



THONK SYNTH T08 DOUBLE BUBBLE

DUAL MULTI MODE FILTER

Eurorack DIY Kit
Build Instructions



OVERVIEW

For the most recent version of this document please visit

<http://thonk.co.uk/bubble>

This document should be used in conjunction with the relevant user manual.

All Thonk kits are sold under our standard Terms and Conditions -

<http://www.thonk.co.uk/faq/>

DIY INSTRUCTIONS

This document gives detailed instructions that assume you have purchased a complete kit from www.thonk.co.uk. It also assumes no previous knowledge of electronics. To learn to solder try http://youtu.be/I_NU2ruzyc4 and the **Adafruit guide to excellent soldering** – <http://bit.ly/1177tF4>

Watch and understand that whole YouTube video! If you're not achieving the results shown in the video then you need to buy new tools or seek advice.

You will not end up with a working module otherwise.

TOOLS REQUIRED

Solder, soldering iron, diagonal cutters AKA snips AKA side-cutters, masking tape. A Digital Multimeter is always helpful for checking for bad solder joints and continuity. Thonk sell a range of inexpensive tools here -

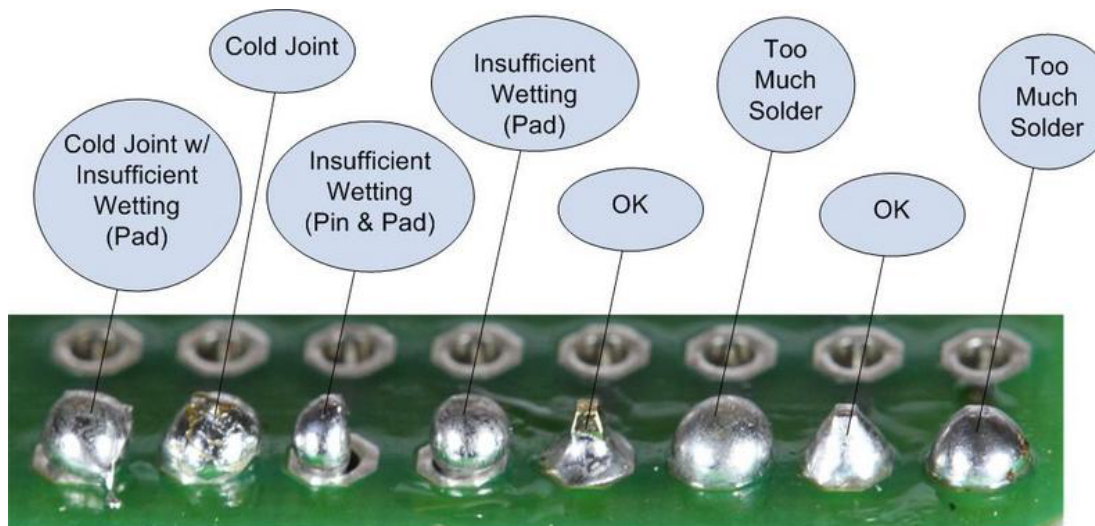
<http://bit.ly/1jxqF3n>



SOLDER JOINTS

Your solder joints should look like those shown as 'OK' below, they should have that neat conical shape on **BOTH sides of the PCB**. If they don't look the same on both sides then stop! Work out why from the soldering guides linked and don't continue until you are getting those results.

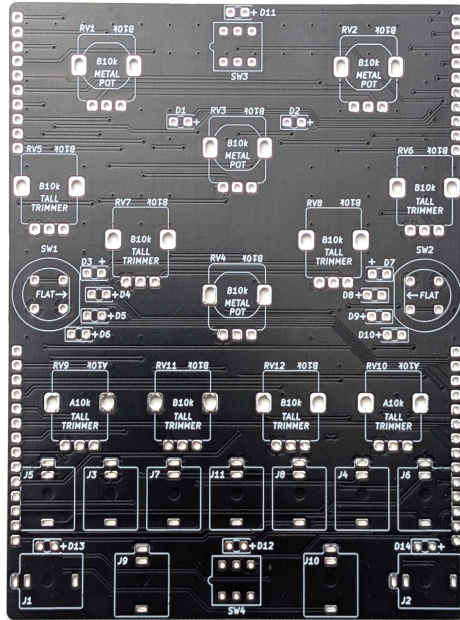
This isn't just OCD talking, you are very likely to end up with a destroyed, damaged or defective unit if you're not hitting that standard.



