How to midify a Yamaha SY1 using MIDImplant

The Yamaha SY1 doesn't have any connections except audio out and footcontroller input. So a midi input is desirable. I couldn't find any decent midi conversion for the Yamaha SY1. So it was time to solve this problem with the use of the MIDImplant. What makes the SY1a little more complicated to midify is that it doesn't have a real gate input (like many Korg's and Yamaha's). The cure needs some resistors, one transistor, one 5 volt reed relays and an opamp.
The internal power supply is +/-15 volts and the MIDImplant is designed up to +15 volts and thus can be connected directly to the internal +15 V and ground of the Yamaha SY1.

1 Open the synth and inspect.

Turn the synth up side down. Unscrew the 2 big screws next to the 2 front feet. These hold the keyboard and switches in place. These screws don't come out, you just have to loosen them. Turn the synth and flip the keyboard open.
Trim the power supply to -15,00 V and +15,00 V. Look at the service manual to calibrate the keyboard. It should be 4 volts for the upper C note.

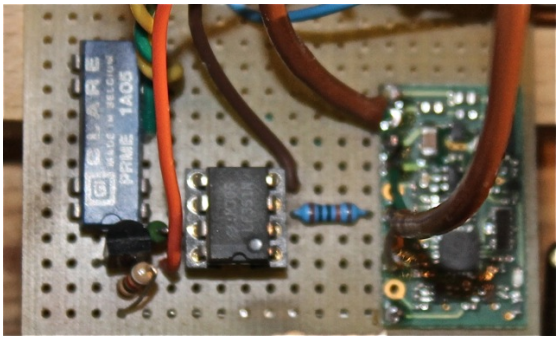
2 The MIDI connector/ Switch.

I'm going to install a cable DIN connector and a switch and guide them through the cinch jones plugs using balanced shielded cable. Connect them to the MIDImplant according to the manual.

If you like to use the second hole for a midi through connector instead of the switch, you can always program the MIDImplant with midi sysex.

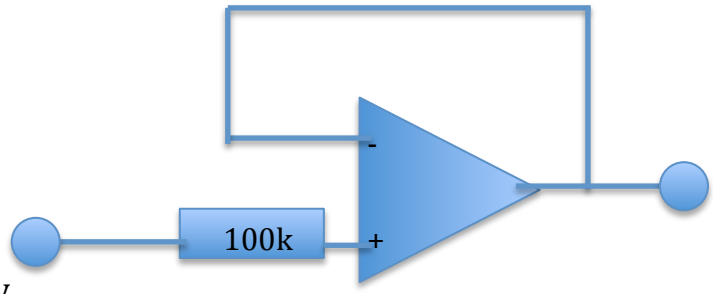
3 CV-Opamp buffer.

I built a small buffer on breadboard.



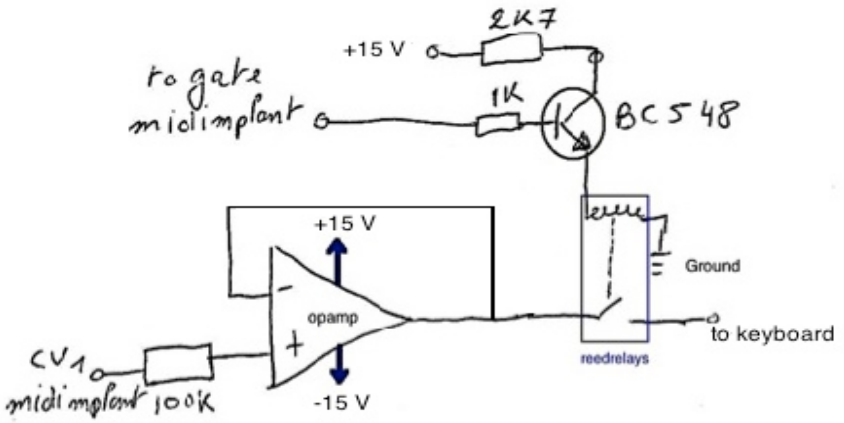
Order here: www.midi-hardware.com Installed and written by : www.studioreanimator.be

