

5×0



Anchor Bolt Dimensions:



GENERAL DESCRIPTION

SCENE:

The basic wind speed of the solar bracket is related to the elevation angle of the photovoltaic panel. The basic wind speed for the elevation angle of 15, 25, 35, and 45 degrees is 40, 40, 35, and 31 m/s (3s time interval). The soil bearing capacity at the bottom of foundation should not be less than 100kPa. The support and foundation can be placed in flat terrian where the ground surface roughness category is C in ASCE 7-05 (B in GB50009-2001) .In some particular scene, such as island and mountain peak, site designer should recheck the foundation dedign and modify the drawing.

FOUNDATION SELECTION PRINCIPLE:

1.Selection of foundation grade shall be decided by bracket height, angle.

NOTICE:

1.Wind speed is 3 second gust; 2.If site basic wind velocity exceed the design basic wind speed, or soil bearing capacity at the bottom of foundation is less than 100kPa (most is quicksand or swampland), foundation drawing should be modified. HQ GTS or R&D can be contacted.

说明

支架及基础应用场景:

该太阳能支架设计的基本风速与光伏板仰角有关,仰角为15、25、35、45度的基本 风速为40、40、35、31m/s (3S时距)。按照光伏支架高度的不同分为: 低支架基础和高支架基础。所有基础所在位置的地基土承载力不小于100kPa。设计适用于 美标C类(中标B类)地面粗糙度的平坦地区或稍有起伏地区,对于海岛或山峰等特殊地形的应 用,需要站点设计人员根据实际情况对基础重新验算,并做相应的变形设计。

基础选型的一般原则:

1.根据支架高度、角度的不同选择基础;

注:

1.风速为3s时距;

2.若站点基本风速高于基本风速,或者地基土承载力低于100kPa(大部分为流沙或沼泽地区),基础需重新设计。可以联系配套服务或机关研发人员。

客户:

签名:

分包商:



签名:

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| 项目 : Project: | | | |
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| 备注 : Remark: | | | |
| 图名: Drawing title: | | | |
| 备注: Sharp A E Remark: | Bracket 3.0 Foundatio A型支架3.0条形基础 (商支架) | n (High solar bracl | ket) |
| 编码:Part-No | | | $1 \bigoplus$ |
| 版本:Version: | | | |
| 比例: Scale: | | 图号: NO.: | |
| 结构编号: | | | |
| 设计:Designed: | | | |
| 检查: Checked: | | | |
| 审核: Verified: | | | |
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PV Module Support (Standard A-Shaped Support 3.0) Quick Guide

Issue: 01 Part Number: 21540480, 21540481 Date: 2022-04-30

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Safety Precautions

Safety Precautions

When installing, operating, and maintaining the equipment, observe all the safety instructions on the equipment and in this document to prevent personal injury and equipment damage. The "WARNING", "CAUTION", "NOTICE", and "NOTE" statements in this document do not cover all the safety instructions. They are only supplements to the safety instructions. Follow all the safety precautions and instructions provided by Huawei. Huawei will not be liable for the consequences that are caused by the violation of the safety operation regulations and design, production, and usage standards.

Local Laws and Regulations

When operating the equipment, comply with local laws and regulations.

Personnel Requirements

Personnel who plan to install or maintain Huawei equipment must be qualified electricians who receive thorough product training, understand all necessary safety precautions, and are able to correctly perform all operations.

Symbol Conventions

NOTICE

Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results.

D NOTE

Supplements the important information in the main text.

Personal Safety

To prevent electric shocks, use insulated tools and wear insulation gloves when connecting cables.

To prevent personal injury, wear protective shoes when moving heavy objects.

