

GRIDFLEX[™] 10 INSTALLATION GUIDE



UNIRAC Code-Compliant Installation Manual

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TECHNICAL SPECIFICATIONS:

Maximum System Voltage: 1500V

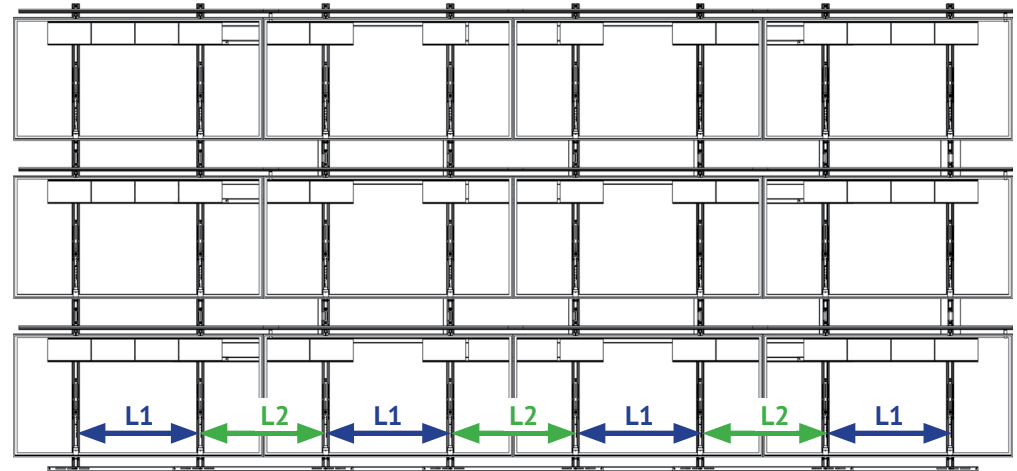
Maximum Module Dimensions: 100" x 52"

Minimum Module Dimensions: 65" x 39"

Hardware: Stainless steel

TOOLS REQUIRED OR RECOMMEND FOR LAYOUT, ATTACHMENTS, AND INSTALLATION:

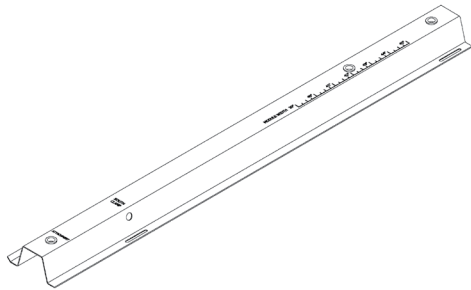
- Drill (Do Not Use an Impact Driver)
- 3/8" Socket
- Torque Wrench
- Tape Measure
- Chalk Reel
- Optional L1 and L2 Span Spacers



- *Refer to construction drawing for L1 and L2 spans.*
- *L1 and L2 spans are measured from rail center to rail center*

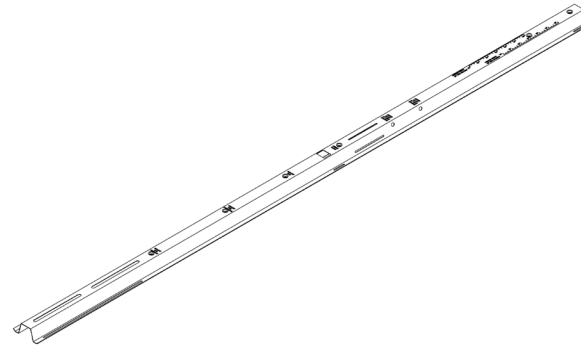
IMPORTANT

All applicable OSHA safety guidelines should be observed when working on a PV installation job site. The installation and handling of PV solar modules, electrical installation and PV racking systems involves handling components with potentially sharp metal edges. Rules regarding the use of gloves and other personal protective equipment should be observed.



SOUTH RAIL (P/N: 380010/380020)

The rail is made of structural steel, pre-assembled with 1/4" SS Riv-Hex nuts. Module width scale is marked on rail, for overlap alignment.

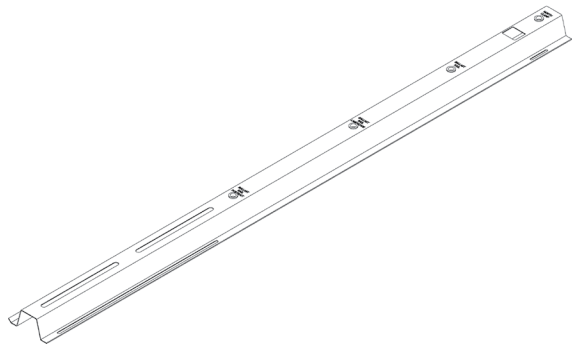


MID RAIL (P/N: 380100/380110/380120/380130)

The rail is made of structural steel, pre-assembled with 1/4" Riv-Hex nuts, SS.

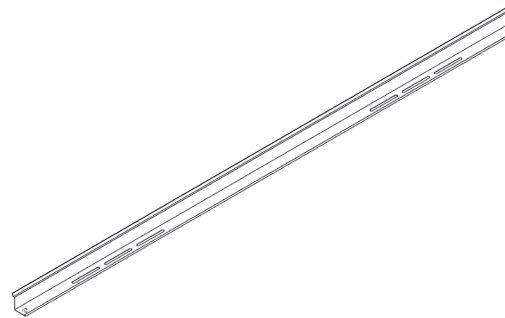
NOTE:

Mid rails have a provision to adjust the row to row spacing (10" or 13"). Two module-width scales, each corresponding 10" and 13" row spacing are printed on rail, so that rails are overlapped to achieve accurate module width connection.



NORTH RAIL (P/N: 380200)

The rail is made of structural steel, pre-assembled with 1/4" Riv-Hex nut, SS.



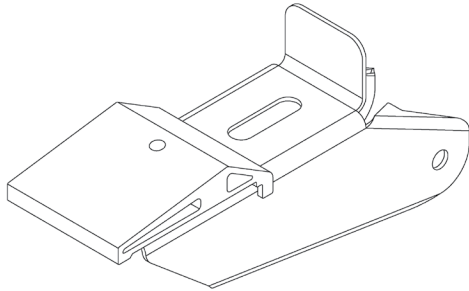
BALLAST RAILS (P/N: 380300)

Ballast Rails are made of structural steel and hold standard ballast blocks.

BALLAST TRAY NOTE:

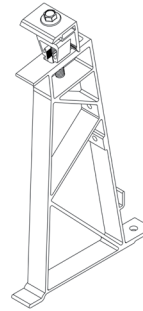
Ballast rails can fit up to 4 standard 4"x8"x16" solid concrete cap blocks in landscape and 8 blocks in portrait. If more than 6 blocks are required, additional rails will be placed over the initially laid rails on both sides.

P/N stands for Part Number



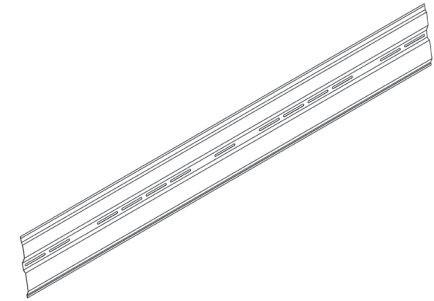
SOUTH CLAMP (P/N: 380700)

The south clamp assembly is made of a structural steel and engages the return flange underneath the module to secure the module.



NORTH STANCHION (P/N: 380601)

The north stanchion assembly is made of a mill finish Aluminum and secures the module.

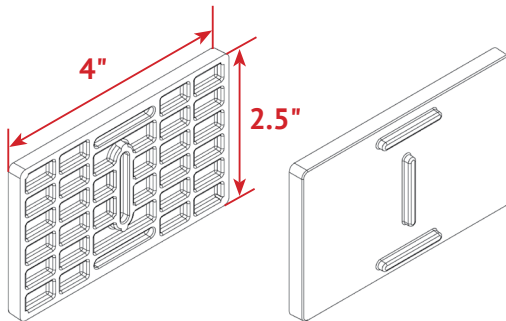


WIND DEFLECTORS

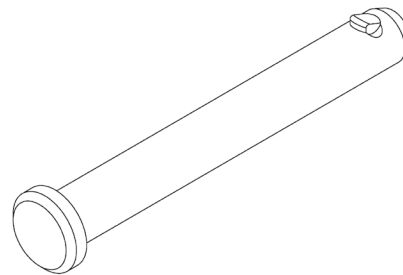
(P/N: 380400/ 380410/380420/ 380430/ 380440/ 380450/380401 380402)

Wind deflectors are made of steel. Multiple lengths are available to accommodate different module lengths

IMPORTANT: WIND DEFLECTORS ARE REQUIRED ON ALL MODULES



ROOF PAD (P/N: 380800) The Roof Pad provides a protective interface between the rails and roofing material to protect the roof membrane.

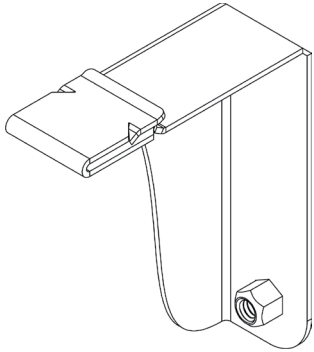


CLEVIS PIN (P/N: M31216)

The clevis pin is made of mill finish Aluminum with a self-locking Stainless Steel wedge pin to secure the south clamp to the base rail.

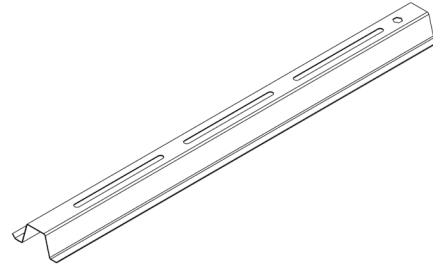
HARDWARE:

1. 1/4"-20 X 0.75" Hex Head Bolt
2. 5/16" Flat Washer, 1" OD, .125 Thick



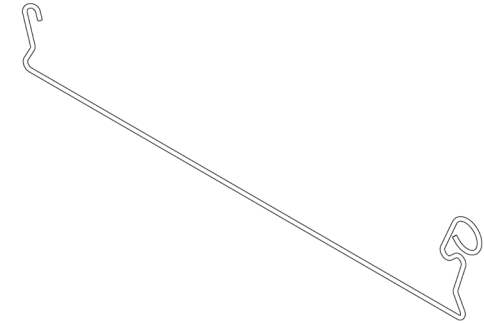
WIND DEFLECTOR BRACKET (P/N: 380405)

The wind deflector end bracket is made of steel and reinforces the cantilever of the wind deflector.



SOUTH RAIL STIFFENER (P/N: 380050/380051)

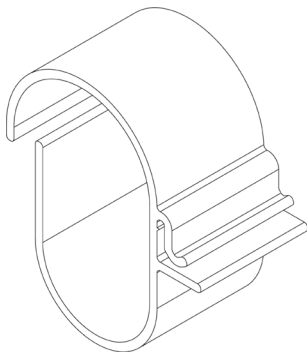
The south rail stiffener is made of steel and reinforces the mid rail to south rail connection.



BALLAST RAIL BRACE (P/N: 380301)

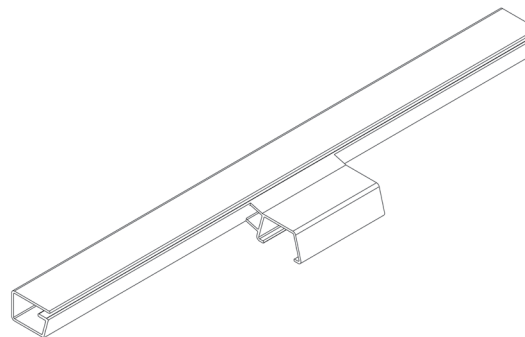
The ballast rail brace is made out of stainless steel and reinforces the ballast rails in the L1 spacing with high ballast counts.

WIRE MANAGEMENT ACCESSORIES (OPTIONAL)



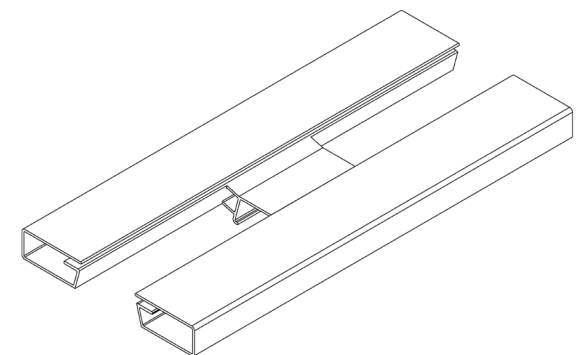
WIRE MANAGEMENT CLIP, (P/N: 380900)

The wire management clip is made of PVC plastic and is used to route wires in the east-west direction along the ballast rail



INTER-ROW WIRE MANAGEMENT COVER (P/N: 380910/ 380950)

The inter-row wire management cover is made of PVC plastic and is used to route and protect wires running north-south direction between module rows.



