

CHIKO CK-U2V

Steel Ground Mount

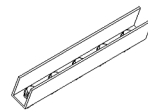
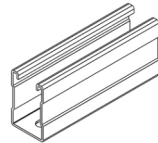
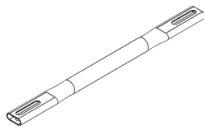
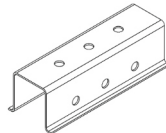
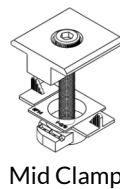
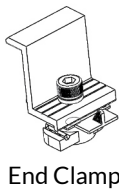
Installation Manual

Version 2023.06.2



Intertek
Conforms to UL STD NO.2703

I Installation Tools



II Installation Rule

Installation of the framing shall comply with relevant local government standards, manufacturer's specifications and good building practices. The roof which the panels are to be installed shall conform to the relevant local government standards.

- ◆ Follow the risk management process prior to commencing work – that is, identify all the hazards, assess their risks and eliminate or control them.
- ◆ Consult with those involved in the work.
- ◆ Develop safe work procedures for installing solar panels, using information from the risk management process, which would include reviewing the following information:
 - Provide appropriate information and training to those involved in performing the work.
 - Provide appropriate tools and personal protective equipment (PPE).
 - Ensure that a system is in place to prevent or arrest falls.
 - Ensure there are adequate first aid facilities.
 - Ensure all employees are aware of the emergency procedures.

III Notice

1. Max Span 9'

(Review current span charts and apply all applicable site conditions to include wind, snow, module size, tilt, etc. to determine recommended site span calculations.)

2. Max. Rated Current: 30A

3. Minimum design load for Chiko CK-U2V STEEL GROUND MOUNT mounting system:

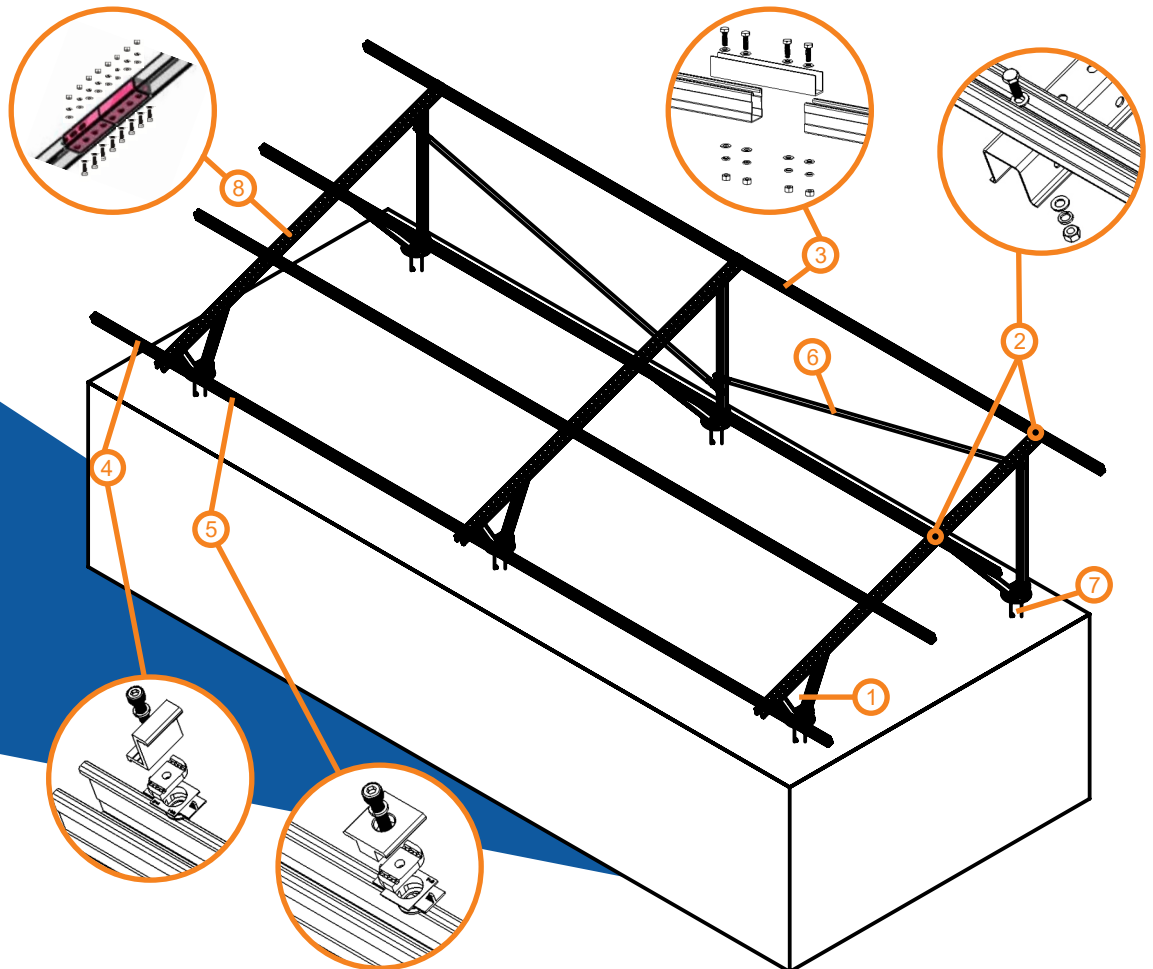
- a) Downward Pressure - 10 psf allowable load
- b) Upward Pressure - 5 psf allowable load
- c) Down-Slope Load - 5 psf allowable load

4. This ground mount system is used for in ground mounting

5. This racking system has been tested and evaluated to UL 2703 for Bonding, grounding, mechanical loading and fire classification, and may be used to ground and/or mount PV modules listed to UL 1703 or UL 61730.

