

## Fuser- 6 Kit Assembly Instructions

### Revision History

29 April 2021                      Document updated with new PCB  
 12 May 2021                      Packing list amended

### Packing List

It's a good idea to check that you have all the parts before you get started:

Item	Quantity	Comments
Printed Circuit Board	1	
PowerPole shells (Red)	6	
PowerPole shells (Black)	6	
PowerPole Contacts	12	PCB type
Resistor	1	620 $\Omega$ R1
Bi colour LED	1	D1
Fuse contacts	12	
Fuse 25 Amp White	3	
Fuse 5 Amp Brown	3	

#### Optional Enclosure

Item	Quantity	Comments
Front panel	1	Acrylic with transit protective film
Black ABS box	1	Self tapping screws inside box (4 off black)
M3 metal screws	9	
M3 Nylon Nuts	9	
M3 10mm spacers	9	

If anything is missing, just get in touch for help.

### Spotted a mistake or need help?

Please let us know if you need help! Email [support@sotabeams.co.uk](mailto:support@sotabeams.co.uk)

### Tools needed

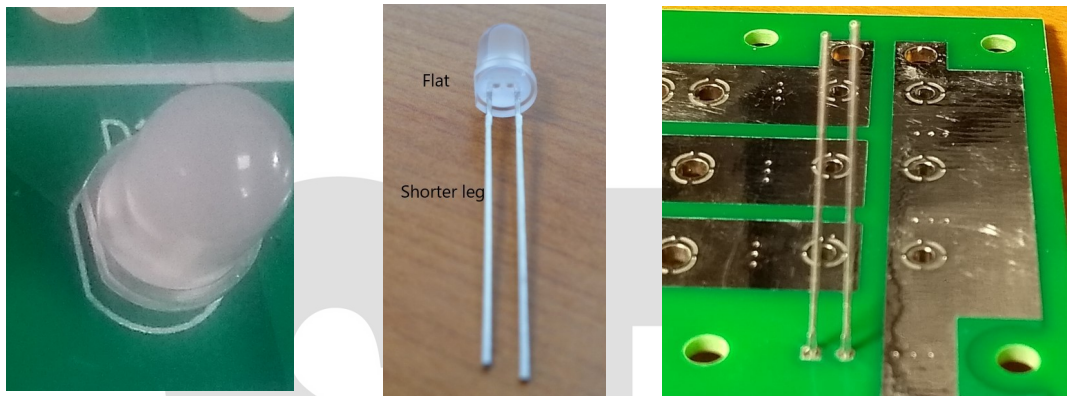
- 1 Soldering iron (50 Watts with medium/large bit) and solder
- 2 Small screwdriver (cross head)
- 3 Long nosed pliers
- 4 Wire cutters

## Assembling the PCB

1. Fit the 680 Ohm resistor (R1) onto the PCB. Solder it carefully, as it is easy to bridge the tracks from the pads.

2. Fit the LED (D1) onto the PCB.

Ensure the LED is fitted with the **correct polarity**. The LED has a flat side which lines up with the white outline on the PCB. The flat side has the shorter leg / lead.

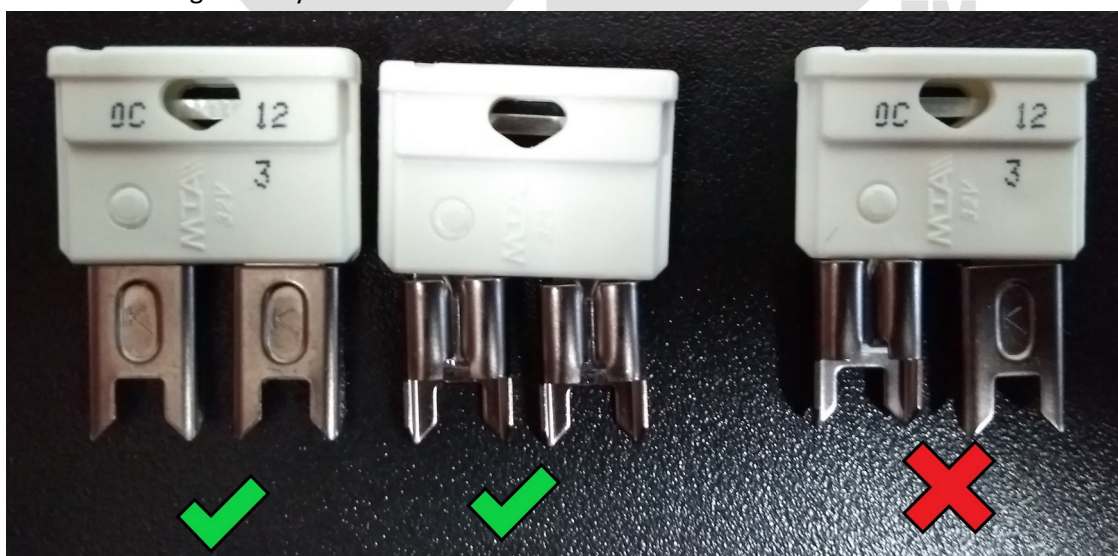


Before soldering, ensure the shorter leg of the LED is nearest to the centre of the PCB.

