

Roof Mounting System

Light Rail (XRL)

2013 Edition v1.3

This **Installation Manual** was created to help with the assembly of the IronRidge Light Rail Mounting System.

Light Rail

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Introduction

The IronRidge Light Rail System is a flexible and straightforward roof mounting solution for a wide variety of solar photovoltaic (PV) needs. Due to its modular design, it can easily handle a wide variety of panel sizes and quantities.

Installer Responsibility

The installer is solely responsible for:

- i. Complying with all applicable local or national building codes, including any that may supersede this manual;
- ii. Ensuring that IronRidge and other products are appropriate for the particular installation and the installation environment;
- iii. Ensuring that all structural support members, including the roof, its rafters, and connections, can support the array under all code level loading conditions;
- iv. Using only IronRidge parts and installer-supplied parts as specified by IronRidge. Substitution parts may void the warranty;
- v. Ensuring that anchoring devices including lag screws have adequate pullout strength and shear capacities as installed;
- vi. Maintaining the waterproof integrity of the structural support or roof, including selection of appropriate flashing;
- vii. Ensuring safe installation of all electrical aspects of the PV array; and
- viii. Ensuring that PV module is UL or CE listed and verification of PV Module's capacity to support the loads associated with the given array; and
- ix. Ensuring correct and appropriate design parameters are used in determining the design loading used for the specific installation. Parameters, such as snow loading, wind speed, exposure and topographic factor should be confirmed with the local building official or a licensed professional engineer.

Customer Support

IronRidge makes every effort to ensure your mounting kit is easy to install. If you need assistance at any point with your installation or have suggestions on how we can improve your experience, call IronRidge customer support: (707) 459-9523

Tools Required For Assembly

Wrenches are required to assemble the IronRidge Light Rail System. An open-end wrench, box-end wrench, or socket drive with sockets will suffice. The sockets will need to support the following size hex heads:

Hex Head Size	Component
5/16"	#12 Self Drilling/tapping screws
7/16"	1/4 cap-end screws and bolts
9/16"	3/8 cap-end screws and bolts

Torque Values For Dry Bolts

Use the following torque values in this assembly.

Bolt Size	Required Torque Value
1/4-20	120 in-lbs. (dry), 100 in-lbs. (wet), 65 in-lbs. on End Clamps (wet or dry)
3/8-16	236 in-lbs.

Module Clamp Table

Module Thickness		Clamp Info		Part Numers		
Mm	Inches	Clamp Type	Bolt Height	End Clamp	Mid Clamp (hex)	Mid Clamp (tbolt)
31.0 - 32.5	1.22 - 1.28	I	2.00"	29-7000-125	29-7000-105	29-70TB-105
33.3 - 34.8	1.31 - 1.37	A	2.00"	29-7000-134	29-7000-105	29-70TB-105
34.8 - 36.8	1.37 - 1.45	B	2.00"	29-7000-224	29-7000-105	29-70TB-105
39.0 - 41.0	1.53 - 1.61	C	2.25"	29-7000-157	29-7000-101	29-70TB-101
41.1 - 42.7	1.62 - 1.68	J	2.25"	29-7000-165	29-7000-101	29-70TB-101
42.7 - 44.2	1.68 - 1.74	E	2.25"	29-7000-171	29-7000-101	29-70TB-101
45.0 - 47.0	1.77 - 1.85	F	2.50"	29-7000-214	29-7000-108	29-70TB-108
46.7 - 48.3	1.84 - 1.90	K	2.50"	29-7000-187	29-7000-108	29-70TB-108
49.0 - 51.1	1.93 - 2.01	G	2.50"	29-7000-204	29-7000-108	29-70TB-108
57.4 - 58.9	2.26 - 2.32	H	2.75"	29-7000-230	29-7000-104	29-70TB-104

Grounding Setup

All electrical installation and procedures should be conducted by skilled, licensed and bonded electricians. All work must comply with all national, state and local installation procedures, product and safety standards. These standards include but are not limited to applicable National Electrical Code (NEC®), National Electrical Installation Standards (NEIS™), UL Standards, and OSHA Regulations.

Note: For installations that utilize WEEBs, WEEB Lugs and WEEB Bonding Jumpers, please refer to Wiley/Burndy installation manual for "IronRidge Light and Standard Series Rail" for proper installation procedures.

