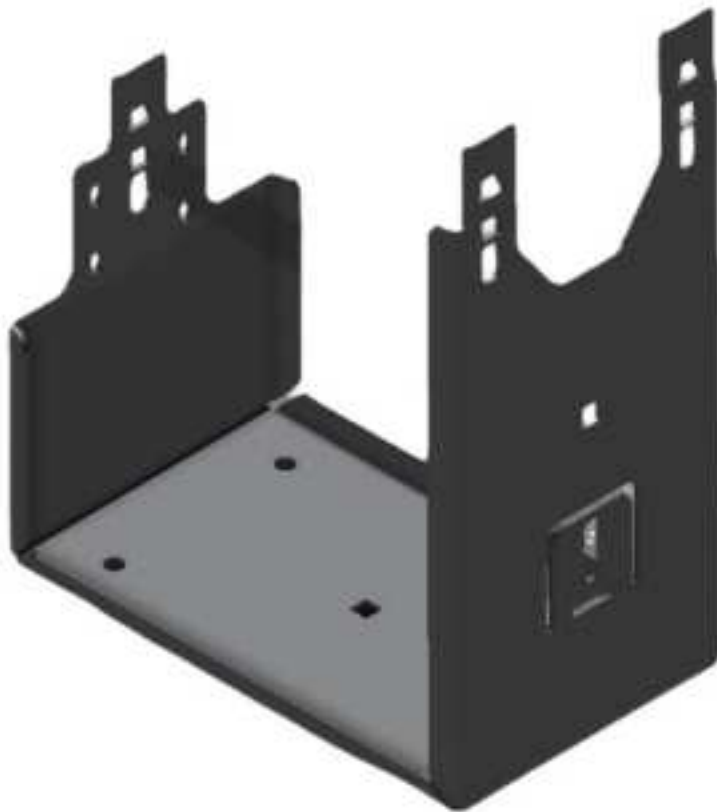




Revolutionary Solar Racking Systems



IR-05 INSTALL INSTRUCTIONS

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Warranty



IntegraRack® backs all of its products with a 25 year limited product warranty. We fully stand by the quality and guarantee that they will hold up under the harshest conditions when properly installed.

Disclaimer

The instructions detailed in this manual will provide the knowledge and requirements necessary for proper installation of the given product. Be sure to read them thoroughly and make sure that you fully understand them before proceeding with installation. Any improper use or installation of these products will void any and all warranty coverage, and may cause failure, property damage or personal injury. IntegraRack is not responsible for any damages caused by improper use.

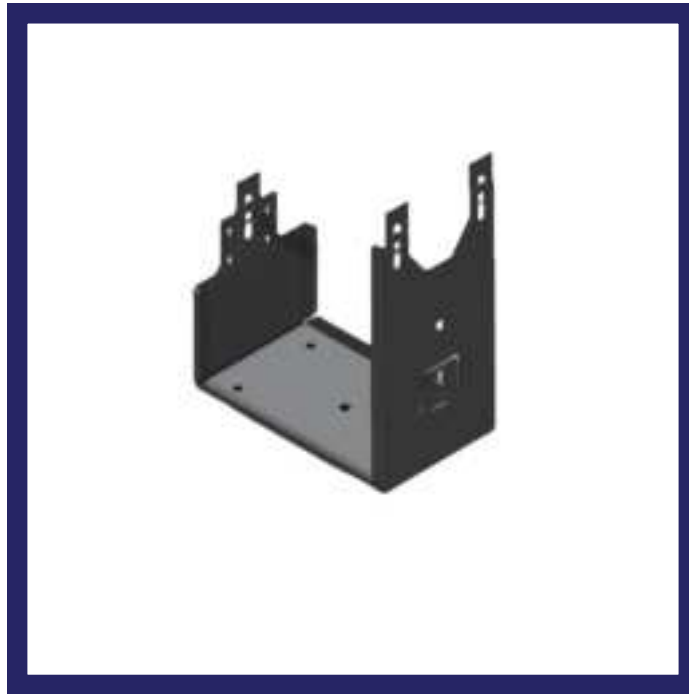
IT IS THE RESPONSIBILITY OF THE INSTALLER TO:

