## OVERVIEW

For the most recent version of this
document please visit
https://thonk.co.uk/documents/startup/

This document has hi-res images. ZOOM
IN for a closer look

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 https://youtu.be/IpkkfK937mU and the
**Adafruit guide to excellent soldering** – http://bit.ly/1l77tF4

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

Soldering iron, snipe nose pliers, masking tape, small flat head screwdriver
and diagonal cutters AKA snips AKA side-cutters. 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.
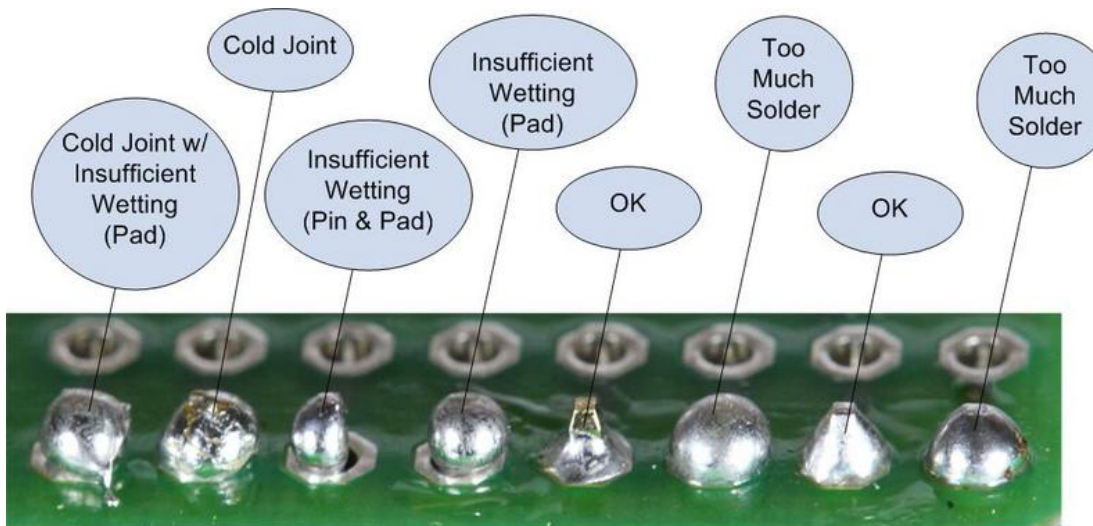


This photo is from the Adafruit guide to excellent soldering and is reproduced under an Attribution-Sharealike creative commons license - http://creativecommons.org/licenses/by-sa/3.0/

# STARTUP BUILD INSTRUCTIONS

1.

Start by emptying the component bag into one bowl or container. This makes it much easier to pick parts as you need them and you're less likely to lose anything.

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2.

All of the SMD components on the PCB have been placed and soldered by robots, so this is a very quick build. However, it does require very careful and precise soldering.
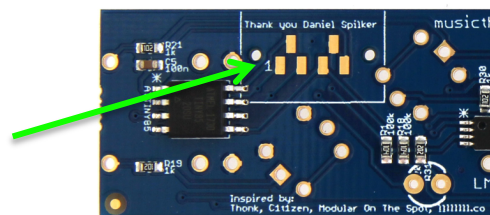
Avoid touching the SMD components with your hands and be very careful not to touch them with your soldering iron.

Take your time, and use an iron with a reasonably small tip



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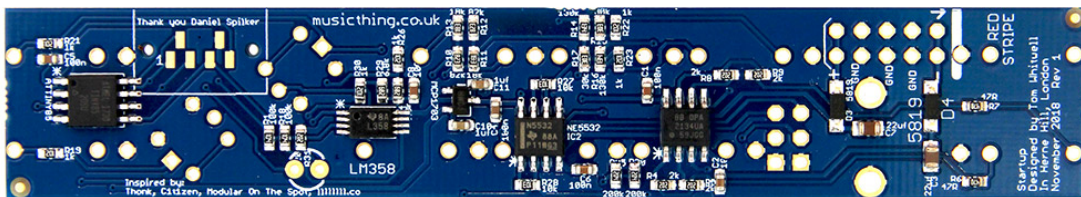
3.

There are 6 pads towards the top of the board marked 'Thank you, Daniel Spilliker' - these are programming pads, and will not be populated



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4.

