RM10 EVO INSTALLATION GUIDE

UNIRAC Code-Compliant Installation Manual

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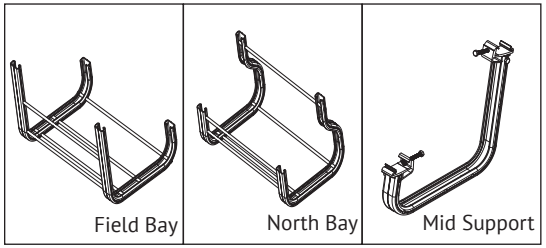
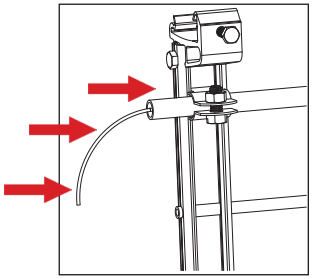


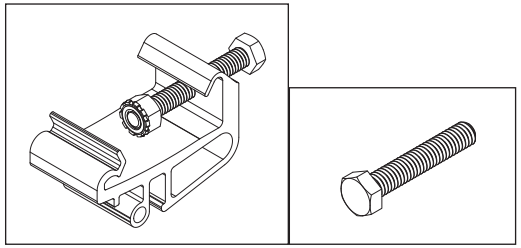
BALLAST Field BAY/North Bay: The Ballast Bay frame is made of a mill finish Aluminum. This roof mount is a modular design that allows for easily getting around roof obstructions and accommodating roof undulations. The Ballast Bays are created such that they nest within each other to optimize shipping logistics. North bay will be only used only on north row.

Mid Support: Mid Supports are made of mill finish Aluminum and provide additional downforce support for large modules as well as heavy wind and snow loads.

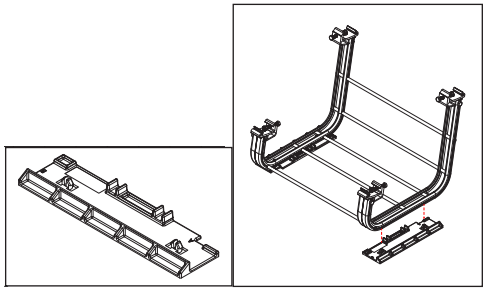


OPTIONAL WIRE MANAGEMENT: The BallastBay frame runners will accept standard strut-strap wire management solutions, or standard strut nuts, available for purchase through your local electrical supply store.

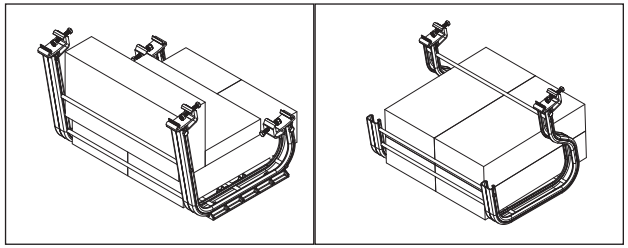
NOTE: All conduit and wire ways should be grounded & bonded per the (NEC) National Electric Code.



CLAMP ASSEMBLY & SIDE BOLT: The Module Clamp is made of a mill finish Aluminum and engages the return flange underneath the module. A stainless-steel nut with an external tooth washer affixed to the end of a bolt is pre-assembled with the module clamps, which secures and electrically bonds the module. Side bolt is used to connect the clamp assembly to ballast bay.



ROOF PAD: The Roof Pad provides a protective interface between the Ballast Bay and roofing material. Please consult the roofing manufacturer to see whether it is required and to verify compatibility. Additionally, roof pads are required for unattached system installation in certain seismic areas. Refer to Appendix A for roof pad usage requirements. The Roof Pad snaps into the holes on the bottom side of the Ballast Bay.



BALLAST BLOCK: The RM field ballast bay can fit up to 3 and a half standard 4”x8”x16” solid concrete cap blocks (4 blocks on north ballast bay). See Page 5 "Complete Ballast Placement" page of this document for more information. Block weight can range from 26 – 38 lbs. The weight of the block will have a major impact on how many will be required for the project so be sure to verify your block weights before using the U-builder online tool.

NOTE:

1. Concrete masonry unit (CMU) should comply with ASM standard specification for concrete roof pavers designation (C1491 or C90).

2. Oxidization of the star washer is possible in high salt environments but does not impact the integrity of bonding or strength.

3. System labels for the RM10 and RM10 Evo systems are identical. Visually inspect the system components to distinguish between RM10 and RM10 Evo.

S.No.	PART NUMBER	DESCRIPTION
1	370010	FIELD BAY
2	370011	NORTH ROW BAY
3	370030	MID SUPPORT
4	370020	CLAMP ASSEMBLY
5	310760	ROOF PAD

TECHNICAL SPECIFICATIONS:

Material Types: Mill finish aluminum for clamps and ballast bays (6105-T52, 6063-T5, 6061-T6 or 6005A-T61)
Hardware: Stainless Steel
Bonding and Grounding: UL2703 Listed Continuous Bonding Path.

TOOLS REQUIRED OR RECOMMENDED FOR LAYOUT, ATTACHMENTS & INSTALLATION:

- Drill **(Do Not Use An Impact Driver)**
- Shallow 1/2" Socket
- Torque Wrench
- Optional torque limiter (7 FT-LBS / 25 FT-LBS)
- Tape Measure
- Chalk Reel
- Optional Spacers (See Diagram - Page Right)

SAFETY:

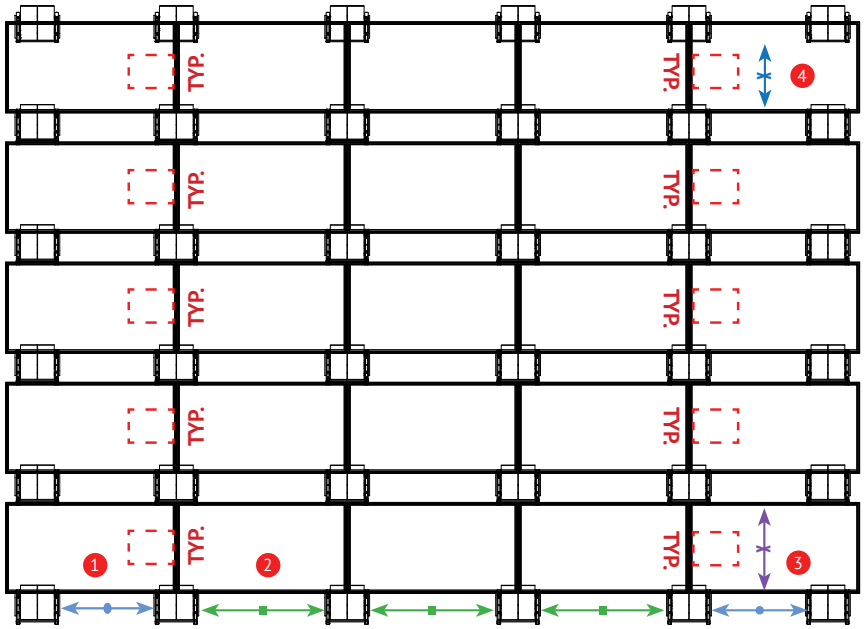
All applicable OSHA safety guidelines should be observed when working on a PV installation job site. The installation and handling of PV solar modules, electrical installation and PV racking systems involves handling components with potentially sharp metal edges. Rules regarding the use of gloves and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

NOTE: The RM10 EVO mounting system may be used as a Ground Mount PV Module Mounting System provided that all relevant requirements from the National Electric Code ANSI/NFPA 70 and other jurisdictional codes are met.

See page 7 for guidelines regarding routine maintenance.

LAYOUT ASSISTANCE TOOL:

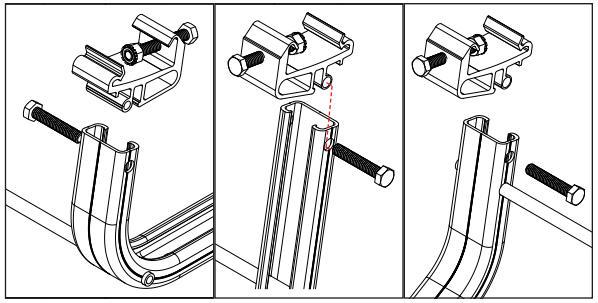
Module Dimensions:		RM10 EVO	Module location:	Spacing Equations (in Inches):
Module Length **(ML) =**		1	Perimeter Column Spacing =	**ML**+(**G**/2)-30.37"
Module Width **(MW) =**		2	Interior Column Spacing =	**ML**+**G**-19.25"
Prefered module gap? (1/4" - 1" is permissible)		3	Field Row Spacing =	Fully install one panel in south row, cut spacer to N/S distance for all the bays except north row
		4	North Row Spacing =	Fully install one panel in north row, cut spacer to N/S distance for north row
East/West Module Gap **(G) =**				



The module J-Box in the column nearest the roof's East or West edge must be oriented away from the edge of the roof in order to meet UL2703 fire test requirements. Reference Appendix C.

