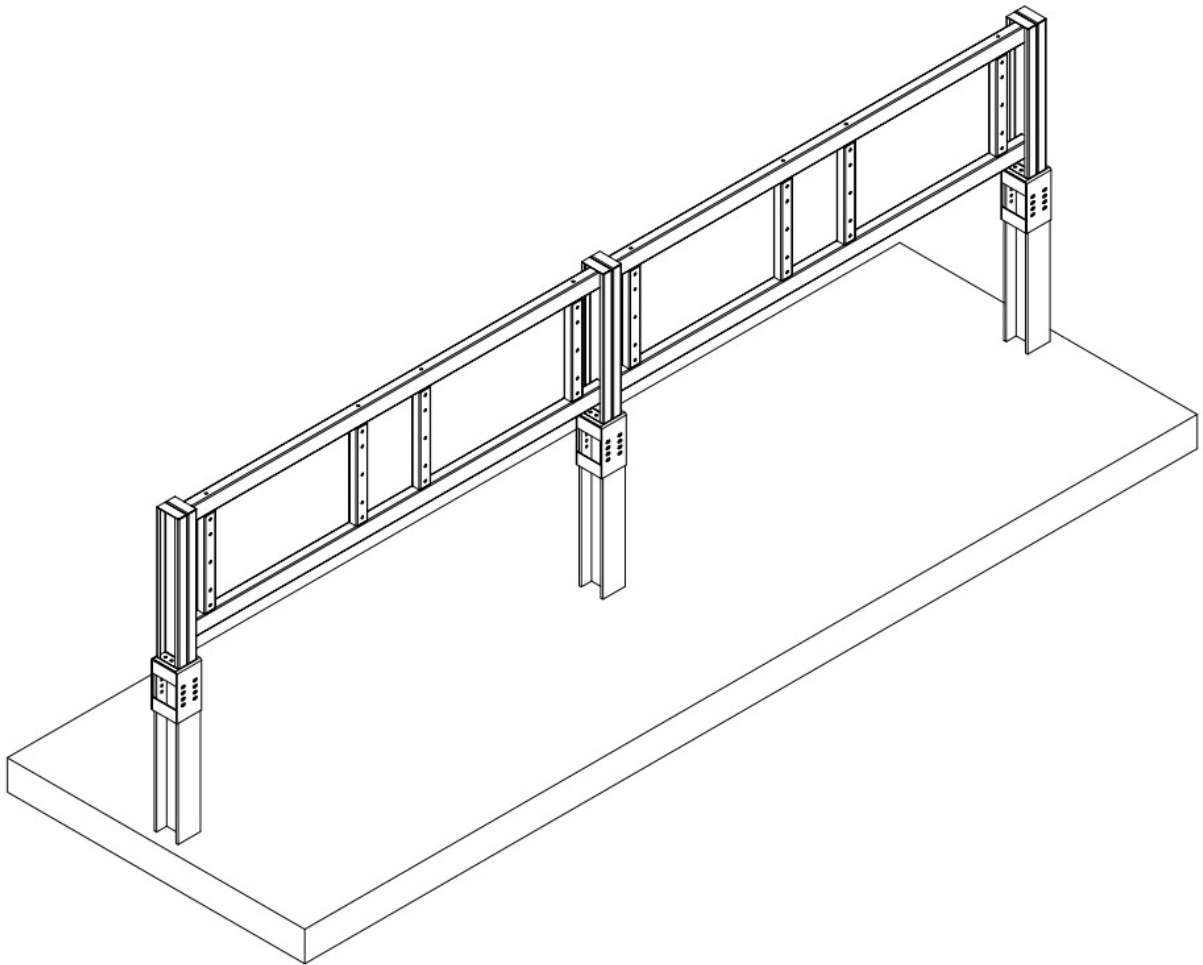


User Manual for CPS In-Line Cluster Mount



CHINT POWER SYSTEMS AMERICA CO., LTD

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0 Preface

Thank you for choosing CPS SCH275KTL-DO US-800 Series Grid-tied PV Inverters, CPS DPA03-800V/US Series AC Combiner as well as this CPS 3*275 Cluster-IL developed by CHINT POWER SYSTEMS AMERICA CO., LTD (hereinafter referred to as "CPS").

These products are all highly reliable devices, which are widely applicable in various PV systems.



IMPORTANT!

Please read this manual carefully and make sure that you have understood all the contents thoroughly before you start any operation.

Main Contents

Product overview, assembly and installation procedures are described in this manual.

Target Reader

This manual is applicable to the assembler and installer of the Cluster.

Manual Management

Please store this manual together with related documents of other device components.

Make sure keep it at hand for quick reference and easy use.

Copyrights

CPS reserves all rights in this manual. Any reproduction, disclosure or copy in whole or in part is forbidden without prior written authorization. CPS doesn't accept any responsibilities whatsoever for potential errors or possible lack of information in this document.

Version






This manual is subject to technical change or contents modification without prior notice. The version applicable to the purchased device shall prevail. Users can get the latest manual from our sales channel or our official website: www.chintpowersystems.com/.

1 IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

PLEASE READ THIS USER MANUAL CAREFULLY BEFORE THE ASSEMBLING THE CLUSTER AND INSTALLING COMBINER AND INVERTER. CPS RESERVES THE RIGHT TO REFUSE WARRANTY CLAIMS FOR EQUIPMENT DAMAGES IF USERS FAIL TO ASSEMBLE THE CLUSTER OR INSTALL THE EQUIPMENT ACCORDING TO THE INSTRUCTIONS IN THIS MANUAL.

1.1 Symbols and Meanings in This Document

Symbol	Meanings
	DANGER! DANGER indicates a hazardous situation with high level of risk which, if not avoided, will result in death or serious injury.
	WARNING! WARNING indicates a hazardous situation with medium level of risk which, if not avoided, could result in death or serious injury.
	CAUTION! CAUTION indicates a hazardous situation with low level of risk which, if not avoided, could result in minor or moderate injury.
	NOTICE! NOTICE indicates a hazardous situation which, if not avoided, could result in equipment working abnormally or property loss.
	IMPORTANT! IMPORTANT indicates important supplementary information or provides skills or tips that can be used to help you solve a problem or save you time.

2 General Introduction

This CPS 3*275 Cluster-IL as shown below is specially designed as the alternative of “3+1 Cluster” to install three CPS SCH275KTL-DO US-800 Series Grid-tied PV Inverters and one CPS DPA03-800V/US Series AC combiner, which will be referred as Cluster or In-line Custer hereinafter for short.

Following are the product appearance, dimensions and general introduction.