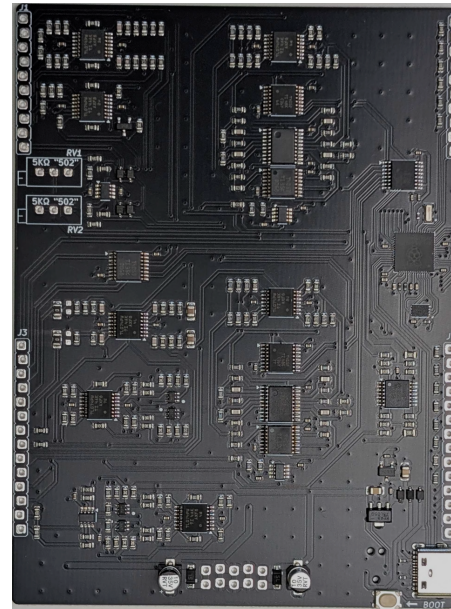
This photo is from the [Adafruit guide to excellent soldering](http://adafruit.com/guides/quickstart/soldering) and is reproduced under an Attribution-Sharealike creative commons license - <http://creativecommons.org/licenses/by-sa/3.0/>



BUILD INSTRUCTIONS



Control Board



Main Board

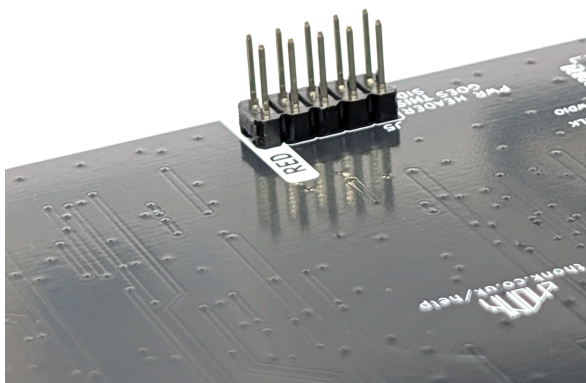
There are two PCB's included in your kit, these are referred to as the Control Board and the Main Board.

The pcb's will come wrapped together in some bubble packaging which you may want to save for a step later on in this guide.

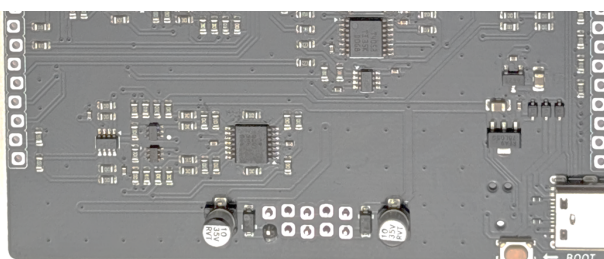


1.

First take the main board and place the 2x5 power header on the rear of the board (the side without the SMD components).



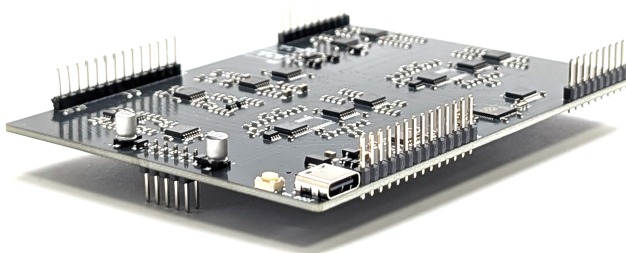
The header should stay firmly in place but you can check that this is soldered flush to the board by first soldering one joint then reflowing and adjusting where necessary.



