

Tubbutec OrganDonor

Installation manual for Roland RS-505



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
- 5x organ Donor Switch Board, 3x 16pin Connector, 2x 20pin connector
- Analog switch connection:
 - Switch 1 16pin, 40cm
 - Switch 2 16pin, 45cm
 - Switch 3 20pin, 45cm
 - Switch 4 16pin, 45cm, wire 1 extended to 75cm
 - Switch 5 20pin, 40cm, wire 1 extended to 64cm
 - optional 16pin header on switch board 5, 120cm
- Interconnect cables: 1x 8cm, 2x 14cm, 1x 22cm, 1x 45cm
- Midi connector assembly
- Power connector
- Learn button
- 2 resistors (1K, 47K), 1 capacitor (100nF)
- 19x screw 2,9x6.5mm
- Midi socket drill guide
- 2x M3 bolt, 2xM3 nut for midi socket

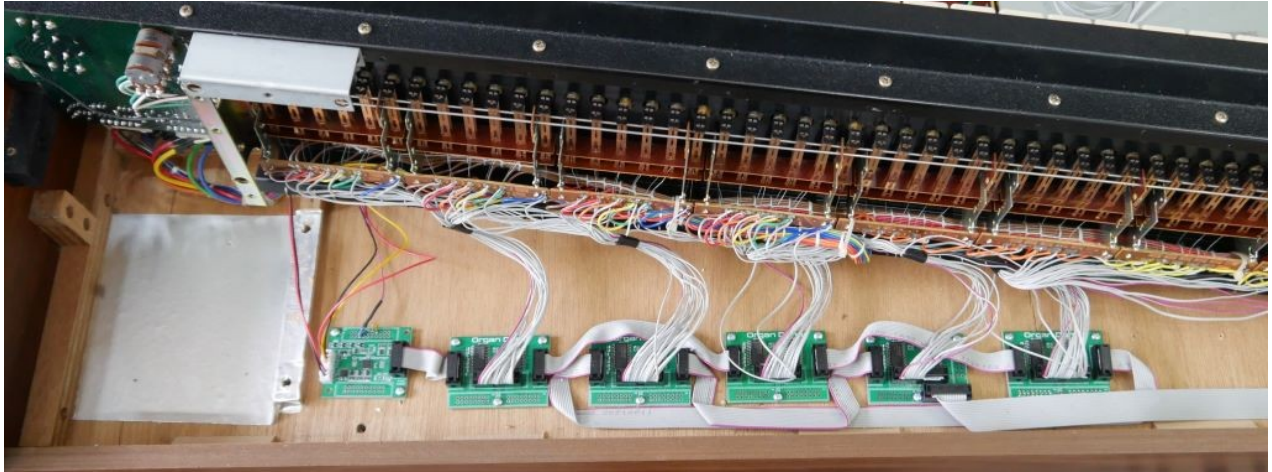
Principle of operation

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. We already connect these jumpers for you.

In the case of the Roland RS-505 there is one common signal for the String section (all 49 keys), and one common signal for the bass section (lower 24 keys). This allows for different configurations: you can trigger the keys via one MIDI channel (strings and bass at the same time), or you can split MIDI channels, for example MIDI channel 1 for the strings and MIDI channel 2 for the bass. The standard configuration uses 1 MIDI channel.

Board installation

Mount the main board and the 5 switch boards directly to the bottom of the synthesizer case under the keyboard using the supplied 2,9x6,5mm screws.



Please note: the order of the boards is as followa:

main – switch 1 – switch 4 – switch 2 – switch 5 – switch 3

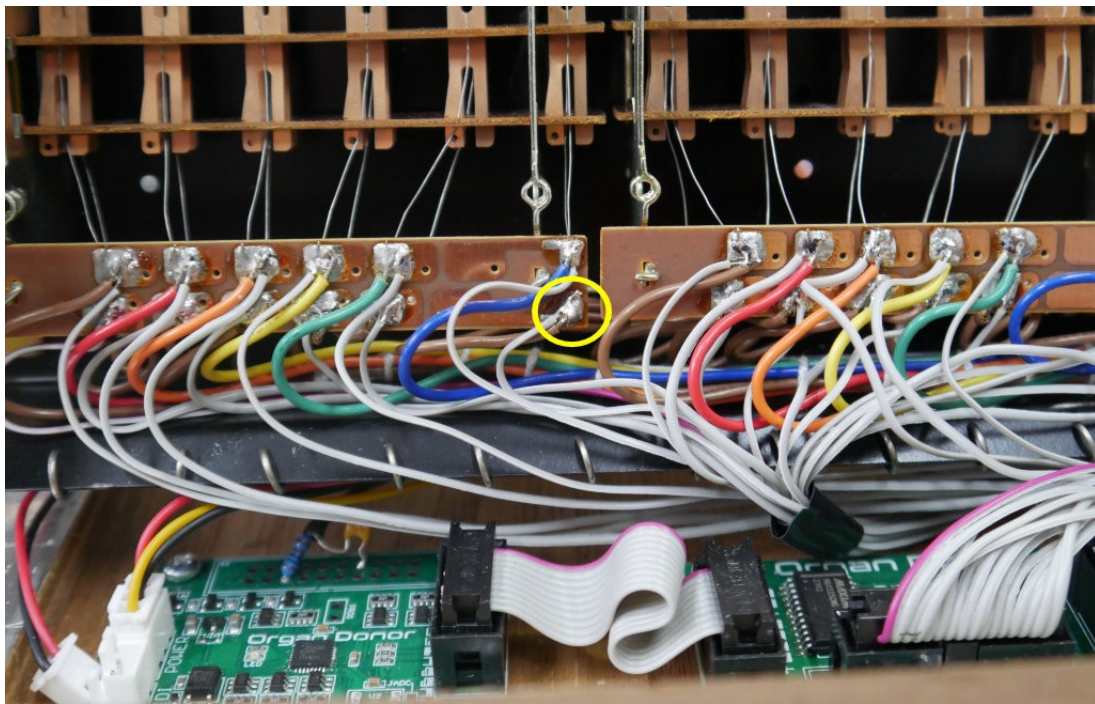
The boards are marked on the backside, so make sure they are in the correct order. We installed them in this order to reduce cable length for the bass connections.

Please take also care that you connect them in the correct order, using the interconnection cables: main – s1 – s2 – s3 – s4 – s5

Install the interconnection cables and the switch cable assemblies.
Take care of the order of connections.
Cut the cables to length and strip the wires.
Solder the wires to their respective points on the pcb, take care not to desolder the internal wires.

Switch board 1:

Wire 1 - 16 get soldered to the lower row of key contacts to contacts 1 - 16.



Switch board 2:

Wires 1 - 16 get soldered to the lower row of key contacts to contacts 17 - 32.

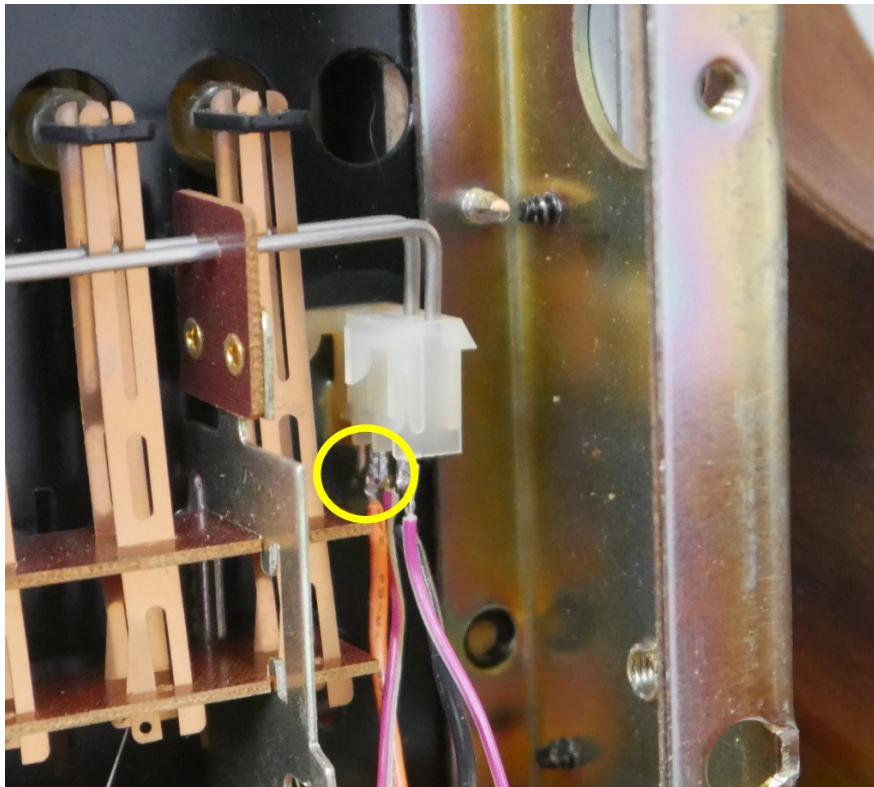
Switch board 3:

