS

Screws and Accessories

Washer-----Stainless Steel A2-70

GS-F-W108	Spring Washer, M8
GS-F-W208	Lock Washer, M8, OD13
GS-F-W308	Lock Washer, M8, OD18



Self-tapping Screw-----Stainless Steel 410

GS-F-T625	Self-tapping Screw, St6.3x25
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Wood Screw

GS-F-W680	Wood Screw, St6.3x80 With Pad
GS-F-W808	Wood Screw, M8x80 With Pad



Hanger Bolt

GS-F-H020	Hanger Bolt M10x200 -Stainless Steel A2-70
GS-F-H220	Hanger Bolt M12x200 -Stainless Steel A2-70
GS-F-H230	Hanger Bolt M12x300 -Stainless Steel A2-70



Hanger Bolt Assembly

GS-FA-H020	Hanger Bolt Assembly M10x200
GS-FA-H220	Hanger Bolt Assembly M12x200
GS-FA-H230	Hanger Bolt Assembly M12x300



PROJECT EXAMPLE

Framed Module Project



Solar Panels Size: 1580*808*46mm or 1585*826*46mm	Rail GS-DR-	Roof Hook GS-IK-01 (Tile) GS-IK-05 (Tin)	Inter Clamp GS-IC-F46	End Clamp GS-EC-F46	Rail Splice GS-DR-SP
Tile Roof 3 Panels	2560mm 2 pcs	6	4	4	2
Tile Roof 4 Panels	3405mm 2 pcs	6	6	4	2
Tin Roof 3 Panels	2560mm 2 pcs	10	4	4	2
Tin Roof 4 Panels	3405mm 2 pcs	10	6	4	2

Note: The above planning is applicable to the low snow loads and normal wind loads.

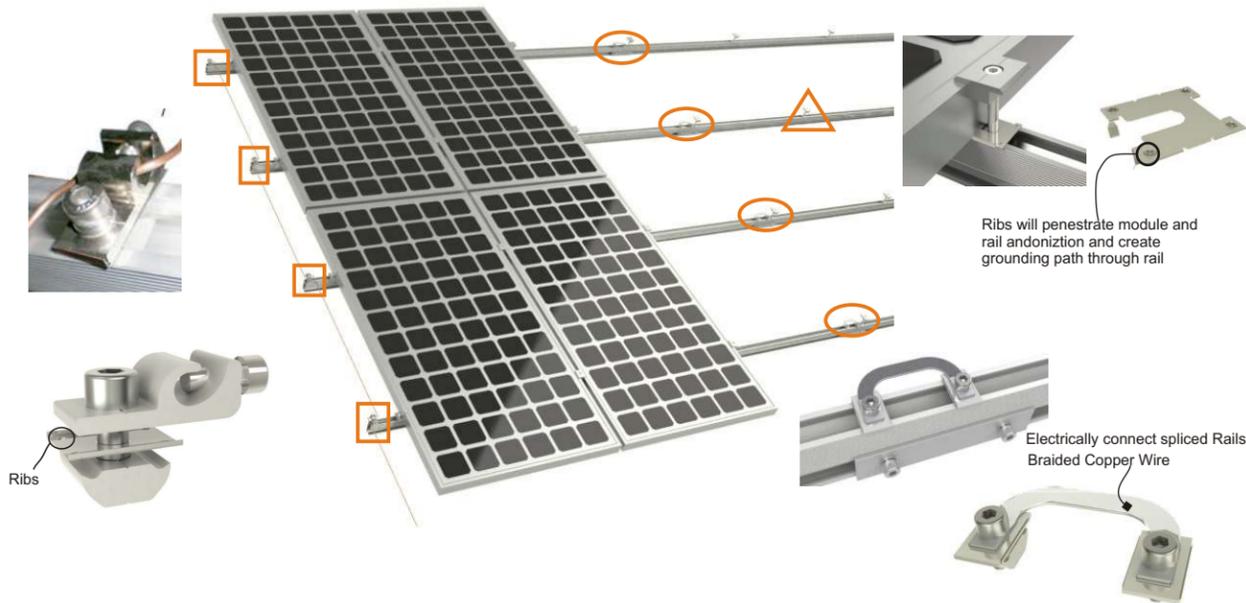
Frameless Module Project



Solar Panels Size: 1200*600*6.8mm	GS Rail Top Floor GS-DR-2560	GS Rail Bottom Floor GS-DR-2560	Thin Film Inter Clamp GS-IC-L80	Thin Film End Clamp GS-EC-L80	Rails Cross-Connector GS-RC-D	Roof Hook 1# GS-IK-01
Tile Roof 8 Panels Array 4x2	2560mm 4 pcs	2560mm 2 pcs	80mm 12 pcs	80mm 8 pcs	40mm 8 pcs	Thickness 5mm 6 pcs

Note: The above planning is applicable to the low snow loads and normal wind loads.

COMPONENTS



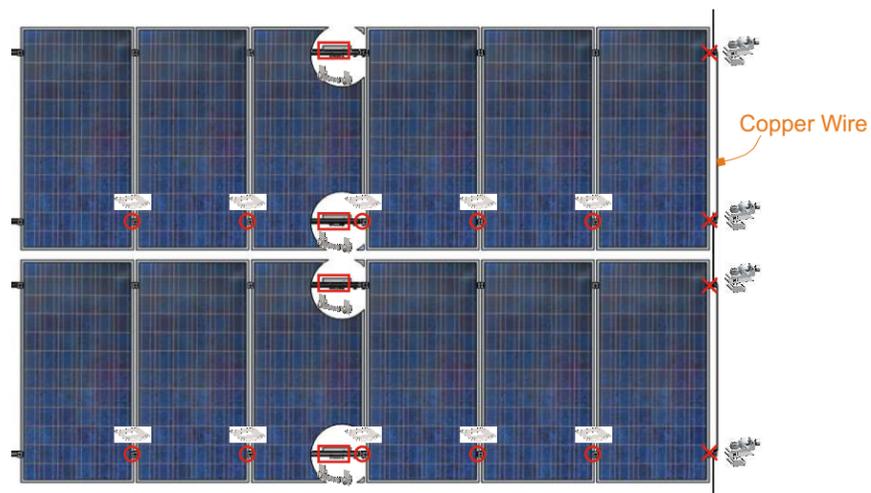
SOLAR ARRAY GROUNDING SYSTEM

Introduce

GS Grounding Product can be used to bond solar modules to the aluminum rails and the aluminum rails to ground, so that the entire solar system is grounded and safe; Grounding products include the stainless steel grounding clip and aluminum grounding lug, which are all designed to comply with the requirement of AS5033, UL467 for bonding or grounding systems.