HOMERUN WIRE MANAGEMENT COVER (P/N: 380920/ 380940)

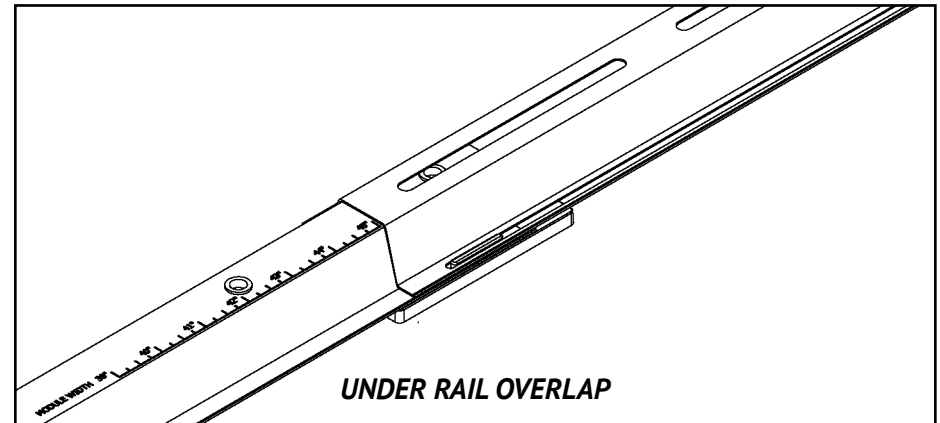
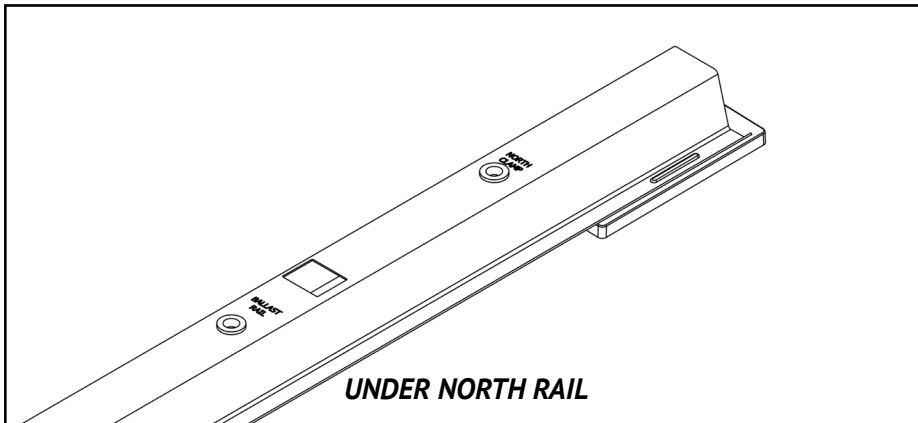
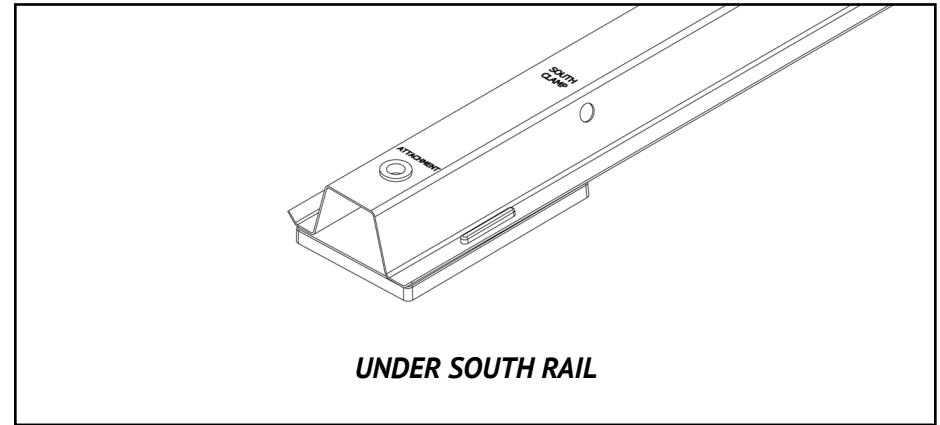
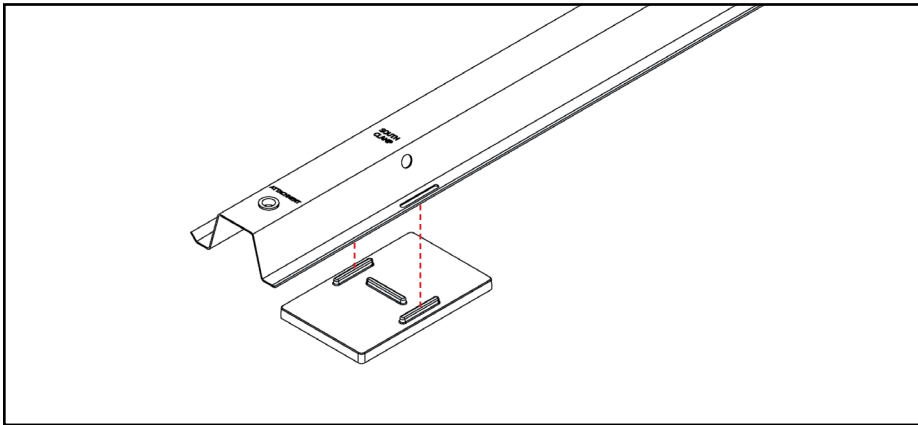
The homerun wire management cover is made of PVC plastic and is used to route and protect homerun bundles running north-south direction between modules rows.

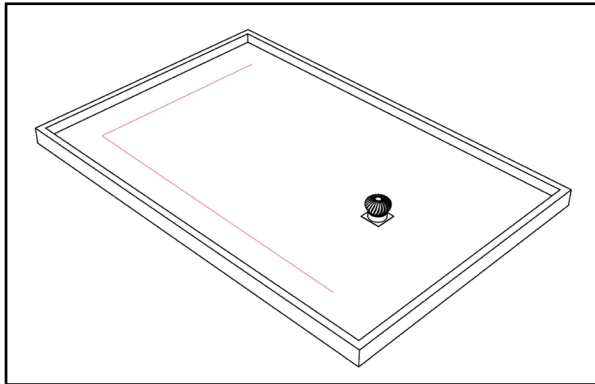
INSTALL ROOF PADS ON RAILS

Attach roof pads to all pre-punched slots in rails. Install a roof pad under every north stanchion, rail overlap, and south clamp located at the south edge of the array.



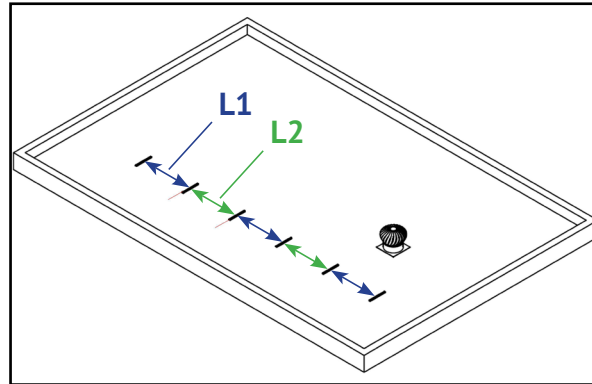
Ensure there is no direct contact between metal parts and the roof membrane to prevent damage and potential leaks.





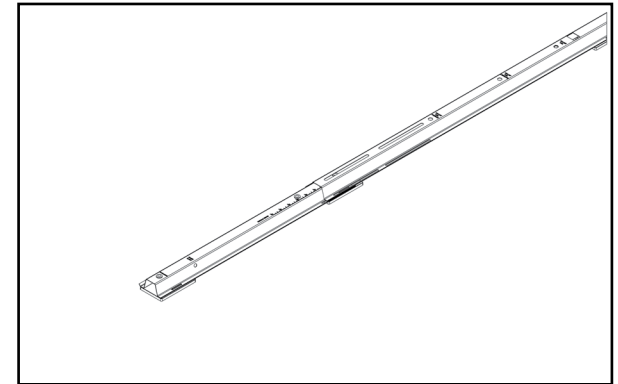
STEP 1: MARK ARRAY LAYOUT ON ROOF:

Use chalk line to mark distances from roof edge as called out in construction documents.



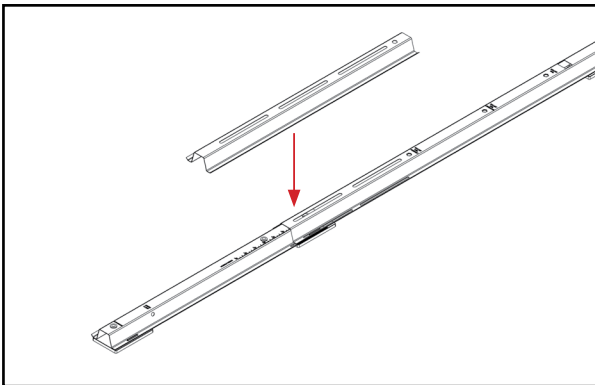
STEP 2: LOCATE ARRAY ON ROOF:

Place south rails on previous chalk lines. Follow L1 & L2 rail spans as per construction documents.



STEP 3: ATTACH SOUTH RAIL TO MID RAIL:

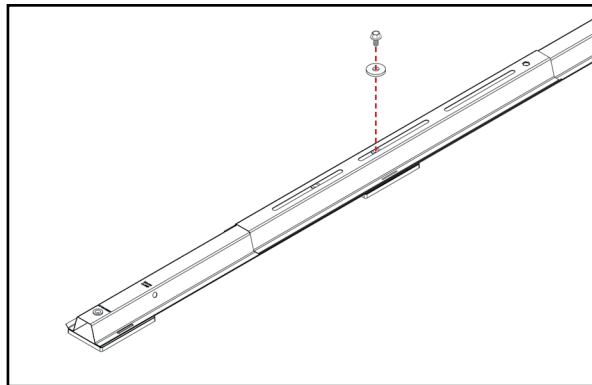
Overlap Mid-Rails on top of South Rails, use the measurement scale printed on the rail to determine the overlap length. Match the value on scale to the module width.



STEP 3: ATTACH SOUTH RAIL TO MID RAIL

(CONT.):

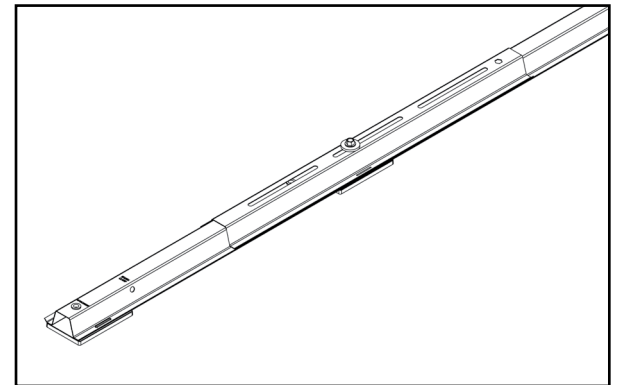
Place the stiffener over both the mid and south rails, ensuring the hole in the stiffener aligns with the hole in the mid rail labeled 'Ballast Rail Portrait'.



STEP 3: ATTACH SOUTH RAIL TO MID RAIL

(CONT.):

Insert a $\frac{1}{4}$ -20 hex bolt with a flat washer through the slot in the stiffener and into the riv-nut on the south rail.

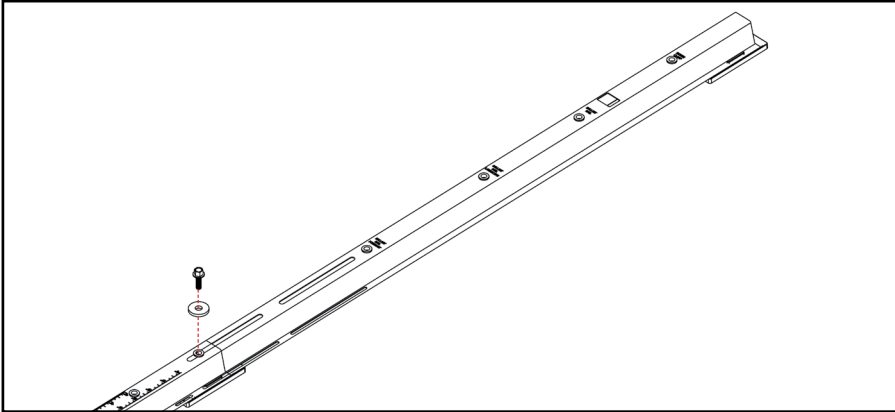


STEP 3: ATTACH SOUTH RAIL TO MID RAIL

(CONT.):

Torque $\frac{1}{4}$ -20 hex bolt to 12 ft-lbs

NOTE: Stiffener is not needed for base rails with mechanical attachments



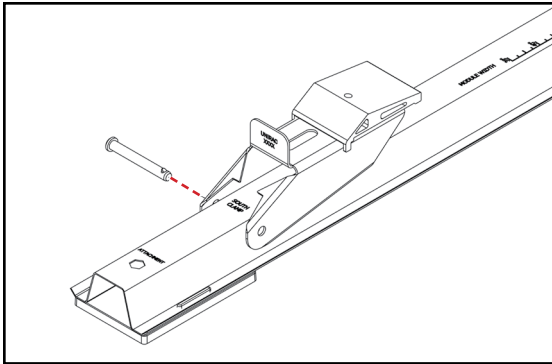
STEP 4: ATTACH MID-RAIL TO MID-RAIL/ MID-RAIL TO NORTH-RAIL :

Overlap next rail (Mid or North) on top of rail laid on roof, use the measurement scale (**10", 13" or 17" row spacing**) printed on the rail to determine the overlap length. Match the value on scale to the module width. Insert $\frac{1}{4}$ -20 hex bolt with flat washer into riv-nut and secure the rails.

