How to midify a Korg 700s using MIDImplant

The MiniKorg 700s doesn't have any connections except audio out. So a midi input is desirable. I couldn't find any decent midi conversion for the MiniKorg on the net. It was time to solve this problem with the use of the MIDIplant. The MiniKorg doesn't have a real gate input (like on many Korgs), besides the MiniKorg has got 3 special features to take care of: the bender, portamento and auto trigger.
The cure needs some resistors, one transistor, one 5 volt reed relays and an opamp.
The internal power supply is approximately - 10 volt and +20 volt. The MIDImplant is designed up to 15 volt. Here we need a voltage regulator like the 7809.

1 Open the synth and inspect.

Remove the top metal plate and the wooden left side. Unscrew the 2 screws that hold the top left panel in place which were before hidden by the wooden panel. Sometimes there is a screw that connects the top panel to the keyboard. Remove the 4 big screws from the keyboard on the bottom of the synth.
The MiniKorg is becoming old. First thing to do is replace the caps of the power supply. For this you need the following caps: 3 x 100uf/63v , 470uf/35v, 470uf/63v. If you can't trim the power supply to -10v &+20v adjust the resistors in series with the trimmer. I added 820 ohm to the 10k resistor. Don't forget, most MiniKorgs prefer to see a little over 20 volt so 20,4 volt should be fine.

2 The MIDI connector/ Switch.

Drill holes in the back of the Minikorg if you like for the DIN connector(s) and for the switch.
I'm going to install cable connectors and leave them in the little container meant to put the power chord. The switch can be installed next to the fuse holder.
Connect the midi wires from the MIDImplant to the DIN connector.
Install a push button if you like for programming the MIDImplant. Solder one wire from the switch to the ground (on the output jacks for instance). The other one goes to the MIDImplant. If you don't like to drill holes, you can always program the MIDImplant with midi sysex.

Install a single pole switch to switch between keyboard and MIDI. Unsolder the wire that goes to contact 38. Connect the middle contact of the switch to contact 38. Switch between the wire that goes to contact 38 and the wire coming from our reed relays. This is not really necessary as long as you don't play the keyboard and midi simultaneously. I'm not installing this.

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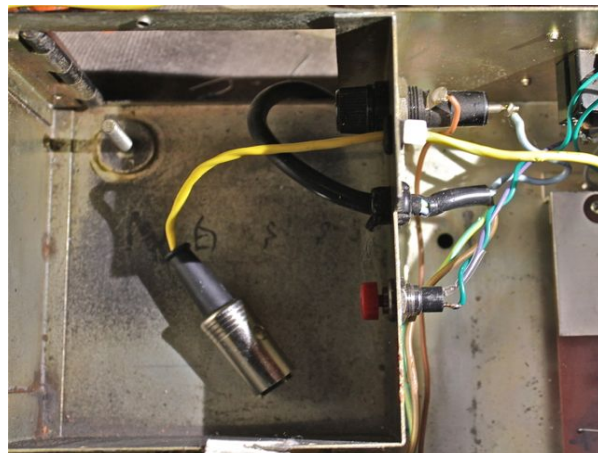
3 CV-Opamp buffer.

