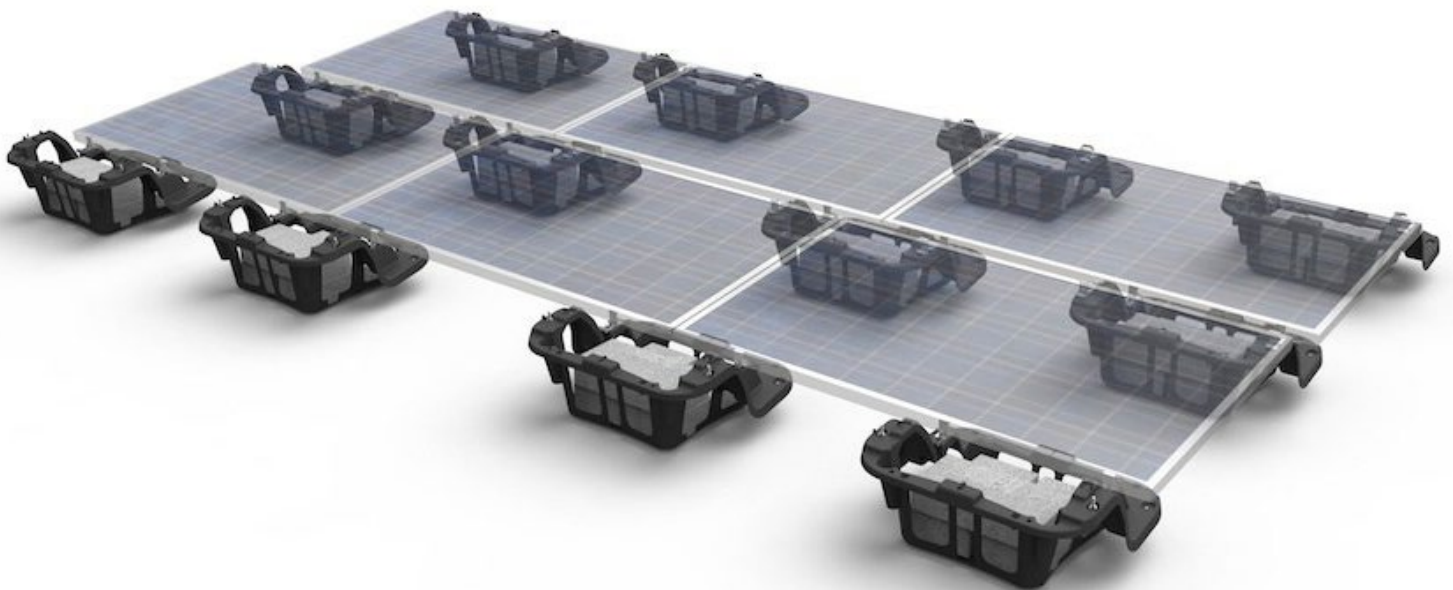


BX SYSTEM



CONTENTS

DISCLAIMER	1
RATINGS	2
MARKINGS	2
CHECKLIST	3
OVERVIEW	4
INSTALLATION STEPS (QUICK GUIDE)	5
1. MARK LAYOUT	6
2. PLACE CHASSIS	6
3. MOUNT MLPE (OPTIONAL)	6
4. LAY BALLAST	7
5. ANCHOR SYSTEM (OPTIONAL)	7
6. INSTALL MODULES	8
7. COMPLETE BONDING	8
8. PV MODULE GROUNDING LUGS	9
STRING INVERTER MOUNTING KIT (OPTIONAL)	9
ELECTRICAL DIAGRAM	10
MODULE COMPATIBILITY	10

DISCLAIMER

This manual describes proper installation procedures and provides necessary standards required for product reliability. Warranty details are available at IronRidge.com. All installers must thoroughly read this manual and have a clear understanding of the installation procedures prior to installation. Failure to follow these guidelines may result in property damage, bodily injury or even death.

IT IS THE INSTALLER'S RESPONSIBILITY TO:

- Ensure safe installation of all electrical aspects of the array. All electrical installation and procedures should be conducted by a licensed and bonded electrician or solar contractor. Routine maintenance of a module or panel shall not involve breaking or disturbing the bonding path of the system. All work must comply with national, state and local installation procedures, product and safety standards.
- Comply with all applicable local or national building and fire codes, including any that may supersede this manual.
- Ensure all products are appropriate for the installation, environment, and array under the site's loading conditions.
- Use only IronRidge parts or parts recommended by IronRidge; substituting parts may void any applicable warranty.
- Review the [Design Assistant](#) to confirm design specifications.
- Ensure provided information is accurate. Issues resulting from inaccurate information are the installer's responsibility.
- Ensure bare copper grounding wire does not contact aluminum and zinc-plated steel components, to prevent risk of galvanic corrosion.
- If loose components or loose fasteners are found during periodic inspection, re-tighten immediately. If corrosion is found, replace affected components immediately.
- Provide an appropriate method of direct-to-earth grounding according to the latest edition of the National Electrical Code, including NEC 250: Grounding and Bonding, and NEC 690: Solar Photovoltaic Systems.
- Disconnect AC power before servicing or removing modules, AC modules, microinverters and power optimizers.
- Review module manufacturer's documentation for compatibility and compliance with warranty terms and conditions.

RATINGS

UL 2703 LISTED



us #5014158

Intertek

- Conforms to STD UL 2703 (2015) Standard for Safety First Edition: Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels.
- Max Overcurrent Protective Device (OCPD) Rating: 25A
- Max Module Size: 24ft²
- Module Orientation: Landscape
- System Level Allowable Design Load Rating: 30 PSF downward, 20 PSF upward, 5 PSF lateral. Actual system structural capacity is defined by PE stamped project designs.

CLASS A SYSTEM FIRE RATING PER UL 1703

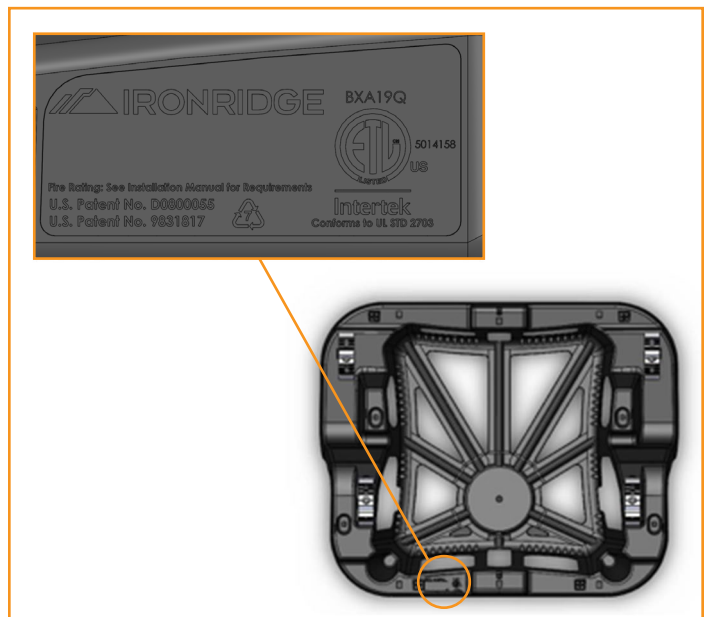
- Any System Tilt with Modules Types 1, 2 & 3 on Low Slope Roofs (< 9.5 degrees)
- Any module-to-roof gap is permitted with no perimeter guarding required. This rating is applicable with any IronRidge or 3rd party roof attachment and with or without concrete blocks in the Chassis.
- Class A rated PV systems can be installed on Class A, B, and C roofs without affecting the roof fire rating.

