The Phonepole Mini

a Powerpole DC Distribution System

with a built-in USB phone charger

The Phonepole was designed to meet the needs of portable operators who use a mobile phone as part of their standard operating set-up. It could be that you use your phone to check the DX cluster, as a data-mode terminal, for self-spotting or even for navigation but whatever the use, you will need it to have a charged battery.

It's very frustrating to pull your phone out of your pocket only to discover that its battery is nearly flat. The Phonepole allows you to use your high-capacity radio battery to charge your phone. But there's more as the Phonepole includes a handy Powerpole splitter so that, for example, you can connect your battery to your radio and an amplifier as well as charging your mobile phone.

Building the PHONEPOLE is easy and fun. It will take about 45 minutes to build and is suitable for a beginner.

Revison History

1-Sep-15   First issued

PHONEPOLE Packing List

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

Designator	VALUE	NOTES
C1, C2	10uF	Yellow tantalum bead capacitors
R1, R3	2k2	2,200 Ohm resistors Markings red, red, red
R2, R4	3k3	3,300 Ohm resistors Markings orange, orange, red
J1	USB socket	
U1	5 Volt	IC voltage regulator
	Heatsink	black finned metal
	red Powerpole connector shells	x 3
	black Powerpole connector shells	x3
	Powerpole connector contacts	x6 Special PCB contacts
	PCB	

Item	Number	Comments
ENCLOSURE KIT		
Laser cut front panel	1	
Black plastic box	1	
Nylon hex spacers	6	
Nylon screws	6	
Nylon nuts	6	
Aluminium foil (self adhesive)	1	to put in the bottom of the box

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

Richard@sotabeams.co.uk

Errata
None

PHONEPOLE Instructions

The PHONEPOLE kit is easy to make and you will end up with really useful addition to your portable station.

Step by step instructions together with photographs will make it easy to build your Phonepole. It will take around 30 minutes of work.

Spotted a mistake or need help?

Please let me know!

Email Richard@sotabeams.co.uk, telephone +44 (0) 7976 688359

Building tips

Use a soldering iron with a fine tip (e.g. 1.2mm) and a fine solder (e.g. 0.7mm).

Pro-tip. Try to install all the resistors the same way round – so the bands always read the same way.

The resistors install with the leads bent at the resistor body. If done correctly they fit perfectly!

All the components except U1 are installed on the side of the board with the silk screened lettering.
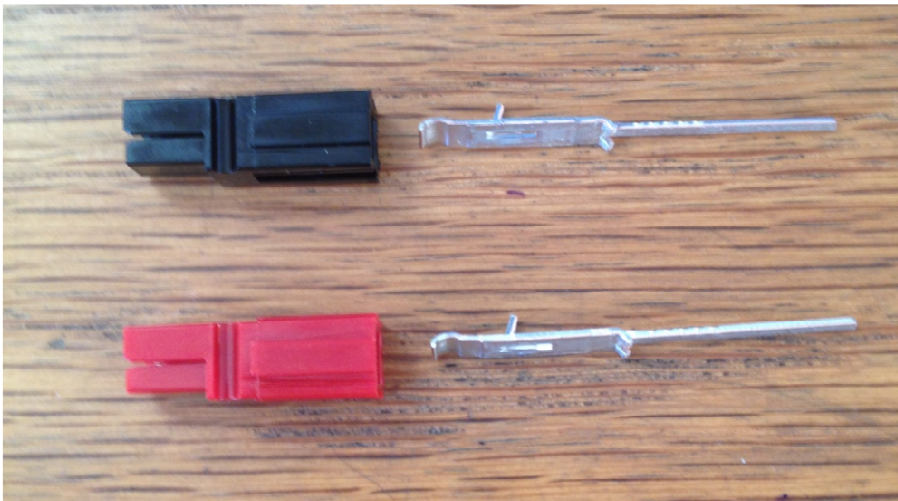
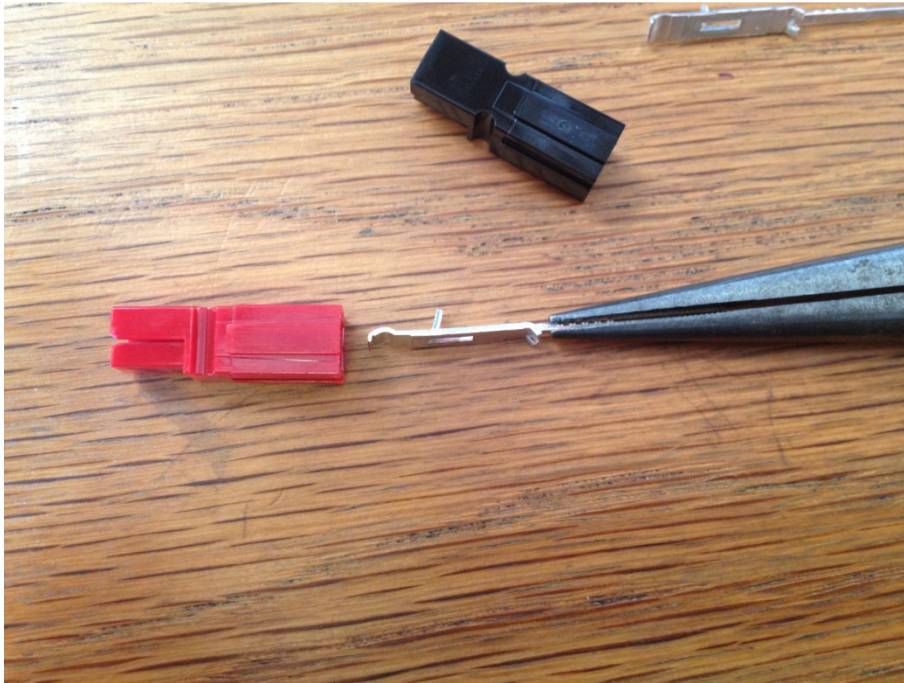Use the list above to identify the components.

