



USER MANUAL

SYNTAX II



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# Thank you for purchasing the Erica Synths SYNTRX II synthesizer!

Peter Zinovieff himself approved of our re-imagination of his legendary Synthi AKS in the form of the SYNTRX which was produced in a limited run of 1056 units. Based on lessons learned from the SYNTRX, we decided to create an instrument which would integrate even deeper into contemporary electronic and experimental music setups and cover sonic territory from daunting drones to powerful basslines and glitched noisescapes.

The SYNTRX II is the culmination of our analogue sound design circuits – two perfectly stable main oscillators with waveshapers, a versatile multimode filter, supercharged external instrument inputs with an envelope follower, a unique, great sounding ringmodulator, a recordable joystick and built-in piano roll sequencer, all arranged around our signature matrix mixer and topped off with powerful FX on our new DSP platform. Introducing The SYNTRX II - a new dark horse for experimental sonic rides.

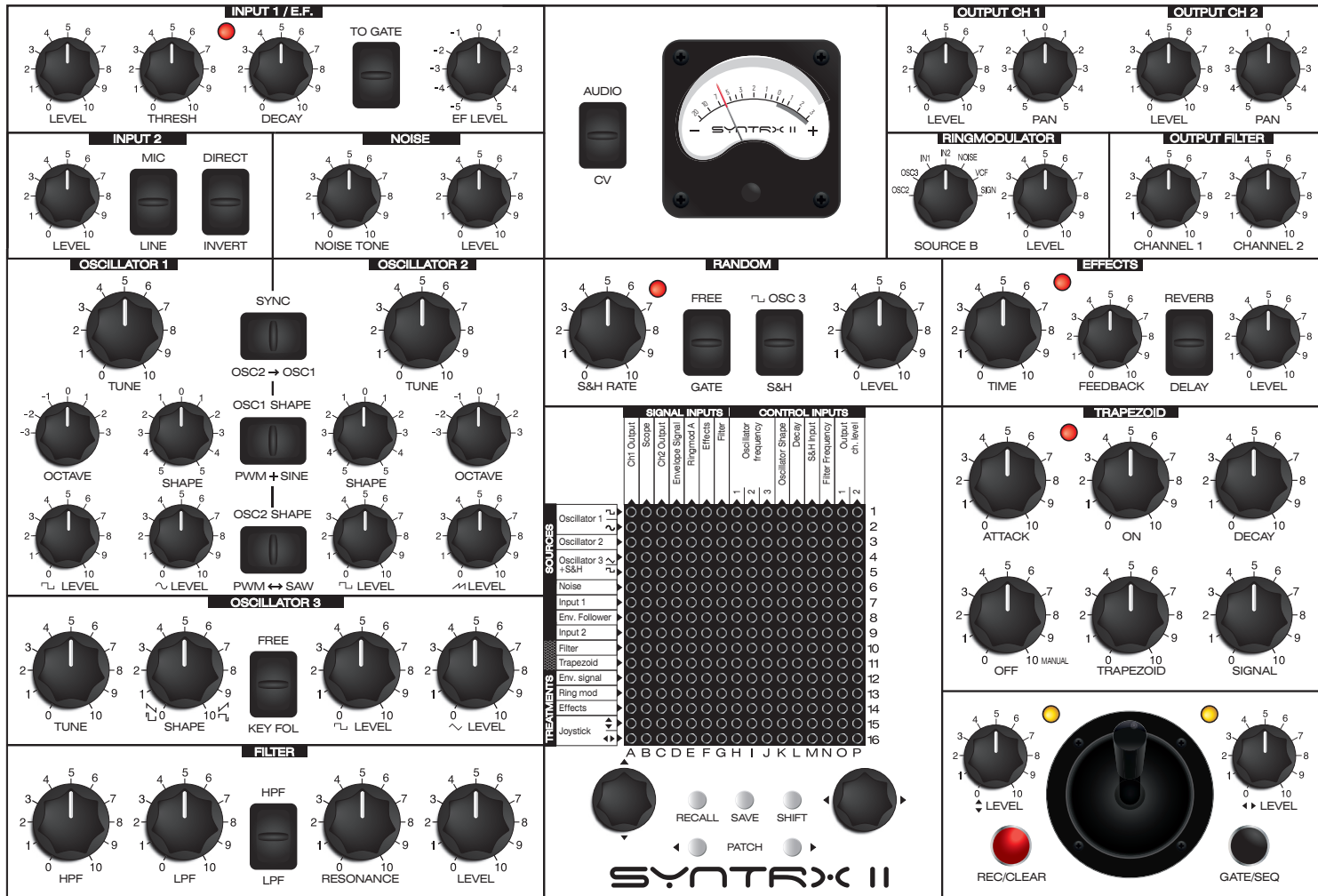
## FEATURES

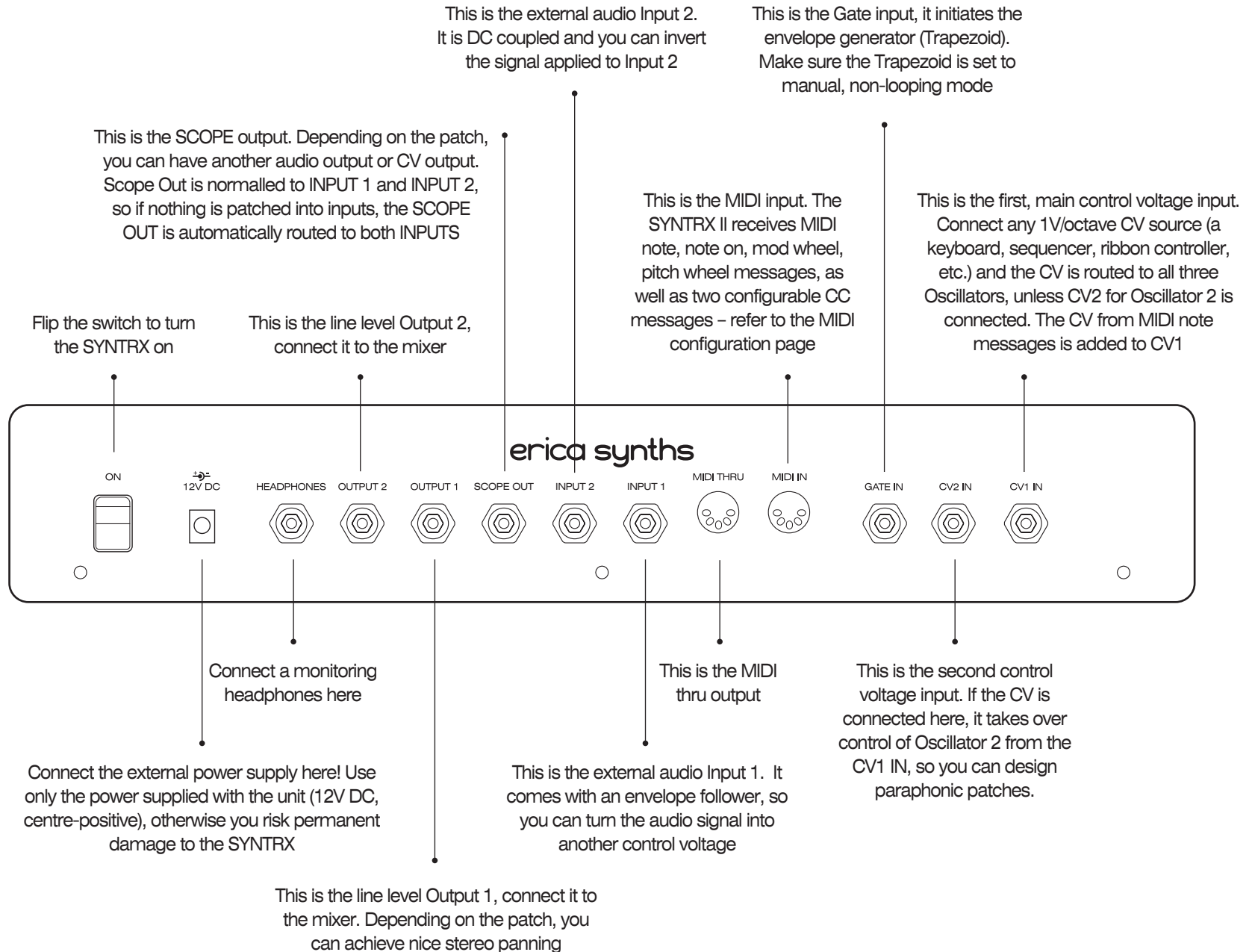
- Two perfectly stable main oscillators with CV controlled waveforms
- Modulation oscillator with variable waveforms
- Highpass and Lowpass filters in series
- Free running or gate synced sample and hold circuit
- Multi-colour noise generator
- DC coupled instrument inputs with signal inversion and envelope follower
- Ringmodulator of unique design
- Looping trapezoid envelope generator and VCA
- Two output VCAs
- Signal meter with a dedicated audio/CV output
- FX section with great sounding Delay and Reverb
- Recordable Joystick