Component List

The IronRidge Light Rail System contains the following parts:

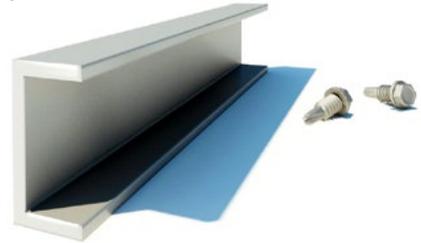
L-Foot

Attaches to the roof and is the anchor point for the rest of the panel assembly.



Internal Splice

Ties the extrusion rails together, extending their length.



Light Rail

Attaches to the foot via foot clamp and provides support for the PV modules.



End Clamp

Clamps the outside ends of the PV modules to the rails.



Mid Clamp

Clamps the inside edges of the PV modules to the rails.



End Cap

Caps off the end of the rail and prevents the collection of debris inside rail.



Assembly

Step 1. Mounting the feet and the first piece of rail.

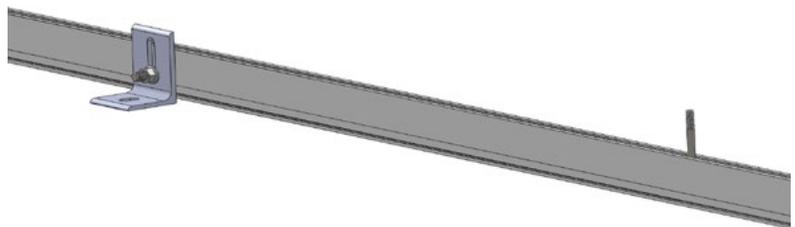
- A.** Mount all of the feet to the roof in the desired locations.

Note: Determine the maximum distance between feet according to engineering specifications.

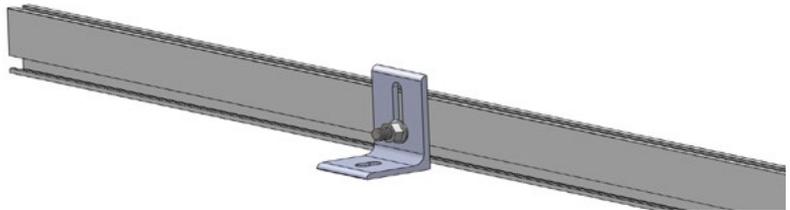


- B.** On the first piece of rail, slide 3/8-16" bolts into the side facing t-slot on the rail. Space the bolts out to match the foot spacing.

- C.** On this same piece of rail, slide 1/4-20" bolts into the top facing t-slot on the rail. Space the bolts out to match the panel spacing.



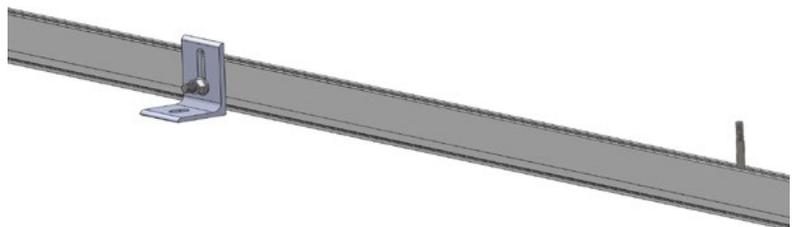
- D.** Attach this first piece of rail to the feet mounted on the roof. Mount the rail to each foot with a flange nut and hex bolt. Hand tighten the nuts and check the level of the rail. Tighten 3/8-16 hardware to 236 in-lbs.



Step 2. Mounting the next pieces of rail.

- B.** On the next piece of rail, slide 3/8-16" bolts into the side facing t-slot on the rail. Space the bolts out to match the foot spacing.

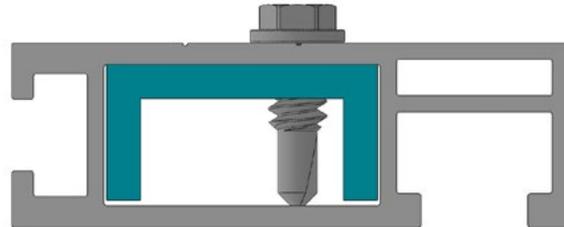
- C.** On this same piece of rail, slide 1/4-20" bolts into the top facing t-slot on the rail. Space the bolts out to match the panel spacing.