SPACERS - OPTIONAL

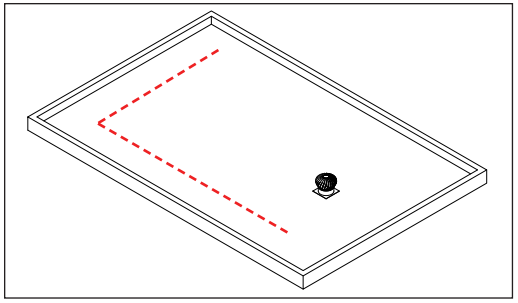
PERIMETER COLUMN SPACER
COLUMN SPACER
SOUTH ROW SPACER
NORTH ROW SPACER



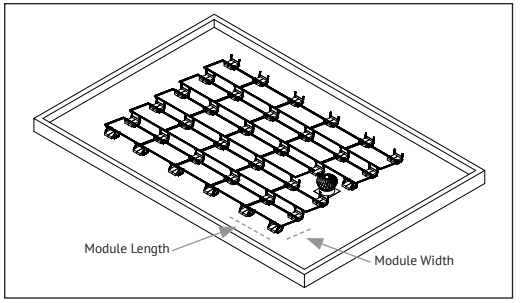
ATTACH CLAMP: Place the clamp on the bay, align the bottom hole on the clamp with the side hole on the bay, and install the side bolt.

Install the side bolt from the direction of the clearance hole.

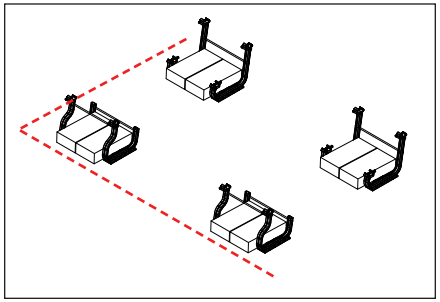
TORQUE VALUE: 25 FT-LBS



MARK ROOF WHERE ARRAY WILL START: Use chalk line to mark distances from roof edge as called out in construction documents.

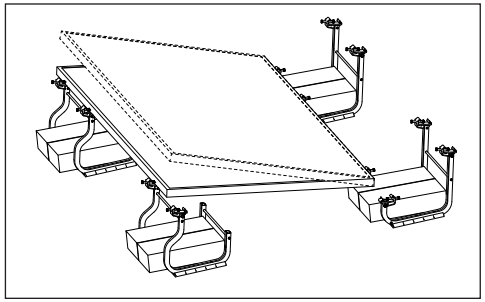


LOCATE ARRAY ON ROOF: Align Ballast Bays with previous chalk lines, using bay spacers as shown on Page 2 if desired.

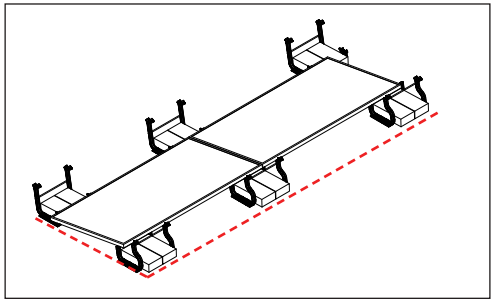


PLACE SOME BALLAST IN 1ST FOUR BAYS TO RESIST THE BAY FROM ROTATING FOR FIRST MODULE INSTALLATION

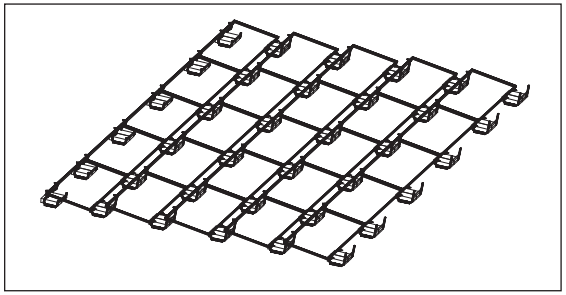
NOTE: Refer to Appendix D & E for mid support and supplementary bays installation.



PLACE MODULE IN CLAMPS

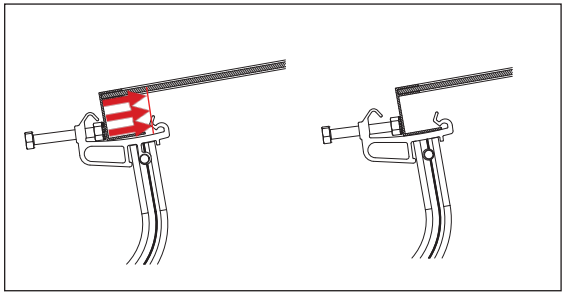


PLACE ANOTHER MODULE IN NEXT BAY CLAMP

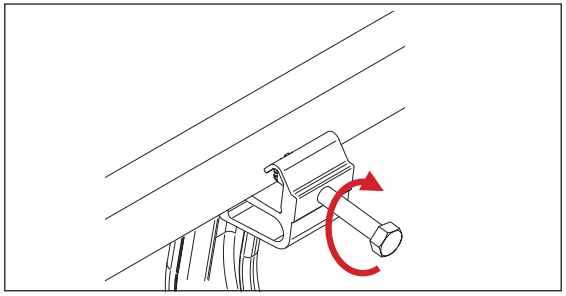


SEAT REMAINING MODULES IN CLAMPS: It is recommended to finish one row before beginning the next.

NOTE: 1/4" - 1" gap is required between modules for thermal expansion.

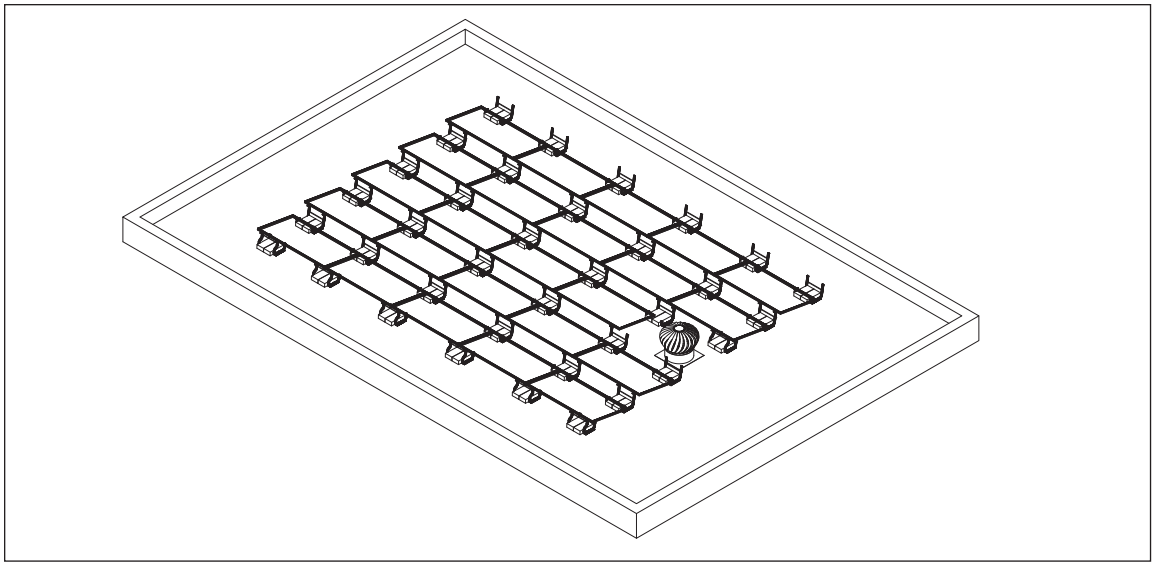


FULLY SEAT MODULE IN CLAMPS AND TIGHTEN BOLTS: A gentle tug on the bays will seat the module into the module Clamp. It is NOT recommended to use the bolt to seat the module.



TIGHTEN BOLT AND CHECK CLAMP BOLT TORQUE IN SEQUENCE: It is recommended to tighten bolts one row at a time, working outward from the north or south edge of the array.

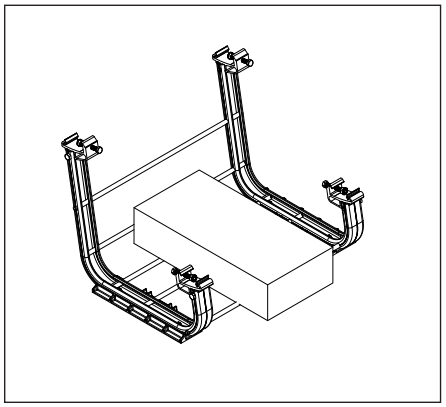
TORQUE VALUE: 5 to 7 FT-LBS



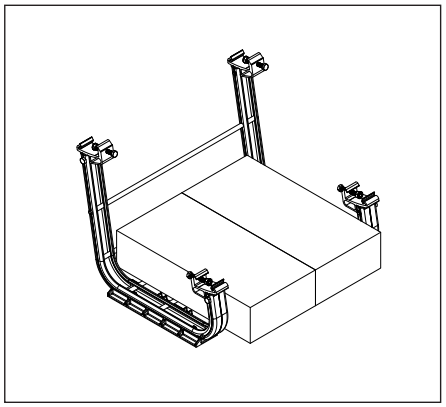
COMPLETE BALLASTED PLACEMENT: Place ballast as required. Deviations from block arrangements shown in this guide may cause shading. Site specific module loading and ballast calculations should be determined for each individual project in accordance with the U-Builder software. This system has been rated for the mechanical load provisions of UL2703. In addition, it has been designed and tested to comply with the more rigorous requirements of SEAOC PV1, PV2 and ASCE 7.