2.1 Appearance and Components

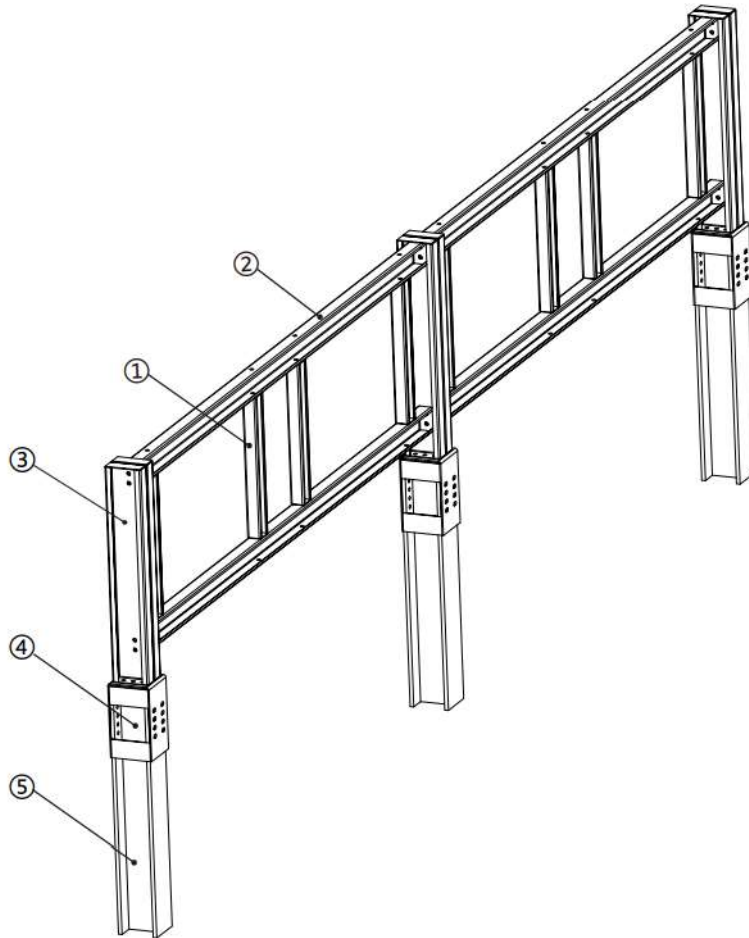


Figure 2-1 Cluster Components

Item No.	Component name	Qty
1	Equipment installation vertical beam	8
2	Beam	4
3	Vertical beam	6
4	Pile connector	3
5	Pile	3 (user-supplied)

Table 2-1 Components of Cluster

2.2 Material and Dimension

2.2.1 The main structure of the Cluster

The main structure of the Cluster is comprised of above mentioned five components, which are all made of DC51D-ZM180 material.

For the dimensions of the main structure, refer to the figures as shown below.

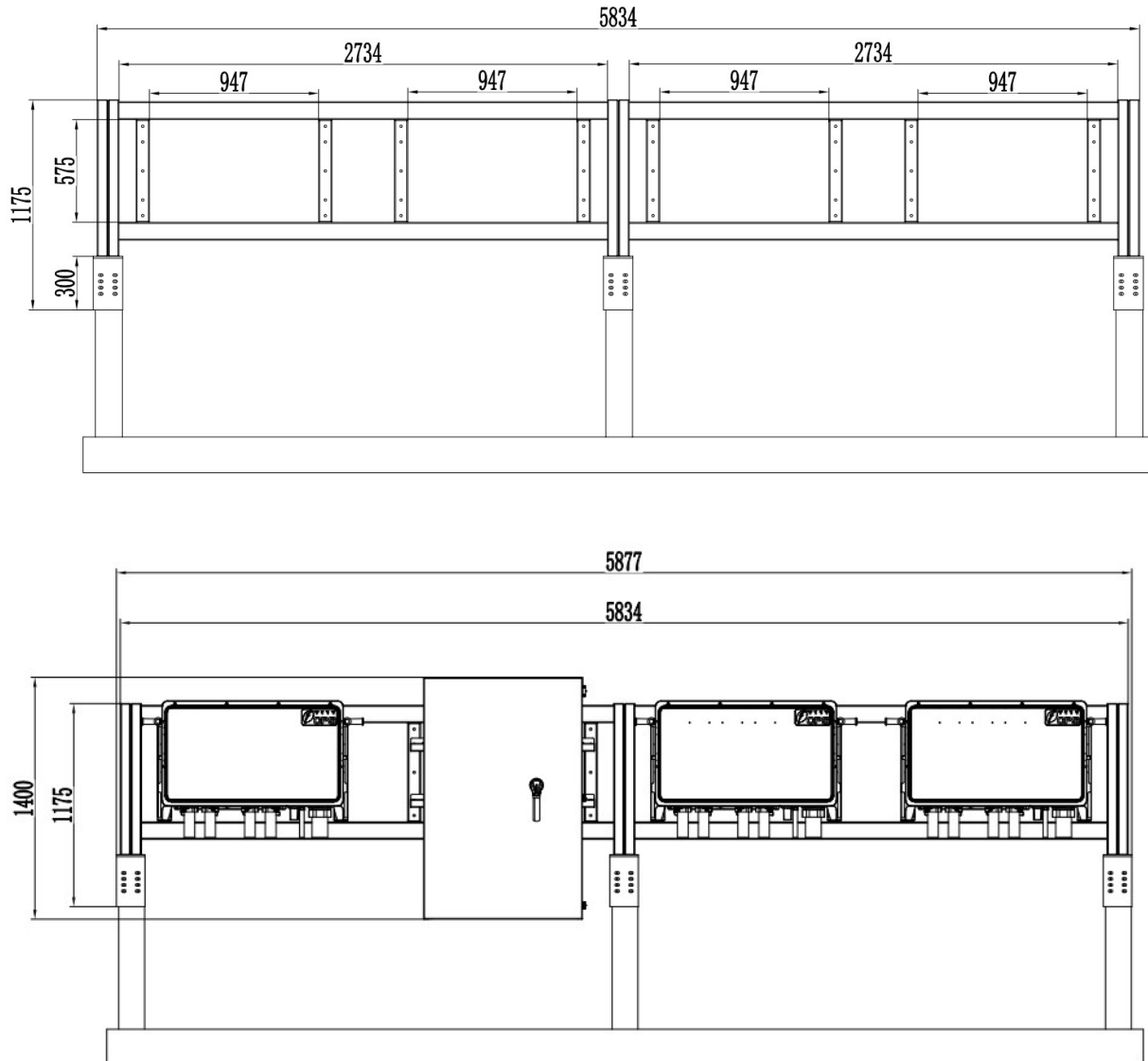


Figure 2-2a Dimensions of the Main Structure (front view)

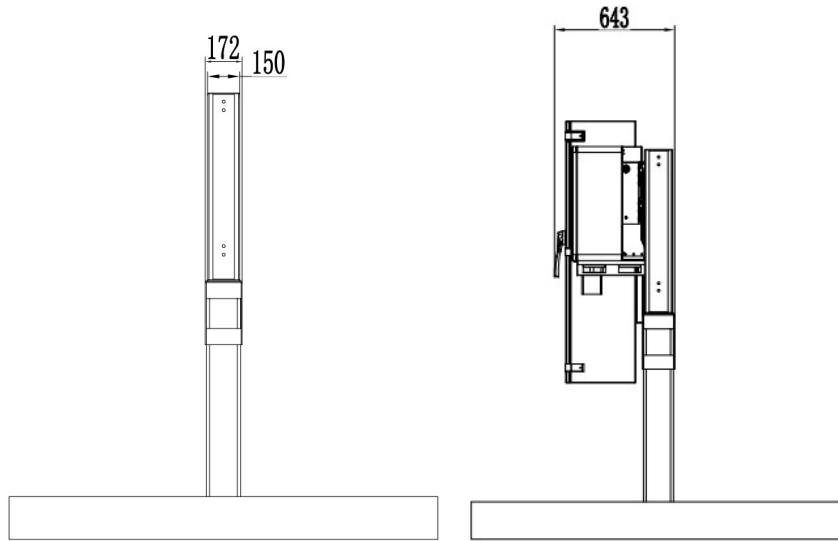


Figure 2-2b Dimensions of the Main Structure (side view)

2.2.2 The Dimension of applicable piles

The piles are not included in the accessory kit and shall be installed by the users. The piles are recommended to be painted indoor to Industrial gray (RAL7035) or galvanized.