Torque value – 12 ft-lbs

NOTE: In STEP 3 and STEP 4

- If two riv-nuts are showing in the rail slots, secure the rails to the riv-nut that is closer to the North side.
- For modules that do not measure to $\frac{1}{4}$ " increments, round down to the next $\frac{1}{4}$ " mark.

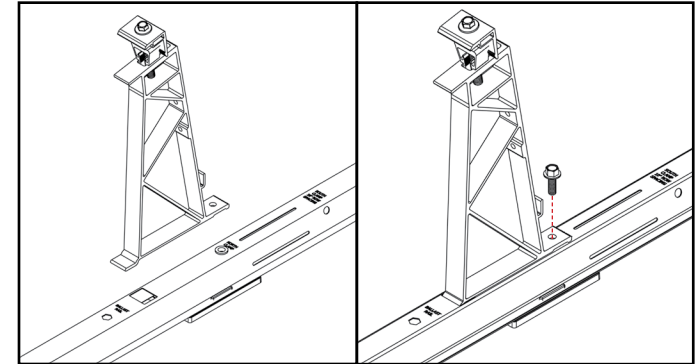
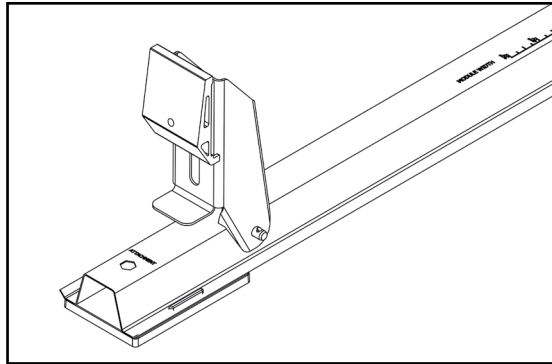


STEP 5: ATTACH SOUTH CLAMP

- Place the south clamp at the specified location on the base rail.
- Align holes in the south clamp with the side holes of rail and insert a clevis pin (from either direction).
- Rotate the south clamp to vertical.

CAUTION

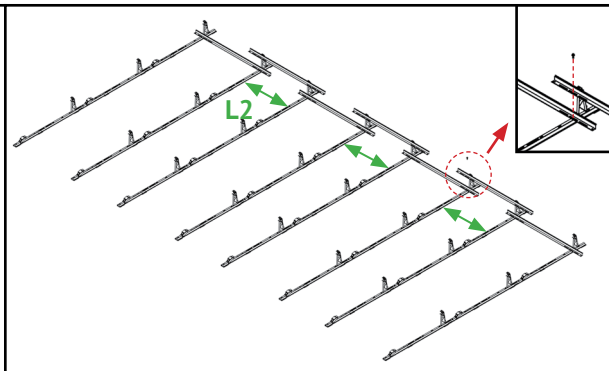
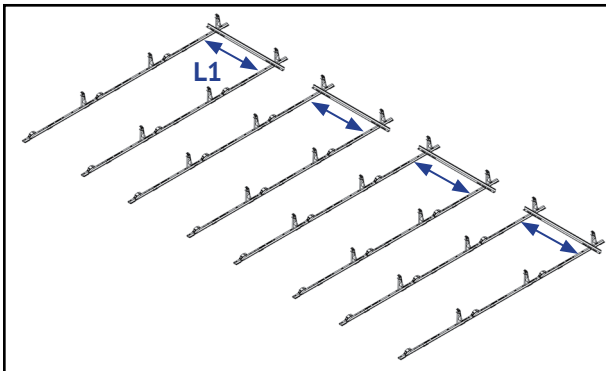
Ensure Clevis Pin is fully inserted.



STEP 6: ATTACH NORTH CLAMP:

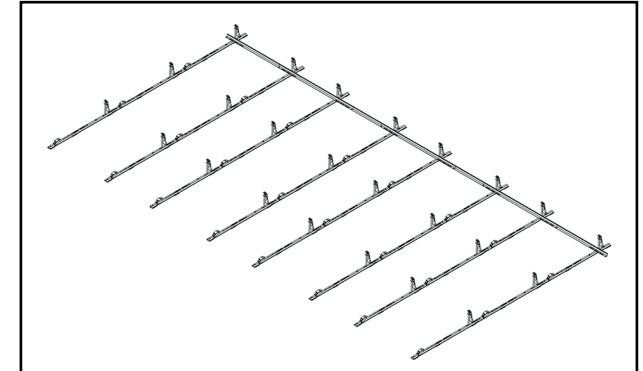
- Insert the front tab of the North Clamp into the slot on the base rail at the specified location.
- Secure with a $\frac{1}{4}$ -20 hex head bolt through the rear hole into the riv-nut

Torque value – 12 ft-lbs



STEP 7: BALLAST RAILS INSTALLATION (NORTH-SIDE OF BALLAST BLOCK):

- Place the ballast rails at L1 span locations.
- Then place the ballast rails at L2 span locations.
- Align the slots in the ballast rails with the holes on the base rail.

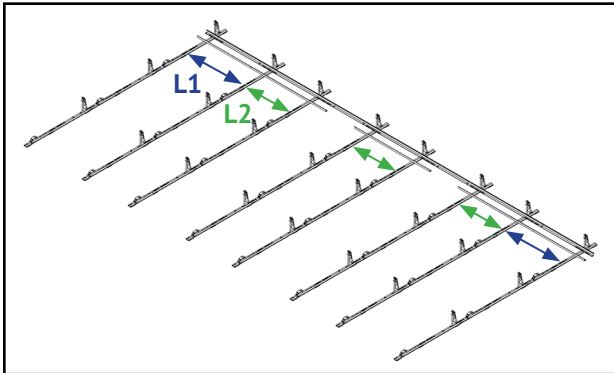


BALLAST RAILS INSTALLATION

(NORTH-SIDE OF BALLAST BLOCK)(CONT.):

- Secure the ballast rails with a $\frac{1}{4}$ -20 hex head bolt to rails.

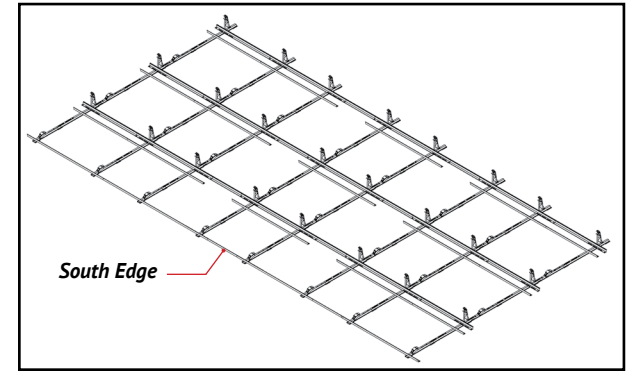
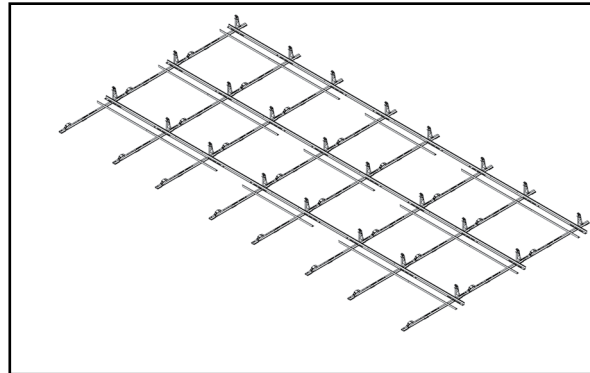
Torque value – 12 ft-lbs



STEP 8: BALLAST RAILS INSTALLATION (SOUTH-SIDE OF BALLAST BLOCK):

- Place the ballast rails at L1 span locations on the east and west edges and continue placing them at L2 span locations.
- Secure the ballast rail to the mid/north rails with a $\frac{1}{4}$ -20 hex head bolt at a specified location to place ballast blocks in portrait or landscape orientation.

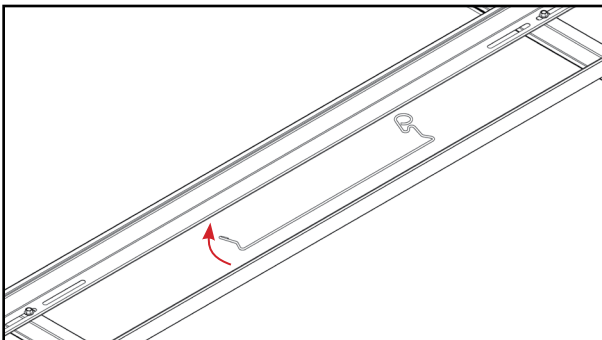
Torque value – 12 ft-lbs



STEP 9: BALLAST RAILS INSTALLATION

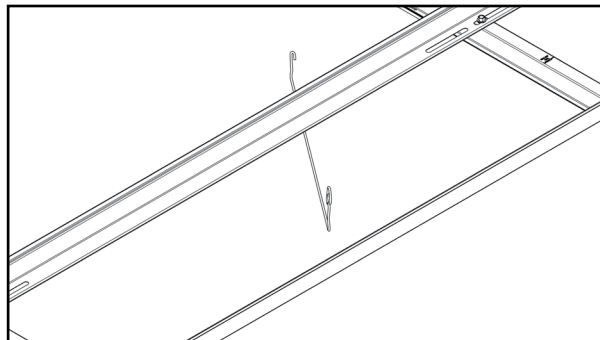
(SOUTH EDGE OF ARRAY):

- Follow **STEP 7** to install ballast rails on the south edge of the array.



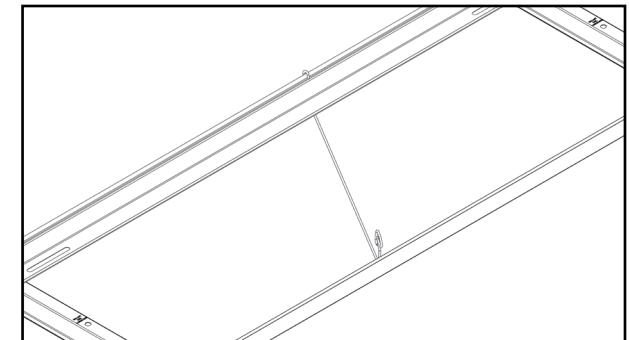
STEP 10: BALLAST RAIL BRACE INSTALLATION

- Place the rail brace between ballast rails and rotate it.
- Ensure rail brace is centered between base rails of L1 spacing.



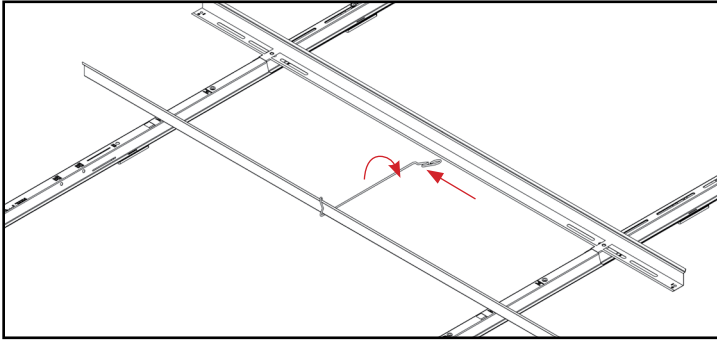
STEP 10: BALLAST RAIL BRACE INSTALLATION (CONT.)

- Hold the rail brace upright as shown in the figure above.



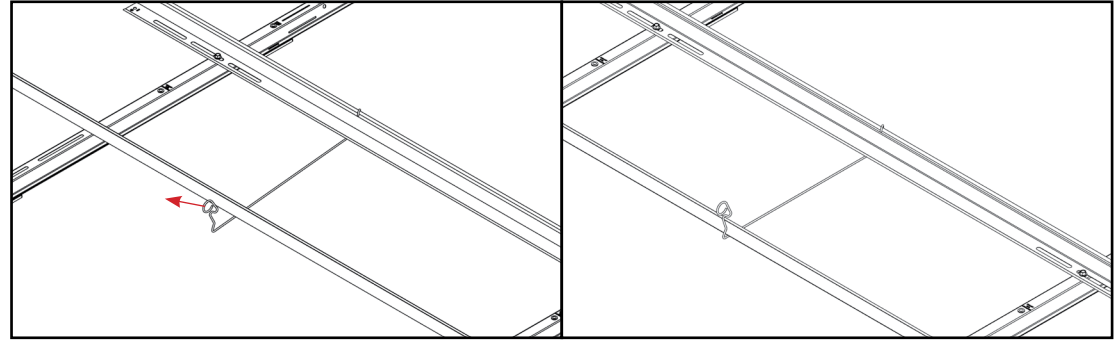
STEP 10: BALLAST RAIL BRACE INSTALLATION (CONT.)