IV Components

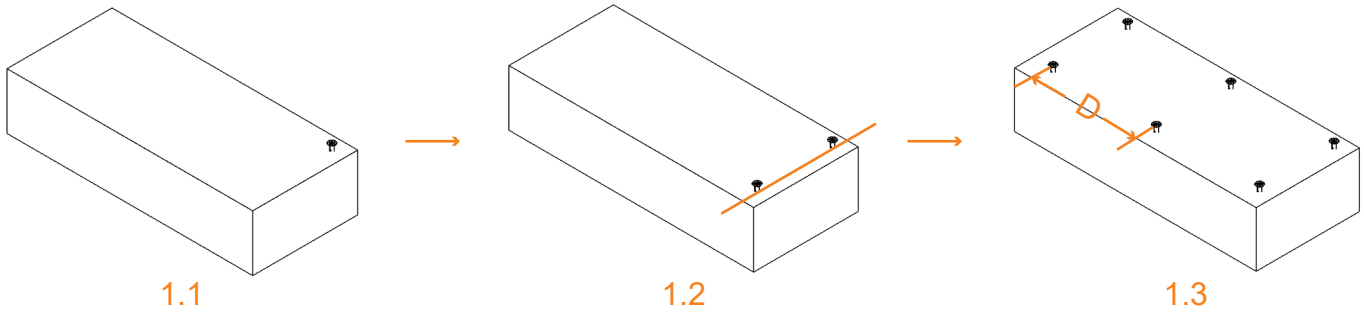
- 1. Base Support & Beam
- 2. Rail
- 3. Splice
- 4. End Clamp
- 5. Mid Clamp
- 6. Strengthen Pipe
- 7. Ground Screw
- 8. Beam Splice



V Installation Steps

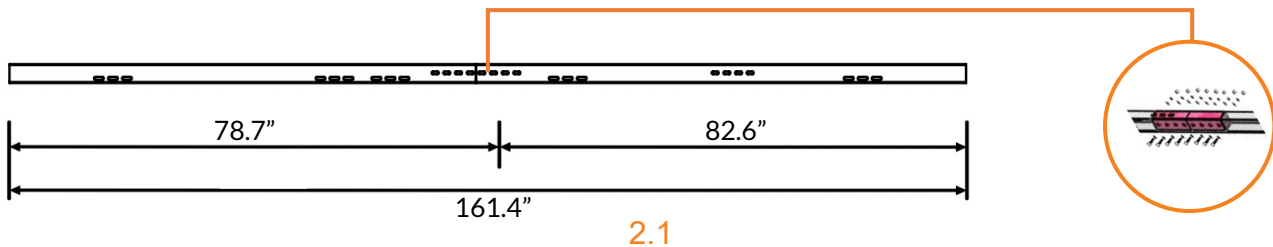
Insert Ground Screw, Trident Mount, or other approved ground mount attachment into the ground according to drawing.

1



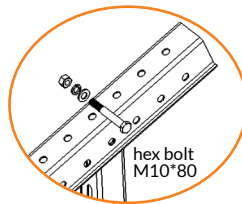
Connect 2 sections of the top beams (78.7" & 82.6") with the Beam Splice (15.7") connect the beams with the M10x80 Hardware, once 2 beams are spliced together the new total beam length will be 161.4" Mark the 82.6" section of Beam with a clearly visible mark on beam that can be seen from a top view. Ensure that the marked portion of the beam is installed on the high side or the side with the longest legs. (The marked portion was originally 82.6")

2



Install the beam on front leg and rear leg by hex bolts M10*80 (1 flat washer, 1 spring washer, 1 nut).

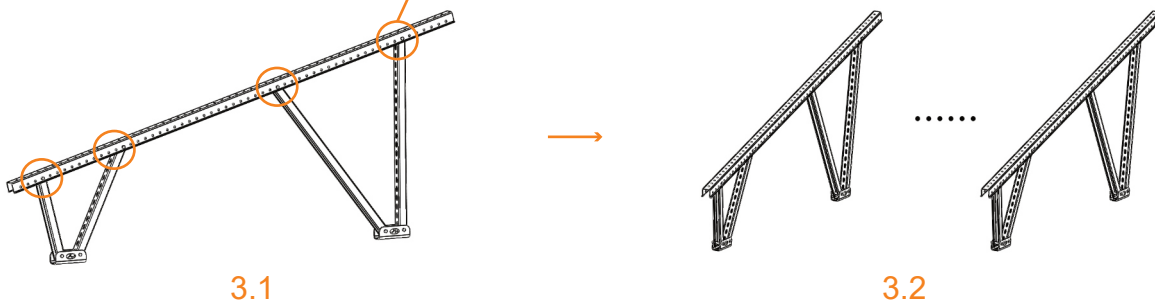
M10: tighten torque is 30N.m;
safe torque is 40N.m;