C. Lay the rail on its side, with the slotted side down as shown.

D. Slide the internal splice half way into the internal cavity in the rail. It should extend approximately three (3) inches into the cavity.

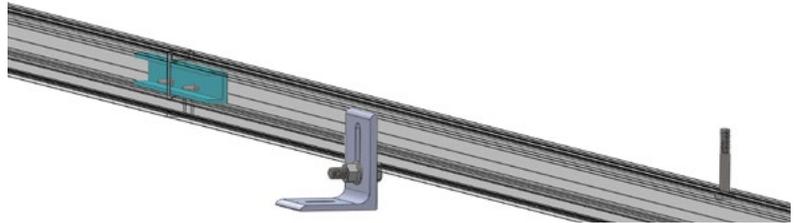
E. Using one (1) self-drilling, self-tapping screw, one (1") inch from the edge of the rail, secure the internal splice into the rail as shown on the right.



Note: For installations that utilize WEEB Bonding Jumpers, please refer to Wiley/Burndy installation manual for "IronRidge Light and Standard Series Rails" for proper installation procedures.

F. Loosely mount this piece of rail onto its footings.

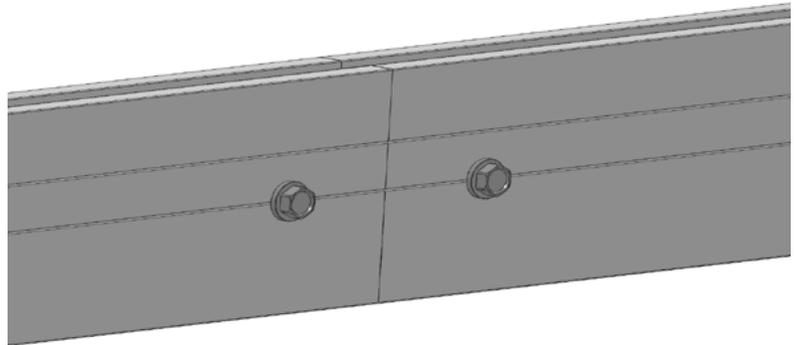
G. By moving this second rail along its footings, the internal splice should slip into the cavity on the first rail, with the rails butting tightly and evenly together.



H. Maintain rail alignment while following the next steps.

I. You should mark off approximately three (3) inches from the end of the first rail (where the internal splice should end). Drive one (1) self-tapping screws through the second rail, one (1") inch from the edge utilizing the same horizontal location as the first rail.

J. Repeat this procedure for the remaining rails.

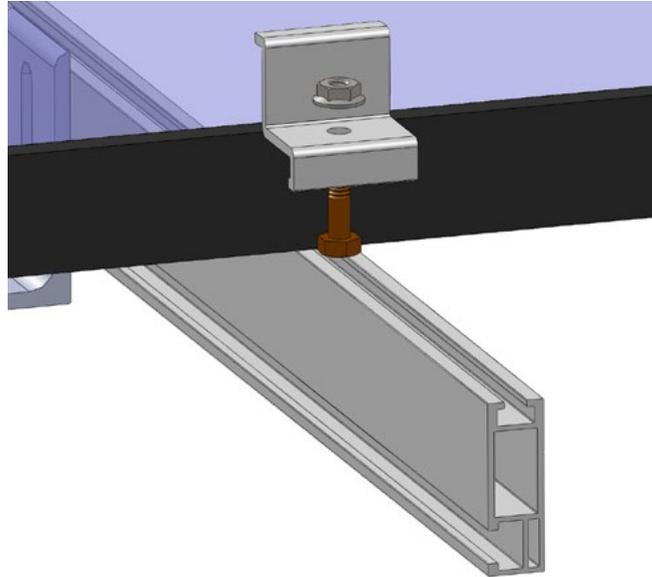


Step 3. Clamping the panels to the rails.