- Hook the end of the rail brace without the loop onto the top of the ballast rail.



STEP 10: BALLAST RAIL BRACE INSTALLATION (CONT.)

- Twist the other end of the rail brace and slide it under the ballast rail to make the rail brace perpendicular to ballast rails.

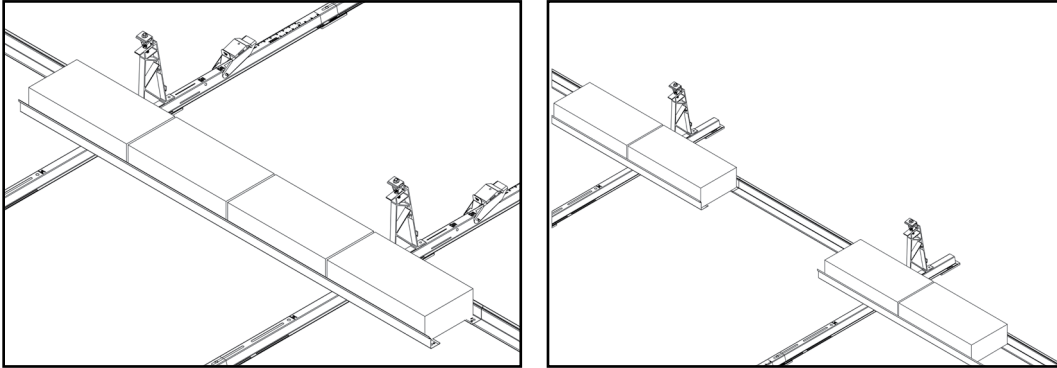


STEP 10: BALLAST RAIL BRACE INSTALLATION (CONT.)

- Pull the ring on the rail brace until it clicks onto the rail.

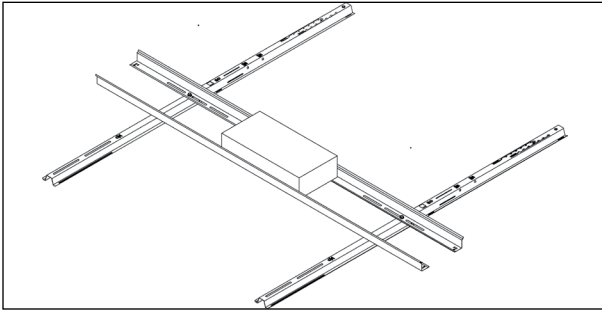
Use Double Ballast Rails and Ballast Rail Brace according to below table

MODULE LENGTH	BALLAST BLOCKS	DOUBLE BALLAST RAILS	BALLAST RAIL BRACE
65" to 79"	Upto 6 Blocks	Not Required	Not Required
	7 or 8 Blocks	Required	Not Required
79" to 92"	Upto 6 Blocks	Not Required	Not Required
	7 or 8 Blocks	Required	Required
92" to 100"	Upto 4 Blocks	Not Required	Not Required
	5 Blocks	Required	Not Required
	6 to 8 Blocks	Required	Required

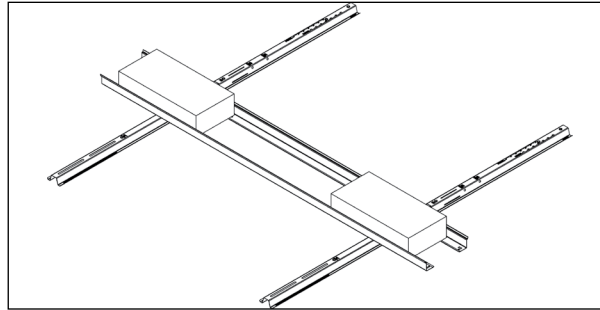
**STEP 11: LAY BALLAST BLOCKS:**

- Lay ballast blocks into ballast rails and quantity of blocks to be placed should be as per engineering report or U-Builder report.
- Ballast block placement for a given number of blocks - See pages **12 & 13**

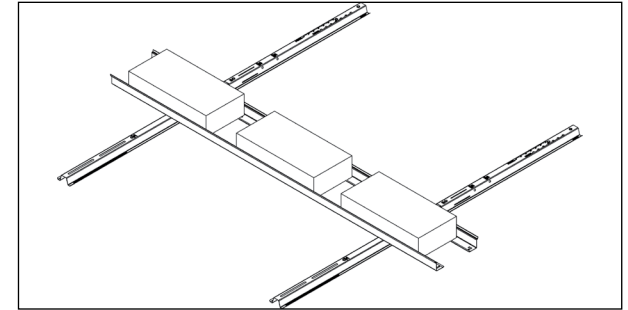
BALLAST BLOCKS CONFIGURATIONS AT EAST -WEST EDGES



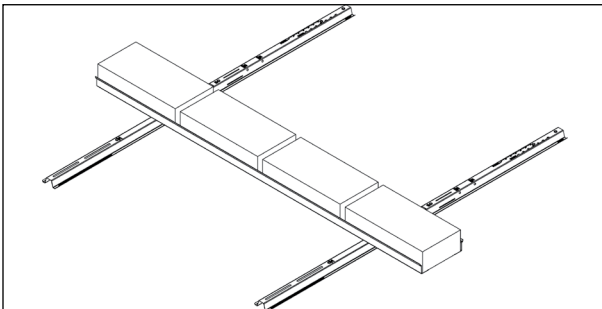
1-Block Configuration



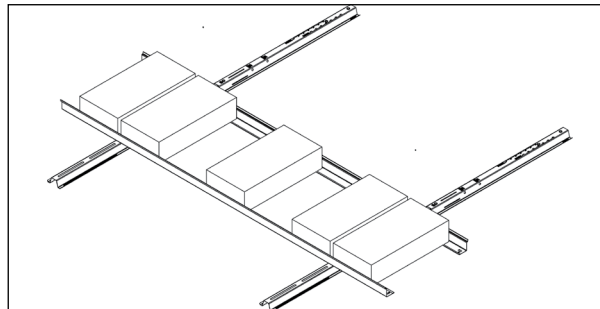
2-Block Configuration



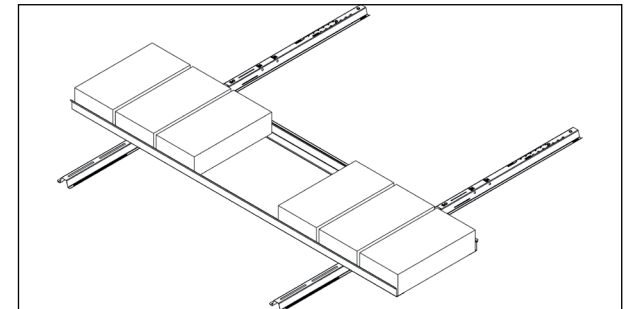
3-Block Configuration



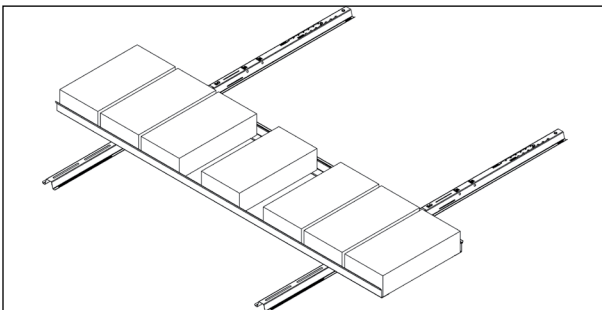
4-Block Configuration



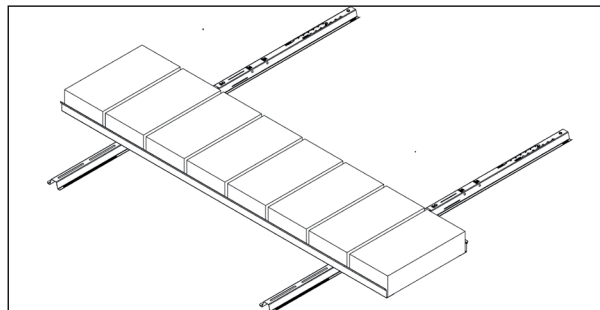
5-Block Configuration



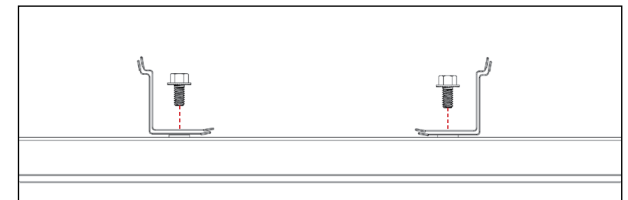
6-Block Configuration



7-Block Configuration

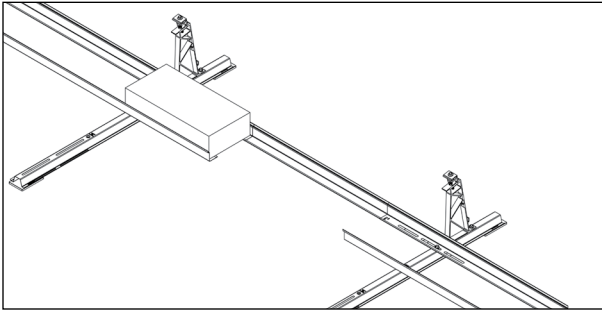


8-Block Configuration

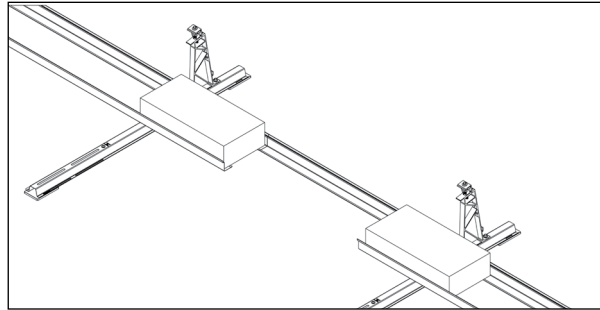


Note: For installations with more than 6 blocks, two ballast rails must be installed on top of each other on both sides.

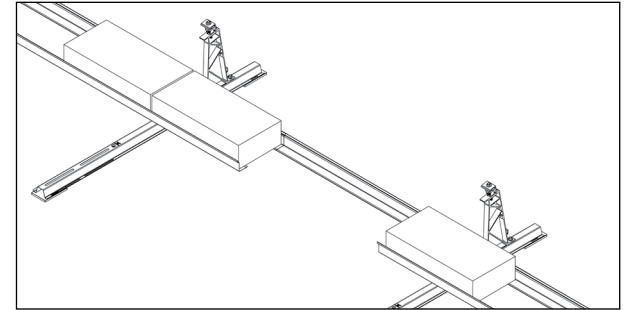
BALLAST BLOCKS CONFIGURATIONS AT L2 SPANS



