UNIRAC PUB2023JUN12 Code Compliant Instruction Manual

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Contents

TOOLS & SPECIFICATIONS

TECHNICAL SPECIFICATIONS:

Material Types: 16G ASTM A653 GR50 Steel

Coating(s): G235 Galvanization, G180 Galvanization,
G40 Galvinization + InterCoat® ChemGuard,
G60 Galvinization + InterCoat® ChemGuard or
G80 Galvinization + InterCoat® ChemGuard
Hardware: Stainless Steel
Bonding and Grounding: UL2703 Listed Continuous

TOOLS REQUIRED OR RECOMMENDED FOR LAYOUT, ATTACHMENTS & INSTALLATION:

- Drill (Do Not Use An Impact Driver)
- 7/16” Socket
- Torque Wrench
- Tape Measure
- Chalk Reel
- Optional Spacers (See Diagram – Page Right)

GENERAL HARDWARE:

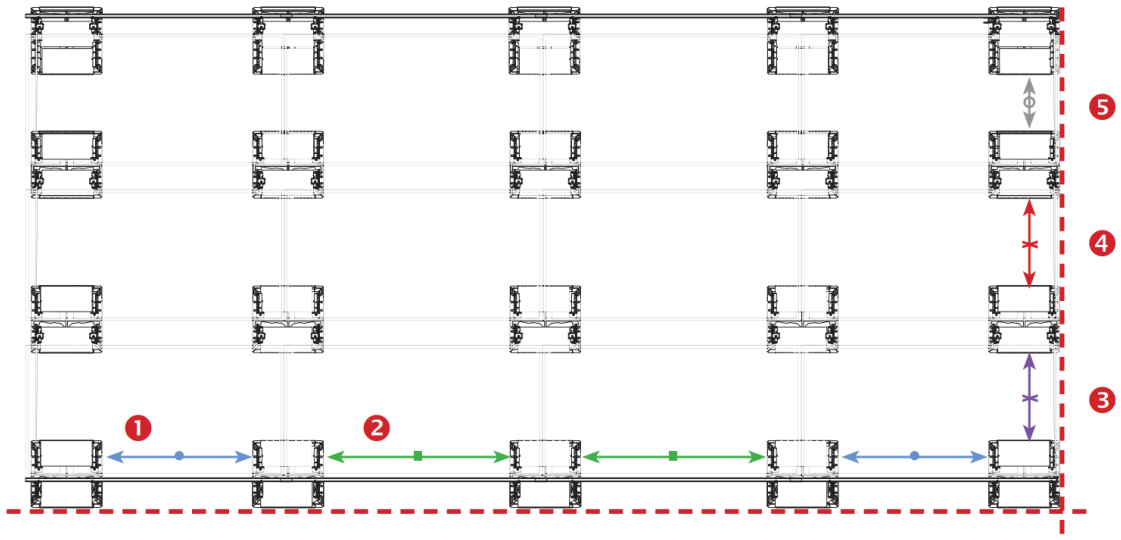
- ¼-20 X 2 ½” Hex Head Bolt – Module Clamps
- ¼-20 X 1” Hex Head Bolt – Wind Defl ectors
- ¼-20 Stainless Steel U-Nuts
- ¼” Flat Washer 1 ½” O.D.

SAFETY:

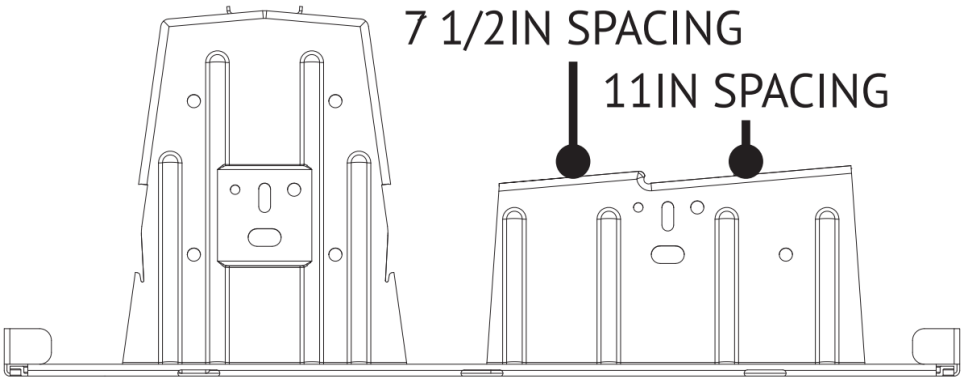
All applicable OSHA safety guidelines should be observed when working on a PV installation job site. The installation and handling of PV solar modules, electrical installation and PV racking systems involves handling components with potentially sharp metal edges. Rules regarding the use of gloves and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

LAYOUT ASSISTANCE TOOL:

<table>
<tr><td colspan="2" rowspan="2">Module Dimensions:</td><td rowspan="2">RM5</td><td rowspan="2">Module location:</td><td colspan="2">Spacing Equations (in Inches):</td></tr>
<tr><td>For 7.5″ inter-row opt ion:</td><td>For 11″ inter-row opti on:</td></tr>
<tr><td>Module Length (ML) =</td><td></td><td>1</td><td>Perimeter Column Spacing =</td><td colspan="2">ML+(G/2)-32.04″</td></tr>
<tr><td>Module Width (MW) =</td><td></td><td>2</td><td>Interior Column Spacing =</td><td colspan="2">ML+G-21.36″</td></tr>
<tr><td colspan="2" rowspan="2">Prefered module gap? (1/4″ – 1″ is permissible)</td><td>3</td><td>South Row Spacing =</td><td>(MW x 0.996) – 12.7 9″</td><td>(MW x 0.996) – 12.7 9″</td></tr>
<tr><td>4</td><td>Row Spacing =</td><td>(MW x 0.996) – 12.7 9″</td><td>(MW x 0.996) – 9.25 ″</td></tr>
<tr><td>East/West Module Gap (G) =</td><td></td><td>5</td><td>North Row Spacing =</td><td>(MW x 0.996) – 21.9 7″</td><td>(MW x 0.996) – 18.4 6″</td></tr>
</table>



MODULE ROW SPACING OPTIONS



SPACERS – OPTIONAL

PERIMETER COLUMN SPACER

COLUMN SPACER

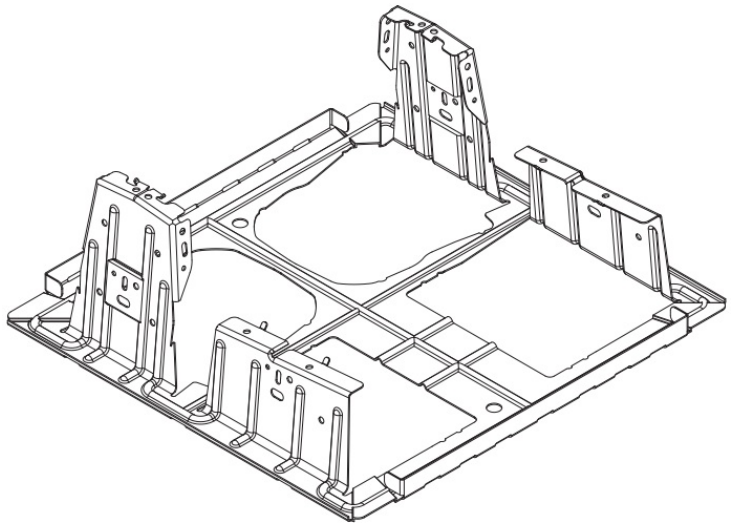
SOUTH ROW SPACER

ROW SPACER

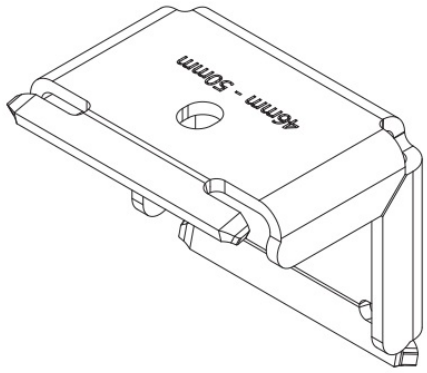
NORTH ROW SPACER

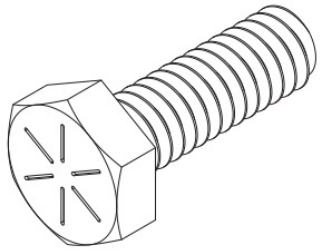
SYSTEM COMPONENTS

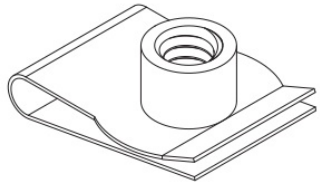
BALLAST BAY: The Ballast Bay is constructed of a high strength low alloy steel with a coating to protect against corrosion. This system has a modular design that allows for easy installation around roof obstructions and accommodates roof undulations. The Ballast Bays are designed to nest within each other to optimize shipping logistics.
NOTE: Systems installed on PVC roofs require ballast bays with preinstalled Santoprene pads.



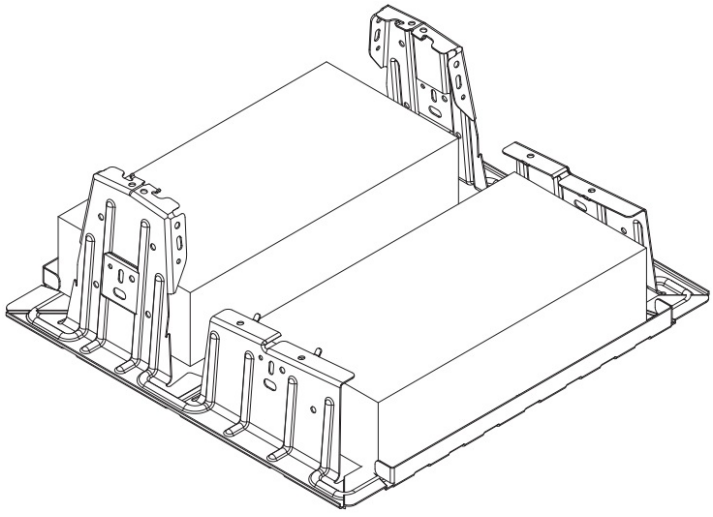
CIAMP & HARDWARE: The Module Clamp is made of Stainless Steel and can be used with module frame heights indicated on the clamp. The clamps are a portion of the UL2703 Listed system when installed according to this installation guide. A ¼-20 stainless steel bolt and u-nut are the associated hardware for installing clamps.
NOTE: U-Nuts come in packages separate from Clamp Kit.



