



**MUSIC THING MODULAR**

**EURORACK  
WORKSHOP  
COMPUTER**

Eurorack DIY Kit  
Build Instructions



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## OVERVIEW

For the most recent version of this document please visit

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

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

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

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

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## DIY INSTRUCTIONS

This document gives detailed instructions that assume you have purchased a complete kit from [www.thonk.co.uk](http://www.thonk.co.uk). It also assumes no previous knowledge of electronics. To learn to solder try [http://youtu.be/l\\_NU2ruzyc4](http://youtu.be/l_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.**

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## TOOLS REQUIRED

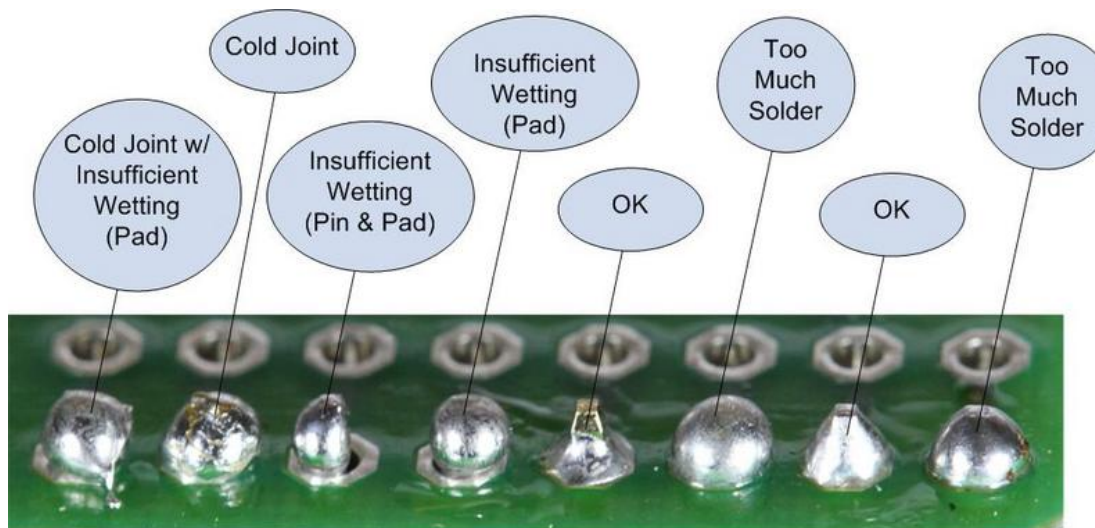
Solder, soldering iron, diagonal cutters AKA snips AKA side-cutters, masking tape. A Digital Multimeter is always helpful for checking for bad solder joints and continuity. Thonk sell a range of inexpensive tools here -

<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

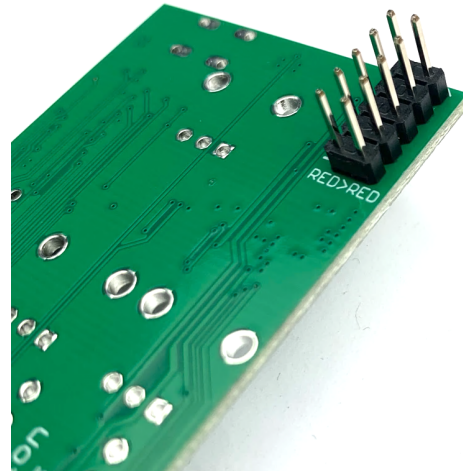


In your kit you will have the above bags. Within the bag labelled 'Workshop Computer Kit Bag' you will find all of the components necessary for the build, alongside the module panel and PCB which have been individually wrapped.