STRUCTURAL CERTIFICATION

- Designed and Certified for Compliance with the International Building Code & ASCE/SEI-7
- Wind Tunnel Testing by I.F.I.

MARKINGS

Product markings are located on the top surface of the BX Chassis.



CHECKLIST

PRE-INSTALLATION

- Verify module compatibility. See [Page 9](#) for info.

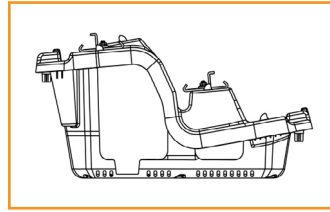
TOOLS REQUIRED

- Cordless Drill (optional)
- Torque Wrench (0-250 in-lbs)
- 9/16" Socket
- 7/16" Socket
- 1/2" Socket
- String Chalk Line

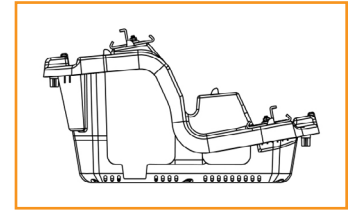
TORQUE VALUES

- Top Clamp Nuts (1/2" Socket): 120 in-lbs
- 5/16" MLPE Flange Bolts (1/2" Socket): 60 in-lbs
- 5/16" String Inverter Mount Bolts (1/2" Socket): 80 in-lbs
- 5/16" L-Foot to Chassis Nuts (1/2" Socket): 120 in-lbs
- 3/8" T-Bolt Bonding Hardware (7/16" Socket): 250 in-lbs
- 1/4" String Inverter Mount Hdw (7/16" Socket): 80 in-lbs
- #10-24 PV Grounding Lug Hdw (7/16" Socket): 60 in-lbs
- Flat Roof Attach to 3/8" L-Foot Hdw (9/16" Socket): 250 in-lbs
- Grounding Lug Terminal Screws (7/16" Socket): 20 in-lbs
- 3/8" Strut Channel Bolt (9/16" Socket): 250 in-lbs

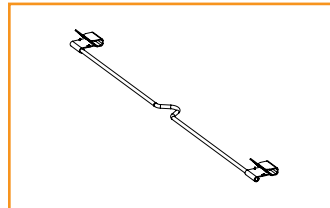
COMPONENTS



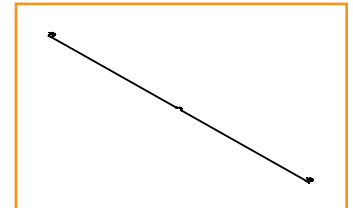
5° BX Chassis



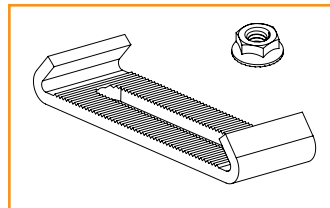
10° BX Chassis



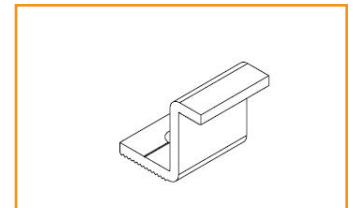
8" Module Bonding Jumper



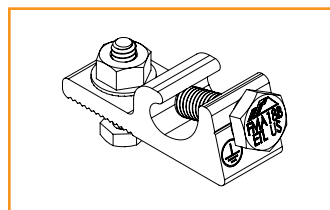
38" Row Bonding Jumper



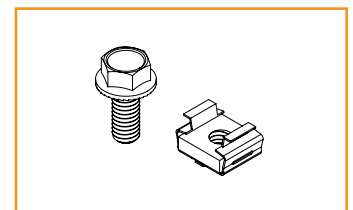
Bottom Clamp



Top Clamp (Height Varies)



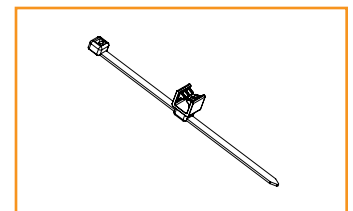
PV Module Grounding Lug



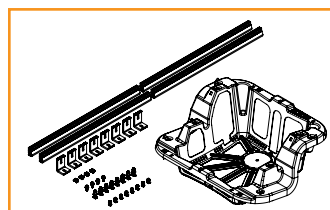
MLPE Mounting Hardware



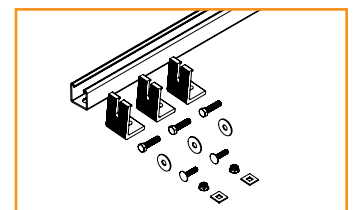
Cable Tie



Edge Clip Cable Tie



String Inverter Mounting Kit



Flat Roof Attachment Kit

OVERVIEW

BX CHASSIS (5° & 10°)

BX Chassis is designed to clamp PV modules and secure them in place. Reference tabs are integrated to aid with aligning modules according to system layout. The Chassis is available in two SKUs: 5 and 10 degree tilt configurations. The Chassis is designed to accommodate 4 full size (16" x 8" x 4") or 8 half-size concrete ballast blocks (16" x 8" x 2") nominal dimensions.

Concrete ballast block must meet the following requirements:

- Manufactured per ASTM C 1491 (Standard specification for concrete pavers)
- Manufactured to resist freeze-thaw as required per local conditions
- Weight: 17 lbs +/- 2 lbs for half size and 34 lbs +/- 2 lbs for full size

MODULE CLAMPING

Top Clamps are module frame height specific and accommodate most common module sizes: 30mm, 32mm, 35mm, 38mm, 40mm, 46mm.

ARRAY GROUNDING

Only one PV Module Grounding Lug is required per continuous array, regardless of array size. Use the IronRidge PV Module Grounding Lug (PV-LUG-01-A1).