Wires 1 gets soldered to the common bus of the synth/string section (orange wire).

Wire 2 gets cut.

Wires 3 - 18 get soldered to the lower row of key contacts to contacts 33 - 48.

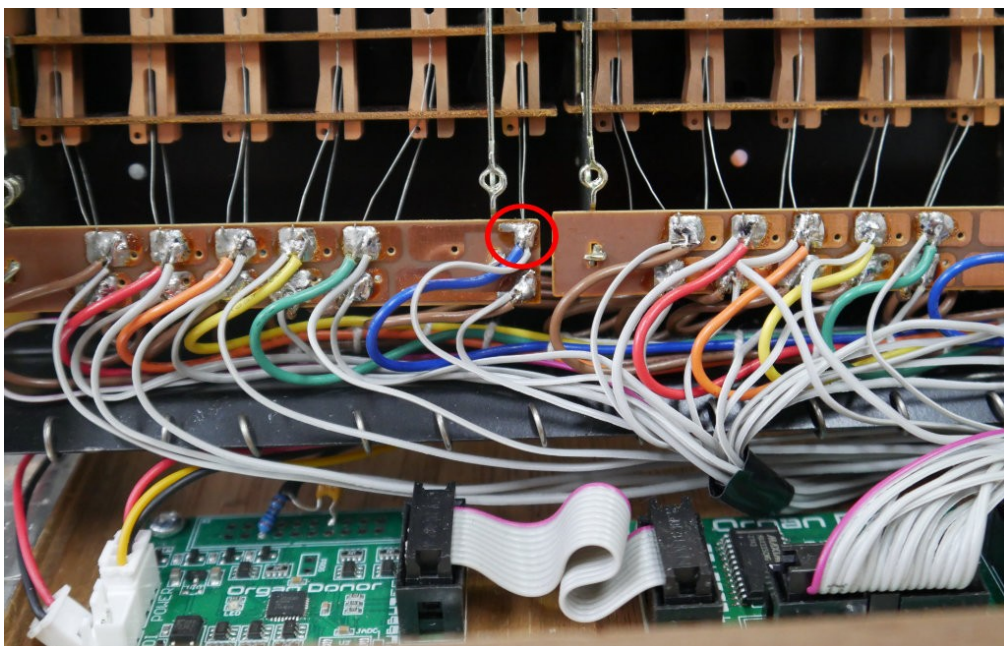
Wires 19 and 20 get cut.



Switch board 4:

Wire 1 (the extended one) gets soldered to key contact 49 of the lower row of key contacts.

Wires 2 – 16 get soldered to the upper row of key contacts to contacts 1 – 15.