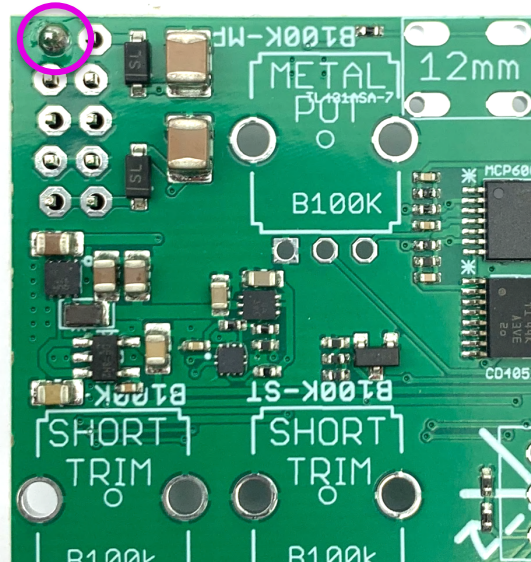
1.

First take the PCB and place the 2x5 power header on the rear of the board as pictured.



Make sure the header is placed on the side of the board without the SMD components.

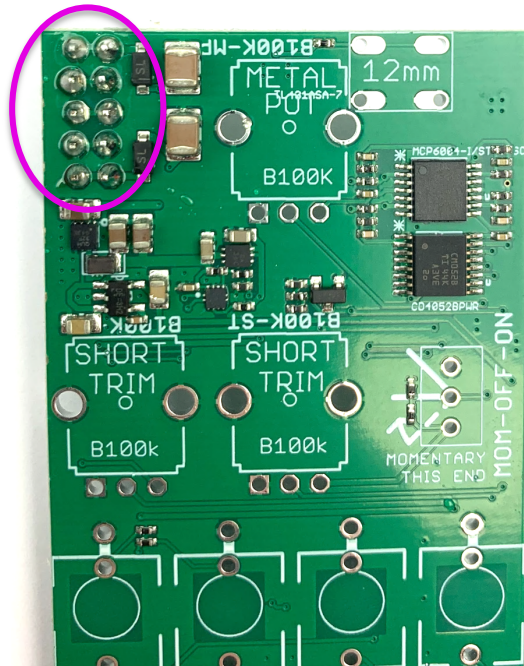
To ensure the header stays flush to the PCB first solder one point. Reflow the single point and adjust if necessary ensuring the header is flush.





2.

When you are satisfied with the position of the power header continue to solder all remaining points.

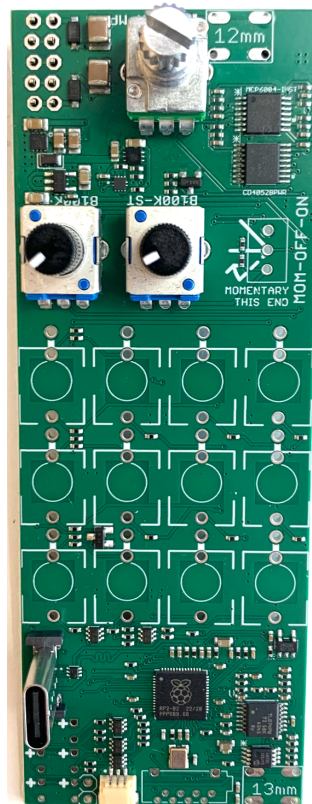


3.

Next Place the single Green pot and 2x blue trimmer pots into the positions shown.

**DON'T SOLDER YET**

**Resume soldering at step 10.**





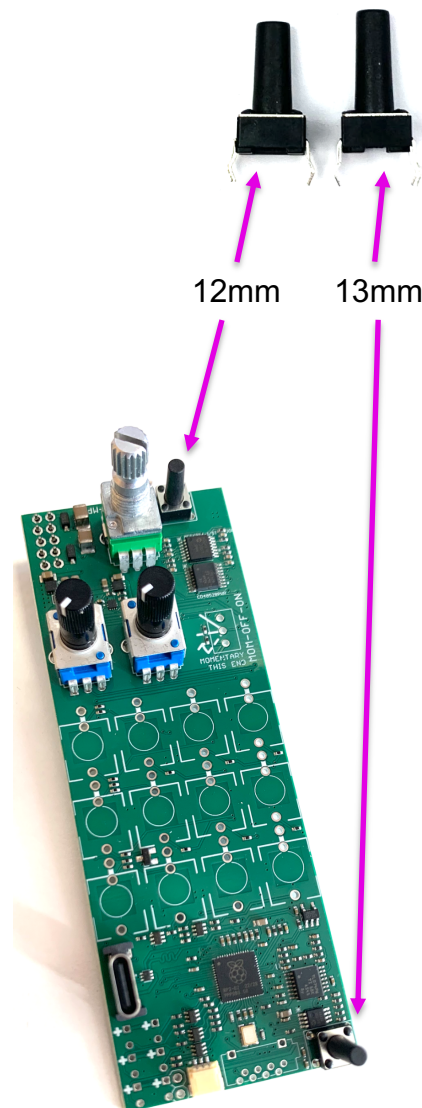
4.