2.

Continuing with the main board, take the two 1x10 pin headers and two 1x14 pin headers.

Place these headers on the opposite side of the board to the power header and on the same side as the pre soldered components as pictured.



Solder all four headers ensuring they stay flush to the board.

Again the headers should stay securely in place but follow the above method soldering one pin first if necessary.

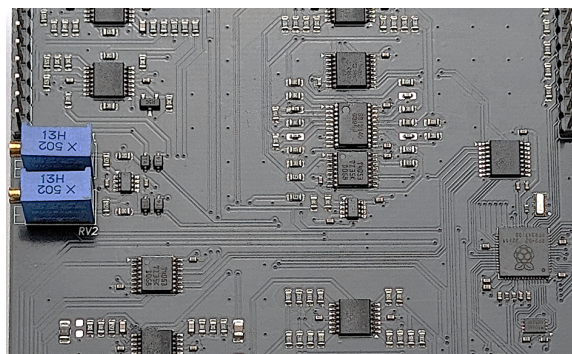
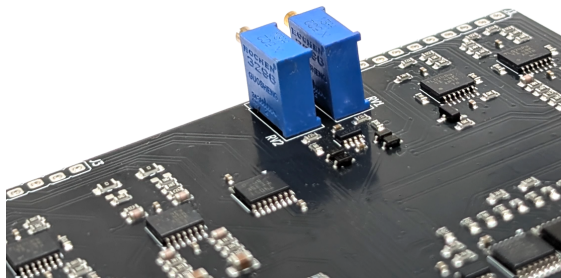


3.

Continuing with the main board, take the two 5K trimmers and place them onto the board in the positions pictured.

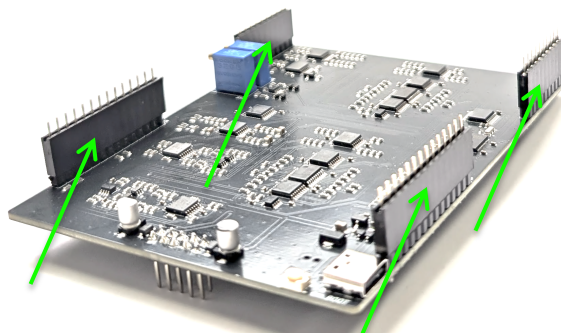
These are placed on the same side as the SMD components and single row pins soldered in step 2.

Ensure the trimmers are soldered flush to the board and follow the footprint with the screws lining up on the edge of the PCB.



4.

Take the two 1x10 and two 1x14 pin sockets and insert them onto the pin headers from step 2 as pictured.

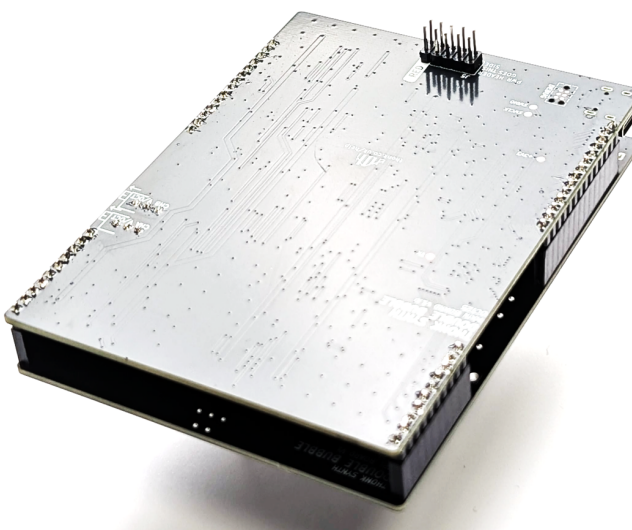


5.

Next take the control board and place it together with the main board inserting the pins from the socket headers into the pads on the control board.