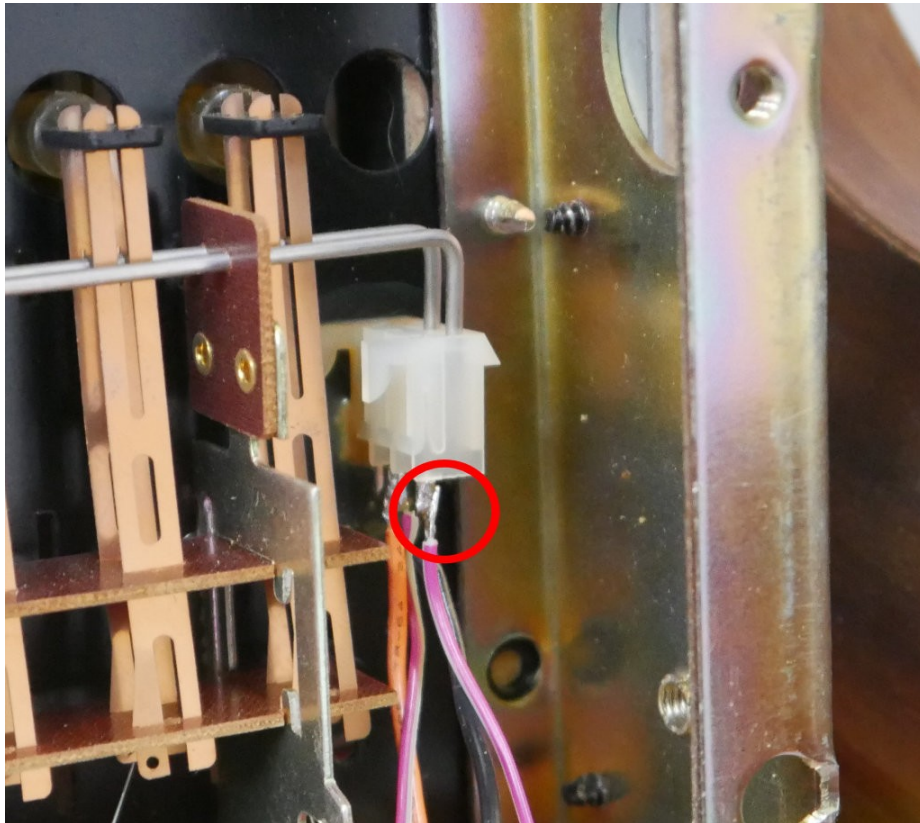
Switch board 5:

Wires 1 (the extended one) gets soldered to the common bus of the bass section (black wire).

Wire 2 gets cut.

Wires 3 – 11 get soldered to the upper row of key contacts to contacts 16 – 24.

Wires 19 and 20 get cut.



Optional 16pin header of switch board 5

There are 7 switch contacts left, so we choose to use 6 of those to switch the registers of the synth section on and off via MIDI CC.

To do that you simply have to solder 2 wires each to the switches.

Wires 1 and 2 get cut.

Wires 3 and 4 get soldered to the Bass 16` switch (CC#85).

Wires 5 and 6 get soldered to the Bass 8` switch (CC#86).

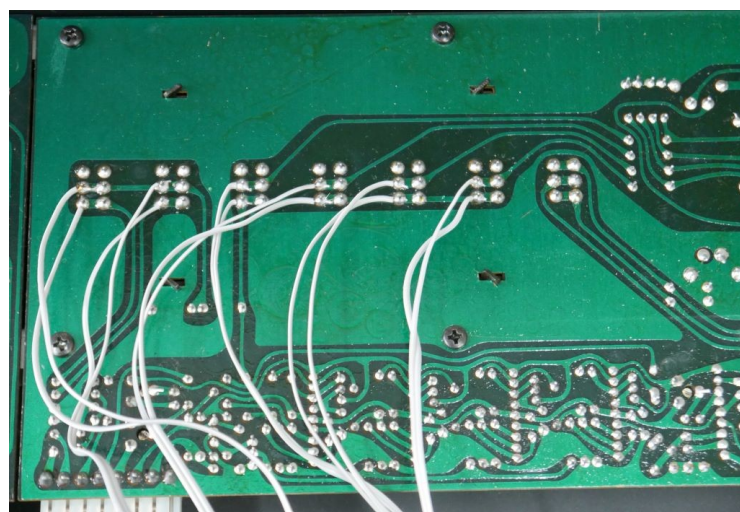
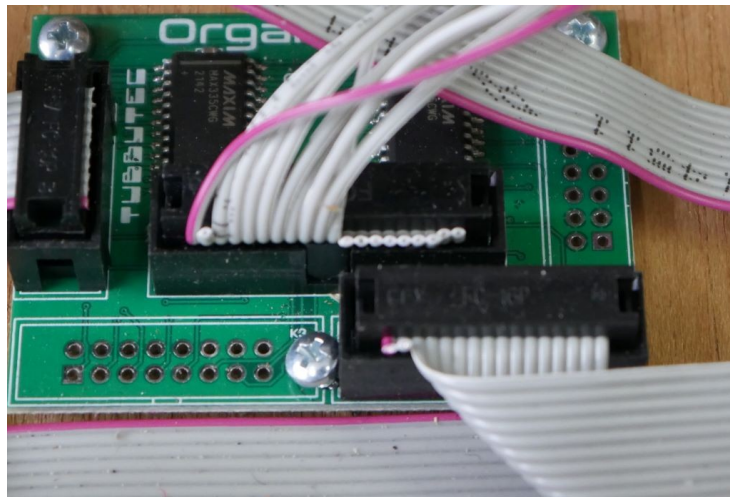
Wires 7 and 8 get soldered to the Lower 8` switch (CC#87).