- Analogue patch matrix with 3 attenuation levels in each patch point
- 256 patch memory
- Piano roll sequencer
- DIN5 MIDI Input (CV and Gate) and MIDI Thru
- Two assignable outputs
- Headphone output

### What's included

- SYNTRX synthesizer
- Universal 12VDC wall wart adapter
- User manual
- 10 patch notes stencils

The SYNTRX II, like most synthesizers built around a patch matrix, is somewhat similar to a modular synthesizer – here you can modulate any available “module” with another and possible connections are almost limitless (it does not mean, however, that every connection will produce sound). The mixer/splitter matrix allows for mixing of up to 16 signals to one output and likewise – because all inputs and outputs are buffered – splitting one signal to 16 destinations.

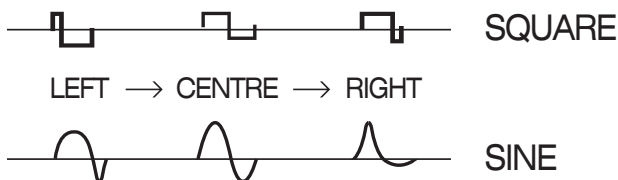




As mentioned above, using the matrix patchbay on the SYNTRX II, you can build patches and achieve unconventional modulations. In order to fully understand the functionality of the SYNTRX II, let's take a closer look at the individual “modules”.

## OSCILLATOR 1

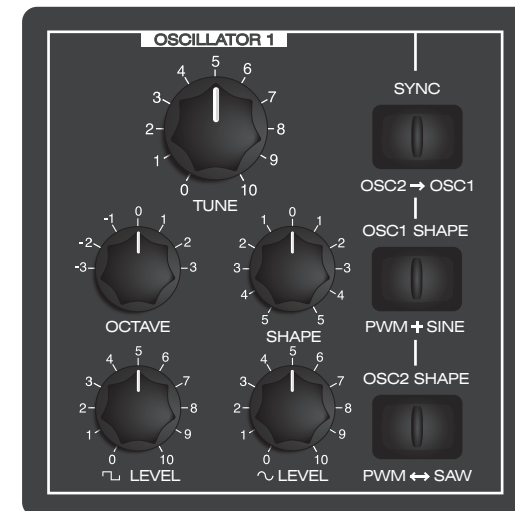
OSCILLATOR 1 is primarily an audio rate oscillator and without an external CV applied, it generates sine and pulse waves at frequencies from approximately C0 to C8. The OCTAVE switch allows for offsetting the oscillator three octaves up or down. The TUNE knob allows for fine-tuning the pitch of the oscillator in an approximately two octave range. Each wave has manual and CV control over the waveform. By turning the SHAPE knob, the pulse wave changes pulse width, while the sine wave changes shape from pure sine in the 0 setting to inverted sharkfin when turned counter-clockwise and sharkfin when turned clockwise.