Locate the two black switches, one of these switches has a longer stem than the other.

Place the switches side by side to compare and ensure you know the difference.

The taller 13mm switch is placed into the position at the bottom of the PCB and shorter 12mm switch is placed at the top of the PCB - as shown on the photo to the right.

Ensure the base of the switches are clicked in firmly and level with the PCB.



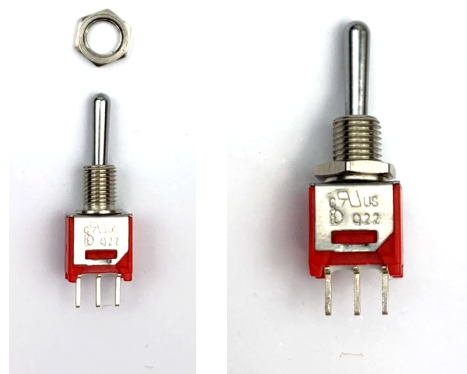
**DON'T SOLDER YET**

**Resume soldering at step 10.**

5.

Find the red toggle switch from the components bag, screw one of the two switch nuts onto the switch as shown.

This is needed to keep the switch level between the PCB and panel.



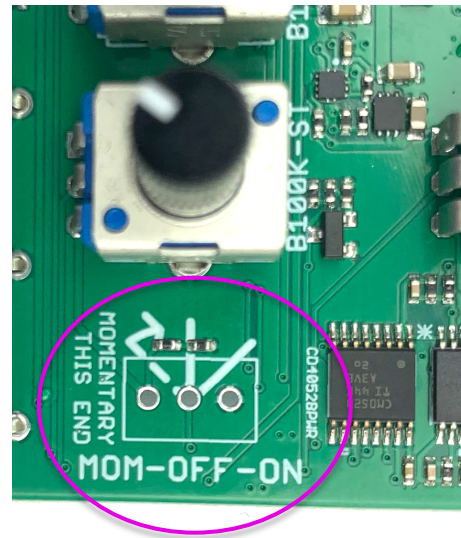
**DON'T SOLDER YET**

**Resume soldering at step 10.**

6.

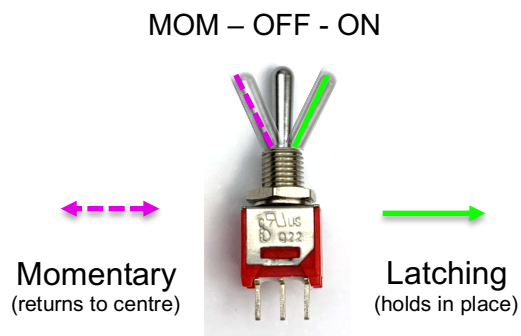
Place the red switch in the position shown to the right of the blue trimmer pots.

**Note:** This part is polarised and must be placed in the correct orientation.



The switch has three positions - Off in the centre, **Momentary** on one side and **Latching** on the other side.

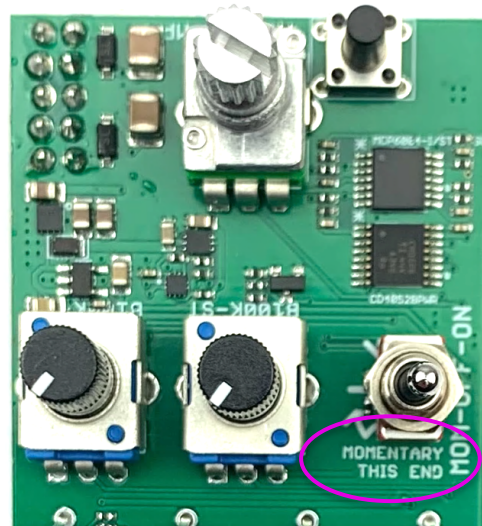
Flick the switch to find the momentary side which returns to the central position when released.



