

Solar Charge Box v1 Build Guide

Chris Payne 2015

List of Parts

- [x1] 12volt – 12Ah sealed lead acid battery



- [x1] SKIL plastic tool box

<http://www.canadiantire.ca/en/pdp/skil-16-in-tool-box-0581180p.html>



- [x2] 10A DC compressor breaker/reset

<http://www.amazon.com/Compressor-Circuit-Breaker-Overload-Protector/dp/B00EZC7N0E>



- [x1] SPDT 20A rocker switch (for Battery)

<http://www.zorocanada.com/g/Panel-Mount%20Rocker%20Switches%20JW%20Series/00065103/>



- [x2] SPST 15A round rocker switch (for output devices)

<http://www.canadiantire.ca/en/pdp/blue-round-rocker-switch-0203738p.html>



- [x1] 20A SPST rocker switch (for PV)



- [x1] 12 gauge automotive wire/red



- [x1] 8A solar charge controller



<http://www.canadiantire.ca/en/pdp/coleman-8-5-amp-12-volt-solar-charge-controller-0112008p.html>

- [x15] 12 gauge wire terminal ends



- [x1] 12v accessory port (options)



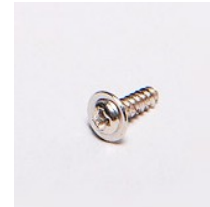
http://www.amazon.ca/Foxnovo-Universal-Waterproof-Motorbike-Cigarette/dp/B00TALKX98/ref=sr_1_4?s=electronics&ie=UTF8&qid=1436802117&sr=1-4&keywords=12v+socket

- [x1] USB car charger – 4port with fuse



<http://www.canadiantire.ca/en/pdp/type-s-md-4-port-usb-plug-12-v-2-4a-0374537p.html>

- [x6] screws M2 x 8mm



http://www.hobbyking.com/hobbyking/store/__8717__Self_Tapping_Screw_M2x8mm_Phillips_Head_w_should_10pcs_.html

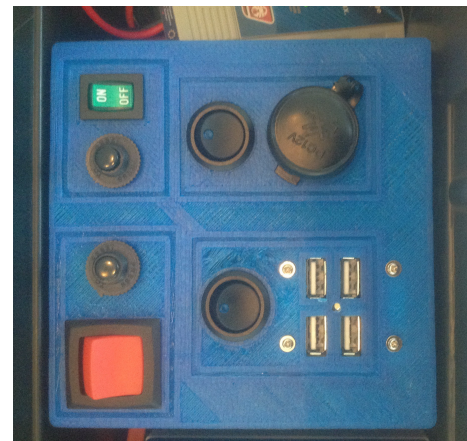
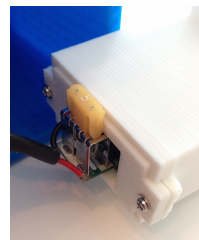
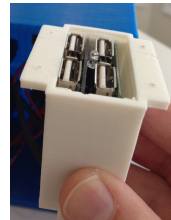
- Heat shrink tubing or electrical tape to protect solder connections
- Soldering iron and lead free solder

Print Instructions

- Layer height: 0.30mm
- Infill: 30%
- Wall thickness: 2
- Print outer case in PLA
- Print USB case in PLA
- Print USB cover in PLA