Moreover, if OSCILLATOR SHAPE CV is applied to the relevant matrix input, the OSC1 SHAPE switch determines which wave is being modified by the incoming CV. In the middle setting, both waves are shaped, in the left setting pulse width modulation is applied, in the right setting the sine wave is shaped. Please note that incoming CV is added to the SHAPE knob position.

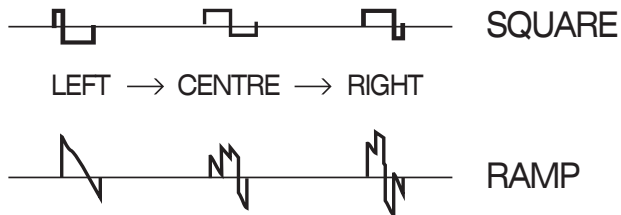
Each waveform has its LEVEL control and each wave is sent to an individual matrix input. This is very handy if you design drones and wish to send each wave to an individual output.

Oscillator 1 is controlled via the CV1 input, and an external CV is added to the TUNE/OCTAVE knob setting.



## OSCILLATOR 2

OSCILLATOR 2 is also primarily an audio rate oscillator and without external CV applied, it generates pulse and saw waves at frequencies from approximately C0 to C8. The OCTAVE switch allows for offsetting the oscillator three octaves up or down. The TUNE knob allows for fine-tuning the pitch of the oscillator in an approximate two octave range. Each wave has manual and CV control over the waveform. By turning the SHAPE knob, the pulse wave changes pulse width, while the saw changes shape from saw if the SHAPE knob is all way counter-clockwise to dual super saw when all the way clockwise.

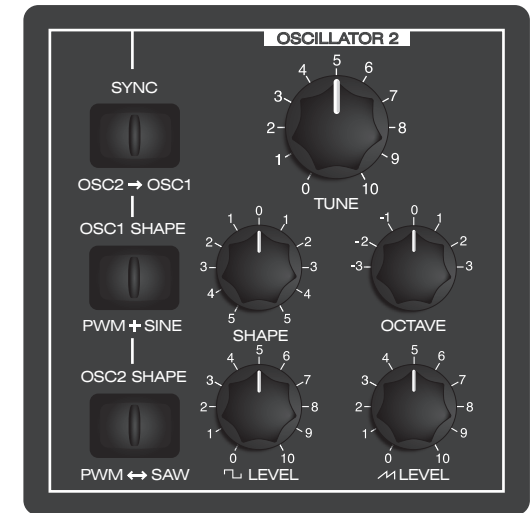


Moreover, if OSCILLATOR SHAPE CV is applied to the relevant matrix input, the OSC2 SHAPE switch will determine which wave is being modified by the incoming CV. In the middle setting no wave shaping is applied, in the left setting - pulse width modulation is applied, in the right setting - a saw wave is shaped. Please note, that incoming CV is added to the SHAPE knob position.

Each waveform has its LEVEL control and both waves are mixed before they are sent to the single matrix input.

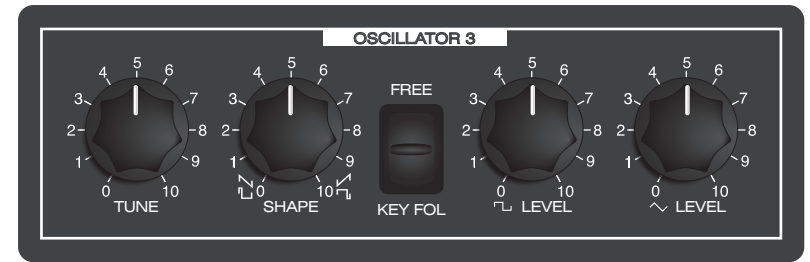
Oscillator 2 can be free-running or synchronized to Oscillator 1 if the SYNC switch is in the right position.

If external CV is applied only to the CV1 input, Oscillator 2 is controlled via the CV1 input, but if CV2 is used, it takes over control of Oscillator2; an external CV is added to the TUNE/OCTAVE knob setting.



## OSCILLATOR 3

OSCILLATOR 3 is primarily a low-frequency oscillator that goes into the audio range and without an external CV applied, it generates pulse and triangle waves at frequencies from 0.05 Hz to 500 Hz, adjustable by the TUNE knob. Both waves have independent points on the patch matrix with an adjustable LEVEL for each wave and both waves have manually adjustable SHAPE. Depending on FREE/KEY FOL switch position, Oscillator 3 can be either free-running or controlled via external CV (key follow). On the patch matrix, the pulse output shares the input with the Sample&Hold output – use the switch on the Sample&Hold module to select the output which is routed to the matrix.

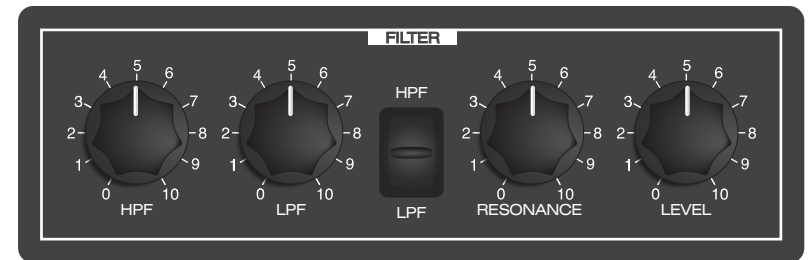


## FILTER

The FILTER is a resonant multimode filter of unique design. Highpass and lowpass filters in series allow for designing various filter responses. With the LPF (lowpass filter cutoff) knob set to 10, the lowpass filter is all the way open and the filter becomes a highpass filter with the HPF knob controlling its cutoff frequency. With the HPF (highpass filter cutoff) knob set to 0, the highpass filter is all the way open and the filter becomes a lowpass filter with the LPF knob controlling its frequency. Any other HPF and LPF knob positions will make a bandpass filter with adjustable bandwidth and center frequency.

