Tubbutec OrganDonor

Installation manual for Korg Delta DL-50

Tools you will need:
- Soldering iron
- Wire stripper
- Metal drill 3.5mm (or similar)
- Metal drill for a 15mm hole (stepping drill for example)
- Center punch
- Screw driver

Included in the kit:
- OrganDonor Main Board
- 4x organ Donor Switch Board, 3x 2x16pin connector, 1x Single
- Analog switch connection: 2x 16pin 125cm, 2x 16pin 115cm, 2x16pin 105cm, 1x Single 55cm
- Interconnect cables: 1, 43cm, 3x 5cm
- Midi connector assembly
- Power connector
- Learn button
- Midi socket drill guide
- 2x M3 bolt, 2xM3 nut for midi socket
- 8x 2,9x6,5mm screws
- 4x plastic standoff for Mainboard

Principle of operation

OrganDonor uses analog switches to simulate keyboard presses directly. Normally this would require to solder two wires for each key. Luckily this can often be avoided by grouping common signals. OrganDonor features solder jumpers to connect common signals on the back of each analog switch board.
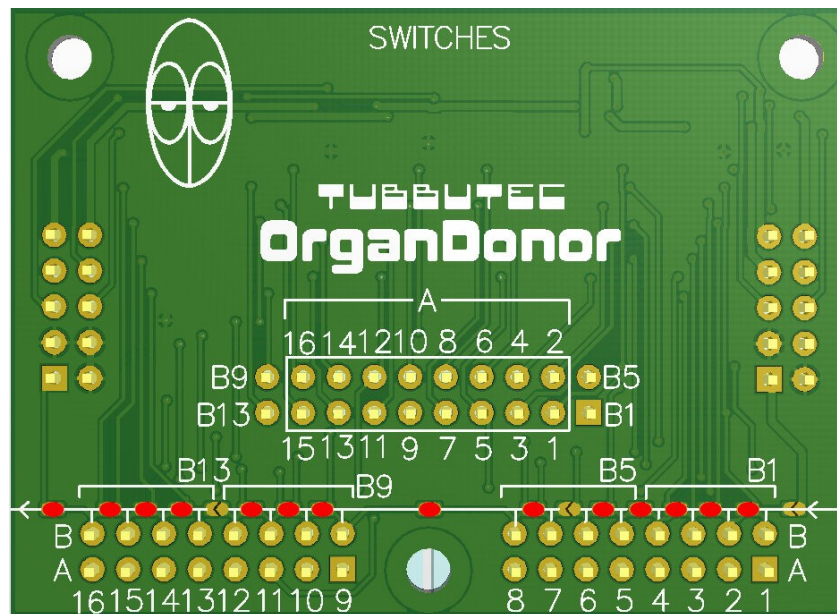
In the case of the Korg Delat there are 8 common signals, grouped in 7x6 notes and 1x7 notes.