Planning Layout

- Grounding Clip
- × Grounding Lug
- Bonding Jumper



Grounding Clip

Features

- Material: SUS304
- Special rib both surface to pierce the aluminum anodization
- Cooperated with Inter Clamp to install under the Rail

Item No.	Description
GS-G-GC	Grounding Clip



Grounding Lug

Features

- Connect system to equipment ground conductor
- High Pre-assembly

Item No.	Description
GS-G-GL	Grounding Lug

- Material: Al6005-T5 lay-in lug & Stainless Steel Clip & A2-70 bolt



Item No.	Description
GS-G-CGL	Copper Grounding Lug

- Material: Copper lay-in lug & Stainless Steel Clip & A2-70 bolt

Bonding Jumper

Features

- Material: Braided Copper Wire & Stainless Steel Clip & A2-70 bolt
- High Pre-assembly
- Electrically connect spliced Rails
- Excellent electric conductivity

Item No.	Description
GS-G-BJ	Bonding Jumper





Adjustable System



Fixed System

FLAT ROOF RACKING SYSTEM



◉ Introduce

GS Flat Roof Racking system is developed to mount the module tilt a certain angle on a flat roof or ground. You can have the fixed or adjustable angle solution as 10-15deg, 15-30deg and 30-60deg according to your exact requirement. GS series product have the innovated aluminum rail, D-module, clamps and legs which can be pre-assembled to make the installation easy and quick for saving your labor cost and time. Besides, the customized length of rail will not require onsite weld and cut, keeping the appearance entirety, structural strength and anti-corrosive performance.

◉ Benefits

❖ Easy Installation

D-module can be put into GD Rail from any position. so the parts can be pre-assembled on factory to save your install time on site.

❖ Flexibility and Compatible

GD Rail and its accessories can be installed with the most solar panels on the difference condition.

❖ Safety and Reliability

The racking systems can stand up to the extreme weather complied with the AS/NZS 1170 and other international structure load standards by skilled engineers. The main support components have also been tested to guarantee its structure and load-carrying capacity.

◉ Technical Information

Install Site	Low profile roof or open field
Tilt Angle	10deg ~ 60deg
Building Height	up to 20m
Max Wind Speed	up to 60m/s
Snow Load	up to 1.4KN/m ²
Standards	AS/NZS 1170 & DIN 1055 & Other
Material	Aluminum alloy & Stainless Steel
Color	Natural
Anti-corrosive	Anodized
Warranty	Ten years warranty
Duration	More than 20 years

COMPONENTS

Adjustable Tilt System



Legs



Item No.	Description	Leg Length
GS-AD-FL	AD Front Leg	———
GS-AD-RL10/15	AD Rear Leg 10/15 deg	240~360mm
GS-AD-RL15/30	AD Rear Leg 15/30 deg	340~680mm
GS-AD-RL30/60	AD Rear Leg 30/60 deg	700~1200mm

COMPONENTS

Adjustable 2# System



Legs



GS-AD2-FL

GS-AD2-RL

Item No.	Description
GS-AD2-FL	AD 2# Front Leg
GS-AD2-RL10/15	AD 2# Rear Leg 10/15
GS-AD2-RL15/30	AD 2# Rear Leg 15/30

Note: it need Wood Screw M8x80 for Wood Structure and Expand Bolt M8x80 for Concrete Foundation

COMPONENTS

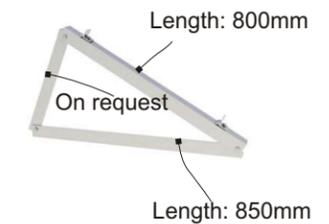
Fold Tri-Bracket System



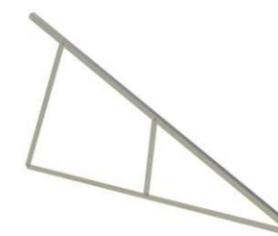
Fold Tri-Bracket



Tri-Bracket 1#



Tri-Bracket 2#



Tri-Bracket 3#



Accessories: DR Rail Clamp

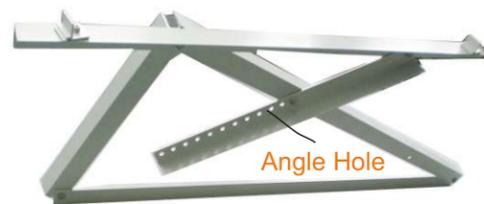
Item No.	Description	Module Length	Angle
GS-FT30-01	Triangle Bracket 1# 30deg	Less than 1.7meter	Fixed 30deg
GS-FT30-02	Triangle Bracket 2# 30deg	Less than 1.1meter	Fixed 30deg
GS-FT30-03	Triangle Bracket 3# 30deg	Less than 2meter	Fixed 30deg

Note: Other angle can be customized

GS-RC-01	DR Rail Clamp Kit
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COMPONENTS

AD Tri-Bracket 1# System



Step Adjust Tri-Bracket

Item No.	Description	Module Length	Angle
GS-AT-01	Step Adjust Tri-Bracket 1#	Less than 1.7meter	5~60deg, 5deg a step
GS-AT-02	Step Adjust Tri-Bracket 2#	Less than 1.1meter	5~60deg, 5deg a step