Alternately, the following grounding lugs have been tested or evaluated for use with the BX system:

- IlSCO GBL-4DBT
- Amphenol HGLUI
- Burndy CL501TN, BGBS4

MLPE DEVICES (OPTIONAL)

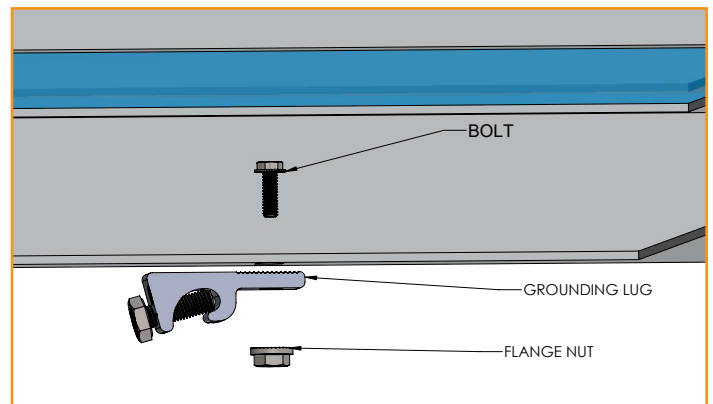
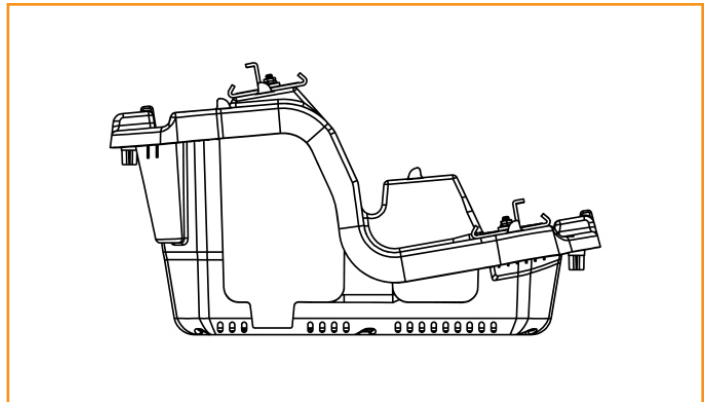
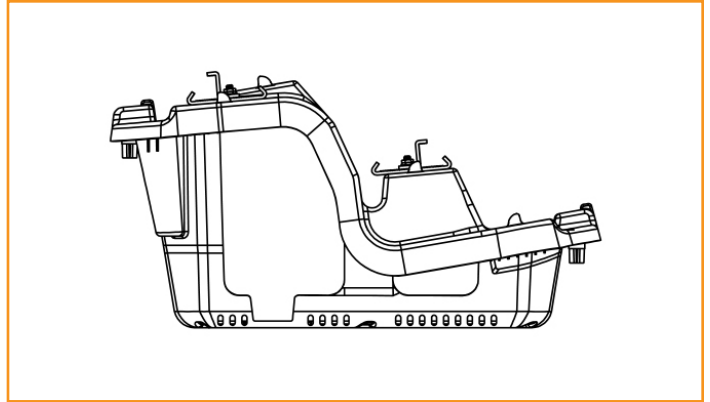
The following third party MLPE module mounting brackets have been tested or evaluated for use with the BX system:

- EcoFasten Rock-It Clip 2.0
- Unirac MLPE Mount

💡 Refer to respective manufacturer for specific installation instructions of MLPE module mounting brackets.

WIRE MANAGEMENT

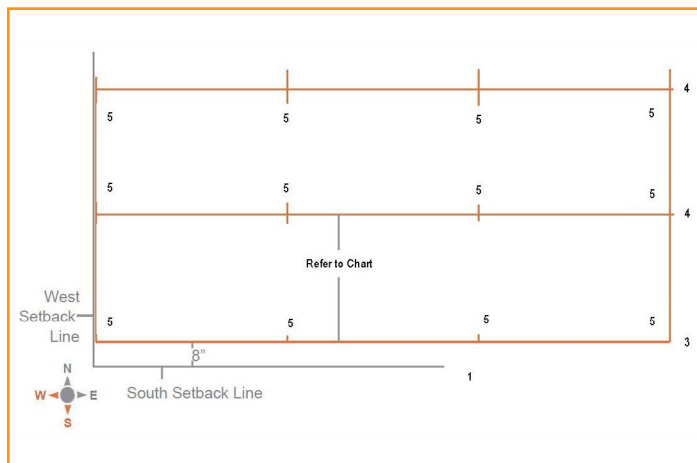
Optional Edge Clips and wire ties can be used to aid with wire management.



1. Mark out all fire setbacks on the roofing plane.
2. Measure and mark out footprint of array according to the approved plan set location.
3. Starting at the south edge of the approved plan set, chalk the South Array Edge, making sure that this line is at least 8" away from the South Fire Setback.
4. Measure Chassis spacing (refer to chart below) and chalk out 3 rows, 25' each.
5. Measure out the Chassis locations by marking along each row, module width plus 3/8".
6. Place Chassis on cross hairs. Align cross hairs with alignment marks on Chassis.
7. Install MLPE as needed.
8. Load Chassis with blocks as per the plan set.
9. Install fixed attachment points as required by the plan set for anchored hybrid systems, seal/flash in accordance with the roofing manufacturer's guidelines.
10. Module Installation
 - a. Place all Bottom Clamps on Chassis.
 - b. Land all panels on Chassis.
 - c. Place all Top Clamps and ensure proper alignment and engagement of the Bottom Clamp.
 - d. Make sure that all Clamps are fully engaged and square to the module and torqued appropriately.
11. Complete Array Bonding
 - a. Install 8" Module Bonding Jumpers between all modules along the rows.
 - b. Install 38" Row Bonding Jumpers between all rows.
12. Install PV Module Grounding Lug to ground each array.

It can be helpful on constrained arrays to chalk line every row, but it is not required.

The illustration below shows the order of chalk operations for marking out the starter array, as well as a corresponding Chassis spacing table which can be used to easily find the approx. Chassis spacing within 1/8". For more precise measurements use the formulas provided at the bottom of the table.



Module Width	5° Chassis Spacing	10° Chassis Spacing
38.5" - 39"	48.5"	51"
39" - 39.5"	49"	51.5"
39.5" - 40"	49.5"	52"
40" - 40.5"	50"	52.5"
40.5" - 41"	50.5"	53"
41" - 41.5"	51"	53.5"
41.5" - 42"	51.5"	54"
42" - 42.5"	52"	54.5"
42.5"+	52.5"	55"

Spacing Formulas: | $\text{Width} \cos(5^\circ) + 10"$ | $\text{Width} \cos(10^\circ) + 13"$

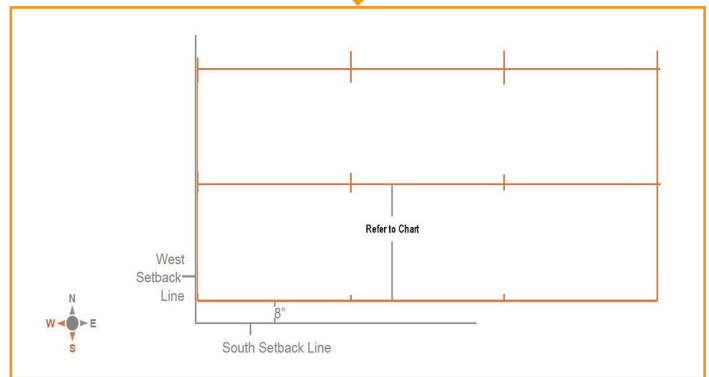
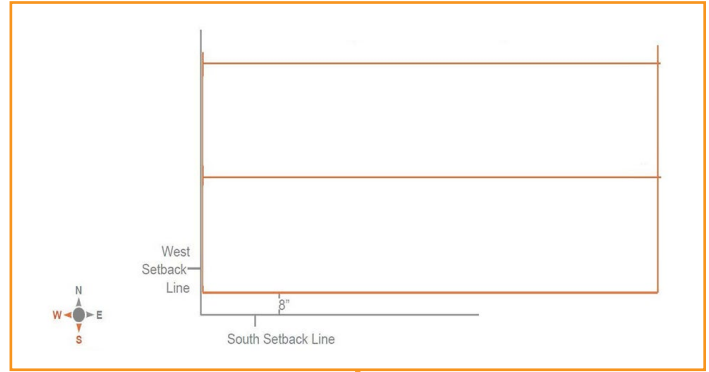
1. MARK LAYOUT

Using the approved planset, mark out all fire setbacks and the array footprint on the roof(s).

