20 Amp Renogy DC-DC Charger Install – 2021 F-150

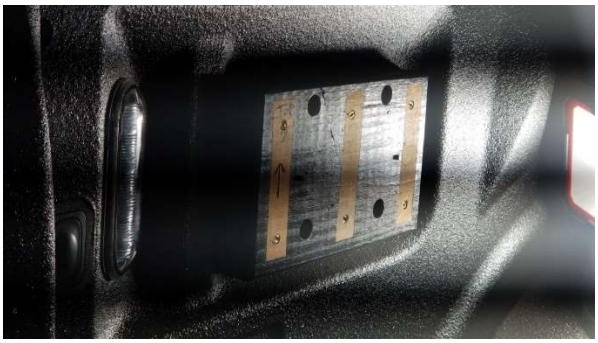
I wanted battery charging on my T@B and any other additional camper, so I did my install completely on the truck with wiring going to an Anderson Connector, then more wiring zipped to the 7-way cord on the camper to the junction box. We adapted our install from a video I found on youtube. Some of the stuff we did may have been overkill, but the “designer” (my pop) was having fun.

https://www.youtube.com/watch?v=8_drtItPiII

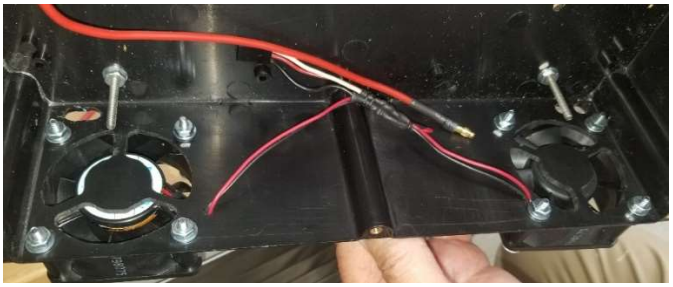
The first thing was a place to mount it. The charger needed to be as close to the trailer as possible. I really don’t plan on using the “boxlink” connectors in my truckbed, so found a spot on the sidewall of the truck and removed the boxlink bracket. We used the mounting holes for the boxlink bracket to mount the unit to the truck.

We wanted the charger to be enclosed in a box, and an almost factory looking orderly install. We found an electronics junction box on Amazon.

We cut a piece of 2x6 to fit the indent in the truck bed wall. Painted it black, added mounting holes to mount it to the truck, mounting holes to mount the box enclosure to the board and alignment pins, so the box would line up on the board.

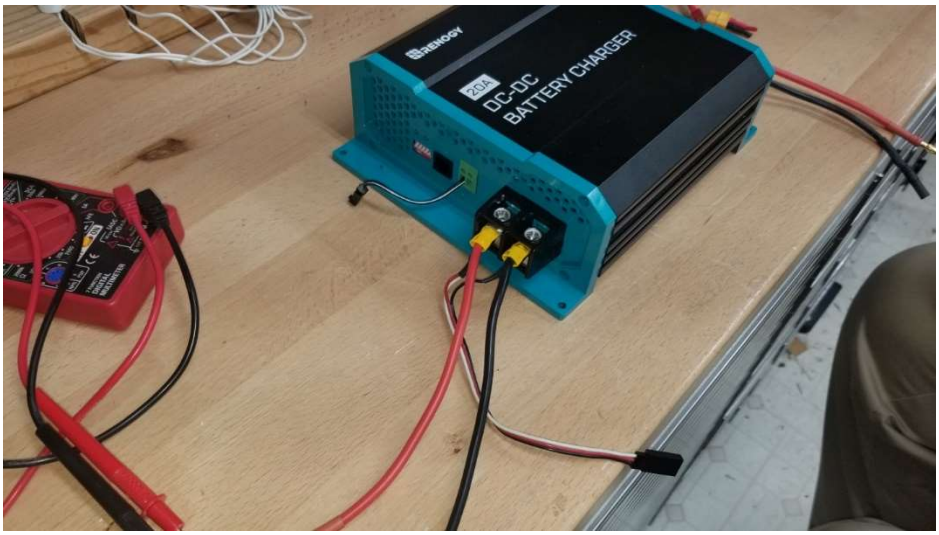


We mounted two small circulation fans to the outside of the plastic box enclosure, and routed vents in the bottom of the box. One fan pulls air in, one fan, blows air out. We cut holes for the wires to come out of the box.