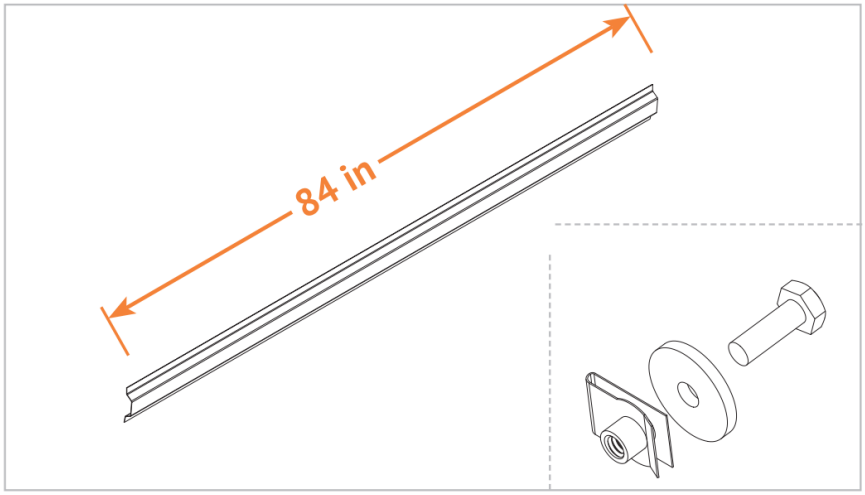




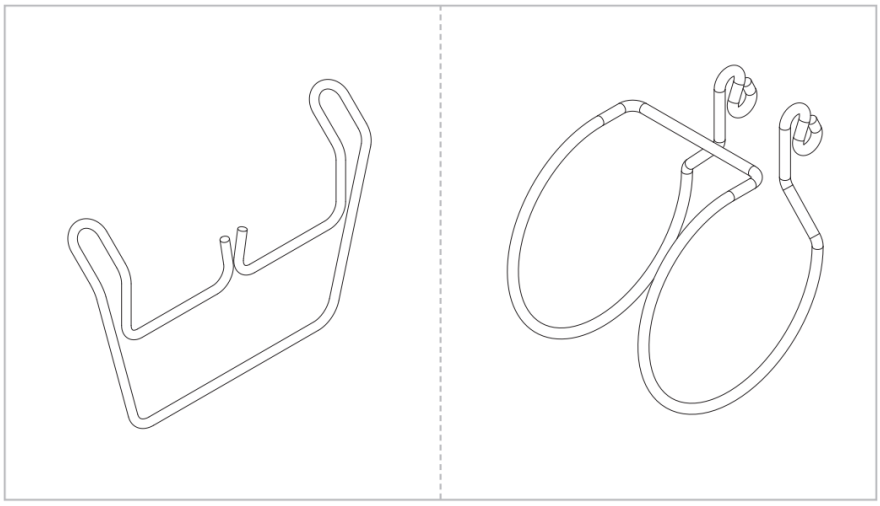
BALLAST BLOCK: The RM ballast bay can fi t up to 2 standard 4”x8”x16” solid concrete cap blocks. Block weight can range from 26 – 38 lbs. and shall meet ASTM C1491 requirements for freeze thaw durability. Verify your block weights before using the Unirac U-Builder online design tool.



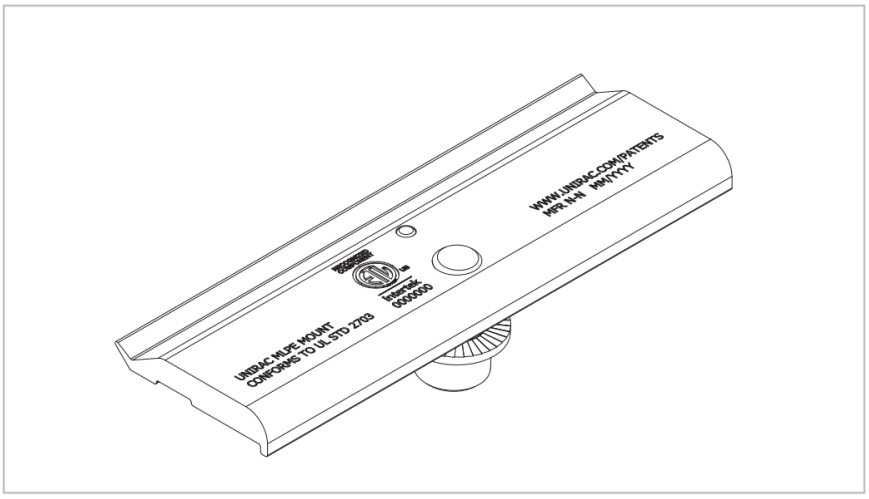
WIND DEFLECTOR: 18G G180 steel wind defl ector aids in ballast reduction and provides fi re mitigation. A 1/4″ – 20 stainless steel bolt and fender washer (1.5″ O.D) are associated hardware for wind defl ectors.
NOTE: U-Nuts come in packages separate from defl ector hardware.



OPTIONAL WIRE MANAGEMENT: Custom Uniracwire clip along with mounting options for various off the shelf wire management clips.
NOTE: All conduit and wire ways should be grounded & bonded per the (NEC) National Electric Code.



OPTIONAL MICROINVERTER MOUNTING: Microinverter / Power optimizer bracket, see page 9 for additional instructions.

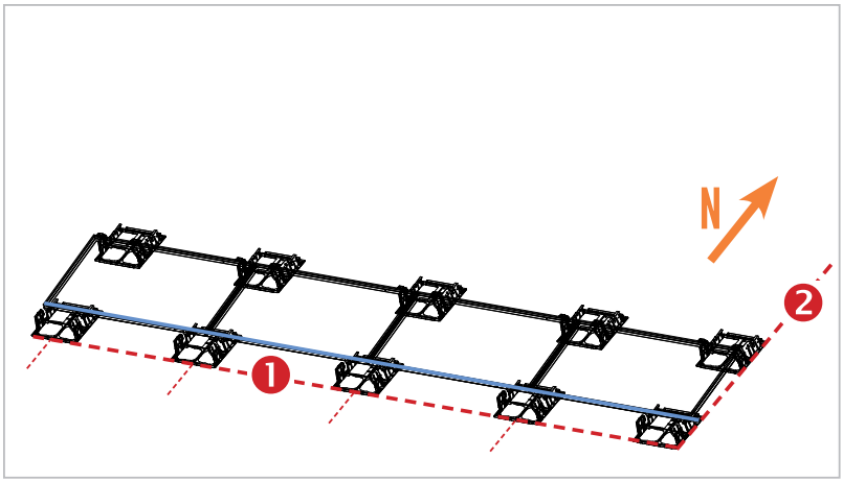


PART NUMBER DATA

S.No.	Part Number	Part Description
1	310800	RM5 BAY
2	310803	RM5 BAY, PVC
3	310810	RM5 WIND DEFLECTOR, 84″
4	310811	RM5 WIND DEFLECTOR, 98″
5	310820	RM5/DT ENDCLAMP 30-40MM
6	310821	RM5/DT ENDCLAMP 41-45MM
7	310822	RM5/DT ENDCLAMP 46-50MM
8	310830	RM5/DT PVC ROOF FRICTION PATCH
9	310850	RM5/DT WIRE MGMT CLIP
10	310851	RM5 WD WIRE MGMT CLIP
11	310860	RM5/DT 1/4-20 CLIP U-NUT SS18-8
12	310861	RM5, WIND DEFLECTOR HDW KIT
13	008114M	MLPE MOUNT ASSY
14	205000S	ENPHASE ENGAGE CABLE CLIP
15	008002S	GROUND WEEBLUG #1
16	008009P	ILSCO LAY IN LUG (GBL4DBT)
17	310999	FLASHLOC RM KIT

LOCATE ARRAY & PLACE BAYS

SNAP SOUTH PERIMETER CHALK LINE, THEN EAST OR WEST PERIMETER CHALK LINE. As best practice, on south edge of array mark lines to locate the center of each bay.



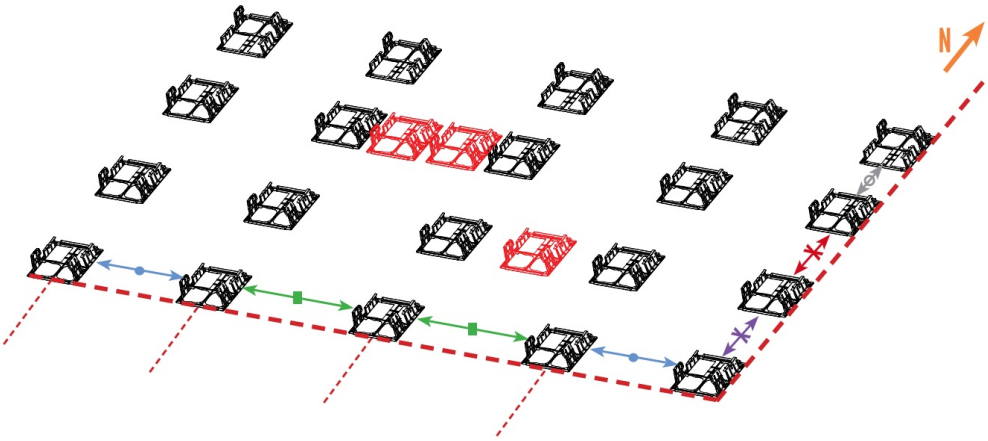
SPACERS – OPTIONAL

PERIMETER COLUMN SPACER

COLUMN SPACER

PLACE SOUTH PERIMETER BAYS FIRST. If slip sheets are required, place per manufacturers recommendations.

NOTE: Custom spacers can be made to aid in the placement of bays on the roof. See page 1



SPACERS – OPTIONAL

PERIMETER COLUMN SPACER

COLUMN SPACER

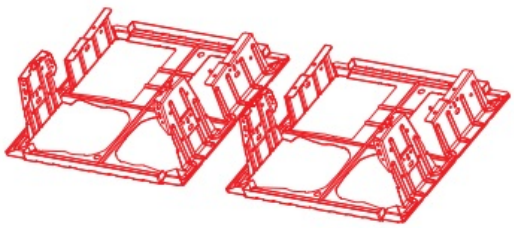
ROW SPACER

NORTH ROW SPACER

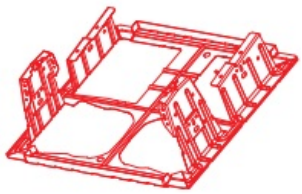
SOUTH ROW SPACER

SUPPLEMENTAL BAYS – OPTIONAL

DUAL SUPPLEMENTAL BAYS



SINGLE SUPPLEMENTAL BAY

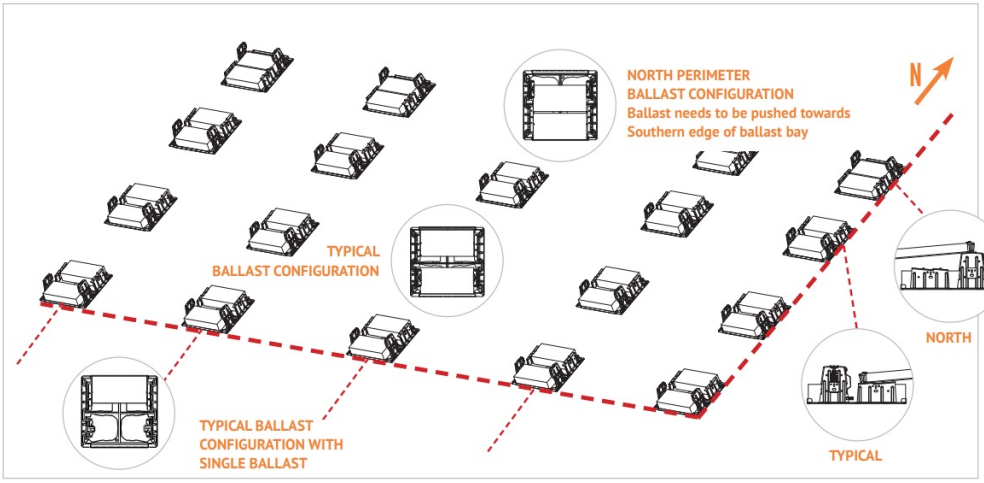


PLACE ALL BAYS.