Mark the South Array Edge with a 25' line (for example). If the southern edge of the array is against the South Fire Setback, mark the South Array Edge at least 8" away from the setback. This will ensure that no part of the Chassis is in the setback.

Measure Chassis spacing (referring to table on [Page 5](#)) and chalk out 3x 25' rows. Then measure out the Chassis locations by marking along each row (module width plus 3/8").

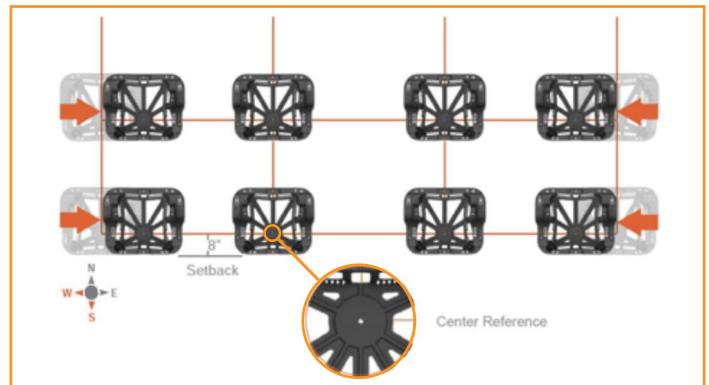
💡 These layouts are useful for maintaining a straight line at the start of the array. Once started the rest of the system is build as you go.



2. PLACE CHASSIS

Place first Chassis at Southwest corner of the array, aligning the center reference hole with the cross hair marker. Repeat for each additional Chassis in the array.

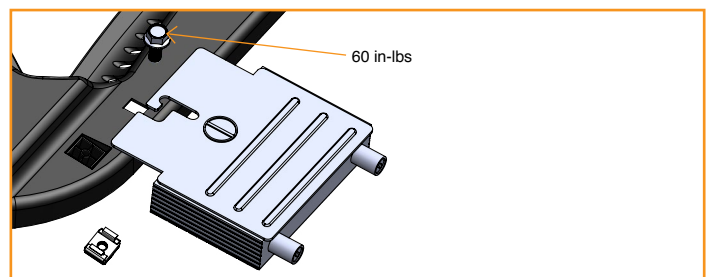
💡 After the array has been installed, the Chassis at the East and West edges of the array should be moved inward from the perimeter reference lines so that they are fully underneath the modules.



3. MOUNT MLPE (OPTIONAL)

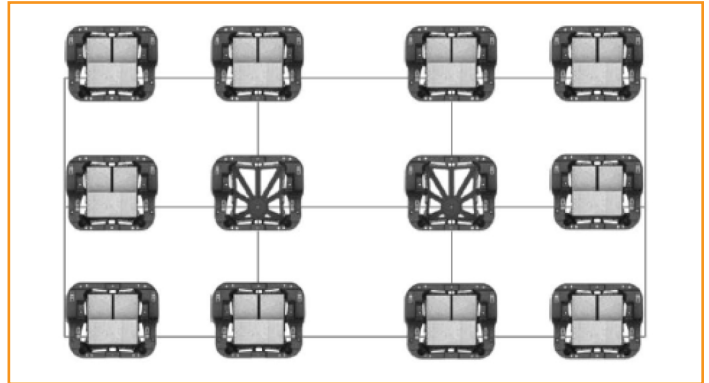
Mount microinverters and power optimizers directly to the Chassis using the MLPE Mounting Hardware Kit. Alternatively, you can use a third party module mounting bracket (following manufacturer instructions).

To install the MLPE Mounting Hardware Kit, place the Cage Nut into either of the square cut-outs on the lower edge of a Chassis. Secure your MLPE device with a 5/16" Flange Bolt torqued to **60 in-lbs**.



4. LAY BALLAST

Place ballast blocks in BX Chassis as indicated on site layout.



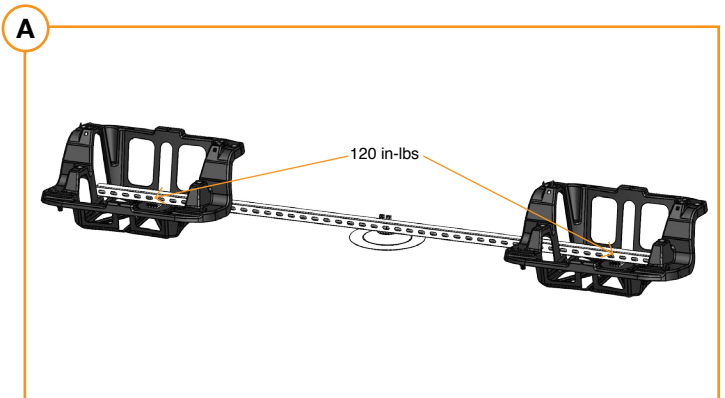
5. ANCHOR SYSTEM (OPTIONAL)

A. SECURE L-FEET

The Attachment Kit uses an 8' minimum Strut Channel to span across two Chassis and a FRA Anchor in order to anchor the Chassis to the roof. Secure L-Feet onto the Chassis by installing the Carriage Bolt and Square Washer from the underside of each Chassis through the reference hole. Torque Flange Nut to **120 in-lbs**.

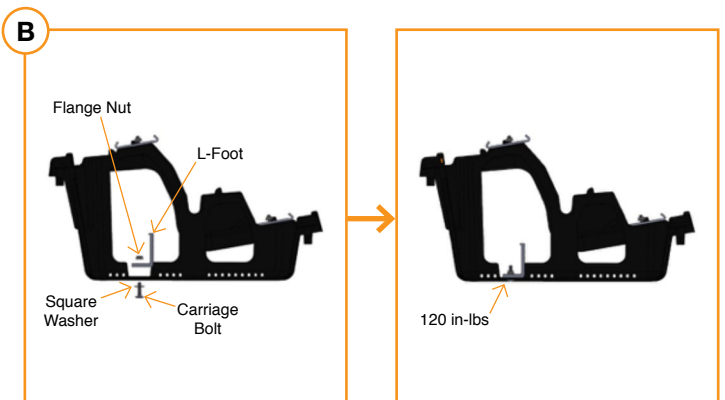
💡 Refer to Flat Roof Attachment [installation instructions](#) for details, where applicable.