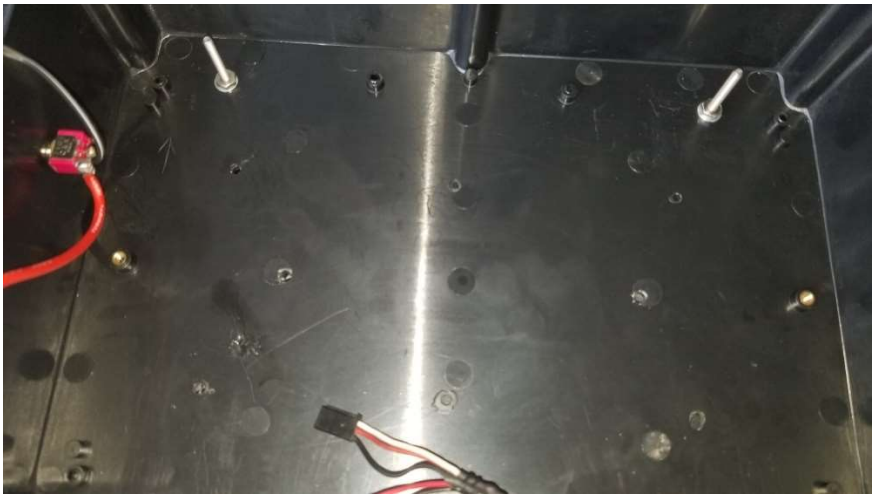


We added a switch to the outside of the box, so that when not towing, the circulation fans won't run.

We wired the DC-DC charger according to instructions with short wires with quick connectors and an inline 25 Amp fuse attached to the output side to exit the box.



We mounted the box to the board. We dipped the mounting screws in Loctite.

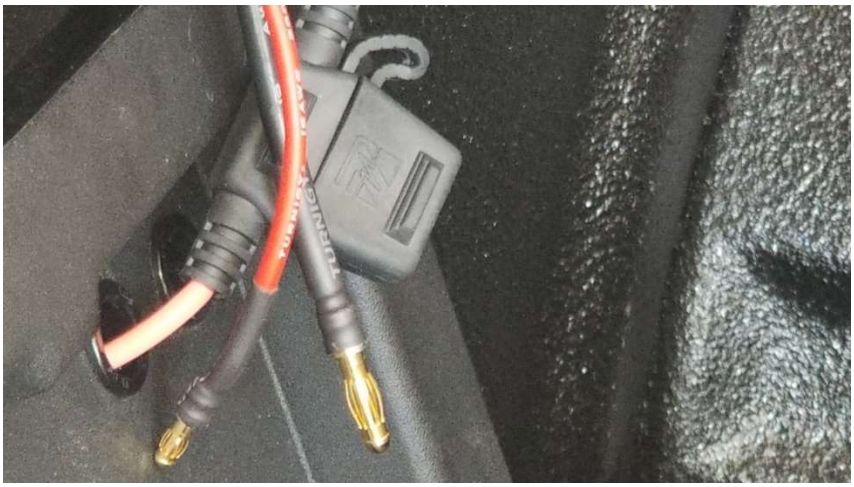


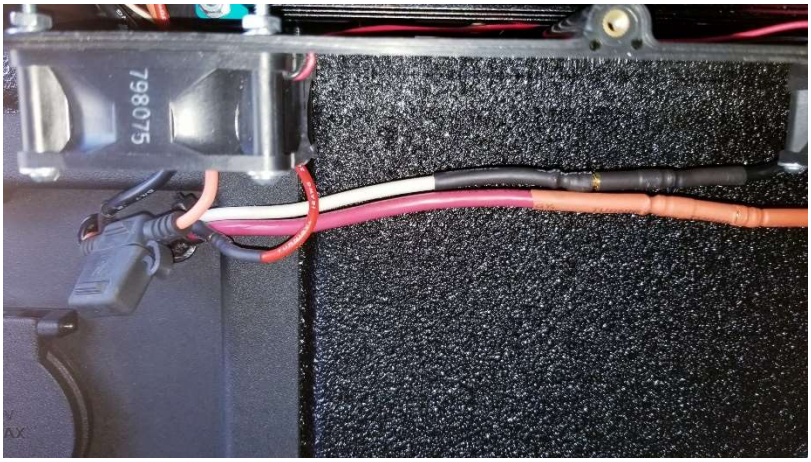
The DC-DC charger was then mounted in the box. (Back of the box with screws to mount the charger)

The charger in the box

We drilled holes in the plastic 400W plug plate and inserted grommets.

Inline fuse on the output side





We attached the longer wires to the short wires and ran them through the grommets in the plastic plug plate and out the bottom of the truck.