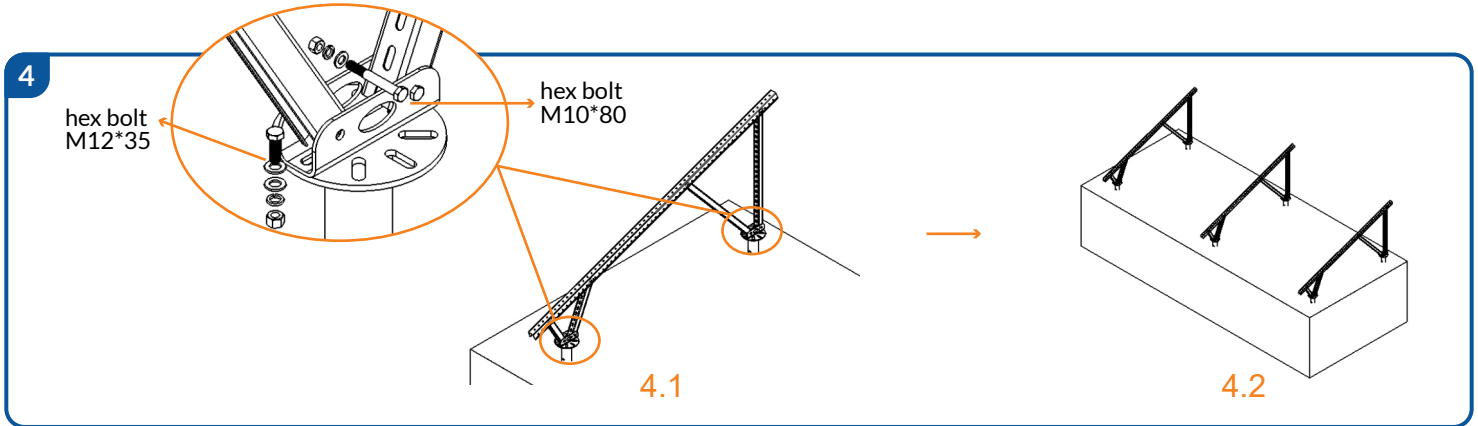


The front V leg and rear V leg are pre-assembled with V bases by hex bolts M10*80 (1 flat washer, 1 spring washer, 1 nut).

M10: tighten torque is 30N.m; safe torque is 40N.m;

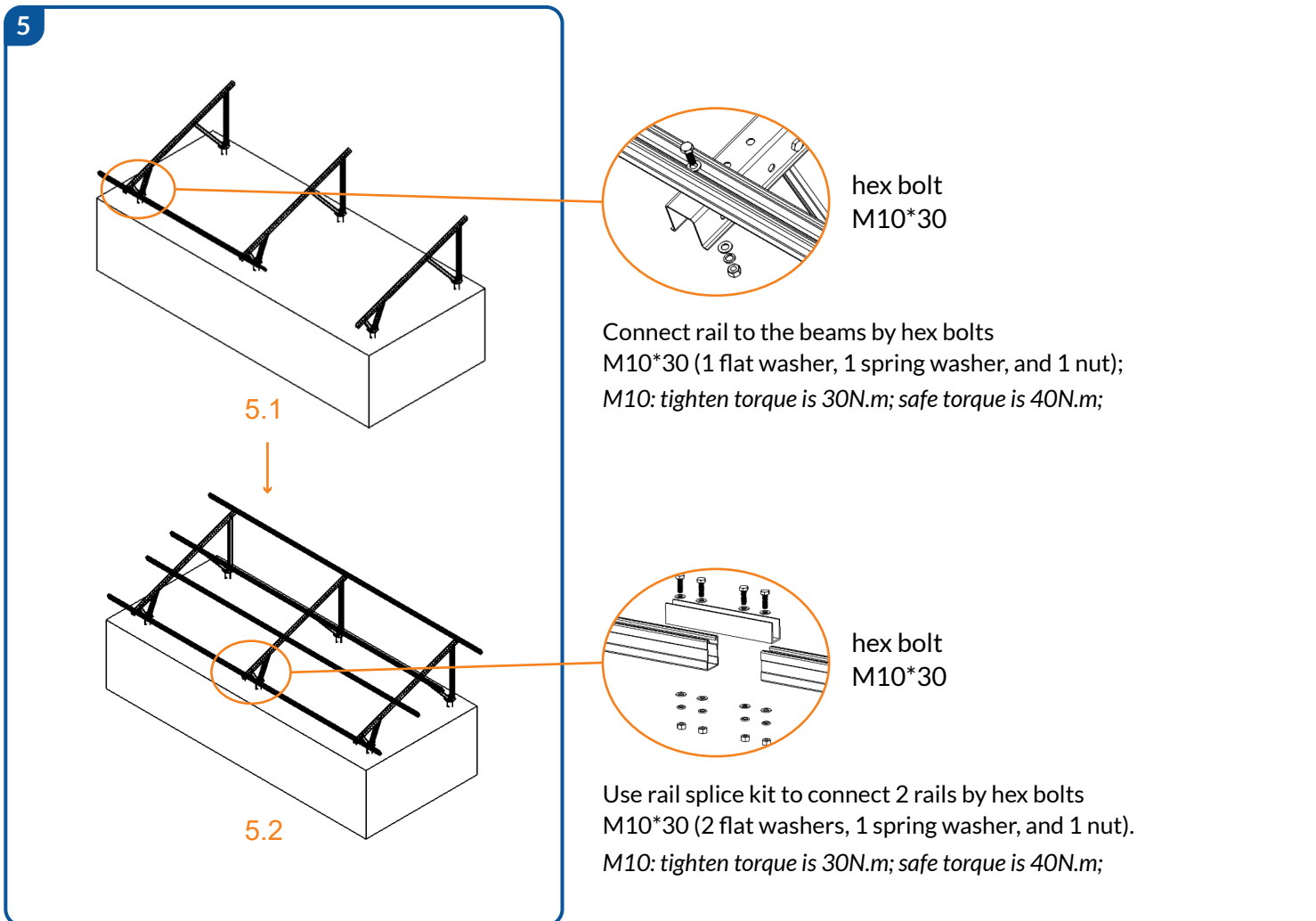
3



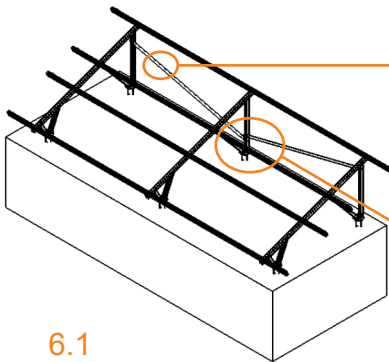


Connect the V leg bases to ground screws by hex bolts M12*35 (2 flat washers, 1 spring washer, 1 nut);
M12: tighten torque is 50N.m; safe torque is 55N.m;

Use the same attachment method and torque specs when utilizing the Trident Mount. When connecting bases to concrete using anchor bolts follow the specific anchor bolt installation instructions.



