Tobinski

INTERPOLATING SCANNER

USER MANUAL

Note: This manual is currently being updated.
Please check back later for the final version.

The Tobinski Interpolating Scanner is an all analogue module that is a combination of an 8 channel interpolating scanner and 8 independent VCAs, each with their own dedicated mixer section that can be used for stereo and mono operation at the same time plus an 8 channel slider mixer.

The Scanner section and VCA sections all operate down to DC so they can be used with CV as well as audio signals. While the scanner and VCAs share the same inputs they are completely independent after that, allowing for the module to be used as independent VCAs, scanner and mixer all at the same time.

The scanner section features CV with bipolar attenuverter and manual control over both the SCAN STAGE and SCAN WIDTH. The scanner stage and width is indicated with GREEN LEDs at the top of the module. The 8 channels of the scanner are sent into 3 mixers: ODD (only mixes odd channels), EVEN (only mixes even channels) and ALL (mixes all channels).

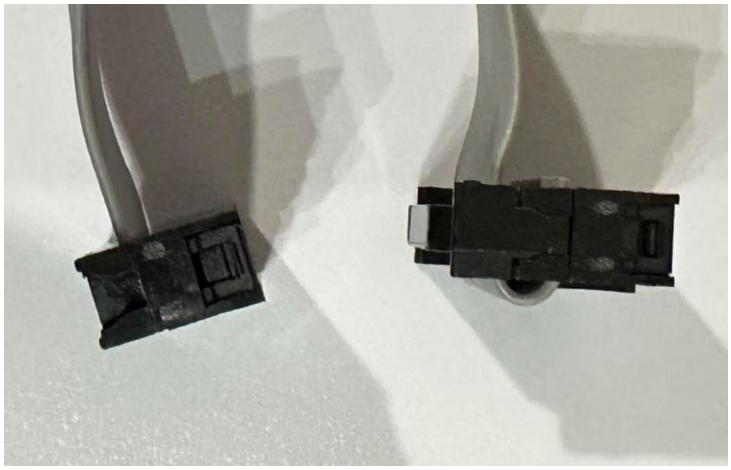
The 8 x VCA section is indicated with RED LEDs at the top of the module. Each VCA features IN (also goes to the scanner input), OUT and CV. The CV will only affect the VCA section and does not affect the scanner. The VCAs are then sent into 3 mixers: ODD (only mixes odd channels), EVEN (only mixes even channels) and ALL (mixes all channels). If the OUT jack socket for the VCAs is used it will remove the output of that channel from the mixers. This allows the VCAs, mixers and slide attenuators to be used independently at the same time.

The 8 channel slider mixer attenuates the inputs before they are sent to the VCAs and scanner. They can be set via a 3 position toggle switch to either attenuate the levels going into the scanner, VCA or both. If the VCA or scanner is selected the inputs to the non selected side will be at full level.

The Interpolating Scanner can also be used with the Tobinski Harmonic Timing Generator (HTG) through an internal ribbon cable connection.

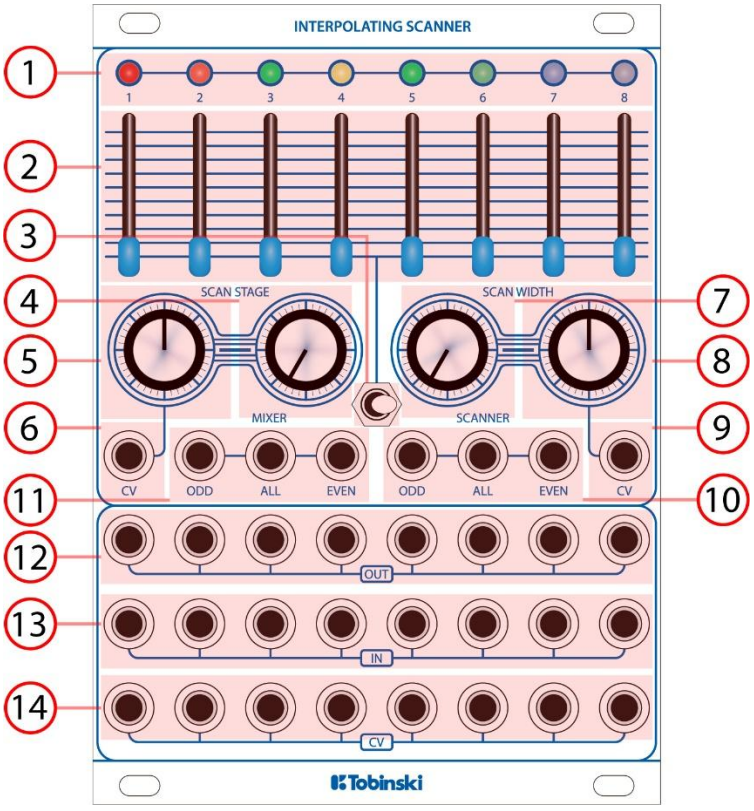
This connection sends the 8 outputs of the HTG into the Interpolating Scanner. Along the way the HTG outputs are converted to sine waves and sent to the normalled connection on the Interpolating Scanner jack inputs. In order to keep the amplitude from peaking too much when all the harmonics are mixed together, the last 4 channels from the HTG are inverted. This has the benefit that when the HTG is stopped the first 4 channels on the Interpolating Scanner have around -5V present on the inputs and the last 4 channels have +5V present on the inputs. This is useful if you require a variable DC source or you could set the sliders and scan through each channel at LFO rate for a kind of sequencer or at audio rate for a type of graphic VCO.