NOTE: If mechanical attachment is required, place prior to installation of modules.
NOTE: If supplemental bay is required, install after the primary bays are installed. Supplemental bay needs to be centered in between primary bays.

PLACE BALLAST & SOUTH MODULES

PLACE ALL BALLAST: A maximum of two (2) ballast blocks can be placed in each ballast bay, typically pushed into the retention feature on the north or south edge. The North perimeter requires ballast blocks to be pushed towards the southern edge of the ballast bay to accommodate wind defl ectors. Site specifi c ballast calculations should be created for each individual project in accordance with the U-Builder design software. This system has been rated for the mechanical load provisions of UL2703. In addition, it has been designed and tested tocomply with the more rigorous requirements of SEAOC PV1, PV2 nd ASCE 7.

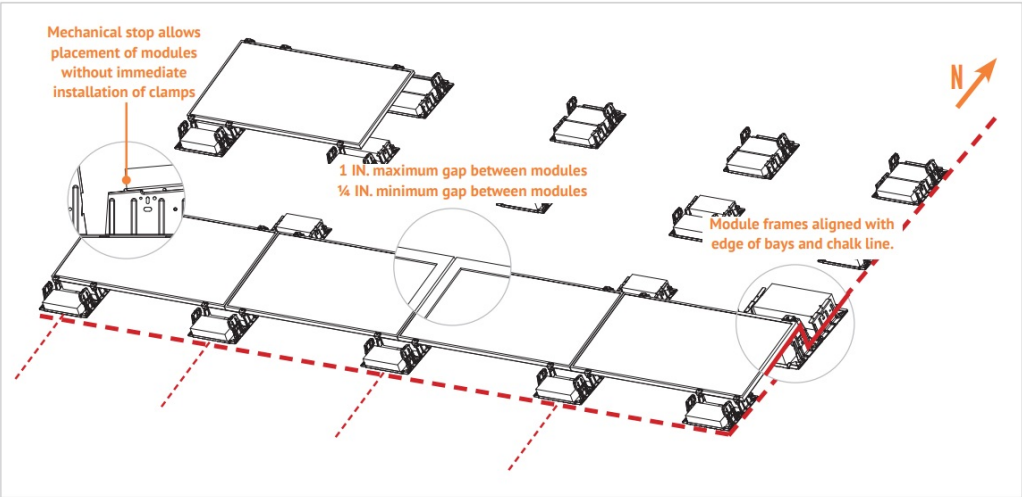


SOUTHERN EDGE MODULE PLACEMENT: Each bay has two spacing options, select the appropriate tab according to layout requirements.

Place southern row of modules on bays. You may adjust second row of bays. Do not adjust southern most row of bays

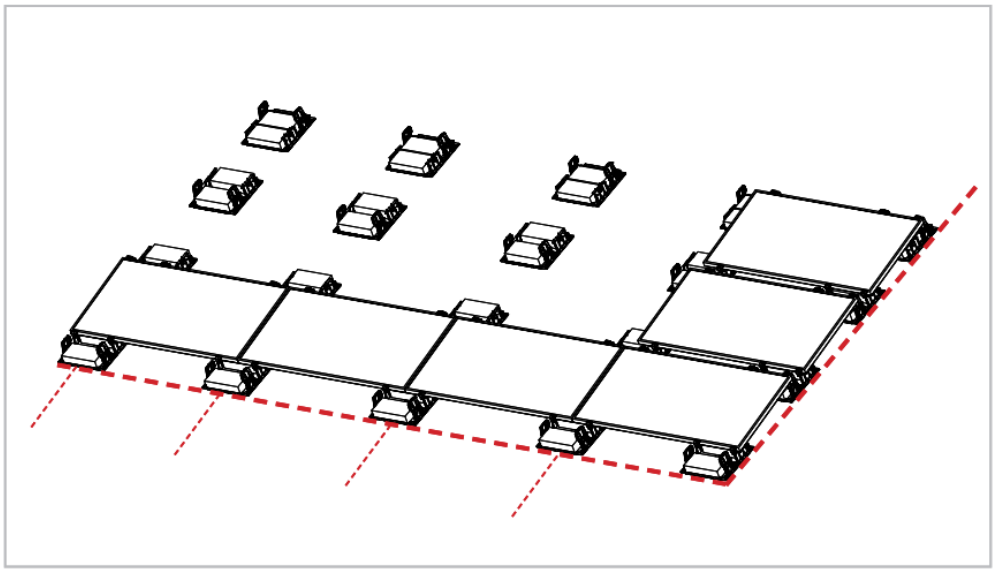
1 IN. Maximum gap between modules
¼ IN. Minimum gap between modules

NOTE: Modules may be placed on bays without immediate installation of clamps.
NOTE: Modules shall be mounted in landscape orientation only



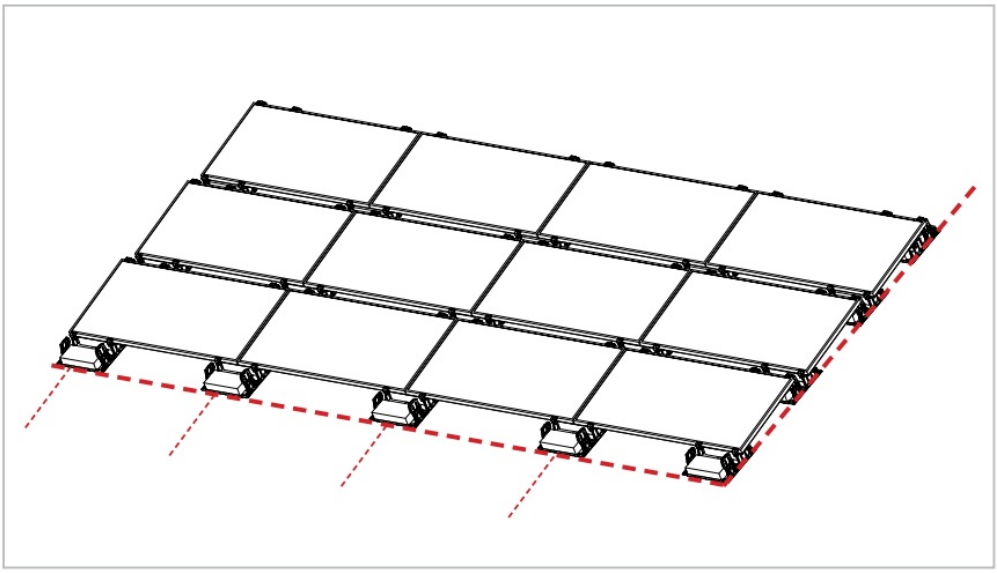
EAST OR WEST EDGE MODULE PLACEMENT

NOTE: Modules may be placed on bays without immediate installation of clamps.
NOTE: Modules shall be mounted in landscape orientation only.
NOTE: Install wind deflector at the time of module installation. See page 7 for installation guide.

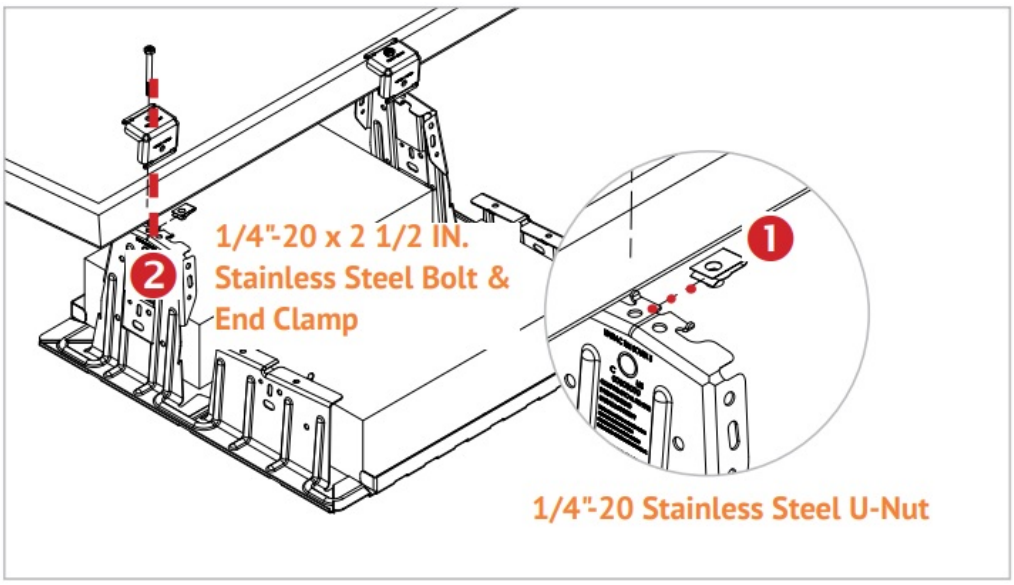


COMPLETE MODULE PLACEMENT

NOTE: Wiring, wire management, and electrical QC should be done as each row is built, especially in case of 7.5″ row spacing to ensure adequate room for installation.

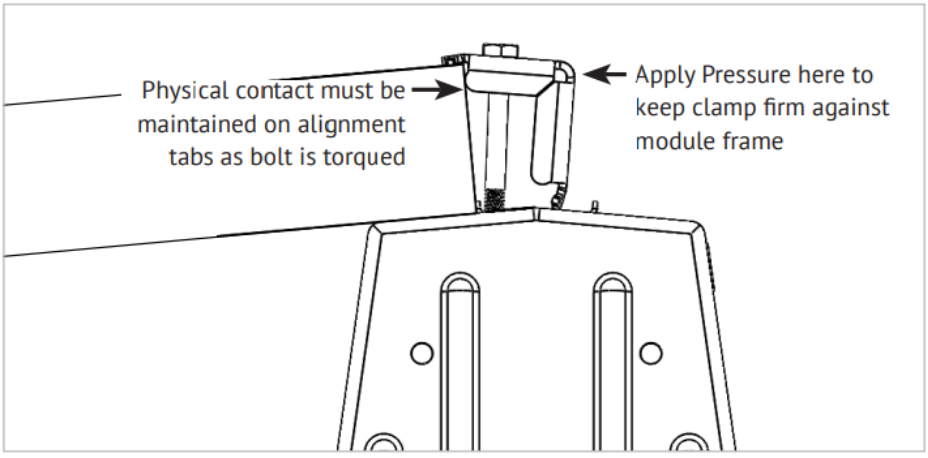


INSTALL U-NUT & INSTALL CLAMPS
NOTE: U-NUT – Single Use Only – Do not re-torque once fully seated
NOTE: CLAMP AND BOLT – Single Use Only – Do not re-torque once fully seated
TORQUE VALUE: 7FT-LBS to achieve UL2703 required clamp load