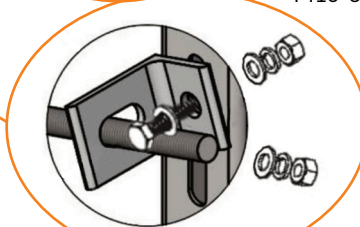
6



6.1



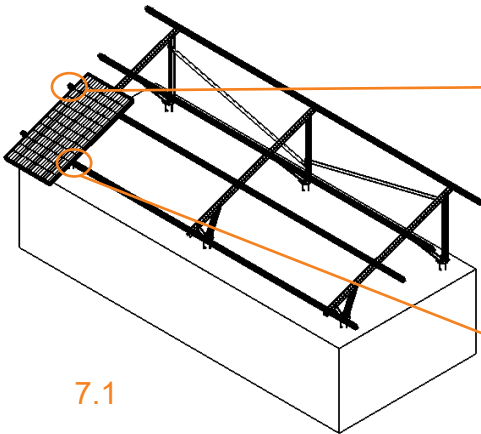
hex bolt
M10*60



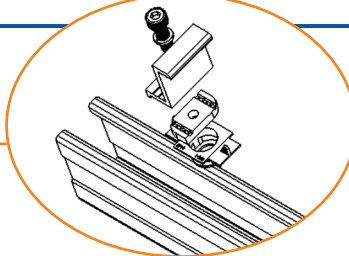
Connect 2 sections of strengthening pipe with orchid bolt in the middle of the pipes, then connect either end of the connected strengthening pipe between 2 rear V legs by hex bolts M10*60 (2 flat washer, 1 spring washer and 1 nut) after threaded rod has been inserted through connection bracket place washers and nut on end of strengthening pipe.

M10: tighten torque is 30N.m; safe torque is 40N.m;

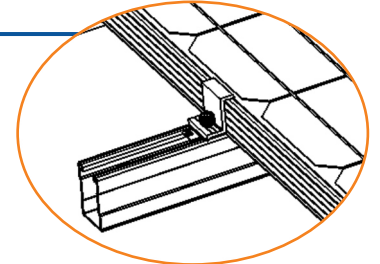
7



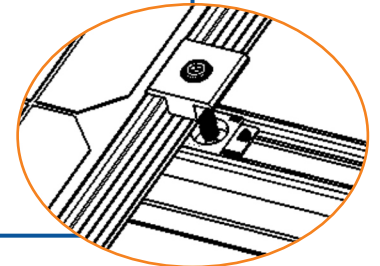
7.1



hex bolt
M8*25



hex bolt
M8*50

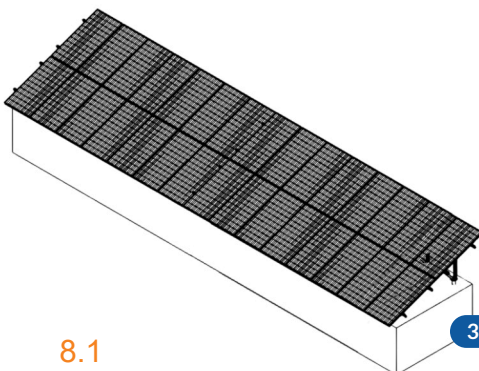


Install panels onto rails by fastening mid and end clamps.

Note: End clamps by inner hex bolts M8*25 (1 spring washer, 1 plastic steel nut);
Mid clamps by inner hex bolts M8*50 (1 spring washer, 1 plastic steel nut).

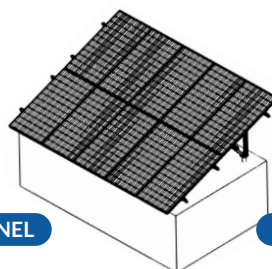
M8: tighten torque is 15N.m; safe torque is 20N.m;