Wires 9 and 10 get soldered to the Lower 4` switch (CC#88).

Wires 11 and 12 get soldered to the Upper 8` switch (CC#89).

Wires 13 and 14 get soldered to the Upper 4` switch (CC#90).

Wires 15 and 16 get cut.



To use these the hardware switches must be turned off.
Then you can switch them on and off via MIDI CC#85-90.

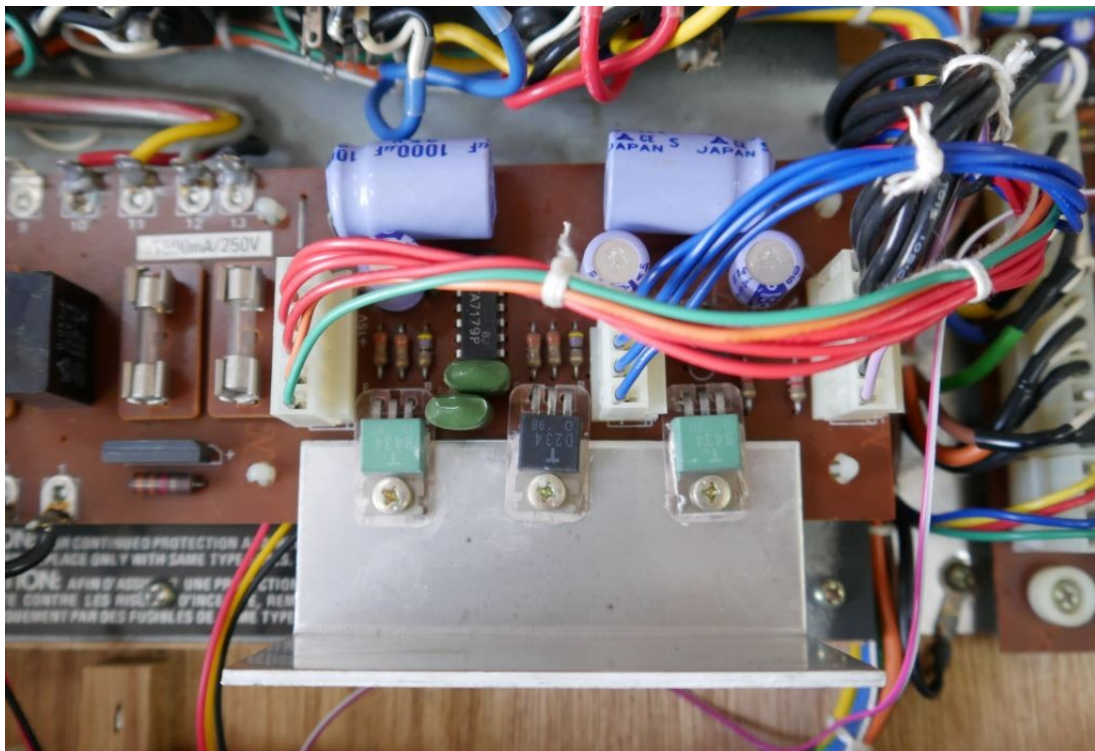
Power connection

Install the power connection wire assembly as follows:

The red wire gets soldered to +15V on the bottom side of the power supply pcb. This is the connector on the left, with the red wires being the +15V connections.