The momentary or unlatching side should face downwards towards the bottom of the module as marked by the footprint on the PCB and shown in the picture to the right.

**DON'T SOLDER YET**

**Resume soldering at step 10.**





7.

Place the 12x Thonkiconn sockets into the positions shown.

The longer leg of each jack should be inserted into the top pad of each footprint.

**DON'T SOLDER YET**

**Resume soldering at step 10.**



8.

Locate the panel and place over the components and PCB assembly securing it with the single pot nut and a couple of socket nuts as shown.

Don't over tighten these nuts but make sure they are holding the panel securely.

**DON'T SOLDER YET**

**Resume soldering at step 10.**



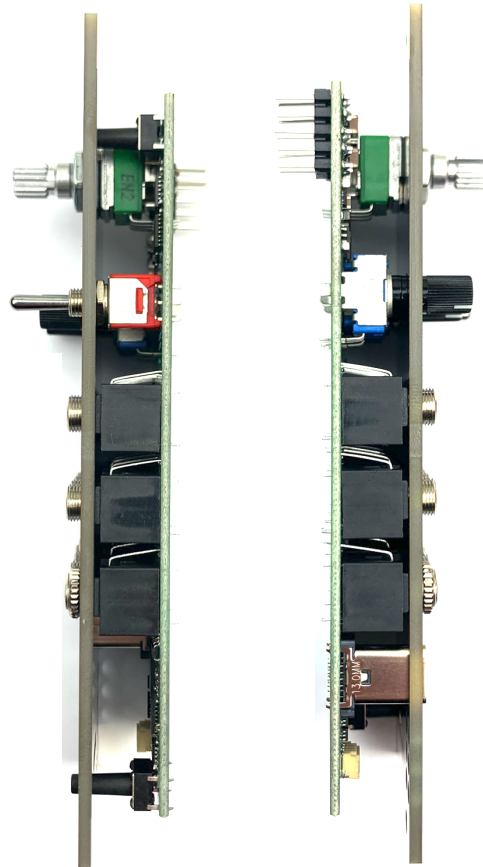


9.

Check that all the components are through the panel. Make sure that the pots and sockets are level with the PCB, the switches function correctly and the pots turn comfortably.

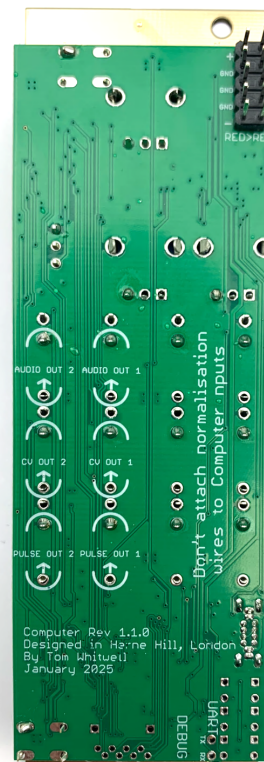
**DON'T SOLDER YET**

**Resume soldering at step 10.**



10.

Solder just one point of each component before checking once more that all components are level and function correctly.



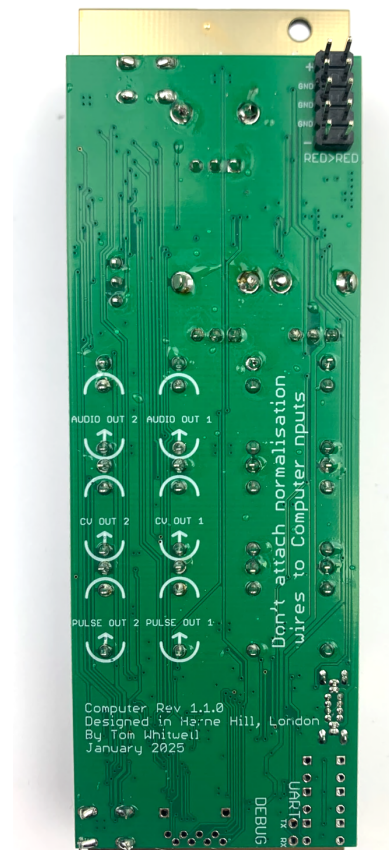


11.