Only solder a component when you are sure that you have inserted the correct one.

Once soldered, cut the surplus lead.

Assemble and install the Powerpole Connectors

1. Slide the pins into the plug shells. This is best done with pliers. They click into place when seated correctly. Note that they only go in one way – see photo.
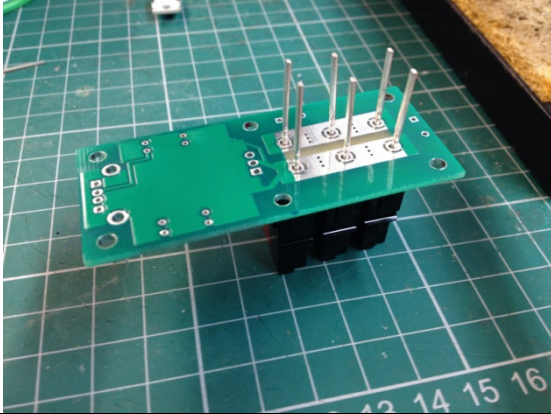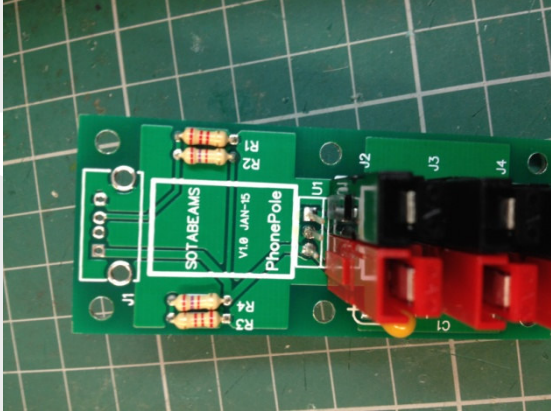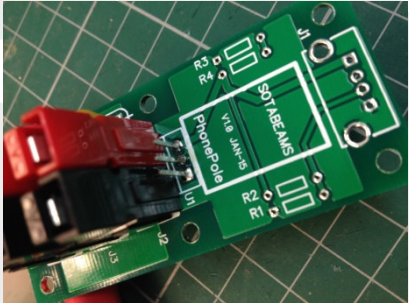
2. Pair up, the shells as shown, one black and one red. The shells will pair up in many ways so make sure that you get them right – as shown in the photograph. This is the "standard way" of using Powerpole connectors for ham radio use.
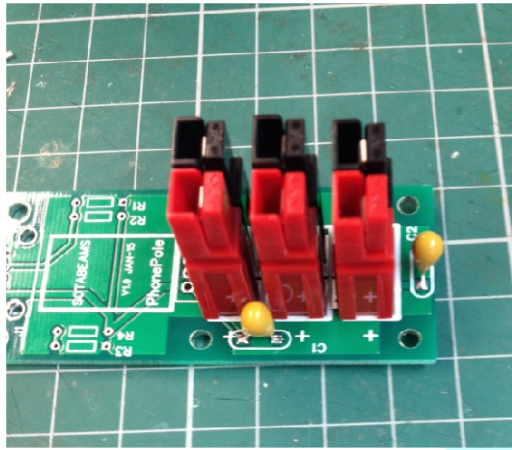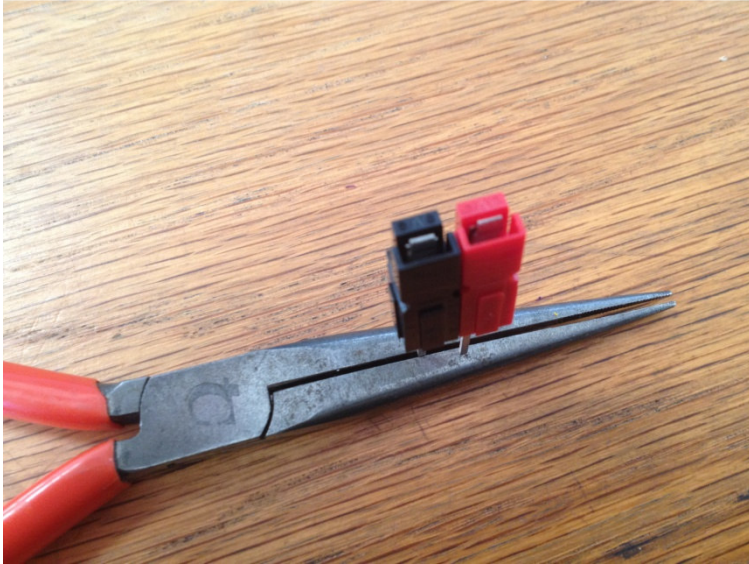
Designator	Value	Notes	Tick when done
J2, J3, J4		Install the Powerpole connectors in the correct position on the PCB. Make sure that the red connector is on left side of the board; marked +.	
		Turn the board over and place it on a flat surface before soldering the connectors in place. The connectors must sit square in the board and flush with it. You will need a fairly powerful soldering iron to solder the Powerpole connectors in place.	

Designator	Value	Notes	Tick when done
		Trim the leads.	
R1, R3		Install the 2200 Ohm resistors (red, red, red)	
R2, R4		Install the 3300 Ohm resistors (orange, orange, red) Note: photo shows different value resistors used in prototype.	
U1		Bend the leads of U1 at right angles to the case of the device as shown (must be the right way round!!)	
		Insert U1 into the heatsink. Push in firmly (must	

Designator	Value	Notes	Tick when done
		be the right way round!!) NOTE: supplied heatsink may look different 	
		U1 can now be installed on the underside of the PCB. The heat-sink must sit tightly against the PCB and must be perfectly flat.	
		It is easiest to solder the leads of U1 on the upper side of the PCB using a fine soldering iron. Don't trim the leads as they act as useful test points.	
C1, C2		Install the tantalum bead capacitors. The long lead is the positive one and should go through the square pad. The marking for C1 may be confusing but the longest lead goes into the hole closest to J2.	

Designator	Value	Notes	Tick when done

DO NOT INSTALL THE USB CONNECTOR YET.

This is a good time to test the PCB.

First perform a detailed visual inspection of the PCB. Things to check are that the connections for J2, J3 and J4 have flowed properly and that the pins of U1 are properly soldered with no bridges.

Next apply a fused/current limited 12 Volt supply via one of the Powerpole connectors.

Check that there is 12 Volts on the other two Powerpole connectors.