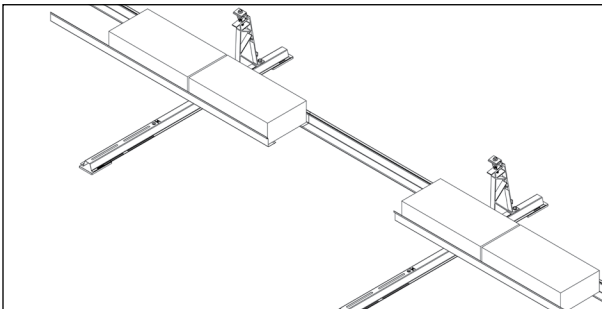
1-Block Configuration



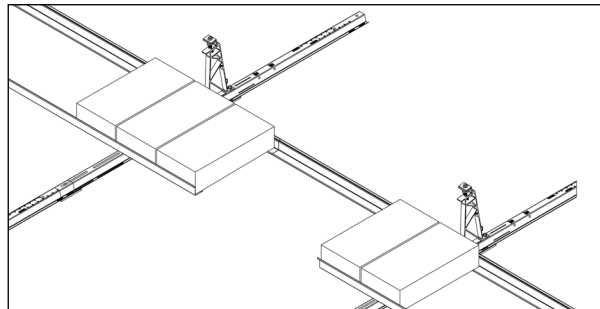
2-Block Configuration



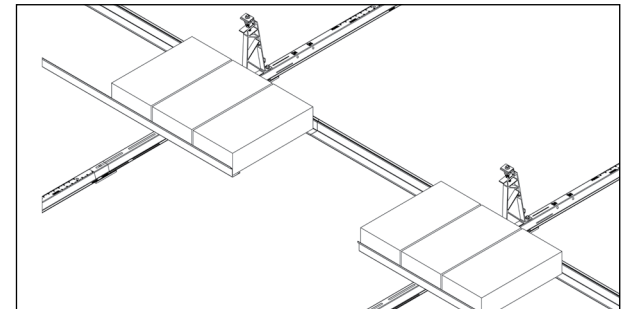
3-Block Configuration



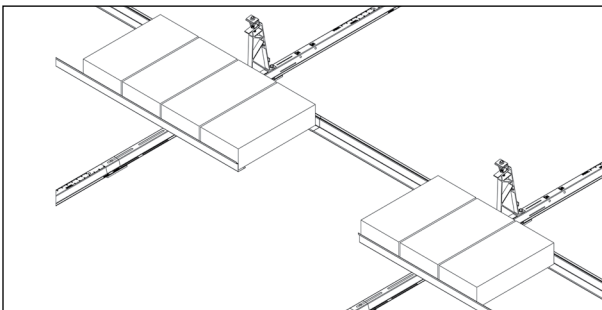
4-Block Configuration



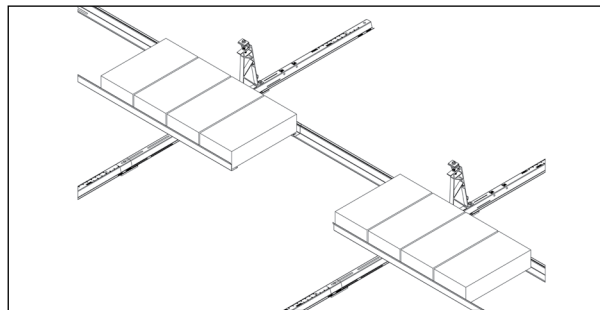
5-Block Configuration



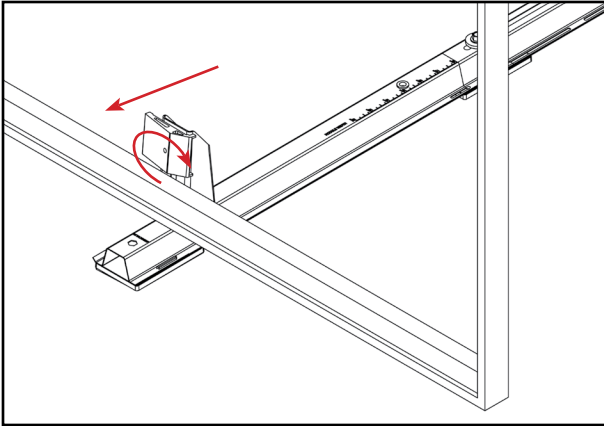
6-Block Configuration



7-Block Configuration

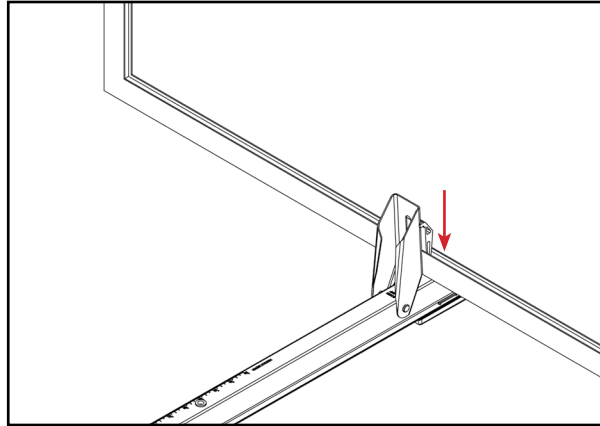


8-Block Configuration



STEP 12:

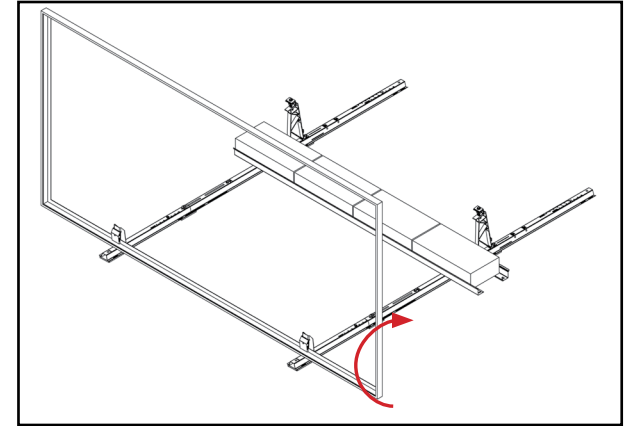
- Place module at South Clamps.
- Pull sliders toward module and rotate it 180° anti-clockwise.



STEP 13:

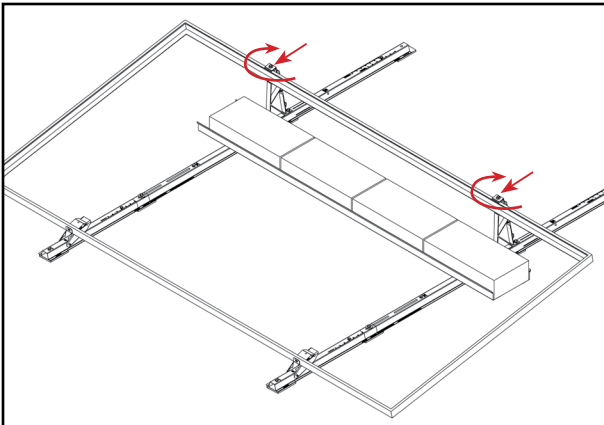
- Push sliders down to fully engage module flange and tighten the bolt.

Torque the bolt to 12 ft lbs



STEP 14:

- Rotate the module downward and position it on the north stanchions.

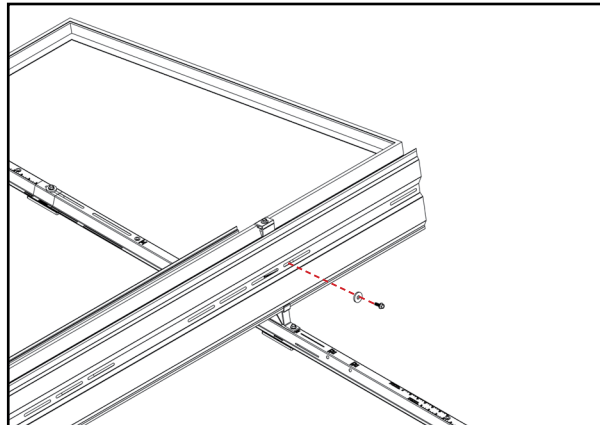


STEP 15:

- Slide the north clamps onto the module and tighten the bolts.

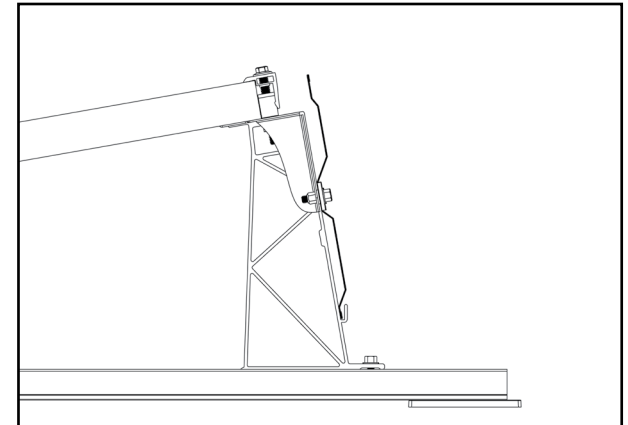
Torque the bolt to 12 ft-lbs.

Complete modules installation by repeating STEP 12 to STEP 15.



STEP 16: INSTALL WIND DEFLECTOR

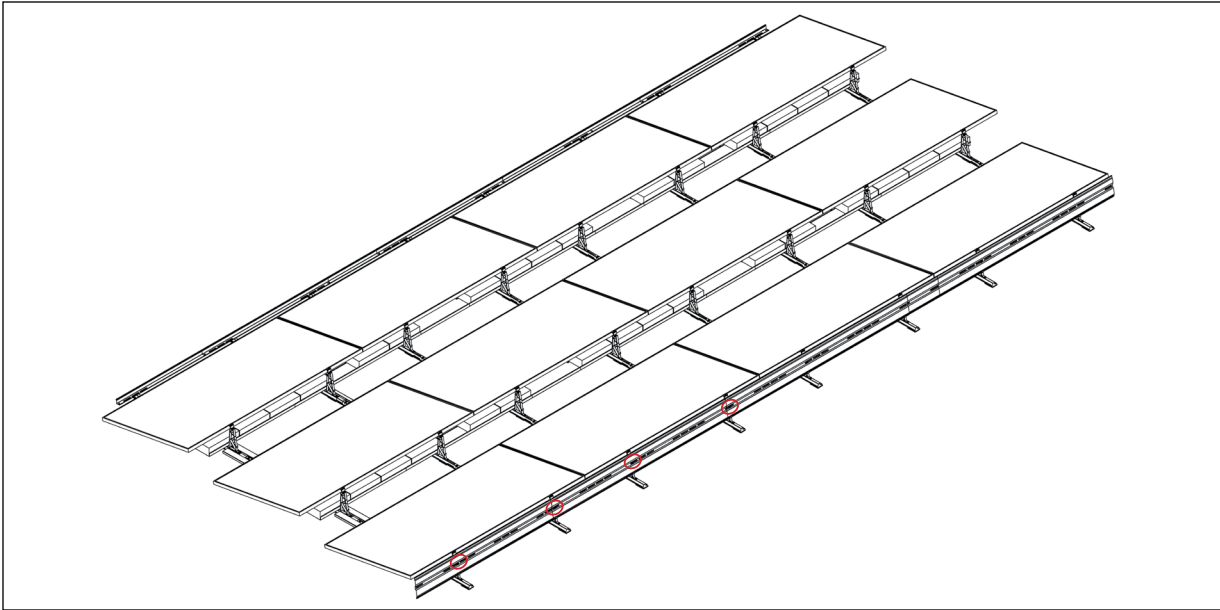
- Position the wind deflector in the V-projection of the north stanchion.
- Align the wind deflector with the module end and slots of the north stanchion holes.



STEP 17:

- Secure wind deflector to north stanchion with a 1/4-20 hex head bolt and washer.

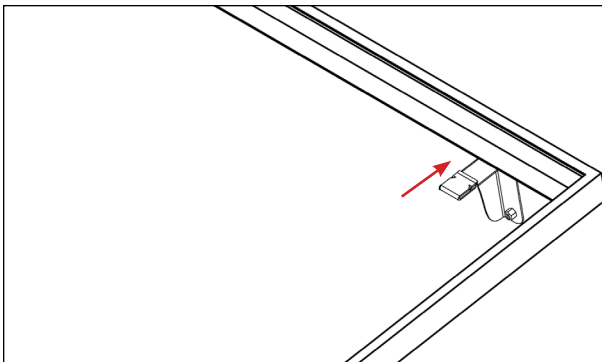
Torque the bolt to 12 ft-lbs.



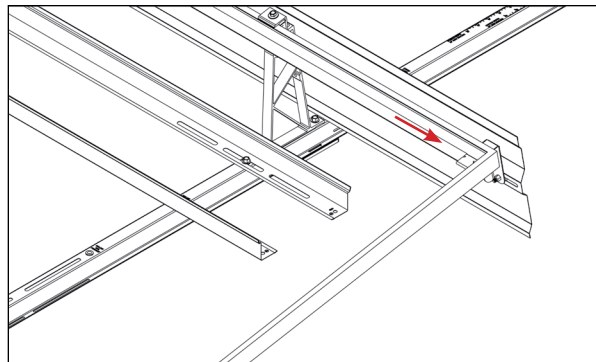
CAUTION

Ensure that each wind deflector is attached to three north stanchions, while the east and west edge wind deflectors are attached to only two north stanchions.

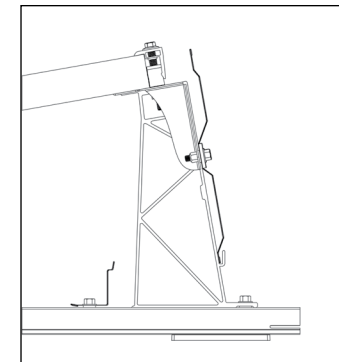
STEP 18: WIND DEFLECTOR BRACKET INSTALLATION



Position the bracket beneath the module and pull it to engage with the module's return flange.