Once you are satisfied with the above, proceed to solder the remaining points.

Work slowly and precisely, there should be 62 points to solder in total.

Flip the panel and PCB assembly then remove the panel setting aside the pot and jack nuts for the final panel assembly in step 15.



12.

Flip the panel and PCB assembly then remove the panel setting aside the pot and jack nuts for the final panel assembly in step 15.

Locate the x6 LED's and x3 plastic spacers from your kit.

Three of the LED's that are placed on the outer edge should have a spacer pushed onto the legs as pictured.

The LED spacers protect the sides of the LEDs which is important if you ever upgrade your Computer to the full [Workshop System](#).



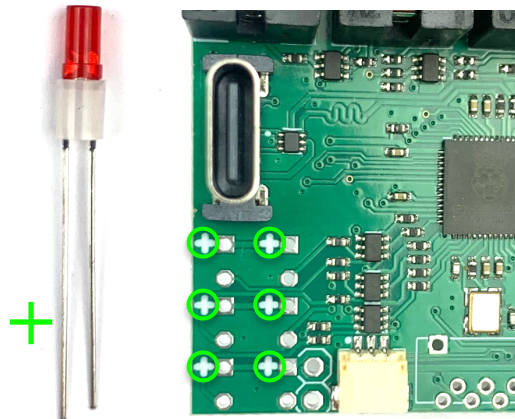
**DON'T SOLDER YET**  
**Resume soldering at step 18**



13.

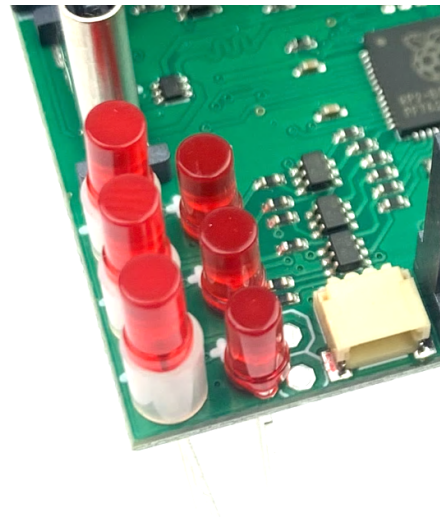
Place the x6 LED's onto the PCB in the positions pictured.

**Note:** This part is polarised and must be placed in the correct orientation with the long leg of each LED going into the top hole marked with a '+'.  
**+**



Check that each LED is oriented correctly and the LED spacers have been added to the outer 3 LED's.

Pay extra attention to the LED on the bottom right making sure it goes into the pads in line with the other LED's and not the additional debugging pads next to the right hand side of it.



**DON'T SOLDER YET**  
**Resume soldering at step 18**



14.

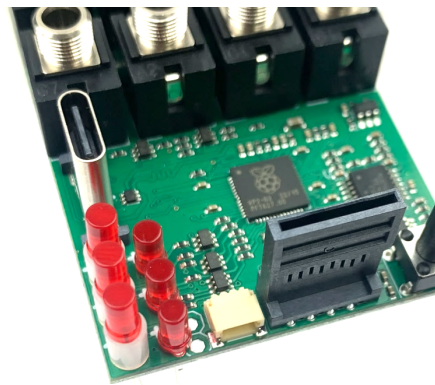
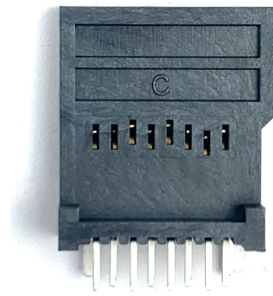
With the LED's in position, next locate and open the small labelled packet containing the SD card holder.