Preparing Tools

| Protective gloves | Insulated gloves | Work shoes | Safety helmet | Compass | Steel measuring tape |
|--------------------|-----------------------|-----------------------------|---------------------------------|-------------------|----------------------|
| Falsework | Ladder | Power cable cutter | Wire stripper | Hydraulic pliers | Crimping tool |
| Diagonal pliers | Needle-nose pliers | Adjustable torque wrench | A Insulated socket wrench | Adjustable wrench | Inner hex key |
| Marker | <u>C.O</u> Level | Insulated torque | Heat gun | Rivet gun | Hammer drill |
| Heat shrink tubing | Cloth insulation tape | | | | |

Components of a Standard A-Shaped Support (Low Support)





No.







Installed Standard A-Shaped Support (Low Support)



Components of a Standard A-Shaped Support (High Support)



| No. | Item | Length (mm) | Quantity (PCS) |
|-----|------------------------|-------------|-------------------------------|
| 1 | Horizontal beam | 4089 | 4 |
| 2 | Longitudinal beam | 3656 | 2 |
| 3 | Reinforced beam | 2986 | 2 |
| 4 | Long raking strut | 2165 | 2 |
| 5 | High column | 3391 | 4 |
| 6 | Low column | 1862 | 4 |
| 7 | Short raking strut | 1321 | 4 |
| 8 | Column bracket | / | 4 |
| 9 | Anchor bracket | / | 8 |
| 10 | PV module middle clamp | / | 9 (including one spare part) |
| 11 | PV module edge clamp | / | 9 (including one spare part) |
| 12 | M12x100 bolt | / | 19 (including one spare part) |
| 13 | M12x140 bolt | / | 29 (including one spare part) |
| 14 | M12x180 bolt | / | 3 (including one spare part) |
| 15 | M8x35 bolt | / | 2 (including one spare part) |



In the figure, the PV module (540 W) tilt angle is 25° .



Standard A-Shaped Support (Low Support)

1 Installing a PV Module Support

1.1 Determining the Direction and Tilt Angle of PV Modules

Determine the orientation of PV modules based on design requirements. In the northern hemisphere, PV modules face south. In the southern hemisphere, PV modules face north. The following table lists the tilt angle design specifications.

| Site Latitude (Degree) | 0–15 | 16–25 | 26–30 | 31–45 |
|-------------------------------|------|-------|-------|-------|
| PV Module Tilt Angle (Degree) | 15 | 25 | 35 | 45 |

1.2 Installing a PV Module Support

NOTICE

- The PV module support can be mounted with 540 W PV modules or iPV540-M1A.
- When installing mechanical parts, use two nuts to secure the bolts. Tighten the inner nut first and then the outer nut. After the nuts are tightened, ensure that the flats on the two nuts are not aligned. (Use a wrench to secure the inner nut and use another wrench to tighten the outer nut.)
- When installing a support, use a marker to mark each bolt after tightening.
- In steps 1 to 4, partially tighten the bolts to reserve space for adjustment. Then, tighten the bolts in step 6.



1. Install connecting plates on columns. (Partially tighten the bolts.)



2. Install a longitudinal beam. (Partially tighten the bolts.)



3. Install a long raking strut and short raking strut. (Partially tighten the bolts.)

NOTICE

- The short raking strut needs to be installed on the lower side of a PV module support, and the long raking strut needs to be installed on the higher side of a PV module support.
- When installing raking struts, partially tighten them first. After anchor bolts are installed, tighten the raking struts.
- The holes in the long and short raking struts are silkscreened. Determine the holes for mounting based on the tilt angle of PV modules and support type. The following figure uses the installation of raking struts for a low support for 45° PV modules as an example. In this case, the raking struts need to be mounted through the holes marked with 45L.





4. Install anchor brackets. (Partially tighten the bolts.)



5. Loosen the washers and nuts of the anchor bolts, fix the support assemblies to the foundation, and tighten the anchor bolts.

NOTICE

- Ensure that lower edge of the longitudinal beam faces the equator.
- When installing anchor bolts, secure each bolt using two nuts.



- 6. Tighten all bolts partially tightened on the support assemblies to 45 N·m.
- 7. Install horizontal beams.

Ensure that the bolts are inserted from the front side of the beam.





