

BITBUDDY BUILD GUIDE V1.2



Hello fellow DIYer! Thank you for purchasing BitBuddy.
BitBuddy is an expander module for the Music Thing Modular Turing Machine Eurorack Module. You can find out more about the Turing Machine [here](#).

BiTBUDDY can connect to the Turing Machine via either the Pulses or the Gates expander header pins via the supplied cable and should not be connected to anything else. Please do not attempt connecting to your system power rail.

This is an ideal intermediate DIY soldering project for you which includes not only through hole parts but contains SMD resistors too. It's an ideal starting point to get to grips with SMD soldering. There are many different ways to approach SMD soldering and there are lots of resources available online showing you how. Also a good pair of tweezers and some liquid flux will also be your friend whilst placing the tiny components.

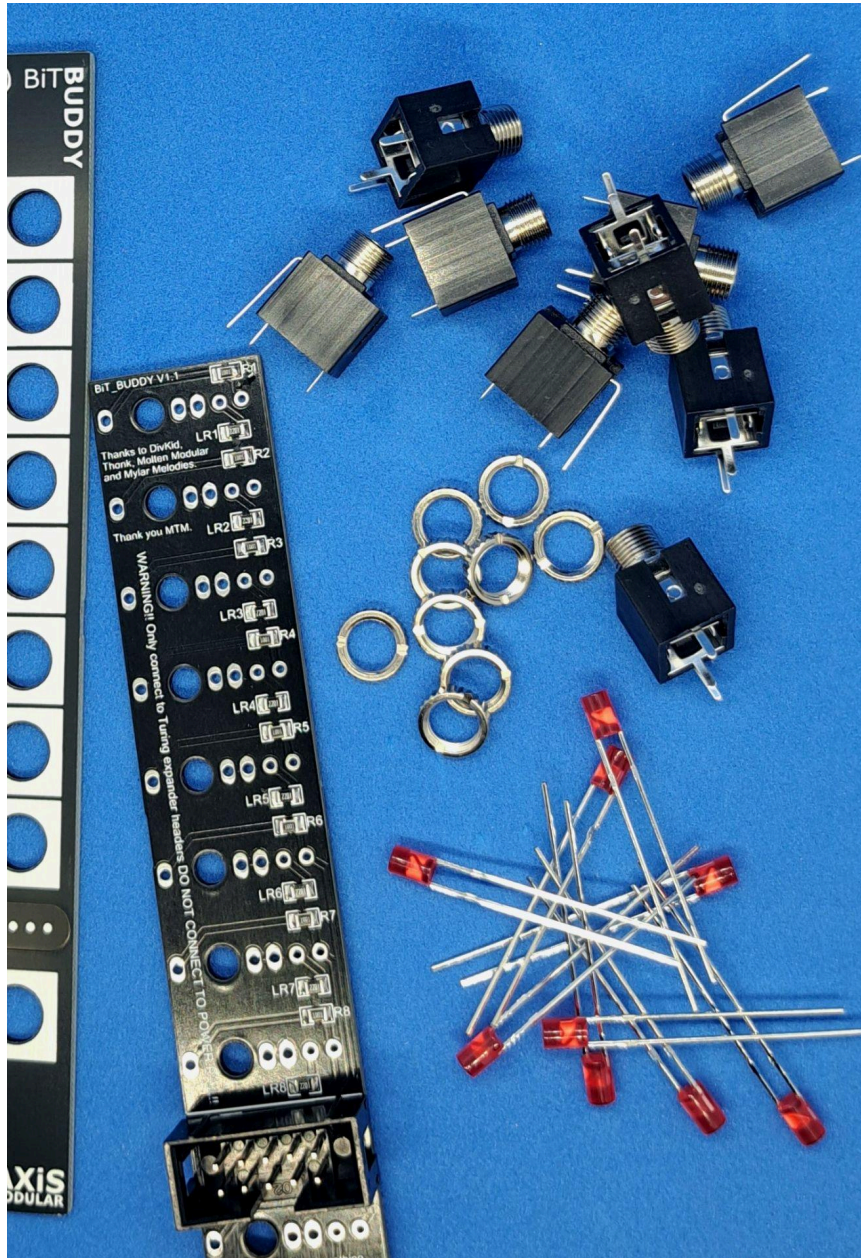


For SMD resistors, I prefer the 'adding solder to one pad' method and then 'reheating to sit the component in place' method. Which I recommend you do with this kit. It is recommended that you have some soldering experience however, if this is your first time soldering please check out these useful guides [here](#) and for SMD [here](#).