If control voltage is applied to the Filter Frequency input on the matrix, the HPF/LPF SWITCH determines which filter cutoff frequency is altered. In the middle setting, the cutoff of both filters is controlled via incoming CV. This also means that the center frequency of the bandpass filter is altered. In the HPF setting, only the highpass filter cutoff is altered and in the LPF setting, only the lowpass filter cutoff is altered. Incoming CV is added to the HPF and LPF knob settings. The filter can be modulated at audio rate and when RESONANCE is set to 7 or more, it becomes an oscillator that produces a pure sinewave.

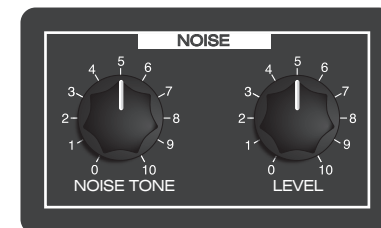
The LEVEL knob adjusts the amplitude of the audio signal from the filter before it is sent to the patch matrix.



## NOISE GENERATOR

The SYNTRX II has a Zener diode-based NOISE GENERATOR that provides full spectrum white noise. The Noise Generator is not voltage controlled, but the COLOUR knob allows for emphasizing low (LOW setting) or high (HIGH setting) frequencies of the noise spectrum.

The LEVEL knob adjusts the amplitude of noise before it is sent to the matrix mixer.

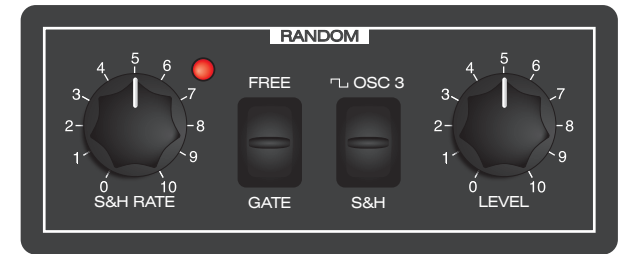




## RANDOM

The RANDOM section is essentially a Sample and Hold circuit that generates stepped control voltages for voltage control of other modules. It has an independent S&H RATE control as well as an output LEVEL control and two switches. The FREE/GATE switch selects if the Sample and Hold circuit works from the internal clock (FREE setting) or from the gate signal (GATE setting), which means that the voltage on the output will change with each incoming gate. The OSC3/S&H switch selects which signal is sent to the patch matrix. The matrix has only 16 inputs, therefore the RANDOM shares its matrix input with the OSCILLATOR 3 pulse output.

The matrix mixer has a dedicated S&H Input where you can assign any signal for the S&H circuit. For example, a triangle-sawtooth wave (depending on the waveform knob setting) from Oscillator 3 will generate staircase-like control voltages on the output, noise will generate random voltage steps. Experiment with various inputs and S&H RATE settings! With high S&H RATE settings and an audio signal applied to the S&H Input, you can achieve an analogue bitchrush effect.

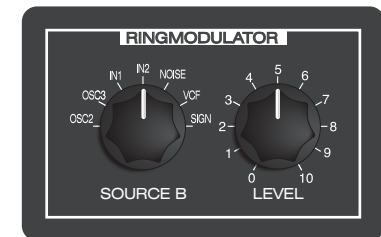


## RINGMODULATOR

The RINGMODULATOR, also known as a Four-Quadrant Multiplier, is a special case of amplitude modulation - one signal changes the level or - “multiplies” - the level of a second signal.

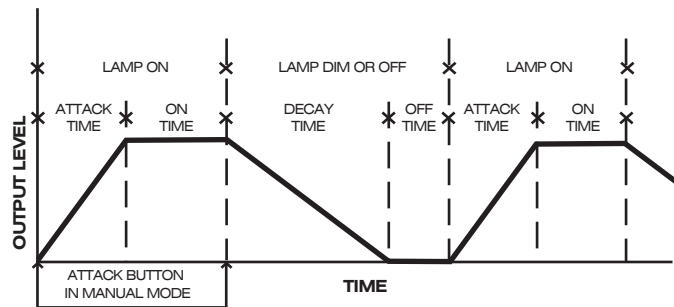
Two signals - A and B - are required in order for the ring modulator to operate (if you multiply by zero, you get zero), for example two oscillators both running at audio rate or an oscillator and microphone patched into one of Inputs of the SYNTRX II. Signal A is assignable on the matrix mixer’s Ringmod A input, while signal B is selected by rotary switch SOURCE B. Depending on the input signal frequency relationship, the output is a complex set of component tones, typically metallic, bell-like sounds. When a voice from a microphone is modulated by an oscillator, a robotic speech effect can be achieved.

Adjust the LEVEL of the ringmodulator output to your taste.



## TRAPEZOID - ENVELOPE GENERATOR AND VOLTAGE CONTROLLED AMPLIFIER

The SYNTRX II has a distinct looping envelope generator called TRAPEZOID. It is functionally similar to the one found on the EMS Synthi, because the envelope shape is reminiscent of a trapeze. The Trapezoid generates control voltages to control events on the SYNTRX – signal amplitude, pitch of the oscillators, cutoff frequency of the filter, etc. By default, it is a looping envelope generator with 4 stages – ATTACK, ON, release (DECAY), and OFF.



All stages are manually adjustable and the decay stage is also voltage controlled, so the decay time of the envelope can be varied automatically if a control voltage is applied to the Decay input on the matrix mixer. If the OFF control is set to more than 9, the looping is terminated and a new envelope cycle can be initiated by pressing the GATE button next to the joystick controller. If the SYNTRX II is used with external CV/Gate signals (connected to CV and Gate inputs correspondingly) or a MIDI keyboard or sequencer, in most cases, the looping must be off (OFF control all way clockwise), otherwise, when the gate will be off, the envelope will start looping. Also with the external gate signal applied, the ON knob will have no effect – the ON time is defined by the gate length.

The output level of the envelope generator is adjusted by the TRAPEZOID knob, in other words, it sets the modulation depth for other “modules” on the SYNTRX II. Besides the envelope generator, the trapezoid unit has a built-in voltage-controlled amplifier (VCA); its control voltage input is linked to the output of the envelope generator. The audio signal input of the VCA is the Envelope Signal input on the patch matrix and the SIGNAL control in the trapezoid unit sets the audio signal level after the VCA output.