This component has lots of small and fragile legs. Handle carefully and after unwrapping the packet check the legs are straight and uniform as pictured.

Place the SD card holder into position at the bottom of the module.

**DON'T SOLDER YET**

**Resume soldering at step 18**



15.

Keeping the LED's and SD card holder balanced in position, place the panel back over the module.

This time secure the panel with the pot nut, switch nut and all 12 Jack nuts as pictured.

**DON'T SOLDER YET**

**Resume soldering at step 18**





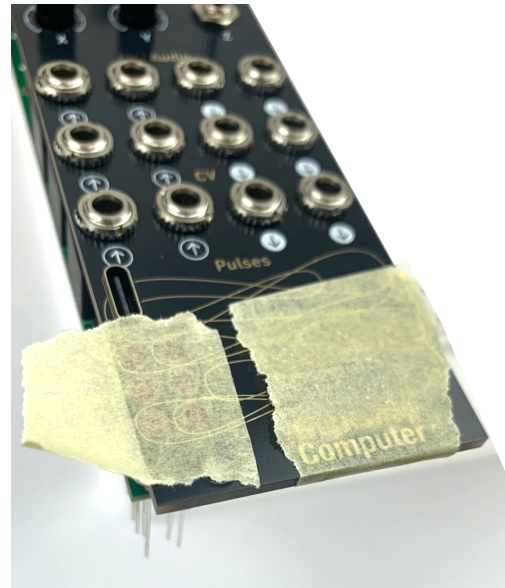
16.

With the panel secured to the PCB push the 6x LED's through the holes so the tops of the LED's are flush with the panel.

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

**DON'T SOLDER YET**

**Resume soldering at step 18**



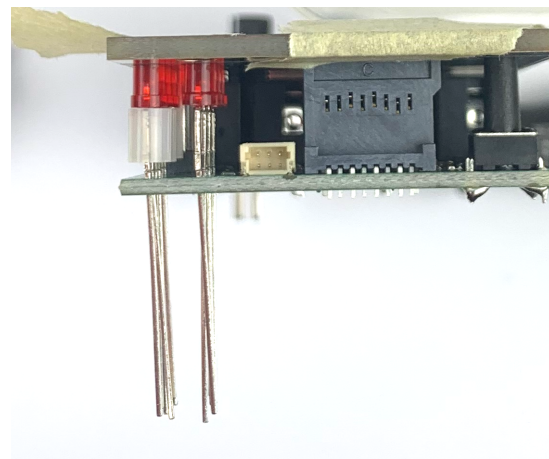
17.

Similarly use another strip of masking tape to secure the SD card holder to the PCB.

Ensure the base of the SD card holder is sitting flush to the PCB and the legs are through the bottom of the PCB.

**DON'T SOLDER YET**

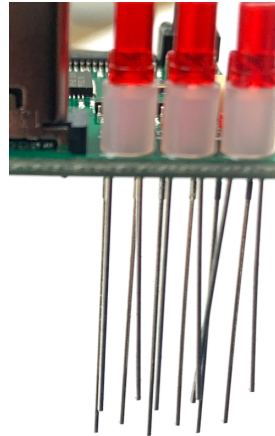
**Resume soldering at step 18**



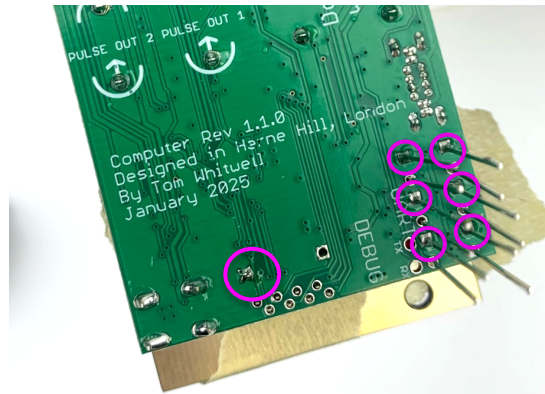


18.

Double check the LED's are oriented correctly with the long leg of each LED in the top hole above the short leg.



Solder just one leg of each LED and one point on the SD card holder as pictured.