There is also an excellent video on Youtube by PNP Modular on how to solder SMD:

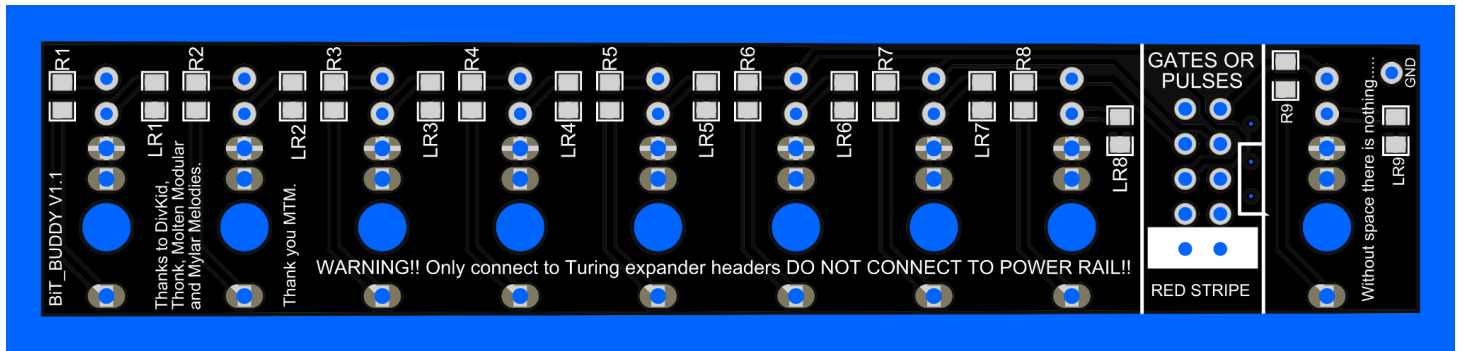
▶ [Hand Soldering 0603 SMD SMT with a practise board](#)

By undertaking the construction and soldering yourself you agree that it is your responsibility to complete the final build safely and confidently. This kit is sold exclusively through Think and you can find full terms and conditions [here](#).

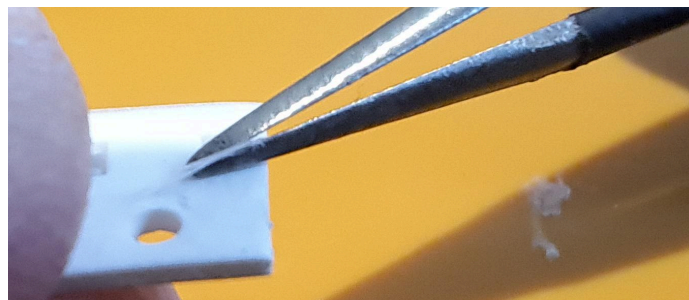


BITBUDDY BOM

ID	Name	Designator	Footprint	Quantity	Check
1	1k	R1,R2,R3,R4,R5,R6,R7, R8,R9	0805 SMD RESISTOR	9	
2	2.2k	LR1,LR2,LR3,LR4,LR5,L R6,LR7,LR8,LR9	0805 SMD RESISTOR	9	
3	GATES OR PULSES	10 Pin connector	PULSES OR GATES	1	
4	Thonk jack	1,2,3,4,5,6,7,8,CLOCK	THONK MONO JACK	9	
5	3mm LED		LED	9	
6	PANEL	4hp or 1u		1	