8



8.1

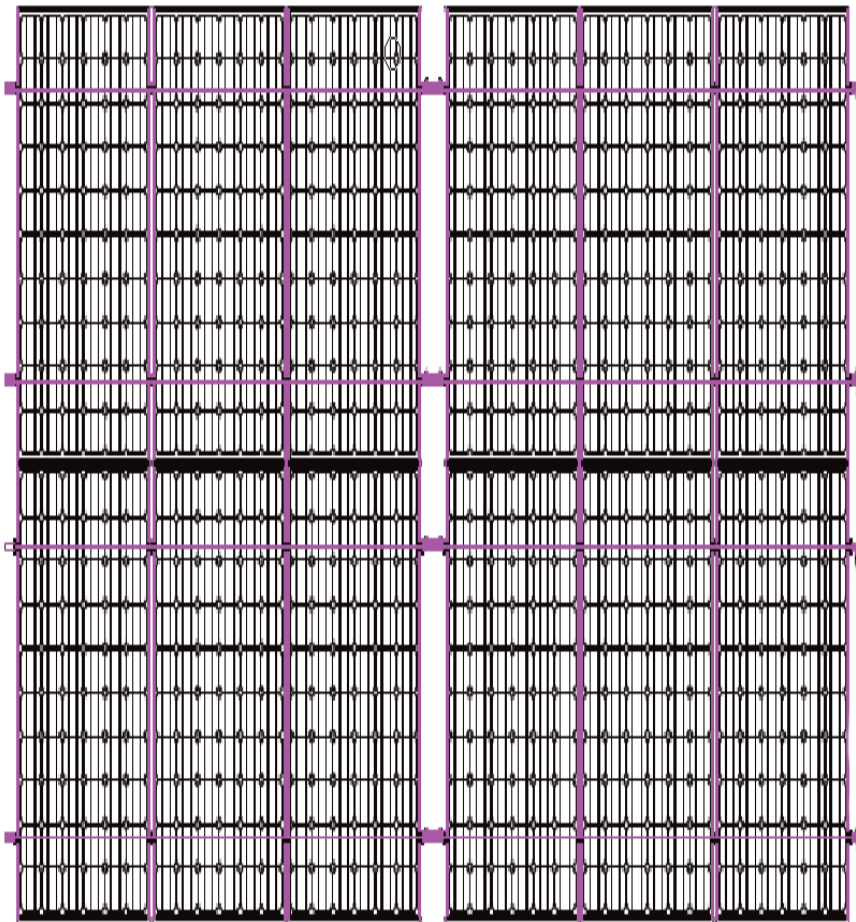
30 PANEL



10 PANEL

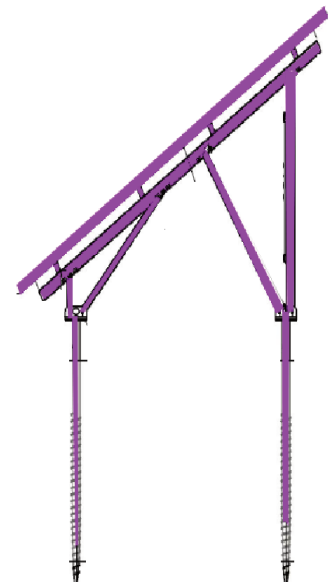
Double-check to make sure all bolts are fastened tight after installing all the panels.

VI Grounding System



The grounding function of the whole mounting system connections is achieved by the following steps

1. Grounding Mid Clamp and Grounding End Clamp: Grounding & Solar Panel
2. Rail Splice Kit : Connect two rails
3. Beam Splice Kit : Connect two Beams
4. SUS Bolt and Nut: All mounting system connected
5. Ground screw: connect the mounting system to the ground
6. Grounding Lug
7. Copper wire (or other steel products): connect the mounting system to the ground (if not ground screw foundation, such as concrete)



Grounding Lugs are intended for use with one solid or stranded copper wire, conductor size range 10-6 AWG following local municipal and/or AHJ guidelines

CONTINUING MAINTENANCE

- a) Any loose components or fasteners shall be re-tightened in accordance with these instructions
- b) Any components showing signs of damage that compromise safety shall be replaced immediately

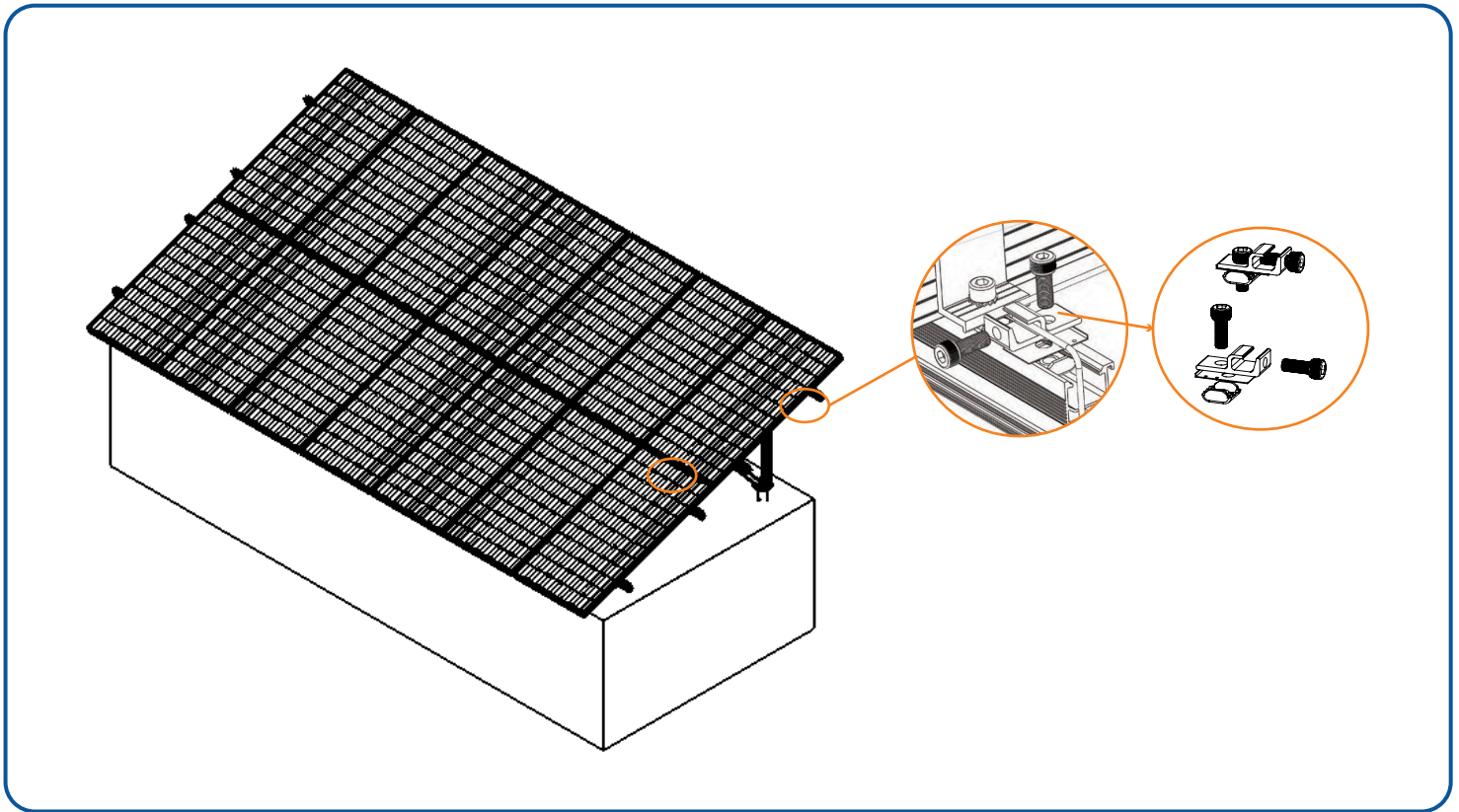
FOR SINGLE USE ONLY

Bonding and grounding devices, are "For single-use only", NOT multiple use) Module removal may disrupt the bonding path and could introduce the risk of electric shock. To ensure that the bonding path remains intact, additional steps may be necessary; qualified persons should follow the instructions in this manual."