AD Tri-Bracket 2# System



Item No.	Description	Module Length	Angle
GS-AT2-10/15	Adjustable 2# Tri-Bracket 10/15	Less than 1.7meter	10~15deg
GS-AT2-15/30	Adjustable 2# Tri-Bracket 15/30	Less than 1.7meter	15~30deg
GS-AT3-10/15	Adjustable 3# Tri-Bracket 10/15	Less than 1.1meter	10~15deg
GS-AT3-15/30	Adjustable 3# Tri-Bracket 15/30	Less than 1.1meter	15~30deg

PROJECT EXAMPLE

ADJUSTABLE TILT SYSTEM



Solar Panels Size: 1580*808*46mm or 1585*826*46mm	Rail GS-DR-	Front Leg GS-AD-FL	Front Leg GS-AD-RL	Inter Clamp GS-IC-F46	End Clamp GS-EC-F46	Rail Splice GS-DR-SP
Adjustable 10/15 4 Panels install	3405mm 2 pcs	4	4	6	4	2
Adjustable 15/30 4 Panels install	3405mm 2 pcs	4	4	6	4	2
Adjustable 30/60 4 Panels install	3405mm 2 pcs	4	4	6	4	2

Fold Tri-Bracket System



Solar Panels Size: 1580*808*46mm or 1585*826*46mm	Rail GS-DR-	Tri-Bracket 1# GS-FT30-01	Rail Clamp GS-RC-01	Inter Clamp GS-IC-F46	End Clamp GS-EC-F46	Rail Splice GS-DR-SP
Fixed 30deg 3 Panels install	2560mm 2 pcs	2	4 pcs	4	4	2
Fixed 30deg 4 Panels install	3405mm 2 pcs	3	6 pcs	6	4	2



BALLASTED MOUNTING SYSTEM

Introduce

GS Ballasted Mounting System is a highly engineered solution that secures the array without damaging the flat roof. It is compatible with the usual framed modules and typically does not require roof penetrations. Made of lightweight and strong aluminum construction, the GS ballasted solution components are pre-assembled and pre-cut to prevent corrosion and save your installation time and labor cost.

Benefits

Easy Installation

D-module can be put into GD Rail from any position. so the parts can be pre-assembled on factory to save your install time on site.

Flexibility and Compatible

GD Rail and its accessories can be installed with the most solar panels on the difference condition.

Safety and Reliability

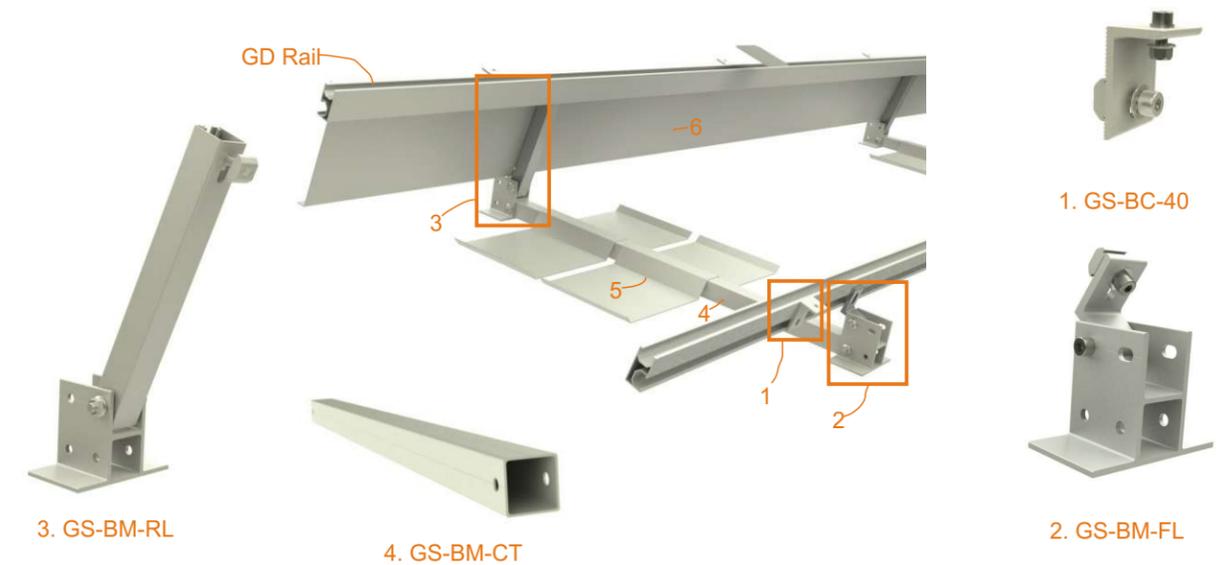
The racking systems can stand up to the extreme weather complied with the AS/NZS 1170 and other international structure load standards by skilled engineers. The main support components have also been tested to guarantee its structure and load-carrying capacity.

Technical Information

Install Site	Low profile roof or open field
Tilt Angle	5deg, 10deg, 15deg, 20deg
Building Height	up to 20m
Max Wind Speed	up to 60m/s
Snow Load	up to 1.4KN/m ²
Standards	AS/NZS 1170 & DIN 1055 & Other
Material	Aluminum alloy & Stainless Steel
Color	Natural
Anti-corrosive	Anodized
Warranty	Ten years warranty
Duration	More than 20 years

COMPONENTS

System Overview



Project Example

Solar Panels Size:	1580*808*46mm	Installation Site:	Flat Roof
Tilt Angle:	15 Deg	Wind Speed:	Normal
Unit Array:	3*1 (3 pcs panels)		

Components list

Item No.	Description	Qty
GS-DR-4780	GD Rail 4780mm	2pcs
GS-BC-40	Bottom Frame Clamp	12pcs
GS-BM-FL	BM Front Leg	3pcs
GS-BM-RL-265	BM Rear Leg 265mm	3pcs
GS-BM-CT-827	BM Connect Tube 827mm	3pcs
GS-BP-200	Ballasted Pan	6pcs
GS-WD01-2350	Wind Deflection Plate 2350mm	2pcs
GS-FA-BM-S08	BM Accessories, Bolt M8 kits	6pcs





Concrete Foundation 4x2



Ground Screw Foundation 4x3

UB GROUND MOUNTING SYSTEM



Introduce

GS UB-Ground Mounting System is applicable for the photovoltaic array system on the open fields. The steadiness and safety of this system is compatible with the structural mechanics and construction acts.