DON'T SOLDER YET

Ensure the boards are the correct way round as pictured with the power header facing the rear of the module as pictured and with the text on both PCB's facing the same direction.

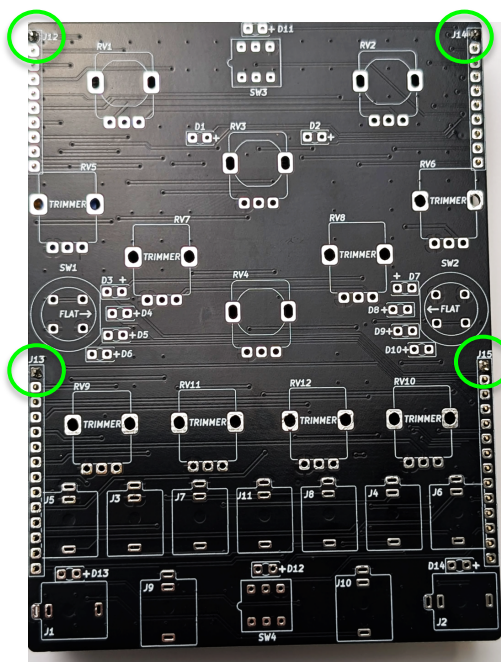




6.

Solder one point on each socket header. Check the headers are flush to the board and the boards are level with each other.

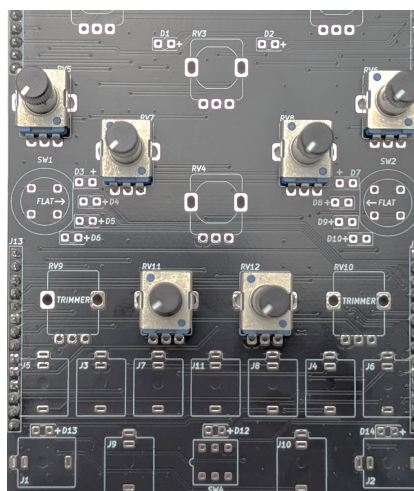
Reflow the soldered points and adjust if necessary before soldering all remaining points to secure the headers in place.



7.

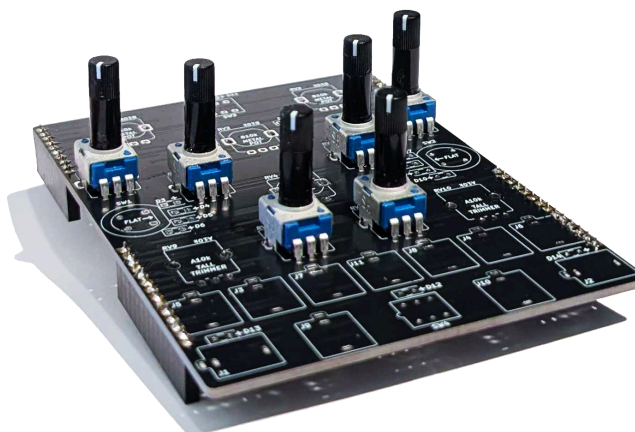
Carefully detach the two boards. Locate the x6 Blue B10k trimmer pots.

There are two different values of blue trimmer pot provided in this kit. Ensure these are the correct B10K pots before placing them in the positions shown.



DON'T SOLDER YET

Resume soldering at step 14

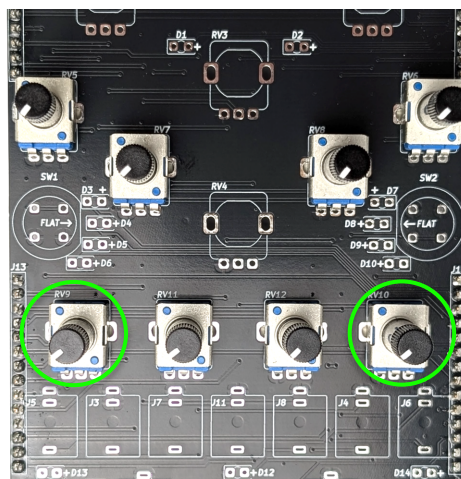




8.