Scenerios that could result in a disruption of the bonding path are irregularly-shaped arrays, arrays consisting of individual rows or any other scenario where module removal could disrupt the bonding path.

Installation of Grounding Lug

Install a grounding lug (500mm from the rail end) on to each rail line edge with an inner hex bolt M8*25 and a stainless steel nut, then cross 8.4mm² (greater than or equal to 8AWG) copper wire through all the grounding lugs (fixed by M8*20 inner hex bolt), finally connect copper wire to the ground. The grounding lug has grounding function when fastened tight to connect rail and copper wire. M8 Torque: 15~20N.m



Electrical Characteristics of AWG Copper Wire

AWG	Diameter [inches]	Diameter [mm]	Resistance [Ohm / 1000ft.]	Resistance [Ohm / km]	Max Current [Amperes]	Max Frequency for 100% skin depth
6	0.162	4.1148	0.3951	1.295928	37	1100 Hz
7	0.1443	3.66522	0.4982	1.634096	30	1300 Hz
8	0.1285	3.2639	0.6282	2.060496	24	1650 Hz
9	0.1144	2.90576	0.7921	2.598088	19	2050 Hz
10	0.1019	2.58826	0.9989	3.276392	15	2600 Hz

Authorized to Mark

Equipment and components are authorized to be marked with the manufacturer's name, trade name, trademark or other descriptive marking which identifies the organization responsible for The product, part number, and/or model number.

System Model No : CK-U2V

Max. Rated Current : 30A

Max. Size : 6000mm

System Fire Class Rating : NA

See Installation Instructions for Installation Requirements to achieve a Specified System UL2703 Grounding with this Product.

Manufactured Add : No 680 Xingwen Rd. Jiading dist.
Shanghai 201815, China

Production Date : 20230315

Design Load :

- a) Downward Pressure - 10 psf
- b) Upward Pressure - 5 psf
- c) Down-Slope Load - 5 psf



EXAMPLE SPAN CHARTS (20 DEGREES)

Potrait

Standard Strength

72 Cell Module

Allowable Rail Span (ft.) based on Wind Speed and Ground Snow Load

20 DEGREES	Wind Speed	Ground Snow Loads				
		0 psf	20 psf	40 psf	60 psf	80 psf
	90 MPH	9	7	6	4	-
	100 MPH	8	7	5	4	-
	1150 MPH	6	6	5	4	-
	130 MPH	5	5	4	-	-
150 MPH	-	-	-	-	-	

Potrait

Standard Strength

Large Format Module

Allowable Rail Span (ft.) based on Wind Speed and Ground Snow Load

20 DEGREES	Wind Speed	Ground Snow Loads				
		0 psf	20 psf	40 psf	60 psf	80 psf
	90 MPH	8	7	5	4	-
	100 MPH	7	6	4	-	-
	1150 MPH	5	5	4	-	-
	130 MPH	4	4	-	-	-
150 MPH	-	-	-	-	-	

Panel Start Location for 10 and 30 Panel Systems using 9' Spans

10 Panel System

$$\frac{\text{Panel Width}}{\text{# of Panels in Row Spacing}} \times 5 = \frac{\text{Distance of Clamps}}{6"} = \frac{\text{Total Panel Width Plus Clamp Distance}}{\text{Total Rail Length}} - 248" = \frac{\text{Distance From End of Rail to 1st Panel}}{2}$$

Example : (Using 41.1" wide module)

$41.1" \times 5 = 205.5" + 6" = 211.5" - 248" = -36.5" / 2 = -18.25" = 18.25"$ Distance from end of Rail 1st Panel Edge Installed

End of Rail to Beam Distance 16"

Max Panel Width 48.4"

AHJ to provide max wind and snow span requirements for install location

30 Panel System

$$\frac{\text{Panel Width}}{\text{# of Panels in Row Spacing}} \times 15 = \frac{\text{Distance of Clamps}}{16"} = \frac{\text{Total Panel Width Plus Clamp Distance}}{\text{Total Rail Length}} - 661.4" = \frac{\text{Distance From End of Rail to 1st Panel}}{2}$$

Example : (Using 41.1" wide module)