- Comply with any and all applicable local or national codes and regulations.
- Ensure all products are appropriate for the installation according to the environmental and loading conditions.
- Ensure roof structure is in good condition prior to installation
- Disconnect AC power before servicing or removing modules, micro-inverters or power optimizers.
- Review manufacturer's documentation for compatibility and compliance for solar modules and 3rd party systems.
- If loose components or loose fasteners are found during periodic inspection, re-tighten immediately. Any components showing signs of corrosion or damage that compromise safety shall be replaced 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.
- Ensure safe installation of all electrical aspects of the solar system (All electrical installation and procedures should be conducted by a licensed and bonded electrician or solar contractor). Regular 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.
- Ensure bare copper grounding wire does not contact aluminum and zinc-plated steel components, to prevent risk of galvanic corrosion.
- Ensure provided information is accurate. Issues resulting from inaccurate information are the installer's responsibility.

Components

INCLUDED COMPONENTS

- (1) IR-05
- (1) Tube Handle
- (2) 5/16-18x5/8" Bolts



IR-05 Flat Roof Ballast System

Required Tools

Tools Needed

- 1/2" Wrench or Screw Gun
- Line Chalk
- Tape Measure
- Up to (3) IR-F1 Flange Clamp & Bonding Brackets Per IR-05 ((6) IR-F1s Per Solar Module)

Tools Needed For Ballasted Installation

- (1) 4" x 8" x 16" Cinder Block Per IR-05

Tools Needed For Adhesive Installation

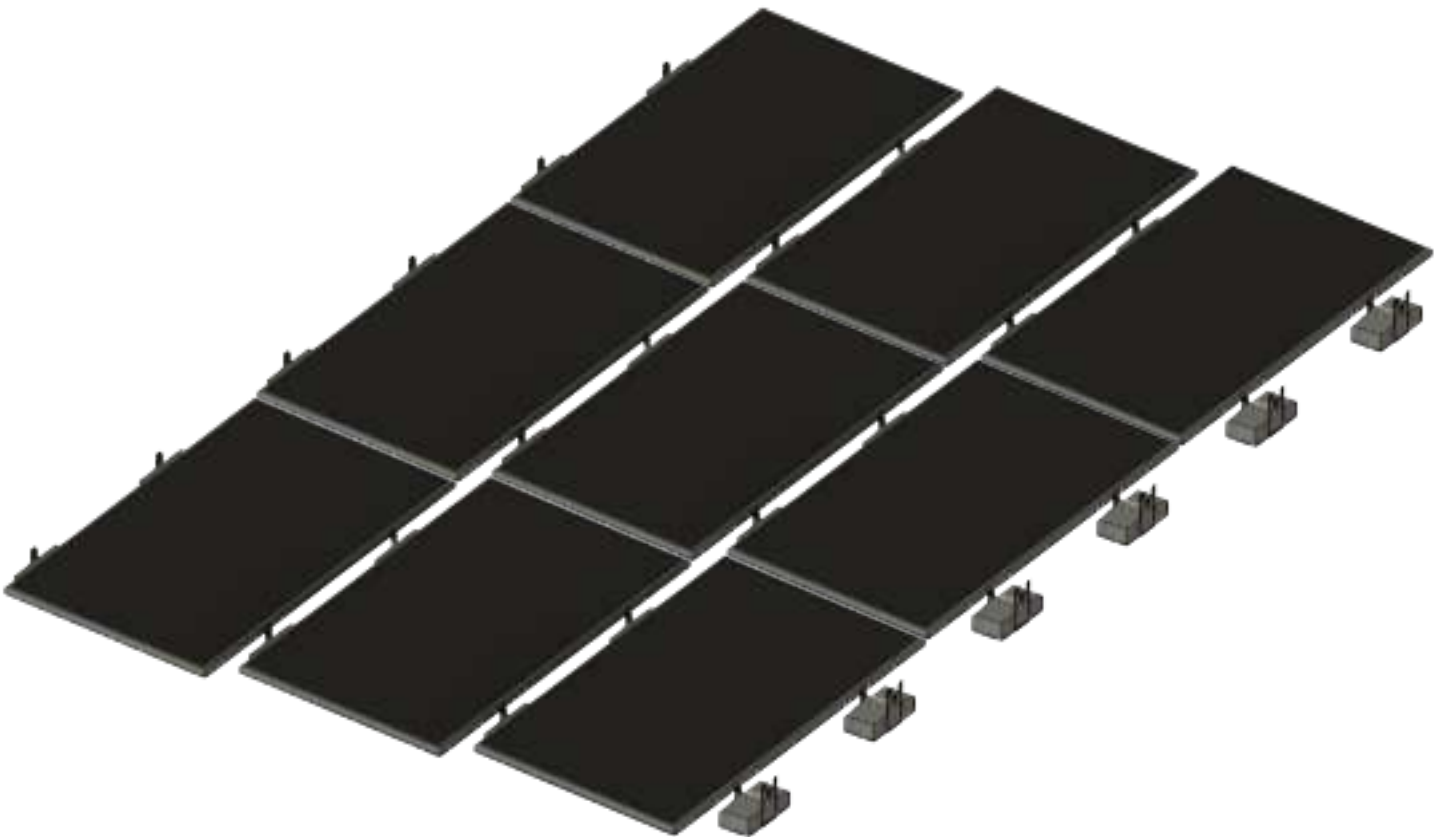
- Bostik 915FS™ Hurricane Strength Fast Setting Polyurethane Adhesive
- Caulk Gun With Spreader Attachment