9. Install edge clamps and middle clamps for PV modules.

NOTICE

- Partially tighten all the clamps.
- When installing the rubber pad, ensure that the adhesive side faces upwards. Remove the adhesive sticker and press the rubber pad to ensure that it is firmly attached.
- The nuts for securing PV module clamps are classified into common nuts and antitheft nuts. Select nuts based on the actual configuration.
- Use an antitheft nut wrench to partially tighten antitheft nuts.





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10. Install PV modules.

NOTICE

- When installing PV modules, ensure that the distances between the PV module edges and the two ends of the support horizontal beam are the same.
- When installing PV modules, ensure that the control boxes behind PV modules face the same direction.
- The following table lists the dimensions of PV modules that can be mounted on a support.

| PV Module Specifications | Dimensions (mm) | | | | |
|--------------------------|-----------------|-----------|-----------|--|--|
| PV Module specifications | Length | Width | Thickness | | |
| 540 W/iPV540-M1A | 2256-2285 | 1133–1134 | 35 | | |

| Applicable to 540 | |
|-------------------|--|
| W PV Modules | |







11. Adjust the positions of clamps to secure the PV modules. Then tighten the screws.

NOTICE

When fixing PV modules, ensure that the edge clamps and the middle clamps are tightly attached to the inner and outer sides of the PV modules, respectively.



2 Installing Cables for PV Modules

1. Install ground screws and a ground cable for PV modules.

Install ground screws near the ground bar.



2. Install DC power cables for PV modules.

NOTICE

If the DC power cables to PV modules are not long enough, connect the extension cables.

Installing 540 W PV Modules (Connecting to an SJB)

Connect two PV modules in series as a route and connect the route to the SJB.



Installing 540 W PV Modules (Connecting to a PVPU)

Connect all PV modules in series and then connect them to the photovoltaic power unit (PVPU).

NOTICE

Three to eight PV modules can be connected in series. The following shows how to connect six PV modules in series.





Installing iPV540-M1A PV Modules

When installing the iPV540-M1A, connect all PV modules in series and then connect them to the PVPU.

NOTICE

Three to eight PV modules can be connected in series. The following shows how to connect six PV modules in series.





Standard A-Shaped Support (High Support)

1 Installing a PV Module Support

1.1 Determining the Direction and Tilt Angle of PV Modules

Determine the orientation of PV modules based on design requirements. In the northern hemisphere, PV modules face south. In the southern hemisphere, PV modules face north. The following table lists the tilt angle design specifications.

| Site Latitude (Degree) | 0–15 | 16–25 | 26-30 | 31–45 |
|-------------------------------|------|-------|-------|-------|
| PV Module Tilt Angle (Degree) | 15 | 25 | 35 | 45 |

1.2 Installing a PV Module Support

NOTICE

- The PV module support can be mounted with 540 W PV modules or iPV540-M1A.
- When installing mechanical parts, use two nuts to secure the bolts. Tighten the inner nut first and then the outer nut. After the nuts are tightened, ensure that the flats on the two nuts are not aligned. (Use a wrench to secure the inner nut and use another wrench to tighten the outer nut.)
- When installing a support, use a marker to mark each bolt after tightening.
- In steps 1 to 4, partially tighten the bolts to reserve space for adjustment. Then, tighten the bolts in step 6.



1. Install connecting plates on high columns. (Partially tighten the bolts.)



2. Install a longitudinal beam. (Partially tighten the bolts.)



3. Install a long raking strut and short raking strut. (Partially tighten the bolts.)

NOTICE

- The short raking strut needs to be installed on the lower side of a PV module support, and the long raking strut needs to be installed on the higher side of a PV module support.
- When installing raking struts, partially tighten them first. After anchor bolts are installed, tighten the raking struts.
- The holes in the long and short raking struts are silkscreened. Determine the holes for mounting based on the tilt angle of PV modules and support type. The following figure uses the installation of raking struts for a high support for 45° PV modules as an example. In this case, the raking struts need to be mounted through the holes marked with 45H.