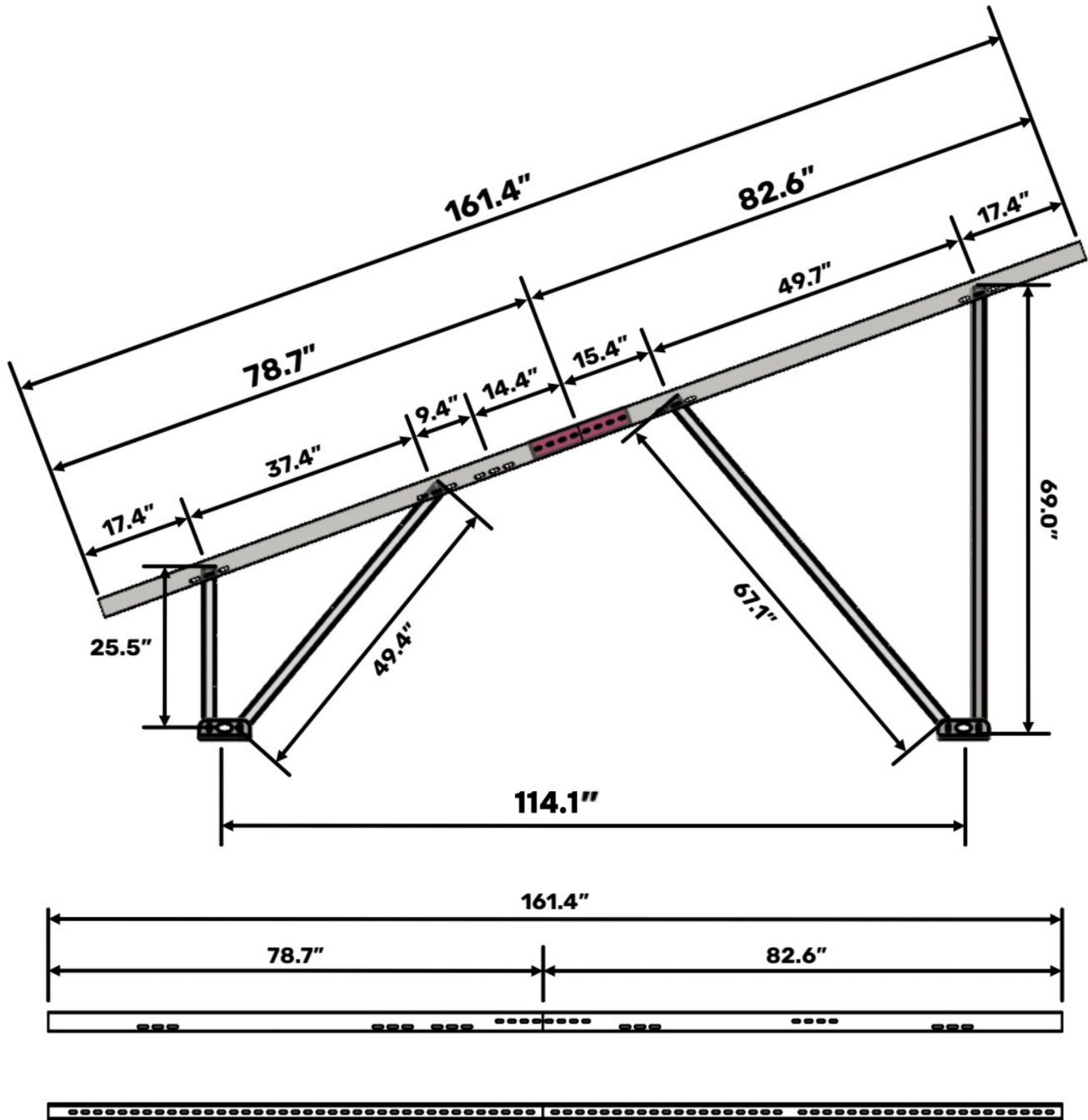
$41.1" \times 15 = 616.5" + 16" = 632.5" - 661.4" = -28.9" / 2 = -14.45" = -14.45"$ Distance from end of Rail 1st Panel Edge Installed

End of Rail to Beam Distance 6.7"





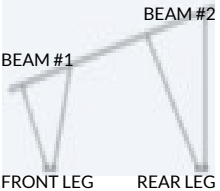




Max Panel Width 43"

AHJ to provide max wind and snow span requirements for install location





Side Profile Ground Mount



CHIKOUSA Ground Mount 10 Panel System | 9 Foot Span | BOM





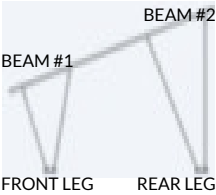


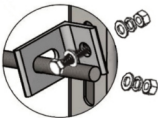

NEW CHIKO GROUND MOUNT; NUMBER OF NALES;			10	(9 FOOT SPAN)
IMAGES	BOM COUNT	LENGTH IN INCHIES	DESCRIPTION	PART NUMBER
	12	82.7	U72 Rail (2100mm)	CK-UR72-T2.5-001-2100
	12	9.8	U72 Rail Splice Kit	CK-0221RU72-3-200
	20		Mid clamp (30-40mm with grounding pin)	CK-777RU-K-(30-40)-50
	8		End clamp (30-42mm with ground pin)	CK-749RU-K-(30-42)-40
	3	78.7	Beam #1-(2000mm)	CK-ET-011-197-34-C26-1 - U2V-2000mm
	3	82.7	Beam #2-(2100mm)	CK-ET-011-197-34-C26-1 - U2V-2100mm
	3	25.6 and 49.4	Front V LEG (Assembled)	CK-ET-011-197-34-C26-2 CK-U2V-V-1705/1753
	3	67.1 and 69.0	Rear V LEG (Assembled)	CK-ET-011-197-34-C26-3 CK-U2V-V-1705/1753
	12		Bolts Kit for V Leg attached to Beam	CK-HS-006-2
	3	78.7	Strengthen Pipe #1 (2000mm)	CK-ET-011-197-34-C26-4 Strengthen Pipe 2000mm+1000mm + Connector
	3	39.4	Strengthen Pipe #2 (1000mm)	
	6		Strengthen pipe fix kit with Bolts	
	12		Nut and washer to fix Pipe	
	3		ORCHID BOLT/ PIPE Connector	

CHIKOUSA Ground Mount (CONTINUED)
10 Panel System | 9 Foot Span | BOM



	6	65.0	Ground screw	CK-GST-N16-3.0T2(H)-800-1600
	6	31.5	Adjustable Flange	
	36		Bolt to Tighten Top Flange to Ground Screw Bottom	
	12		Bolt to attach bottom V Legs to ground screw	CK-JGH-Q1235-2
	1		Grounding Lug	CK-592RU-1-20
	10		MLPE BOLT KITS for micro-inverter	CK-003RU(微逆-37
	12	5.9	Concrete Expansion Bolt M12*150	CK-JEB-12150

Mounting option: Ground Screw, Trident Mount, or Concrete Bolts (One Option Only)