For different foundation solutions, such as concrete with pre-buried bolt, direct buried and ground screw, the system can be modified to install. Material used include hot galvanized steel and anodized aluminum alloy, with great anti-corrosive suitable for outdoor using.

Benefits

Easy Installation

Planning and machining in the factory saving your time and cost

Steady and Safety

Design and check the structure according to the structural mechanics and construction acts.

Excellent Duration

For Outdoor using, all the material selected with high class anti-corrosion protection.

Great Flexibility

The Ground Array can be planned from kilo-watt to mega-watt

Technical Information

Install Site	Open Field
Tilt Angle	10deg ~ 60deg
Building Height	up to 20m
Max Wind Speed	up to 60m/s
Snow Load	up to 1.4KN/m ²
Standards	AS/NZS 1170 & DIN 1055 & Other
Main Material	Aluminum alloy & Galvanized Steel
Color	Natural
Anti-corrosive	Anodized & Galvanized
Warranty	Ten years warranty
Duration	More than 20 years

COMPONENTS

Integrated Type Ground Mounting

Features

- Material and finish: Hot galvanized steel Q235
- The Leg welded to be integral reduce the install step
- Foundation option: Concrete Foundation



Concrete Foundation with Pre-buried Bolt



1. GS-CP-60



2. GS-AS-40/1820



3. GS-GM-FL985



4. GS-GM-BL1990

Item No.	Description.
GS-CP-60/	Cross Pipe OD60
GS-AS-40/1820	Angle Steel Brace 1820mm with accessory
GS-GM-FL985	Front Leg 985mm with U bolt
GS-GM-BL1990	Back Leg 1990mm with U bolt

Note: the above products is planned for the project example

Item No.	Description
GS-GM-SK	Angle Splice for cross pipe and GD Rail



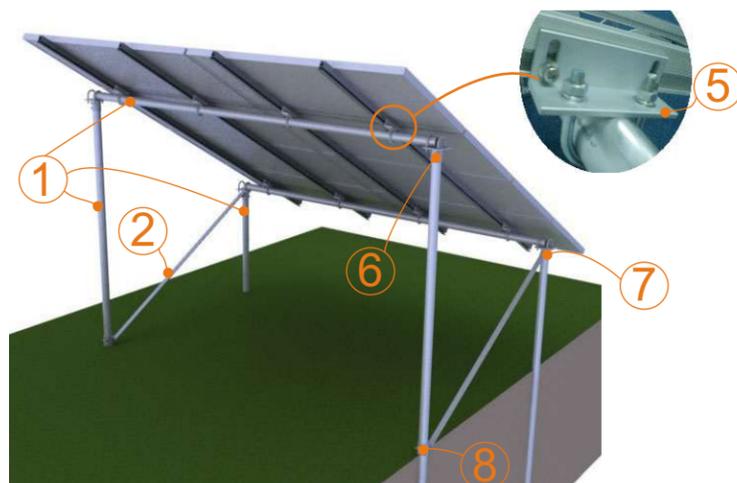
5. GS-GM-SK

COMPONENTS

Cap Type Ground Mounting

Features

- Material and finish: Hot galvanized steel Q235
- The steel cap is applied flexibly on various condition
- Foundation option: a. Concrete b. Ground Screw c. Directly Buried



Directly Buried



6. GS-GM-C01



7. GR-GM-C02



8. GS-GM-C03



9. GS-FA-UB60



Installation of Steel Cap 3#

Item No.	Description.
GS-GM-C01	Steel Cap 1# for Pipe OD60
GS-GM-C02	Steel Cap 2# for Pipe OD60
GS-GM-C03	Steel Cap 3# for Pipe OD60

GS-FA-UB60	U bolt kit M12x76, DACROMET
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Installation of Steel Cap 1#



Installation of Steel Cap 2#

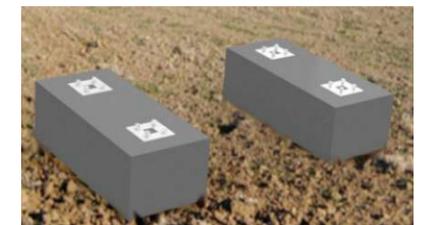
PROJECT EXAMPLE

Project Information

Solar Panels Size:	1580*808*46mm	Flood Height:	600mm
Tilt Angle:	30 Deg	Wind Speed:	Normal
Unit Array:	4*2 (8 pcs panels)	4*3 (12 pcs panels)	

Solution 1: Integrated Ground Mount

Product Item	Spec.	Qty	
		Array 4*2	Array 4*3
GS-DR-3405	3405mm	4pcs	6pcs
GS-IC-F46	46mm	12pcs	18pcs
GS-EC-F46	46mm	8pcs	12pcs
GR-GM-SK	50*6*140mm	8pcs	12pcs
GS-GM-FL985	985mm	2pcs	2pcs
GR-GM-BL1990	1990mm	2pcs	2pcs
GS-AS-40/1820	1820mm	2pcs	2pcs
GS-CP-60/3200	3200mm	2pcs	X
GS-CP-60/4800	4800mm	X	2pcs



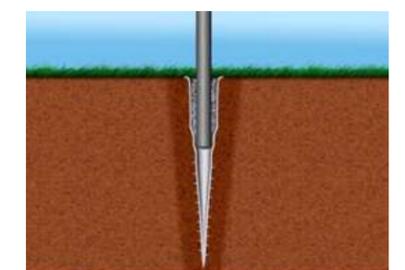
Concrete Foundation

Solution 2: Cap type Ground Mount

Product Item	Spec.	Qty	
		Array 4*2	Array 4*3
GS-R-3405	3405mm	4pcs	6pcs
GS-IC-F46	46mm	12pcs	18pcs
GS-EC-F46	46mm	8pcs	12pcs
GS-GM-SK	50*6*140mm	8pcs	12pcs
GS-GM-C01	1#	2pcs	2pcs
GS-GM-C02	2#	2pcs	2pcs
GS-GM-C03	3#	2pcs	2pcs
GS-FA-UB60	M12x76	8pcs	8pcs
GS-CP-60/1985	1985mm	2pcs	2pcs
GS-CP-60/2990	2990mm	2pcs	2pcs
GS-AS-40/1820	1820mm	2pcs	2pcs
GS-CP-60/3200	3200mm	2pcs	X
GS-CP-60/4800	4800mm	X	2pcs



Directly Buried



Ground Screw Foundation

Note: The above is suitable for the directly buried solution.