Start by soldering the power header. **ENSURE** that it is on the correct side: The long pins should be on the same side as all the SMD components. Note: soldering this on the wrong side will ruin the build!
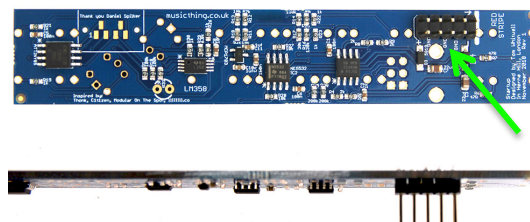
## 5.

Before soldering the rest of the parts; now is a good time to confirm that the firmware is correctly programmed on the PCB. We program and test all boards before sending them out, but this step gives you peace of mind and shouldn't be skipped.

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## 5.1

To do this first take the power cable and affix it to the power header as shown - with the red stripe on the cable facing towards the PCB text: 'RED STRIPE'.
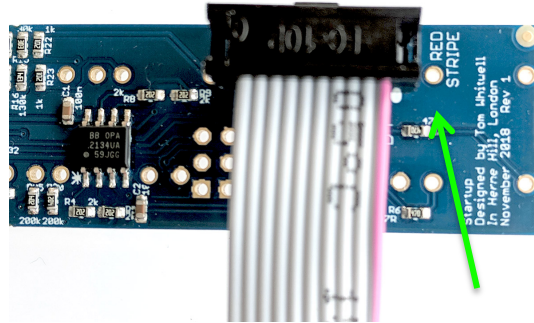
Then plug the other end of the power cable into your case power - but do not switch on the power yet.



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## 5.2

Next locate the red LED and bend the legs slightly outwards as shown.



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## 5.3

**NOTE: <u>DO NOT</u> solder the LED now – it's only going to be placed on the PCB as a test. Do not solder it!**

Now place (do not solder!) the LED on the PCB with the longer leg going through the square hole closest to the edge of the board.



Long Leg    Short Leg
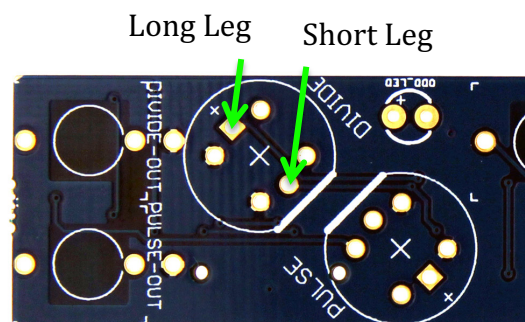
5.4

Once in place, switch on your
Eurorack power connecting to the
PCB. Now the LED should start
flashing – this indicates that the
firmware is correctly programmed.
You may need to apply some gentle
sideways pressure to the LED to
ensure that it is contacting the pads.
See this video for a demonstration
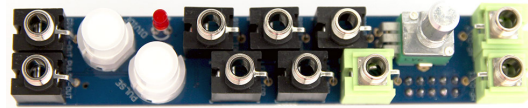of the LED behavior:
https://youtu.be/lavLY58sziA
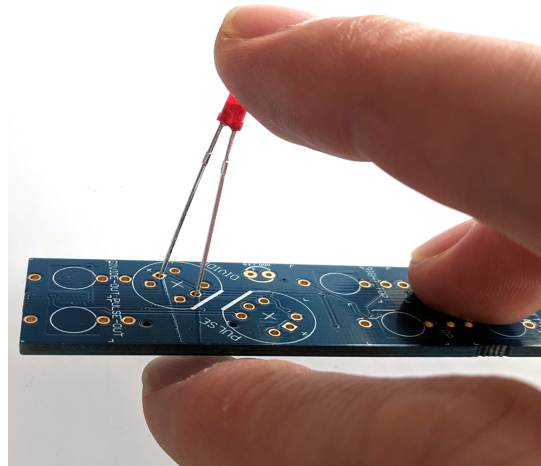
6.

Once you have confirmed that the firmware is programmed you can
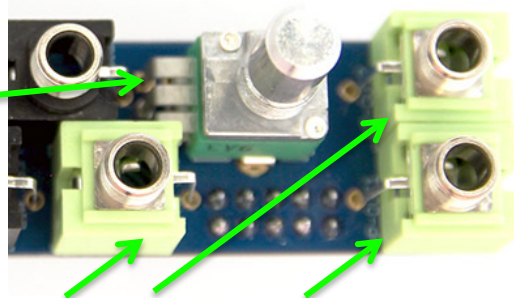remove the LED and unplug the power cable.

7.

Next, place all the components onto
the board as shown, but **DO NOT**
solder anything yet.

8.

Add the potentiometer first, it's a bit
fiddly to get all the legs through.