Tools Needed For Deck Mounted Installation

- Bostik 915FS™ Hurricane Strength Fast Setting Polyurethane Adhesive
- Caulk Gun With Spreader Attachment
- (4) IR Deck Mount Bolts with EPDM Sealing Washers Per IR-05 Bracket

Example Layout

In the example given below you can see a nine solar module system laid out in three rows of three. With this layout, (24) IR-05 Brackets and (54) IR-F1 Brackets were used for racking the solar modules with this ballast system. Each solar module will require (2) IR-05 Flat Roof Ballast Brackets attached to the front 15%-20% in from the outer edge, and (2) extra IR-05 Brackets will be needed to end each row of solar module. (3) IR-F1 Brackets can be mounted to each IR-05 Bracket and are required for racking modules, though the IR-05 Brackets at the start and end of each row will only require IR-F1 Brackets on the side that is holding the solar module. (6) IR-F Brackets are needed per solar module.



Spacing Between IR-05 Brackets

This system is designed to rack solar modules of any size in landscape orientation on a flat roof. Two IR-05 brackets are required per solar module after the first row of brackets are placed on the roof. The center point of each IR-05 bracket will need to be located under the ideal loading point of the solar module (Usually 15%-25% in from each long end of the solar module) as per the solar module manufacturer's ideal mounting point guidelines.



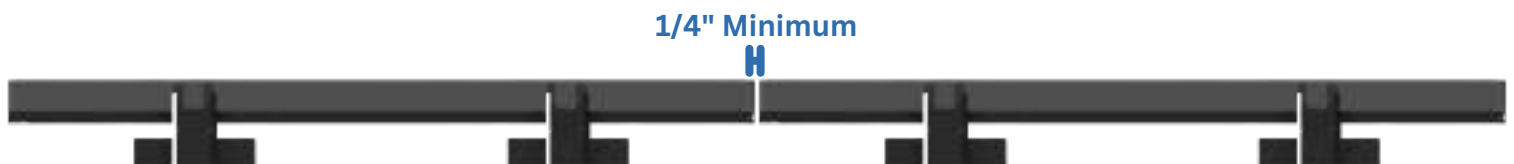
Chalkline Spacing Between Brackets

To calculate the spacing between IR-05 brackets at each side of solar module, measure the width of the underside of solar module from inside of inner flange to the inside of inner flange and add 12" to that number. (e.g. if the inside to inside flange of solar module measures 40", the calculation will be $40" + 12" = 52"$) Each series of brackets for the example above will be chalked at 52" apart.