The black wire gets soldered to the ground connection (marked E) on the bottom side of the power supply pcb. This is the connector to the right, with the black wires being the ground connections.

The yellow wire gets soldered to -15V on the bottom side of the power supply pcb. This is the connector in the middle, with the blue wires being the -15V connections.



Installing the MIDI socket

Drill the holes for the MIDI jack directly above the power inlet and install the MIDI wire assembly.



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. These settings are saved.

Installing the optional Filter Control

It is possible to control the filter cutoff via MIDI.

To do so you need to install the included resistors and capacitor as follows:

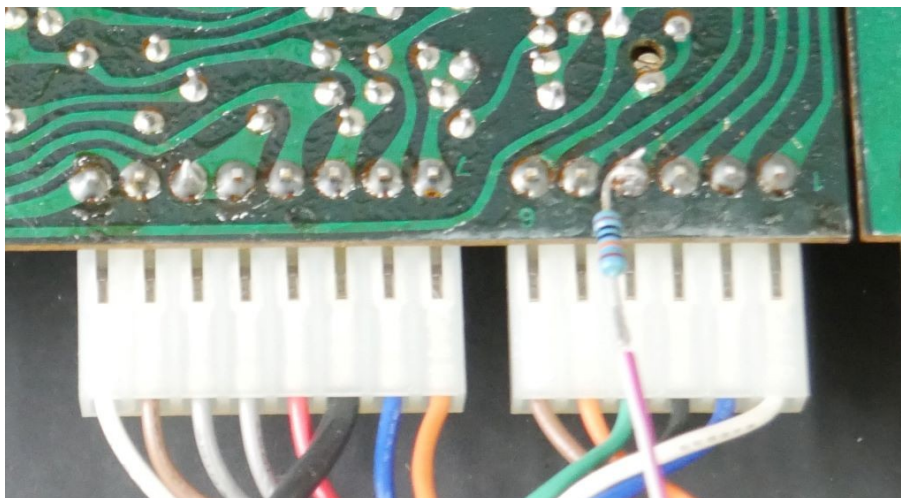
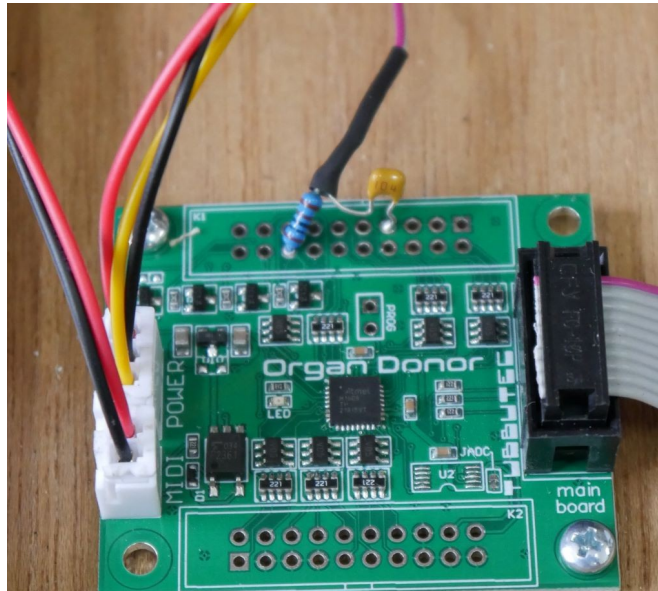
Solder one leg of the 1K resistor to the PWM1 connection (The back of the main board has labels on it).

Solder one leg of the 100nF capacitor to a ground connection of the main board. Solder the second leg of the capacitor to the other leg of the 1K resistor.

Solder a wire to the connection of the 1K resistor and capacitor.

Solder the 47K resistor to the 4th pin from the right of the 6pin connector of the filter control board.

Solder the wire coming from the 1K resistor to the 47K resistor.



Now you can control cutoff via MIDI CC# 23.

Configuration

We already flashed the corresponding configuration file to Organ Donor. There is, however, a software configuration tool available, in case you want to play around 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 Organ Donor, save and load settings and export settings as SysEx files for uploading to Organ Donor via another SysEx tool.