The LED gives visual feedback on the envelope generator status

ATTACK time of the envelope generator is 6ms – 850ms

ON time of the envelope generator is 0-1,5s

DECAY time of the envelope generator is 16ms – 2s

OFF time of the envelope generator is 14ms – 1,3s



## EFFECTS

The SYNTRX II has great-sounding DELAY and REVERBERATION effects, developed in collaboration with [www.112db.com](http://www.112db.com). The switch allows for selecting between the effects, while the TIME knob adjusts the delay time (5ms (50ms in Tape mode) - 500ms in SHORT mode and 5ms (50ms in Tape mode) - 3" in LONG mode. You can change the modes in configuration settings.) for the delay effect or room size for the reverberation effect. The FEEDBACK knob sets the number of repeats for the delay effect (it goes into self-oscillation with high feedback settings) and applies feedback for the reverb. With the feedback knob all the way clockwise the reverb starts looping and you can use it as a drone source with adjustable pitch (TIME setting). The LEVEL knob adjusts the volume of the processed signal. Besides the features above, you can record motion of the TIME knob - push and hold the REC/CLEAR button and rotate the TIME knob. You can record up to 8" of knob motion. To clear this automation, double tap the REC/CLEAR button. Please note that the automation is not saved in memory.

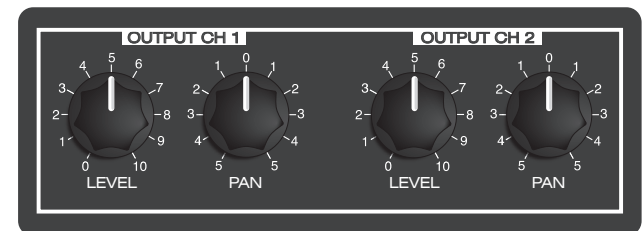
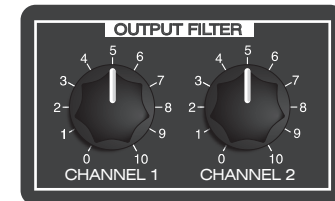
Also, remember that the EFFECTS unit outputs processed (WET) signal only, so in order to achieve a dry/wet mix, you have to send both the unprocessed (DRY) and processed (WET) signals to the same output(s) on the patch matrix. In that case, the EFFECTS LEVEL knob will control amount of wet signal. An example of the most basic patch that involves EFFECTS is shown on page 23 of this manual.

## OUTPUT FILTER

Both output channels feature an OUTPUT FILTER that is essentially a tone control. If the control is at 5 on the dial, the frequency response is flat, turning the control counter-clockwise (towards the LOW setting) boosts lower frequencies, turning it clockwise (towards the HIGH setting) boosts higher frequencies. These are manual-only controls. Use the output filter for final treatment of the outgoing sound for each channel.

## OUTPUT AMPLIFIERS

The OUTPUT AMPLIFIER section is for the final treatment of the audio signal before it is sent to the headphones output and to the main outputs going your external mixer desk. As there are two output channels (Ch1 output and Ch2 output on the patch matrix) and each channel has stereo panning (PAN) controls (the manual only control), you can design advanced soundscapes in stereo. The LEVEL controls allow for setting the output level manually, but there is a voltage controlled amplifier on each channel so the control voltage from the patch matrix is added to the manual level settings, thus providing even more versatility in sound design. When a CV is applied to one of the channels, while the same but inverted CV is applied to the other channel, a stereo panning effect is achieved.



## JOYSTICK

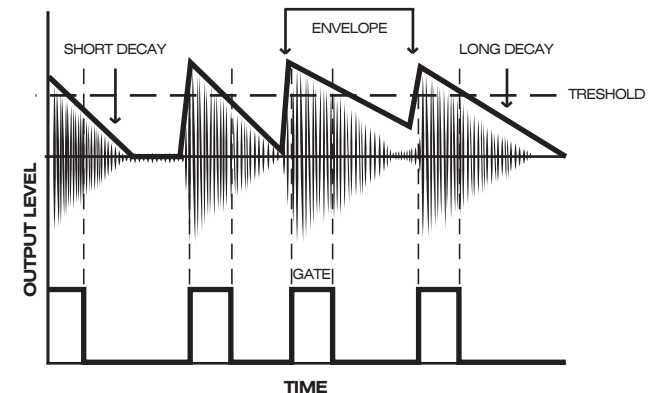
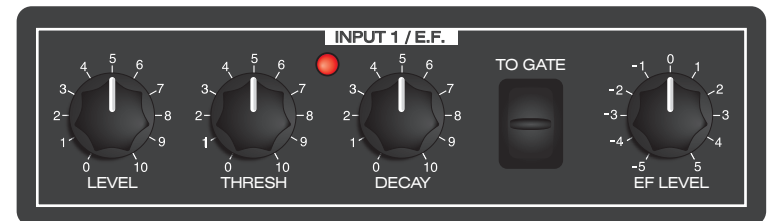
The JOYSTICK allows for altering two bipolar control voltages simultaneously. These control voltages can be applied to the control parameters on other “modules” e.g. Oscillator pitch, Filter cutoff frequency, VCA gain and others. The X and Y level controls define the range of the control voltages where maximum range is -5V to +5V. The joystick is connected to pins 15 and 16 on the patch matrix, and there’s a hidden feature – the control voltage from user-defined MIDI CC messages is added to the Joystick’s voltage. For even more extensive control over parameters on the instrument, the RECORDING of joystick movements has been implemented. To record a joystick movement, push and hold the REC/CLEAR button and move the joystick. You can record up to 8” of motion. Playback starts half a second after the REC button is released, and the bicolour LEDs will give visual feedback on the CVs going the output. If you move the joystick during playback, the recorded CV is overdubbed, and playback resumes in half a second after no motion is detected. To clear the recording, double tap the REC/CLEAR button. The Joystick module also features a manual GATE button that controls the TRAPEZOID generator described above. You also can record a GATE PATTERN – push and hold the REC/CLEAR button and push the GATE button to record a gate pattern. You can record up to 8” of gate patterns. To clear the recording, double tap the REC/CLEAR button.