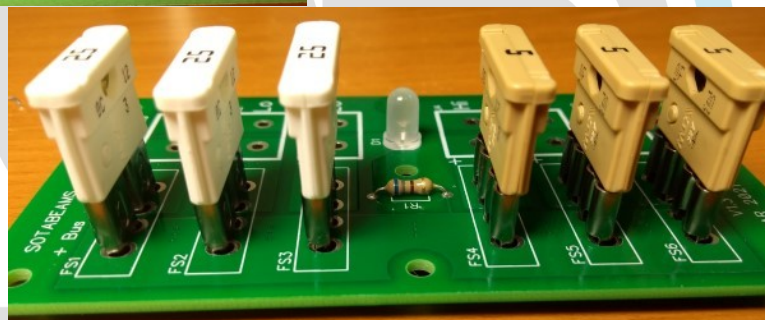
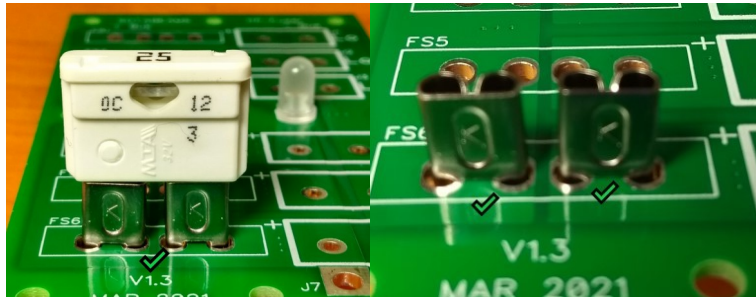
**Top tip** Solder one leg first and check LED is flush with PCB. If it is not flush, the LED can be aligned by re-heating this joint and realigning the LED.

Using wire cutters trim the excess legs / leads of both the LED and resistor.

3. Slide the fuse contacts onto the fuses. Make sure that the open end of the contact is the same side on each leg of every fuse.



4. Insert all six fuses into the PCB with the open end of the contact towards the top of the PCB.



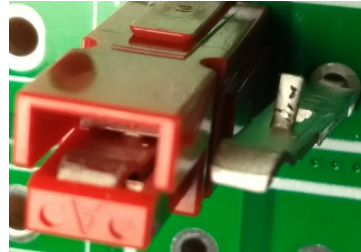
Invert the PCB onto a flat firm surface. Check that all the fuses are all straight.

5. Solder the fuses. We advise initially soldering one pin of each fuse to ensure the connector is flush with the PCB, then when it is flush solder all 4 pins. Make sure that each joint is well heated and use enough solder to ensure a good joint. However, do not try to run excess solder down into the plated-through holes or you may solder the fuses into the holders.

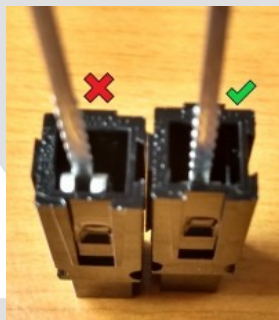
Bridging the track spokes is not a problem – it reduces the resistance. The spokes are there to help you get the board/pins up to temperature for soldering.

### Install the Powerpole connectors

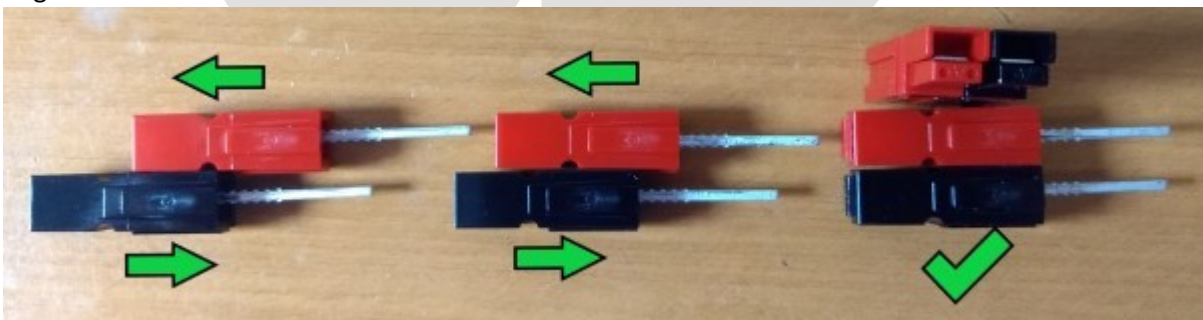
5. Slide the pins into the plug shells. This is best done with long nose pliers. They click into place when seated correctly. **Important Note** that they only go in one way – see photos.