IMPORTANT – PLEASE USE THE SUPPLIED POWER CABLE ONLY



The cable on the left is the supplied power cable that doesn't have a strain relief attached.

The cable on the right has a strain relief and is longer which will cause the power header to be damaged as it will push the power header shroud back and possibly damage the components on the PCB when the module is inserted into the rack.



1. LED indicators. The VCAs use RED LEDs and the scanner uses GREEN LEDs. The combination of both produces a yellow/orange colour.
2. Slider mixer to attenuate the inputs before they are sent to the scanner/VCAs.
3. Slider mixer selecter switch – 3 position toggle switch to set whether the sliders attenuate the inputs to the Scanner or VCA or both.

4. SCAN STAGE manual control – selects the scan stage and acts as a manual offset for the CV input.
5. SCAN STAGE bipolar CV control – Bipolar attenuverter for the CV input.
6. SCAN STAGE CV input.
7. SCAN WIDTH manual control – selects the scan width and acts as a manual offset for the CV input.
8. SCAN WIDTH bipolar CV control – Bipolar attenuverter for the CV input.
9. SCAN WIDTH CV input.
10. SCANNER mixer outputs – ODD, EVEN and ALL outputs for the scanner stages.
11. MIXER outputs – ODD, EVEN and ALL. Summed outputs for the VCAs.
12. OUT – Outputs of the individual VCAs. If used, the output is removed from the summed MIXER outputs
13. IN – Channel inputs to the scanner and VCAs. Normalled to the HTG if connected.
14. CV inputs – Normalled to 10V if nothing is connected. Can be used to modulate the amplitude of the VCAs.

All inputs are tolerant of full modular +-12V signals.