| | 1 | a.) | | | | |
|--|---|-------------------|---------------------------|------|--|--|
| Raking strut mounting hole for a high support for 45° PV modules | 4 | 2. 0 0 0 | N.O. | | | |
| Raking strut mounting hole for a high support for 35° PV modules | 4 | 84 0 | 281. 0 16H | | Raking strut mounting hole for a high support for 15° PV modules | |
| Raking strut mounting hole for a high support for 25° PV modules | 4 | 8 | 2211 321 321 321 | | Raking strut mounting hole for a high support for 25° PV modules Raking strut mounting hole for a high support for 35° PV modules | |
| Raking strut mounting hole for a high support for 15° PV modules | ÷ | HR C | 46H | 1608 | Raking strut mounting hole for a high support for 45° PV modules | |
| Short raking strut Long raking strut | | | | | | |

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5. Install a short raking strut. (Partially tighten the bolts.)



6.

7. Loosen the washers and nuts of the anchor bolts, fix the support assemblies to the foundation, and tighten the anchor bolts.

NOTICE

- Ensure that lower edge of the longitudinal beam faces the equator.
- When installing anchor bolts, secure each bolt using two nuts.



- 8. Tighten all bolts partially tightened on the support assemblies to 45 N·m.
- 9. Install horizontal beams.

NOTICE

Ensure that the bolts are inserted from the front side of the beam.



10. Install reinforced beams.

Loosen the M12x180 bolts that are partially tightened before installing reinforced beams.



11. Install edge clamps and middle clamps for PV modules.

NOTICE

- Partially tighten all the clamps.
- When installing the rubber pad, ensure that the adhesive side faces upwards. Remove the adhesive sticker and press the rubber pad to ensure that it is firmly attached.
- The nuts for securing PV module clamps are classified into common nuts and antitheft nuts. Select nuts based on the actual configuration.
- Use an antitheft nut wrench to partially tighten antitheft nuts.







12. Install PV modules.

NOTICE

- When installing PV modules, ensure that the distances between the PV module edges and the two ends of the support horizontal beam are the same.
- When installing PV modules, ensure that the control boxes behind PV modules face the same direction.
- The following table lists the dimensions of PV modules that can be mounted on a support.

| D) (Modulo Specifications | Dimensions (mm) | | | | |
|----------------------------|-----------------|-----------|-----------|--|--|
| PV Module Specifications | Length | Width | Thickness | | |
| 540 W/iPV540-M1A | 2256-2285 | 1133–1134 | 35 | | |

Applicable to 540 W PV Modules



Applicable to iPV540-M1A PV Modules



13. Adjust the positions of clamps to secure the PV modules. Then tighten the screws.

D NOTE

When fixing PV modules, ensure that the edge clamps and the middle clamps are tightly attached to the inner and outer sides of the PV modules, respectively.





2 Installing Cables for PV Modules

1. Install ground screws and a ground cable for PV modules.

NOTICE

Install ground screws near the ground bar.



2. Install DC power cables for PV modules.

NOTICE

If the DC power cables to PV modules are not long enough, connect the extension cables.

Installing 540 W PV Modules (Connecting to an SJB)



Installing 540 W PV Modules (Connecting to a PVPU)

Connect all PV modules in series and then connect them to the PVPU.

NOTICE

Three to eight PV modules can be connected in series. The following shows how to connect six PV modules in series.



Installing iPV540-M1A PV Modules

When installing the iPV540-M1A, connect all PV modules in series and then connect them to the PVPU.

NOTICE

Three to eight PV modules can be connected in series. The following shows how to connect six PV modules in series.





Appendix

(Optional) Installing a Standard SJB

1. Install an SJB.



2. Install cables between PV modules and the SJB.

| PV Module Type | Installation mode | Maximum Routes Connected to the SJB |
|-----------------------------------|--------------------------|-------------------------------------|
| 540 W PV module | Every two PV modules are | 4 (if configured with a 4 kW SSU) |
| connected in series as one route. | | 3 (if configured with a 3 kW SSU) |

The figure shows how to connect one route to the SJB.