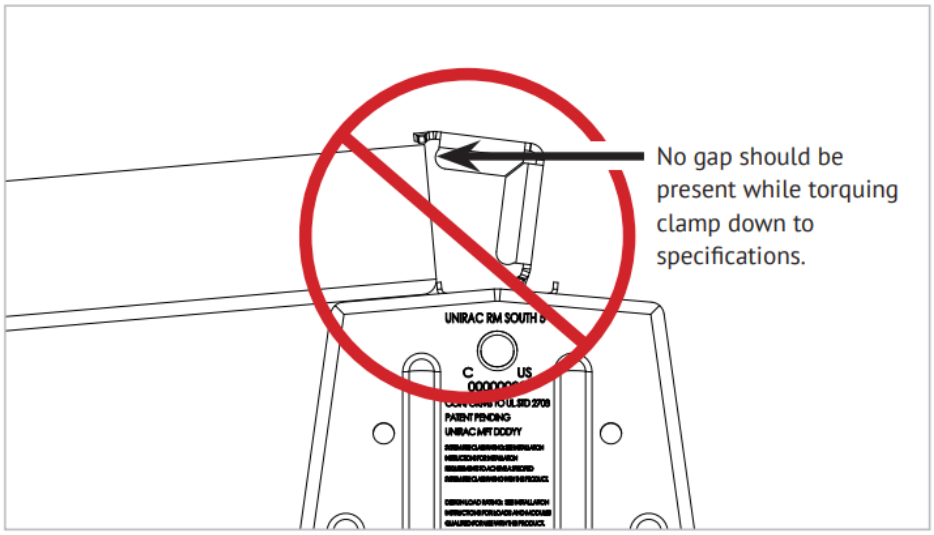
PROPER CLAMP INSTALLATION:

- Clamp is stamped for module frame height on each leg
- Clamp should be firmly held against module frame while being torqued



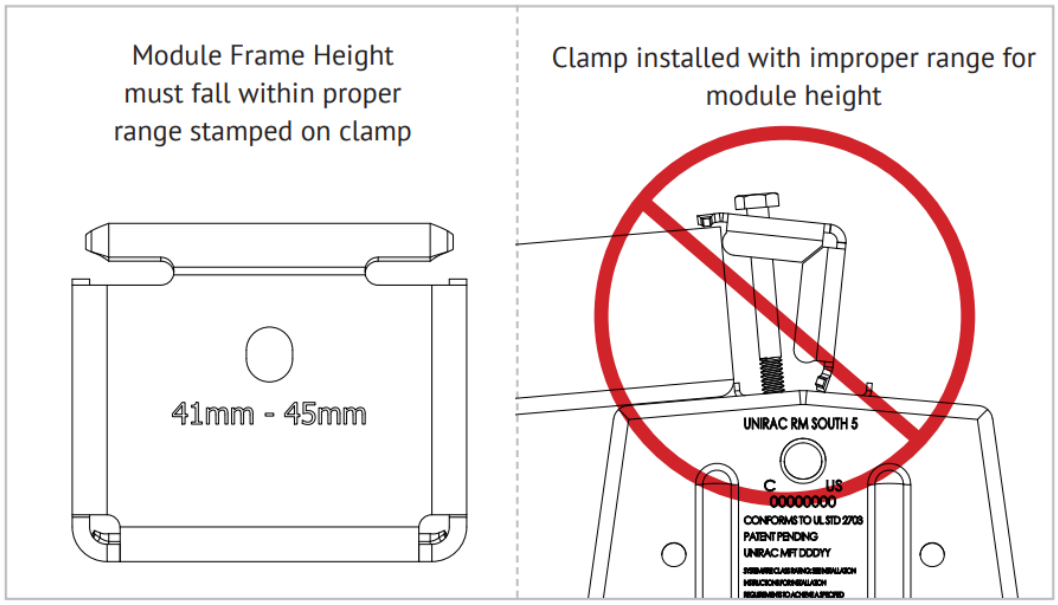
PROBLEM – CLAMP NOT SEATED AGAINST MODULE DURING TORQUING

- Clamp needs to be held securely against the module frame during torquing for proper installation



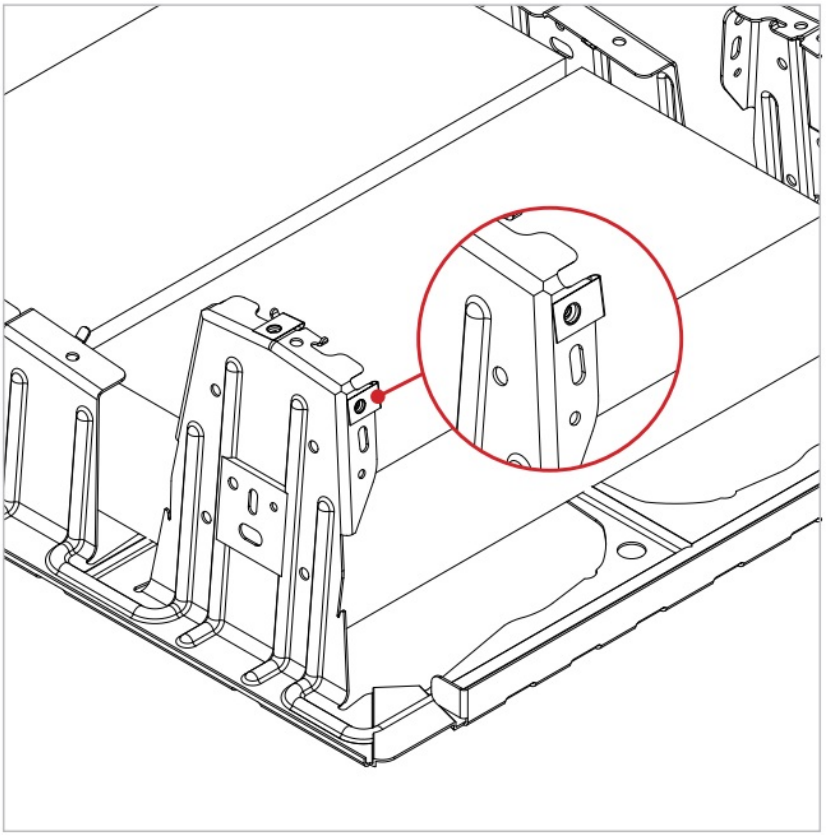
PROBLEM – NOT USING PROPER SIZE OF CLAMP FOR MODULE FRAME HEIGHT

- Double check the stamping on clamp to use the correct leg of clamp for module frame height
- The module height shall fall within the range shown on the topof the clamp
- Excessive angle on clamp will inhibit required clamp load on module

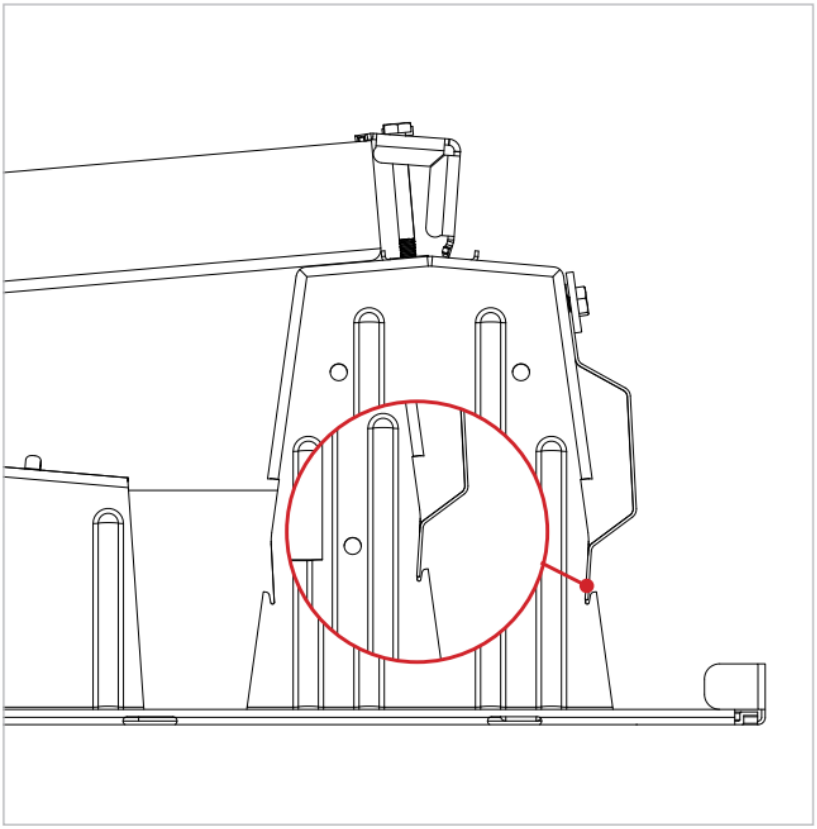


BALLAST BAY WIND DEFLECTORS

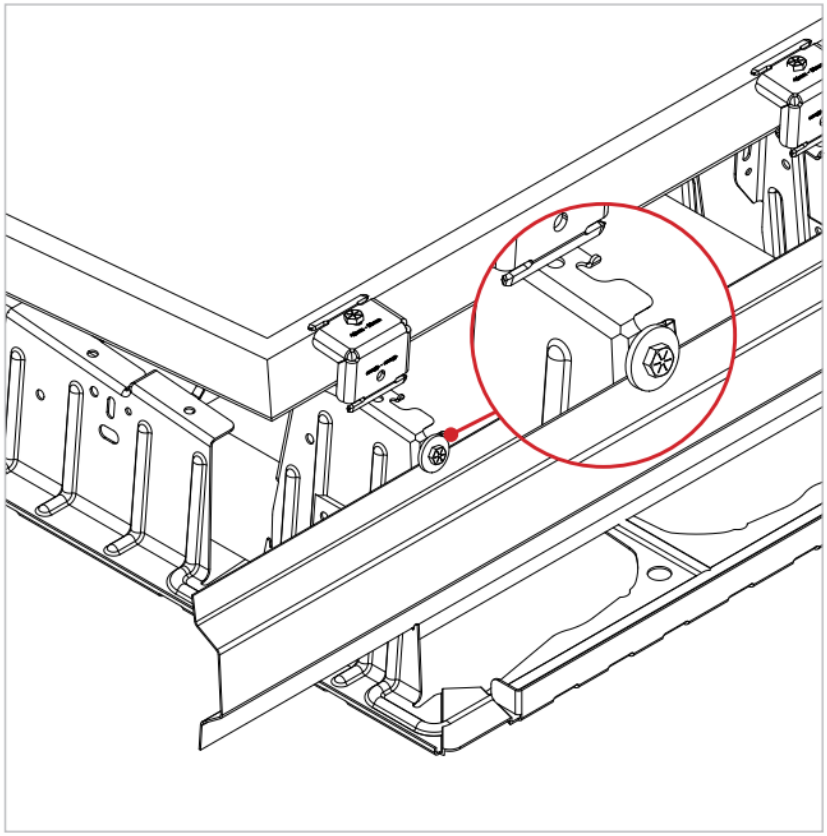
STEP 1 – U-NUTS: Install u-nuts on side flange