For dimensions of the pile and its mounting holes and pile clearances, refer to the figures as shown below. The length of the pile shall be determined by the local engineers according to the actual demands and application scenarios (Proposed value > 1000mm).

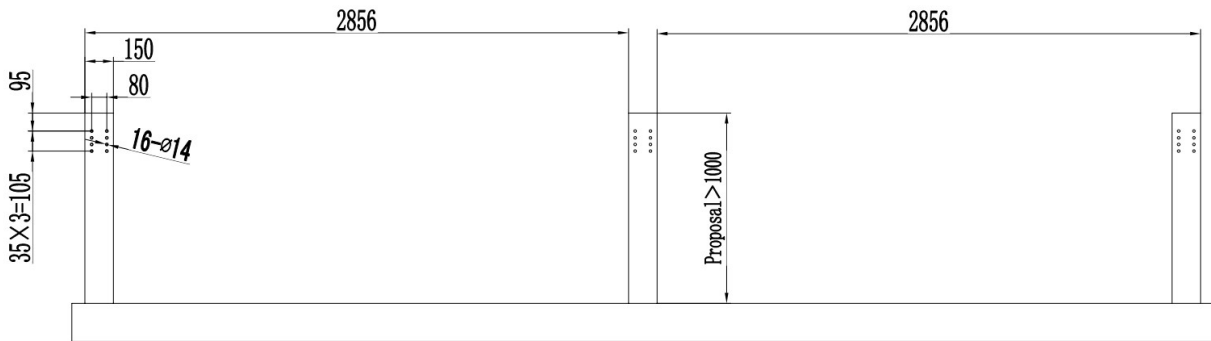


Figure 2-3a Dimensions of Applicable Piles and Pile Clearances (front view)



Figure 2-3b Dimensions of Applicable Piles (top view)

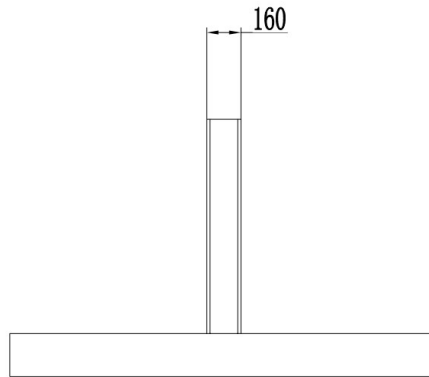


Figure 2-3c Dimensions of Applicable Piles (side view)



IMPORTANT!

- These three piles shall be provided by the customers themselves.
- Make sure that these three piles are capable to bear the weight of 1000 Kg, so that it can support the Cluster itself, one CPS DPA03-800V/US Series AC Combiner and three SCH275KTL-DO/US-800 Grid-Tied PV Inverters.

2.3 Storage Requirements

- (1) Storage space shall be clean and dried and be free from dust or moisture.
- (2) The temperature of the storage space shall be kept between -40°C and $+70^{\circ}\text{C}$.
- (3) The relative humidity of the storage space shall be kept between 5% and 95%.

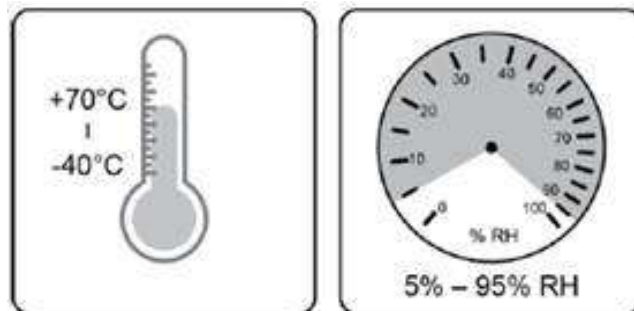


Figure 2-4 Temperature and Relative Humidity of the Storage Space

3 Assembly and Installation

3.1 Unpacking for Inspection

Before assembling the Cluster, check the product for any obvious damages or if the items on the delivery list are complete. Contact your supplier if any problem is found. The delivery list is as below:







No.	Component name	Pic.	Desc.	Qty	Units
1	Cluster components	NA	As table 2-1.	1	Set
2	M12×25 screw		Hexagon head/SUS304/Passivated/GBT 5783	40	Pcs
3	M12×40 bolt		SUS304/Passivated/GBT 5783	60	Pcs
4	M12 Flat washer		SUS304/Passivated/H=2.5mm/GBT97.1	200	Pcs
5	M12 nut		SUS304/passivated/GBT6170	60	Pcs
6	M12 Spring washer		SUS304/Passivated/T=3.1mm/GBT93.87	100	Pcs
7	User manual and warranty card		For assemble and installation guidance and warranty service etc.	2	Pcs

Table 3-1 Delivery List of Cluster

3.2 Installation Requirements

3.2.1 Environment requirements

- (1) Inflammable and explosive materials inside and around the Cluster are strictly prohibited.
- (2) Good ventilation around the product shall be kept.
- (3) The temperature shall be kept within -30°C ~ +60°C to ensure the normal operation of combiner and inverter. If the environment temperature is more than 55°C, please choose installation sites with shelters, or sunshades shall be built for outdoor locations.
- (4) It is not recommended to expose the product directly to heavy rain, to avoid the Cluster from rusting or water entering the device through the cable entry hole in the bottom in case that the water level is very deep.

3.2.2 Installation requirements

- (1) Never install, use or maintain the product or device in lightning, rain, snow, wind and other severe weather.
- (2) Do not wear conductive objects such as watches, bracelets, rings, and necklaces when installing or maintaining the device.
- (3) After installing devices, recycle empty packing materials in time, such as cartons, foams and cable ties.
- (4) The paint scratches on the surface caused in the process of transportation and installation must be repaired in time. It is strictly prohibited to expose the scratched parts to the outdoor environment for a long time.
- (5) The Cluster shall be assembled by two people at least.

3.3 Assembly Procedures



NOTICE!

- ALL the M12X25 screws and M12X40 bolts shall be used in combination with spring washers and flat washers.
- One screw or bolt shall be used in combination with one spring washer and two flat washers (hereinafter referred to as “screw combination” or “bolt combination”).
- M12X40 bolts shall be tightened with M12 nuts.

Assemble the Cluster as follows:

1. Position two Beams (2) on flat ground, with their parallel distance about the length of Equipment installation vertical beam (1). Insert four equipment installation vertical beams in between the two Beams and align their mounting holes. Tighten them with eight M12×25 screw combinations as shown below, torque value: 52 N.m, 458 in-lbs. Now one “ladder” is finished. Then assemble the other “ladder” in the same way.

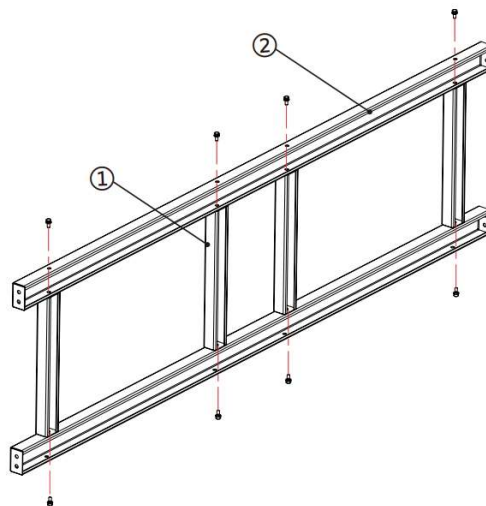


Figure 3-1 Tighten Vertical Beams to Horizontal Beams

2. Position two vertical beams (3) back-to-back and align all their mounting holes. Then align the mounting holes of the Beams (2) with those of vertical beam and pre-tighten them with four M12×40 bolt combinations as shown below. Assemble another two vertical beams on the other “ladder” in the same way.