Foundation Option 2: Ground Screw

GS-N68-1000	OD68*1000	4pcs	4pcs
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Note: The front and back leg can be shorted 500mm.



PILE GROUND MOUNTING SYSTEM

◉ Introduce

GS Pile Ground System is applied for large commercial and utility PV systems on non-sandy ground, suitable for both framed and frameless module installation.

In GS Pile Ground System, Open Post can be pile into the ground 1-2 meters by pile machine quickly, then easily mounting the pre-assembled Al-Beam structure, B-Rail with clamps.

Our mission is to simplify your installation and ensure the structure safety. Grace Solar, your best choice.

◉ Benefits

❖ Easy Installation

Parts have been high pre-assembly on factory to save your installation time

❖ Safety and Reliability

Check and test the structure strictly to against the extreme weather condition

❖ Flexibility and Adjustable

Smart design reduce the difficulty of the installation on the most condition

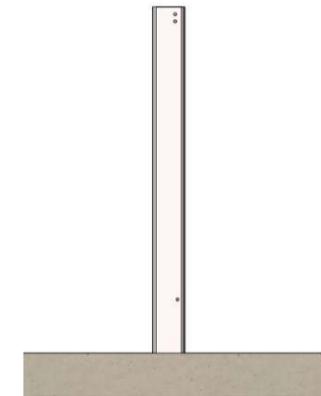
❖ 10 Years Warranty

Grace Solar provides a 10-years warranty for the material and structure

◉ Technical Information

Install Site	Open Field
Max Wind Speed	up to 60m/s
Snow Load	up to 1.4KN/m ²
Module Type	Framed or Frameless
Module Orientation	Portrait
Rail Material	Anodized Aluminum
Post Material	Hot-dip Galvanized Steel
Adjustability	Post Height Deviation: 10mm
	Post Angle Deviation: 2°
	Post Verticality Deviation: 2°
	Pile Driving Depth: 1000~2000mm
Soil Condition	Non-Sandy

INSTALLATION STEPS



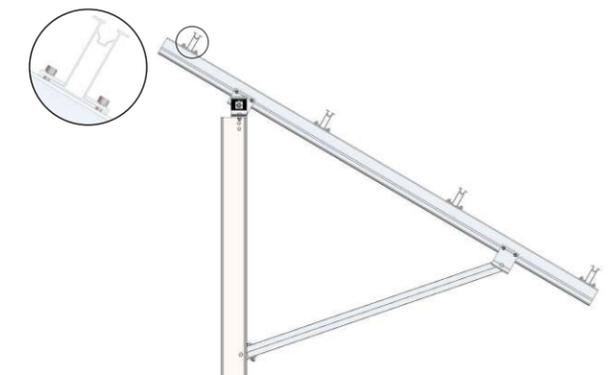
Step 1: Pile the Open Post by Pile Machine