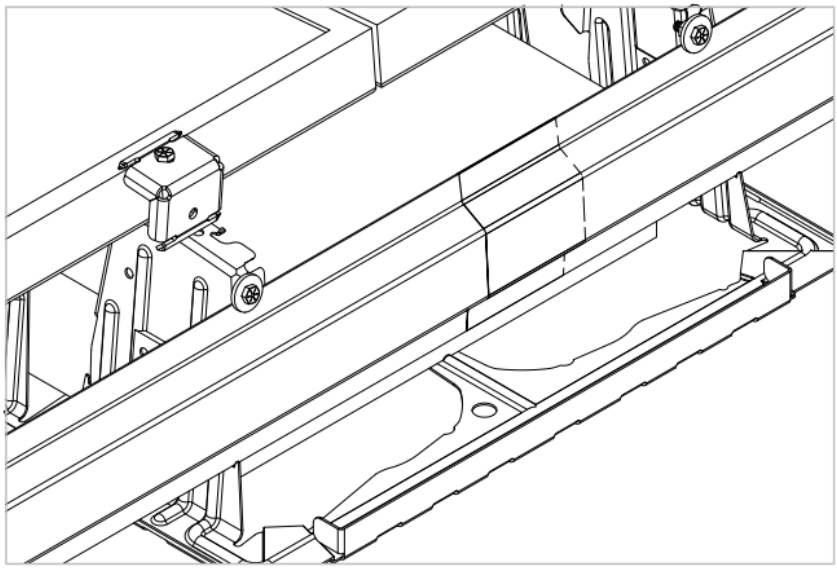
STEP – 2 WIND DEFLECTOR: Position wind deflector in the slots provided in the bay



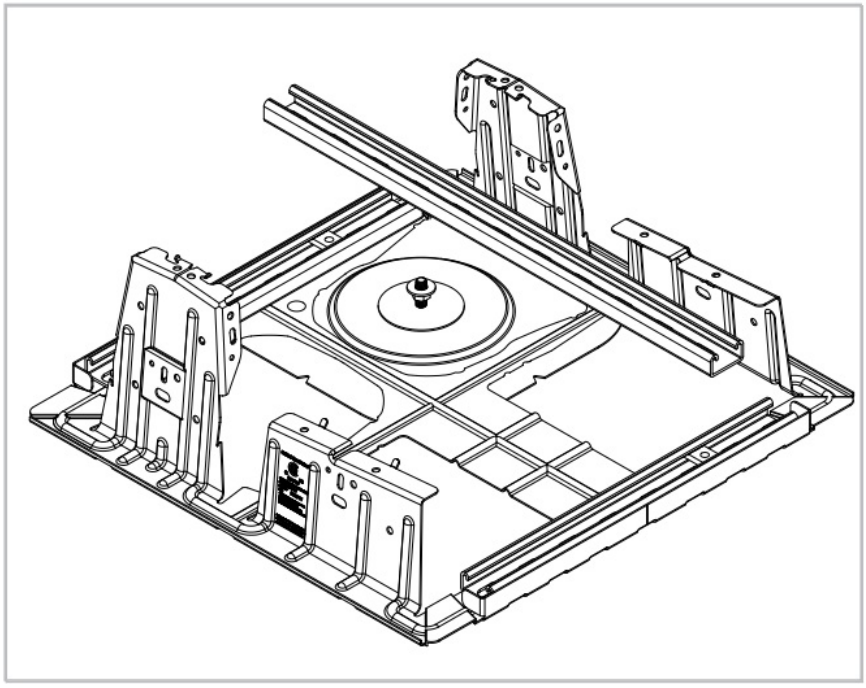
STEP 3 – HARDWARE: Secure wind deflector with 1 ½” O.D. flat washer and ¼-20 x 1” Bolt, as shown above



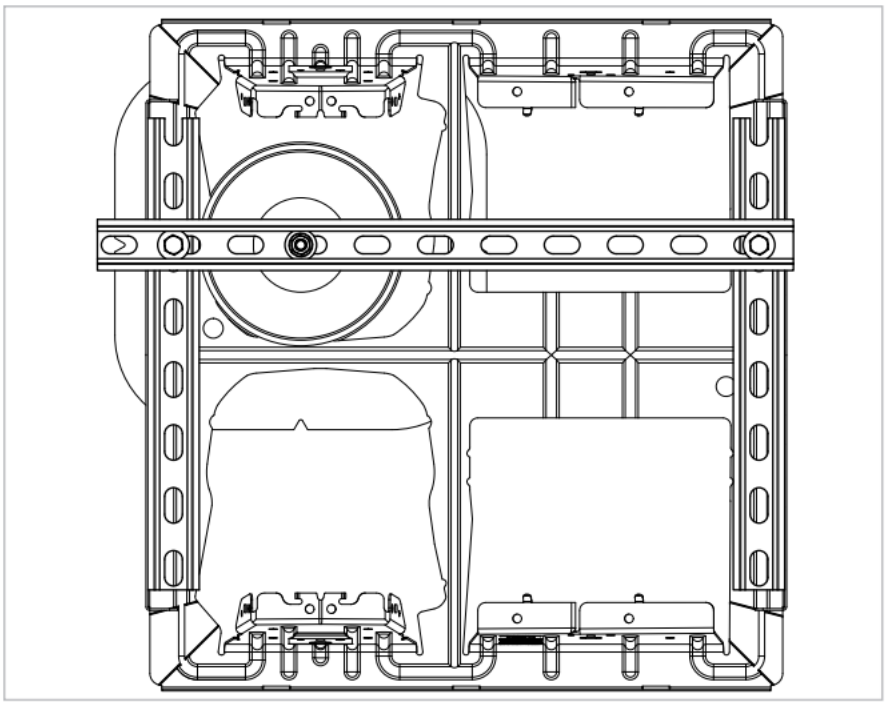
INSTALL BALLAST BAY WIND DEFLECTORS
NOTE: Wind deflectors overlap at splice



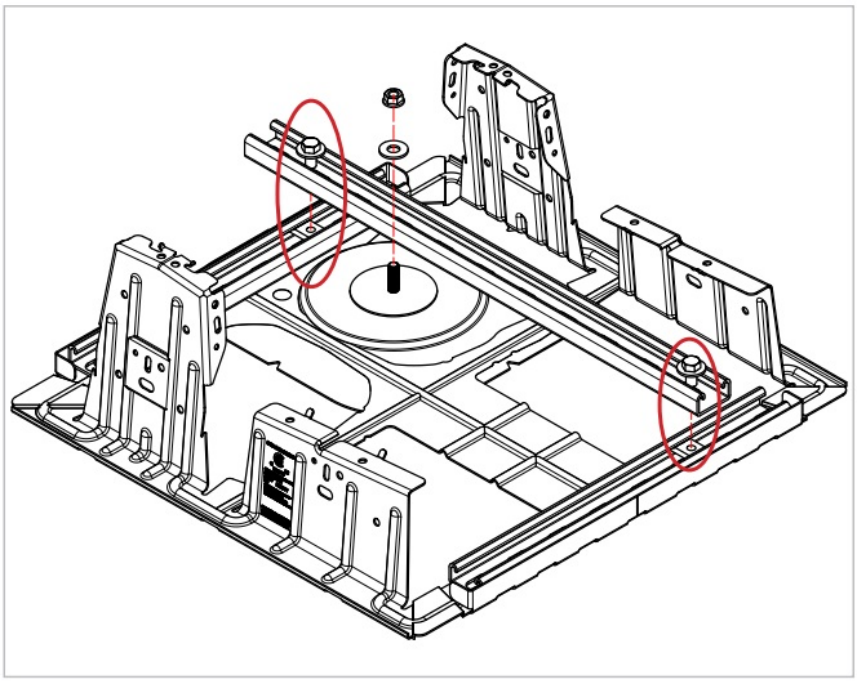
STEP 1 – PLACE NUT AND WASHER:
Include the nut and washer on the anchor stud prior to placing the stud through the strut.



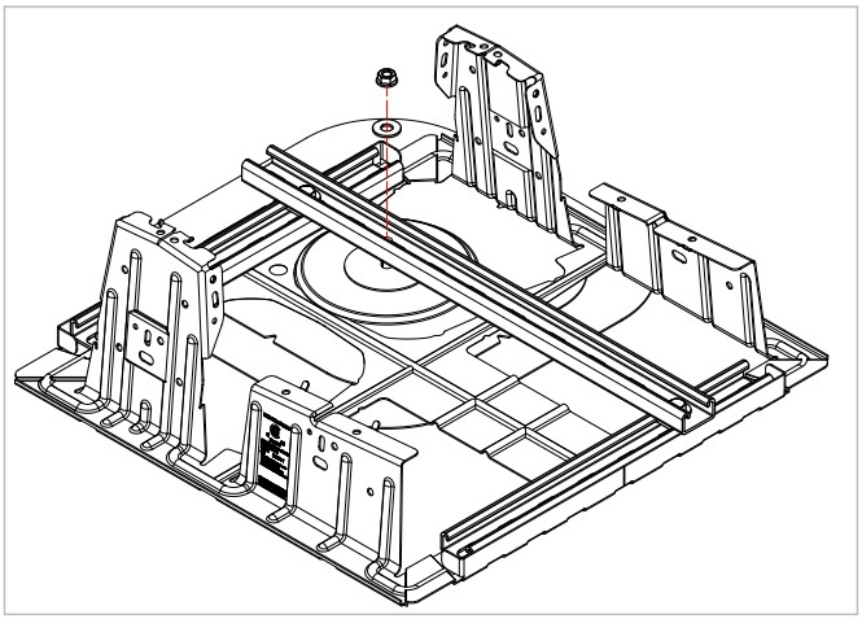
STEP 2 – POSITION ROOF ATTACHMENT:
Position Roof Attachment under bay requiring attachment and install according to manufacturer installation instructions.
NOTE: Position attachment so that it is close to center of the bay as possible.



STEP 3 – PLACE UNISTRUT: Position strut sections on bay as pictured above. Align the cross-strut with the anchor's stud. Connect side strut sections to cross strut using a strutnut, bolt, and washer as pictured.
NOTE: Metal base of attachment where stud is located cannot exceed a height of 1/4″.

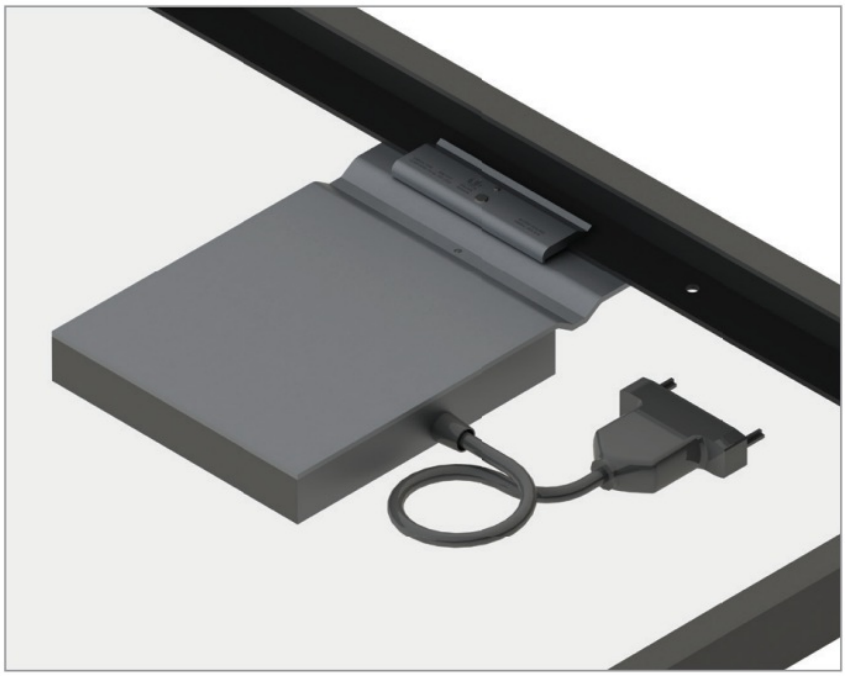


STEP 4 – SECURE UNISTRUT TO ROOF ATTACHMENT: Place 3/8” washer and 3/8-16 serrated flange nut on anchor stud, serrations facing down and tighten to 30 ft-lb.
TORQUE VALUE: 30FT-LBS



MICROINVERTER INSTALL & WIRE MGMT

PRE-INSTALL MICROINVERTERS: Install MLPE in a location on the module that will not interfere with ballast bays or grounding lugs. To use trunk cable most effi ciently, install MLPE components in the same locations on all modules in the same row.
TORQUE VALUE: 20FT-LBS



GROUNDING LUGS

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 ROOFMOUNT 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.