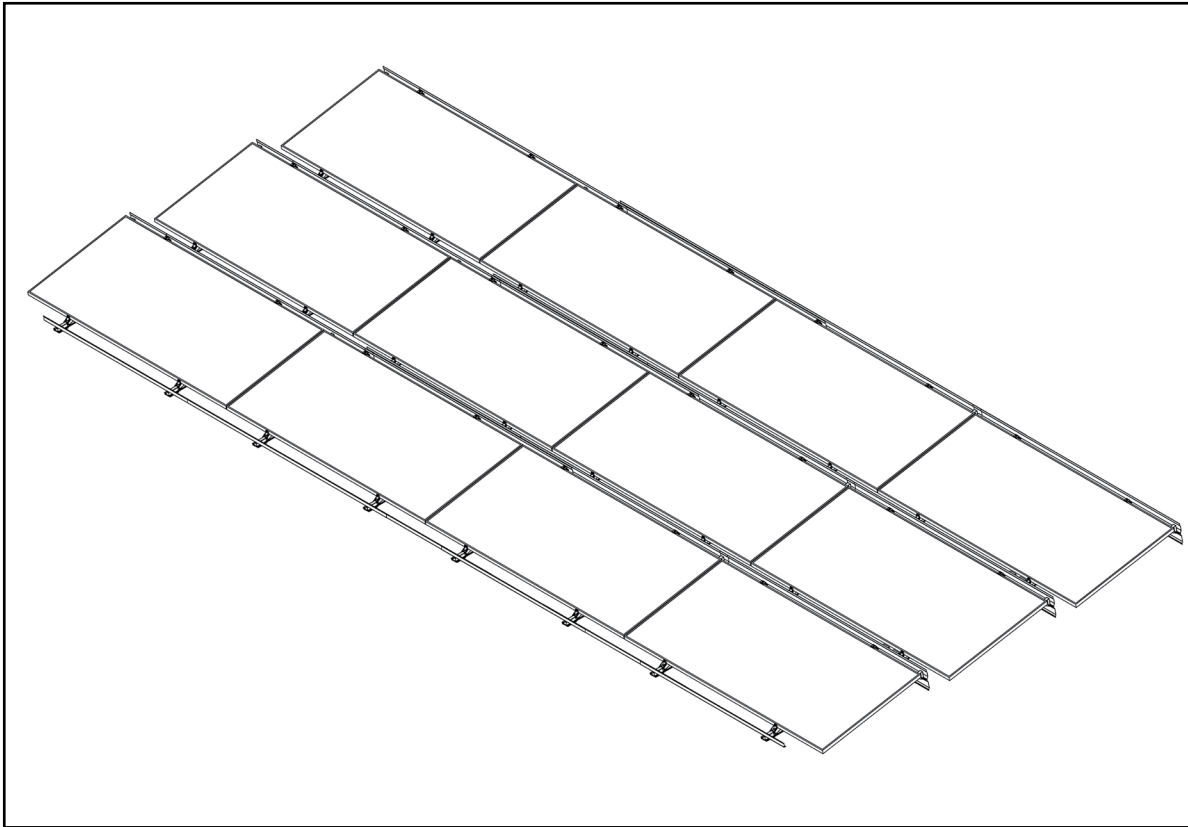
Slide the bracket to align the bracket hole with the wind deflector slot.



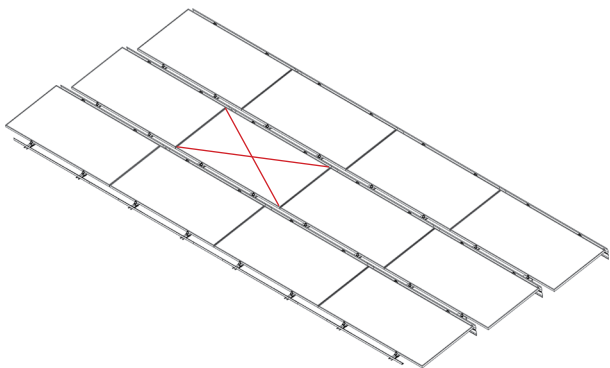
Secure the bracket to the wind deflector with a $\frac{1}{4}$ -20 hex head bolt and washer.

Torque the bolt to 12 ft-lbs.

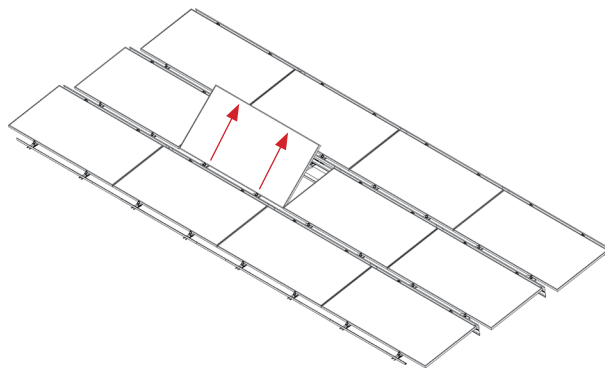
NOTE: Wind deflector brackets are installed only at the east and west edges of the array.

**STEP 19:**

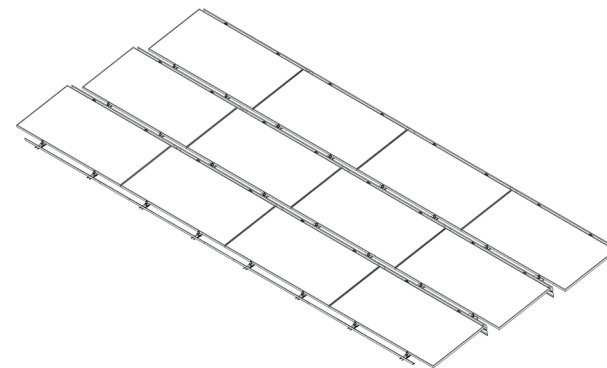
Check all the fasteners to verify correct torque values.



STEP 1: Locate the module to be replaced. Loosen the hexagonal bolt in both the north stanchion's clamp to which the module is connected.



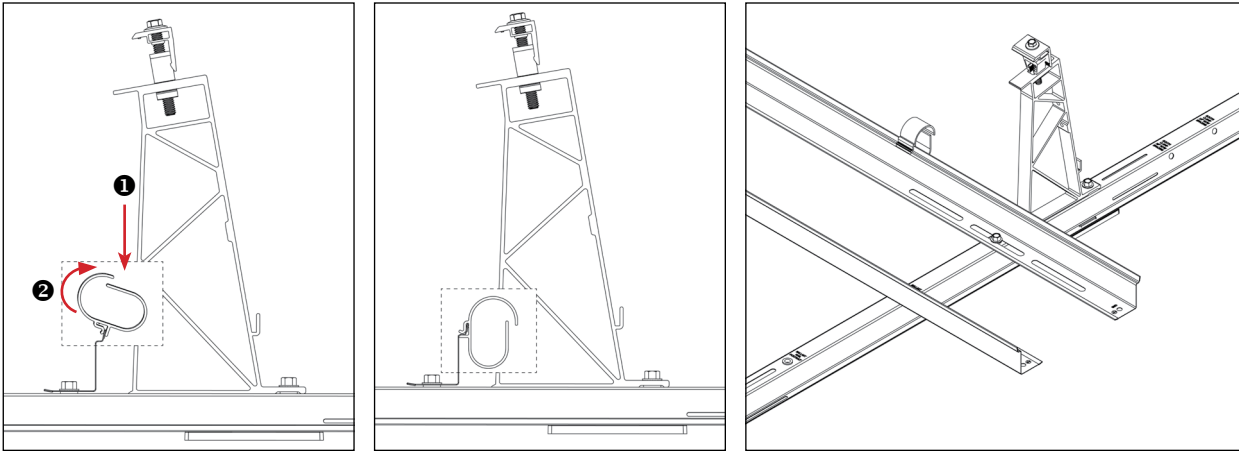
STEP 2: Now lift the module from north edge and rotate it 75° towards south. Loosen the bolt in the south clamp and rotate the slider 90° clockwise.



STEP 3: Remove the module and re install the new module by following steps mentioned on *page 14*.

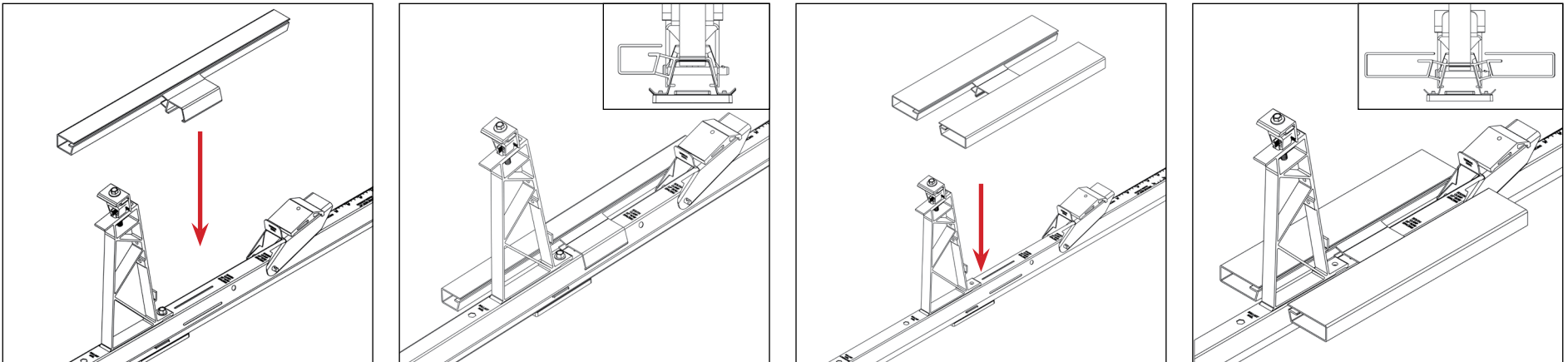
IMPORTANT:

Unirac recommends periodic re-inspection of the installation for loose components, loose fasteners, and any corrosion, such that if found, the affected components are to be immediately re-tightened or replaced.



INSTALL WIRE MANAGEMENT CLIP

1. Place the wire management clip on the ballast rail and press it to engage.
2. Rotate the wire management clip to secure it to the ballast rail.



INSTALL INTER-ROW WIRE MANAGEMENT COVER

- Place the Inter-Row wire management cover over the mid-rail and press down until the tabs engage with the side slots of the mid-rail.

INSTALL HOMERUN WIRE MANAGEMENT COVER

- Place the Homerun cover over the mid-rail and press down until the tabs engage with the side slots of the mid-rail.



GROUNDING LUG MOUNTING DETAILS AS REQUIRED BY CODE & ENGINEER OF RECORD: The Ilsco lug has a green colored set screw for grounding indication purposes. One lug is recommended per continuous array, not to exceed 150ft X 150ft.

Unirac GridFlex 10 is intended to be used with PV modules that have a system voltage less than or equal to that allowable by the National Electric Code (NEC). It is the installer's responsibility to check adherence to local codes.

NOTE: The installation must be conducted in accordance with the National Electric Code ANSI / NFPA 70.

GROUND LUG	BOLT SIZE	TORQUE VALUE
Ilsco Lug SGB-4	1/4" - 20	6.5ft-lbs (75 in-lbs)
Ilsco Lug GBL-4	#10 - 32	2.9ft-lbs (35 in-lbs)
Wiley 6.7	1/4" - 20	10ft-lbs (120 in-lbs)

NOTE: In order to prevent corrosion induced by dissimilar metals, it is important to verify that the bare copper wire does not come into contact with aluminum or galvanized steel. These metals must be kept separate.

Although conformance with UL2703 was demonstrated without the use of oxide inhibitor material, it is recommended by Ilsco.

Ilsco SGB-4 Solar Grounding & Bonding



TERMINAL TORQUE:

Install conductor and torque to the following: **4-14 AWG: 35 in-lbs**

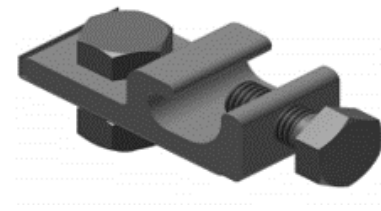
Ilsco GBL-4 Solar Grounding & Bonding



TERMINAL TORQUE:

Install conductor and torque to the following: **4-6 AWG: 35 in-lbs, 8 AWG: 25 in-lbs**

Wiley WEWB-Lug 6.7 Solar Grounding & Bonding



TERMINAL TORQUE:

Install conductor and torque to the following: **4-6 AWG: 10 ft-lbs, 6-14 AWG: 7 ft-lbs**



GRIDFLEX[™]

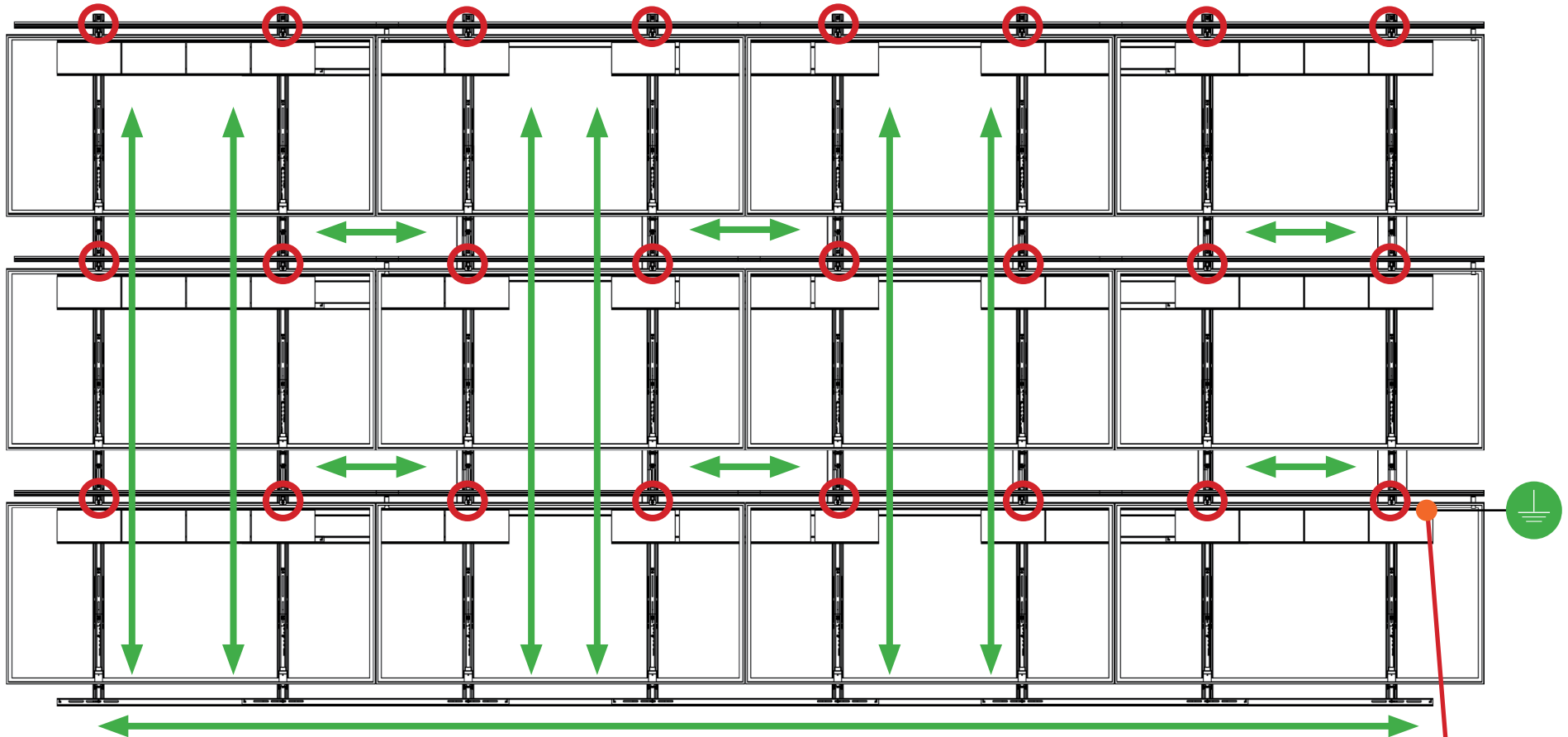
10

BONDING AND GROUNDING

INSTALLATION GUIDE

20

PAGE



NOTE: Grounding path can be established by installing the ground lug and copper wire connection at specified locations on ballast rails