Locate the x2 Blue A10k trimmer pots.

Ensure these are the correct value before placing them in the positions shown on the control board.



DON'T SOLDER YET

Resume soldering at step 14



9.

Locate and place the 2x smaller black buttons into the positions pictured paying close attention to the polarity.

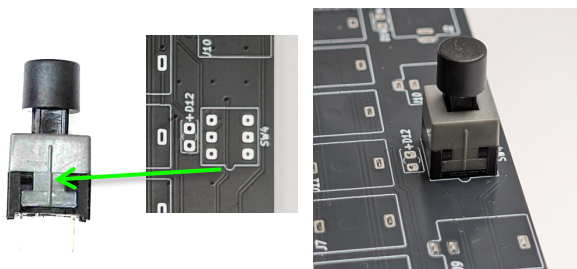
CHECK ORIENTATION

These components are polarized and must be placed as pictured with the notch on the switch body lining up with the PCB footprint.



DON'T SOLDER YET

Resume soldering at step 14



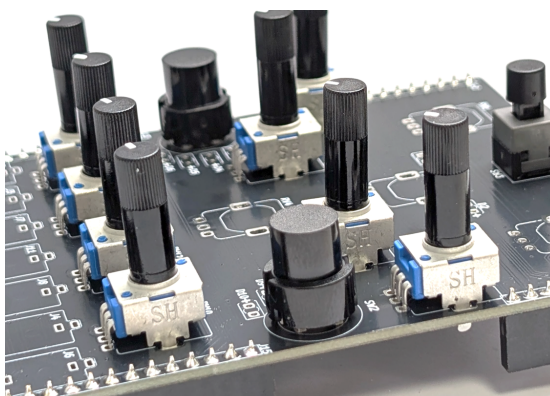


10.

Locate and place the 2x larger black switches into the positions pictured paying close attention to the polarity.

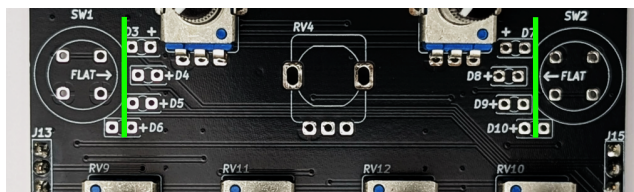
CHECK ORIENTATION

These components are polarized and must be placed as pictured with the flat edge (identified in green in the photo) on the button body lining up with the PCB footprint as marked.



DON'T SOLDER YET

Resume soldering at step 14



11.

Remove the nuts from the jacks and place the 4x Green pots and 11x Thonkiconn jacks onto the board as shown.

DON'T SOLDER YET

Resume soldering at step 14



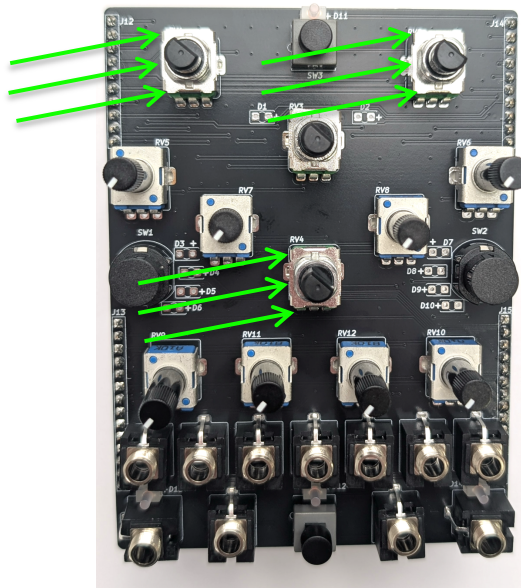
12.

Next place x3 of the provided silver washers onto each of the three green pots pictured. You will have x9 washers total.

These will help keep the components level between panel and PCB.