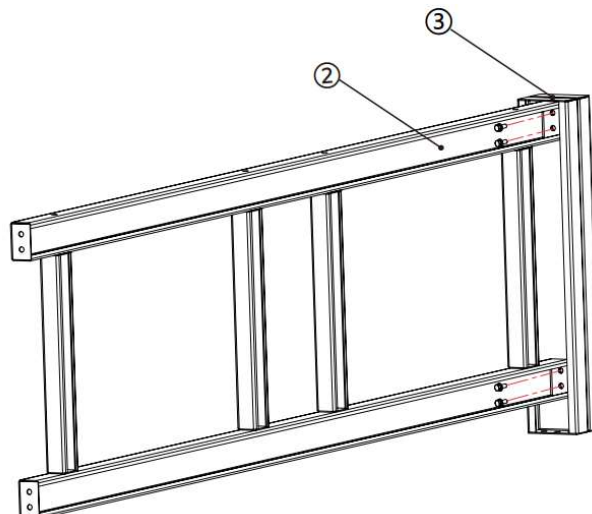


Figure 3-2 Pre-tighten Vertical beams onto Horizontal Beams

- Align the above-mentioned components (hereinafter referred to as “component A” and “component B”) in line as shown below. Loosen the four bolt combinations of the component A, and then align all its mounting holes with those of component B. Make sure all the four M12×40 bolt combinations run through all the mounting holes and tighten them again, torque value: 41 N.m, 363.0 in-lbs. Finally, tighten the bolt combinations of component B in the same way.

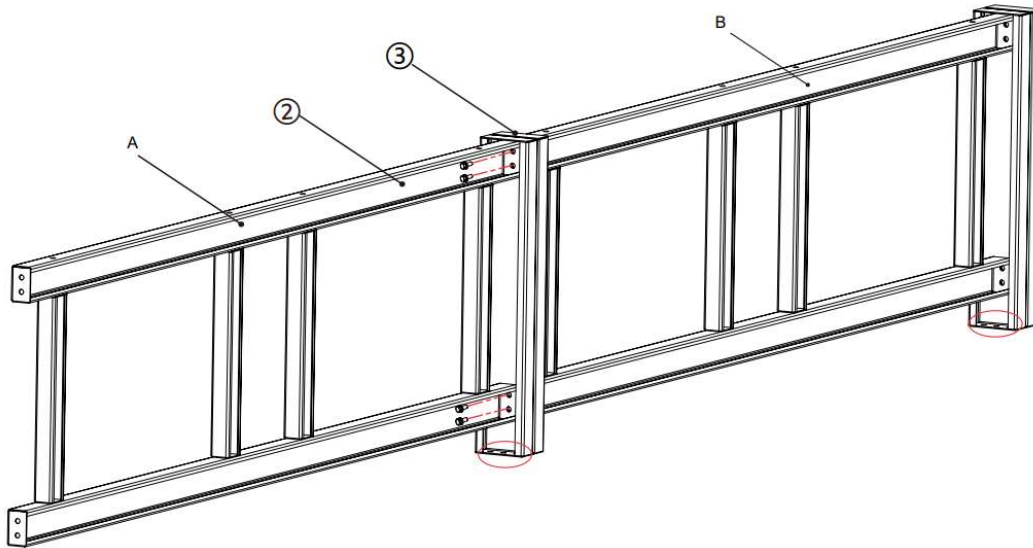


Figure 3-3 Pre-tighten Vertical Beams



IMPORTANT!

The ends extra three mounting holes (shown in red circles) shall face the same direction.

- Position last two vertical beams (3) back-to-back and align all their mounting holes. Then align all these mounting holes of vertical beam with those of the Beams (2) and tighten them with four M12×40 bolt combinations, torque value: 41 N.m, 363.0 in-lbs.

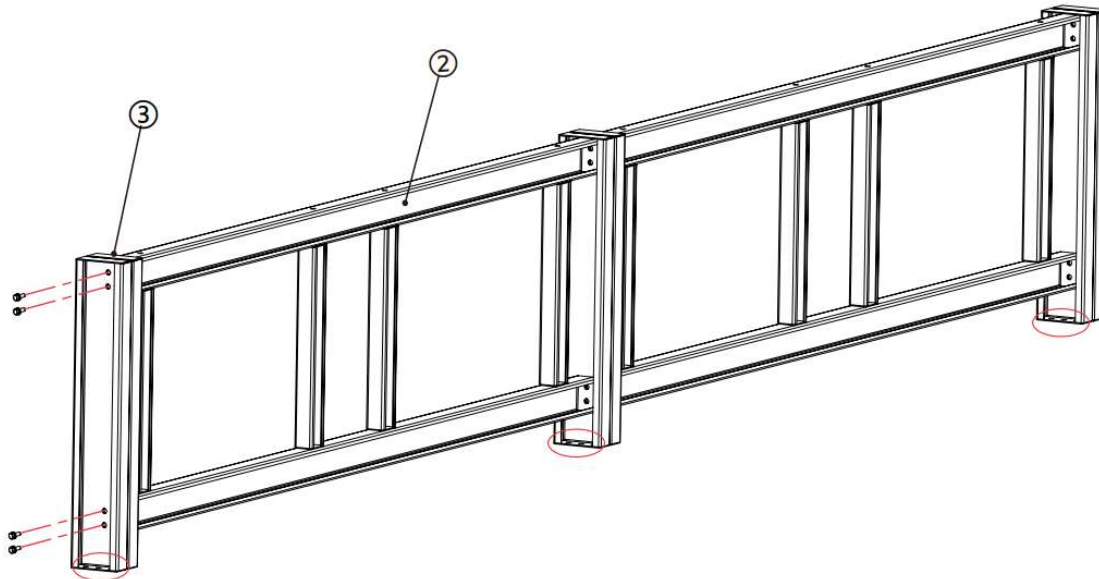


Figure 3-4 Pre-tighten Last Two Vertical Beams onto Beams



IMPORTANT!

The ends with extra three mounting holes (shown in red circles) shall face the same direction.

5. Align the mounting holes of pile connector (4) to those of vertical beam (3). Tighten them with three M12 × 40 bolt combinations as shown below, torque value: 41 N.m, 363.0 in-lbs. Repeat this step for another two pile connectors.