CHIKOUSA Ground Mount 30 Panel System | 9 Foot Span | BOM

NEW CHIKO GROUND MOUNT; NUMBER OF NALES;			30	(9 FOOT SPAN)
IMAGES	BOM COUNT	LENGTH IN INCHIES	DESCRIPTION	PART NUMBER
	32	82.7	U72 Rail (2100mm)	CK-UR72-T2.5-001-2100
	32	9.8	U72 Rail Splice Kit	CK-0221RU72-3-200
	60		Mid clamp (30-40mm with grounding pin)	CK-777RU-K-(30-40)-50
	8		End clamp (30-42mm with ground pin)	CK-749RU-K-(30-42)-40
	7	78.7	Beam #1-(2000mm)	CK-ET-011-197-34-C26-1 - U2V-2000mm
	7	82.7	Beam #2-(2100mm)	CK-ET-011-197-34-C26-1 - U2V-2100mm
	7	25.6 and 49.4	Front V LEG (Assembled)	CK-ET-011-197-34-C26-2 CK-U2V-V-1705/1753
	7	67.1 and 69.0	Rear V LEG (Assembled)	CK-ET-011-197-34-C26-3 CK-U2V-V-1705/1753
	28		Bolts Kit for V Leg attached to Beam	CK-HS-006-2
	7	78.7	Strengthen Pipe #1 (2000mm)	CK-ET-011-197-34-C26-4 Strengthen Pipe 2000mm+1000mm + Connector
	7	39.4	Strengthen Pipe #2 (1000mm)	
	14		Strengthen pipe fix kit with Bolts	
	28		Nut and washer to fix Pipe	
	7		ORCHID BOLT/ PIPE Connector	

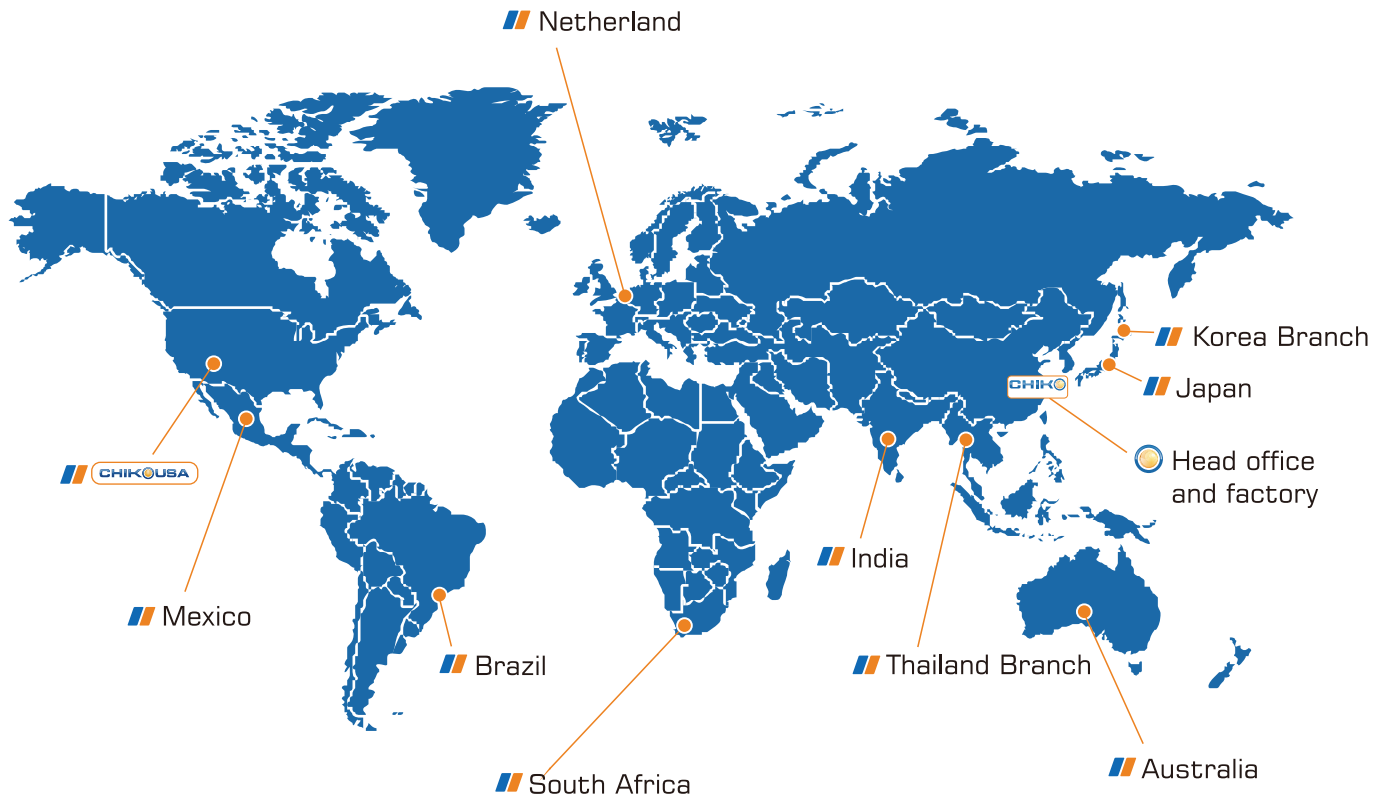
CHIKOUSA Ground Mount (CONTINUED)
30 Panel System | 9 Foot Span | BOM

	14	65.0	Ground screw	CK-GST-N16-3.0T2(H)-800-1600
	14	31.5	Adjustable Flange	
	84		Bolt to Tighten Top Flange to Ground Screw Bottom	
	28		Bolt to attach bottom V Legs to ground screw	
	1		Grounding Lug	CK-592RU-1-20
	30		MLPE BOLT KITS for micro-inverter	CK-003RU(微逆-37
	28	5.9	Concrete Expansion Bolt M12*150	CK-JEB-12150

Mounting option: Ground Screw, Trident Mount, or Concrete Bolts (One Option Only)

WORLDLEADING

M A N U F A C T U R E



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