The CV/gate Card for Synthi A / VCS3

Hi

Thank you very much and congrats for purchasing the plug and play CV/gate Card.
You'll definitely enjoy how it expands your Synthi.

Features

gate input
- accepts signals from +4.5V to +15V
- 3 position toggle switch
  • top - sustained : the on time depends on the gate signal length, ie how long the key is depressed
  • center - off : no gate signal is sent to the Synthi
  • bottom - transient : the gate signal is converted into a short trigger and the on time depends on the on pot setting only

cv1 input
- tracks 1V/oct over about 5 octaves
- CV available on row 8
- 2 position mini slide switch
  • left - CAL : pre-scaled 1V/oct input with input ch level 1 pot set fully CW to 10, see scaling procedure below
  • right : standard CV input with 100k series resistor for manual scaling with the input ch level 1 pot

cv2 input
- tracks 1V/oct over about 5 octaves
- CV available on row 9
- 2 position mini slide switch
  • left - CAL : pre-scaled 1V/oct input with input ch level 2 pot set fully CW to 10, see scaling procedure below
  • right : standard CV input with 100k series resistor for manual scaling with the input ch level 2 pot

cv3 input
- tracks 1V/oct over about 5 octaves
- CV available on row 16 if your Synthi is a MK2 with a joystick vertical range switched pot (or a modified MK1)
- pre-scaled 1V/oct input only, see scaling procedure below
- 2 position toggle switch
  • top : normal CV
  • bottom - inv : inverted CV

1V/oct scaling

Your CV/gate Card was checked and calibrated on my own Synthi prior to ship however accurate 1V/oct may need slight adjustment of each CV inputs' multiturn trimmer to fit each individual Synthi because of the pins and input amps tolerance. The multiturn trimmer is accessible via the small hole to the left of each CV input. Use the same pins whose value is matched 1% for calibration and performance to have always the same CV. It's good to measure and select a few pins that will be the same color or marked to use with the CV/gate Card.

Any 1V/oct CV/gate controller (keyboard, sequencer, midi to CV converter) can be used.

1. Plug the CV/gate Card into the Synthi's keyboard socket turn it on.
2. Switch the mini slide switch to CAL.
3. Plug the 1V/oct controller's CV output into the cv1 mini jack socket.
4. Set the Synthi input level ch1 pot fully CW to 10.
5. Patch an oscillator to the output.
6. Patch a selected pin into row 8 to control this oscillator's frequency.

7. Set the oscillator's frequency vernier dial to around 4.5 to get an accurate note with the keyboard's lowest note (0V).
8. Play the key 1 octave higher and adjust the CV/gate Card's cv1 trimmer to get a note 1 octave higher using your ear or a tuner.
9. Proceed the same until 5 octaves, with a good working Synthi you'd be able to get proper tracking over 5 octaves with minimal drift.
10. Proceed the same for the cv2 input via the input ch2 on row 9.
11. If your Synthi is a MK2 with a joystick vertical range switched pot, proceed the same for the cv3 input, with the inv switch in top position and the joystick vertical range pot switched below 0 (sequencer setting).

Tips

Some oscillators track better with the initial frequency 1 octave higher, the vernier set around 5.2. If you struggle to get more than 2 octaves in tune and the higher ones are too high, try again with this initial setting.

The CV/gate Card is designed to be plugged directly into the Synthi's Jones socket. Connecting the card via a standard EMS umbilical cable upsets proper 1V/oct scaling of the cv1 and cv2 inputs because the cable's built-in 100k resistors to prevent the Synthi's input amps saturation are added in series with the card's ones and the signal is attenuated too much. The card's 100k resistors can be bridged if you want to use an umbilical cable, contact me for support.

By design, oscillator 3 tracks differently from oscillators 1 and 2 and is in tune over around 2 octaves only, unless it has the high range modification.
Oscillators 1 and 2 may track a little differently.
Scale cv1 for oscillator 1, cv2 for oscillator 2 and cv3 for oscillator 3 to compensate for the tracking differences.
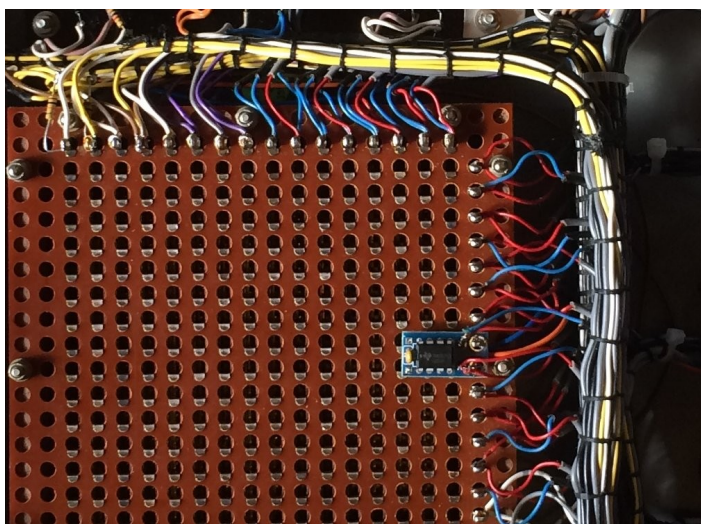
The card can be calibrated to 1.2V/oct for control with Buchla equipment.

When the on pot is set fully CCW to 0, the enveloppe might not react properly and buzz when fired via the card, to prevent this, adjust the on pot.

From the factory, the Synthi is unbuffered and patching more than 1 pin into rows 8 and 9 will cause CV drop.
Buffering rows 8 and 9 fixes this and can be done by installing the supplied buffer chiclet. This mod is not essential and the CV/gate Card can be used with your Synthi as is.

1. Open the Synthi.
2. Remove the 3 boards.
3. Locate rows 8 and 9 on the back of the matrix and desolder the cables.
4. Insert the buffer chiclet along rows 8 and 9 lugs and solder it paying attention its bottom doesn't touch the matrix and its top doesn't touch board B when in place.
5. Solder the cables you desoldered to the square pads on the buffer chiclet.
6. Solder the buffer chiclet's orange cable to +12V and blue cable to -9V. In most Synthis the color code is the same : orange cables are +12V and blue cables are -9V, otherwise check with voltmeter. The power rails are accessible on various pots : reverb mix, decay, oscillators shape and frequency.
7. Adjust tracking if needed.

More details and pics on http://www.portabellabz.be/synthipcbs.html#buf

Thank you and have fun!
C.