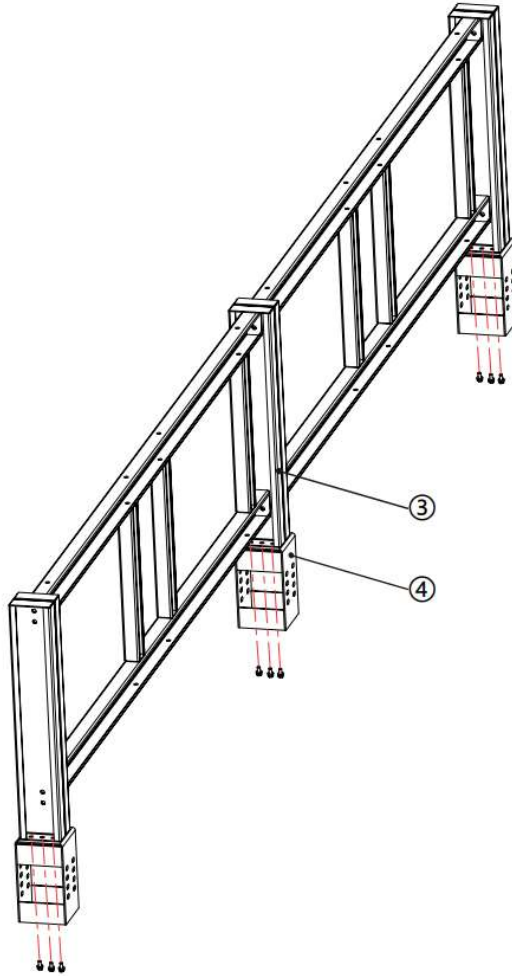


Figure 3-5 Pre-tighten the Pile Connectors

6. Prepare three piles (5) (not provided), drill holes on piles, and mark the burial locations of piles exactly according to the dimensions shown in figure 2-3a, b and c. Drive these piles in the ground by qualified installation engineer acc. to the actual demands and application scenarios.

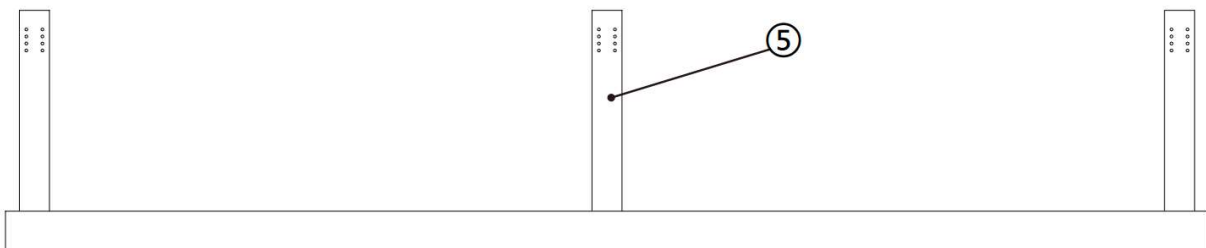


Figure 3-6 Drive Piles in the Ground



IMPORTANT!

Make sure that these three piles are capable to bear the weight of 1000 Kg, so that they can support the Cluster itself, one CPS DPA03-800V/US Series AC Combiner and three SCH275KTL-DO/US-800 Grid-Tied PV Inverters.

7. Lift the Cluster high enough to snap its three pile connectors (4) to a.m. three piles (5). Place the Cluster in place and tighten these three pile connectors with twenty-four M12 × 40 bolt combinations in total, torque value: 41 N.m, 363.0 in-lbs. Now the In-line Cluster is installed completely.

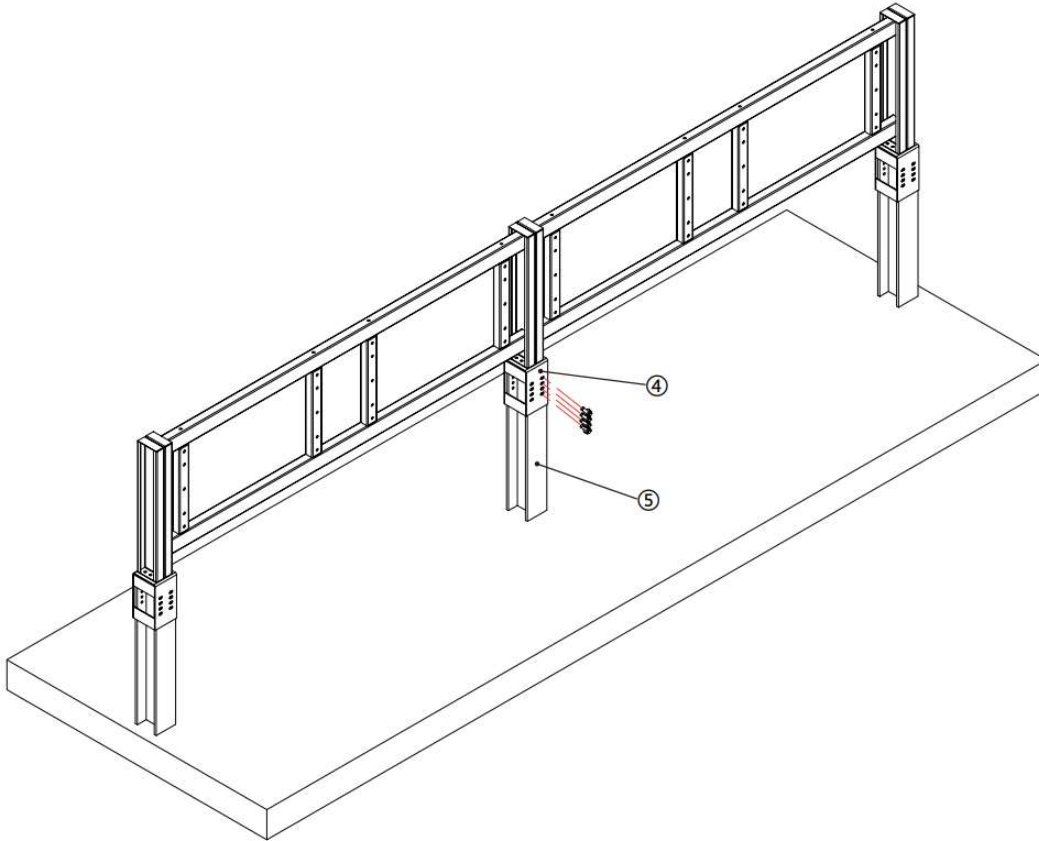


Figure 3-7 Tighten Three Pile Connectors onto the Three Piles



DANGER!

- Beware of the Cluster turning over or incline towards to any side.
- The piles shall be made strong enough and driven in the ground deep enough.

3.4 Installation Procedures



WARNING!

All of the installation procedures of the combiner and inverter should be performed only by qualified installation personnel.



CAUTION!

Heavy device, move it or lift the combiner or inverter carefully in case of falling.

3.4.1 Install the Combiner onto the Cluster



IMPORTANT!

All the accessories needed to install the combiner are provided with the combiner.

Install the AC Combiner on the Cluster as shown below:

1. Take out mounting brackets from the AC combiner accessory bag. Fix the two mounting brackets (1) with four M12X40 bolt combinations onto one group of Equipment installation vertical beams (2). Tighten all these bolts with four M12 nuts, torque value: 52.0 N.m, 458.0 in-lbs.