Make sure you connect the opamp to +15 volts and – 15 volts. The output goes to a 5 volt reed relays. The relays is switched by a NPN transistor, like BC548. You can add a 10k multiturn trimpot connected to + and – 15 volts, connect the wiper via a 1M resistor to the positive input of the opamp to compensate for the offset of the opamp or you can use an opamp with no offset. These days there is a wide choice of opamps, which don't have any real offset. Don't use the old faithful NE5534. I have a pile of LF351 and after testing 6 I found one with an offset of 0,04 volts, which should be OK. The schematic:



Output to reed relays

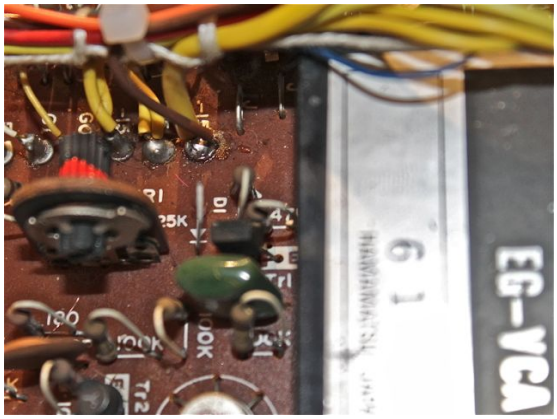
From MIDImplant CV



Ground and +15 Volts to MIDImplant

4 Solder the wires to the Yamaha SY1 PCB.

Take the +/_ voltages from the SM2 board: the orange wire (solder point 68, the closest to the edge of the pcb and where the brown wires are soldered) in the first picture is +15V, the brown wire (solder point 49, the closest to the EG-VCA and where the big yellow wire is soldered) in the second picture is -15V. Never connect the -15 V to the MIDImplant.

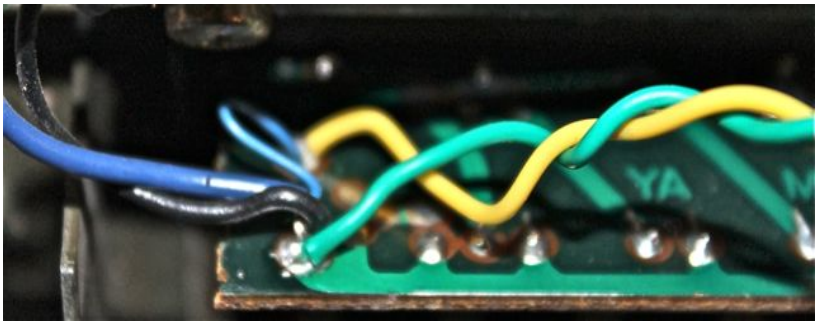


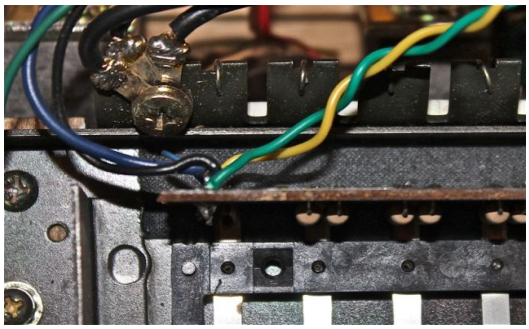
The red wire with the grey shielding is CV2. It goes to a 470k resistor and then to the positive input of opamp 8. CV2 can control volume and the filter using the potentiometers on the back of

the synth. Velocity didn't give a good result: If you release a note the value falls back to 0 what is not desirable.

In the last picture you see the connection of the green ground wire and the yellow wire that goes to the keyboard input.

Install a single pole switch to switch between keyboard and MIDI CONTROL. This is not really necessary as long as you don't play the keyboard and midi simultaneously. I'm not installing this.





8 Configuring the MIDImplant.

You have to put the MIDImplant in V/Hz mode (3 or 4 octaves) and gate polarity on positive volt, off 0 volt. For this go to http://www.midimplant.com/config3.html

For MAC users, use Safari. Click "create midi file". Than the "ALT" button and click on download midi file. The MIDI file is now in your downloads folder. Play it through your midi sequencer to the MIDImplant. I use SysEx Librarian, it's freeware and a great little program to backup all your midi equipment.

9 Inspection.

This is what it looks like when the work is done. Now close the SY1 and enjoy!!