DON'T SOLDER YET

Resume soldering at step 14



13.

Place the panel over the components making sure all the jacks, switches and pots are lined up and through the holes in the panel.

Secure the panel to the control PCB with the 3x black pot nuts and half of the jack nuts.

Tighten firmly to hold all components in place but don't overtighten.

Note: at this stage only screw black pot nuts onto the three pots with the washers underneath.

DON'T SOLDER YET

Resume soldering at step 14





14.

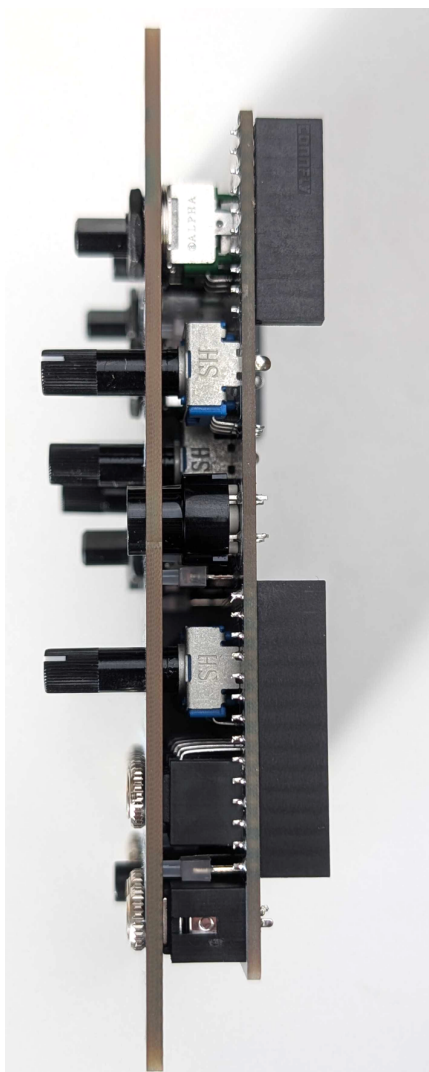
Flip the Panel / PCB assembly.

Before soldering we recommend using masking tape to hold the buttons and switches flush to the board.

First solder one pin on each of the 2x smaller black switches and 2x larger black buttons.

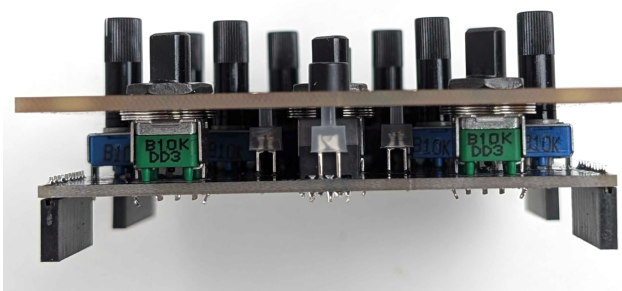
Check these components are sitting flat against the board.

Reflow the pin whilst pushing against the button if necessary to keep the base of the button flat against the board.



15.

Repeat the above step for each of the pots ensuring that they are sitting flat against the base of the board.

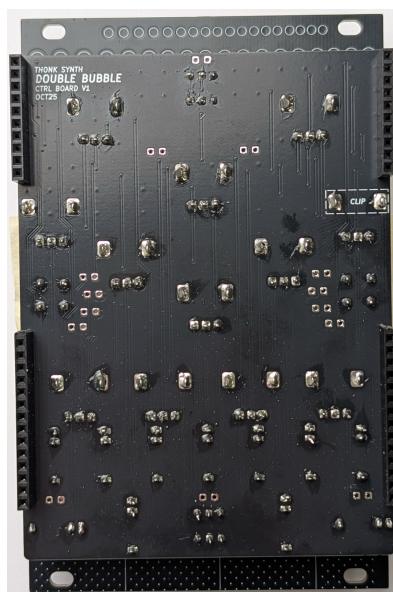




16.