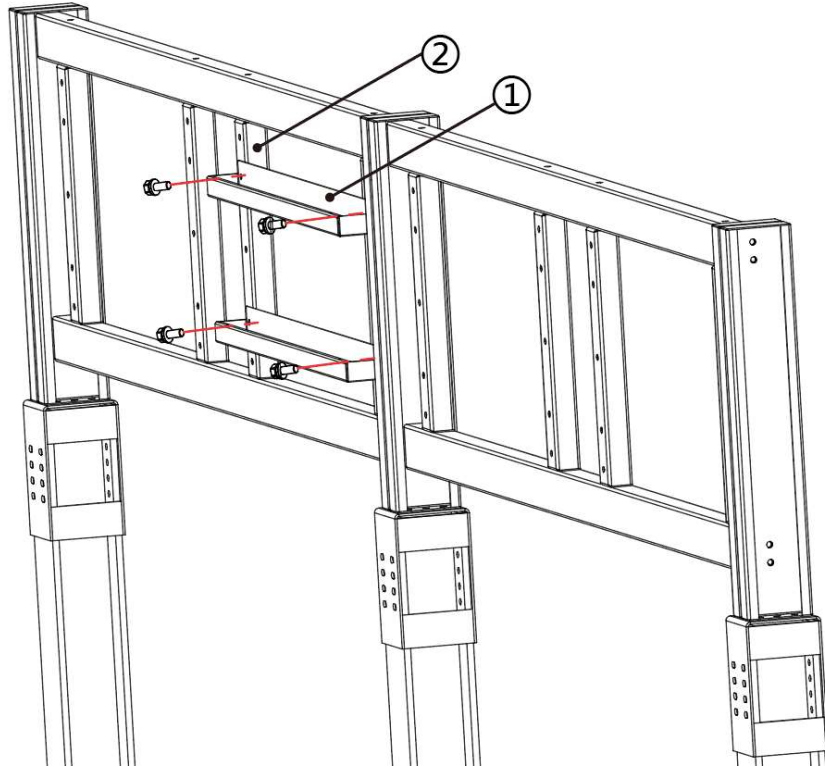


Figure 3-8 Fix the Two Mounting Brackets onto the Two Vertical Beams

2. Take out fixed brackets from the AC combiner accessory bag. Position one fixed bracket (2) onto one side of the mounting bracket (3) and fasten it with one M4*12 securing screw (1) via screwdriver as shown, torque value: 1.6N.m, 14.1 in-lbs.

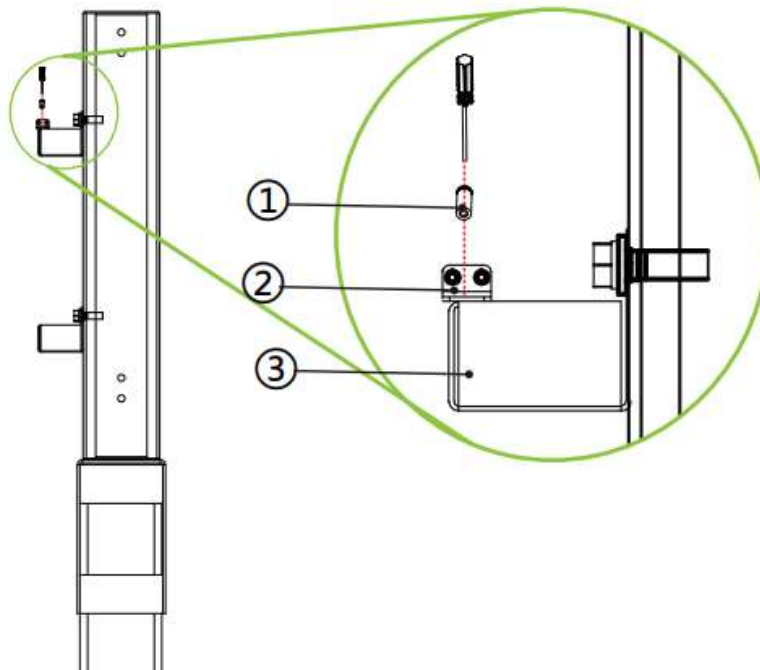


Figure 3-9 Position One Fixed Bracket

3. Hoist the bottom of the Combiner till all its hooks (1) are aligned with the mounting bracket (2) and hang them onto the mounting brackets of the rack. It can be achieved by hoisting the Combiner with a hydraulic vehicle or forklift according to the method below:

- (1) Find the center of gravity of the Combiner as shown below.

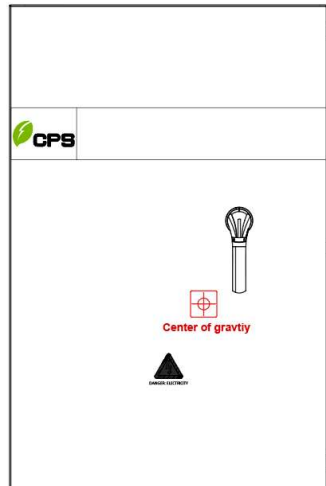


Figure 3-10 Center of Gravity of the Combiner

- (2) Keep the center of gravity in the central position of the hoisting fork to avoid the Combiner tilting.

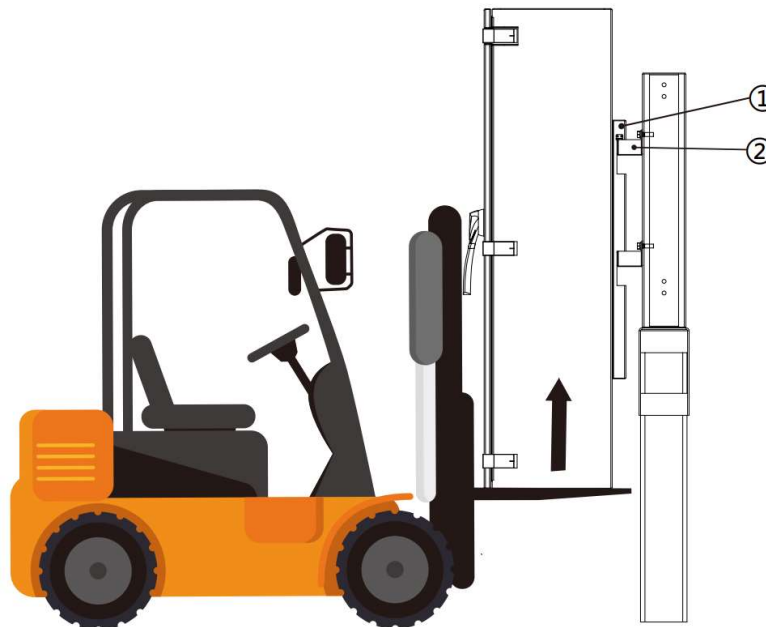


Figure 3-11 Hoist the Combiner with Hoisting Forklift

WARNING!



- All the hoisting operations should be performed only by qualified technical personnel to guarantee the Combiner will not tilt or fall.
- Operate the hydraulic vehicle or forklift on level ground to prevent the vehicle and the Combiner tilting.
- The center of gravity of the Combiner shall be kept in the central position of the hoisting fork.
- During all the hoisting operations, the hoisting fork shall be kept horizontal to avoid the Combiner tilting or even falling.

NOTICE!

- The weight of the device is about 120 kg. For safety purpose, please hoist it with forklift or hydraulic vehicle as far as possible.
-

WARNING!

- All the hoisting operations should be performed only by qualified technical personnel to guarantee the Combiner will not tilt or fall.
 - Pay attention to the center of gravity of the Combiner and adjust the lifting position of the ropes or hooks properly to avoid the Combiner tilting or even falling.
-

4. Slide the Combiner along the groove rail of the mounting bracket (1), until the hook (2) stays closely with the fixed bracket (3). Fasten the fixed bracket onto the hooks of the Combiner by screwing another two M4*12 securing screws into the holes of the fixed bracket. Then fasten another fixed bracket onto the other side of the mounting bracket to avoid the accidental movement of the Combiner, torque value: 1.6N.m, 14.1 in-lbs.