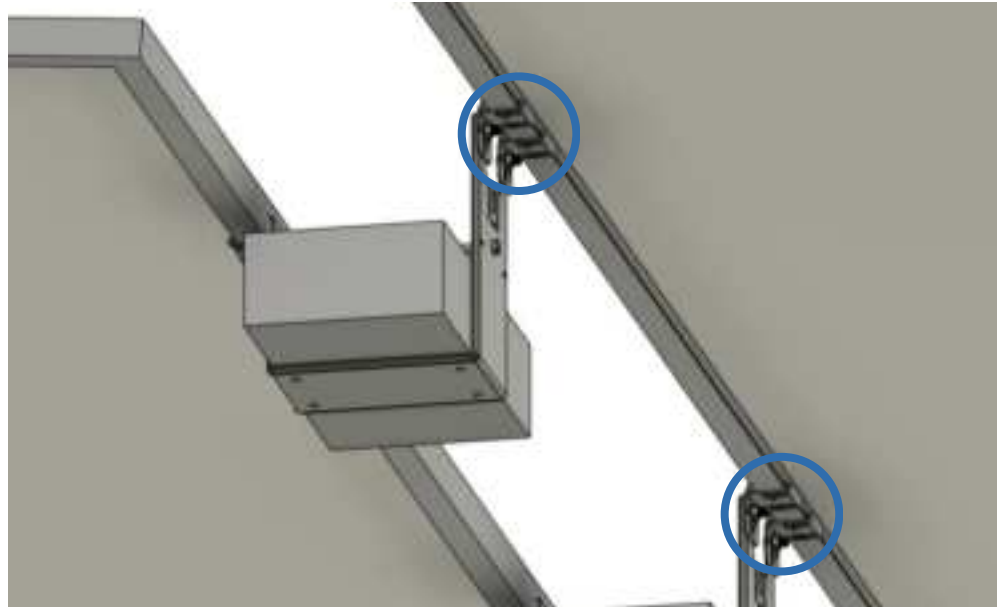
Spacing Between Each Row

The design of this system allows for solar module rows to be placed within 1/4" apart from each other, from solar module end to solar module end.