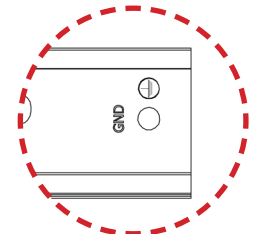
Bonding Clamp



Grounding Lug



Min. 10AWG, 105°C Copper Wire



Grounding location
on Ballast Rail

SYSTEM LEVEL FIRE CLASSIFICATION: The system fire class rating is only valid when the installation is conducted in accordance with the assembly instructions contained in this manual over a fire resistant roof covering rated for the application. GridFlex 10 has been classified to the system level fire portion of UL2703. It has achieved Class A performance for low sloped roofs when used in conjunction with type 1, 2, 3 with a metal frame, 19, 22, 25, 29 and 30 module constructions. Please see the specific conditions for mounting details described within this document required to maintain the Class A fire rating. Minimum and maximum roof slopes are restricted through the system design and layout rules. The fire classification rating is only valid on roof pitches less than 2:12 (slopes < 2 inches per foot, or 9.5 degrees).

IMPORTANT: Wind Deflectors are required on north edges of arrays to maintain Class A fire rating.

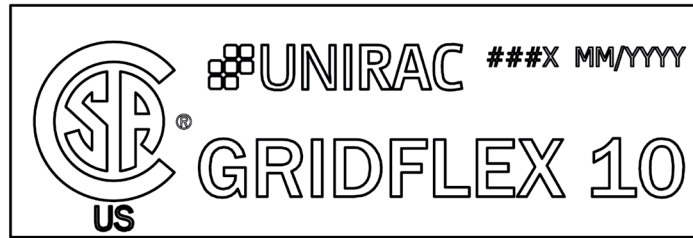
NOTE: Fire Type information can be found on back of modules or through manufacturers documentation. Some building codes and fire codes require minimum clearances around PV racking installations, and the installer should check local building code requirements for compliance.

CLASS A FIRE RATING MOUNTING ORIENTATION

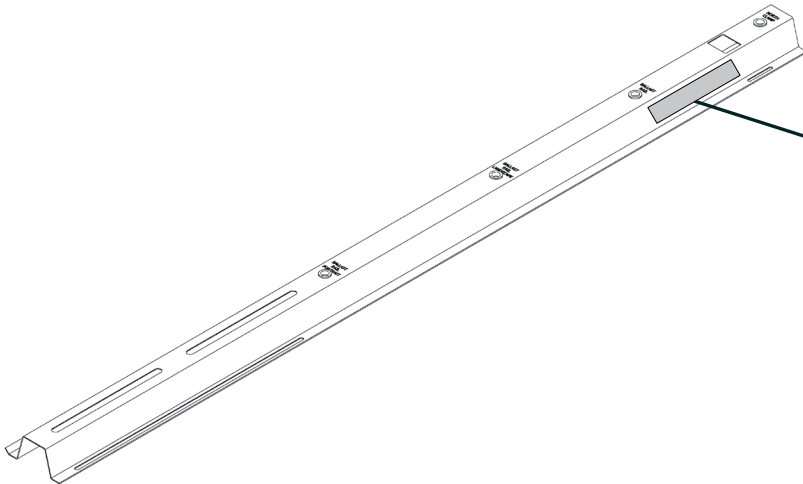
GridFlex 10 has achieved Class A system level fire performance for type 1, 2, 3 with a metal frame, 19, 22, 25, 29 and 30 module constructions. In order to maintain the fire rating, the module J-Box must be oriented away from the array east-west edges.



UL2703 System Label: To comply with UL2703 system rating, North rail has a stamp of system label as shown below



###X - Vendor ID
MM/YYYY - Month and Year of
Manufacturing



Note: North Rail has a system label at the location shown in the diagram.

MECHANICAL LOAD TEST QUALIFICATION

The GridFlex 10 system has been tested to the mechanical load provisions of UL2703 and covers the following basic parameters:

- PV module may have reduced load rating, independent of the GridFlex 10 rating. Please consult the PV module manufacturer's installation guide for more information.
- Load rating may vary based on PV module area. Please Contact Unirac for more information

See the table below for system design loads in the up, down, and downslope directions for the various system installation configurations

Module Manufacturer	Model	Module Area (sq ft)	Downward Design Load (psf)	Upward Design Load (psf) Non-South Row Modules & South Row Modules with Either Ballasting or Mechanical Attachment South of the South Row Modules	Upward Design Load (psf) South Row Modules with South Rail Stiffener	Downslope Design Load (psf)
Jinko	JKMxxxM-72HL4-TV	27.76	50.48	31.01	#N/A	8.93
ZN Shine	ZXM8-TPLDD132	33.44	17.59	18.55	5.38	6.20
SunPower	SPR-P19-390-COM	22.2	60.12	38.57	#N/A	11.91

NOTE: Design loads are equal to tested loads with 1.5 safety factor applied.

Electrical Bonding and Grounding Test Modules

The list below is not exhaustive of compliant modules but shows those that have been evaluated and found to be electrically compatible with the GridFlex 10 system.

Manufacture	Module Model / Series	Manufacture	Module Model / Series	Manufacture	Module Model / Series
Aionrise	AION60G1, AION72G1	Canadian Solar	CS1(H/K/U/Y)-MS CS3K-(MB/MB-AG/MS/P/P HE/PB-AG) CS3L-(MS/P), CS3N-MS CS3U-(MB/MB-AG/MS/P/P HE/PB/PB-AG) CS3W-(MB-AG/MS/P/P-PB-AG) CS3Y-MB-AG, CS5A-M CS6K-(M/MS/MS AllBlack/P/P HE) CS6P-(M/P), CS6R-MS CS6R-xxxMS-HL CS6U-(M/P/P HE), CS6W-(MB-AG/MS) CS6X-P, CSX-P, CS7L-MB-AG CS7L-xxxMB-AG CS7N-xxxTB-AG CS7N-xxxMB-AG CS7L-MB-AG CS7L-TB-AG CS7N-xxx MS ELPS CS6(A/P)-MM CS6.1-54TM-H CS6.1-60TM-H CS6.1-72TB-H	ET Solar	ET AC Module, ET Module ET-M772BH520-550WW/WB
Aleo	P-Series & S-Series			First Solar	FS-6XXX(A) FS-6XXX(A)-P, FS-6XXX(A)-P-I
Aptos Solar	DNA-120-(MF/BF)10-xxxW DNA-120-MF10 DNA-120-(MF/BF)23 DNA-144-(MF/BF)23 DNA-120-(MF/BF)26 DNA-144-(MF/BF)26 DNA-108-(MF/BF)10-xxxW			Flextronics	FXS-xxxBB
				Freedom Forever	FF-MP-BBB-xxx, FF-MP1-BBB-xxx
				FreeVolt	PVGraf
				GCL	GCL-P6 & GCL-M6 Series
Astronergy	CHSM6612 M, M/HV CHSM6612P Series CHSM6612P/HV Series CHSM72M-HC CHSM72M(DG)/F-BH			Hansol	TD-AN3, TD-AN4 UB-AN1, UD-AN1
				Hanwha SolarOne	HSL 60
Auxin	AXN6M610T AXN6P610T AXN6M612T AXN6P612T AXNG1M SERIES			Heliene	36M, 36P 60M, 60P, 72M & 72P Series 144HC M6 144HC M10 SL Bifacial 156HC M10 SL Bifacial
				H-SAAE	HT60-156M-C HT60-156M(V)-C HT72-156(M/P) HT72-156P-C, HT72-156P(V)-C HT72-156M(PDV)-BF, HT72-156M(PD)-BF HT72-166M, HT72-18X
Axitec	AC-xxx(M/P)/60S, AC-xxx(M/P)/72S AC-xxxP/156-60S AC-xxxMH/120(S/V/SB/VB) AC-xxxMH/144(S/V/SB/VB)	Centrosolar America	C-Series & E-Series		
Bluesun Solar	BSMxxxM10-72HBD	CertainTeed	CT2xxMxx-01, CT2xxPxx-01, CTxxx-Mxx-01 CTxxxPxx-01, CTxxxMxx-02, CTxxx-Mxx-03 CTxxxMxx-04, CTxxxHC11-04 CTM10400HC11-08, CTM-10400HC11-09 CTM10400HC11-06 , CTxxxHC11-06	Hyperion Solar (Runergy)	HY-DH108P8(B), HY-DH108N8B HY-DH144P8 HY-DH156N8 HY-DH156P8
Boviet Solar	BVM6610, BVM6612 BVM6612M-XXXS-H-HC-BF-DG BVM7612M-H-HC-BF-DG	Eco Solargy	Orion 1000 & Apollo 1000		
BYD	P6K & MHK-36 Series				

- Unless otherwise noted, all modules listed above include all wattages and specific models within that series. Variable wattages are represented as "xxx"
- Items in parenthesis are those that may or may not be present in a compatible module's model ID
- Slashes "/" between one or more items indicates that either of those items may be the one that is present in a module's model ID.
- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Please see GridFlex 10 information at Unirac.com to ensure the exact solar module selected is approved for use with GridFlex 10
- Listed models can be used to achieve a Class A fire system rating, for low slope applications, only when modules fire typed 1, 2, 3 with a metal frame, 19, 22, 25, 29 or 30.

Electrical Bonding and Grounding Test Modules

The list below is not exhaustive of compliant modules but shows those that have been evaluated and found to be electrically compatible with the GridFlex 10 system.