## INPUT 1

The SYNTRX II has two external audio signal inputs and you can use the instrument as an FX unit for external signal treatment or to inject the external signal into advanced patches and generate completely new sounds.

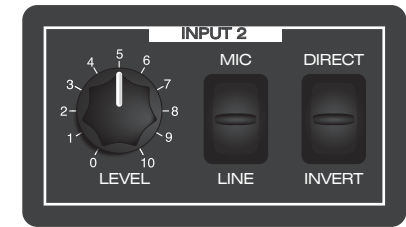
INPUT 1 comes with an input LEVEL attenuator and an ENVELOPE FOLLOWER (E.F.). The envelope follower will do two things: 1) extract a gate from the incoming signal, 2) extract the envelope or, in other words, control voltage that follows the change of the amplitude of the incoming signal. The basics of the envelope follower operation are shown in the image below. The envelope follower works the best with audio signals that have beats and it has four controls. The gate THRESHOLD knob sets the threshold (upper level) of gate detection. A signal below the threshold will be interpreted as a gate and the LED will turn on to indicate the presence of the gate. The switch TO GATE sends an extracted gate to the gate ORing circuit, and it’s added to other incoming gates (one from an external keyboard, internal sequencer or GATE button). The DECAY knob adjusts the decay time of the envelope – at 0 setting it’s sharp and follows the amplitude of the incoming signal, at more clockwise settings, the decay time is extended. The EF LEVEL knob is the envelope follower output CV attenuverter. It determines how much CV is sent to the Env. Follower output. The Inverted signal (counter clockwise setting of the EF LEVEL knob) is useful for ducking audio outputs in a beat with a signal applied to INPUT 1. The INPUT1 is normalled to the SCOPE OUTPUT, so, if nothing is patched into the INPUT 2 jack socket, a signal from the SCOPE OUTPUT is automatically routed to INPUT 2.





## INPUT 2

INPUT 2 comes with a gain switch that selects between LINE level signals in the input and MICROPHONE level signals (this setting is also recommended for guitar pickups). Select the input amplifier gain and adjust the signal level with the LEVEL knob. You can also overdrive the signal in the far clockwise settings of the level controls. The INPUT 2 is DC coupled, which means it can also process control voltages, and the DIRECT/INVERT switch inverts the incoming signal. This is particularly handy, if you want to create patches with stereo panning. See the patch example on the page 22 of this manual. INPUT 2 is also normalled to the SCOPE OUTPUT, so, if nothing is patched into the INPUT 2 jack socket, a signal from the SCOPE OUTPUT is automatically routed to INPUT 2.



## SCOPE

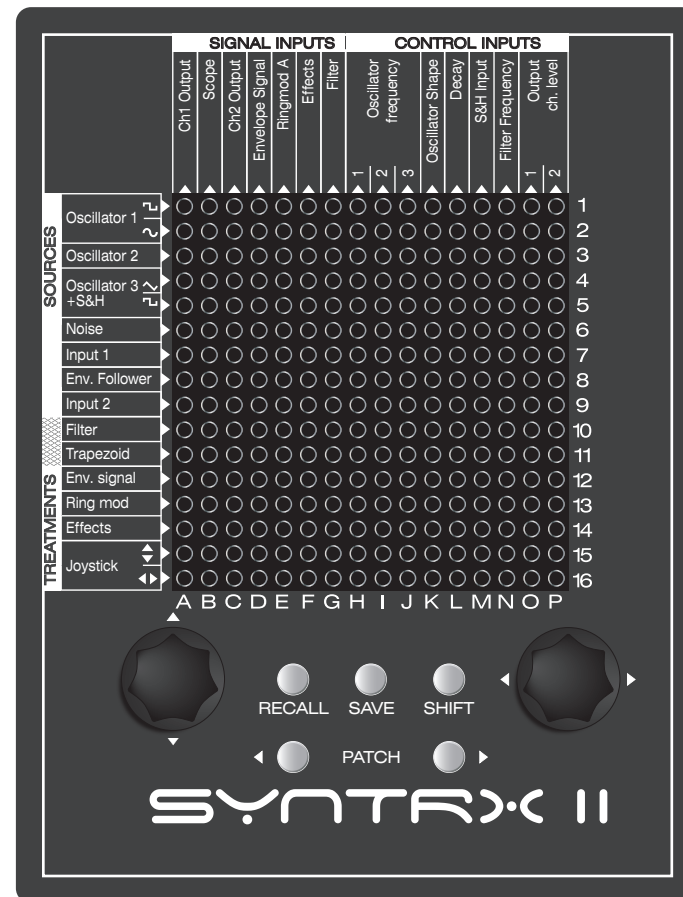
The SCOPE is used to monitor both the CV and audio signal levels in the SYNTRX II patches. The internal signal levels in the SYNTRX are line level, meaning, normal, unattenuated audio signal that is about 3,7 V<sub>ptp</sub>, but it can be higher when several signals are mixed; CV signals can be up to -5V - +5V .

Use the switch to select between CV and audio signal measurement. In the Audio setting, the measurement starts from the left side of the scale and the full scale is ~4.5V. In the CV setting, the centre of the scale is 0 and it indicates both positive and negative voltages.

The SCOPE has a dedicated SCOPE OUTPUT which you can use to get an extra audio or CV signal.



The SYNTRX II has a digitally controlled analogue PATCH MATRIX. It's a mixer/buffered multiple matrix, so when designing patches, you can mix up to 16 inputs to a single output without losing signal strength and likewise – you can send one signal to up to 16 outputs simultaneously. Moreover, each patch point has three levels of attenuation – gain 1, gain 0,7 and gain 0,3 for more advanced patches. The matrix has 16 inputs (or receives, where signals are applied) and 16 outputs (or sends, where signals are sent).