Note: To avoid wind events during installation, ensure bays are ballasted according to the design layout before module installation

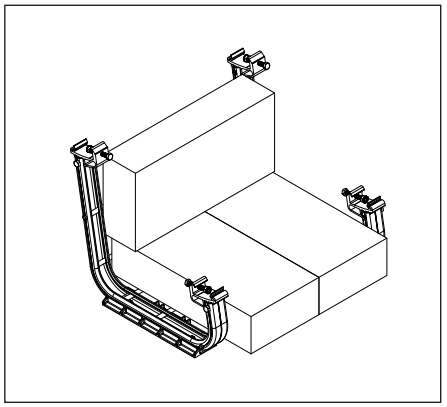
FIELD BAY:



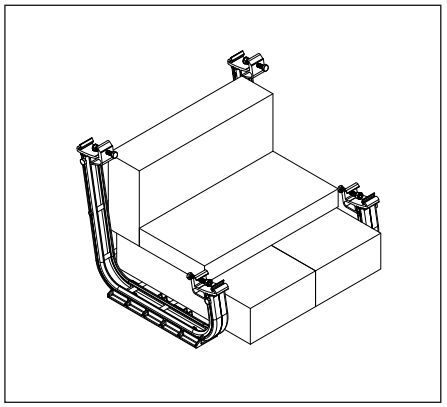
1-Block Configuration



2-Block Configuration

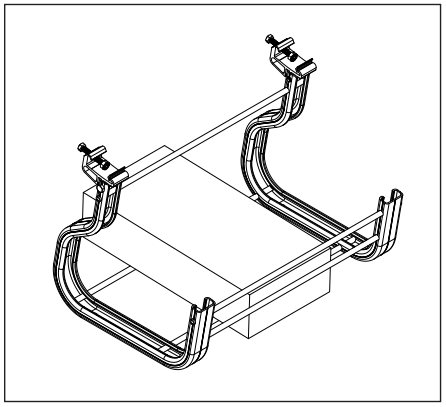


3-Block Configuration

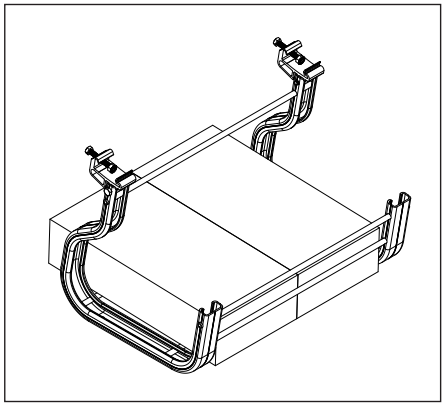


3 1/2-Block Configuration

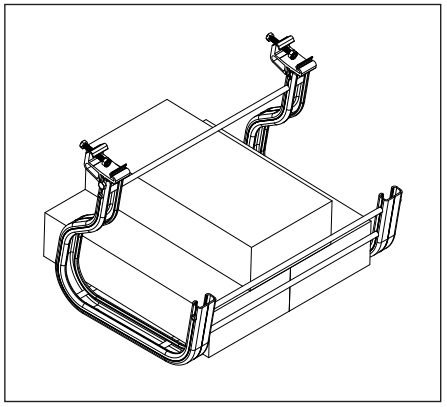
NORTH BAY:



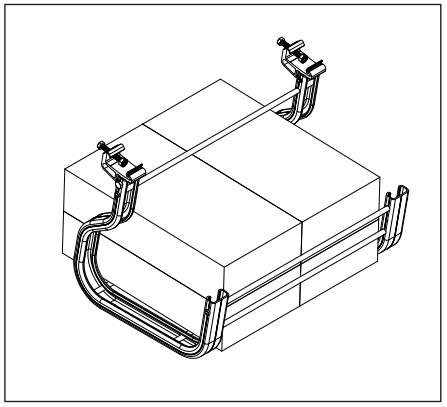
1-Block Configuration



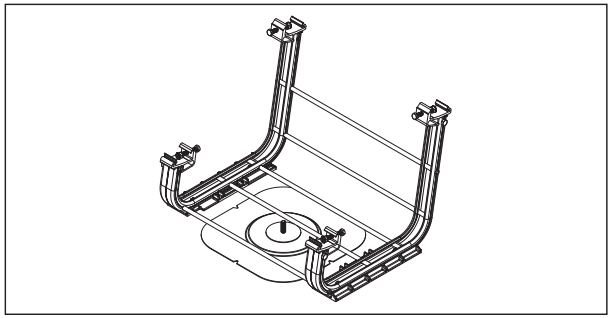
2-Block Configuration



3-Block Configuration

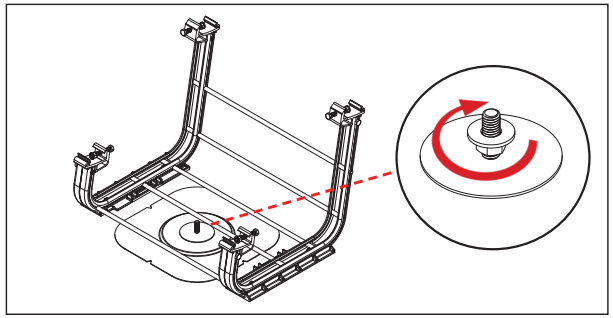


4-Block Configuration

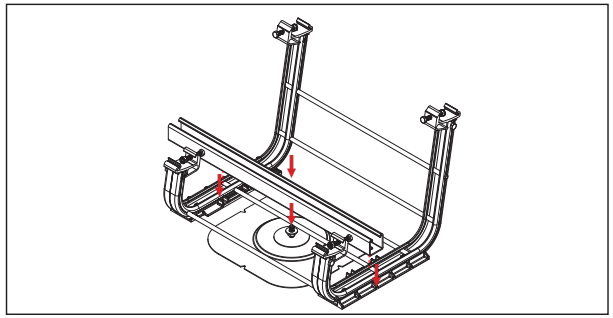


STEP 1 - POSITION ROOF ATTACHMENT: Position Roof attachment under bay requiring attachment and install according to manufacturer installation instructions.

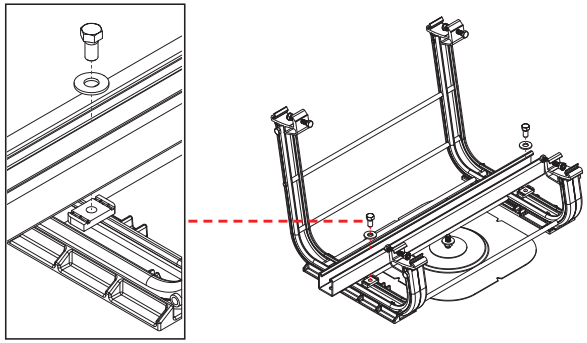
NOTE: Center roof attachment under ballast bay as close as possible.



STEP 2 - ENGAGE FLANGE NUT: Place 3/8-16 serrated flange nut and 1" OD washer on the anchor stud approximately halfway down, nut serrations facing up.

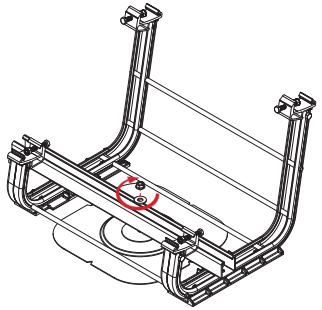


STEP 3 PLACE UNISTRUT: Place 24" Unistrut across RM bay with the anchor stud though a slot.



STEP 4 - SECURE UNISTRUT TO BAY: Place strut nuts inside RM channels under Unistrut, and secure Unistrut with 3/8-16 x 3/4" bolt and 1" OD washer to 30 ft-lb.

TORQUE VALUE: 30FT-LBS

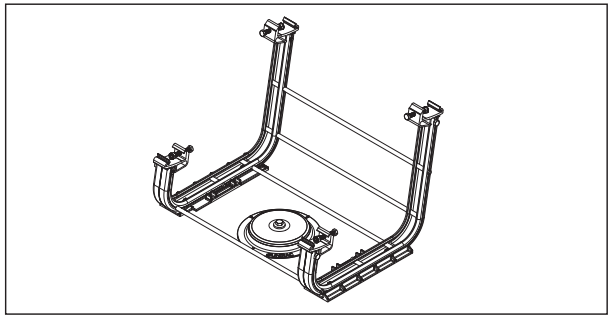


STEP 5 - SECURE UNISTRUT TO U-ANCHOR:

Tighten nut that was placed on roof attachment stud in step 2 until making contact with the underside of the Unistrut. Then place another 3/8-16 serrated flange nut and 1" OD washer on the stud, serrations facing down and tighten to 30 ft-lb.