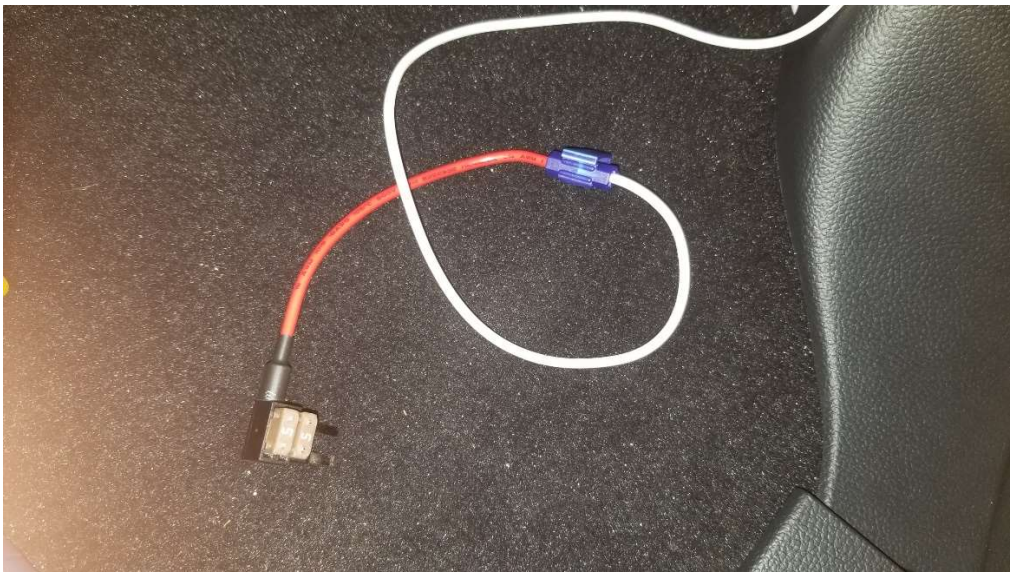
We mounted a Powerwerx PanelPole1 in the bumper for Anderson connectors. There was a perfectly sized hole in the steel, so we only had to drill a hole in the plastic to mount.

We ran the output wires to the Powerwerx connector in the bumper.

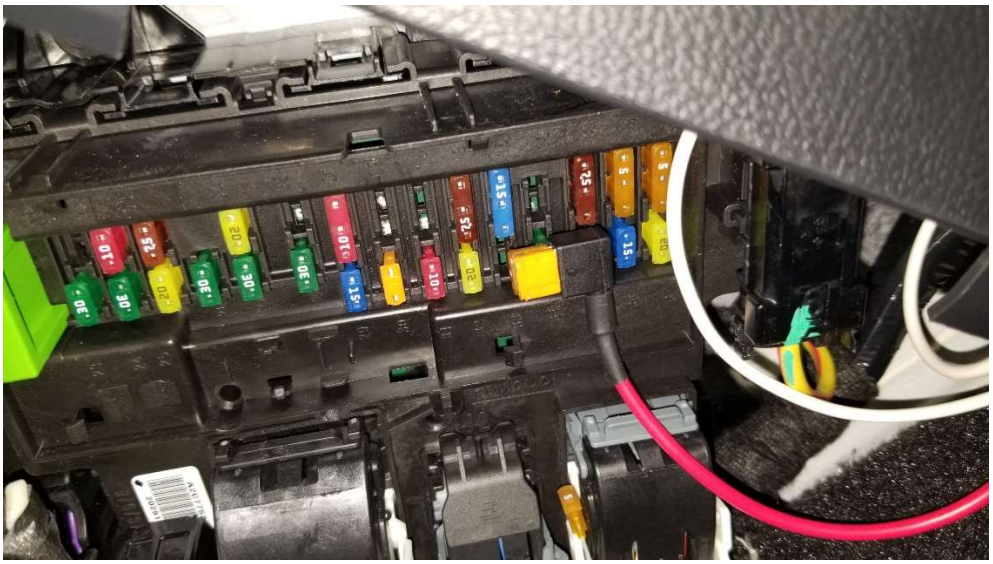
We ran the input wires and the trigger wire along the frame under the truck toward the engine compartment.

We found a rubber plug in the front passenger footwell and ran the trigger wire into the truck by poking a small hole in that rubber plug. We pulled it out from under the carpet and to the interior fuse panel.

We used an add a circuit jumper and attached the trigger wire to a switched fuse slot.