**Inputs (or receives) are:**

SOURCES	Oscillator 1	<ul style="list-style-type: none"> <li>Pulse output of Oscillator 1</li> <li>Sine output of Oscillator 1</li> </ul>
	Oscillator 2	Output of Oscillator 2 - both waveforms mixed at levels defined by manual level controls
	Oscillator 3 +S&H	<ul style="list-style-type: none"> <li>Triangle/ramp output of Oscillator 3</li> <li>Selectable between the pulse output of Oscillator 3 and Sample&amp;Hold CV output</li> </ul>
	Noise	Output of the noise generator
	Input 1	Amplified/attenuated signal form external audio input 1
	Env. Follower	Control voltage from the Envelope Follower
	Input 2	Amplified/attenuated signal form external audio input 2
	Filter	Output of the Filter/Oscillator
	Trapezoid	Control Voltage output of the envelope generator
	Env. signal	Audio signal output of the VCA linked to the envelope generator
TREATMENTS	Ring mod	Output of the Ring modulator
	Effects	Output of the Effects unit
	Joystick	<ul style="list-style-type: none"> <li>Control Voltage from the Joystick, corresponding to the vertical movement, also control voltage associated with the configurable MIDI controller</li> <li>Control Voltage from the Joystick, corresponding to the horizontal movement, also control voltage associated with the configurable MIDI controller</li> </ul>

**Outputs (or sends) are:**

The input of the output amplifier for Channel 1	Ch1 Output	SIGNAL INPUTS	
The input of the level meter	Scope		
The input of the output amplifier for Channel 2	Ch2 Output		
The audio input of the VCA linked to the envelope generator	Envelope Signal		
The signal input of the ring modulator (the carrier input is selected by rotary switch)	Ringmod A		
The audio input of the FX unit	Effects		
The audio input of the filter	Filter		
The control voltage input for Oscillator 1 pitch	1		Oscillator frequency
The control voltage input for Oscillator 2 pitch	2		
The control voltage input for Oscillator 3 pitch	3		
The control voltage input of the Oscillator 1 and Oscillator 2 waveshapers	Oscillator Shape	CONTROL INPUTS	
The control voltage input for envelope decay time	Decay		
The signal for the Sample and Hold circuit input	S&H Input		
The control voltage for the filter cutoff frequency	Filter Frequency		
The control voltage for the VCA of the Output amplifier 1	1		Output ch. level
The control voltage for the VCA of the Output amplifier 2	2		

The PATCH MATRIX has 256 possible patch points, each with three levels of attenuation and it has a memory of 256 patches.

**To build a patch**, avigate the matrix via the X and Y encoders and select a patch point. The left encoder allows you to make attenuated connections. Push the encoder to make a connection. The first push makes a connection with a gain value of 1, the second – gain 0.7, the third – gain 0.3 and the fourth turns the connection off. The right encoder makes a connection with a gain value of 1 and pushing it the second time disconnects it – basically, it works like a shortcut with only two options - maximum attenuation level or off.

You can also **navigate through the matrix via the joystick**. To do so, push and hold the SHIFT button and move the joystick. Push the right encoder to activate a patch point. In order to **draw a patch via the joystick**, push and hold the SHIFT button and the right encoder simultaneously and move the joystick - the movement path will enable patch points. To clear them, hold down SHIFT and REC/CLEAR while moving the joystick.

**Connection preview/live performance** (equivalent to making experimental sounds on Synthi by sticking a pin into a matrix patch point to check the sound and removing it) – navigate to the desired connection point, push and hold SHIFT and push either one of the encoders. While the encoder is pushed, the connection is active.

**Saving patches.** Once you are happy with a patch, push the SAVE button and access the saved patches view. Use the X/Y encoders to navigate to the desired position and push either one of the encoders to save the patch. The relevant LED on the patch matrix will illuminate. If you change your mind and do not want to save the patch, just push SAVE or SHIFT to exit to the patch building mode. The matrix automatically saves the last patch every 30" and when power cycling, it will remember the last active patch. You can choose a memory display between matrix and text modes. Refer to configuration settings on page 26.

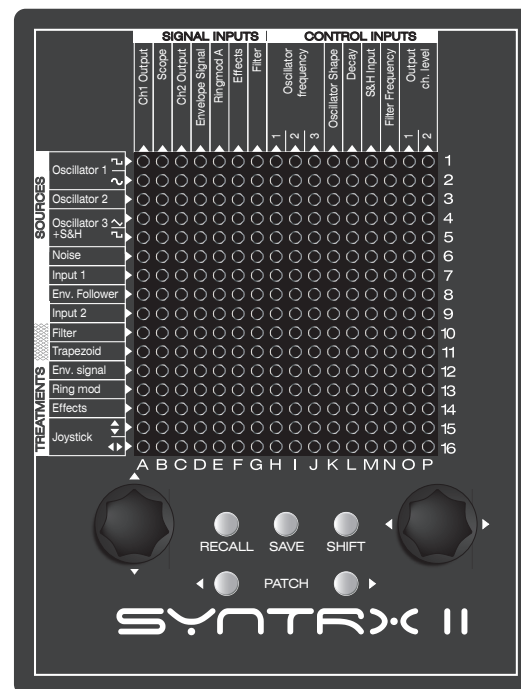
**Random Patches.** Sometimes you may want to go extremely experimental or you may simply lack inspiration. Therefore we have implemented PATCH > randomization functionality! Push and hold the SHIFT button and push the right PATTERN button and the Matrix Mixer will generate a random patch based on randomization density and randomization area settings described on configuration settings page in this manual. NB! Not all random patches will generate sound because sometimes there will be no signal routed to the output(s).

**Sequential patch change.** Push < PATCH > buttons to change patches instantly. With each push of a button, the patch matrix will advance to the next (or previous) saved patch. This is a very handy feature when designing live performances with the SYNTRX II.

**Recalling patches.** Push the RECALL button to access the saved patches mode. Use the encoders to navigate to one of the saved patches, and push either one of the encoders to recall it.