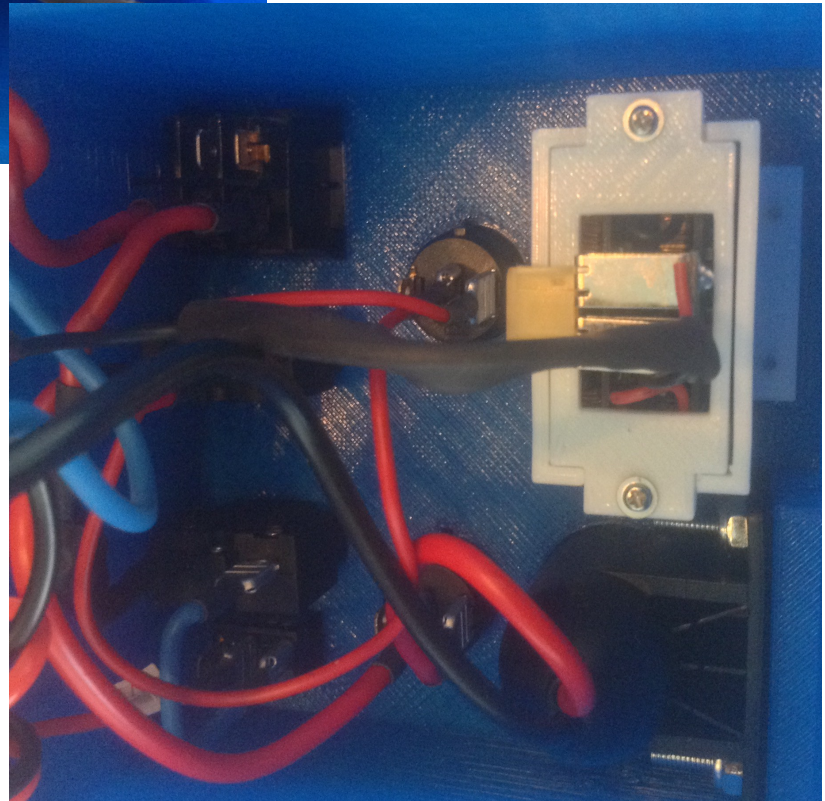
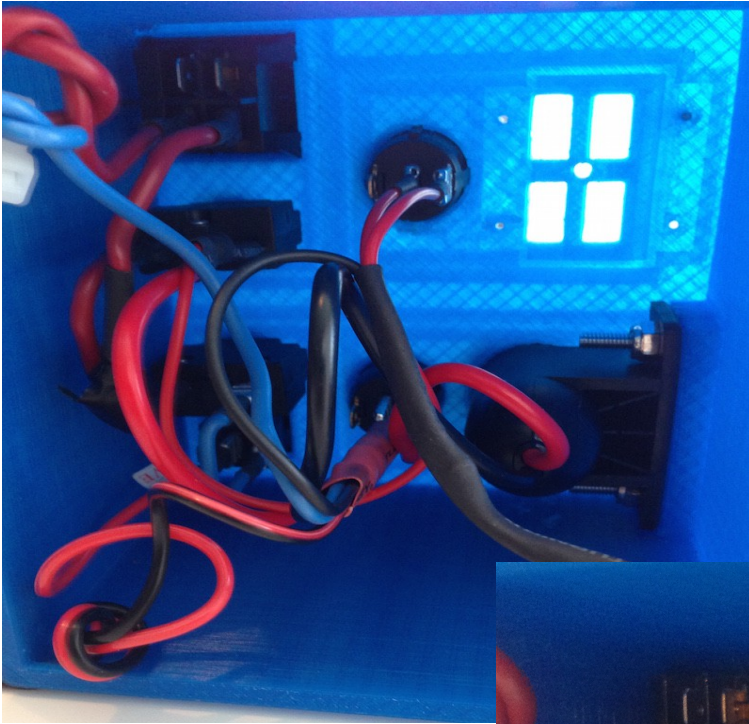
Assembly Instructions

- Locate the USB car charger
- Carefully pry the light-grey backing away from the USB car charger body.
- Carefully remove the internal circuit boards.
- Insert the two interconnected circuit boards into the USB case.
- Install the USB cover on the underside of the USB case. Install 2 screws.
- Install the factory 5A fuse into the USB circuit board.
- Install the DC Circuit breaker #1 and #2 into the case top.
- Install the PV rocker switch into the case top.
- Install the BATTERY rocker switch into the case top.
- Install the 12V power port into the case top.
- Attach with (2) #8 x 1.25" screws and (2) locking nuts.
- Attach the assembled USB case into the underside of the overall case with 4 screws.



Wiring

- Follow the sample wiring schematic to point wire the devices inside the overall case. Use the 12 gauge wire, and wire end terminals to join the devices.
- Note: Large red rocker switch is the master battery and power supply switch point. Connect this switch to the DC circuit breaker on one side. The other side of the circuit breaker will require a Y-connection to share the Positive feed to the battery and also to the positive side of the device paths.
- All common ground wires are to be pigtailed together.



Final installation

- Create the positive and negative connections to connect to the battery.
- Connect the solar charge controller to the PV rocker switch and common ground.