I built a small buffer on breadboard.
The 48k resistor can be a 2 x 22k resistors in series with a 10k trimpot. You can also add a 50k trimpot from positive to negative feeding the negative input of the opamp by a 2M2 resistor to compensate the offset of the opamp.
Make sure you connect the opamp to +20 volt and – 10 volt. The output goes to a 5 volt reed relays. The relays is switched by a NPN transistor, like BC548, powered by contact 11 on the MinKorg pcb and controlled by the MIDImplant.
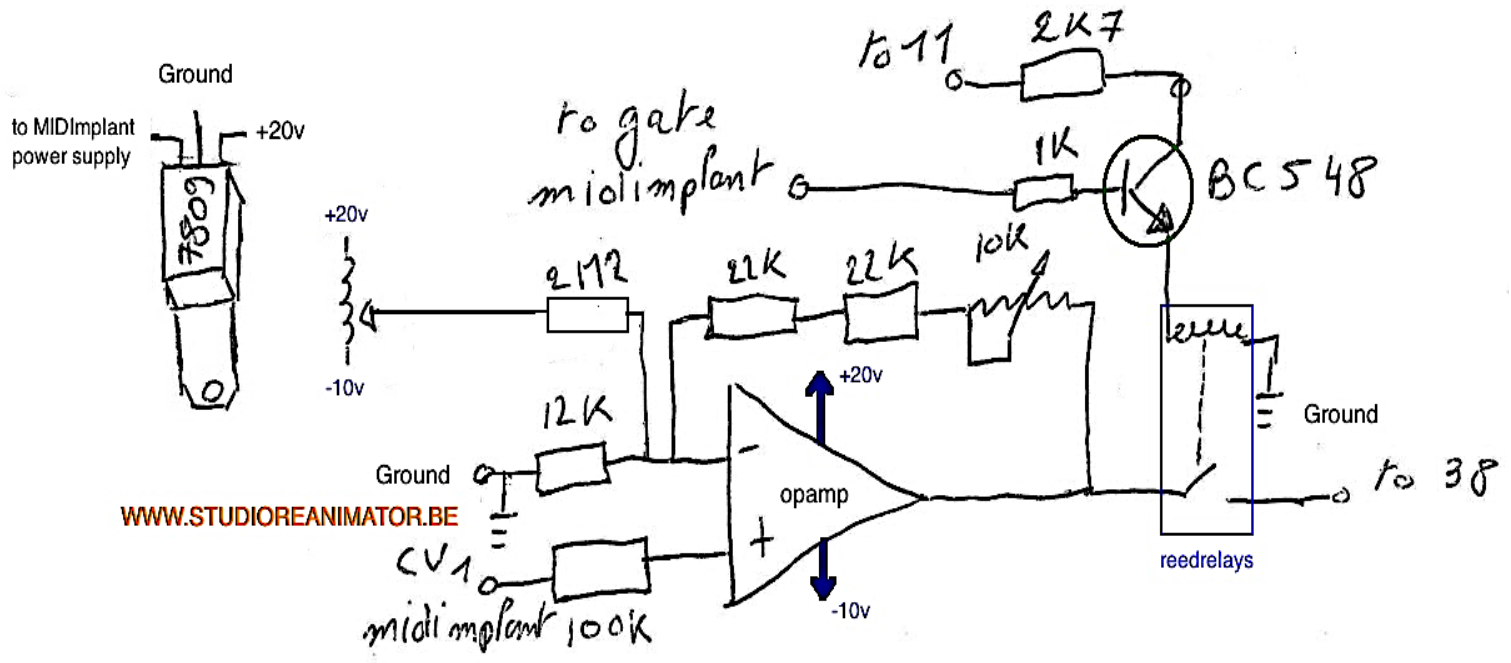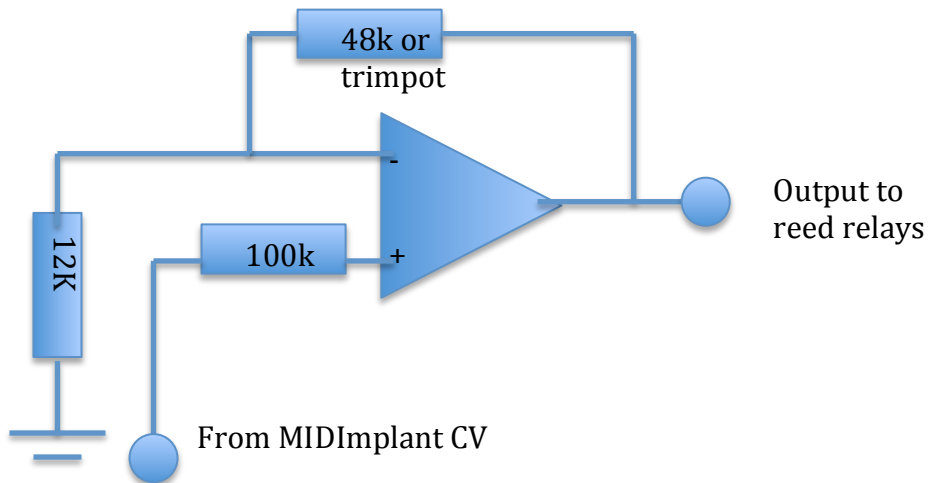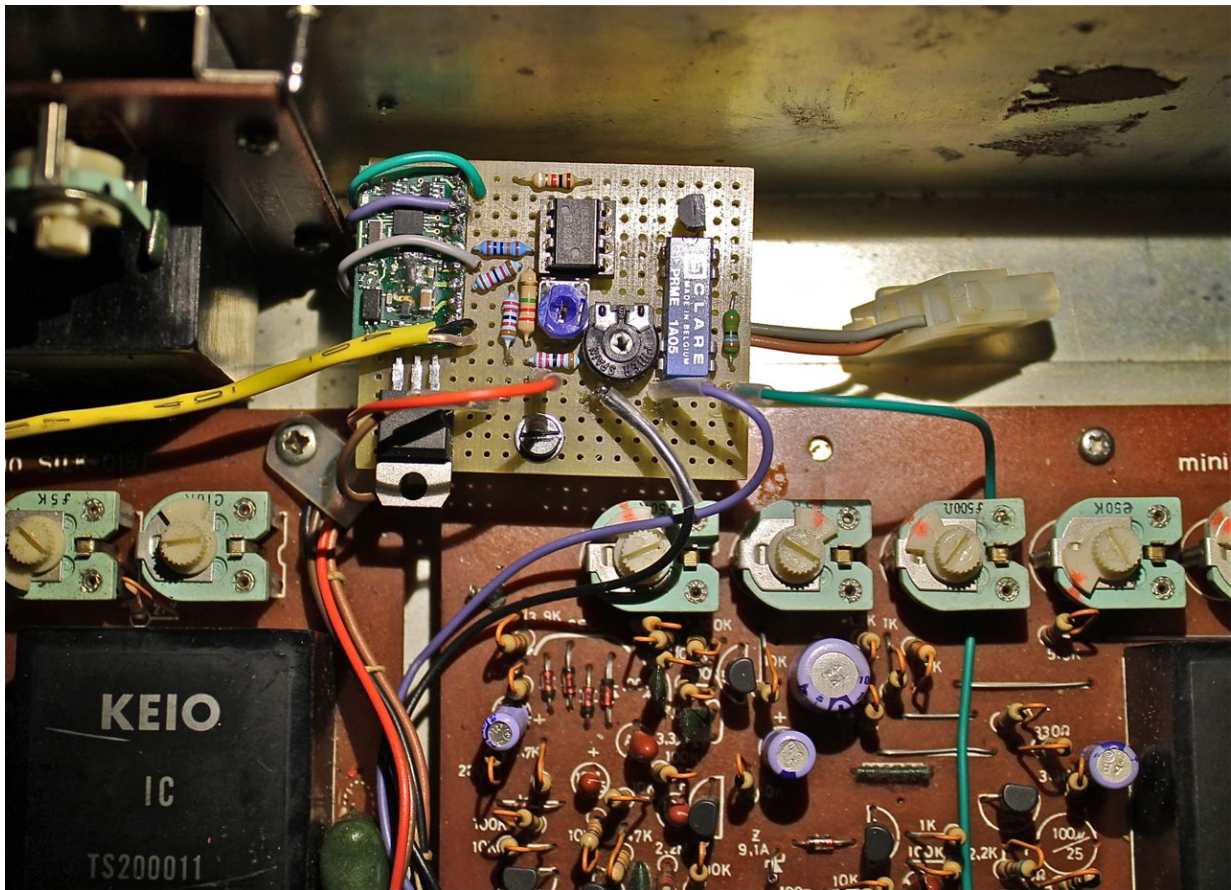
4 Solder the wires to the MiniKORG PCB.