Switchboard Configuration

The switchboards come already configured by us, so this is just for documentation or for troubleshooting, should it be necessary.
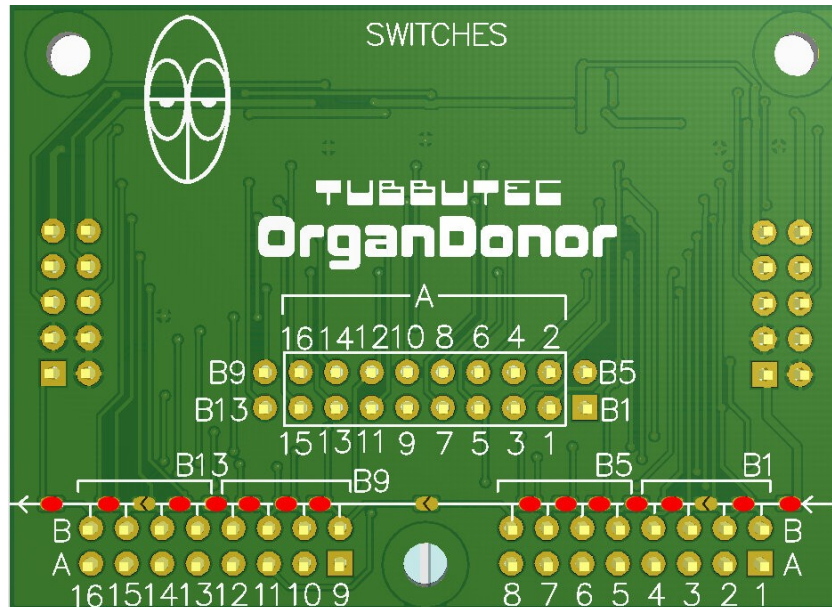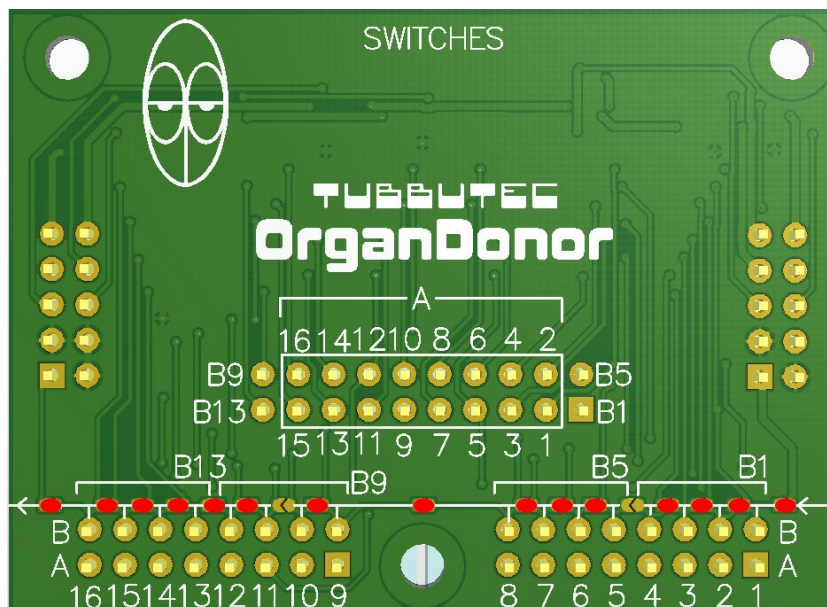
Switchboard 1

2x16pin Header

Switchboard 2

2x16pin Header

Switchboard 3

2x16pin Header

Switchboard 4

Single Switch Board: solder bridge is also placed.

Installation

First you need to remove the keyboard. The keyboard has 7 plugs, 6 of them (5 6pole plugs and 1 7pole plug) are connected to the voiceboard, these are the keycontacts. 1 plug (8pole) is connected to the panel board. These are the common connections. Unplug and remove the keyboard. The plugs are marked, so it`s easy to place them back later.

It is also recommended to remove the pitch bend unit, but that is not absolutely necessary.

Place the Switch Boards as shown in Figure 1. Several things need to be noted:

- place the boards as close to the wooden frame that holds the voiceboard as possible to keep clearance for the keyboard, but also leave enough space for the ribbon cables so they don`t interfere with the voiceboard mounting holes.