Interpolating Scanner

Width 18HP

Depth (internal from panel) = 27mm

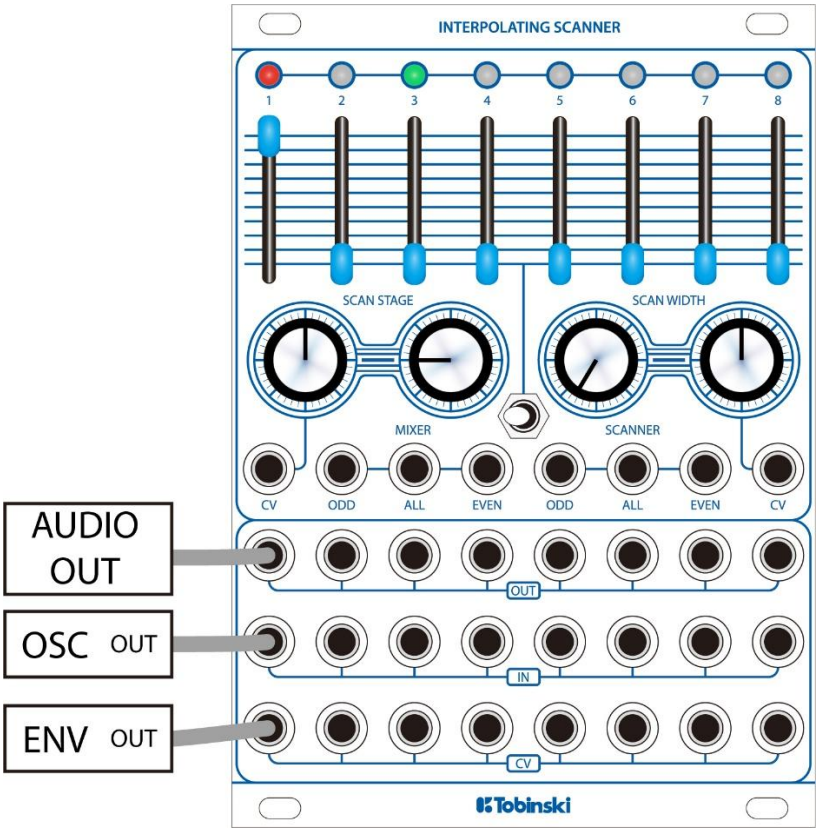
-12V @ 190mA

+12V @ 205mA

INTERPOLATING SCANNER – EXAMPLE PATCHES AND TIPS

The following patches are just examples to show some of the ways the scanner can be connected.

VCA

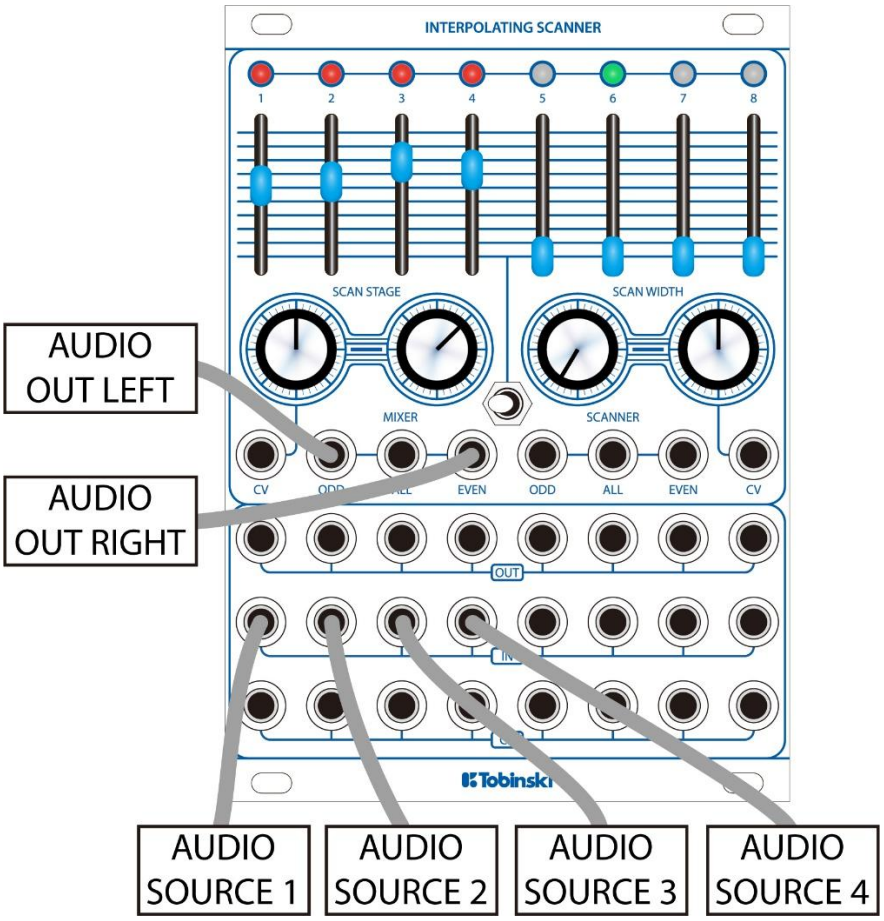


The first very basic patch shows the connections to use the individual VCAs in the Interpolating Scanner. The diagram only shows the first channel connections for the sake of clarity but any of the other channels can also be used in the same way.

In the example, the audio out is taken directly from the VCA OUT 1 jack socket, so this channel is removed from the MIXER outputs.