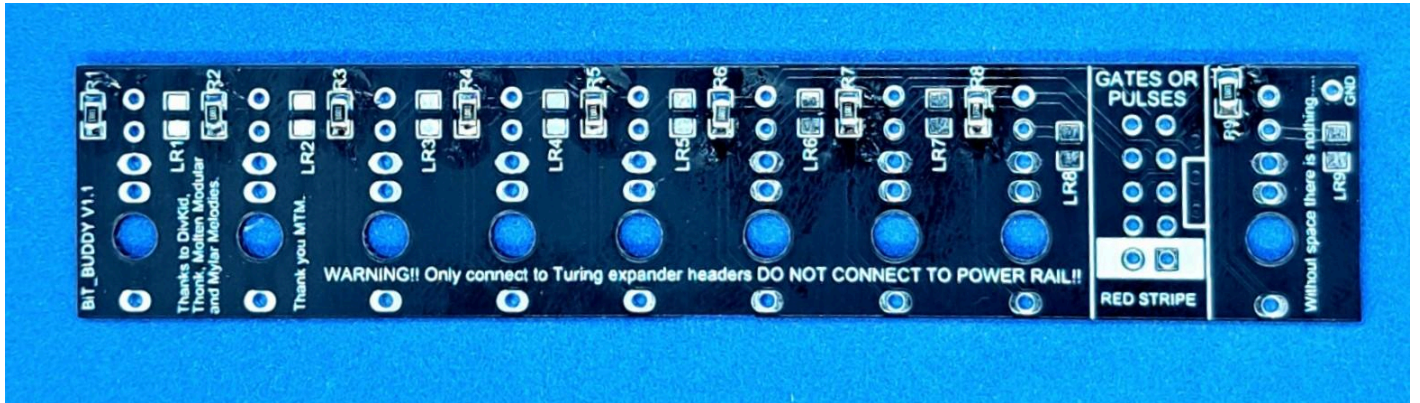


1. SMD 0805 Resistors

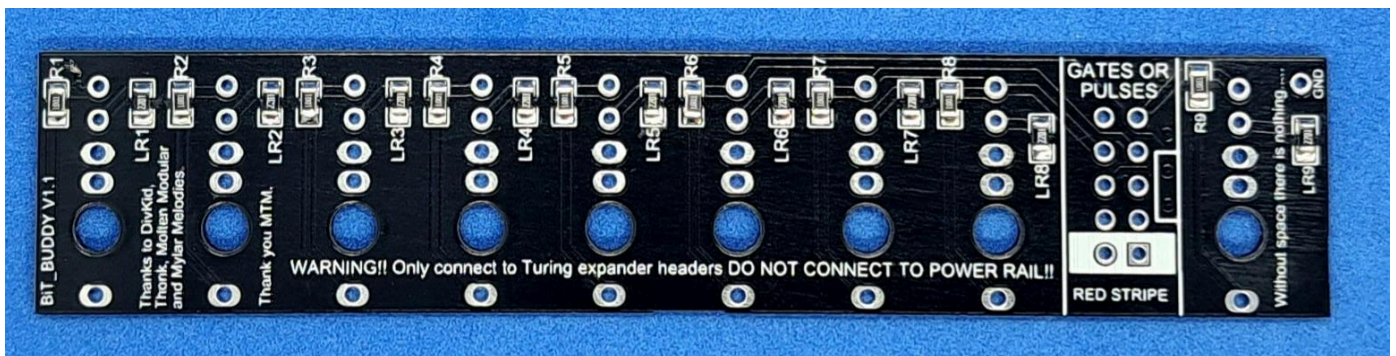


In your kit you'll find 9 1k 0805 resistors labelled '1001'. Carefully peel back the tape on the front to remove each one. I recommend finding a decent sized bowl to place these in as they are small and can 'ping' into the ether if you aren't careful with these(1 spare is included just in case).

Before you start your PCB should be clean and dry, I use an alcohol wipe(the type used in medical kits). Before I solder I use a flux pen to coat the solder pads, it's not essential to use but it will aid the flow of solder onto the pad.



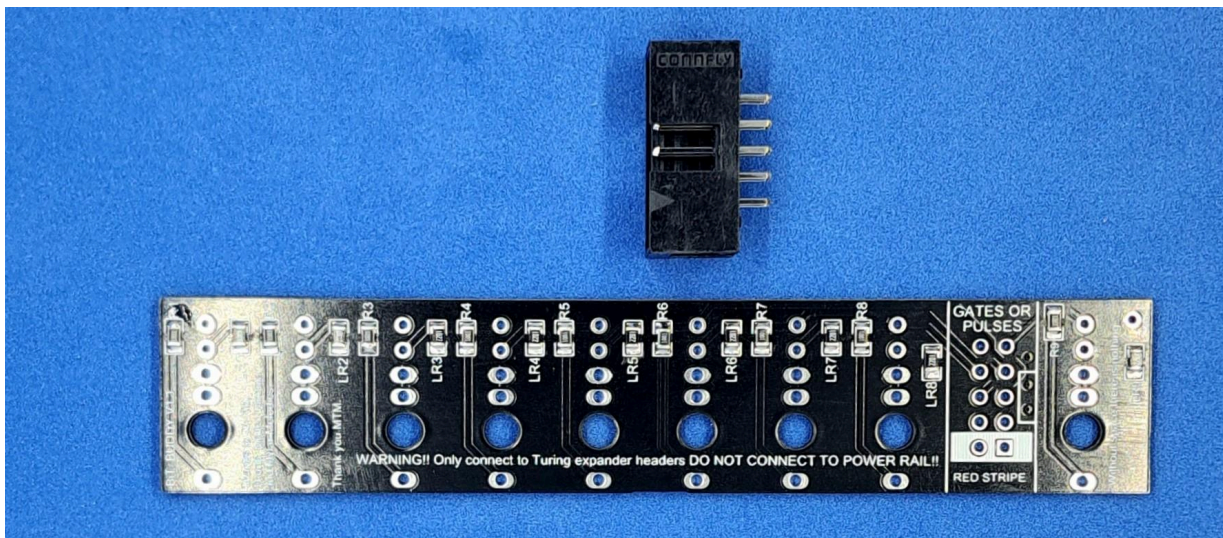
Begin by soldering the 1k resistors R1 through to R9 onto the PCB as shown. I use the technique where you add a small blob of solder to one pad, heat and then move the SMD part in place using your tweezers.