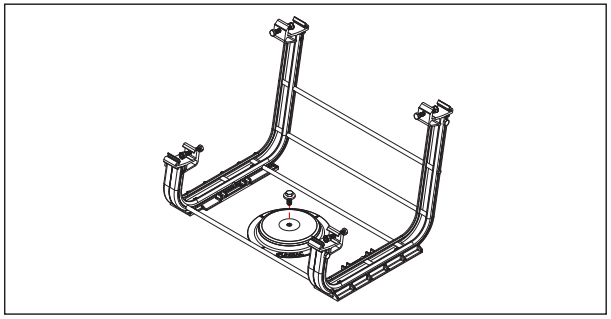
TORQUE VALUE: 30FT-LBS

Note: It is the installer's responsibility to choose appropriate material for roof attachment hardware to prevent any potential corrosion to these components

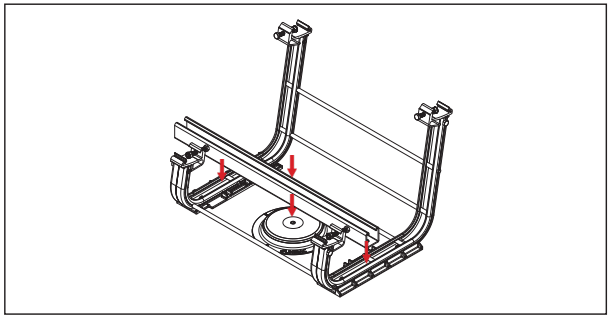


STEP 1 - POSITION FLASHLOC RM: Position Flashloc RM under bay requiring attachment and install according to Unirac installation guide.

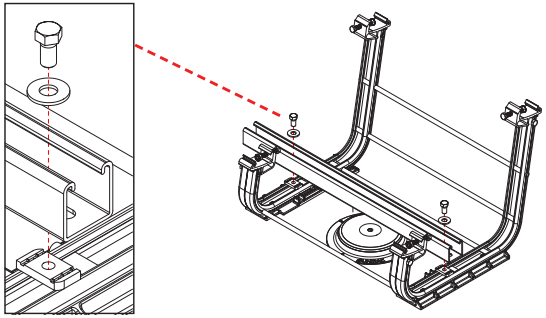
NOTE: Center roof attachment under ballast bay as close as possible and remove the tube that interferes with attachment using a tube cutter



STEP 2 - REMOVE BOLT AND WASHER: Remove the bolt and washer from Flashloc RM

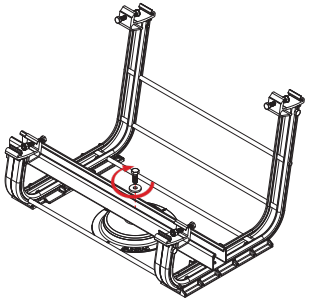


STEP 3 PLACE UNISTRUT: Place 24" Unistrut across RM bay.



STEP 4 - SECURE UNISTRUT TO BAY: Place strut nuts inside RM channels under Unistrut, and secure Unistrut with 3/8-16 x 3/4" bolt and 1" OD washer to 30 ft-lb.

TORQUE VALUE: 30FT-LBS



STEP 5 - SECURE UNISTRUT TO FLASHLOC RM:

Tighten bolt and washer removed in step 2.

TORQUE VALUE: 30FT-LBS

ROOF PAD NOTE:

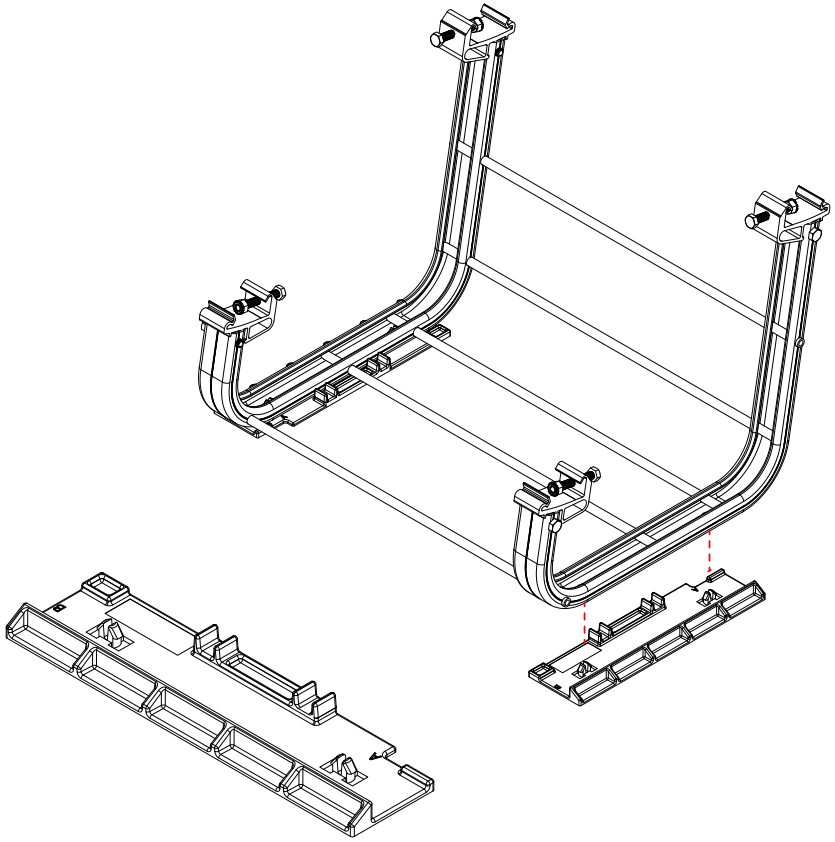
Roof pads are required for unattached system installation in certain seismic areas or are included upon request, following below guidelines:

- Roof pads are always applied 2 per bay (one on each ski).
- When installing minimum roof pads for friction (at a 1:4 ratio), apply 2 roof pads to every 4th bay, staggering the offset between rows.
  - Alternatively, install 2 roof pads to every other bay in a row of bays, then skip a row, and do it again.
  - Skip any bays that have mechanical roof attachments (i.e., Anchor Products, OMG, or RM Flashloc attachments).

Compatibility with roofing surfaces

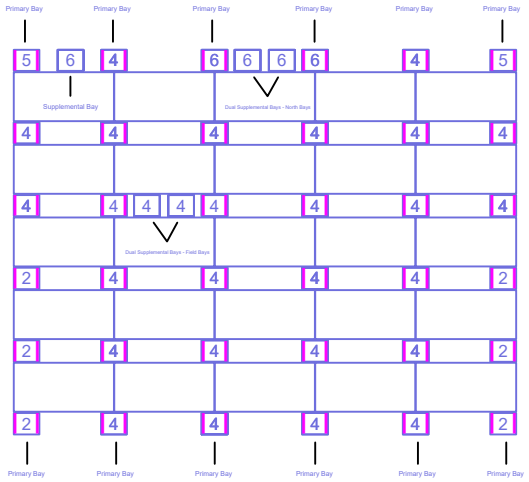
Unirac has thoroughly tested the material of the RM10 Roof Pad. An industry leader in the evaluation of the compatibility of plastic and rubber formulations tested its interaction with numerous roofing types at a range of pressures and high temperatures. No change in surface or visible exchange between raw materials was observed. Here are minimum ratios by main roof types for applications where friction coefficients must be met:

EPDM	1:1	Pads on each bay
TPO	1:4	Pads on 1 of every 4 bays
PVC	1:4	Pads on 1 of every 4 bays
Mineral cap	N/A	No pads required

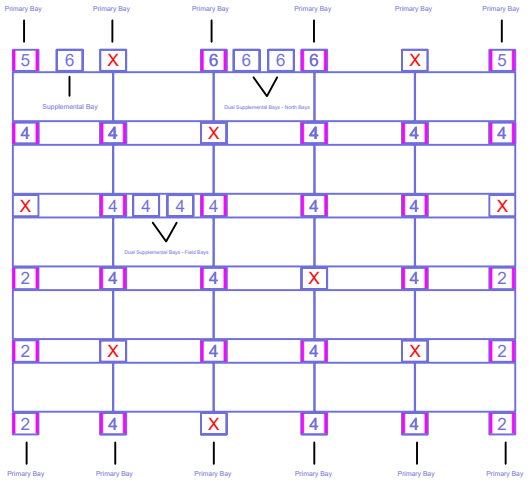


Further information

Consult our YouTube channel regularly for new Tips & Tricks (https://www.youtube.com/user/uniracsolar1).