- the Switch Boards are turned 180 degrees, so the first wire is on the right side. That means we`re counting wires from right to left!
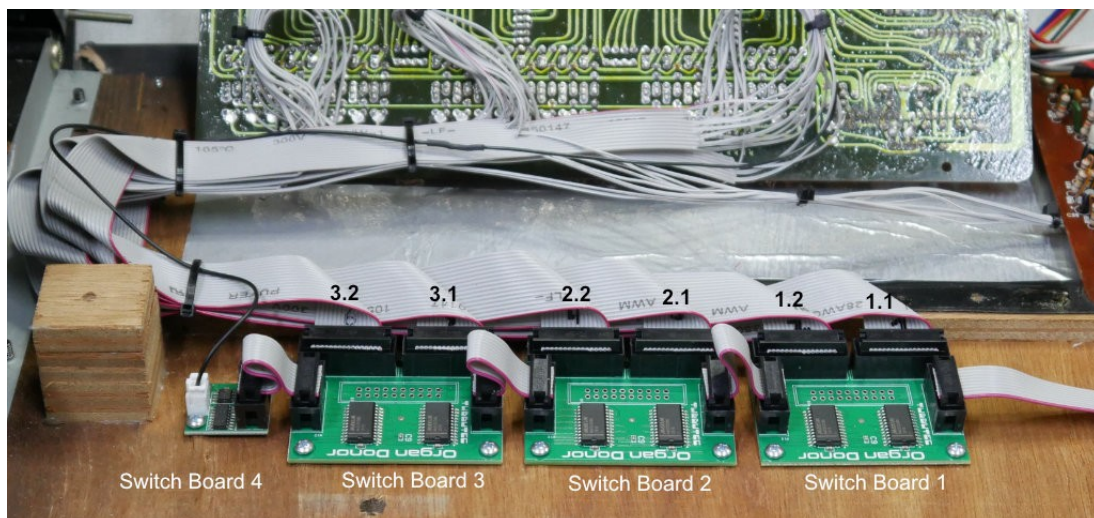

Figure 1: Switch Board placement

Plug in the interconnection cables and the switch board cables.

Remove the 6 screws of the Voiceboard and tilt the board towards the backside.
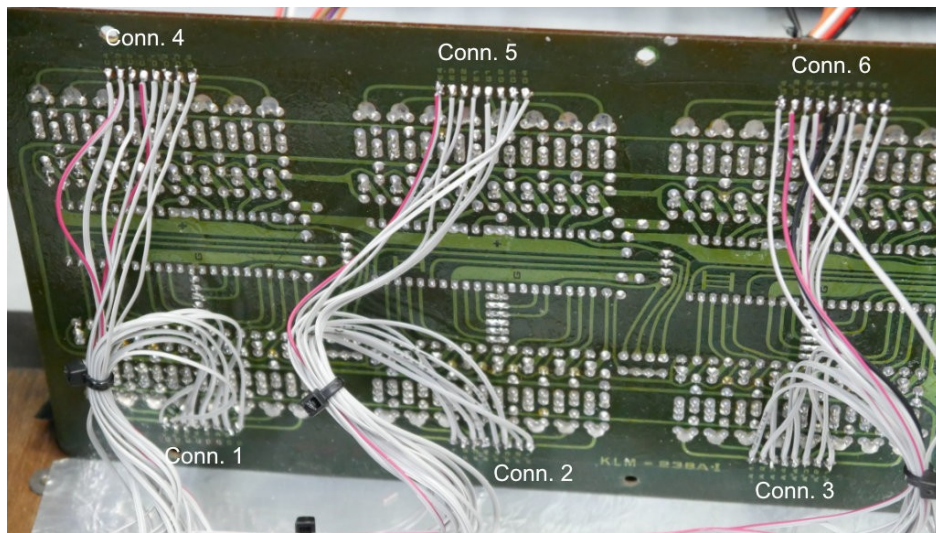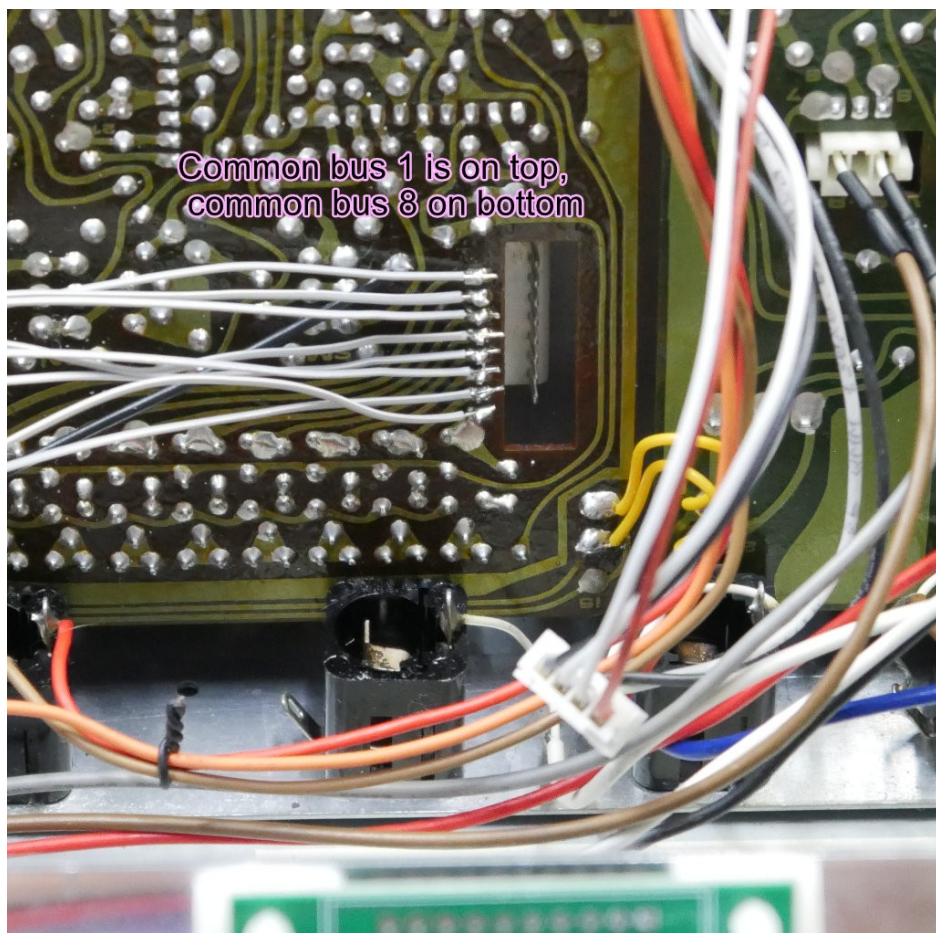
Figure 2: Connector placement