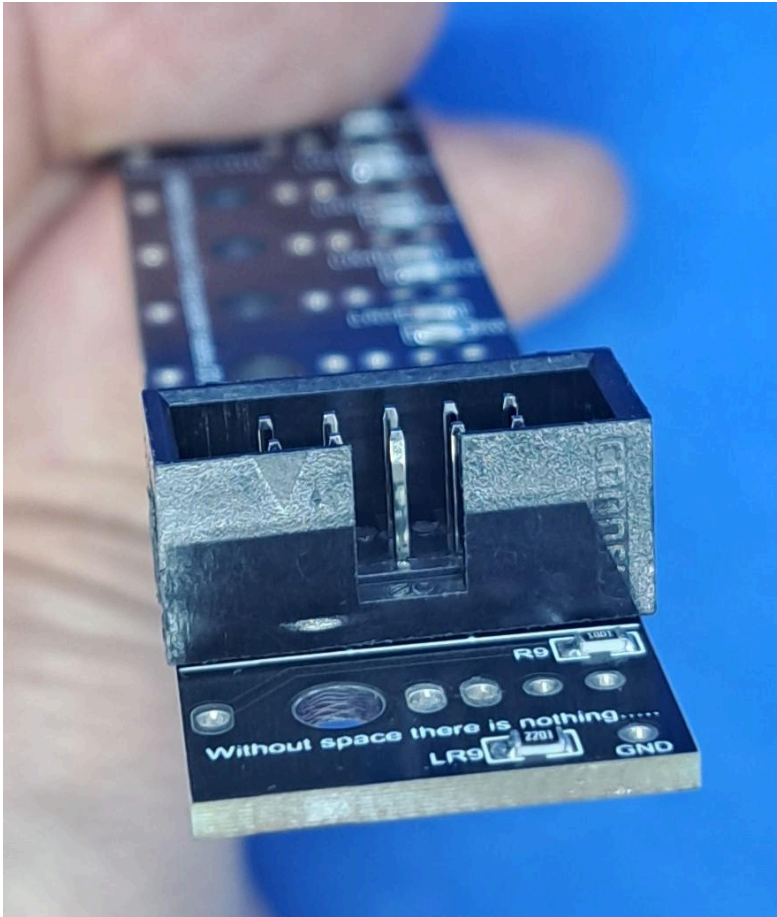
Next solder LR1(indicated by 2201), these are the 2.2k resistors connected to the LED's in the circuit.

Remember, add flux, place a blob of solder on one pad first then carefully take your tweezers and move the resistor up to the pad whilst heating the solder and place. Once happy with position then solder the opposite side being careful not to add too much solder.

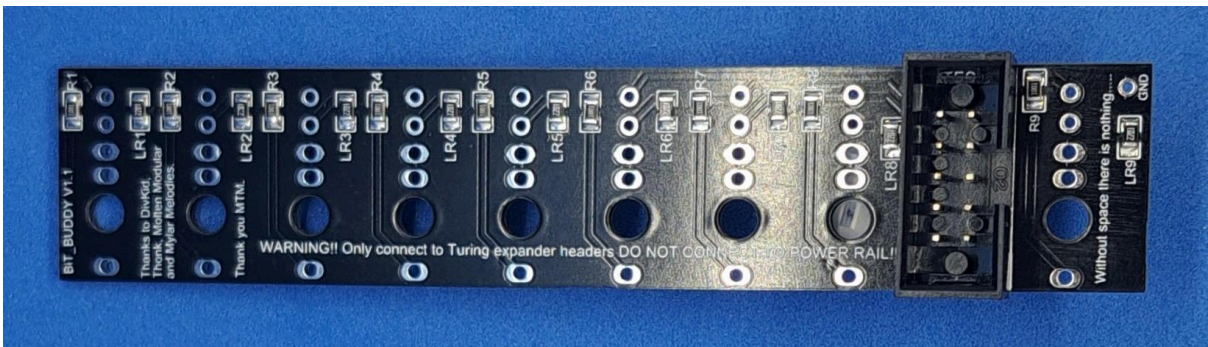
2. Pulse/Gates connector socket.



Add the 10 Pin IDC connector as shown making sure to follow the silk screen printed on the PCB. The arrow on the connector indicates pin 1 as does the square pad on the PCB.



