

## The SQ-1 Card

Hi

Thank you very much and congrats for purchasing the SQ-1 Card.  
You'll definitely enjoy how it expands your Synthi.

### Features

**All the nice features of the SQ-1** are working with the Synthi [https://www.korg.com/us/products/dj/sq\\_1/](https://www.korg.com/us/products/dj/sq_1/)

#### Scaled CV

The SQ-1's CV outputs A and B are routed respectively to the Synthi's input channel 1 and 2. Thanks to a multiturn trimmer, the CV can be scaled for equal temperament when the Synthi's input level pot is set to 10, therefore no more tricky adjustment is needed to control the Synthi 1V/oct.  
A good working and properly calibrated Synthi tracks in tune over 5 octaves with the SQ-1 Card.  
The oscillator's vernier dial should be set to around 4.5, moving away from this setting reduces the tracking range.

#### Gate

The Synthi's envelope can be fired by either the SQ-1's A or B gate, a 3-position switch replaces the SQ-1's former "littlebits OUT" :  
left is gate A, center is no gate, right is gate B.

#### CV/Gate interface

When the SQ-1 is turned off, its CV/gate output jack sockets can be used as inputs to control the Synthi with another controller enjoying its equal temperament 1V/oct scaling.

#### Handle support

Small plates mounted to the back lock the Spartanite case's handle for better stability.

#### Control other synths

The SQ-1's ins and outs minijack sockets are still working.  
The SQ-1 can control other synths together with the Synthi via CV/gate or MIDI and sync with other gear as a slave or as a master via its sync in and out sockets.

#### Save settings

To keep settings such as the CV range and behaviour in memory, turn the SQ-1 Card off by depressing its power button before switching off the Synthi.

### How to use the SQ-1 Card

Plug the SQ-1 Card into the Synthi's keyboard Jones socket, turn it on by pressing the power button, turn both input channel 1 & 2 level pots fully CW to 10. The SQ-1 Card's CV output A is now available on row 8 and output B on row 9.

Switch the a - gate - b switch to the left to fire the Synthi's envelope with the A gate signal, to the right for the B gate signal and in the center for no gate signal.

The SQ-1 Card's gate signal can be mixed with the Synthi's own retrig signal.

The SQ-1 Card's speed and duty settings interact with the Synthi's envelope times, which should be set accordingly.

Refer to the Korg SQ-1 manual for the sequencer own operation [https://www.korg.com/us/products/dj/sq\\_1/](https://www.korg.com/us/products/dj/sq_1/)

## 1V/oct calibration

Your SQ-1 Card was checked and calibrated on my own Synthi prior to ship however it may need slight adjustment to fit each individual Synthi.

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 SQ-1 Card.

1. Install the SQ-1 Card to the Synthi's keyboard socket and power it on.
2. Plug a minijack cable into the cv. A out mini jack socket and connect it's other end to a multimeter with crocodile clip cables (red probe to tip, black probe to sleeve).
3. Set the sequencer A row to 5V range and chroma behaviour.
4. Adjust the pots to have step 1 : 0V, step 2 : 1V, step 3 : 2V, step 4 : 3V, step 5 : 4V, step 6 : 5V.
5. Set the Synthi input level ch1 pot fully CW to 10.
6. Patch an oscillator to the output.
7. Patch a selected pin into row 8 to control this oscillator's frequency.
8. Set the oscillator's frequency vernier dial to around 4.5 to get an accurate note with step 1 (0V).
9. Move the sequencer to the step 2 (1V) and adjust the SQ1 Card's CV A trim to get a note 1 octave higher than the step 1 using your ear or a tuner.
10. Move the sequencer to the step 3 and readjust the SQ1 Card's CV A trim to be 2 octaves higher than step 1.
11. Proceed the same until step 6, with a good working Synthi you'd be able to get proper tracking over 5 octaves with minimal drift.
12. Proceed the same for the SQ1 Card's CV B via the input ch2 on row 9.

If you don't have a multimeter, you can calibrate the SQ-1 Card with any 1V/oct CV/gate keyboard (or midi to CV converter).

1. Install the SQ-1 Card to the Synthi's keyboard socket and leave it powered off.
2. Plug the 1V/oct controller's CV output into the cv. A out mini jack socket.
3. Set the Synthi input level ch1 pot fully CW to 10.
4. Patch an oscillator to the output.
5. Patch a selected pin into row 8 to control this oscillator's frequency.
6. Set the oscillator's frequency vernier dial to around 4.5 to get an accurate note with the keyboard's lowest note (0V).
7. Play the key 1 octave higher and adjust the SQ1 Card's CV A trim to get a note 1 octave higher using your ear or a tuner.
8. 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.
9. Proceed the same for the SQ1 Card's CV B via the input ch2 on row 9.

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.

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, more details on <http://www.portabellabz.be/synthipcbs.html#buf>

Warning and disclaimer : the card's power consumption is 155mA on the Synthi's +12V power rail, which is too much load for a MK1 PSU.

It should never be plugged into a MK1 unit, this would fry its PSU. I assume no liability in case of problem (anyway, it can be repaired, no worries).

An extra PSU can be added to MK1 units to power a KS / TKS keyboard and the Portabellabz expansion cards, the upgrade is detailed in [http://www.portabellabz.be/images/sq1/MK1\\_PSU\\_upgrade.pdf](http://www.portabellabz.be/images/sq1/MK1_PSU_upgrade.pdf)  
Another solution is to power the SQ-1 via its USB port and omit the power circuitry on the card.

Thank you and have fun !  
C.