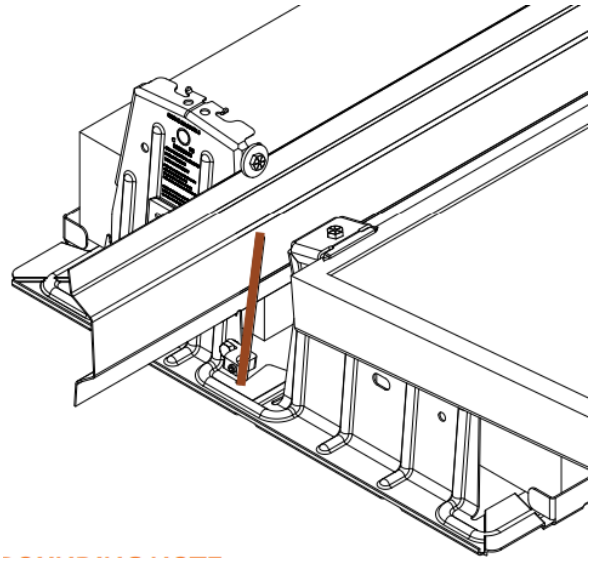
Ground Lug	Bolt Size	Torque Value
Ilsco Lug SGB-4	1/4″-20	6.5 ft-lbs (75 in-lbs)
Ilsco Lug GBL-4	#10-32	2.9 ft-lbs (35 in-lbs)
Wiley 6.7	1/4″-20	10 ft-lbs (120 in-lbs)

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 materials must be kept separate.

Although conformance with UL2703 was demonstrated without the use of oxide inhibitor material, it is recommended by Ilsco to provide an optimized bonding solution for their lay-in lug.

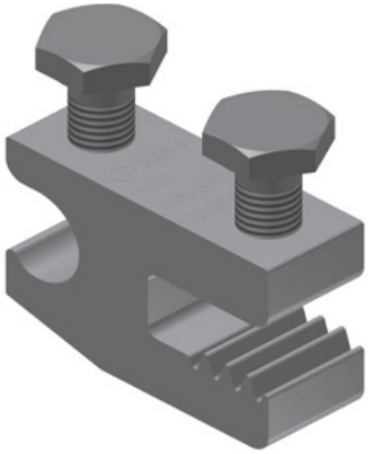
All Lugs Solar Grounding & Bonding

GROUNDING NOTE:
Can be installed on any location with a flat surface on the bay in order to ground the system.



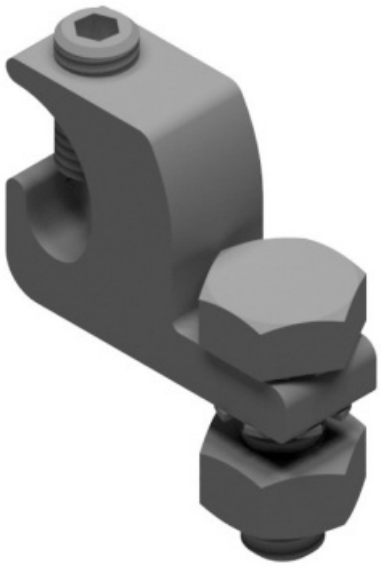
Ilsco SGB-4 Solar Grounding & Bonding

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



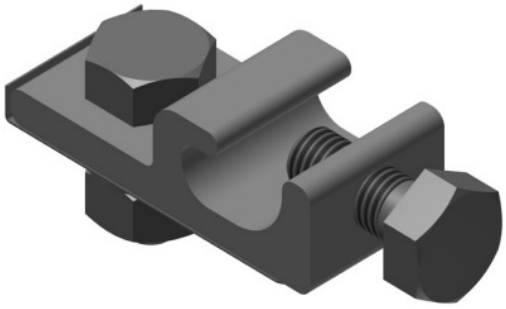
Ilsco GBL-4 Solar Grounding & Bonding

TERMINAL TORQUE:
Install Conductor and torque to the following: 4-6 AWG: 35 in-lbs, 8AWG: 25 in-lbs

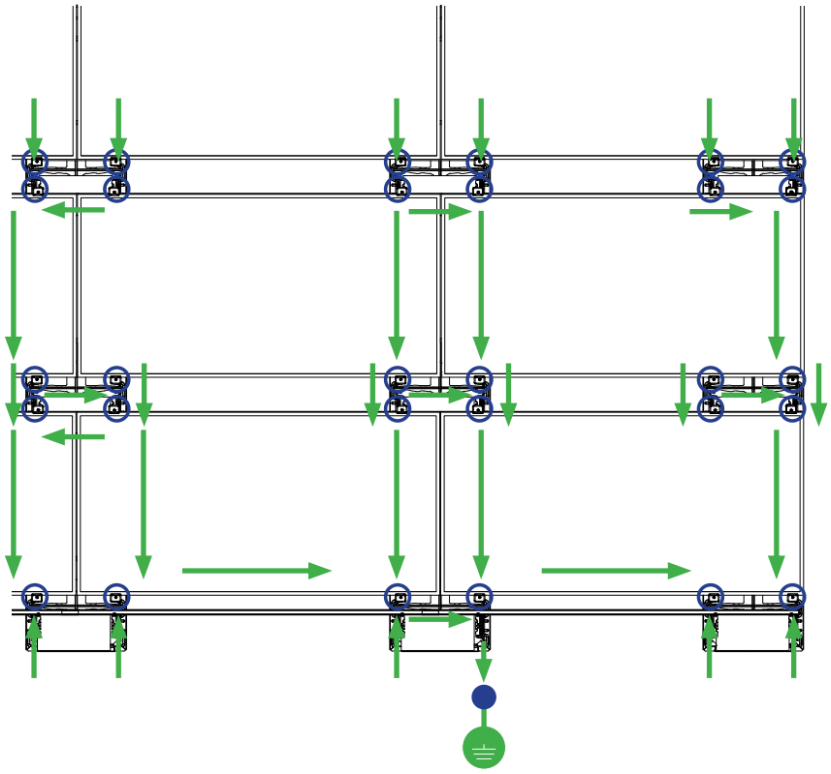


Wiley WEEB-Lug 6.7 Solar Grounding & Bonding

TERMINAL TORQUE:
Install Conductor and torque to the following:
4-6 AWG: 10 ft-lbs, 6-14 AWG: 7 ft-lbs



BONDING & GROUNDING ELECTRICAL DIAGRAM



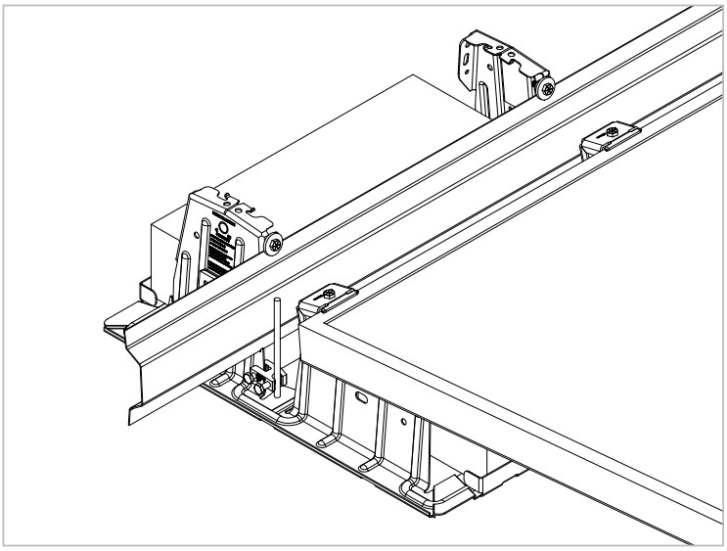
Fault Current Ground Path

Ground Lug

Grounding Clip & Bolt

Min. 10 AWG Copper Wire

Module Frame Module Bay w/ Grounding Clips



TEMPORARY BONDING PROCEDURES

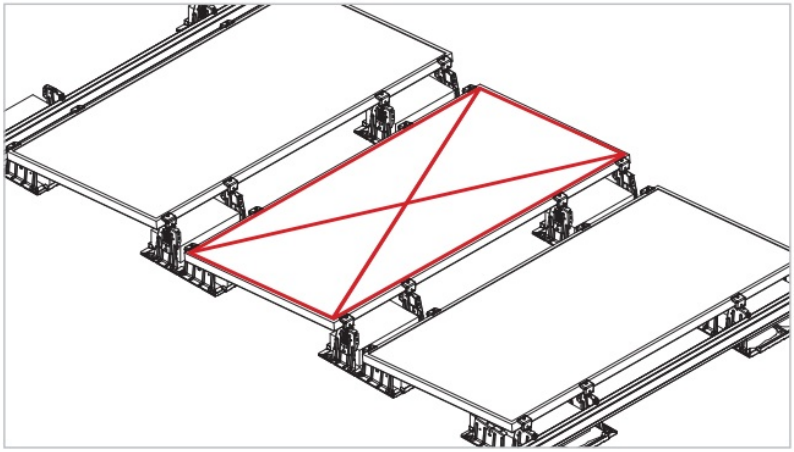
TEMPORARY GROUNDING & BONDING PROCEDURE: Periodic inspections should be conducted on the PV array to ensure there are not loose components, loose fasteners or corrosion. If any of the above items are found, the affected components are to be immediately replaced.