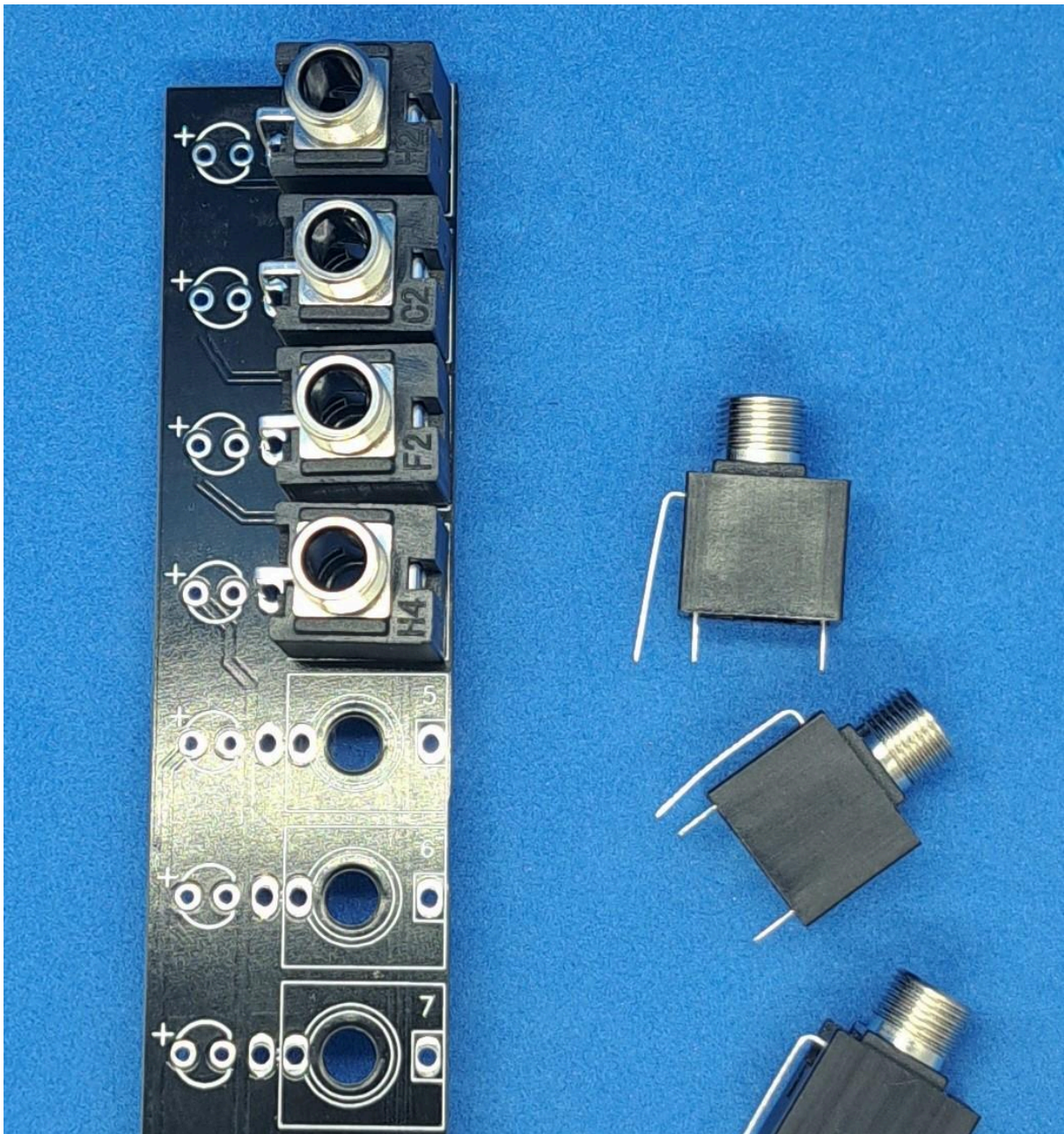
You can hold the connector in place with some masking tape or by holding it carefully in place whilst turning over the PCB before soldering.



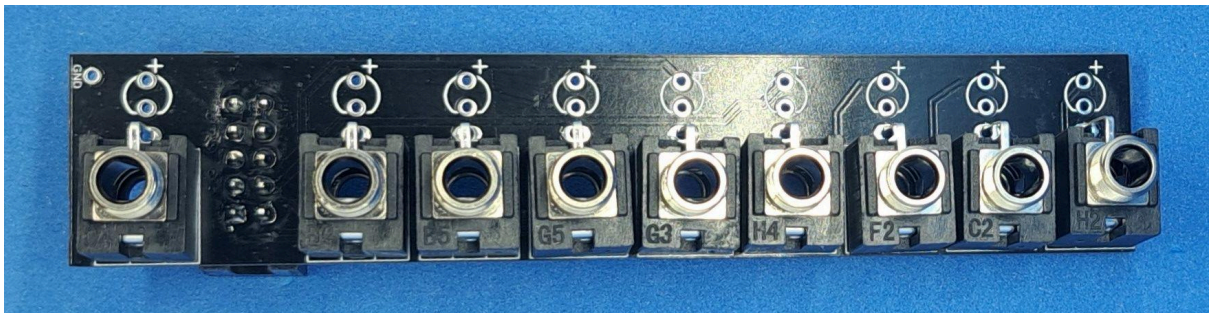
I usually only solder 1 of the pins first and check the position, you can then re-adjust if you need to.

Once you are happy with the position of the connector, carry on and solder the rest of the pins. Once done reflow the solder if you wish(I normally do to tidy things up and make sure the joints are good).