💡 Flat Roof Attachment Kit is not part of the grounding path.



B. ATTACH STRUT CHANNEL

Secure, at minimum, an 8' x 5/8" Hot Dipped Galvanized Strut Channel through the two Chassis onto the L-Foot using the provided 3/8" Bolt with 1-1/4" washer to a galvanized Channel Nut (not provided). Torque Nut to **250 in-lbs**.



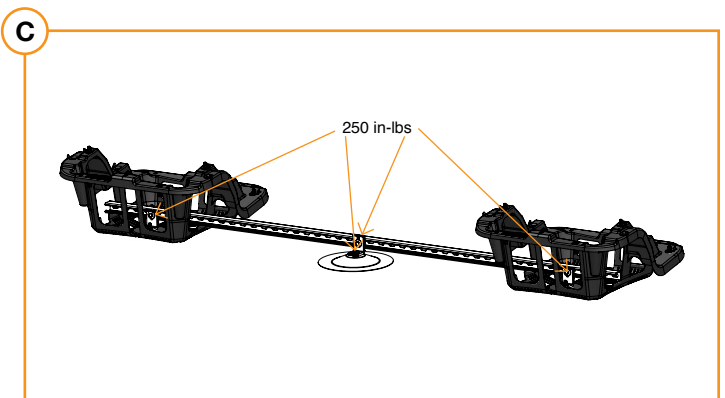
C. FINISH ANCHORS

Assemble an L-Foot onto the Flat Roof Attachment and flashing membrane (where applicable) using the 3/8" Bolt and Flat Washer torqued to **250 in-lbs**. Then, install L-Foot and Flat Roof Attachment assembly at the Strut Channel midpoint using the provided 3/8" Bolt with a 1-1/4" washer to a galvanized Channel Nut (as before) torqued to **250 in-lbs**.

💡 After anchor assembly is installed seal/flash per roofing manufacturer's guidelines.

💡 The following 3rd party roof attachment has been tested or evaluated for use with BX:

- Anchor Products U-Anchors

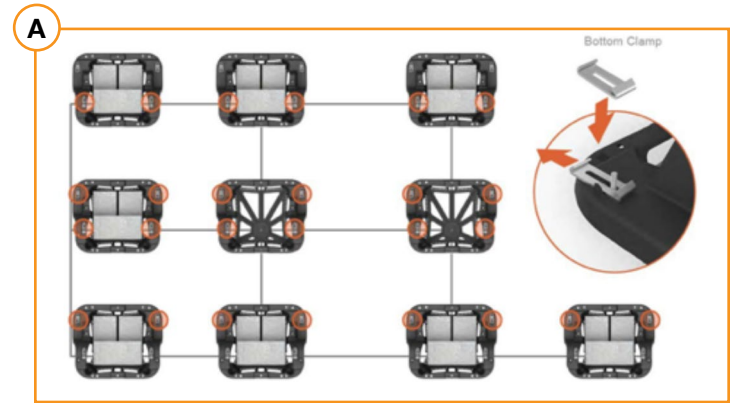


6. INSTALL MODULES

A. PLACE CLAMPS

Place Bottom Clamp over the Chassis' corner bolt, then pull clamp towards the outer edge.

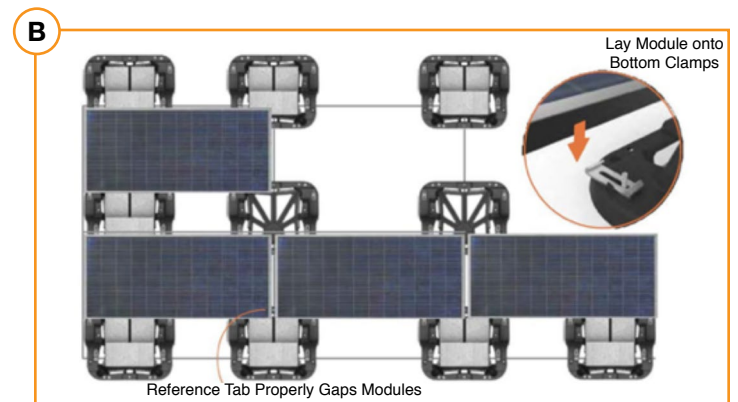
💡 The north end of the North Row and south end of the South Row do not need bottom clamps.



B. LAY MODULES

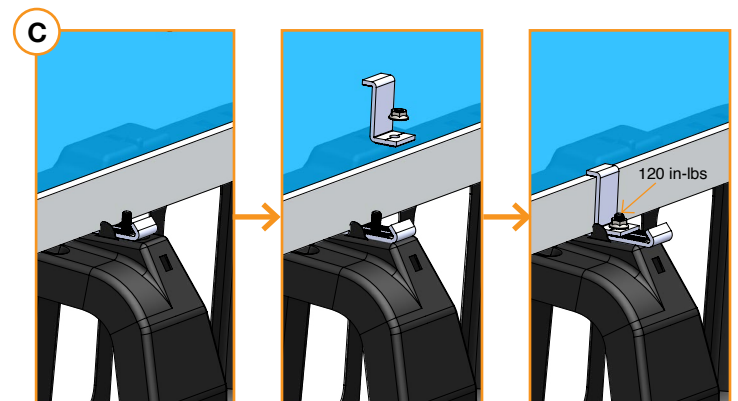
Starting in the South-West corner and working east, lay modules in a row onto edge of Bottom Clamps. Double-check panel spacing along each row.

💡 You can use reference tabs located in the middle of the Chassis to properly space modules.



C. SECURE MODULES

To secure a module, first pull the Bottom Clamp until it is snug against the inner flange of the module. Then place the Top Clamp and Flange Nut over the bolt and torque to 120 in-lbs.



7. COMPLETE BONDING

A. MODULE-TO-MODULE BONDING

The 8" Module Bonding Jumper should be used for bonding modules that are adjacent to each other by clipping each end of the Bonding Jumper onto the module frame.

💡 New jumpers should be used if re-installation of jumper is required.

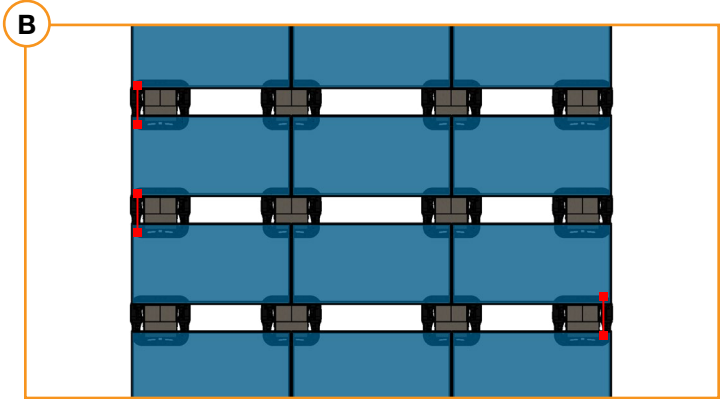


7. COMPLETE BONDING (CONTINUED)

B. ROW-TO-ROW BONDING

Complete row-to-row bonding using the 38" Row Bonding Jumper by securing Clips to inner flanges on long side of a module from each row, as shown. Tapping Clips into place may be required for modules with thicker flanges.