The stereo sockets are GREEN –
these are marked with crosshatching
on the PCB silkscreen.

The three lowest sockets on the
board are green, all the others are
black mono sockets

9.

Be careful to align the pushbuttons correctly: They have one flat side, which is clearly marked on the PCB silkscreen. The two flat sides face towards each other on the middle of the PCB.
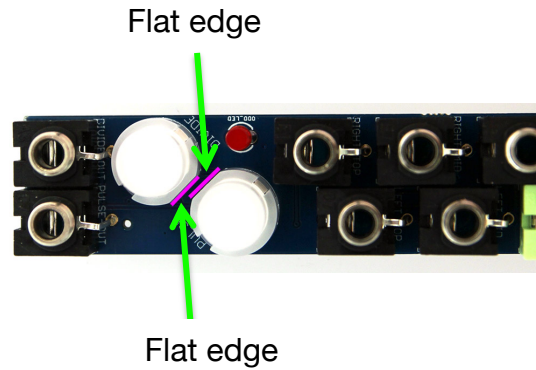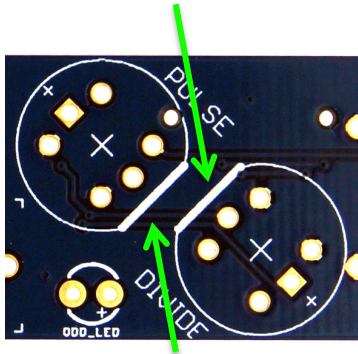
Flat edge

Flat edge

**NOTE:** The real PCB has white lines to show the flat edge - not pink.

10.

Orientation is also vital for the Red LED. The LONGER leg of the LED must go into the hole marked on the PCB with a + sign.
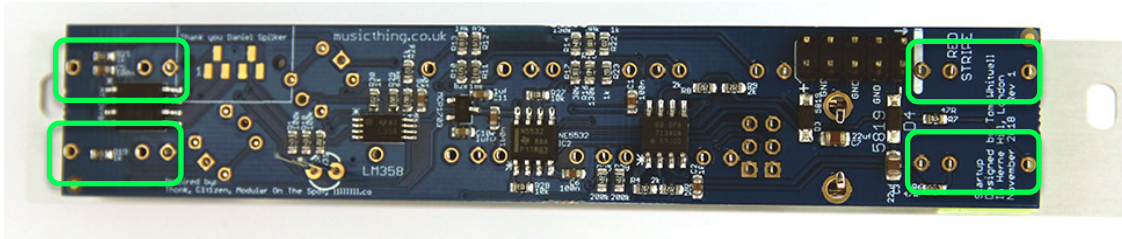
Longer leg goes to +
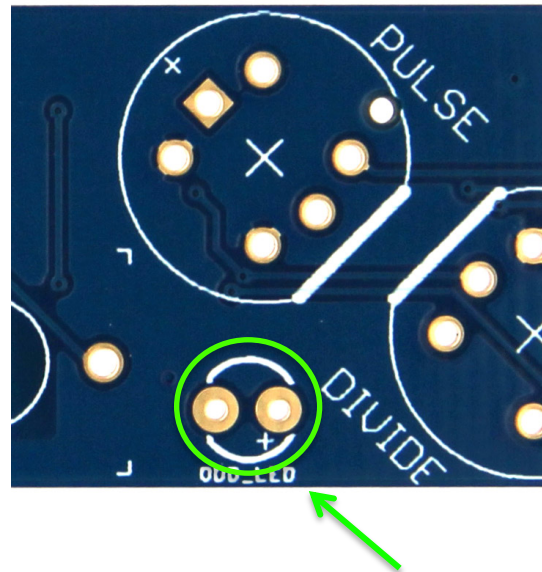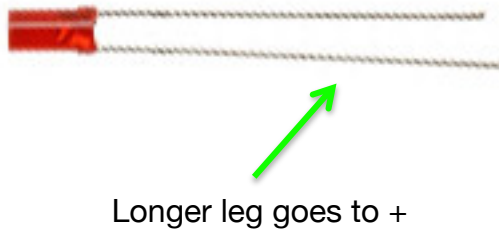
11.

Once all the components are in place, but **NOT SOLDERED**, put on the front panel and screw on 3 or 4 nuts at the top, middle, and bottom of the board on alternating sides. This will take a little gentle jiggling about.
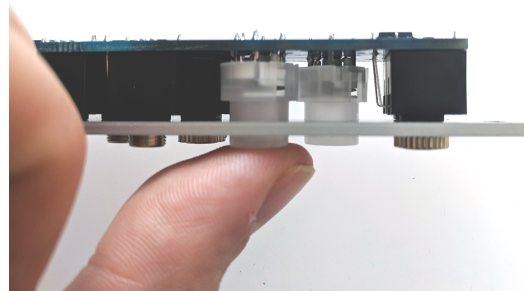
## 12.