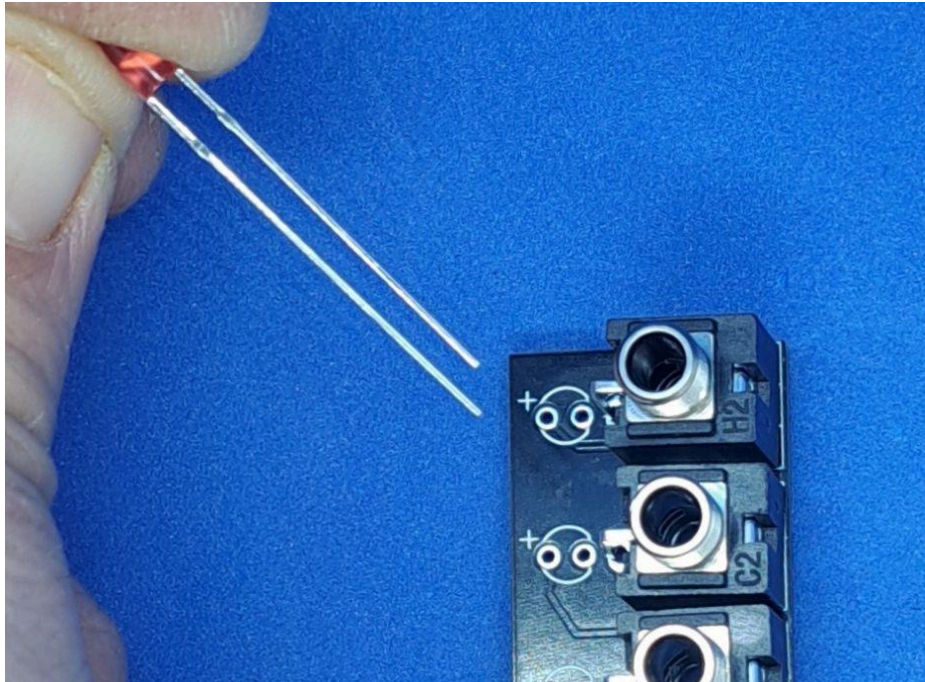
3. Mono Jacks



Next place all the mono jacks as shown but do not solder yet.



4. LEDs



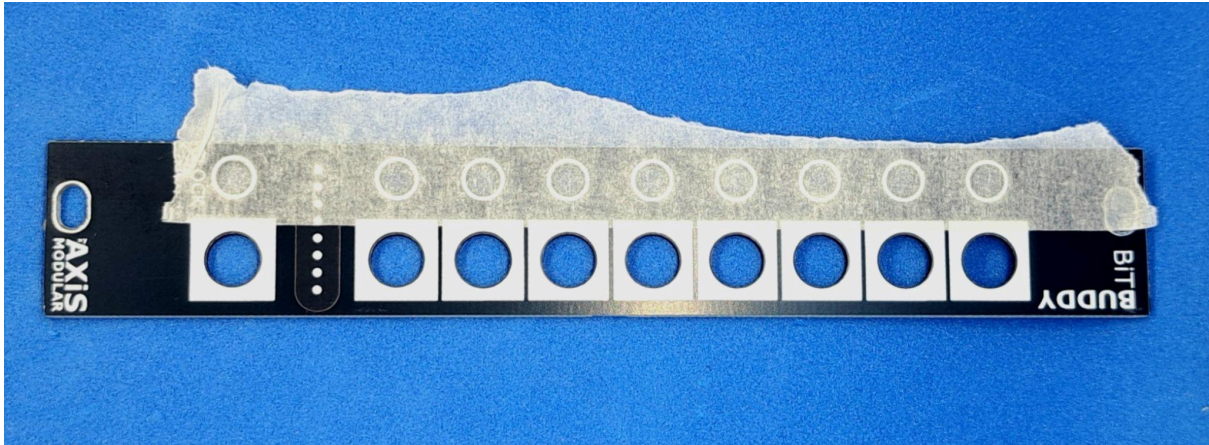
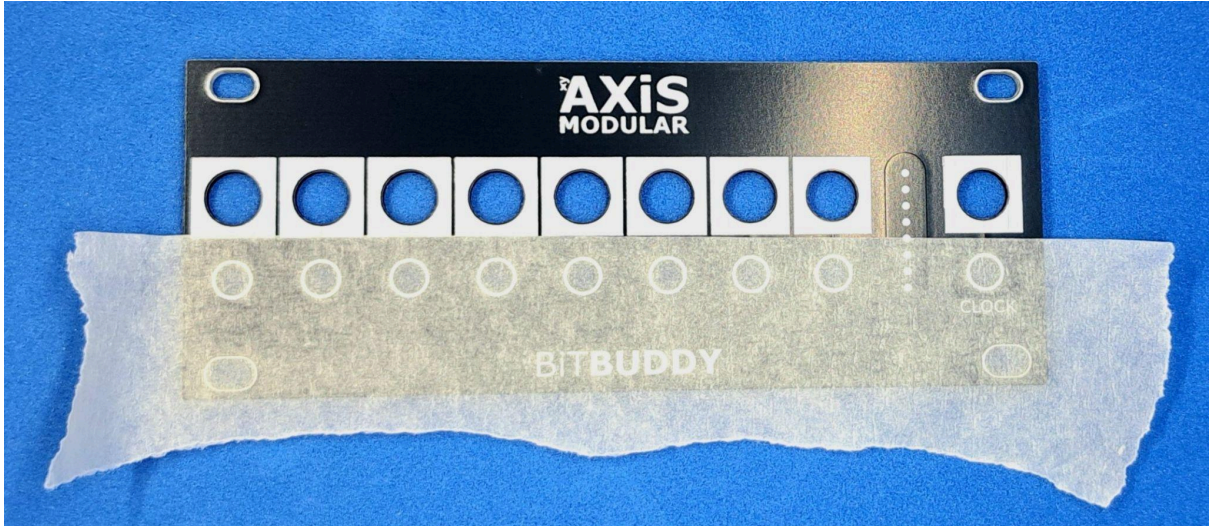
In your kit you will find 9 LEDs, the long leg is positive and short negative. So place the LED legs through the holes as shown. Positive is indicated by the + sign on the PCB.