Figure 3: Common bus connections

Now solder the wires to the connectors as stated in the list below. The notes are marked on the connectors, so it is quite easy to see which wire goes where.

Switch board 1.1 (1st 16pin connector):

Wire 1 (red stripe) gets soldered to note C1 on Connector 4

Wire 2 gets soldered to **common connection 1**

Wire 3 gets soldered to note C#1 on Connector 1

Wire 4 is not used and can get cut off

Wire 5 gets soldered to note D1 on Connector 1

Wire 6 is not used and can get cut off

Wire 7 gets soldered to note D#1 on Connector 4

Wire 8 is not used and can get cut off

Wire 9 gets soldered to note E1 on Connector 5

Wire 10 is not used and can get cut off

Wire 11 gets soldered to note F1 on Connector 2

Wire 12 is not used and can get cut off

Wire 13 gets soldered to note F#1 on Connector 2

Wire 14 gets soldered to **common connection 2**

Wire 15 gets soldered to note G1 on Connector 5

Wire 16 is not used and can get cut off

Switch board 1.2 (2nd 16pin connector):

Wire 1 (red stripe) gets soldered to note G#1 on Connector 6

Wire 2 is not used ad can get cut off

Wire 3 gets soldered to note A1 on Connector 3

Wire 4 is not used and can get cut off

Wire 5 gets soldered to note A#1 on Connector 3

Wire 6 is not used and can get cut off

Wire 7 gets soldered to note B1 on Connector 6

Wire 8 is not used and can get cut off

Wire 9 gets soldered to note C2 on Connector 4

Wire 10 gets soldered to **common connection 3**

Wire 11 gets soldered to note C#2 on Connector 1

Wire 12 is not used and can get cut off

Wire 13 gets soldered to note D2 on Connector 1

Wire 14 is not used and can get cut off

Wire 15 gets soldered to note D#2 on Connector 4

Wire 16 is not used and can get cut off

Switch board 2.1 (1st 16pin connector):