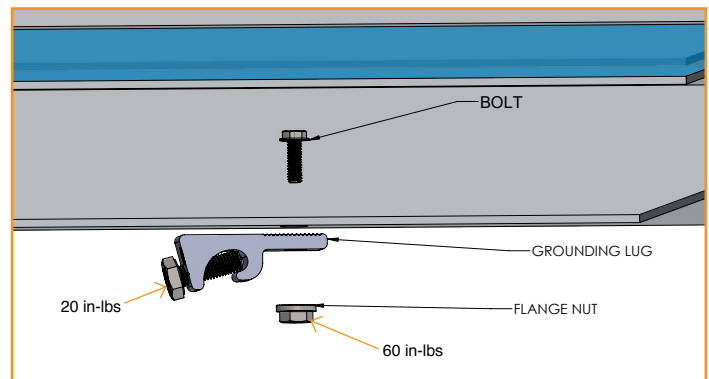
💡 The bonding does not need to take place on the same side of the array, so long as every row is bonded to the next row.



8. PV MODULE GROUNDING LUGS

Ground each continuous array by securing a PV Module Grounding Lug to any module in the array.

💡 Only one PV Module Grounding Lug is required per continuous array, regardless of array size. Reference module manufacturer's installation instructions for grounding location.



STRING INVERTER MOUNTING KIT (OPTIONAL)

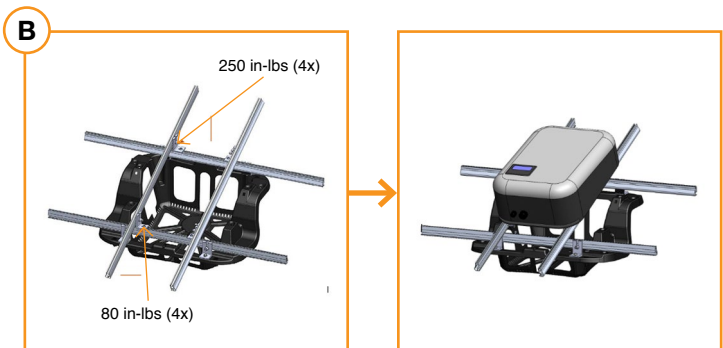
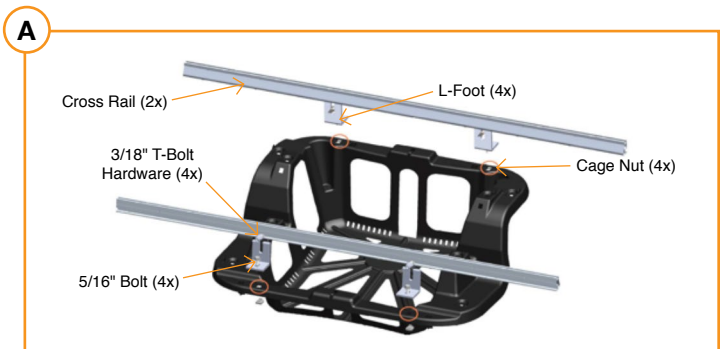
The String Inverter Mounting Kit creates a mounting platform for inverters on top of the BX Chassis. The maximum weight of the inverter shall not exceed 720 lbs. Review inverter manufacturer's installation instructions for inverter mounting details.

A. CROSS RAILS

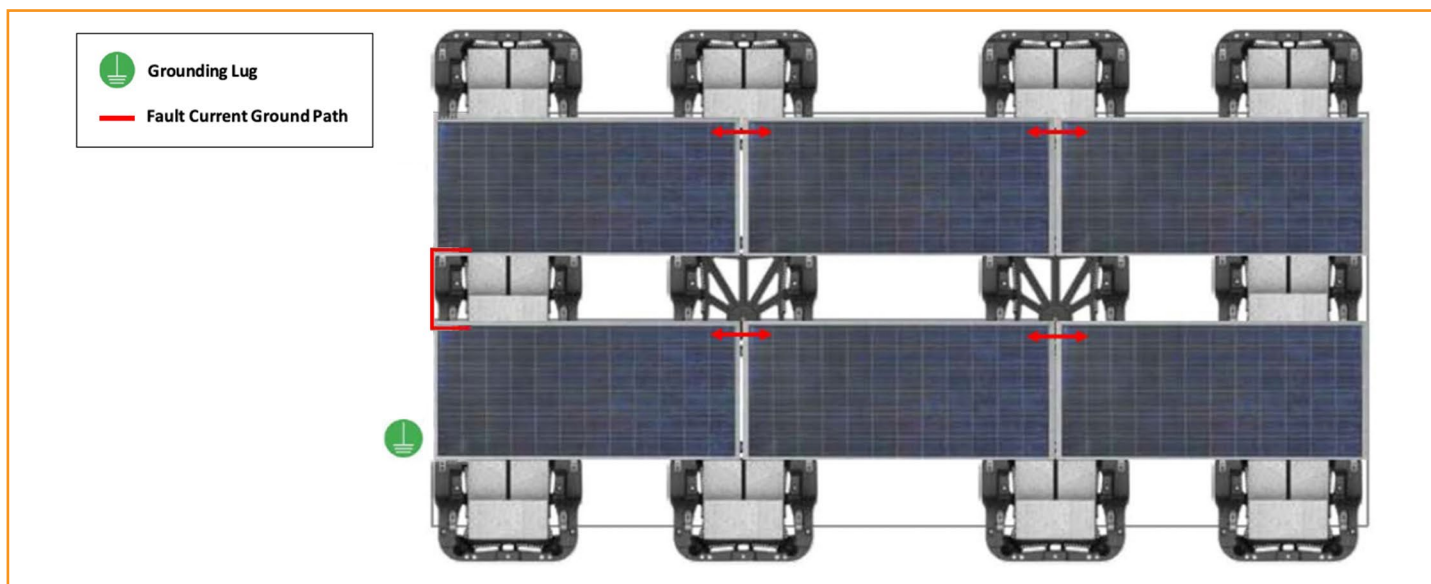
Cut provided rails to length, as needed. Install four Cage Nuts in the square holes on the edges of the Chassis. Then, install an L-Foot into each Cage Nut location using a 5/16" bolt tightened to **80 in-lbs**. Attach rails to L-Feet using 3/8" T-bolt bonding hardware tightened to **250 in-lbs**.

B. TOP RAILS

Assemble the top rails using four L-Feet on top of cross rails. Install four L-Feet on top of the cross rails using 1/4" T-bolt and nut tightened to 80 in-lbs. Attach top rails to L-Feet using 3/8" T-bolt Bonding Hardware tightened to **250 in-lbs**. Space top rails according to the mounting requirements for the inverter being used.