Note

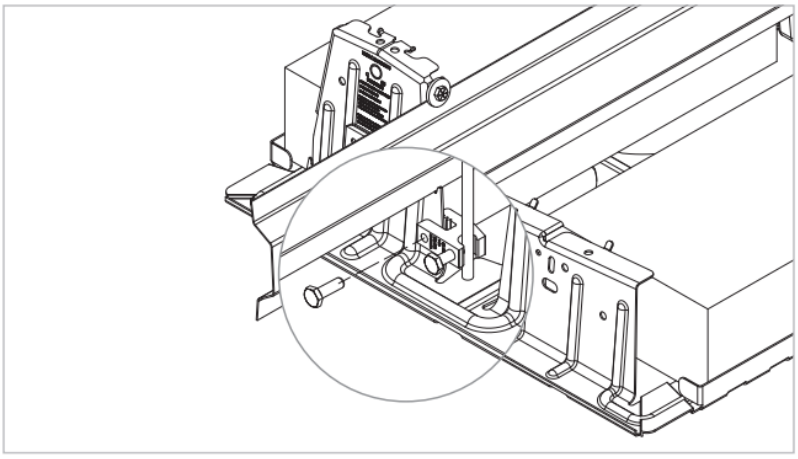
- If a module must be removed or replaced, a temporary bonding jumper must be used to ensure safety of the personnel and PV system.
- Removing a PV module from a system is not considered to be routine maintenance. This type of activity should only be performed by trained and qualifi ed installers.
- 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 materials must be kept separate

APPROVED LUGS and Terminal Torque see page 10

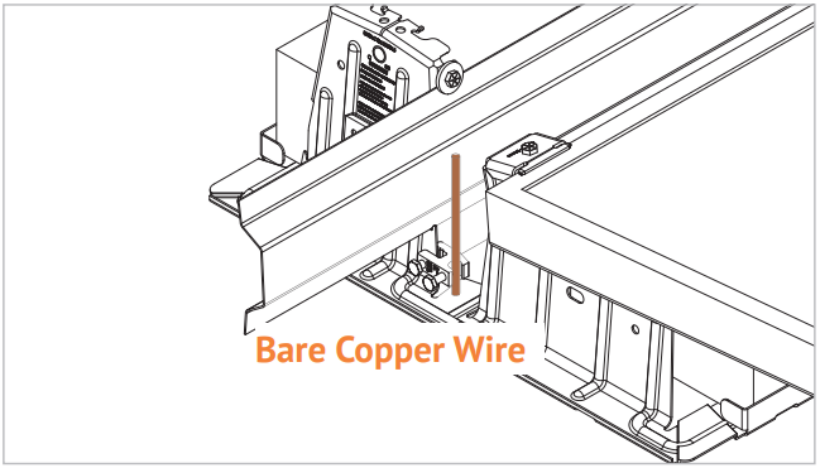
BONDING JUMPER REQUIRED: One example of a module removal that will require the use of a bonding jumper



ATTACH LUGS: Use approved lug(s) to install on adjacent bays where the module is being removed.

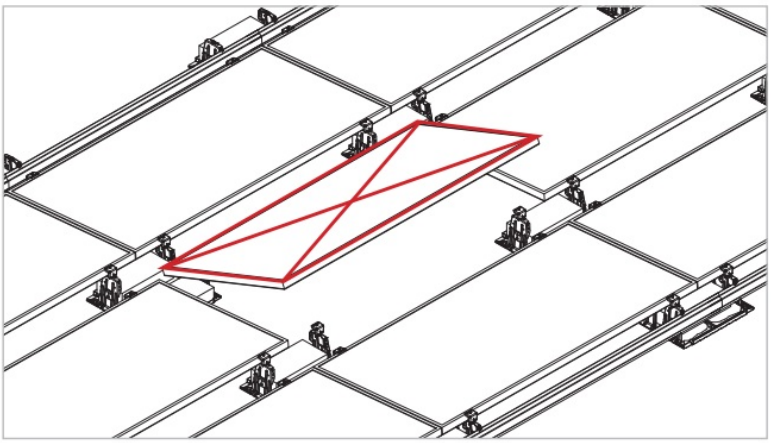


INSERT COPPER WIRE: Insert bare copper wire into each lug, providing a bonding jumper across the missing module location. Remove module & reverse the operation after maintenance is complete



BONDING JUMPER NOT REQUIRED, due to integrated bonding/grounding path throughout module frames/ bays around this location.

NOTE: CLAMP AND BOLT – Single Use Only – Use new clamps after any module replacements or system maintenance.

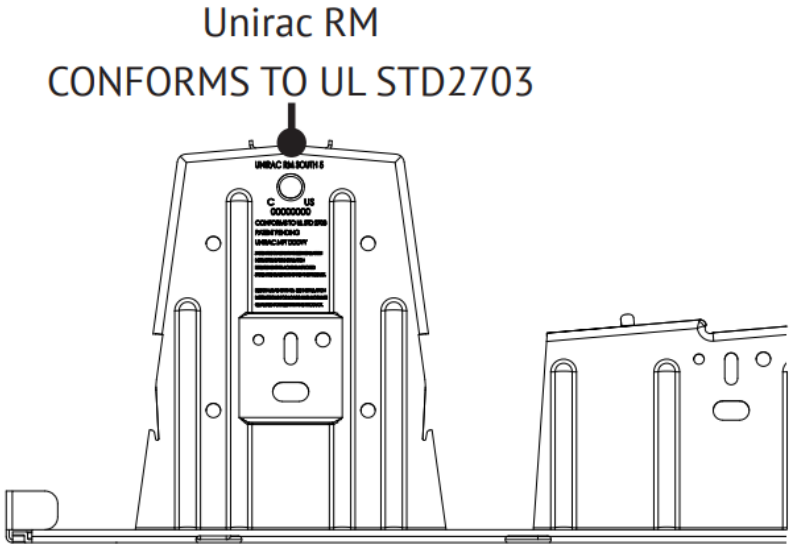


SYSTEM LEVEL FIRE CODE COMPLIANCE

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. RM ROOFMOUNT 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, 29, and 30 module constructions. Please see the specific conditions below for mounting details 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).

Refer to page right for proper installation of wind deflectors for required fire mitigation.

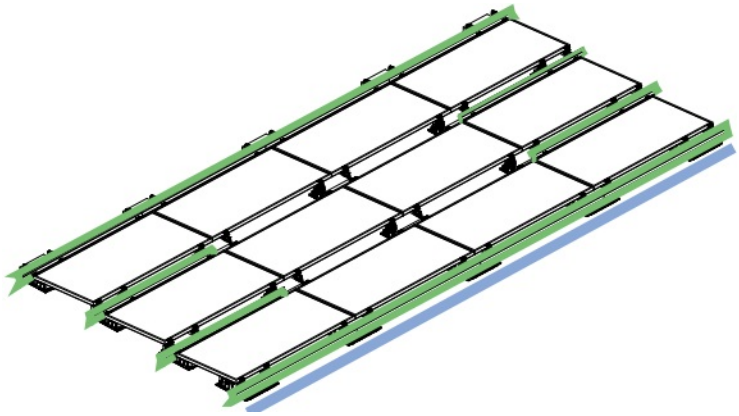
NOTE: Fire Type information is generally located on back of modules or through manufacturer's documentation. Some building codes and fire codes require minimum clearances around such installations, and the installer should check local building code requirements for compliance.



Module Type	System level Fire Rating	Mitigation
Type 1, 29, & 30	Class A	Prescriptive. See notes & Illustration Below
Type 2	Class A	Prescriptive. See notes & Illustration Below

TYPE 1 / TYPE 2 CLASS A FIRE RATING MOUNTING ORIENTATION

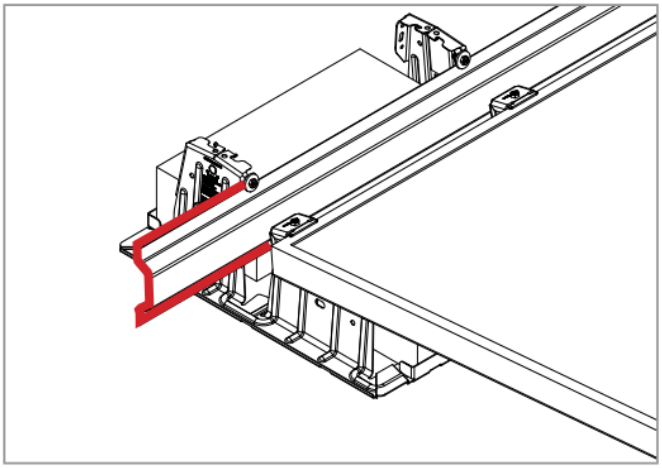
Unirac RM has achieved Class A system level fire performance for type 1, 2, 29, and 30 module constructions. In order to maintain the fire rating for type 1, 29, & 30 modules wind deflectors must be installed on the north edge of the array. Type 2 modules require wind deflectors to be installed on the north and south edges of the array and at all perimeter modules.
NOTE: See page 7 for installation of wind deflectors.



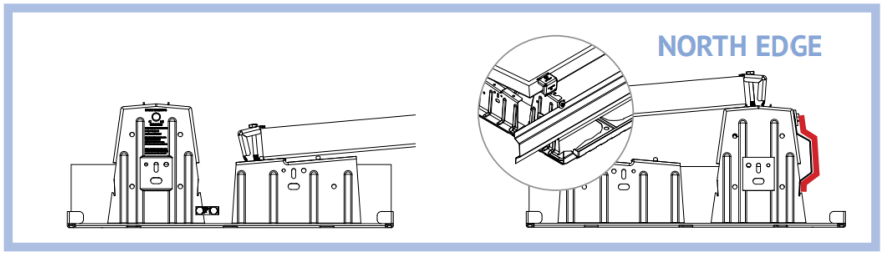
Please use the U-builder tool to optimize the usage of wind deflectors for fire mitigation.

Type 1, 29, & 30 Requires fire mitigation on North Edge when there are no additional wind deflectors throughout the array
Type 2 Requires fire mitigation on all perimeter modules within array

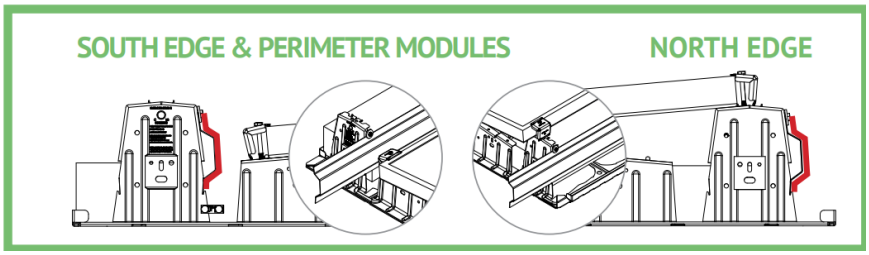
TYPE 2 EAST/WEST EDGES ONLY: Install wind deflectors in each row with 6” overhang on east and west edges. This applies for any deflector installed on east and west edges throughout the array.
TORQUE VALUE: 10FT-LBS All Wind Deflector Hardware (¼-20 x 1inch bolt, ¼-20 u-nut & 1/4inch flat washer 1 1/2in O.D.)



TYPE 1, 29, & 30: Install wind deflectors on North edge of array.



TYPE 2: Install wind deflectors on all perimeter modules within array



NOTE: Wind deflector should be secured to supplemental bay by two hardware kits.

MECHANICAL LOAD TESTING

MECHANICAL LOAD TEST

The Unirac RM system has been tested to the mechanical load provisions of UL2703 and covers the following basic parameter(s):

- Test Loads = 1.5 x Design Loads
- PV modules may have a reduced load rating, independent of the RM5 load rating. Please consult the PV module manufacturer's installation guide for more information.

TESTED MODULES

Module Manufacturer	Model / Series	Area (sq ft)	Standard Installation Configuration – NoMid Bay		Installed with Additional Bay at Modules East/West Center	
			Up Design Load (psf)	Down Design Load (psf)	Up Design Load (psf)	Down Design Load (psf)
Jinko	JKMxxxM-72HL4-V	27.8	17.24	36.20	Not Tested	Not Tested
Canadian Solar	CS7N-xxxMB-AG	33.4	15.67	14.85	23.52	33.33

NOTE:
All installation configurations have achieved a minimum of 5psf design load in the downslope direction.