On the top side of the board, carefully check the voltages on the pins of U1. On the top side of the board (the one with the writing on it) the right-hand pin should have 12 Volts on it. The middle pin, 0 Volts and the left-hand pin 5 Volts (+/- 0.1 Volts).

Next check the Voltages on the holes where the USB connector will be installed – do not install it yet!

On the hole with the square pad (left-hand side) 5 Volts (+/- 0.1 Volts)
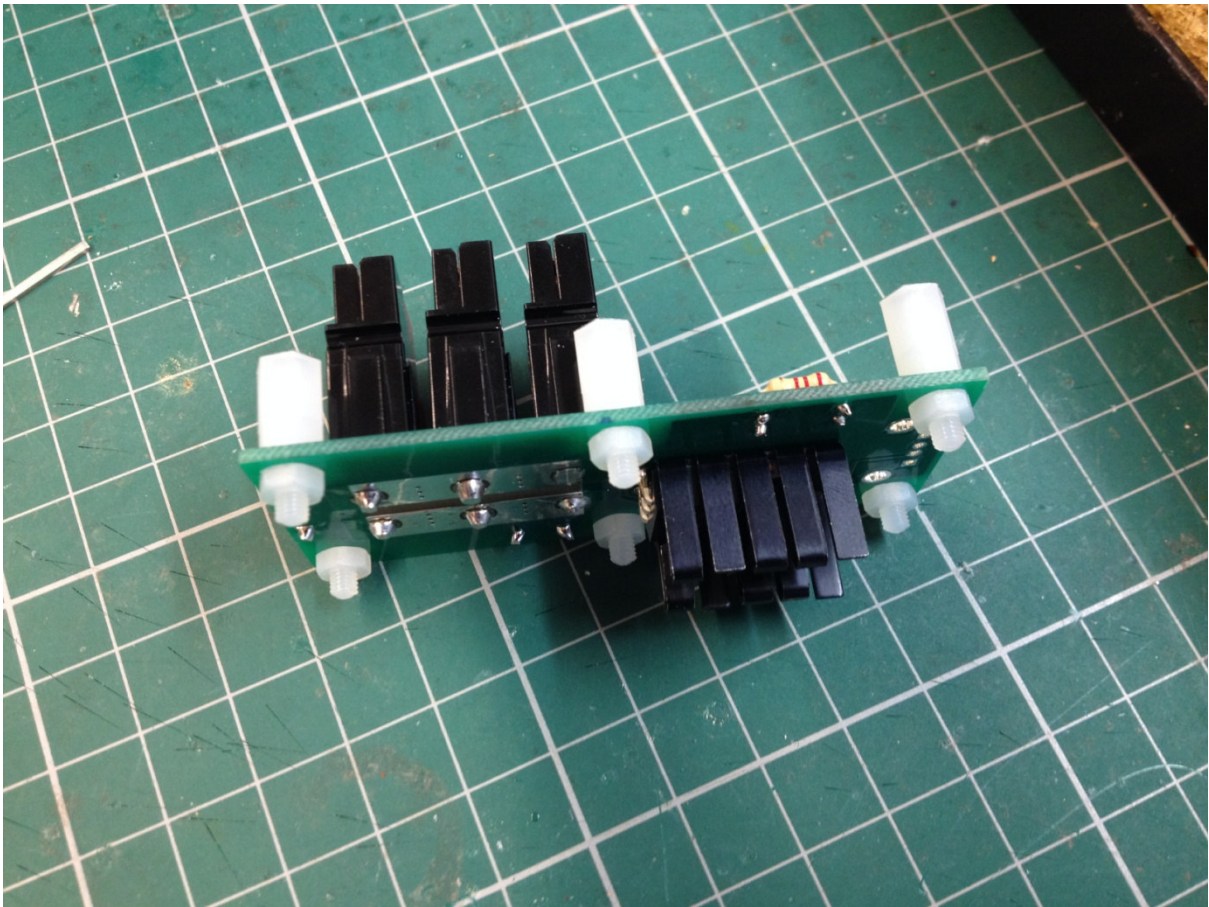
Both of the middle pins 2 Volts (+/- 0.1 Volts)
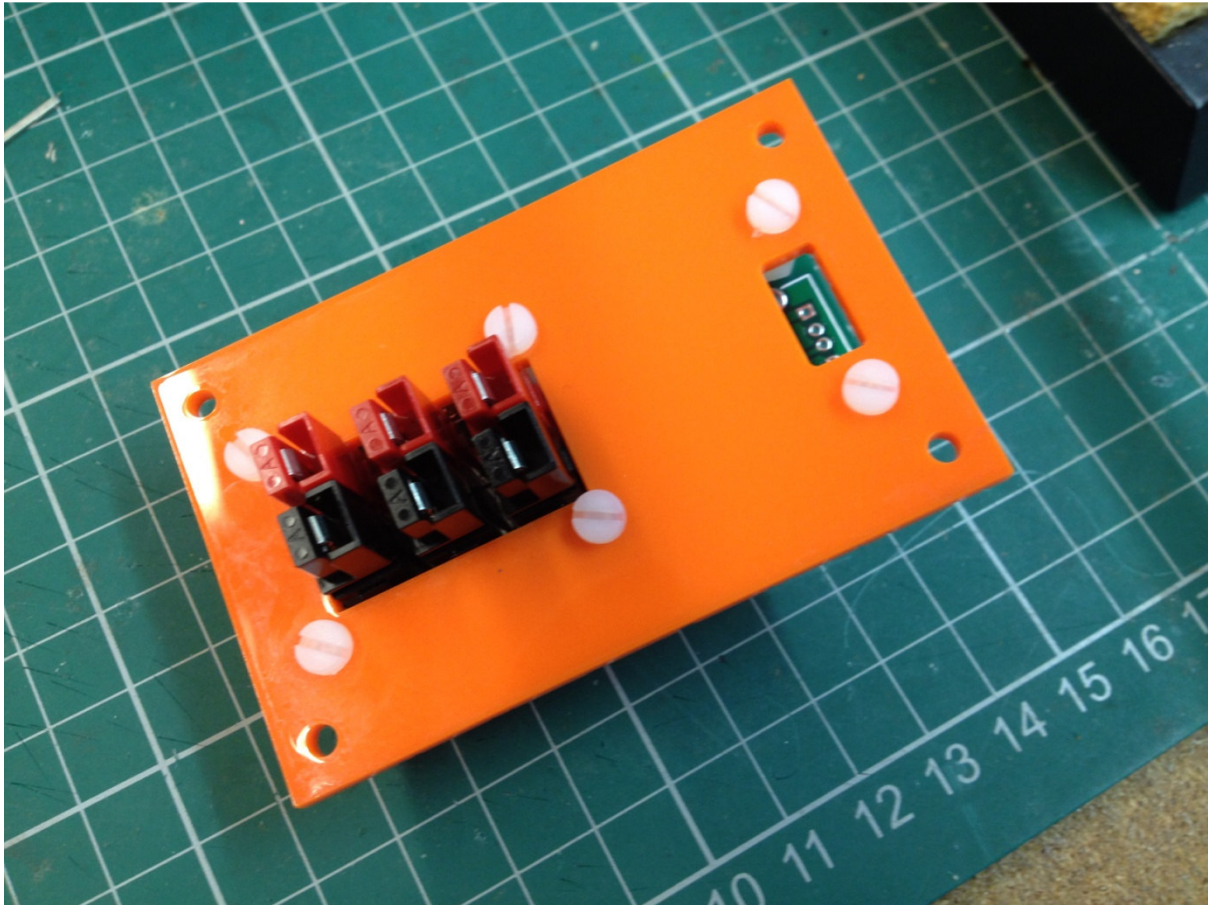
Right-hand pin 0 Volts.