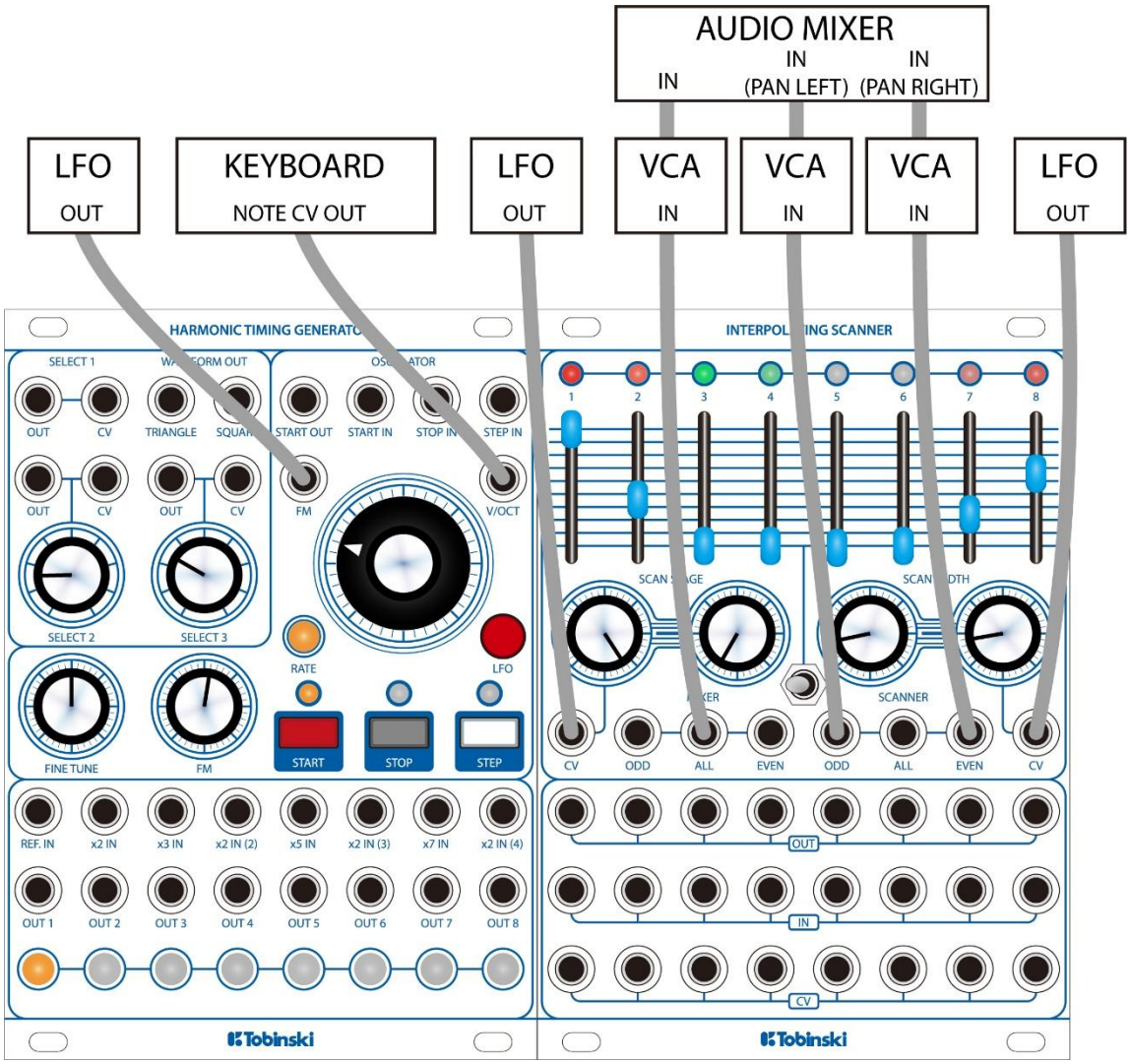
With the 3 position toggle switch set to the left or centre the slider for channel 1 sets the volume of the signal going into the VCA.