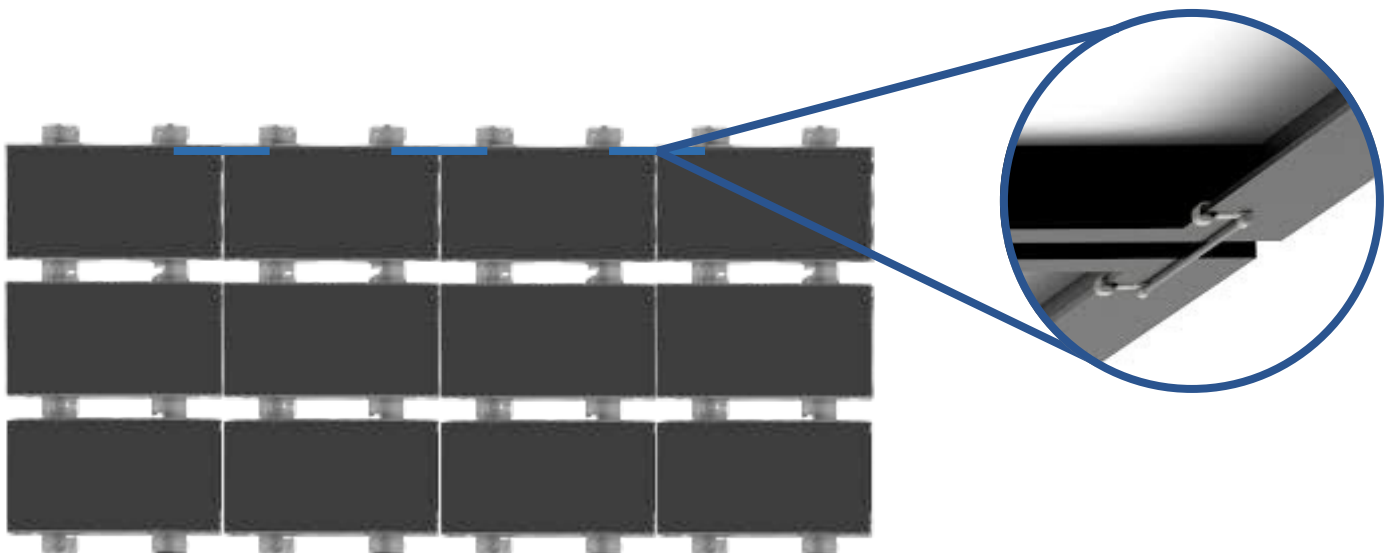
Solar Module Bonding

The IR-F1 Rail-Less Solar Module Flange Clamp Bonding Brackets work to clamp the solar modules to the IR-05 bracket as well as provide bonding for the solar module rows. The spring steel sharp barbs will penetrate into the anodized aluminum flange of the solar module frame when the solar modules are locked into place with the integrated bend tabs. The weight of the solar module pushing onto the barbs also contributes to the pressure needed to penetrate the anodized aluminum frame.



Bonding Between Rows

For bonding between rows of modules, we offer our 8" IR-B1 Bonding Jumpers that are UL 2703 recognized. The bonding jumpers have small internal bonding barbs and they clamp to the bottom inner flange of the solar modules to provide bonding from row to row.



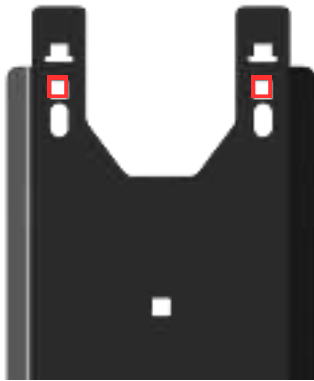


Figure 1

Bolt Placement

On each mounting point of the IR-05, you will see three holes. Make sure to use the middle hole when mounting IR-F1 brackets to the IR-05. The top hole allows for the folding of the bend tabs, the bottom hole is a slot for the IR-F1 brackets anti-rotational tab, and the middle hole is where the mounting bolts will go.

1.Place Weight Block

Once you have completed all measurements and marked bracket placement, it's time to assemble the IR-05 brackets. Place cinder block into the IR-05 and make sure it is centered.



Figure 2

2.Mount Tube Handle & Lower IR-F1

Bolt the tube handle in place using the two provided bolts. Make sure to also mount one IR-F1 Rail-Less Flange Clamp Bonding Bracket to the shorter height side of the IR-05 using the tube handle bolt (See Figure 3).



Figure 3

3.Place IR-05 Systems In Place

Using the integrated tube handle, carry and place IR-05s in place on the roof. The tube handle and all-in-one design allow for multiple ballasted systems to be carried and placed in one trip for fast, easy setup.



Figure 4



Figure 5

4. Mount Upper IR-F1s

Using the carriage bolt and serrated nuts provided with the IR-F1's, bolt the upper IR-F1 brackets to the upper two sections of the IR-05 (See Figure 5). These brackets can also be mounted after placement for easier carrying.