Wire 1 (red stripe) gets soldered to note E2 on Connector 5

Wire 2 is not used and can get cut off

Wire 3 gets soldered to note F2 on Connector 2

Wire 4 is not used and can get cut off

Wire 5 gets soldered to note F#2 on Connector 2

Wire 6 gets soldered to **common connection 4**

Wire 7 gets soldered to note G2 on Connector 5

Wire 8 is not used and can get cut off

Wire 9 gets soldered to note G#2 on Connector 6

Wire 10 is nout used and can get cut off

Wire 11 gets soldered to note A2 on Connector 3

Wire 12 is not used and can get cut off

Wire 13 gets soldered to note A#2 on Connector 3

Wire 14 is not used and can get cut off

Wire 15 gets soldered to note B2 on Connector 6

Wire 16 is not used and can get cut off

Switch board 2.2 (2nd 16pin connector):

Wire 1 (red stripe) gets soldered to note C3 on Connector 4

Wire 2 gets soldered to **common connection 5**

Wire 3 gets soldered to note C#3 on Connector 1

Wire 4 is not used and can get cut off

Wire 5 gets soldered to note D3 on Connector 1

Wire 6 is not used and can get cut off

Wire 7 gets soldered to note D#3 on Connector 4

Wire 8 is not used and can get cut off

Wire 9 gets soldered to note E3 on Connector 5

Wire 10 is not used and can get cut off

Wire 11 gets soldered to note F3 on Connector 2

Wire 12 is not used and can get cut off

Wire 13 gets soldered to note F#3 on Connector 2

Wire 14 gets soldered to **common connection 6**

Wire 15 gets soldered to note G3 on Connector 5

Wire 16 is not used and can get cut off

Switch board 3.1 (1st 16pin connector):

Wire 1 (red stripe) gets soldered to note G#3 on Connector 6

Wire 2 is not used and can get cut off

Wire 3 gets soldered to note A3 on Connector 3

Wire 4 is not used and can get cut off

Wire 5 gets soldered to note A#3 on Connector 3

Wire 6 is not used and can get cut off

Wire 7 gets soldered to note B3 on Connector 6

Wire 8 is not used and can get cut off

Wire 9 gets soldered to note C4 on Connector 4

Wire 10 gets soldered to **common connection 7**

Wire 11 gets soldered to note C#4 on Connector 1

Wire 12 is not used and can get cut off

Wire 13 gets soldered to note D4 on Connector 1

Wire 14 is not used and can get cut off

Wire 15 gets soldered to note D#4 on Connector 4

Wire 16 is not used and can get cut off

Switch board 3.2 (2nd 16pin connector):

Wire 1 (red stripe) gets soldered to note E4 on Connector 5

Wire 2 is not used and can get cut off

Wire 3 gets soldered to note F4 on Connector 2

Wire 4 is not used and can get cut off

Wire 5 gets soldered to note F#4 on Connector 2

Wire 6 gets soldered to **common connection 8**

Wire 7 gets soldered to note G4 on Connector 5

Wire 8 is not used and can get cut off

Wire 9 gets soldered to note G#4 on Connector 6

Wire 10 is not used and can get cut off

Wire 11 gets soldered to note A4 on Connector 3

Wire 12 is not used and can get cut off

Wire 13 gets soldered to note A#4 on Connector 3

Wire 14 is not used and can get cut off

Wire 15 gets soldered to note B4 on Connector 6

Wire 16 is not used and can get cut off

Switch board 4 (Single Switch Board):