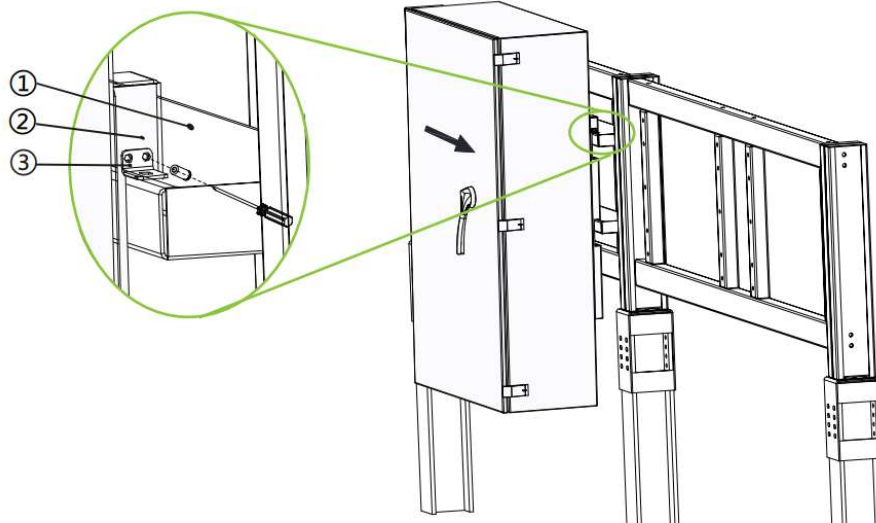


Figure 3-14 Fasten the Fixed Bracket

**IMPORTANT!**

For the installation procedures of the Combiner, please download the specific manual from our office website.

3.4.2 Install the Inverter onto the Cluster

**IMPORTANT!**

All the accessories needed to install the inverter have been provided with the inverter.

Install the inverter onto the Cluster as shown below:

1. Find all the mounting holes on one group of Equipment installation vertical beams of the Cluster according to the size of the mounting brackets of the inverter.
-

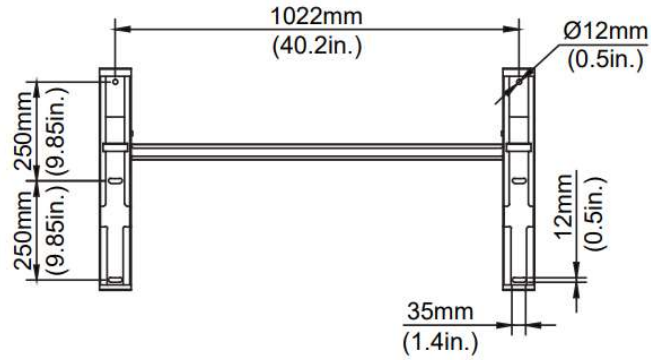


Figure 3-15 Hole Positions of Mounting Bracket

2. Choose any three groups of Equipment installation vertical beams (1) to install inverters. Fasten all the three mounting brackets (2) of inverter on the Equipment installation vertical beams of the Cluster. Six M10x50 hexagon screw combinations shall be used for one mounting bracket.

Tools required: 16mm hex socket wrench, torque: 12.5 N.m, 110 in-lbs.

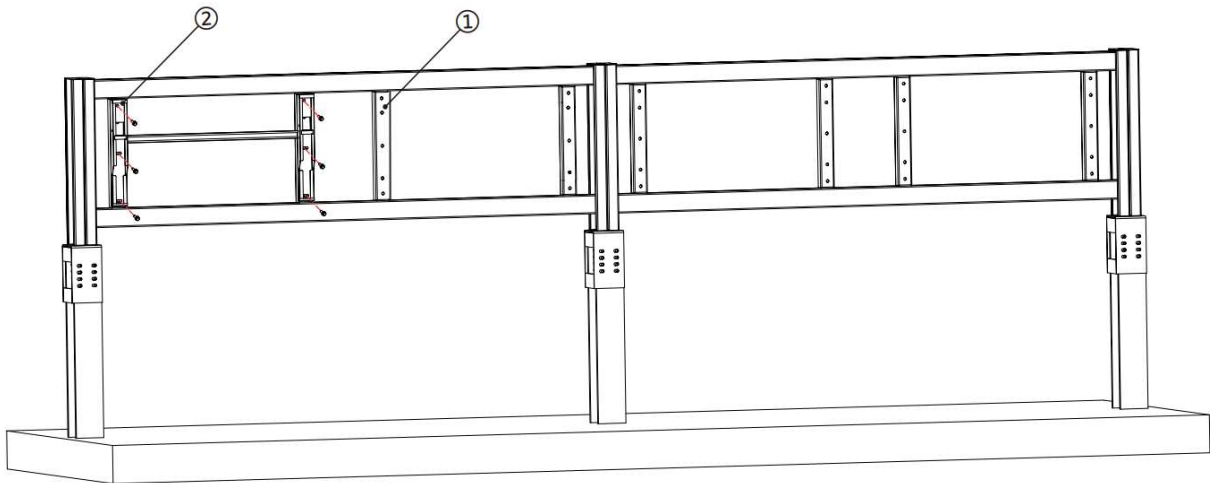


Figure 3-16 Fasten the Mounting Bracket

3. Position the inverter onto the mounting brackets by either of the two ways.
 - A. Lift mounting: screw two M10 lifting eyebolts to the studs at the top of the inverter. Use sling rope or bar (inserted through both lifting eyebolts) to lift the inverter onto the mounting bracket. The minimum angle between the two sling ropes should be less than 90 degrees, as shown below.

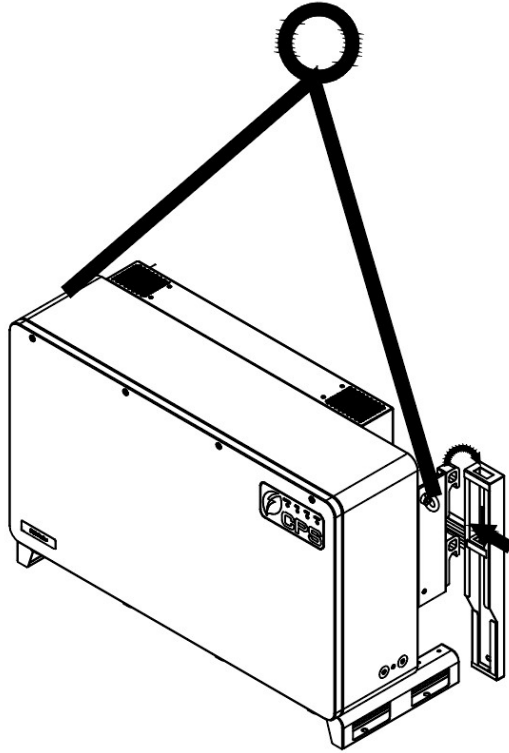


Figure 3-17 Lifting Sling

- B. Manual mounting: Minimum of three people are needed to properly lift the inverter by the handle positions marked in figure below and mount the inverter onto the mounting bracket.