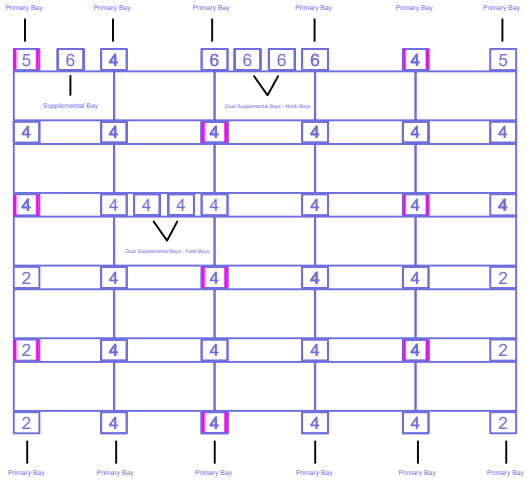
EPDM WITHOUT ATTACHMENTS



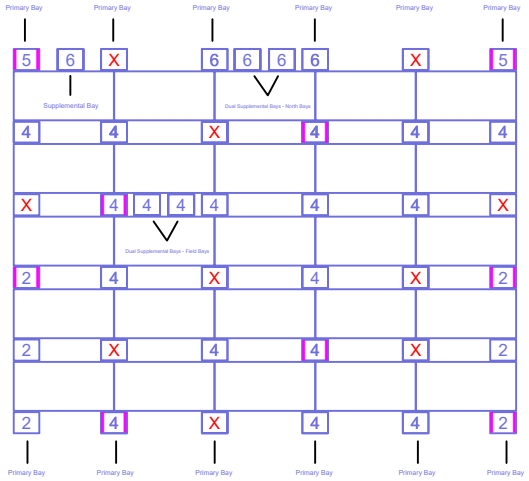
EPDM WITH ATTACHMENTS

LEGEND

- MODULE
- N — BALLAST BAY WITH BLOCK COUNT
- X — BALLAST BAY WITH ATTACHMENT
- BALLAST BAY WITH ROOF PADS



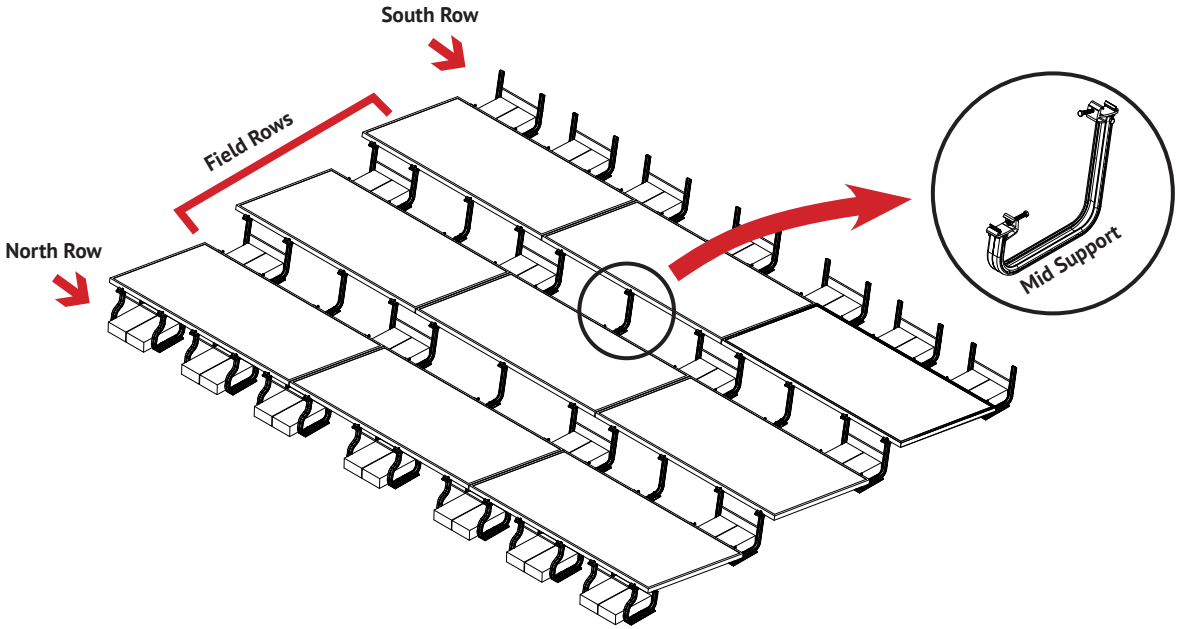
TPO & PVC WITHOUT ATTACHMENTS



TPO & PVC WITH ATTACHMENTS

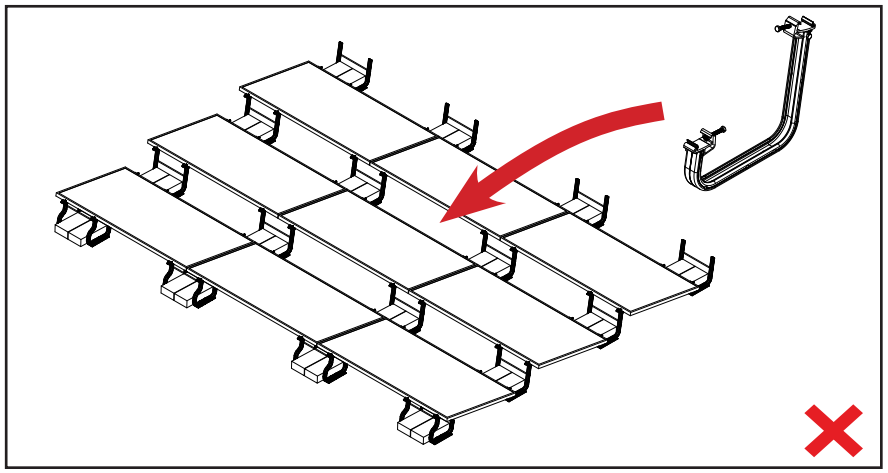
NOTE:

- Apply roof pads to primary bays only.
- Roof pads are optional for supplemental bays and can be added upon customer request.
- Do not apply roof pads to bays with attachments.



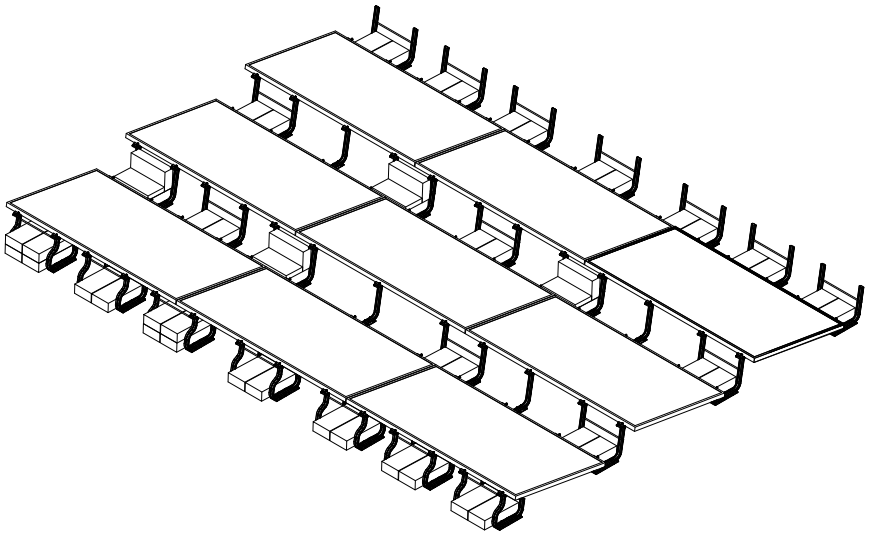
MID SUPPORT INSTALLATION

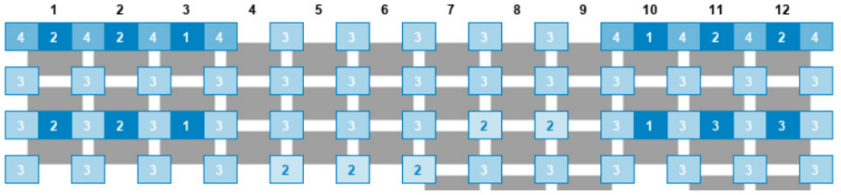
Use north bays for north rows, field bays for south rows and use mid supports in middle as shown in above figure. Place all the bays and mid supports first and then start installing the modules.



CAUTION

Do not install mid supports after module installation.

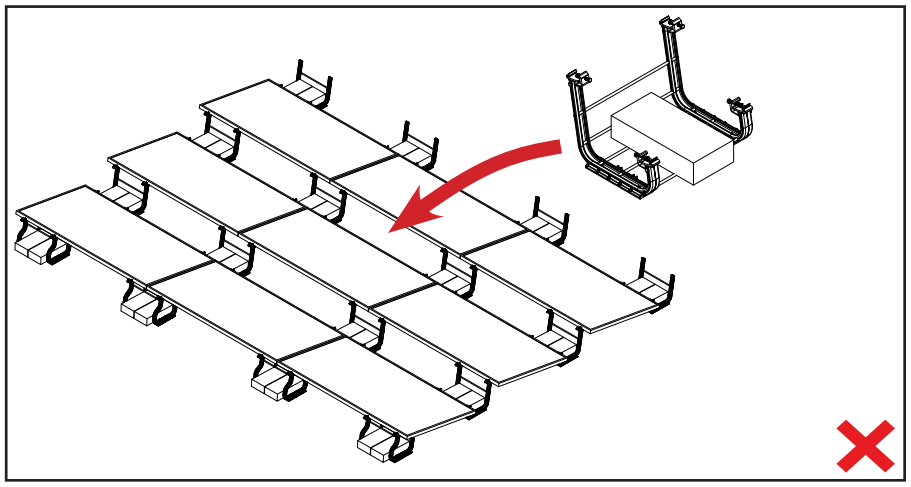




Example U-builder layout.