MIXER



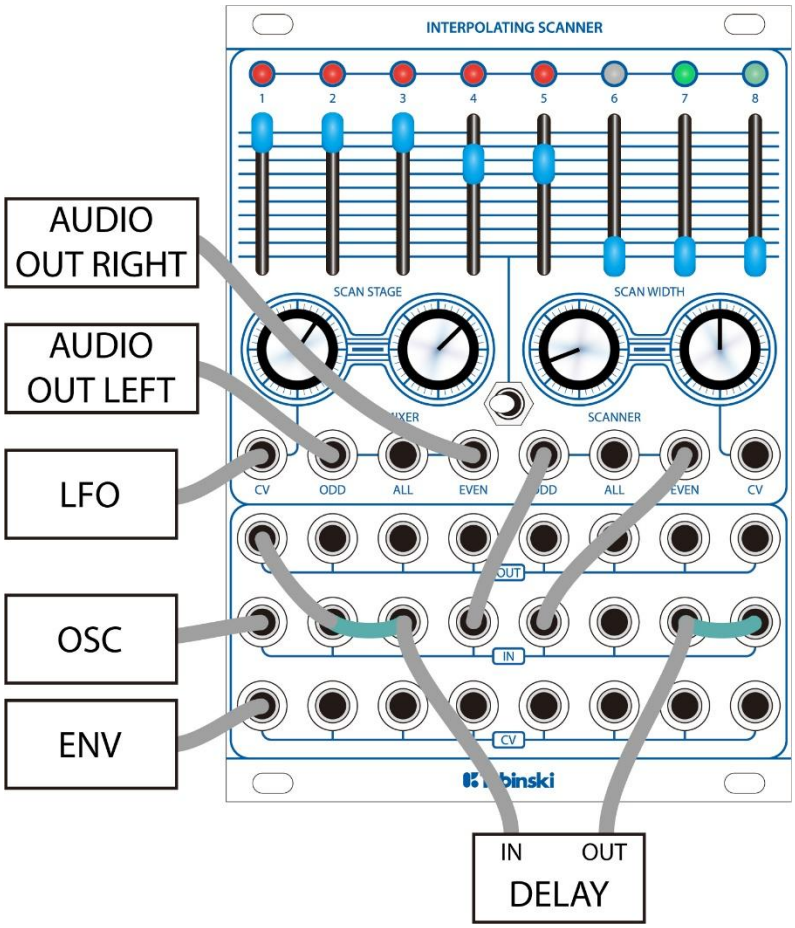
This patch shows the connections for a simple mixer. The levels for the audio sources going to channels 1 to 4 are set with the sliders and the MIXER ODD and EVEN outputs are used for stereo outputs with channels 1 and 3 sent to the left and channels 2 and 4 sent to the right.

HARMONIC OSCILLATOR



With the HTG connected to the Interpolating Scanner, this patch shows the SCANNER and MIXER sections being used to create a stereo harmonic oscillator. The output of the SCANNER mixer is lower volume than the MIXER section in order to avoid distortion, so the mix can be adjusted in the external mixer or the sliders can be used to adjust the level of the MIXER ALL output to get a good balance between the SCANNER and the MIXER outputs.

VCA, PANNER AND STEREO MIXER



This patch is a combination of the previous patches to make a VCA with stereo panning delay and stereo mixer.

Channel 1 is used for the VCA, the output of which is sent into the delay and also into channels 2 and 3 of the mixer (right and left when ODD and EVEN MIXER outputs are used for stereo output) using a stackable cable.

The delay is then sent to channel inputs 7 and 8 using another stackable cable. An LFO is patched into the SCAN STAGE CV and the SCAN STAGE controls are set so that the LFO drifts between channels 7 and 8. The SCAN WIDTH can also be increased a little so the delay is not completely cut off when the LFO scans between the channels.