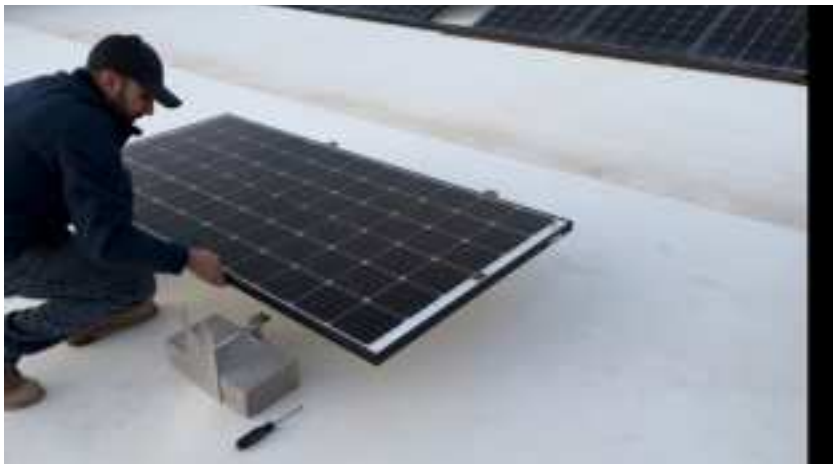


Figure 6

5. Place Solar Modules

Once all brackets are in place, simply set the solar module on the IR-F1 brackets on the high side of bracket first, and then drop the solar module down, and pull it towards you to make sure the solar module's frame flange goes fully into the IR-F1's. Then drop the solar module onto the IR-F1 brackets on the other side of bracket and push the two IR-F1 hooks under solar modules flange on both sides of solar module to lock module into place.



Figure 7

6. Fold Bend Tabs

Use a long flathead screwdriver to fold all six bend tabs around the solar module. Then pull up on the solar module to confirm that it is locked in place at all of the locking points.

Alternate Installation

When installing the IR-05 without ballasted weight, installation is the same. Simply follow the instructions as normal without placing the ballasted block. Make sure to mount the Tube Handle to maintain the structural integrity of the system.

Adhesive Mounting

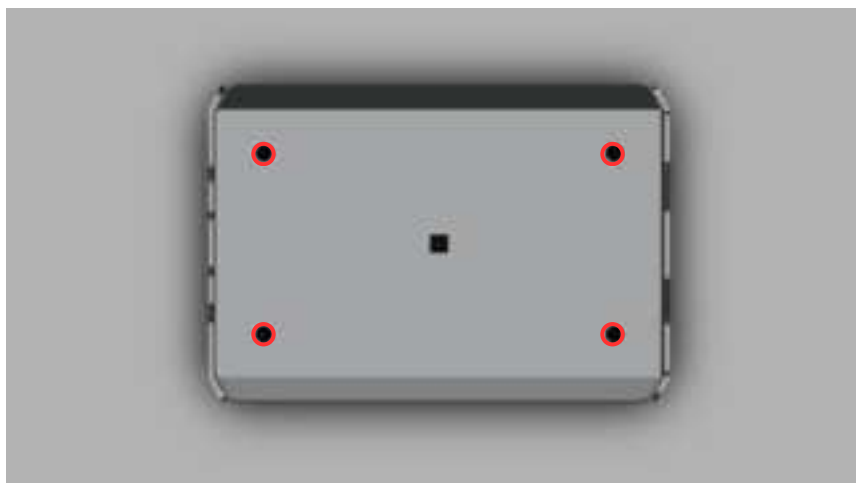
Once all IR-05 Brackets are in place on the roof, use a marker to trace the bottom foot of the IR-05 to mark where the adhesive should go. Next, use a caulk gun and a spreader attachment to apply an even layer of our test proven adhesive. As soon as the adhesive is in place, firmly press the bottom foot of the IR-05 onto the surface of the roof. You will see the glue expanding through the holes on the bottom of the bracket to ensure proper pressure has been applied.



Deck Mounting

For extra hold down strength, the IR-05 Brackets can be deck mounted after adhesive has been applied. For deck mounting, insert (4) of our IR Deck Mount Bolts with EPDM Sealed Washers into the four openings on the bottom of the IR-05.

**It is important that the adhesive is also used to maintain a water tight seal.*





View Installation Video



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