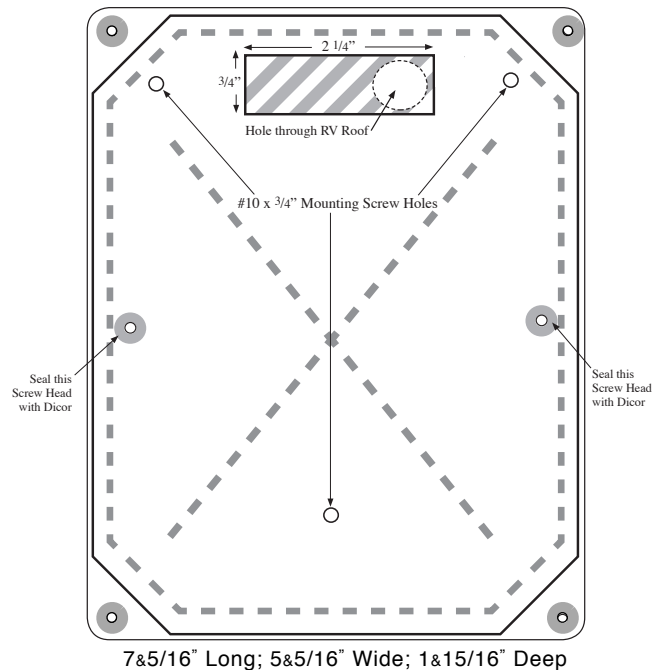


Roof Combiner Box Installation Instructions

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AM Solar, Inc. 541-726-1091 www.amsolar.com

The Roof Combiner box is an AM Solar exclusive design that allows you to provide each solar panel with its own output cable, thereby reducing unnecessary voltage drop associated with parallel panel wiring. It is made of UV resistant plastic, has a rubber gasket inside the lid, and utilizes weather-tight fittings to protect against moisture reaching the electrical connections inside.



Placement: Once you've determined the layout of solar panel(s) and identified the path for the wiring through the roof, you're ready to choose the best location for the combiner box. Whenever possible, we recommend mounting the combiner box on the roof underneath one of the solar panels for a clean and tidy installation, and increased protection from extreme weather conditions.

Prep & Installation: Thoroughly clean the roof surface around the area where the combiner box is going to be installed. Drill a hole through the roof using the appropriate hole saw for the cable you're running up from the interior of the rig. For 8/2 cable, use 5/8" hole saw; for 6/2 cable, use 7/8" hole saw; for 4/2 cable, use 1" hole saw; for 2/2 cable, use 1-1/8" hole saw.

Determine how many and which of the 4 knock-outs you'll need for the solar panel cables. Place a standard screwdriver in the groove near the bottom of the knockout perforation and strike the handle firmly, yet gently with a hammer. Remove knockouts. It may be necessary to shave or file the opening to accept the weather-tight fitting(s). Insert the fitting(s) into the knock-out hole(s) and secure with locknut.

Place the bottom section of the combiner box on the roof, lining up the rectangular opening of its base with the hole drilled through the roof, and trace the outline of the box, as well as the screw holes on the roof surface with a pencil. Set aside. Pre-drill pilot holes using a 1/8" drill bit for fiberglass roofs, or a 9/64" drill bit for metal roofs. It is not necessary to pre-drill pilot holes on rubber or TPO roofs.

Bring about 6" of the interior cable (8/2, 6/2, 4/2, or 2/2) up through the hole in the roof. When using the 8/2 cable, strip about 4" of the outer jacketing, exposing the positive and negative insulated leads for connection to the bus bars later. When working with the 6/2, 4/2 or 2/2 cable, use a knife to gently score the seam (about 4") between the positive and negative leads and carefully pull/separate them for connection to the bus bars later. Use the caulk tape provided to seal up the hole in the roof by wrapping it around the jacketed portion of the remaining wire and seating it into the hole.

Using the penciled outline of the combiner box on the roof and the dotted line pattern in the graphic above, apply Dicor (or other appropriate self-leveling sealant) on the roof. Carefully line up the combiner box over the sealant, atop the outline, and press down gently until you see a bit of the sealant beading up around its base on the roof surface. Attach the combiner box to the roof with the #10 screws provided. Fill the reservoir around the solar wire coming up through the combiner box from the roof with Dicor (or other appropriate self-leveling sealant). The caulk tape will act as a dam, preventing the sealant from leaking into the roof cavity.

Connections: Each solar panel cable (round, grey 10/2) is connected to the combiner box through one of the four knockouts using a weather-tight fitting. Once you've lined out the path of the solar panel cable to the combiner box and secured it to the roof, strip back about 6" of the jacketing from the cable, exposing the insulated positive (black) and negative (white) leads. Insert these into one of the weather-tight fittings until approximately 1/2" of the grey jacketing comes through the fitting, then tighten. Strip about 1/2" of the insulation off of the black and white leads* and connect them to the corresponding positive and negative bus bars.

** We recommend that you confirm the polarity of these conductor leads with a hand held voltmeter prior to making the final connections at the bus bar. This will save you a good deal of time and frustration in the event that you inadvertently reversed the polarity when wiring up the solar panels.*

Next, strip about 1/2" off of the positive and negative leads coming up through the roof and connect them to the appropriate bus bars as well. For wire supplied by AM Solar, use the following key for identifying positive and negative leads: 8/2 - Black = Positive, White = Negative; 6/2, 4/2, and 2/2 - Red = Positive, Black = Negative.

After all of the wire connections are complete, attach the combiner box lid and screw it to the base using the 6 stainless steel sheet metal screws provided. Cover the heads of the screws with Dicor to prevent water from working its way down the threads and inside the box.