ELECTRICAL DIAGRAM



MODULE COMPATIBILITY

The BX System may be used to ground and/or mount a PV module complying with UL 1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions. Unless otherwise noted, “xxx” refers to the module power rating and both black and silver frames are included in the certification.

MAKE	MODELS
Amerisolar	Modules with 35, 40 and 50mm frames and model identifier ASbYxxxZ; where "b" can be 5 or 6; "Y" can be M, P, M27, P27, M30, or P30; and "Z" can be blank, W or WB.
Astronergy Solar	Modules with 35, 40, and 45mm frames and model identifier aaSM66yyPzz-xxx; where “aa” can be CH or A; “yy” can be either 10 or 12; and “zz” can be blank, HV, (BF) or (BL).
Auxin	Modules with 40mm frames and model identifier AXN6y6zAxxx; where "y" can be M or P; "z" can be 08, 09, 10, 11, or 12; and "A" can be F or T.
Axitec	Modules with 35 and 40mm frames and model identifier AC-xxxY/aa-ZZ; where "Y" can be M or P; "aa" can be 125 or 156; and "ZZ" can be 54S, 60S or 72S.
Boviet	Modules with 40mm frames and model identifier BVM66aaYY-xxx; where "aa" can be 9, 10 or 12; and "YY" is M or P.
BYD	Modules with 35mm frames and model identifier BYDxxxAY-ZZ; where "A" can be M6, P6, or PH; "Y" can be C or K; and "ZZ" can be 30 or 36.
Canadian Solar	Modules with 30, 35 and 40mm frames and model identifier CSbY-xxxZ; where “b” can be 1, 3 or 6; “Y” can be H, K, P, U, V, or X; and “Z” can be M, P, MS, PX, M-SD, P-AG, P-SD, MB-AG, PB-AG, MS-AG, or MS-SD.
CertainTeed	Modules with 35 and 40mm frames and model identifier CTxxxYZZ-AA; where "Y" can be M or P; "ZZ" can be 00,01, 10, or 11; and "AA" can be 01, 02 or 03.
CSUN	Modules with 35 and 40mm frames and model identifier YYxxx-zzAbb; where "YY" is CSUN or SST; "zz" is blank, 60, or 72; "A" is blank, P or M; and "bb" is blank, BB, BW, or ROOF.
Ecosolargy	Modules with 35, 40, and 50mm frames and model identifier ECOxxxYzZA-bbD; where "Y" can be A, H, S, or T; "zz" can be 125 or 156; "A" can be M or P; "bb" can be 60 or 72; and "D" can be blank or B.
ET Solar	Modules with 35, 40, or 50mm frames and model identifier ET-Y6ZZxxxAA; where "Y" is P, L, or M; "ZZ" is 60 or 72; and "AA" is WB, WW, BB, WBG, WVG, WBAC, WBCO, WWCO, WWBCO or BBAC.

MODULE COMPATIBILITY (CONTINUED)

Flex	Modules with 35, 40, or 50mm frames and model identifier FXS-xxxYY-ZZ; where "xxx" is the module power rating; "YY" is BB or BC; and "ZZ" is MAA1B, MAA1W, MAB1W, SAA1B, SAA1W, SAC1B, SAC1W, SAD1W, SBA1B, SBA1W, SBC1B, or SBC1W.
GCL	Modules with 35 and 40mm frames and model identifier GCL-a6/YY xxx; where "a" can be M or P; and "YY" can be 60, 72, or 72H.
GigaWatt Solar	Modules with 40mm frames and model identifier GWxxxYY; where "YY" is either PB or MB.
Hansol	Modules with 35 and 40mm frames and model identifier HSxxxYY-zz; where "YY" can be TB, TD, UB or UD; and "zz" can be AN1, AN3, AN4.
Hanwha Solar	Modules with 40, 45, or 50mm frames and model identifier HSLaaP6-YY-1-xxxZ; where "aa" is either 60 or 72; "YY" is PA or PB; and "Z" is blank or B.
Hanwha Q CELLS	Modules with 32, 35, 40, and 42mm frames and model identifier aaYY-ZZ-xxx; where "aa" can be Q. or B.; "YY" can be PLUS, PRO, PEAK, LINE PRO, LINE PLUS, or PEAK DUO; and "ZZ" can be G3, G3.1, G4, G4.1, L-G2, L-G2.3, L-G3, L-G3.1, L-G3y, L-G4, L-G4.2, L-G4y, LG4.2/TAA, BFR-G3, BLK-G3, BFR-G3.1, BLK-G3.1, BFR-G4, BFR-G4.1, BFR G4.3, BLK-G4.1, G4/SC, G4.1/SC, G4.1/TAA, G4.1/MAX, BFR G4.1/TAA, BFR G4.1/MAX, BLK G4.1/TAA, BLK G4.1/SC, EC-G4.4, G5, BLK-G5, L-G5, L-G5.1, L-G5.2, L-G5.2/H, L-G5.3, G6, BLK-G6, L-G6, LG6.1, LG6.2, or LG6.3.
Heliene	Modules with 40mm frames and model identifier YYZZxxx; where "YY" is 36, 60, 72, or 96; and "ZZ" is M, P, or MBLK.
Hyundai	Modules with 35, 40 and 50mm frames and model identifier HiS-YxxxZZ; where "Y" can be M or S; and "ZZ" can be KI, MI, MF, MG, SG, RI, RG(BF), RG(BK), TI, or TG.
Itek	Modules with 40 or 50mm frames and model identifier IT-xxx-YY; where "YY" is blank, HE, or SE, or SE72.
JA Solar	Modules with 35, 40 and 45mm frames and model identifier JAyyzz-bb-xxx/aa; where "yy" can be M, P, M6 or P6; "zz" can be blank, (K), (L), (R), (V), (BK), (FA), (TG), (FA)(R), (L)(BK), (L)(TG), (R)(BK), (R)(TG), (V)(BK), (BK)(TG), or (L)(BK)(TG); "bb" can be 48, 60, 72, 60S01, 60S02, 60S03, 72S01, 72S02, 72S03; and "aa" can be MP, SI, SC, PR, PR/1500V, 3BB, 4BB, 4BB/RE, 4BB/1500V, 5BB.
Jinko	Modules with 35 and 40mm frames and model identifier JKMYxxxZZ-aa; where "Y" can either be blank or S; "ZZ" can be P, PP, M; and "aa" can be blank, 60, 60B, 60H, 60L, 60BL, 60HL, 60HBL, 60-J4, 60B-J4, 60B-EP, 60(Plus), 60-V, 60-MX, 72, 72-V, 72H-V, 72L-V, 72HL-V or 72-MX.
Kyocera	Modules with 46mm frames and model identifier KYxxxZZ-AA; where "Y" is D or U; "ZZ" is blank, GX, or SX; and "AA" is LPU, LFU, UPU, LPS, LPB, LFB, LFBS, LFB2, LPB2, 3AC, 3BC, 3FC, 4AC, 4BC, 4FC, 4UC, 5AC, 5BC, 5FC, 5UC, 6BC, 6FC, 8BC, 6MCA, or 6MPA.
LG	Modules with 35, 40, and 46mm frames LGxxxYaZ-bb; where "Y" can be A, E, N, Q, S; "a" can be 1 or 2; "Z" can be C, K, T, or W; and "bb" can be A3, A5, B3, G3, G4, K4, or V5.
Longi	Modules with 40 and 45mm frames and model identifier LR6-YYZZ-xxxM; where "YY" can be 60 or 72; and "ZZ" can be BK, BP, HV, PB, PE, or PH.
Mission Solar	Modules with 40mm frames and model identifier MSeXXXZZaa; where "ZZ" can be MM, SE, SO or SQ; and "aa" can be 1J, 4J, 4S, 5K, 5T, 6J, 6S, 6W, 8K, 8T, or 9S.
Mitsubishi	Modules with 46mm frames and model identifier PV-MYYxxxZZ; where "YY" is LE or JE; and "ZZ" is either HD, HD2, or FB.
Motech	IM and XS series modules with 40, 45, or 50mm frames.
Neo Solar Power	Modules with 35mm frames and model identifier D6YxxxZZaa; where "Y" can be M or P; "ZZ" can be B3A, B4A, E3A, E4A, H3A, H4A; and "aa" can be blank, (TF), ME or ME (TF).
Panasonic	Modules with 35 and 40mm frames and model identifier VBHNxxxYYzzA; where "YY" can be either SA or KA; "zz" can be either 01, 02, 03, 04, 06, 06B, 11, 11B, 15, 15B, 16, 16B, 17, or 18; and "A" can be blank, E or G.
Peimar	Modules with 40mm frames and model identifier SGxxxYzz; where "Y" can be M or P; and "zz" can be blank, (BF), or (FB).
Phono Solar	Modules with 35, 40, or 45mm frames and model identifier PSxxxY-ZZ/A; where "Y" is M or P; "ZZ" is 20 or 24; and "A" is F, T or U.