Again do not solder yet.

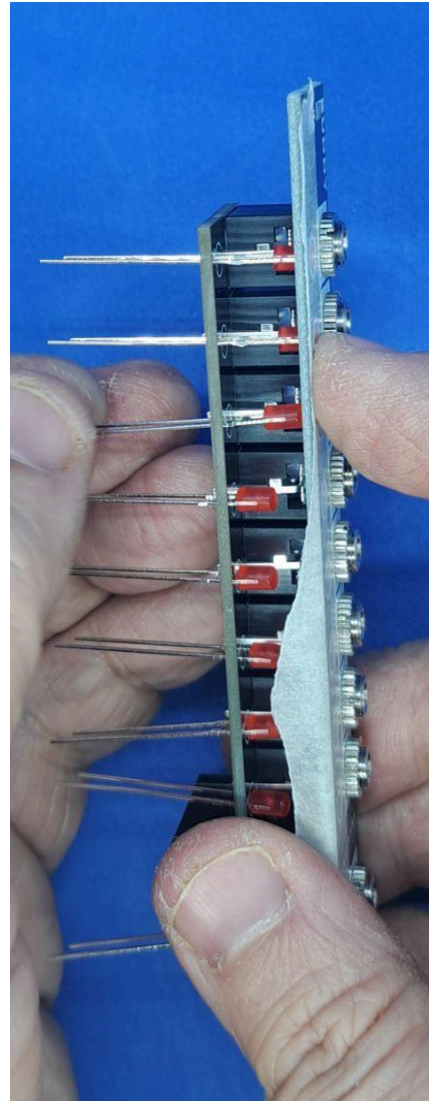
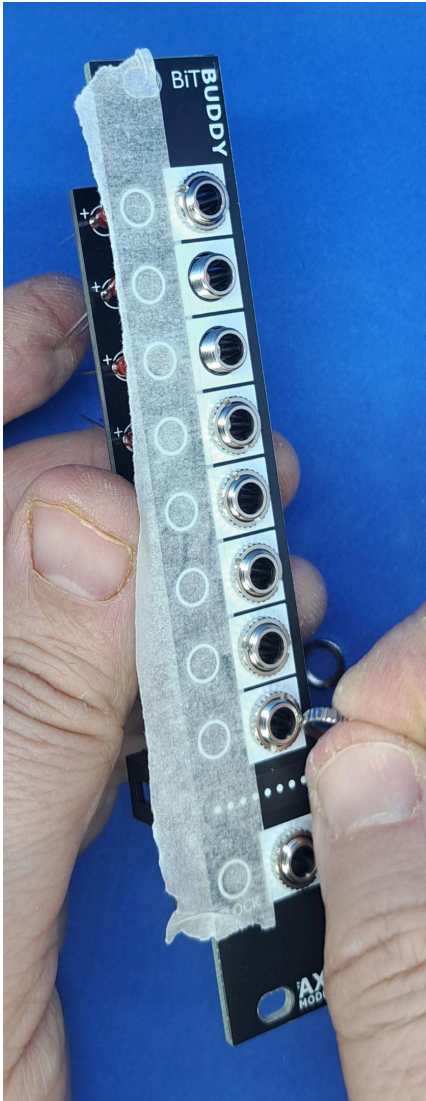
5. Panel

In your kit you will find either a 4hp panel or a 1u 20hp panel depending on the type you purchased for your eurorack system.

As the LEDs are flat they need something to hold them flush with the panel, place some masking tape over the LED holes to help with this.