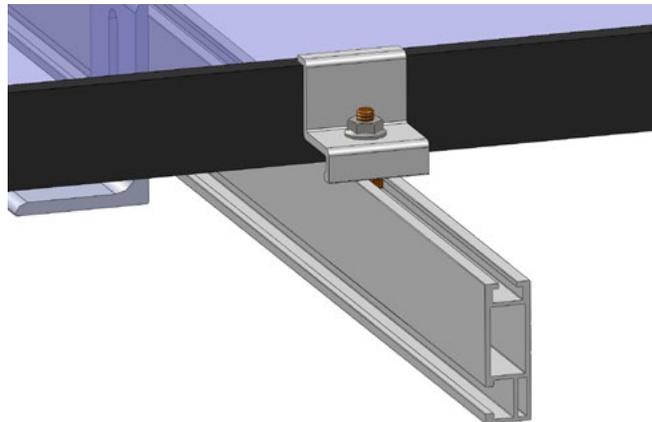
- A.** Lay the first PV module in position on the rails.

Note: For installations that utilize WEEBs, please refer to Wiley/Burndy installation manual for "IronRidge Light and Standard Series Rails" for proper installation procedures.

- B.** Then slip the end clamp over the bolt, making sure it is firmly hooked over the side of the module.



- C.** Complete the clamp assembly with a flange nut as shown. Tighten end clamp to 65 in-lbs.
- D.** Repeat with the other clamp.

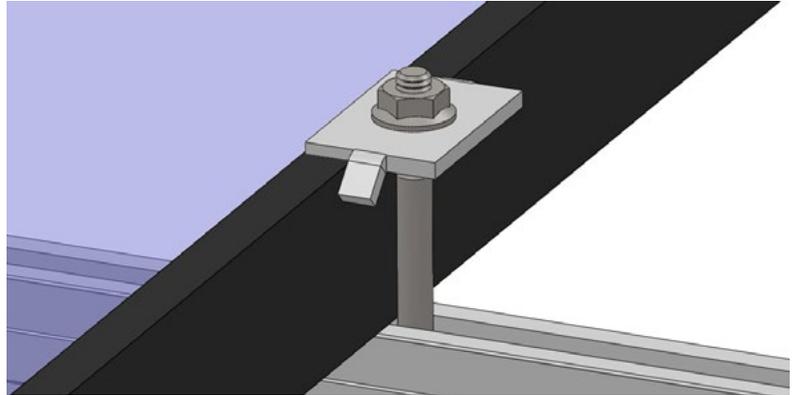


- E.** Working from the opposite side of the PV module. Assemble the mid clamps by putting a clamp on the bolt, followed by the flange nut.

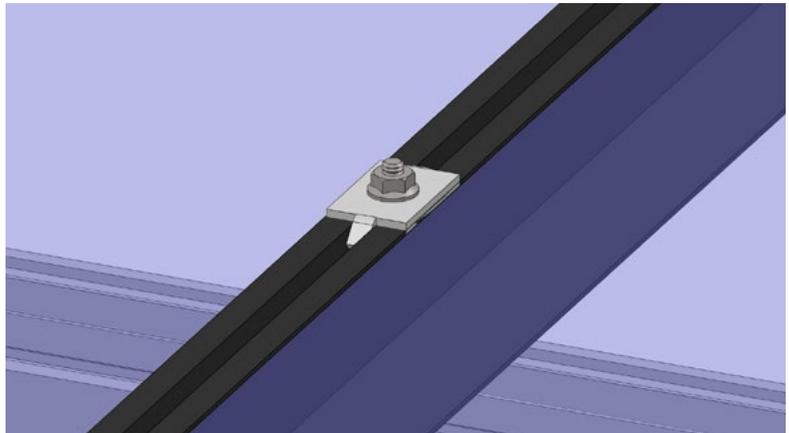


- F.** Place the second PV Module into position on the rails, sliding it against the first so the mid clamps are in contact with the edges of both panels.

Note: For installations that utilize WEEBs, please refer to Wiley/Burndy installation manual for “IronRidge Light and Standard Series Rails” for proper installation procedures.