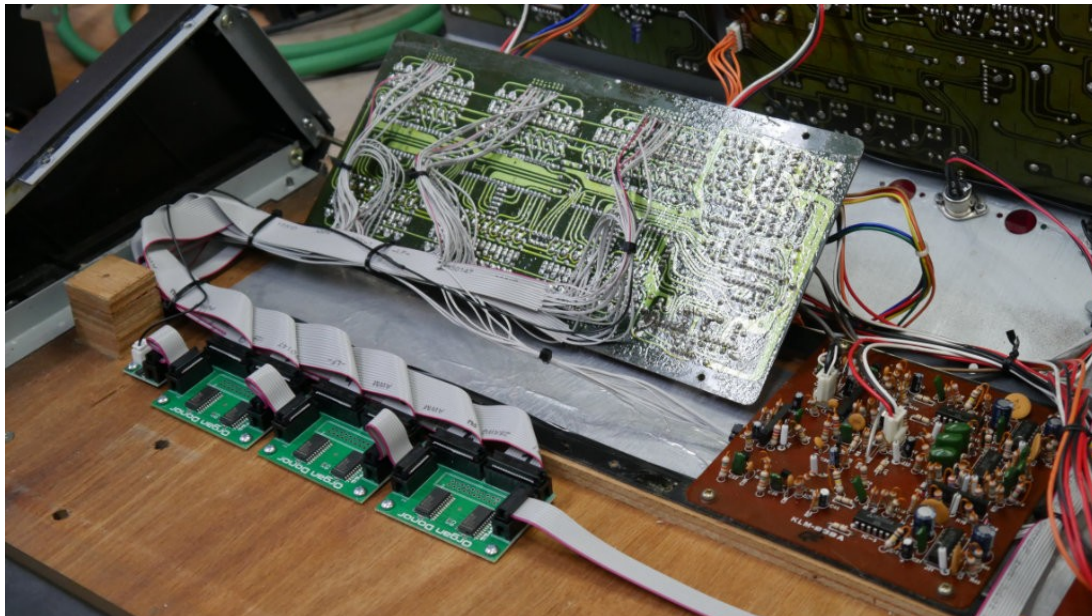The black wire gets soldered to note C5 on Connector 6

Figure 4: completed installation

Power connection

Attach the mainboard to the heatsink of the powersupply using the 4 self-adhesive plastic standoffs. You might want to cut the standoffs a little bit so they won`t protrude the heatsink.
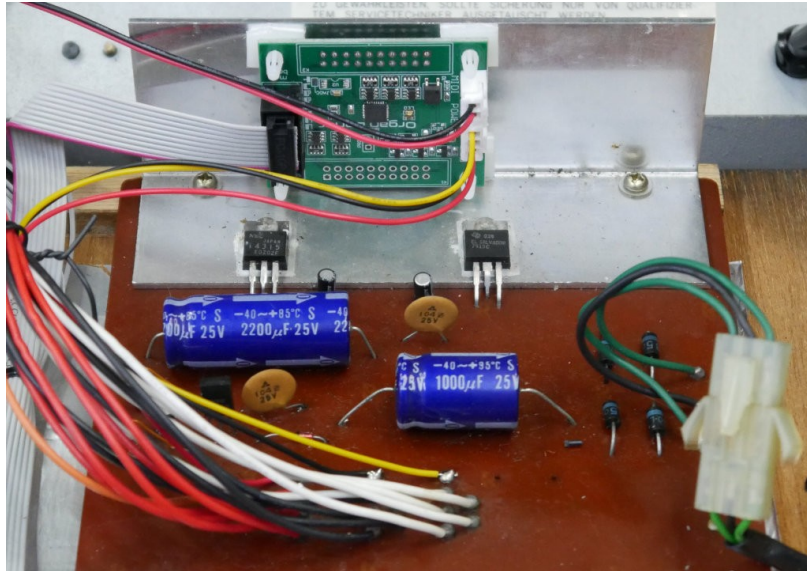

Figure 5: Main Board placement

Solder the wires to the power supply board as shown in Figure 6.

The yellow wire gets soldered to the white wires (-15V), the black wire to the black wires (GND) and the red wire to the red wires (+15V).
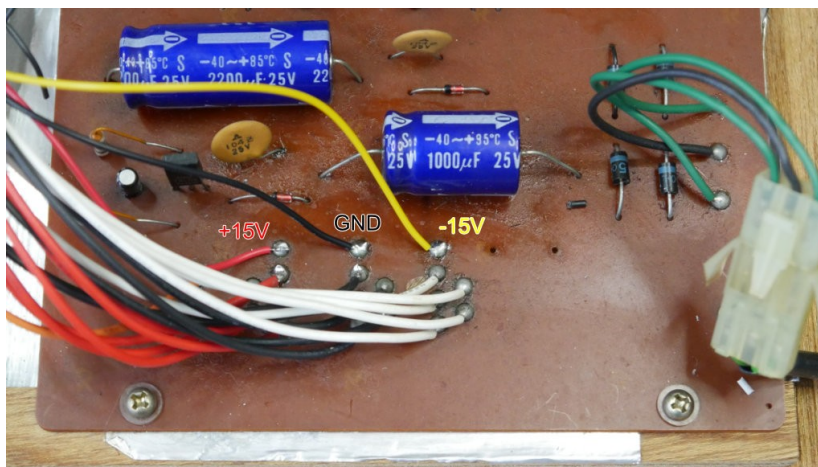

Figure 6: Power connections

Plug in the interconnection ribbon cable from the Main Board to Switch Board 1.