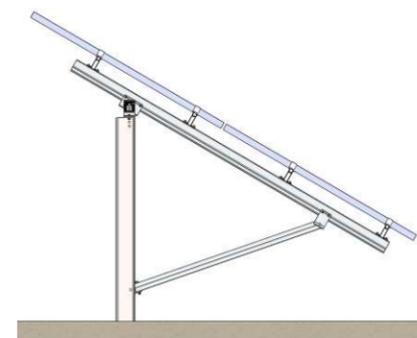
Step 2: Install and adjust the Top Cap



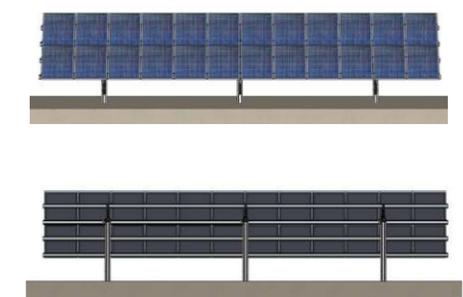
Step 3: Install the Assembly of Beam



Step 4: Install the B-Rail by Rail Clamp



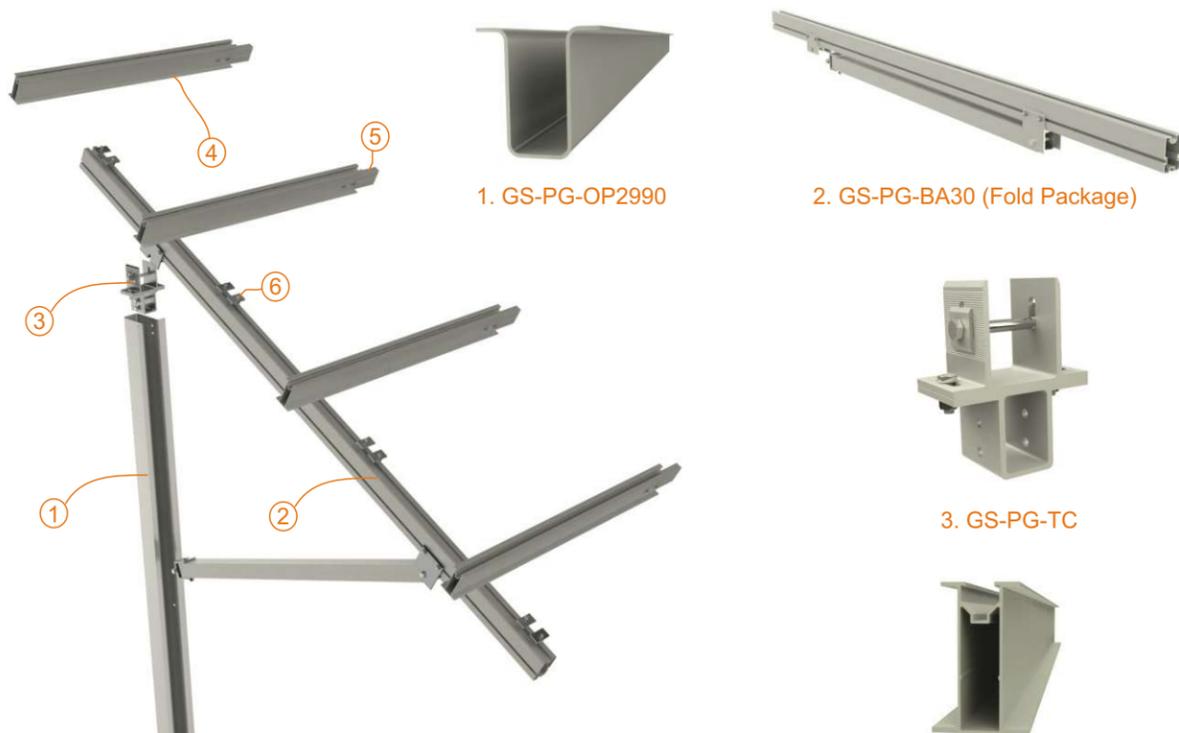
Step 5: Install the Modules



Finish

COMPONENTS

System Overview



1. GS-PG-OP2990

2. GS-PG-BA30 (Fold Package)



3. GS-PG-TC



4. GS-BR-4990



5. GS-BR-SP



6. GS-BR-C60

Item No.	Description
GS-PG-OP2950	Open Post 2950mm

Material: Q235 Steel

GS-PG-TC	Assembly of Top Cap
GS-PG-BA30	Assembly of Support Beam, 30deg -For Module length 1400~1600mm -High Pre-Assembly
GS-BR-4990	B-Rail 4990mm
GS-BR-SP	B-Rail Splice
GS-BR-C60	B-Rail Clamp

Material: Aluminum Alloy 6005-T5

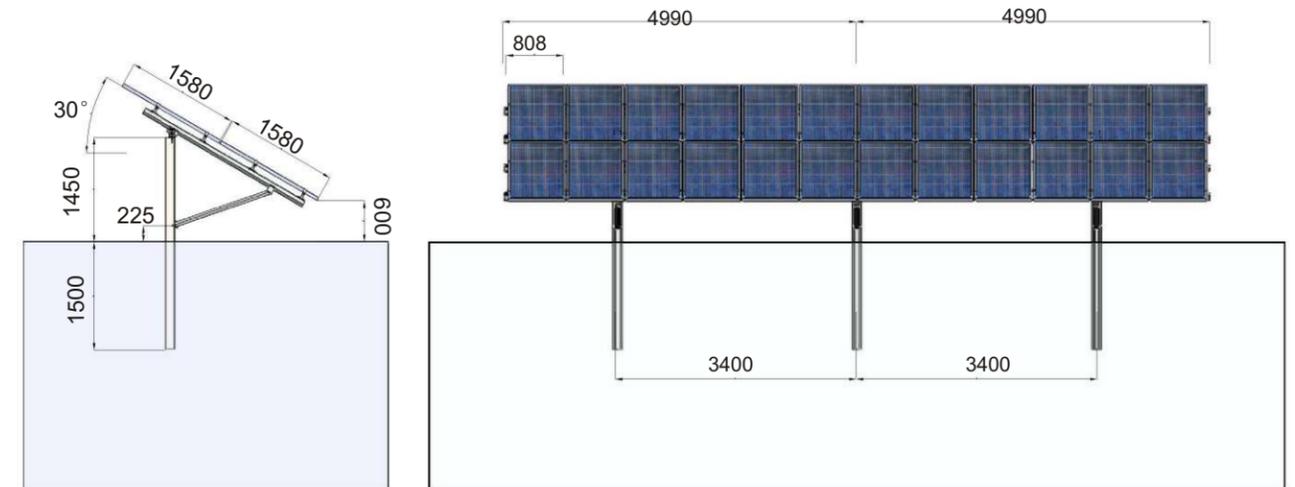
PROJECT EXAMPLE

Project Information

Solar Panels Size:	1580*808*46mm
Tilt Angle:	30 Deg
Module Orientation:	Portrait
Unit Array:	2*12 (24pcs panels)

Flood Height:	600mm
Wind Speed:	<45m/s
Soil Condition:	Non Sandy
Pile Height:	1500mm

2D Planning Drawing



Side View

Front View

Component List

Item	Description	Spec.	Qty
GS-BR-4990	B-Rail 4990	4990mm	8pcs
GS-BR-SP	B-Rail Splice	200mm	4pcs
GS-BR-C60	B-Rail Clamp	60mm	24pcs
GS-IC-F46	Inter Clamp Kit	46mm	44pcs
GS-EC-F46	End Clamp Kit	46mm	8pcs
GS-PG-BA30	Assembly of Support Beam, 30deg	30°	3pcs
GS-PG-TC	Aluminum Top Cap	80mm	3pcs
GS-PG-OP2950	Open Post 2950	2950mm	3pcs



AL-GROUND MOUNTING SYSTEM

Introduce

GS AL-Ground Mounting System is made of 100% aluminum to mount on concrete strip foundations or ground screws. It is featured with light weight, strong structure, and recyclable material.

In GS AL-Ground Mounting System, with pre-assembled Beam, the size of the legs and the B-Rail is manufactured in the factory avoid welding and cut on the spot, saving your time and cost.

Our mission is to simplify your installation and ensure the structure safety. Grace Solar, your best choice.