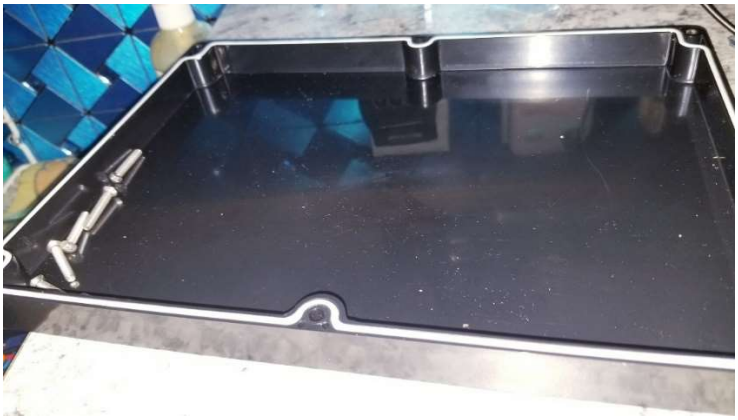
On a 2021 F-150, this was the number 35 slot on the panel inside.



We ran the hot and ground into the engine compartment and attached to the battery positive and negative, with a 30 Amp inline fuse to the hot.

We created a sticker for the box. (The Renogy sticker came with the charger)

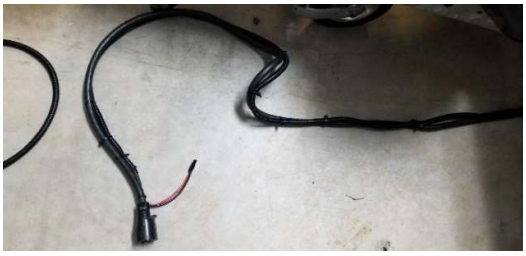
We installed the weather seal in the lid of the box



Attached the lid, with the 6 provided screws. Completed unit in the truck bed

Trailer Connections

We created a wire set to go from the Anderson connector on the truck to the 7-way junction box under the trailer. We zipped tied that along the 7-way with enough loose on the end to attach to the Anderson connector on the bumper.



The junction box on Dutchmen T@Bs is a standard metal junction box with knockout holes. We knocked out one of the additional holes and ran the new wires in with a standard wire connector.

On the trailer side, we went into the junction box under the front of the trailer and disconnected the charge wire from the 7-way wiring and capped it off with shrink tubing. We added the new neutral from the Anderson connector wire to the bundle of neutral wires in the junction box. On my camper, the wires were secured with large wire nuts inside the junction box. Newer trailers may have a row of connections with screw posts and ring terminals.

A list of some of the parts we used is below. Many of the connectors we had on hand in pop's workshop from model airplanes, RC cars, and other toys. We soldered and shrink-wrapped as many connections as possible.

Parts List

Renogy 20 Amp DC-DC Charger
https://www.amazon.com/dp/B07Q5VYPCF/ref=twister_B084QZ6V4C?_encoding=UTF8&psc=1

8 AWG wire – 40 feet **10 AWG wire** – 40 feet **16 AWG wire** – 30 feet

2 Heavy Duty Inline Fuse Holders, 30 Amp Fuse, 25 Amp Fuse
https://www.amazon.com/MUYI-Inline-Holder-Waterproof-Pigtail/dp/B07G7YMJXW/ref=sr_1_9?crid=13ELUIKPNR5OK&dchild=1&keywords=inline+fuse+holder+8+gauge&qid=1626056644&s=automotive&sprefix=Inline+Fuse+Holder%2Cautomotive%2C207&sr=1-9

Zulkit Project Box IP65 Waterproof Dustproof ABS Plastic Electrical Boxes Enclosure Black 11.42 x 8.27 x 3.94 inch
https://www.amazon.com/gp/product/B081LZYNHN/ref=ppx_yo_dt_b_asin_title_o05_s00?ie=UTF8&psc=1

10 AWG Fork Connectors 10 AWG Battery Ring Connectors

Micro2 Add a Circuit (**Note**, there are 5 different fuse sizes available, and 5 different add-a-circuit sizes. Make sure you get the correct one for the fuse you are using).

https://www.amazon.com/gp/product/B083V5DYT6/ref=ppx_yo_dt_b_asin_title_o00_s00?ie=UTF8&psc=1

Small Zip Ties Large Zip Ties
https://www.amazon.com/gp/product/B08K7B6HP9/ref=ppx_yo_dt_b_asin_title_o00_s00?ie=UTF8&psc=1

Powerwerx PanelPole1, Panel Mount Housing for a Single Anderson Powerpole Connector with a Weather Tight Cover
https://www.amazon.com/gp/product/B097QG383J/ref=ppx_yo_dt_b_asin_title_o08_s00?ie=UTF8&psc=1

2 small fans (we had these fans on hand)
https://www.amazon.com/DC-12V-Brushless-Cooling-Fan/dp/B06XQDMMJ5/ref=sr_1_7?dchild=1&keywords=2%22+fan&qid=1626057070&sr=8-7

Toggle Switch (we had this switch on hand)

Various small wires and connectors (we had this on hand)

Shrink wrap tubing, (we had on hand)