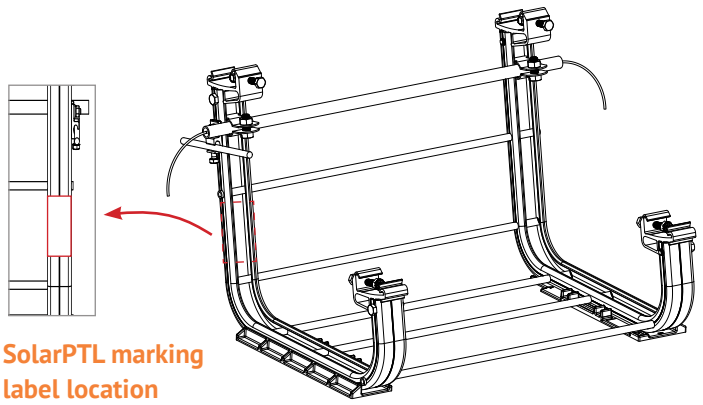
SUPPLEMENTARY INSTALLATION

In few cases tool / U-builder blocks per bay layout shows supplementary bays (additional bays) within the module to accommodate additional ballast required. Place all the bays, supplementary bays and mid supports first and then start installing the modules.



⚠ CAUTION

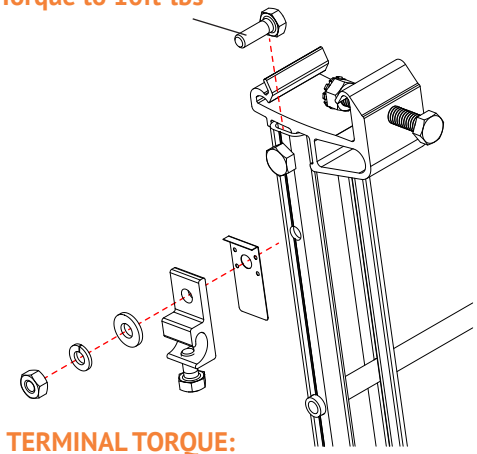
Do not install supplementary bays after module installation.



SolarPTL marking label location

A single bonding lug can be located anywhere along the same surface as the marking label

Torque to 10ft-lbs



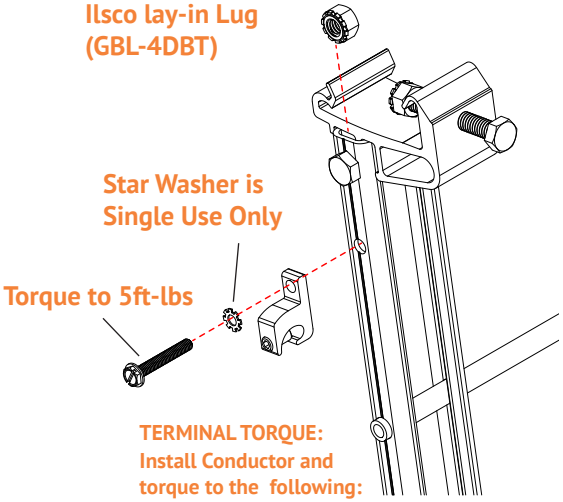
TERMINAL TORQUE:
Install conductor and torque to the following: 6-14 AWG: 5ft-lbs

WEEBLUG - Single Use Only

Ilsco lay-in Lug (GBL-4DBT)

Star Washer is Single Use Only

Torque to 5ft-lbs



TERMINAL TORQUE:
Install Conductor and torque to the following:
4-6 AWG: 35in-lbs
8 AWG: 25 in-lbs
10-14 AWG: 20 in-lbs

WEEB LUG - UNIRAC P/N 008002S

ILSCO LAY-IN LUG - ILSCO PN GBL-4DBT

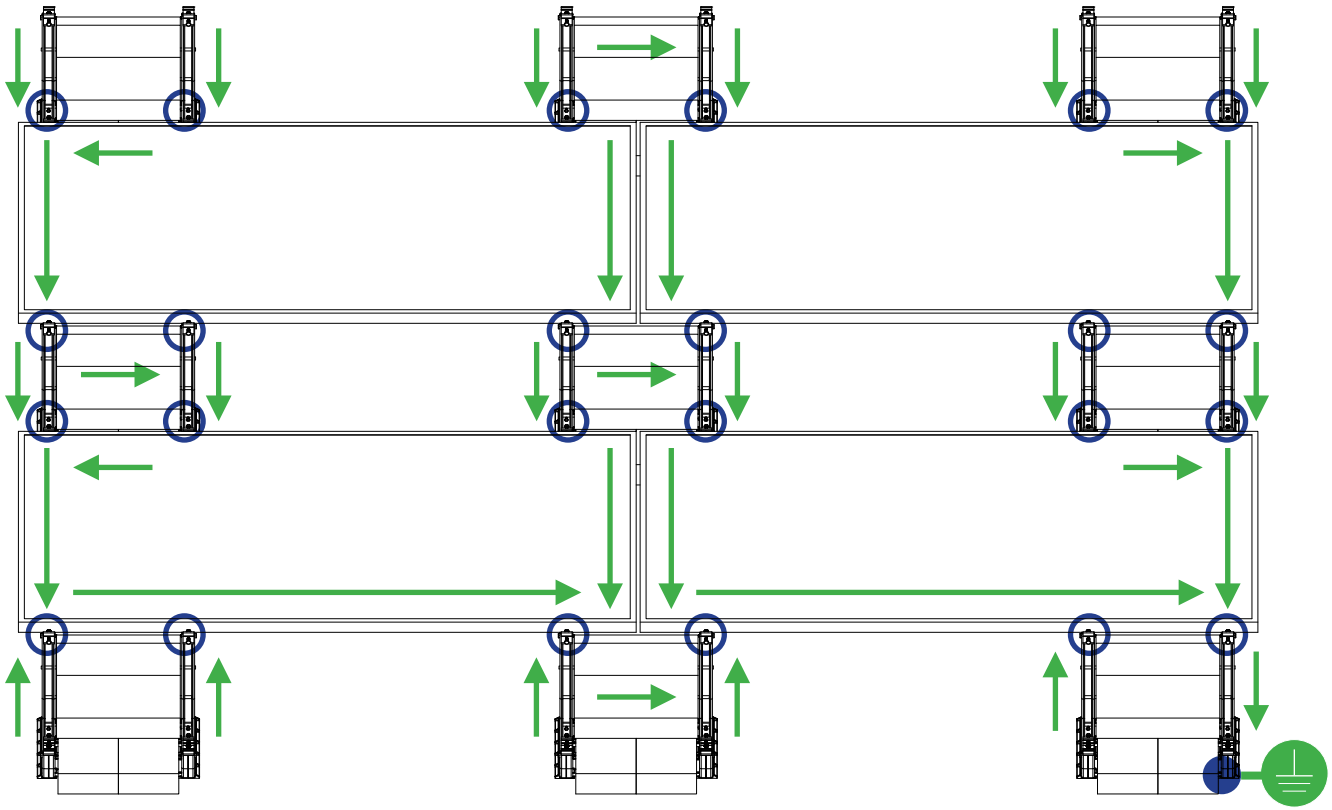
Although conformance with UL2703 was demonstrated without the use of oxide inhibitor material, it is recommended by Ilsco to provide an optimized bonding solution for their lay-in lug.

GROUNDING LUG MOUNTING DETAILS AS REQUIRED BY CODE & ENGINEER OF RECORD: Details are provided for both the WEEB and Ilsco products. The WEEBLug has a grounding symbol located on the lug assembly. 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.

Roof Mount is intended to have a system voltage less than or equal to that allowed by NEC. According to the National Electric Code (NEC), a minimum 10AWG, 105°C copper grounding conductor should be used. It is the installer's responsibility to check local codes, which may vary.

NOTE: The specific site installation must be conducted in accordance with the National Electric Code ANSI/NFPA 70 and any relevant local jurisdiction codes.

Ground Lug	Bolt Size	Drill Size	Torque Value
WEEB Lug	1/4"-20	17/64"	10 ft-lbs
Ilsco Lug	#10-32	7/32"	5 ft-lbs



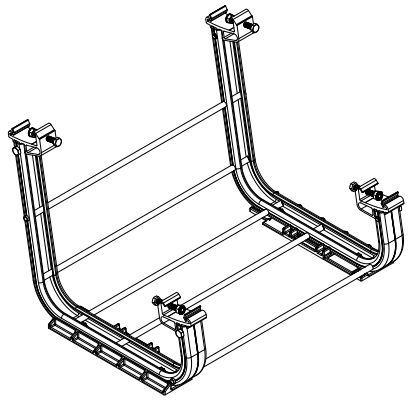
Fault Current Ground Path

Ground Lug

Grounding clamp & bolt

Min. 10 AWG Cooper Wire

Module Bay w/ Grounding Clamps



TEMPORARY GROUNDING & BONDING PROCEDURE:

Periodic inspections should be conducted on the PV array to ensure there are no components damaged, corroded or connected loosely.

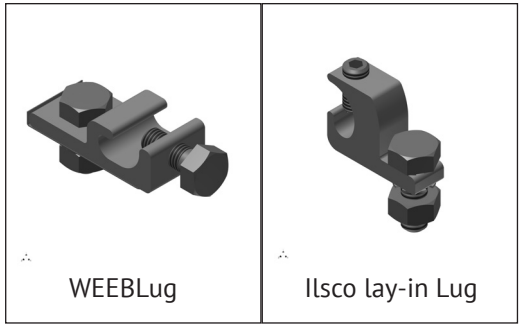
Replace the damaged or corroded components and re-tighten loose components according to the instructions.

If removing a module creates a discontinuity in the array which interrupts the ground path, a temporary bonding jumper must be used to ground the isolated array and ensure safety of the personnel and PV system.