Benefits

Easy Installation

Parts have been high pre-assembly on factory to save your installation time

Safety and Reliability

Check and test the structure strictly to against the extreme weather condition

Flexibility and Adjustable

Smart design reduce the difficulty of the installation on the most condition

10 Years Warranty

Grace Solar provides a 10-years warranty for the material and structure

Technical Information

Install Site	Open Field
Max Wind Speed	up to 60m/s
Snow Load	up to 1.4KN/m ²
Module Type	Framed or Frameless
Module Orientation	Portrait
Main Material	Anodized Aluminum
Fasten Material	Stainless Steel
Foundation	Concrete With Pre-Buried Bolts
	Ground Screw

COMPONENTS

System Overview

Item No.	Description
GS-AG-BA-2600	Assembly of Support Beam, 2600mm -For 2xModule length 1400~1700mm -High Pre-Assembly
GS-AG-T-700	Front Leg, Square Tube, 700mm
GS-AG-T-1600	Back Leg, Square Tube, 1600mm
GS-AG-T-1814	Brace, Square Tube, 1814mm
GS-AG-B	Front and Bottom Base for AG



Purlin is the B-Rail.

PROJECT EXAMPLE

Project Information

Solar Panels Size:	1580*808*46mm	Flood Height:	600mm
Tilt Angle:	30 Deg	Wind Speed:	<60m/s
Module Orientation:	Portrait	Unit Array:	2*12 (24pcs panels)

Components List

Item	Description	Spec.	Qty
GS-BR-4990	B-Rail 4990	4990mm	8pcs
GS-BR-SP	B-Rail Splice	200mm	4pcs
GS-BR-C60	B-Rail Clamp	60mm	24pcs
GS-IC-F46	Inter Clamp Kit	46mm	44pcs
GS-EC-F46	End Clamp Kit	46mm	8pcs
GS-AG-BA-2600	Assembly of Support Beam, 2600mm	2600mm	3pcs
GS-AG-T-700	Front Leg, Square Tube, 700mm	700mm	3pcs
GS-AG-T-1600	Back Leg, Square Tube, 1600mm	1600mm	3pcs
GS-AG-T-1814	Brace, Square Tube, 1814mm	1814mm	3pcs
GS-AG-B	Front and Bottom Base for AG	160mm	3pcs



Detail Figure



POLE MOUNTING SYSTEM

Introduce

GS Pole Mount System is designed to install solar panels on a single pole. According to different conditions, several kinds of solutions are available.

GS Pole Mount System takes the importance of safety and duration. The systems have been calculated compatible with the structural mechanics and tested strictly. Material used include hot galvanized steel and anodized aluminum alloy, with great anti-corrosive suitable for outdoor using.

Benefits

Easy Installation

Integrated Design for the support pole minimizing time and cost of installation

Steady and Safety

Design and check the structure according to the structural mechanics and construction acts.

Excellence Duration

For outdoor using, all the material selected with high class anti-corrosion protection.

Great Flexibility

Tilt angle can be adjusted according to the actual needs on the install site.

Technical Information

Install Site	Open Field
Tilt Angle	10deg~60deg
Building Height	20 meters
Max Wind Speed	Up to 60m/s
Max Snow Load	up to 1.4KN/m ²
Standard	AS/NZS1170 and other
Post Material	Galvanized Steel
Rail Steel	Anodized Aluminum
Warranty	10 Years Warranty

COMPONENTS

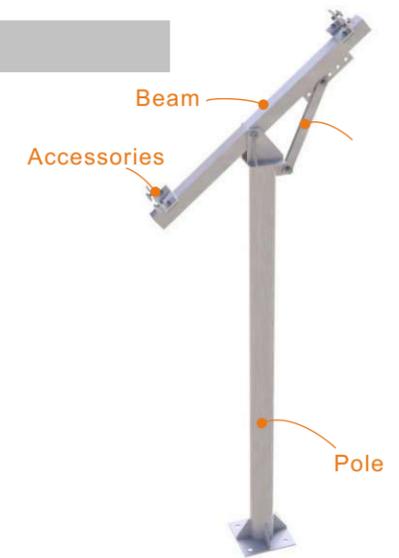
POLE MOUNT 2#

Features

- Material: Hot galvanized steel Q235
- High integrated to reduce the bolt
- Install area of modules: up to 3.2 m² (wind speed < 45m/s)
- Foundation: concrete with pre-buried bolt

Item No.	Description
GS-PM02-01	Pole support for 2 pcs module (1580x808mm) - Pole OD89x1490mm x 1pc - Beam 50x900mm x 1pc - Adjustable bar x 1pc - Accessories and Fastens

Note: the length of the Beam and Pole can be customized for different conditions



POLE MOUNT 6#

Features

- Material: Hot galvanized steel Q235
- High integrated to reduce the bolt
- Install area of modules: up to 8.3 m² (wind speed < 45m/s)
- Foundation: concrete with pre-buried bolt

Item No.	Description
GS-PM06-01	Pole support for 6 pcs module (1580x808mm) - Pole OD140x1490mm x 1pc - Beam 80x1300mm x 1pc - Purlin C100x2600mm x 2pcs - Adjustable bar x 1pcs - Accessories and Fastens

Note: the length of the Pole, Beam and Purlin can be customized for different conditions



COMPONENTS

POLE MOUNT 8#

Features

- Material: Hot galvanized steel Q235
- High integrated to reduce the bolt
- Install area of modules: up to 11.5 m² (wind speed < 45m/s)
- Foundation: concrete with pre-buried bolt

Item No.	Description
GS-PM08-01	Pole support for 8 pcs module (1580x808mm) - Pole OD165x1490mm x 1pc - Beam 100x1800mm x 1pc - Purlin C100x2600mm x 3 pcs - Adjustable bar x 1pc - Accessories and fastens

Note: the length of the Pole, Beam and Purlin can be customized for different conditions



PROJECT EXAMPLE

Project Information

Solar Panels Size:	1580*808*46mm	Pole Height:	1500mm
Tilt Angle:	10~60 Deg	Wind Speed:	<45m/s
Foundtaion:	Concrete with pre-buried bolt		
Array 1#	1*2 (2 pcs panels)		
Array 2#	3*2 (6 pcs panels)		
Array 3#	4*2 (8 pcs panels)		