Manufacture	Module Model / Series	Manufacture	Module Model / Series	Manufacture	Module Model / Series
Hyundai	KG, MG, RW, TG, RI, RG, TI, KI, HI Series HiA-SxxxHG, HiD-SxxxRG(BK), HiN-SxxxXG(BK), HiS-S400PI, HiS-SxxxYH(BK), HiS-SxxxXG(BK)	Jinko (Cont.)	JKMxxxM-72HBL-V, JKMxxxM-72HL4-TV JKMxxxM-6RL3-B, JKMxxxN-72HL4- BDV JKMxxxN-54HL4-B, JKMxxxN-72HL4-TV JKMxxxM-7RL3-TV	LONGi(Cont.)	LR6-72(BK/HV/PB/PE/PH) LR7-72HGD-xxx M LR8-66HGD-xxx M RealBlack LR4-60HPB RealBlack LR6-60HPB
Illuminate USA	IL5-72HBD-xxx M IL8-66HGD-xxx M	Kyocera	KD-F & KU Series	Maxeon	SPR-MAX3-xxx-COM SPR-MAX3-XXX-R SPR-MAX3-XXX-BLK-R
Imperial Star	ISM7-SHDD108-400/M	LA Solar	LSxxxHC(166), LSxxxBF, LSxxxBL, LSxxxHC, BLA Model	Meyer Burger	Meyer Burger Black, Meyer Burger White Meyer Burger Glass
Inxeption	mSolar 108BB HC Series (TXI10- xxx108BB) mSolar 144BB HC Series (TXS6- xxx144BB)	LG Electronics	LGxxx(E1C/E1K/N1C/N1K/N2T/N2W/ S1C/S2W/Q1C/Q1K)-A5 LGxxx(A1C/M1C/M1K/N1C/N1K/Q1C/ Q1K/ QAC/QAK)-A6, LGxxxN2W-B3 LGxxxN2T-B5, LGxxxN1K-B6 LGxxx(N1C/N1K/N2T/N2W)-E6 LGxxx(N1C/N1K/N2W/S1C/S2W)-G4 LGxxxN2T-J5 LGxxx(N1K/N1W/N2T/N2W)-L5 LGxxx(M1C/N1C/Q1C/Q1K)-N5 LGxxx(N1C/N1K/N2W/Q1C/Q1K)-V5 LGxxxN3K-V6	Mission Solar Energy	MSExxxSX9R MSE Mono, MSE Perc MSExxx(SR8T/SR8K/SR9S/SX5T) MSExxx(SX5K/SX6W) MSExxxSX6Z MSExxxHT0B
ITEK	iT-SE Series	LONGi	LR4-60(HPB/HPH) LR4-72(HPH) LR5-54HABB-xxx M (fire type 29 only) LR5-54-HPB-xxx M LR5-72HBD xxx M LR6-60 LR6-60(BK/HPB/HPH/HV/PB/PE/PH) LR6-72	Mitrex	Mxxx-L3H, Mxxx-I3H
Japan Solar	JPS-60 & JPS-72 Series			Mitsubishi	MJE & MLE Series
JA Solar	JAM54S30 xxx/MR JAM54S31 xxx/MR JAM72D30MB, JAM78D10MB JAM72S30 /MR JAP6 60-xxx JAM6(K)-60/xxx, JAP6(k)-72-xxx/4BB JAP72S##-xxx/** JAP6(k)-60-xxx/4BB, JAP60S##-xxx/** JAM6(k)-72-xxx/**, JAM72S##-xxx/** JAM6(k)-60-xxx/**, JAM60S##-xxx/** i. ##: 01, 02, 03, 09, 10 ii. **: SC, PR, BP, HiT, IB, MW, MR ** = Backsheet, ## Cell technology			mSolar	TXI10-xxx108BB
Jinko	JKM & JKMS Series JKMxxxM-72HL-V, JKMxxxM-72HLM-TV JKMxxxM-72HL4-(T)V, JKMxxxM-7RL3-V			Neo Solar Power Co.	D6M Series
				NE Solar	NESE xxx-72MHB-M10 NESE xxx-60MH-M6 NESE XXX 72MHT-M10 NESE XXX 72THB-M10 NESE XXX 72MHB-M10

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- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Please see GridFlex 10 information at Unirac.com to ensure the exact solar module selected is approved for use with GridFlex 10
- Listed models can be used to achieve a Class A fire system rating, for low slope applications, only when modules fire typed 1, 2, 3 with a metal frame, 19, 22, 25, 29 or 30.

Electrical Bonding and Grounding Test Modules

The list below is not exhaustive of compliant modules but shows those that have been evaluated and found to be electrically compatible with the GridFlex 10 system.

Manufacture	Module Model / Series	Manufacture	Module Model / Series	Manufacture	Module Model / Series
Panasonic	VBHNxxxSA06/SA06B/SA11/SA11B VBHNxxxSA15/SA15B/SA16/SA16B, VBHNxxxKA, VBHNxxxKA03/04, VBHNxxxSA17/SA17G/SA17E/SA18/ SA18E, VBHNxxxZA01/ZA02/ZA03/VBHNxxx- ZA04 EVPVxxx EVPVxxx(H/K/PK/HK/HK2)	Q Cells (Cont.)	Q.PEAK DUO (BLK)-G7 Q.PEAK DUO (BLK) G8(+) Q.PEAK DUO (BLK) ML-G10(a)(+) Q.PEAK DUO (BLK) ML-G9(+) Q.PEAK DUO BLK G10(+) Q.PEAK DUO BLK G10+ /AC Q.PEAK DUO BLK-G6+/TS Q.PEAK DUO BLK ML-G10.B+ Q.PEAK DUO BLK ML-G10+ / t Q.PEAK DUO BLK ML-G10+ / TS Q.PEAK DUO-G10+ Q.PEAK DUO L-(G7/G7.1/G7.2/G7.3/G7.7) Q.PEAK DUO L-(G8/G8.1/G8.2/G8.3) Q.PEAK DUO L-G6.3 / BFG Q.PEAK DUO L-G8.3 (BFF/BFG/BGT) Q.PEAK DUO XL-(G10/G10.2/G10.3/ G10.c/G10.d) Q.PEAK DUO XL-(G11.2/G11.3) Q.PEAK DUO XL-(G9/G9.2/G9.3) Q.PEAK DUO XL-G10.3/BFG Q.PEAK DUO XL-G10.d/BFG Q.PEAK DUO XL-G11.3/BFG Q.PEAK DUO XL-G11S Q.PEAK DUO XL-G11S.3 / BFG Q.PEAK DUO XL-G9.3/BFG Q.TRON BLK M-G2+ AC Q.TRON BLK M-G2+ SERIES Q.TRON M-G2+ SERIES Q.TRON XL-G2.3/BFG	REC	RECxxxAA (BLK/Pure/Pure-R/ Pure-RX/ Pure 2/ Pro M) RECxxxNP (N-PEAK) RECxxxNP2 (Black) RECxxxNP3 Black RECxxxPE, RECxxxPE72 RECxxxTP, RECxxxTP72 RECxxxTP2(M/BLK2) RECxxxTP2S(M)72 RECxxxTP3M (Black) RECxxxTP4 (Black)
Peimar	SGxxxM (FB/BF) SMxxxM			Renesola	All 60-cell modules
Philadelphia Solar	PS-M108(HCBF)-400W (30 & 35mm frames)			Risen	RSM Series, RSM110-8-xxxBMDG
Phono Solar	PSxxxM1-20/U, PSxxxM1H-20/U PSxxxM1-20UH PSxxxM1H-20UH PSxxxM4(H)-24/TH PSxxxM1-20/UH PSxxxM1H-20/UH PSxxxM-24/T PSxxxMH-24/T PSxxxM-24/TH PSxxxMH-24/TH			SEG Solar	SEG-xxx-BMD-HV, SEG-xxx-BMD-TB SEG-XXX-BMB-TB, SEG-xxx-BMA-HV SEG-xxx-BMA-TB, SEG-xxx-BMB-HV SEG-xxx-BMA-BG, SEG-xxx-BMB-BG SEG-xxx-BTA-BG, SEG-xxx-BTB-BG SEG-xxx-BMD-BG, SEG-xxx-BTD-BG
Prism Solar	P72 Series, P72X-xxx			S-Energy	SN72 & SN60 Series SL45-60BGI/BHI SL45-60MBI-xxxZ
Q Cells	Peak G5(SC) , G6(+)(SC)(AC), G7, G8(+), Peak L-G5, L-G6, L-G7, L-G8(BFF) Plus, Pro, Peak, G3, G4, Plus, Pro, Peak L-G2, L-G4, L-G5 Q.PEAK DUO(BLK)-G6+			Seraphim	SEG-(6PA/6PB/6MA/6MA-HV/6MB/E01/ E11) SRP-(6QA/6QB) SRP-xxx-6MB-HV, SRP-320-375-BMB- HV, SRP-xxx-BMC-HV, SRP-390-450- BMA-HV, SRP-xxx-BMZ-HV, SRP-390- 405-BMD-HV
				Sharp	NU-SA & NU-SC Series

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- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Please see GridFlex 10 information at Unirac.com to ensure the exact solar module selected is approved for use with GridFlex 10
- Listed models can be used to achieve a Class A fire system rating, for low slope applications, only when modules fire typed 1, 2, 3 with a metal frame, 19, 22, 25, 29 or 30.

Electrical Bonding and Grounding Test Modules

The list below is not exhaustive of compliant modules but shows those that have been evaluated and found to be electrically compatible with the GridFlex 10 system.

Manufacture	Module Model / Series	Manufacture	Module Model / Series	Manufacture	Module Model / Series
Silfab	SLA-M, SLA-P, SLG-M, SLG-P & BC Series SILxxx(BG/BK/BL/HC/HC+/HL/HM/HN/ ML/NL/NT/NX/NU/QD/QM) SIL-xxx XM, SIL-xxx XM+	SunPower	AC, X-Series, E-Series & P-Series SPR E20 435 COM (G4 Frame) Axxx-BLK-G-AC, SPR-Mxxx-H-AC SPR-Mxxx-BLK-H-AC	URECO	D7Kxxx(H7A/H8A), D7Mxxx(H7A/H8A) F6MxxxE7G-BB FAKxxx(C8G/E8G), FAMxxxE7G-BB FAMxxxE8G(-BB), FBKxxxM8G FBMxxxM7G-BB FBMxxxMFG-BB
Solar4America	S4Axxx-108MH10BB, S4Axxx-72MH5BB S4Axxx-144MH10xxx, S4Axxx- 144TH10xxx S4Axxx-144TH16xxx, S4Axxx- 108MH10xxx S4Axxx-108TH10xxx	SunTech	STP, STPXXS - B60/Wnhb	Vikram Solar	Eldora, Somera, Ultima PREXOS VSMDHT.60.AAA.05 PREXOS VSMDHT.72.AAA.05 Paradea VSMDH.72.AAA.05
SolarEver USA	SE-166*83-xxxM-120N SE-182*91-xxxM-108N	Talesun	TP572, TP596, TP654, TP660 TP672, Hipor M, Smart TD6I72M, TP7G54M(H) TD7G72M	Vina	VNS-72M1-5-xxxW-1.5, VNS-72M3-5-xxxW-1.5, VNS-144M1-5-xxxW-1.5, VNS-144M3-5-xxxW-1.5, VNS-120M3-5-xxxW-1.0
Solaria	PowerXT-xxxR-(AC/PD/BD) PowerXT-xxxC-PD PowerXT-xxxR-PM (AC) PowerX-400R	Tesla	SC, SC B, SC B1, SC B2, TxxxS, TxxxH	VSUN	VSUNxxx-60M-BB, VSUNxxx-72MH VSUN4xx-144BMH, VSUN4xx-144BMH-DG VSUN5xx-144BMH-DG, VSUNxxx-108M-BB VSUNxxx-120M-BB, VSUNxxx-120BMH VSUNxxx-132BMH, VSUNxxx-108BMH VSUNxxxN-144BMH, VSUNxxxN-144MH VSUNxxx-144BMH, VSUNxxx-144MH VSUNxxx-144M-BW, VSUNxxx-144M-BB
Solartech	STU HJT, STU PERC & Quantum PERC	Thornova	TS-BG54	Waaree	Arka Series WSMDi
SolarWorld	Sunmodule Protect, Sunmodule Plus/ Pro	Trina	DE06, DE09.05, DE09C.07 DEG15HC.20(II), DEG15MC.20(II) DEG15VC.20(II), DE18M(II), DEG- 18MC.20(II) DE19, DEG19C.20 PA05, PD05, DD05, DD06 PD14, PE14, DD14, DE14, DE15, DE15V(II) TSM-DE09.08, TSM-DE09C.07, TSM- DE09.05, TSM-DEG21C.20 TSM-NE09RC.05 TSM-NEG19RC.20	Winaico	WST & WSP Series
Sonali	SS-M-360 to 390 Series SS-M-390 to 400 Series SS-M-440 to 460 Series SS-M-430 to 460 BiFacial Series	TSMC	TS-150C2 CIGSw	Yingli	YGE & YLM Series
Sun Edison	F-Series, R-Series	Universal Solar	UNI4xx-144BMH-DG UNI5xx-144BMH-DG UNIxxx-108M-BB UNIxxx-120M-BB UNIxxx-120MH	Yotta Energy	YSM-B450-1
Suniva	MV Series & Optimus Series (35mm)	Upsolar	UP-MxxxP, UP-MxxxM(-B)		
Sunmac Solar	M754SH-BB Series				

- Unless otherwise noted, all modules listed above include all wattages and specific models within that series. Variable wattages are represented as "xxx"
- Items in parenthesis are those that may or may not be present in a compatible module's model ID
- Slashes "/" between one or more items indicates that either of those items may be the one that is present in a module's model ID.
- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Please see GridFlex 10 information at Unirac.com to ensure the exact solar module selected is approved for use with GridFlex 10
- Listed models can be used to achieve a Class A fire system rating, for low slope applications, only when modules fire typed 1, 2, 3 with a metal frame, 19, 22, 25, 29 or 30.

Electrical Bonding and Grounding Test Modules

The list below is not exhaustive of compliant modules but shows those that have been evaluated and found to be electrically compatible with the GridFlex 10 system.

Manufacture	Module Model / Series
ZNShine Solar	ZXM7-SHLDD144 ZXM7-SHDB144 ZXM6-72 Series, ZXM6-NH144 ZXM6-NHLDD144, ZXM7-SH108 Series ZXM7-UHLDD144

- Unless otherwise noted, all modules listed above include all wattages and specific models within that series. Variable wattages are represented as "xxx"
- Items in parenthesis are those that may or may not be present in a compatible module's model ID
- Slashes "/" between one or more items indicates that either of those items may be the one that is present in a module's model ID.
- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Please see GridFlex 10 information at Unirac.com to ensure the exact solar module selected is approved for use with GridFlex 10
- Listed models can be used to achieve a Class A fire system rating, for low slope applications, only when modules fire typed 1, 2, 3 with a metal frame, 19, 22, 25, 29 or 30.