NOTE: 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 qualified installers.

CAUTION: Module removal may disrupt the bonding path and could introduce the risk of electric shock. Additional steps may be required to maintain the bonding path. Modules should only be removed by qualified persons in compliance with the instructions in this manual.

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. These materials must be kept separate.

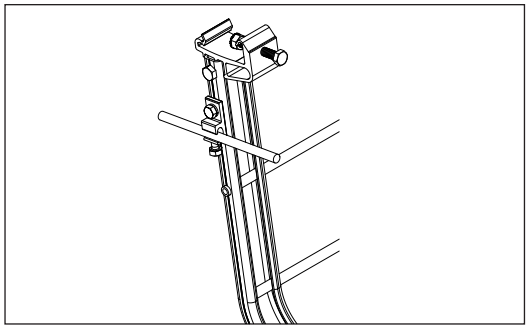


WEEBLug | Ilsco lay-in Lug

APPROVED LUGS

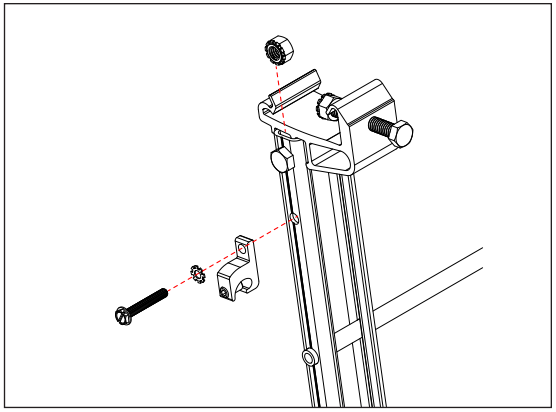
WEEBLug UNIRAC PN 008002S
See product data sheet

Ilsco lay-in Lug Ilsco PN GBL-4DBT
See product data sheet

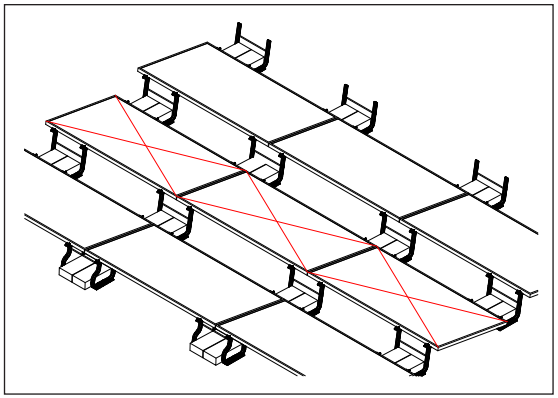


#6 AWG Bare Copper Wire

INSERT COPPER WIRE: Insert bare copper (#6 AWG) wire into each lug, providing a bonding jumper across the missing module location.



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



REMOVE MODULE & REVERSE THE OPERATION AFTER MAINTENANCE IS COMPLETE

NOTE: 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 qualified installers.

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. RM Roof Mount 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 the following module constructions:

Type 1
Type 2
Type 3 with an aluminum frame
Type 19
Type 22
Type 25
Type 29
Type 30

In order to maintain the system Class A fire performance rating the following criteria must be met:

- Modules are installed so that the junction box is away from the array perimeter. This can be ignored if the junction boxes are not near the edge of the module
- 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.
- Rack mounting system is to be installed over a fire resistant roof covering rated for the application

MECHANICAL LOAD TEST QUALIFICATION

The Unirac RM 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 RM10 EVO 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
- Frame thickness greater than or equal to 1.0mm
- Basic single and double wall frame profiles

Manufacturer	Model ID	Area [sq ft]	No Mid Support Design Load [PSF]	Single Ski Mid Support & Mid Bay Design Load Down [PSF]	Mid Bay Design Load Up [PSF]
BenQ	PMxxxP01	17.34	20.3 up / 41.9 down	N/A	N/A
Canadian Solar	CS3W-PB-AG	24.04	17.2 up / 20.3 down	N/A	N/A
	BiHiKu7 CS7N-xxxMB-AG	33.44	15.88 up / 13.57 down	33.37	26.63
Goldi Solar	GS10-B144-GF	27.78	20.16 up / 20.37 down	48.3	30
Runergy	HY-DH144P8	27.81	22.65 up / 18.97 down	45.53	33.4
Jinko	JKMxxxM-72HL4-V	27.76	15.3 up / 32 down	50.4	N/A
Meyer Burger	Meyer Burger White	19.80	21.00 up / 43.13 down	N/A	N/A
	Meyer Burger Glass	19.30	20.63 up / 37.93 down	N/A	N/A
NE Solar	NESE xxx-72MHB-M10	27.81	27.5 up / 17.1 down	30.6	N/A
Philadelphia Solar	PS-M144(HCBF)-xxxW	27.77	12.67 up / 19.97 down	33.53	22.33
SunPower	SPR-E20-327 / E-Series	17.53	15 up / 50 down	N/A	N/A
Trina	TSMxxx - DE19	28.12	16.9 up / 17 down	N/A	N/A
ZnShine	ZXM7-SHLDD144	27.88	17.87 up / 18.20 down	43.44	27.33

COMPATIBLE MODULES

SYSTEM CERTIFICATION

ELECTRICAL BONDING & GROUNDING TEST MODULES: This racking system may be used to ground and/or mount a PV module complying with either UL1703 or UL61730 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions. The modules selected for UL 2703 bonding & grounding testing were selected to represent the broadest range possible of modules on the market. The tests performed cover the following basic module parameters:

- Frame profile with vertical wall thickness ≥ 1.0mm, overall width ≤ 1.575", return flange length ≥ 0.45", and return flange thickness ≤ 2.1mm
- Basic single and double wall frame profile (some complex frame profiles could require further analysis to determine applicability)
- Clear and dark anodized aluminum frames
- The frame profile must not have any feature that might interfere with bonding devices that are integrated into the racking system

Manufacturer	Module Model / Series
Aptos	DNA-120-MF26 DNA-120-BF26 DNA-120-MF10
Astronergy / Chint	AstroSemi CHSM72M-HC CHSM6610M (BF)+HV ,
AU Optronics (BenQ Solar)	PM Series
Auxin	AXN6M610T, AXN6P610T, AXN6M612T & AXN6P612T
Axitec	AC-XXXP/156-60, AC-XXXP/72S, AC-XXXM/72S
BenQ Solar	PMxxxP01
Boviet	(40mm) BVM6610(P/M) & BVM6612(P/M) (35mm x 35mm) BVM6610(P/M) & BVM6612(P/M)
Canadian Solar	BiHiKu7 CS1H-MS, CS1K-MS, CS1U-MS, CS1Y-MS CS3K-MB-AG, CS3K-MS (Black), CS3K-P (HE), CS3K-PB-AG, CS3L-P CS3N MS, CS3U-MB-AG, CS3U-MS, CS3U-P (HE), CS3U-PB-AG, CS3W-MB-AG CS3W-PB-AG, CS3W-P/MS, CS3W-P-PB-AG, CS3Y-MB-AG CS5A-M, CS6K-M, CS6K-MS (AllBlack),CS6K-P (HE), CS6K, CS6P-M, CS6P-P, CS6R-MS-HL, CS6U-M, CS6U-P (HE), CS6W-MB-AG, CS6X-P CS7L-MB-AG, CS7L-MB-AG, CS7L-TB-AG CS7N-xxxMB-AG (640-665 W) CS7N-xxxTB-AG,

Manufacturer	Module Model / Series
Canadian Solar (Cont.)	ELPS CS6A-MM, ELPS CS6P-MM,
Centrosolar America	C-Series & E-Series
CertainTeed	CT M/P-01, CT M-02 & CT M-03 CTM10xxxHC11-09
CSUN	CSUN-72M, CSUN-72P
ET Solar	ET AC Module (40mm framed) ET Module (40mm framed)
Flex	FXS 60
Freedom Forever	FF-MP-BBB 370
Freevolt	PVGraf
GCL	GCL-P6 & GCL-M6
Goldi Solar	GS10-B144-GF
Hansol	UB-AN1, UD-AN1, TD-AN4, TD-AN3
Hanwha SolarOne	SolarOne HSL 60, SolarOne HSL 72
Heliene	108HC M10 SL All Black Module 144 HC M10 SL Bifacial 144HC M10 SL Monofacial 156HC M10 SL BF 72M, 72P, 60M & 60P, 72M-360 HSPE-132HC-M10-SL-Monofacial
HT-SAAE	HT72-156M, HT72-156M(V), HT72-156M-C, HT72-156M(V)-C, HT72-156P-C, HT72-156P(V)-C
Hyundai Heavy Industries	TI, RI, KI, HI, MI & MG Series