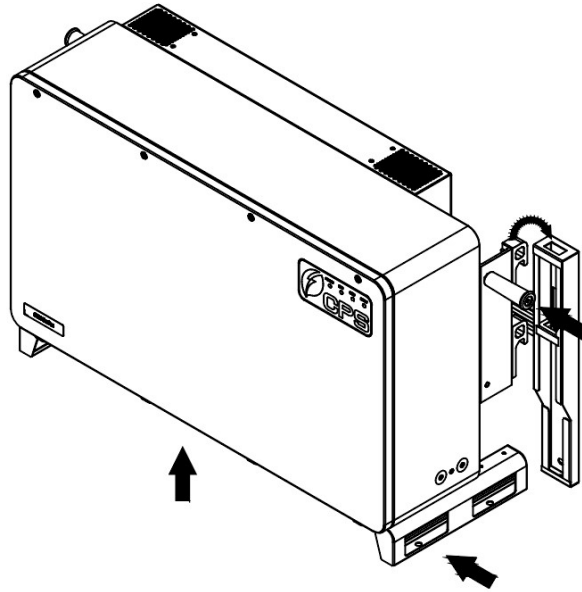


Figure 3-18 Handle Positions



CAUTION!

The total weight of the inverter is approx. 119 kg (262.4 pounds).

Ensure the mounting bracket is properly installed before hanging the inverter on the bracket. It is recommended to have at least 3 people to mount the inverter due to the weight of the equipment.

4. Use two M6X90 screws to fasten inverter on mounting bracket.
Tools required: #3 Philips head screwdriver, torque: 6 N.m, 53 in-lbs.

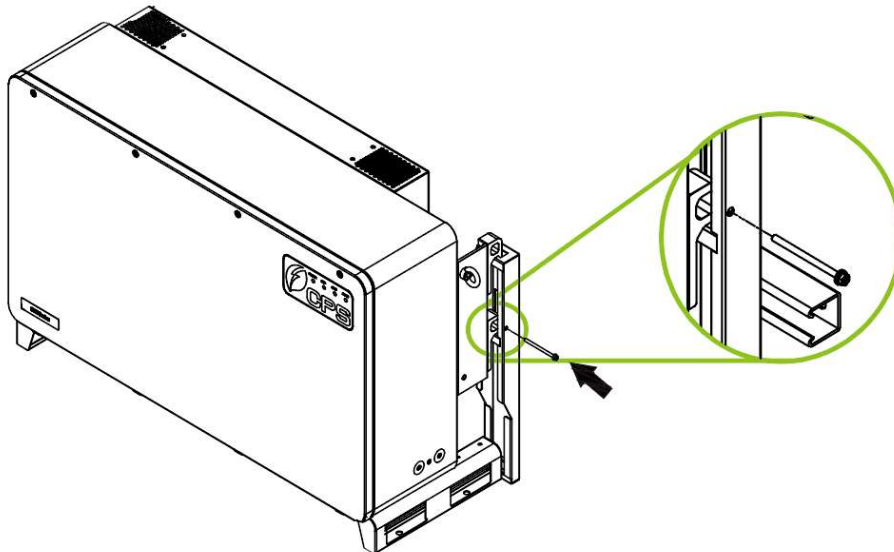


Figure 3-19 Fasten the Inverter

After finishing all the installation procedures, the cluster will look like the following pictures (just for illustration).

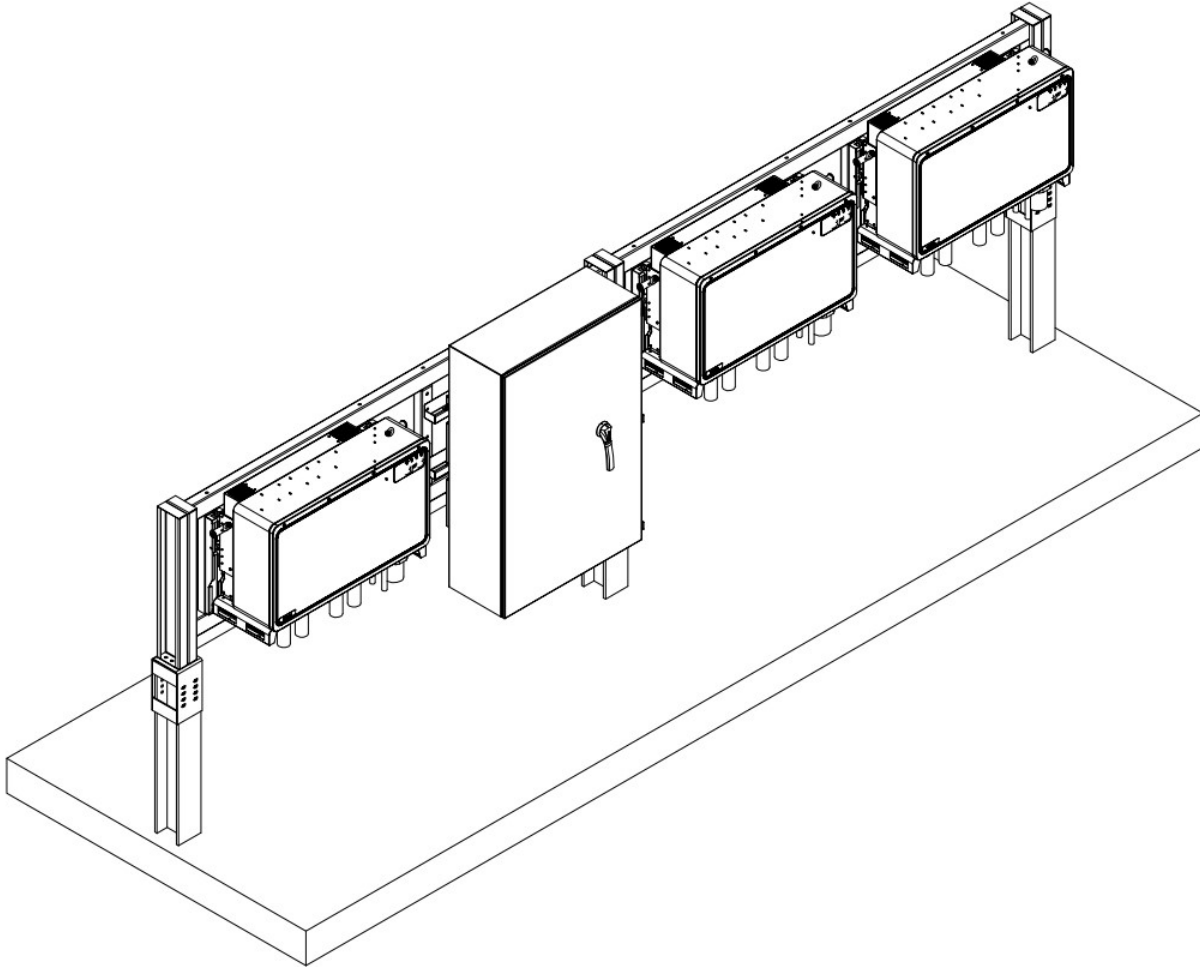


Figure 3-20 Completed Installation view

IMPORTANT!



For more information about the Inverter and Combiner, please download the specific manual from our official website: www.chintpowersystems.com/.

4 Regular Maintenance

To keep the device working normally for a long time, it is necessary to check its working status regularly. Regular maintenance items are as follows:

- (1) Remove the dust with a clean, soft, lint-free cloth regularly.
- (2) Check all the component parts for any abnormal condition, such as cracks, twist, corrosion, or rust.
- (3) Regular maintenance shall be done in accordance with the requirements of the combiner and inverter.

For the regular maintenance requirements for the inverter and combiner, refer to their specific user manual.

5 Appendix

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6 Contact Information

Please do not hesitate to contact us if you have any questions regarding CPS Grid-tied PV Inverters, AC Combiner as well as the Cluster. We are glad to provide the best service for you.

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