Continue to solder the remaining points for all panel components placed so far. There should be 92 points remaining to solder.

Work slowly and precisely taking care with your soldering iron. Particularly pay attention around the headers already populated on the board.





17.

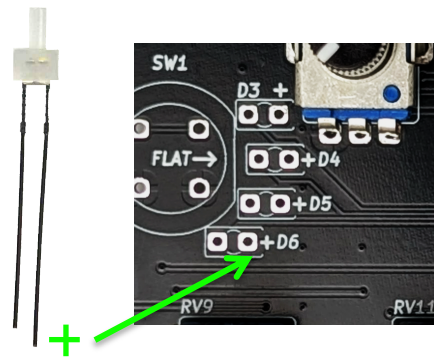
For the next step remove the panel and locate the LED's provided with the kit.

WARNING there are two types of LED's supplied in this kit that look almost identical.

They are bagged and labelled separately so keep them in their respective bags until placing on the board.

CHECK ORIENTATION

These components are polarized and must be placed as pictured with the long leg inserted into the pad marked with '+'.



18.

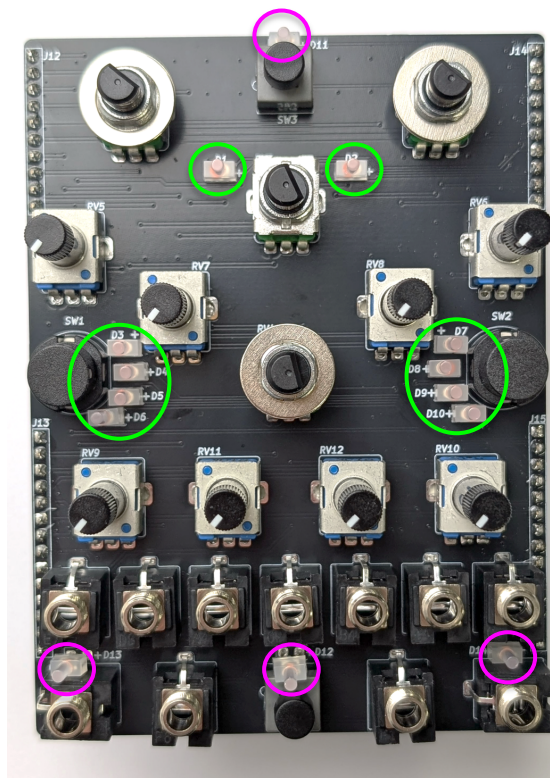
Place the **x4 Pink LED's** into the positions marked D11, D12, D13, D14 - the single top most LED and x3 bottom LED's.

Place the **10x Bi-colour LED's** into the remaining positions marked D1, D2, D3, D4, D5, D6, D7, D8, D9, D10 - the row of x2 LED's second from the top and the curved set of LED's surrounding each of the black buttons.

Double check orientation of all LED's before proceeding.

DON'T SOLDER YET

Resume soldering at step 20





19.

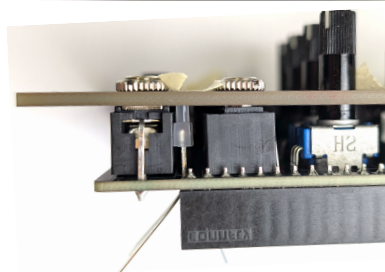
Relace the panel securing it with all pot and jack nuts.

Use small strips of masking tape or similar over the LED holes to keep the LED's flush with the panel whilst soldering.

Push the 16x LED's through the holes and into the tape so the tops of the LED's are flush with the panel.