2 (Optional) Installing an SJB-0601A

1. Install a metal base.

Securing with Screws



Securing with Rivets

 Mark mounting holes in an appropriate area on the wall.





Securing with Hose Clamps



2. Install an SJB.



3. Install an SJB ground cable.



4. Install cables between PV modules and the SJB.

| PV Module Type | Installation mode | Maximum Routes Connected to the SJB | |
|-----------------|-------------------|-------------------------------------|--|
| 540 W PV module | | 4 (if configured with a 4 kW SSU) | |
| 540 W PV module | | 3 (if configured with a 3 kW SSU) | |

The figure shows how to connect one route to the SJB.



ZXJ0000266

3 (Optional) Installing a Signal Cable for Reporting PV Module Thefts

- 1. Route the cable through the holes on the rear of PV modules in sequence and bind the cable using cable ties.
- 2. Connect the cable to the DIN port on the user interface module (UIM). The following figure uses the DIN2 port as an example.

NOTICE

- If the signal cable is a two-core cable, select a color and ensure that the cables connected to the dry contacts are of the same color.
- If the cable is connected to a dry contact that reports an alarm when closed, set the dry contact to report an alarm when open.
- If the cable is connected to a multiplexing port and is an ALM output port, set it to a DIN port.



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|---|---------------|--|-------------|-------------|--|-------------|----------|-----------------------------|-----------|----------------|
| | | | iaing schei | | bar bending schedule of 20m nign slegged tower | a tower | | | | |
| | | σ | | | <u>q</u> | ŋ | | Cover - Slab | 50 | шш |
| | Type - A | وم | | | Type - C | | U | Column Beam | 40 | 40 mm 25 mm |
| | b Type - B | e | | | Type - D | م ں ں | σ | ~ | | |
| | | | Dia. Of | Size | Size | Size | Length | Qty in Nos | 1 Init we | Total |
| ltem | Position | Type | Rebar | g | q | υ | | both ways | | Weight of |
| | | | (mm) | (mm) | (mm) | (mm) | (mm) | or total | (kg/m) | (kg) |
| Raft Slab | Тор | В | B10 | 2000 | 150 | 1 | 2300 | 99 | 0.62 | 94 |
| | Bottom | В | B10 | 2000 | 150 | | 2300 | 78 | 0.62 | 111 |
| | | | a. | | | | | | | |
| | Тор | B | B16 | 3153 | 300 | | 3753 | 9 | 1.58 | 36 |
| Tie Beams | Bottom | В | B16 | 3153 | 300 | 1 | 3753 | 9 | 1.58 | 36 |
| | Strips | D | B8 | 250 | 250 | 80 | 1160 | 54 | 0.40 | 25 |
| | Main | C | B16 | 2700 | 309 | 600 | 3609 | 24 | 1.58 | 137 |
| Column | Ties | ۵ | B8 | 317 | 317 | 80 | 1428 | 57 | 0.40 | 32 |
| | | ۵ | B8 | 224 | 224 | 80 | 1057 | 57 | 0.40 | 24 |
| | - | | | | | | Total (5 | Total (5% extra considered) | sidered) | 550 |
| | Duch ideal : | de la constant de la c | | | | | | | | |
| | | | | | | | | | | |
| Notes : | | | | | | | | | | |
| 1. Dimensions | of Bars are a | 1. Dimensions of Bars are along the Center Lines. | | | | | | | | |
| 3. Splicing of Bars should not be more thar | ars should no | ot be more than 50%. Length of splice as per Standards. | f splice as | per Standar | ds. | | | | | |
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BARBED WIRE FENCING AND GATE DRAWING



| Ti | itle : Barbed wire fencing | BHUTAN | TELEC | OM LIMITED |
|----|----------------------------|----------|-------|------------|
| | Checked by: | Approved | by: | |
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