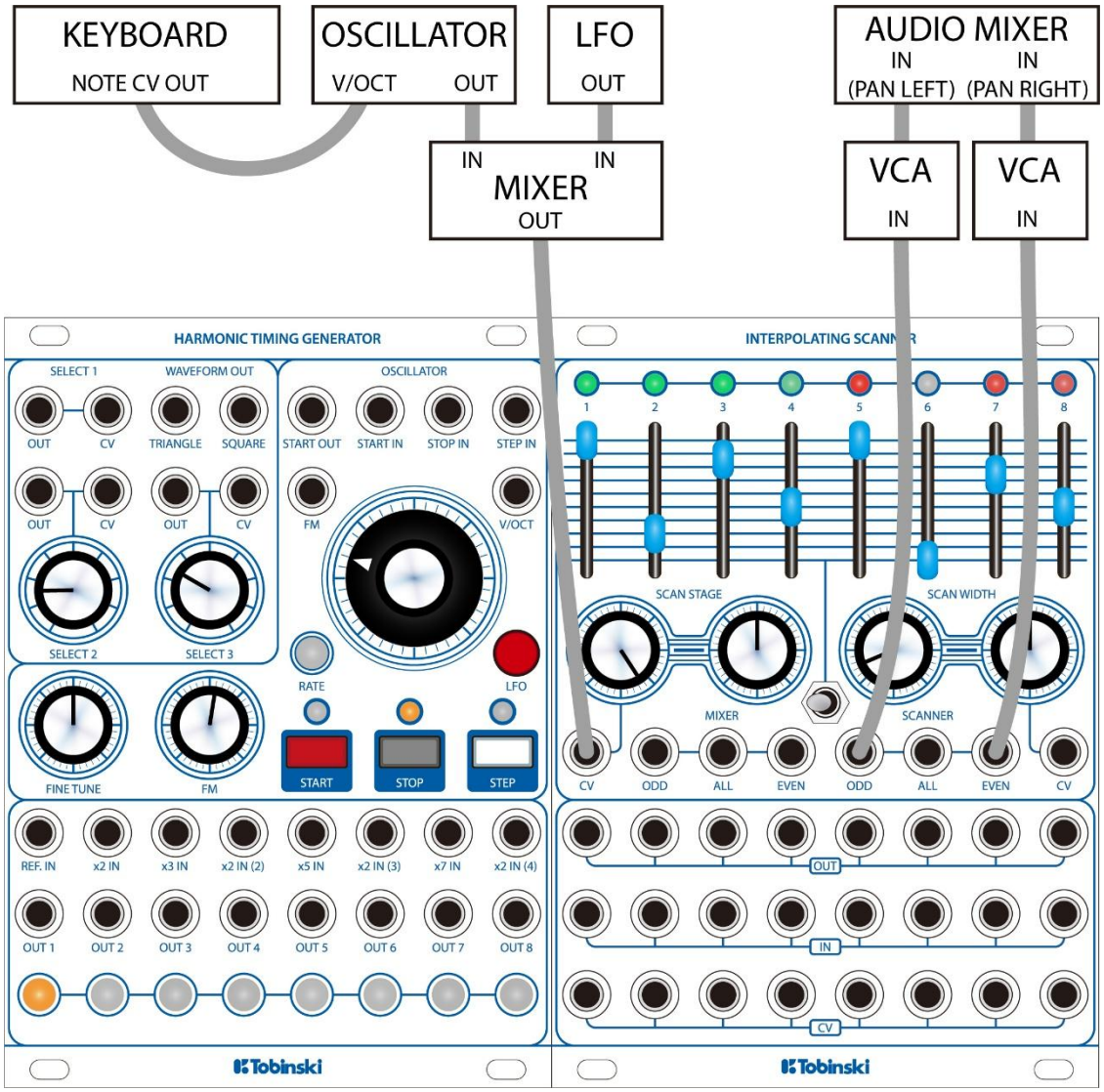
The SCANNER, ODD and EVEN outputs are then sent to channel inputs 4 and 5.

The 3-position toggle switch is set LEFT so the sliders only affect the VCA/MIXER sections.

The sliders are set so that channels 6, 7 and 8 are at 0 and don't get sent to the MIXER outputs, then sliders 2 to 5 can be used to adjust the balance between the delay on channels 4 and 5 and the dry signal on channels 2 and 3.

Channel 1 is not sent to the MIXER directly as the output jack is used to send the signal to the delay, so the slider for channel 1 just sets the level going into the delay.

GRAPHIC STEREO OSCILLATOR



This patch uses the HTG and Interpolating Scanner together, although the HTG is not actually running. When the HTG is stopped, the outputs all sit at about -5V. As channels 5 to 8 from the HTG to the Interpolating Scanner are inverted and as the Scanner operates down to DC, it means channels 1 to 4 can be used for negative DC voltages and channels 5 to 8 can be used for positive voltages. The sliders can be used to set the level of the voltage and the output can be taken directly from the channels OUT socket.

The above patch takes that idea but instead of using the voltage out as a DC source, they can be set using the sliders and then each output can be scanned through at audio rate using a triangle or sine wave etc. from an oscillator. If the SCANNER, ODD and EVEN outputs are used and sent to the left and right of a mixer, then the result is stereo graphic oscillator.

The LFO in the above example is mixed with the oscillator to give a slow drift across the scanned channels which adds some interesting tonal variation.

You could also try pressing START on the HTG and tuning the HTG to something that fits with the keyboard melody or you could patch the keyboard CV into the HTG V/OCT as well so it tracks with the oscillator.