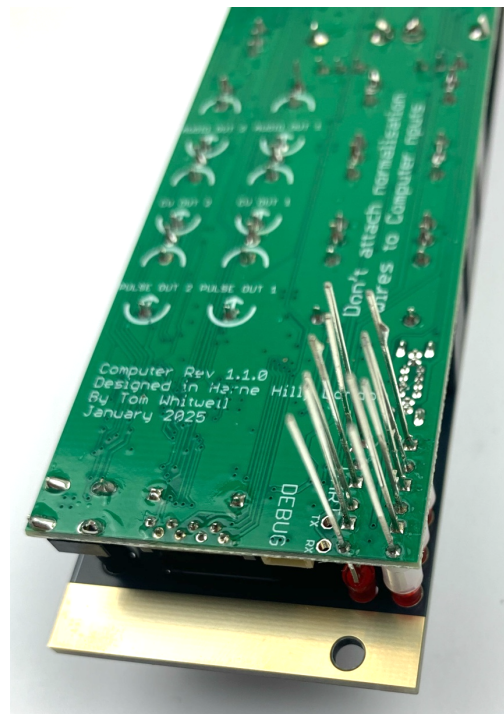
19.

Check the LED's are flush to the panel and SD card holder is flush to the PCB.

Once you are satisfied with the above, proceed to solder the remaining points.

Work slowly and precisely, particularly paying close attention to the smaller points on the SD card holder.

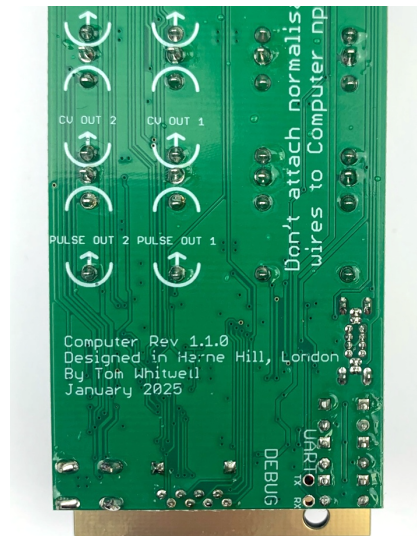
Use a minimal amount of solder to ensure you don't bridge any joints and cause any shorts on the circuit.





20.

Remove the tape and trim the excess from the LED legs so the solder points look like the points on the rest of the PCB



21.

Place the knob onto your computer module.

Turning the pot all the way clockwise or anti clockwise is the best way to get the line on the knob lined up correctly.

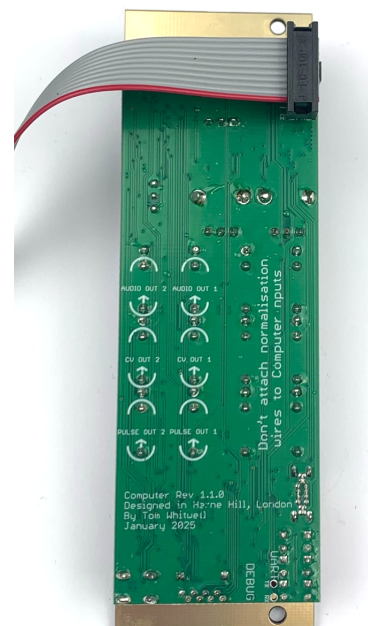


22.

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 white stripe and text (RED>RED) on the PCB.

Picture shown for reference.





23.

Finally, you should have a keyring and a pack of green program cards remaining from your kit.

Use the keyring to keep the program cards together.

Three of the four program cards provided in your kit are prewritten with the functions labelled on the card: a Turing Sequencer, MIDI card, and Reverb+. You also have a blank card that can be written with a range of other programs [found here](#).

Test your module is working as expected by inserting the turing card, and pressing the reset button. You should see an LED pattern which reacts to the controls when the card is loading correctly.

Your Music Thing Modular Workshop Computer is now complete.

Find the manual, product links and further info on writing and using your program cards at the link below.

<https://www.musicthing.co.uk/Workshop-Computer/>