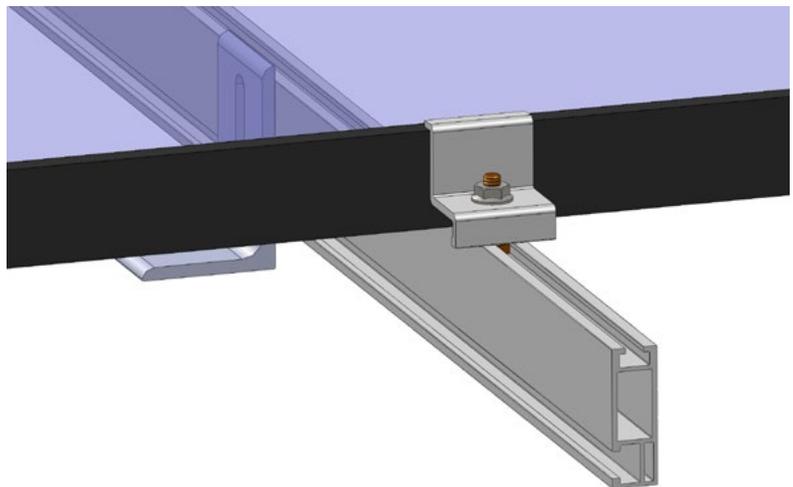


- G.** Tighten to 120 in-lbs. (dry), 100 in-lbs. (wet).



- H.** Repeat the procedure using mid clamps to secure each successive module.

- I.** Secure the last module at the end of the rails using the other set of end clamps. Tighten to 65 in-lbs.



Warranty Information

Effective for IronRidge, Inc. (“IronRidge”) mounting structure components (“Products”) manufactured after April 1st, 2012, IronRidge provides the following warranties, for Products installed properly and used for the purpose for which the Products are designed:

- finishes shall be free of visible defects, peeling, or cracking, under normal atmospheric conditions, for a period of three (3) years from the earlier of (i) the date of complete installation of the Product or (ii) thirty days after the original purchaser’s date of purchase of the Product (“Finish Warranty”);
- components shall be free of structurally-related defects in materials for a period of ten (10) years from the earlier of (i) the date of complete installation of the Product or (ii) thirty days after the original purchaser’s date of purchase of the Product;
- components shall be free of functionally-related manufacturing defects for a period of twenty (20) years from date of manufacture.

The Finish Warranty does not apply to: (a) surface oxidation of the galvanized steel components or any foreign residue deposited on Product finish; and (b) Products installed in corrosive atmospheric conditions, as defined solely by IronRidge; corrosive atmospheric conditions include, but are not limited to, conditions where Product is exposed to corrosive chemicals, fumes, cement dust, salt water marine environments or to continual spraying of either salt or fresh water. The Finish Warranty is VOID if (c) the practices specified by AAMA 609 & 610-02 – “Cleaning and Maintenance for Architecturally Finished Aluminum” (www.aamanet.org) are not followed by Purchaser for IronRidge’s aluminum based components; and (d) if the practices specified by ASTM A780 / A780M - 09 “Standard Practice for Repair of Damaged and Uncoated Areas of HotDip Galvanized Coatings” are not followed by Purchaser for IronRidge’s galvanized steel-based components.

The warranties above do not cover any parts or materials not manufactured by IronRidge, and exclude nonfunctionally-related defects, as defined solely by IronRidge. The warranties do not cover any defect that has not been reported to IronRidge in writing within twenty (20) days after discovery of such defect.

In the event of breach of or non-compliance with the warranties set forth above, IronRidge’s sole obligation and liability, and the sole and exclusive remedy for such breach or non-compliance, shall be correction of defects by repair, replacement, or credit, at IronRidge’s sole discretion. Such repair, replacement or credit shall completely satisfy and discharge all of IronRidge’s liability with respect to these warranties.

Refurbished Product may be used to repair or replace the defective components. Transportation, installation, labor, or any other costs associated with Product replacement are not covered by these warranties and are not reimbursable. These warranties additionally do not cover (a) normal wear, or damage resulting from misuse, overloading, abuse, improper installation (including failure to follow professional instruction and certification), negligence, or accident, or from force majeure acts including any natural disasters, war or criminal acts; and (b) Products that have been altered, modified or repaired without written authorization from IronRidge or its authorized representative; and (c) Products used in a manner or for a purpose other than that specified by IronRidge. A formal document proving the purchase and the purchase date of the Product is required with any warranty claim.

Except as set forth above, IronRidge sells the Products on an “AS IS” basis, which may not be free of errors or defects, and ALL EXPRESS OR IMPLIED REPRESENTATIONS AND WARRANTIES, INCLUDING ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, QUALITY, WORKMANLIKE EFFORT, CORRESPONDENCE TO DESCRIPTION, DESIGN, TITLE OR NON-INFRINGEMENT, OR ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE OR TRADE PRACTICE, ARE HEREBY DISCLAIMED.