Installing the midi socket

Decide where you want to install the MIDI socket.
Use the provided drill guide to center punch the locations of the 3 holes.
The two small holes need to be about 3.5mm in diameter, the large hole 15mm. Here we typically use a stepping drill.
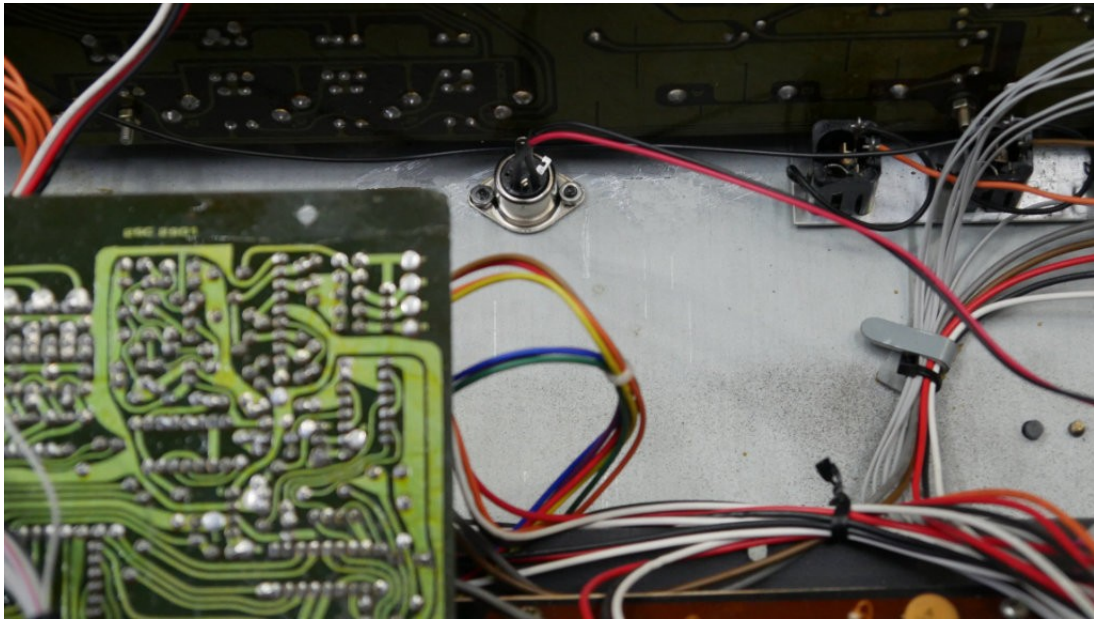

Figure 7: MIDI jack placement

Figure 8: MIDI jack

Installing the optional learn button

The optional learn button can be used to set midi channel. It needs to be connected to the IO "2" and "G" pin on the main board. (The back of the main board has labels on it). Wires are not included in the kit.
Press the learn button and while it is pressed send a midi note on any midi channel. OrganDonor will use this midi channel from now on. These settings are saved.

Configuration

You need to flash the corresponding configuration file to OrganDonor using our configuration tool.
The configuration tool can also be used to experiment with settings and key assignments.
You`ll find the configurator here:
https://tubbutec.de/files/organDonor/
tubbutecOrganDonorConfigurator.html
This is a browser application, it works with Chrome and Safari right away, Firefox needs to be configured for web MIDI.
The configurator allows you to upload your settings directly from your browser to OrganDonor, safe and load settings and export settings as SysEx files for uploading to Organ Donor via another SysEx tool.