Mounting Instructions

Insert the six nylon hex spacers into the PCB so that the screw thread is on the underside of the PCB.

Screw the nylon nuts onto the spacers – do not over-tighten.
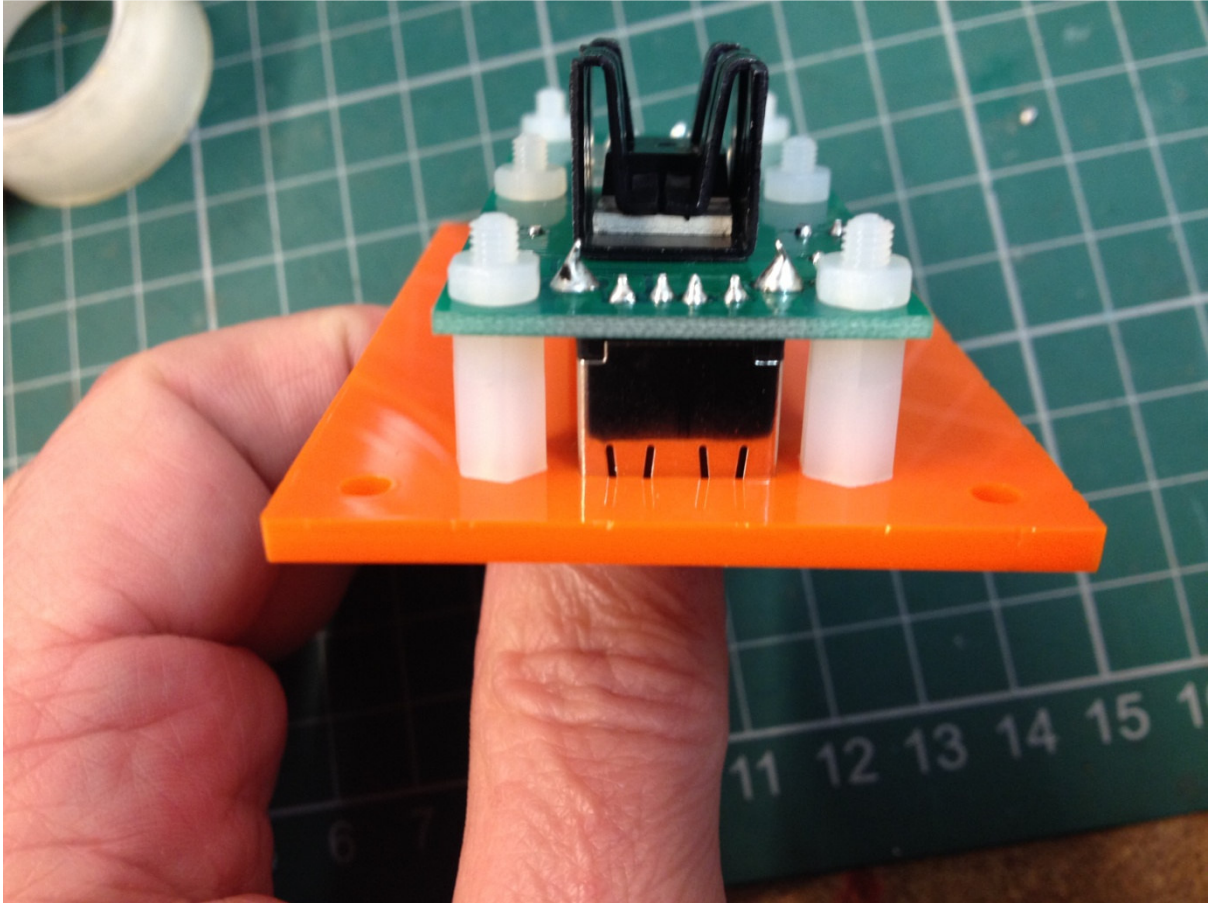

Attach the PCB to the laser cut panel using the six nylon screws – do not over-tighten.

Bend the mounting lugs on the USB socket inwards slightly and insert it through the slot on the front panel. Open out the lugs and carefully push it so that he lugs and pins go through the PCB. It should be a perfect fit. If it does not fit, you have probably put it in the wrong way round!