Solder the topmost (Tap / Diviply) sockets first. Then solder the green sockets at the bottom, so the whole arrangement holds together.



## 13.

Now, gently push the first pushbutton into place. Don't depress the button, just push it gently so its pins come up through the holes in the PCB. **Solder ONE corner pin into place while holding the button firmly in place.**



Then do the same with the second pushbutton.

## 14.

Now, turn over the module and check that the pushbuttons can be clicked - that they move smoothly without rubbing too much on the sides. If not, you can adjust by melting the corner pins that you've soldered. Once you're happy, solder all 6 pins on each button.

15.

Next, push the LED into place,
ensure it's in the hole and - if using a
flat head LED - hold it flush to the
front surface of the panel with a bit
of masking tape or Blu-tac. Solder
the two legs and then snip off the
excess leads.
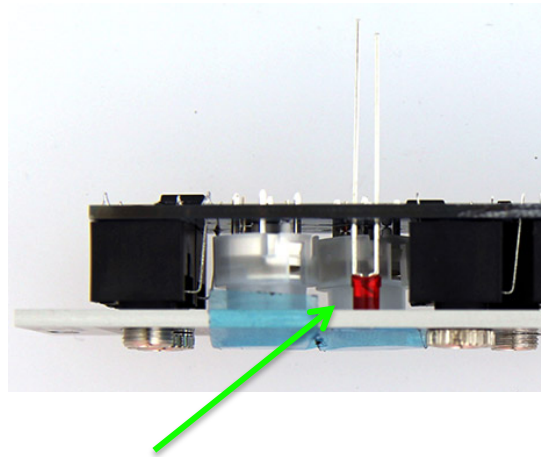


16.

Finally, solder ALL the other points on the back - all the sockets and the
potentiometer.

Be careful down around the 6 pins of the potentiometer - there's a socket
'leg' very nearby, ensure there are no big blobs of solder causing a short
circuit.

There are LOTS of legs, and they're close to lots of tiny components. Go
slowly and make sure you have plenty of light and a clean soldering tip.

Once you've finished, check to make sure you haven't missed a point
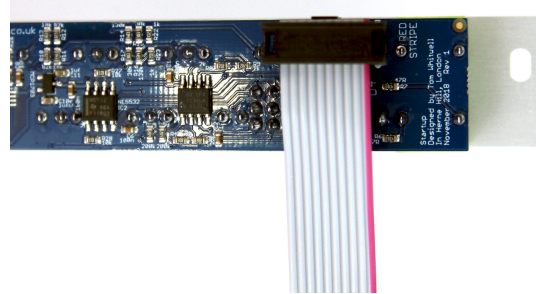somewhere.
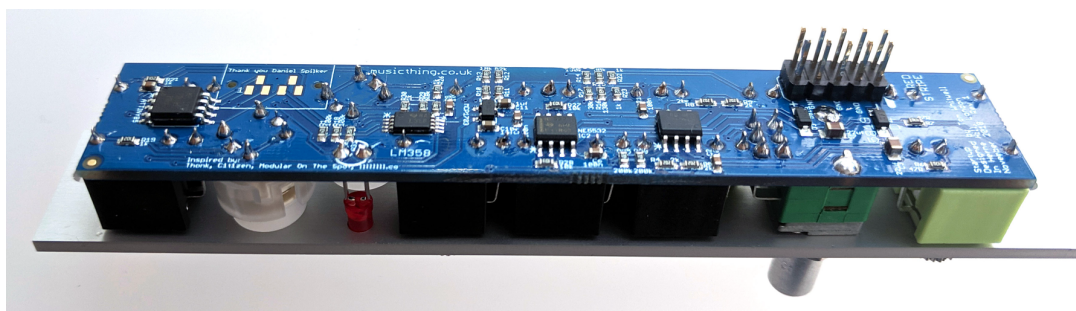


17.

Now you can screw on all the rest of
the nuts and place the knob onto the
pot.

18.

The module is now complete. Affix the power cable as shown with the red stripe on the cable facing towards the PCB text: 'RED STRIPE'



19.

You can find the Quickstart manual for STARTUP here:

https://musicthing.co.uk/collateral/Startup_Rev1_Manual.pdf