Ensure the pin is fully engaged. This can be felt as two clicks if pushing gently. Note that you may need to move the pliers back a bit to get the second click. Visually check that the pin is fully inserted. The shoulder of the pin should be a few mm below the end of the shell.



6. Pair up, the shells as shown, one black and one red. Slide the red along the black to lock the two together.



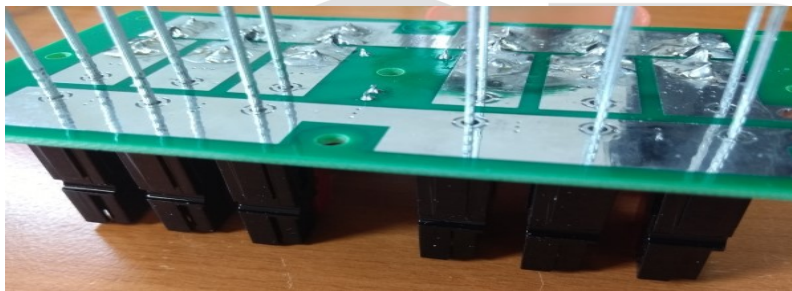


The shells will pair up in many ways so make sure that you get them right – as shown in the photograph. This is the “standard way” of using PowerPole connectors for ham radio use.



7. Insert the pairs into the PCB. Make sure that they are all the same way round and that the red shell is in the positive position as marked on the PCB.

8. Place the pcb on a flat surface making sure that the shells are sitting snug against the PCB and that all the pins are upright and parallel.



9. Solder one of the pair of pins check the shell is flush with the board. If not reheat the solder and push the shell flush with the PCB. Solder the other pin. Bridging the track spokes is not a problem – it reduces the resistance. The spokes are there to help you get the board/pins up to temperature for soldering.

10. Cut the surplus parts of the pins off – do not close-crop them – leave the solder intact.

11. Perform a visual inspection of all solder joints.

This completes the PCB assembly.

## Testing the PCB

T1. Using an Ohmmeter, check that there is no short circuit across the input connector

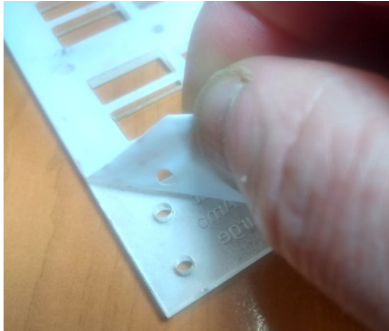
T2. Connect a power source to the input and check that the LED lights green. Reverse the connections and check that the LED shows red.

This completes the testing.

## Installing the optional mounting kit and enclosure

E1. Mount the 9 nylon spacers on the upper side of the PCB with the nylon nuts on the underside. Do not over-tighten the nuts – nylon threads are easy to strip.

*E2. Remove the protective film from the laser-cut top panel (may have film on one side or both).*



*E3. Clean the panel with a soft cloth and plain water. Do not use any solvents.*

*E4. Remove the fuses from the assembled PCB.*

*E5. Put the front panel over the Powerpoles and make sure that it sits down on the spacers. This can be tricky. the Powerpoles have “shoulders” and will need to be moved slightly to get the cover to sit properly. **Do not force the cover down.***

*E6. Once the cover is down on the spacers, move the Powerpoles a little to get the mounting screw holes to line up. This can be tricky – patience is required. Exact alignment is not needed.*

*E7. Screw the cover to the PCB spacers using the nylon screws. Do not over-tighten the screws – nylon threads are easy to strip.*

*E8. Clean off any finger marks from the underside of the panel.*

*If you are going to screw the box to a wall, now is a good time to do that. The box has some indents in the back which will act as handy drilling points. Drill clearance holes carefully through the box first. I would recommend using 4 mounting screws.*

*E6. Finally attach the front panel of the Fuser-6 into the box using the four black self-tapping screws.*



*Your Fuser-6 is now ready to use.*

### Using your Fuser-6

It's pretty straightforward to use these units. We recommend putting the highest current device that you use, on the socket next to the input. The three sockets labelled "Lo" are suitable for loads of up to 10 Amps. The total current through the Fuser 6 should be limited to 30 Amps. Remember that your radios only draw significant current when transmitting.

The supplied fuses can be replaced with different values if you wish.