Remove the lid of the plastic box (not needed). Cut the self adhesive aluminium sheet and stick it in the bottom of the box.
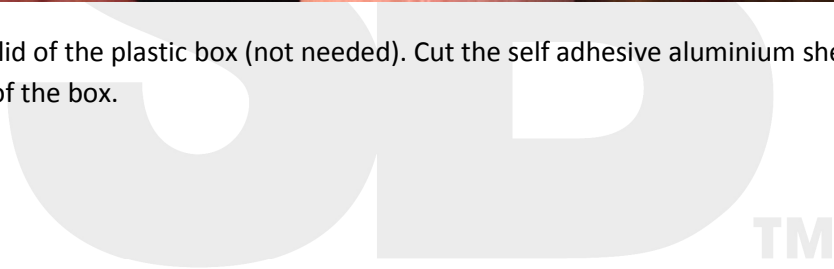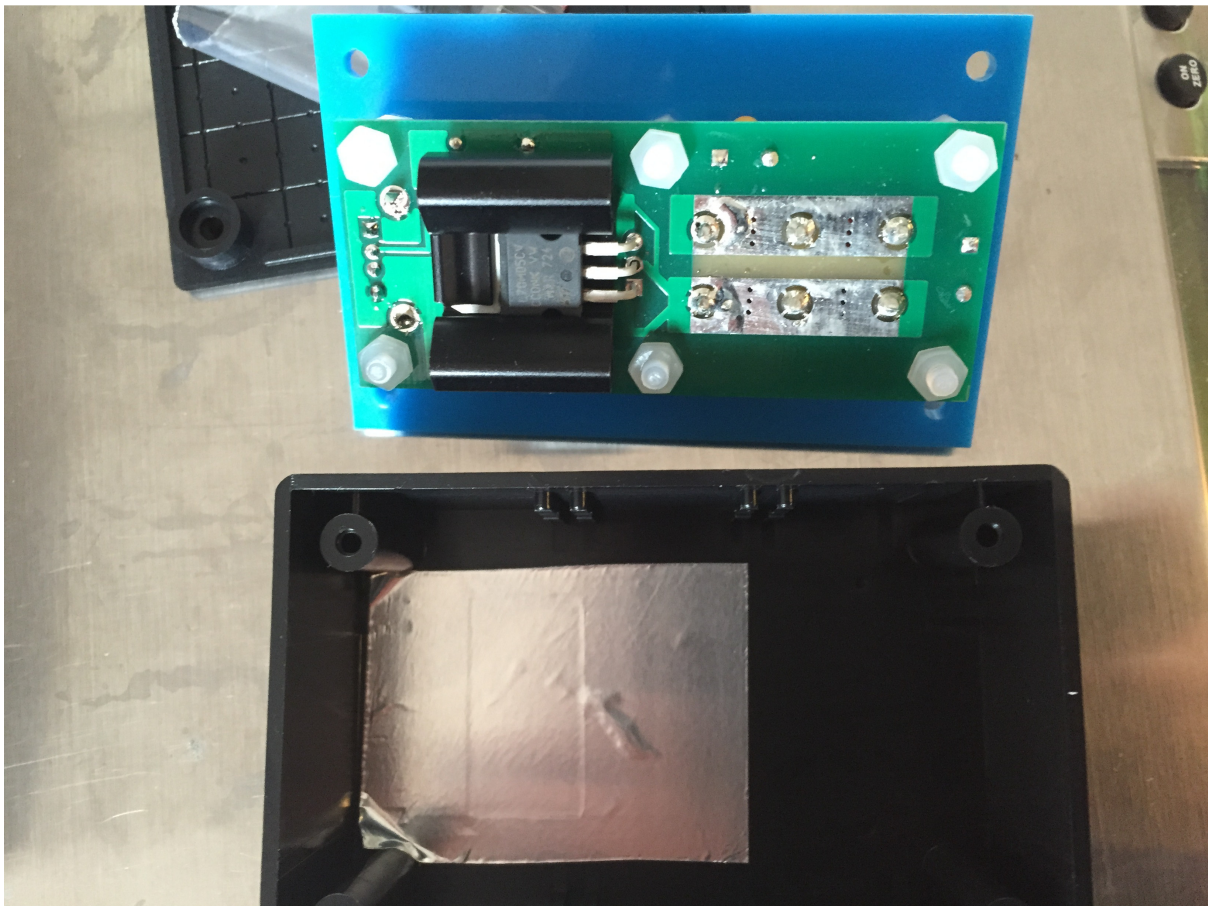
Insert the Phonepole Mini unit so that the heatsink sits over the aluminium sheet. Screw down with the screws provided in the box.

Fault finding

The most likely problem on this board is a poor solder joint, Inspect your soldering carefully.

If you get stuck, send me an e-mail for help! Richard@sotabeams.co.uk