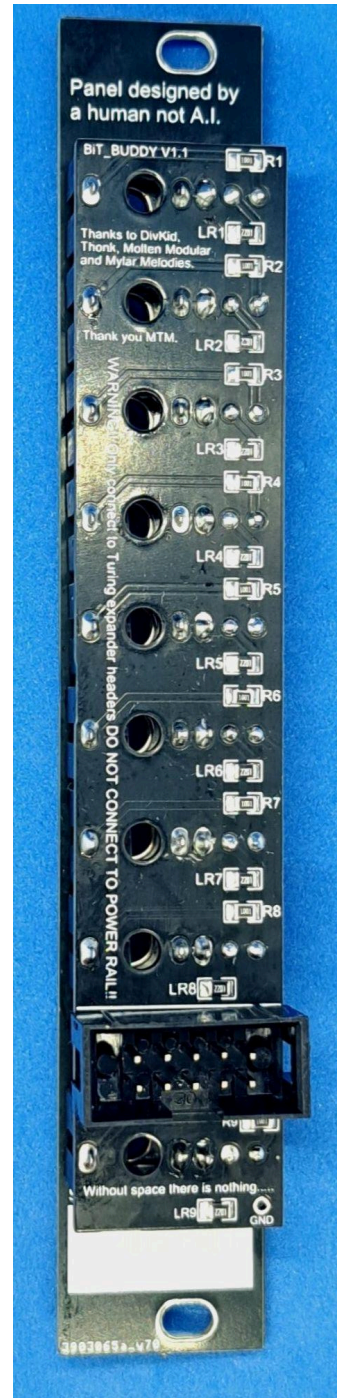
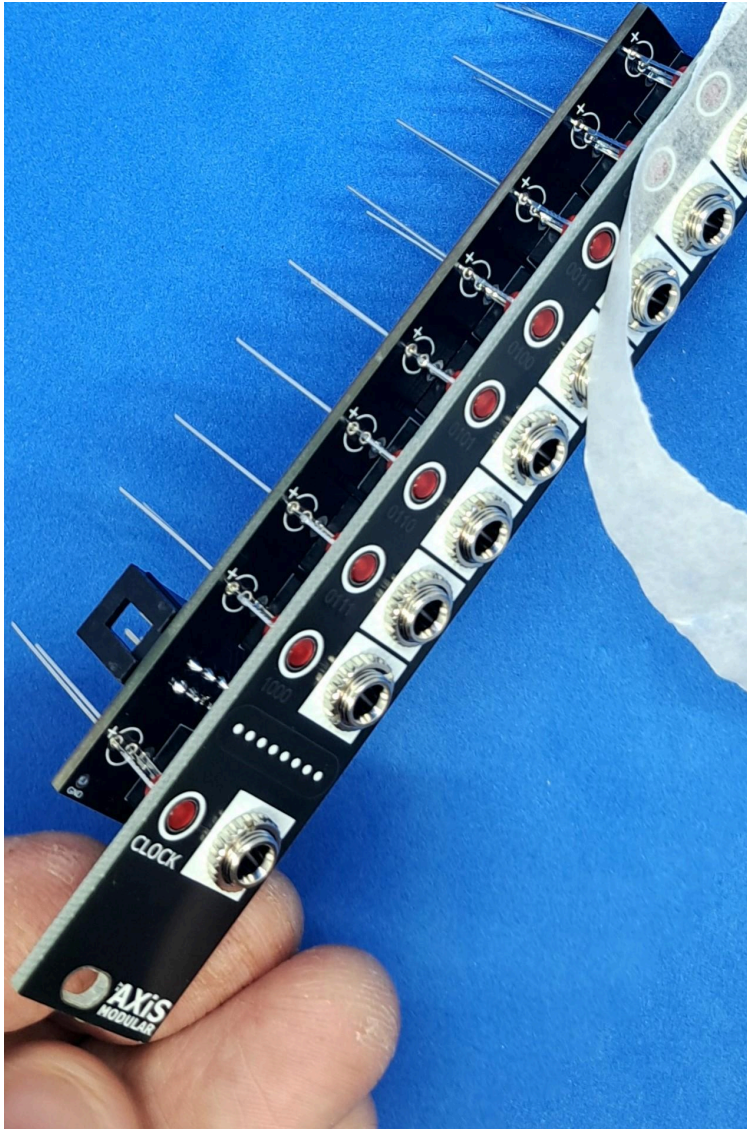
Next carefully place the panel over the jack sockets, add the nuts to hold the panel and carefully seat the LED's into their holes.



Turn over and solder the jack pins first one at a time making sure the jack sits flush with the PCB.

Once you are happy with the jacks then move onto soldering the LED legs. For this do one at a time making sure it is still in the correct position held by the tape.

Once finished, remove the tape from the front of the panel and trim all the LED legs and reflow.





Clean your PCB with a good cleaner to remove any flux etc and your module is now complete. All you need to do now is connect it to your Turing Machine and start patching.

Enjoy!.

Note: You will notice that once you have connected the BiTBUDDY to either the Gates(recommended) or Pulses breakouts on the back of the Turing Machine(or other expanders) that there will be no lights or voltage output from the BiTBUDDY until you have patched in a cable.

To test that it's all working send a clock to your Turing Machine and then take one of the outputs from the BiTBUDDY to an input somewhere else in your system.

If all is well BiTBUDDY will magically start mirroring the Turing Machines top row LEDs.

Magic! 😊

(Actually it's not magic, it's the patch cable providing the ground to finish the circuit.)

BITBUDDY MANUAL

BITBUDDY is a 4hp or 1u Format expander D.I.Y kit for use with the Music Thing Modular Turing Machine.

Connects to either the Gates or Pulses expander on the back of the Turing Machine via the included 10-16 pin connector cable.

This totally passive module breaks out the signals from round the back and brings them straight into your Eurorack frontside for very flexible connections to DC mixers, envelopes, triggers, VCA's and more.

You can place the **BITBUDDY** at the end of your daisy chain with other expander modules such as Voltages, Volts and so on.

Also passes the clock output from the Turing Machine out to sync your other modules.

AXIS MODULAR