Array 1#

Product Item	Spec.	Qty
		1x2
GS-DR-1700	1700mm	2pcs
GS-IC-F46	46mm	2pcs
GS-EC-F46	46mm	4pcs
GS-PM02-01	1500mm	1pcs

Array 2#

Product Item	Spec.	Qty
		3x2
GS-DR-2560	2560mm	4pcs
GS-IC-F46	46mm	8pcs
GS-EC-F46	46mm	8pcs
GS-PM06-01	1500mm	1pcs

Array 3#

Product Item	Spec.	Qty
		4x2
GS-DR-3405	3405mm	4pcs
GS-IC-F46	46mm	12pcs
GS-EC-F46	46mm	8pcs
GS-PM08-01	1500mm	1pcs



⊙ Introduce

Grace Solar has developed different series of screws to meet varied applications. The Ground Screws are installed with a number of specific aids and machines, perfectly perpendicular at the exact point after minutes. This screw-in foundation system is not only suitable for natural ground, but also for dense and even tarred surfaces. Applications are countless, from securing garden umbrellas, windy dryers and fences to carparks, flag poles and traffic signs, solar panel systems, advertising boards and even outdoor building for events and expositions for its quick and easy created and removed advantages. As per practical requirements, the system is able to be planned and customized in the factory to avoid welding and cut on the spot, saving your time and cost.

GROUND SCREW



City and Parts



Docking Post and Trestle Stand



Fencing



Flag Poles and Banners



Garden and Leisure



Sheds and Containers



Solar Power Systems



Street Lamp



Traffic Sign

⊙ Benefits

❖ Easy Installation

Available with installation machines is easier and more quickly than other foundation solution to save your time and money.

❖ Steady and Safety

Many kinds of types can be selected comply with the static load analysis and testing result to make sure the foundation safe.

❖ Excellence Duration

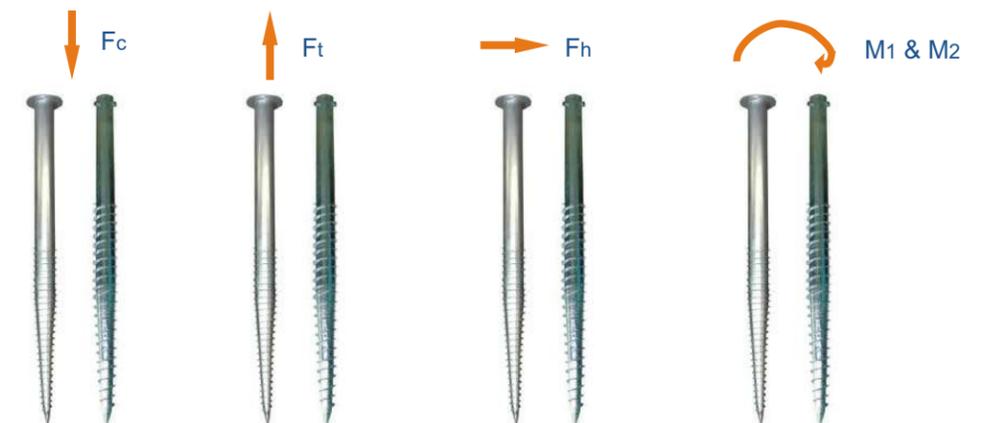
For outdoor using, all the material selected with high class anti-corrosion protection.

⊙ Technical Information

Install Site	All Type of Soil
Pipe Material	Q235B
Pipe Diameter	50~140mm
Pipe Length	1000~2000mm
Pipe Thickness	2~4mm
Standard	GB50021-2001 GB50007-2002 GB50011-2001
Anti-corrosive	Hot-dip Galvanized
Warranty	10 Years Warranty
Duration	More than 20 years

⊙ Cross-section Values and Burdens of GS Ground

Item No.	Tube Dia mm	Tube Thk mm	M1 KN*m	M2 KN*m	Fc KN	Ft KN	Fh KN
GS- 68x1000	68	2.0	1.587	1.811	10.50	5.50	3.50
GS- 76x1200	76	2.0	1.834	2.846	18.50	11.50	5.50
GS- 76x1600	76	3.5	3.386	4.398	35.00	21.50	8.50
GS- 76x2000	76	3.5	3.386	5.951	45.00	32.50	11.50
GS- 90x1200	88.9	3.5	4.729	3.881	30.00	16.50	7.50
GS- 90x2000	88.9	3.5	4.729	7.245	55.00	35.00	14.00
GS- 114x1200	114.3	3.5	8.058	4.916	35.00	20.50	9.50
GS- 114x2000	114.3	3.5	8.058	8.797	66.00	37.50	17.00



M1: moment of the steel pipe
M2: moment in the soil
Fc: compression force
Ft: tension force
Fh: horizontal force

COMPONENTS

N Series

Features

- Material: Q235
- Finish: Hot-dip Galvanized
- Fixed by set screw

Item No.	Description
GS-N68-1000	Ground Screw 68x1000xT2
GS-N76-1200	Ground Screw 76x1200xT2
GS-N76-1600	Ground Screw 76x1600xT3.5
GS-N76-2000	Ground Screw 76x2000xT3.5



UB Ground Mounting installed on Ground Screw 68x1000



COMPONENTS

F Series

Features

- Material: Q235
- Finish: Hot-dip Galvanized
- Weld with Round Flange

Item No.	Description
GS-F68-1000	Ground Screw 68x1000xT2, with Flange
GS-F76-1200	Ground Screw 76x1200xT2, with Flange
GS-F76-1600	Ground Screw 76x1600xT3.5, with Flange
GS-F76-2000	Ground Screw 76x2000xT3.5, with Flange
GS-F90-1200	Ground Screw 90x1200xT3.5, with Flange
GS-F90-2000	Ground Screw 90x2000xT3.5, with Flange
GS-F114-1200	Ground Screw 114x1200xT3.5, with Flange
GS-F114-2000	Ground Screw 114x2000xT3.5, with Flange

Flange OD 220



Install by the Profession Person



Install by Machine