Manufacturer	Module Model / Series
Imperial Star	ISM7-SHDD120-xxx/M
JA Solar	JAP6 60, JAM6-60 /SI, JAM6(K)-60, JAP6(k)-72 /4BB, JAP72SYY /ZZ, JAP6(k)-60 /4BB, JAP60SYY /ZZ, JAM6(k)-72 /ZZ, JAM72SYY /ZZ, Note: YY: 01, 02, 03, 09, 10 ZZ: SC, PR, BP, HiT, IB, MW JAM78D10 MB JAM72D30 MB
Jinko Solar	JKM M-60(B/BL/V/HB/H/L/HL)JKM PP-72(Plus) JKM M-72(V/Plus), JKM M-72HL4-(V/TV) JKM PP-72-(L-V/V/HL-V), JKMxxxM-72-HBL-V JKMxxxM-72HL4-V JKMxxxM-72-HL-V JKMxxxN-54HL4-B JKMxxxN-72HL4-BDV JKMxxxN-72HL4-TV Standard, JKM P-60B
Kyocera	KD-F Series
LA Solar	LSxxxBF (530-550 watt range), LSxxxBL (410 watt) LSxxxBL (430-450 watt range), LSxxxBL (530-550 watt range), LSxxxHC (430-450 watt range),

- 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
- Please see the RM10EVO UL2703 Test Report at Unirac.com to ensure the exact solar module selected is approved for use with RM10EVO

ELECTRICAL BONDING & GROUNDING TEST MODULES: This racking system may be used to ground and/or mount a PV module complying with either UL1703 or UL61730 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions. The modules selected for UL 2703 bonding & grounding testing were selected to represent the broadest range possible of modules on the market. The tests performed cover the following basic module parameters:

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- Basic single and double wall frame profile (some complex frame profiles could require further analysis to determine applicability)
- Clear and dark anodized aluminum frames
- The frame profile must not have any feature that might interfere with bonding devices that are integrated into the racking system

Manufacturer	Module Model / Series
LG Electronics	LGxxx(A1C/M1C/M1K/N1C/N1K/Q1C/Q1K/QAC/QAK)-A6 LGxxx(E1C/E1K/N1C/N1K/N2T/N2W/Q1C/Q1K/S1C/S2W)-A5, LGxxx(N1C/N1K/N2W/Q1C/Q1K)-V5, LGxxx(N1K/N2T/N2W)-E6, LGxxxN1K-B6 LGxxxN2T-J5, LGxxxN3K-V6
LONGi	(40mm) LR5-72HBD LR6-60 & LR6-72 Series (35mm) LR4-72HPH, LR4-72HIH, LR6-72, LR6-72BK, LR6-72HV, LR6-72PE, LR6-72PB, LR6-72PH, LR6-72HPH, LR6-72HIH LR4-60HPH LR4-60HPB
Meyer Burger	Meyer Burger Glass Meyer Burger White
Mission Solar	MSE Series MSExxxSX9R
mSolar	TXI10-xxx108BB
NE Solar	NESE xxx 66MHB-G12 NESE xxx 72MHB-M10 NESE xxx 72MHT-M10 NESE xxx 72THB-M10
Panasonic	EVPVXXX(H/K/PK) VBHN SA15/16/17(G/E)/18(E) VBHN KA01/03/04

Manufacturer	Module Model / Series
Philadelphia Solar	PS-M144(HCBF)-xxxW
Phono Solar Technology	Standard Modules PSxxxM-24/TH, PSxxxMH-24/TH
Q-Cells	B.LINE PEAK DUO G7/G7.2/ L-G7/L-G7.1/L-G7.2/L-G7.3 B.LINE PLUS/PRO L-G4.2 B.LINE PRO L-G4.1 Q.PEAK DUO (BLK) (ML) G10(+) Q.PEAK DUO (BLK) ML-G9(+) Q.PEAK DUO BLK-G10 Q.PEAK DUO BLK-G10+ Q.PEAK DUO BLK ML-G10 Q.PEAK DUO-G10+ Q.PEAK DUO G10 Q.PEAK DUO G5/G6/G7.x/G8 Q.PEAK DUO L-G4.2 Q.PEAK DUO L-G5(.1/.2/.3) Q.PEAK DUO L-G6.2 Q.PEAK DUO L-G6.3 Q.PEAK DUO L- G6/L-G6.2/L-G6.3 Q.PEAK DUO L-G7(.1/.2/.3/.4/.7) Q.PEAK DUO L-G8(.1/.2/.3) Q.PEAK DUO ML-G10 Q.PEAK DUO ML-G9 Q.PEAK DUO ML-G9+ Q.PEAK DUO XL-(G10.2/G10.3/G10.c/G10.d) Q.PEAK DUO XL-G10.3/BFG Q.PEAK DUO XL-G10.d / BFG

Manufacturer	Module Model / Series
Q Cells (Cont.)	Q.PEAK DUO XL - G11.3 BFG Q.PEAK DUO XL-G11S.3/BFG Q.PEAK DUO XL G9/G9.2/G9.3 Q.PEAK L G4.5 Q.PLUS DUO L-G5 Q.PLUS DUO L-G5.2 Q.PLUS DUO L-G5.3 Q.PLUS L G4.2 Q.PEAK DUO BLK ML-G9 Q.PLUS L-G4.2/TAA Q.PLUS/PEAK/PRO L-G4.2 Q.PLUS/PEAK/PRO L-G4/L-G4.1 Q.TRON BLK M-G2+ SERIES Q.TRON M-G2+ SERIES, Q.TRON XL-G2.3/BFG
REC	Peak & Eco RECxxxAA (72/BLK/Pure) RECxxxAA Pro M RECxxxAA Pure 2 RECxxxAA Pure R RECxxxAA Pure-RX RECxxxNP (N-PEAK) (BLK) RECxxxNP2 (Black) RECxxxNP3 Black RECxxxPE (BLK), TP2M RECxxxTP2(BLK2) RECxxxTP3M (Black) RECxxxTP4 (Black) TP2SM72, TP2S72,TP2S72 XV
Renesola	All 60-cell modules
Risen	RSM72-6 (P/M), RSM144-6 RSM110-8-XXXBMDG

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- Please see the RM10 EVO UL2703 Test Report at Unirac.com to ensure the exact solar module selected is approved for use with RM10 EVO

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- Clear and dark anodized aluminum frames
- The frame profile must not have any feature that might interfere with bonding devices that are integrated into the racking system

Manufacturer	Module Model / Series
Runergy Solar (Hyperion)	HY-DH108N8B HY-DH108P8B HY-DH144P8 (30mm) HY-DH156N8 HY-DH156P8
SEG Solar	SEG-xxx-BMA-HV, SEG-xxx-BMA-TB, SEG-xxx-BMB-HV, SEG-xxx-BMB-TB, SEG-xxx-BMD-BG, SEG-xxx-BMD-HV
S-Energy	SN P-10, M-10 & SN P-15
Seraphime	SEG-6, SEG-E & SRP-6 Series
Sharp	ND-24CQCJ, ND-25CQCS, ND-Q235F4, ND-F4Q300
Silfab	SIL - xxx BG SIL-xxx BK SIL-xxx HC+ SIL-xxx HM SIL-xxx HN SIL-xxx-ML/NL/BL/HL/NT/HC SIL-xxx QD, SIL-xxx QM, SLA & SLG Series, SLA-X
Solaria	Power XT-XXXC-BD, Power XT-XXXC-PD, Power XT-XXXR-AC Power XT-XXXR-BD, Power XT-XXXR-PD, PowerXT-xxxR-PM
Solar 4 America	S4A550-144MH10STT

Manufacturer	Module Model / Series
SolarWorld	Sunmodule Plus Sunmodule Protect
Sonali	SS-M-360 to 390 Series SS-M-440 to 460 Series SS-M-430 to 460 BiFacial Series
Sun Edison	F-Series & R-Series
Suniva	OPTIMUS & MV Series
SunPower (not compatible with Invisimount frame)	A-Series, X-Series, E-Series, M-Series, AC & Sig Black
Suntech	STP Series
Talesun Solar	TD6I72M, TD7G72M, TP572, TP596, TP654, TP660, TP672, HIPRO TP660, SMART TP660P
Tesla	TxxxH, TxxxS
Thornova	TS-BG54 (30 & 35 mm)
Trina	DD05, DD06 PD14, DD14A(II), DE06, DE14A(II), DE15, DE15H(II), DE15M(II), DE15V(II), DE15V, DE19, DEG15MC.20(II), DEG15VC, DEG15VC.20(II), DEG18MC, DEG19, DEG19C.20, PA05, PD05, PD14, PE14, TSM-DE15V(II), TSM-DE19 TSM-DEG15VC.20(II) TSM-DEG19C.20, TSM-DEG21C.20 TSM-NEG19RC.20

Manufacturer	Module Model / Series
Trina (Cont.)	TSMxxx-DE19
URE	D7 (M/K) H7A, D7 (M/K) H8A
Vikram	Eldora, Solivo, Somera PREXOS Paradea VSMDH.66.AAA.05 Paradea VSMDH.72.AAA.05 VSMDHT.60.AAA.05 VSMDHT.72.AAA.05
VSUN	VSUNxxx-144BMH VSUNxxx-144BMH-DG VSUNxxx-108BMH VSUNxxx-108MH VSUNxxx-108M VSUNxxxN-108BMH VSUNxxxN-108MH VSUNxxx-120BMH
Waaree	Bi-55
Yingli	YGE60/72, YLM60/72, YLM-VG
Yotta	YSM-Bxxx-06-72-1 YSM-Bxxx-10-72-1
ZN Shine	ZXM6-NHLDD144 ZXM7-SH108 ZXM7-SHDB144 ZXM7-SHLDD144 ZXM7-UHLDD144

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