MODULE COMPATIBILITY (CONTINUED)

REC Solar	Modules with 30, 38 and 45mm frames and model identifier RECxxxYYZZ; where "YY" can be M, NP, PE, TP, TP2, TP2M, TP2SM, or TP2S; and "ZZ" can be blank, Black, BLK, BLK2, SLV, or 72.
Renesola	Modules with 35, 40 or 50mm frames and model identifier JCxxxY-ZZ; where "Y" is F, M or S; and "ZZ" is Ab, Ab-b, Abh, Abh-b, Abv, Abv-b, Bb, Bb-b, Bbh, Bbh-b, Bbv, Bbv-b, Db, or Db-b.
Renogy	Modules with 40 or 50mm frames and model identifier RNG-xxxY; where "Y" is D or P.
S-Energy	Modules with 40mm frames and model identifier SNxxxY-ZZ; where "Y" is M or P; and "ZZ" is 10, or 15.
Seraphim Energy Group	Modules with 40mm frames and model identifier SEG-6YY-xxxZZ; where "YY" can be MA, MB, PA, PB; and "ZZ" can be BB, WB, or WW.
Seraphim USA	Modules with 40 and 50mm frames and model identifier SRP-xxx-6YY; where "YY" can be MA, MB, PA, PB, QA-XX-XX, and QB-XX-XX.
Sharp	Modules with 35 or 40mm frames and model identifier NUYYxxx; where "YY" is SA or SC.
Silfab	Modules with 38mm frames and model identifier SYY-Z-xxx; where "YY" is SA or LA; SG or LG; and "Z" is M, P, or X.
Solaria	Modules with 40mm frames and model identifier PowerXT xxxY-ZZ; where "Y" can be R or C; and "ZZ" can be AC, BD, BX, BY, PD, PX, PZ, WX or WZ.
SolarTech	Modules with 42mm frames and model identifier STU-xxxYY; where "YY" can be PERC or HJT.
SolarWorld AG / Industries GmbH	SolarWorld Sunmodule Plus, Protect, Bisun, XL, Bisun XL, may be followed by mono, poly, duo, black, bk, or clear; modules with 31, 33 or 46mm frames and model identifier SW-xxx.
SolarWorld Americas Inc.	SolarWorld Sunmodule Plus, Protect, Bisun, XL, Bisun XL, may be followed by mono, poly, duo, black, bk, or clear; modules with 33mm frames and model identifier SWA-xxx.
SunEdison	Modules with 35, 40, or 50mm frames and model identifier SE-YxxxZABCDE; where "Y" is B, F, H, P, R, or Z; "Z" is 0 or 4; "A" is B, C, D, E, H, I, J, K, L, M, or N; "B" is B or W; "C" is A or C; "D" is 3, 7, 8, or 9; and "E" is 0, 1 or 2.
Suniva	Modules with 35, 38, 40, 46, or 50mm frames and model identifiers OPTxxx-AA-B-YYY-Z or MVXxxx-AA-B-YYY-Z; where "AA" is either 60 or 72; "B" is either 4 or 5; "YYY" is either 100,101,700,1B0, or 1B1; and "Z" is blank or B.
Sunpower	Modules with standard (G3 or G4) or InvisiMount (G5) 40 and 46mm frames with model identifier SPR-Zb-xxx-YY; where "Z" is either A, E, P or X; "b" can be blank, 17, 18, 19, 20, 21, or 22; and "YY" can be blank, NE, BLK, COM, C-AC, D-AC, E-AC, BLK-C-AC, or BLK-D-AC.
Sunpreme	Sunpreme modules with 35 and 40mm frames and model identifier SNPM-AxB-xxxYzz; where "A" can be G or H; "Y" can be blank or T; and "zz" can be blank, 4BB, SM or 4BB SM.
Sunspark	Modules with 40mm frames and model identifier SYY-xxZ; where "YY" can be MX or ST; and "Z" can be P or W.
Suntech	Vd, Vem, Wdb, Wde, and Wd series modules with 35, 40, or 50mm frames.
Talesun	Modules with 35 and 40mm frames and model identifier TP6yyZxxx-A; where "yy" can be 60, 72, H60 or H72; "Z" can be M, or P; and "A" can be blank, B, or T.
Trina	Modules with 35, 40 or 46mm frames and model identifier TSM-xxxYYZZ; where "YY" is PA05, PC05, PD05, PA14, PC14, PD14, PE14, or DD05; and "ZZ" is blank, A, A.05, A.08, A.10, A.18, .05, .08, .10, .18, .08D, .18D, 0.82, A.082(II), .002, .00S, 05S, 08S, A(II), A.08(II), A.05(II), A.10(II), or A.18(II).
Winaico	Modules with 35 or 40mm frames and model identifier Wsy-xxxz6; where "y" is either P or T; and "z" is either M or P.
Yingli	Panda, YGE, and YGE-U series modules with 35, 40, or 50 mm frames.