ProtectCircuit: Assembly Guide

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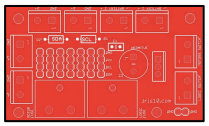
1.0 Required Equipment

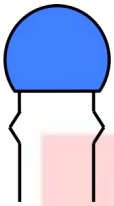
- Soldering Iron
- Solder
- Paper Masking Tape (not plastic)

2.0 Components

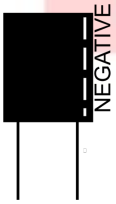


PCB — PCB (image shows the top side)

R1, R2 — 10kΩ Resistor (1% tolerance)



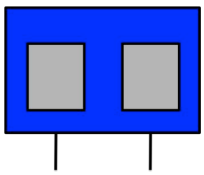
C1 — 10μF Ceramic Capacitor (not polarised)



C2 — 1000μF Aluminium Capacitor
Warning: Polarised

4 pin, 2.54mm (0.1”) pitch header

2 pin, 2.54mm (0.1”) pitch header



JP1 – JP6, JP14, JP15 — 2 pin, 5mm pitch screw terminal

IC1 — LM1084 5A Voltage Regulator

Vertical Mini Blade Fuse Holder

LOGIC FUSE — 5A Mini Blade Fuse (with Lamp)

MOTOR FUSE — 15A Mini Blade Fuse (with Lamp)

Heatsink

Insulator

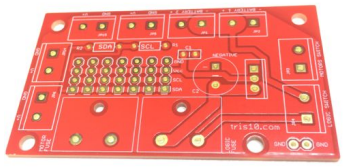
M2 Nylon screw (6mm)

M2 Nylon nut

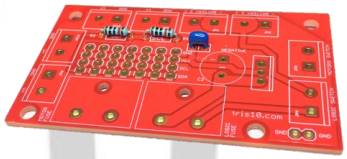
3.0 Instructions

3.1 Soldering

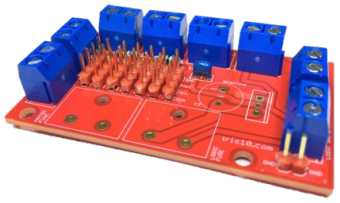
The ProtectCircuit is relatively simple to solder, with the most difficult component being the LM1084 voltage regulator IC. To make it as easy as possible, solder parts in groups, beginning with the shortest and finishing with the tallest (the IC).



1. Start with the bare PCB with the top side (the side with the part outlines) facing up, as shown to the right.
2. Form the leads of the resistors by bending them until they are at right angles with the body of the resistor. Place the resistors in boxes labelled “R1” and “R2”. Place the ceramic capacitor in the box labelled “C1” and push the capacitor in until the kinks in the leads are touching the PCB.
3. Use masking tape to hold the three components in but only place it on the topside of the PCB.
4. Flip the board over and solder the three components in. After flipping the board back over (to the topside), it should now look like the board on the right.



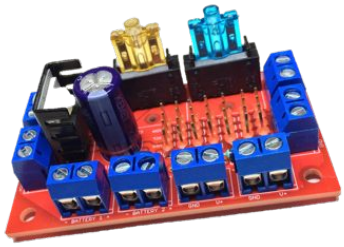
5. With the top of the board facing up, remove the masking tape and place the seven sets of four-pin headers in the header bays. The short side of the pins should be in the board. Use masking tape to hold the headers in the place and make sure it is in fully and straight.
6. Flip the board over and solder one pin of each header. Check that each header is still in correctly and straight, then solder the remaining pins.
7. Remove the masking tape and place the screw terminals in the boxes labelled “JP*x*” on the topside with the connectors facing out. Use masking tape to secure each terminal to the PCB.



8. Flip the board over and solder both pins of each terminal. To keep the terminals straight, push both pins against one edge of the drill holes. The topside of the board should now look like the photo to the right.
9. Remove the masking tape and place the two fuse holders in the boxes labelled “MOTOR FUSE” and “LOGIC FUSE”. Use masking tape to keep the fuse holders in place.
10. Flip the board over and solder in the fuse holders.
11. Remove the masking tape and place the LM1084 voltage regulator IC in in the marked area on the topside of the PCN. The heat tab (back) should be towards the nearest screw terminals.
12. Place the large capacitor in the circle labelled “C2” but **check the polarity is correct**. The negative band of the capacitor (“- -“) should be above the “-“ and “NEGATIVE”

on the PCB. Use masking tape to keep the components in place.

13. Flip the board over and solder in the IC and capacitor. The ProtectCircuit is now fully soldered. If you had problems, just use solder wick to remove the solder and try again.
14. To attach the heatsink, put the insulating pad inside the heatsink and align the drill holes of the heatsink, pad and IC. Hold the nut between large capacitor and IC and screw the M2 screw through the heatsink, pad and IC and into the nut.
15. To allow the board to function, put the 5A fuse in the fuse holder marked “LOGIC FUSE” and the 15A fuse in the fuse holder marked “MOTOR FUSE”.
16. The ProtectCircuit is now fully assembled and should look similar to the photo on the right.



Total Solder Joints: 61