To be sure not to damage the MIDImplant I used a 7809 voltage regulator to bring the voltage for the MIDImplant down to 9 volts. Take the voltages from the vco board: Connection 40 is gnd (brown), connection 37 is +20V (orange), conn. 36 is -10V (green).

In the picture you can see the wire that goes to connection 38: keyboard input (purple).

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In the following picture you can see the green wire that goes to the collector of the transistor coming from connection 11.
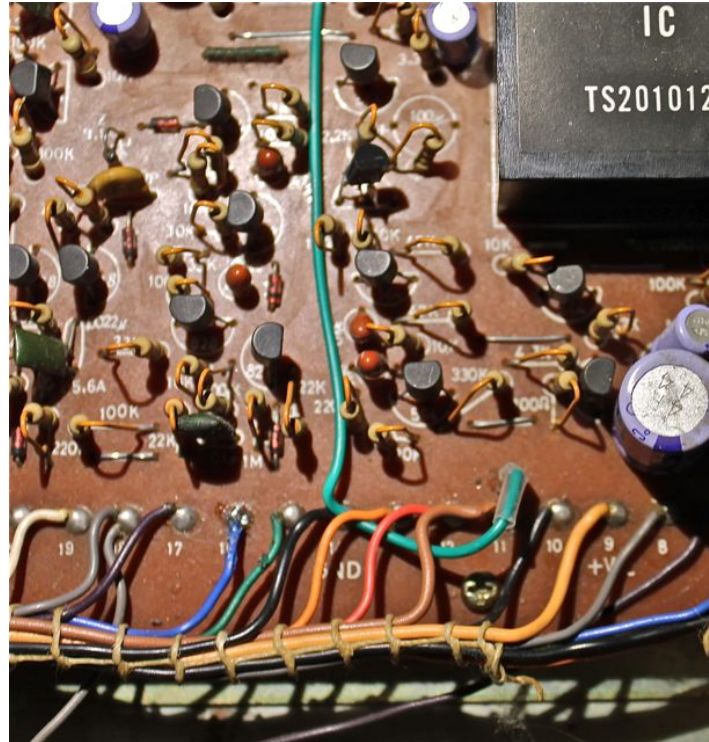
8 Configuring the MIDImplant.

You have to put the MIDImplant in V/Hz mode and gate polarity on 9 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 trough your midi sequencer to the MIDImplant. I use SysEx Librarian, it's freeware and a great little program to backup all your midi equipment.

CV1	CV2
☑ **include in config file**	☑ **include in config file**
event type	event type
notes ▼	velocity ▼
MIDI channel	**MIDI channel**
1 ▼	1 ▼
starting note or CC number	**starting note or CC number**
36	36
enter CC or note number	*enter CC or note number*
in range 0-127	*in range 0-127*
☑ **include in config file**	☑ **include in config file**
○ 1V/oct +/- 0.5 cent	◉ 1V/oct +/- 0.5 cent
○ [1.000] V/oct, +/- 2mV	○ [1.000] V/oct, +/- 2mV
○ Hz/V 2.5 to 5V, 1 octave	○ Hz/V 2.5 to 5V, 1 octave
○ Hz/V 1.25 to 5V, 2 octaves	○ Hz/V 1.25 to 5V, 2 octaves
○ Hz/V 0.63 to 5V, 3 octaves	○ Hz/V 0.63 to 5V, 3 octaves
◉ Hz/V 0.31 to 5V, 4 octaves	○ Hz/V 0.31 to 5V, 4 octaves
○ Hz/V 0.16 to 5V, 5 octaves	○ Hz/V 0.16 to 5V, 5 octaves
☑ **include in config file**	☑ **include in config file**
Gate polarity	**Gate polarity**
◉ on: 6-15V, off: 0V	◉ on: 6-15V, off: 0V
○ on: 0V, off: 6-15V	○ on: 0V, off: 6-15V

create MIDI file

9 Calibration.

After you install the keyboard back. Follow the tuning procedure in the manual of the MiniKorg. For midi calibration, it is possible that you can not reach the upper C note due to the fact that the opamp can not deliver the positive voltage rail. Adjust the 10k trimmer for the upper B and one octave lower. Use 50k trimmer to tune the lowest octave. Trim the 10k trimmer again. Than the 50k trimmer again. Do this several times till you have perfect tuning.
Now close the MiniKorg and enjoy!!