ELECTRICAL BONDING & GROUNDING TEST MODULES: This racking system may be used to ground and/or mount a PV module complying with UL1703 or UL61730 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

Manufacture	**Module Model / Series**
Aionrise	AION60G1,AI0N72G1
Aleo	P18 & P19518, S19, 559, & 579
Aptos Solar	DNA-120-MF10DNA-120-(MF/B926DNA-144-(MF/B926DNA-108-(MF/B910-modN DNA-120-(MF/B910-xxxW
AsVonergy	CHSM6610(P/M)/HV CHSM6612(P/M)/HV CHSM72(P/M)-HC CHSM72M(DG)/F-BH
AU Optronics	PM Series
Auxin	AXN6M610T, AXN6P610T AXN6M612T, AXN6P612T
Axitec	AC-xxx(M/P)/(60/72)(5/V)AC-mP/156-60SMlpremium X HC: AC-xxxMH/(120444)(SA9 AXlblackpremium X HC: AC-xxxMH/(120/144)(SB/VB) Mlpremium XL HC:AC-raMW120(5/V) AXlblackpremium XL HC: AC-raMH/120(5B/VB)
Boviet	BVM6610 & BVM6612
BYD	P6K Series, MHK
Canadian Solar	CS1(K/H/U/Y)-MS, C53(U/K)-MB-AG CS3K-(MB/MS/P/PB), C531-(P/MS) CS3N-MS,CS3U-(MB/MS/P/PB/PB-AG) CS3W-(MB-AG/MS/P/P-PB-AG) CS3Y-MB-AG, CS5A-MCS6K-(M/MS/P), CS6P-(M/P) CS6R-MS, CS6U-(M/P)CS6V-M, CS6W-(MB-AG/MS) CS6X-P, CS7L-MB-AGELPS C56(P/A)-MM

Manufacture	Module Model/ Series
Canadian Solar (Cont)	CS7N-xxxMB-AG CS7L-xxxMB-AG
Centrosolar America	C-Series & E-Series
CertainTeed	amocMxx-(01/02/03/04) Cboodboc-01
Eco Solargy	Orion 1000 & Apollo 1000
ET Solar	ETAC & ET ModulesET-M672BEInxTW, ET-M7726H520-550WWAVB
Flextronics	FXS
Freedom Forever	FF-MP-BBB-xa, FF-MP1-BBB-xxx
FreeVolt	PVGraf
GCL	GCL-P6 & GCL-M6 Series
Hansol	TD–AN^3, TD-AN4, UD-AN1 & UB-AN1
Hanwha SolarOne	HSL 60 & HSL 72
Heliene	116M, 60M, 60P, 72M & 72P Series 144HC M6144HC M10 SL Biracial
HT-SAAE	HT72-156(M/P), HT72-156P-C, HT72-156P(V)-C HT60-156M-C, HT60-156M(V)-C, HT72-166M HT72-18X
Hyperion Solar	HY-DH108P8(13), HY-DH108N8B HY-DH144P8
Hyundai	HiS-SmocYH(BK) HiS-SmocXG(BK) HIN-Sxvv G(BK)
Hyundai Heavy Industries	MG, **TG, RG, KG, MI, RI, KI, HI & TI Series HIA-SmaHG, Hi D-SmoIG(BK), HiS-5 400PI**

Manufacture	Module Model / Series
LA Solar	LSmodiC LSmorl3L LSmodiC
LG Electronics	lanx(E1C/E1K/N1C/N1K/N2T/N2W/S1C/S2W/Q1C/ Q1K)-A5lanx(A1C/M1C/M1K/N1C/N1K/Q1C/QWQAC/ QAK)-A6LCociocN2T-B5LCociocN1K-B6lanz(N1C/N1K/N2T/N2W)-E6 LC000l2T-15lanz(N1K/N1W/N2T/N2W)-13 larxx(M1C/N1C/Q1C/Q119-N5 lardx(N1C/N1K/N2W/Q1C/Q1K)-V5 LGnXN3K-V6
LONGi	LR6-60, LR6-60(BK/PE/PB/PH/HPB/H1B/HPHilet LR6-72, LR6 $^{-72}$(BK/HV/PE/PB/PWIIPIVHDt 1114-60(HPB/HIBMPHMIK)LR4-72(HPH/H1H)
Maxeon	SPR-MAX3-m-COM
Meyer Burger	Meyer Burger Wad, Meyer Burger White Meyer Burger Glass
Mission Solar Energy	MSE MONO & MSE PERC MSExxx(SR8T/SR8K/SR95/SXST/SX5K/SX6W)
Mitrex	bboor-L3H, Mm-13H
Mitsubishi	ME & MLE Series
Neo Solar Po wer Co.	D6M Series
NE Solar	NESE xxx-72MHB-M10 **NESE xxx-60MH-M6**

- 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

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Manufacture	Module Model / Series
Panasonic	VBHN=SA(13/16) VBHNxxxKA(01/112) VBHNxxxSA17(G/E) & SA18(E)VBHNvocKA(03/114) EVP■hoorEVPVxxx(H/KRIVIIK)
Peimar	SGxxxM (FB/BF), SMxxxM
Phono Solar	PSxxxi44(F1)-24/TH
Phono Solar Tech.	Standard Modules
Prism Solar	P72 Series P72X•xxx
Veils	QPRO L-G2, QPEAK (BLK) (G3/G3.1)Q PLUS/PRO G3, Q.PLUS BFR G3.1, Q.PRO/PLUS G4 QPLUS/PEAK/PRO – L G4.xB.LINE PLUS/PRO – L G4.xQPRO BFR G4x, Q.PEAK (BLK) G4.1 (TANNIN° QPLUS BFR G4.1(TANMAX)B.LINE (PLUS/PRO) BFR G4.1QPLUS L-G4.2/TAAQPR O EC-G4.4QPEAK DUO (BLK) GSQPEAK DUO LIGS/G5.1/65.2/G5.3) B.LINE PEAK DUO LIG S/GS.1/GS.2/65.3) QPEAK DUO (BLK)•G6+QPEAK DUO BLK-G6+/TSQPEAK DUO L-(G6/&2/ &3)QPEAK DUO (G7/G7.2)QPEAK DUO (BLK)•G7QPEAK DUO L-(67/67.1/67.2/G7.3/67.7) B. LINE PEAK DUO (G7/67.2)B.LINE PEAK DUO L-(67/G7.1/67.2/67.3) QPEAK DUO (BLK) G8(+)QPEAK DUO L-(68/G8.1/68.2/68.3/68.3 BFG)

Manufacture	Module Model / Series
Q Cells (cont.)	QPEAK DUO (BLK) ML G9(+) QPEAK DUO XL (G9/G9. 2/G9.3) QPEAK DUO XL-G9.3/BFG QPEAK DUO BLK-6 10(+) QPEAK DUO G10+QPEAK DUO (BLK) ML-610(a) (+) QPEAK DUO BLK G10+ /AC QPEAK DUO BLK ML- G10+/TS QPEAK DUO BLK ML-G10+/ tQPEAK DUO XL -(G10/610.2/610.3/G10.c/G10.d) QPEAK DUO XL-G10. 3/BFGQPEAK DUO XL-G10.d/BFG Q.PEAK DUO XL-G 11S QPEAK DUO XL-(G11.2/G11.3)QPEAK DUO XL-G 11.3/BFG
REC	PEAK & ECORECXXXAA (BLK/Pure/Pure-R) RECxxxN P (N-PEAK)RECxxxNP2 (Black)RECxxxNP3 BlackRECxxxPE, RECxxxPE72RECxxxTPRECxxxTP2(BLK2)RECxxxTP2S (B)(X01)RECxxxTP3M (Black)RECxxxTP4 (Black)
Renesola	60 Cell Modules & Vitnis2
Risen	RSM60-6, RSM72-6, RSt4144-6 RSM110-8-xxxBMDG
SEG Solar	SEG-nx-BMD-HV SEG-nx-BMD-TS
5-Energy	SN72, SN60 **Series**

Manufacture	Module Model / Series
Seraphim	SEG•(6PA/6PB/6MA/6MA•HV/6MB/E01/E11) SRP-(6QA/6Q6)SRP-m-6MB-HV, SRP-320-375-BMB-HV, SRP-mocBMC-FIV, SRP-390-415-BMA-FiV, SRP-390-405- BMD-HV
Sharp	ND-24CQD, ND-25CQCS ND-Q235F4, ND-F4Q300 NU-SA, NU-SC
Silfab	SLA-M/P, SLG-1^{4}1./P Slbocx(BG/EIK/I3L/FIC/HC+/HL/1-1M/1-1N/ML/NL/NT/ NX/NU)
Solar4America	S4kocx-108MH1OBB,S4Amoc-72MH5BB
SolarEver USA	SE-16613-xxxM-120N SE-18211-xxxM-108N
Solaria	Powernocdt•PD/BD/ACPowerflxmcC PowerXT-EocR-PM (AC)PowerX-400R
SolarTech	STU HIT & STU PERC
SolarWorld	Sunmodute Protect/Plus
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
Sun Edison/Flex- tronics	F-Series / FLEX FXS, R-Series/ FLEX FXS
Suniva	Optimus Series, MV Series
Sunmac Solar	M754SH-BB Series

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Manufacture	Module Model / Series
SunPower	X-Series 72 & E-Series 72 X-Series 96 & E-Series 96 P-Series, Sig BlackSPR E20 435 COM (G4 Frame) /uocx-BLK-G-AC, SPR-Mxxx-H-AC
SunTech	STP /00C,STPXOCS – B60/Wnhb
Talesun	TP572, TP596, TP654, TP660TP672, Hipor M, Smart TD6172M,TP7G54M(H)
Testa	TxxxS,TxxxH
Trine	PADS, P005, 0D05, DD06 DE06, DE09.05, DEO9C07PD14, PE14, DD14, DE14, DE15, DE15V(II) DEG15HC20(11), DEG15MC20(11),DEG15VC.20(I1) DE1814(11), DEG18MC.20(11)DE19, DE G19C.20
Universal Solar	UN14xx-144814H-DG UN15xx-144814H-DG UNIm-108M-BBUNbocc-120M-BBUNbocc-120MH
Upsolar	UP-Kocx
URE	D7K)18A, D7M.(H7A/H8A)FAI0oa(C8G/E8G), FAMmocE7G-BB FAMmE8G(-BB),FBICwocM8G
URECO	F6M)caE7G-BB FBM]occMFG-BB
Vikram	Eldorado, Solivo & Somera PREXOS VSMOHT.60.AAA.05 PREXOS VSMOHT.72.AAA.05

Manufacture	Module Model / Series
VSUN	VSUNEoc-60M-BB, VSUNxxx-72MH VSUN400-415-144BMHVSUN4xx-1448MH-DG VSUN5xx-1448MH-DG VSUNxxx-108M-BB VSUNxxx-120M-BBVSUNEoc-120BMHVSUNEoc-132BMH VSUNEoc-108BMH
Waaree	Arka Series WSMDi
Winaico	WST & WSP Series
Yingli	YGE 60 CellYGE 60 Cell Series 2YLM 60 YLM 72 YLM-VG
Vona Energy	YSM-8450-1
ZNShine Solar	ZXM6-72 Series,DCM6-NH144 DCM6-NHLDD144400VM DCM7-SH108 Series

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Documents / Resources

	**UNIRAC PUB2023JUN12 Code Compliant** [pdf] Instruction Manual PUB2023JUN12 Code Compliant, PUB2023JUN12, Code Compliant, Compliant

References

- **User Manual**