DON'T SOLDER YET

Resume soldering at step 20



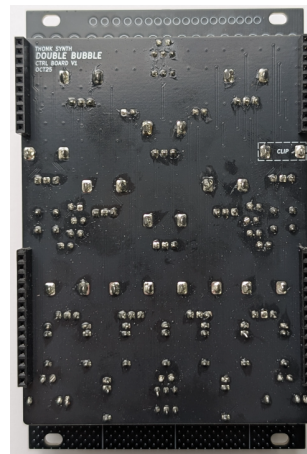
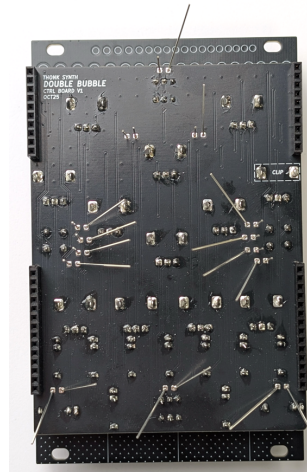


20.

Flip the panel and PCB assembly and solder the LED's in place.

Bend the legs of the LED's outwards as pictured if it helps to keep them secure.

Once soldered clip the LED legs so they are left as small solder peaks like the other components.

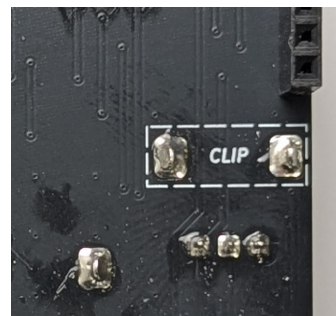


21.

Clip the joints of the left most B10k trimmer pot marked on the PCB as pictured.

Be careful not to damage the PCB.

Aim for solder points as flush as possible to prevent them from interfering with the blue side adjust trimmers on the main board.





22.

With soldering now complete replace the main board onto the back of the control board securing the headers together once more.



23.

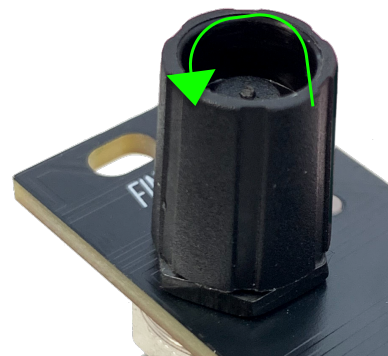
For the next step find the 4x knobs and knob caps which come as separate pieces. In the same bag there should be two smaller knobs with caps and two large knobs with caps.

First place each knob onto the pots.

The x2 larger knobs should be placed on each side pots (cutoff frequency control) and the x2 smaller knobs placed on the two central pots.

Turn the pot turned fully counter clockwise.

This is your 'zero' point for the knob. From here you can clip on the cap – lining up the pointer and indent on the knob at the zero point.

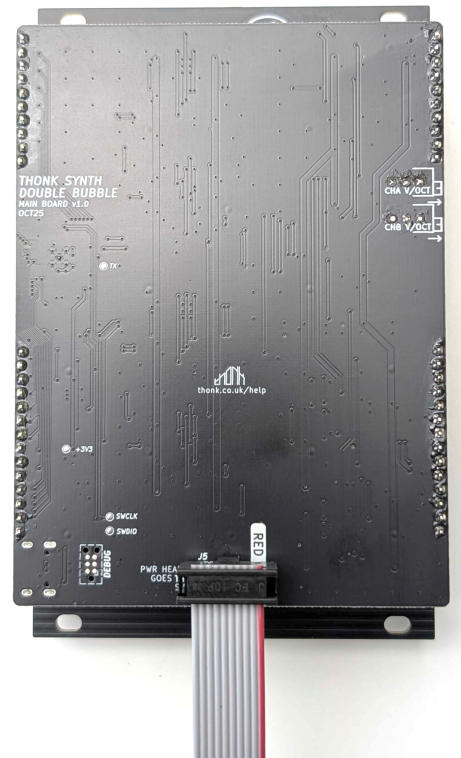




24.

Finally attach the power cable to the rear of the module.

Be sure to follow the polarity by lining the red stripe on the cable up with the text and white stripe on the PCB. Picture shown for reference



Your Thonk Synth Double Bubble is now complete.

Find the manual and other product info on the Thonk website.

<http://thonk.co.uk/bubble>