**Deleting patches.** Push the SAVE button. Use the encoders to navigate to the patch you wish to delete. Push and hold SHIFT and push the right encoder - a DELETE menu will appear (DEL visible on the matrix) with two options - either to confirm (push the right encoder) or cancel (push the left encoder) deletion of the patch.

**Turn the matrix off.** At certain conditions the matrix may feed some noise into audio path of the SYNTRX II, therefore during recording session you may want to turn the matrix off. To do so, push and hold the SHIFT button and push the RECALL button. The matrix will go on if you push any button or rotate the encoder.





# THE SEQUENCER

The patch matrix on the SYNTRX II can be used as a piano roll sequencer that allows you to create up to 16 step sequences with notes within a 3 octave range. The output control voltage of the sequencer is automatically routed to all three Oscillators.

To activate the sequencer push and hold the SHIFT button and push the GATE/SEQ button. The piano roll sequencer will replace the patch matrix.

The first 12 rows of the matrix represent SEMINTONES, where the bottom note on the 12th row is C, while the columns represent the sequencer steps. Use the X/Y encoders to navigate the matrix and push one of encoders to enter a note. The first push will initiate a note in the lower octave and the relevant LED will be 1/3 dimmed. The second push of the encoder will initiate the note in a middle octave and the relevant LED will be 2/3 dimmed. The third push of the encoder will initiate the note in the higher octave and the relevant LED will be fully illuminated.

To remove the note, push and hold the SHIFT button and push the right encoder.

Row 13 on the matrix shows the number of steps in the sequence. In order to set the LAST STEP of the sequencer, push and hold the SHIFT button and rotate the X encoder. The default setting is 16 steps.

The bottom three rows set the GATE LENGTH per step. There are 6 discrete gate lengths, indicated as vertical bars: 15%, 30%, 50%, 65%, 80%, 100% (merge with the next gate), indicated by the LEDs in two levels of brightness. In order to set a gate length, push and hold the left encoder and rotate the right encoder. You can also set a default gate length in the configuration settings.

In order to SET THE BPM of the sequencer, push and hold the SHIFT button and rotate the Y encoder. The matrix will indicate a BPM.

In order to set a PLAY DIRECTION of the sequencer push and hold the < PATCH button and rotate the X encoder. The matrix will indicate play directions: forward (FWD), backward (BWD), ping-pong (PP) and random (RND).

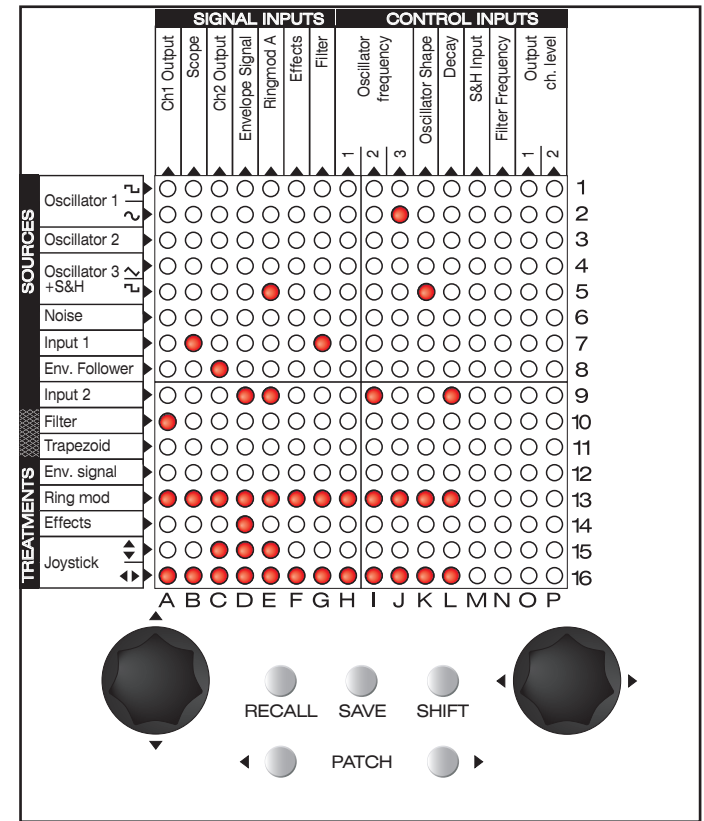
You can select a CLOCK SOURCE of the sequencer in Global settings. But by pushing and holding the < PATCH button and rotating the Y encoder, you can initiate the manual step advance (MAN). In this mode you can use PATCH > button to navigate through the steps in a sequence.

START and STOP the sequencer by pushing the PATCH > button. Reset the sequencer by pushing and holding SHIFT button and pushing PATCH > button.

When the sequencer is stopped, you may want to reset the current note to 0V on the 1V/oct input of the Oscillators. To do so, push and hold the SHIFT button and push the RECALL button.

The sequence is saved with the current patch on the matrix mixer.

In order to **EXIT** the sequencer screen, push and hold the **SHIFT** button and push the **GATE/SEQ** button.



An example above shows a twelve step sequence with Forward play direction and the first note is D and second note is F.

The first two gates are 15% long, the third - 65%, the fourth is merged with the fifth, which is 65% long. Gates 6-12 are 15% long.

## THE STEPPED MODULATION SOURCE

As mentioned above, the sequencer has a hidden feature – two stepped modulation sources; a CV from these is added to the joystick. This allows you to assign controlled, stepped modulations to any destination on the SYNTRX II via the patch matrix and offset/transpose them with the joystick.

When in SEQUENCER MODE, push and hold the **SHIFT** button and push the **Y ENCODER**.

The Y axis modulation setup screen (indicated by the LED dot in the bottom left corner of the matrix) will appear. Unlike the sequencer, the modulation sources are bipolar, and they generate discrete, 21 step (indicated by 7 LED bars, where each point has 3 brightness levels) voltages with a maximum amplitude of +/-5V. Use the X and Y encoders to navigate the matrix and design the modulation pattern (see the example to the right). Note that the top LED on each bar has 3 brightness levels – this indicates three sub-levels of the CV on each step.

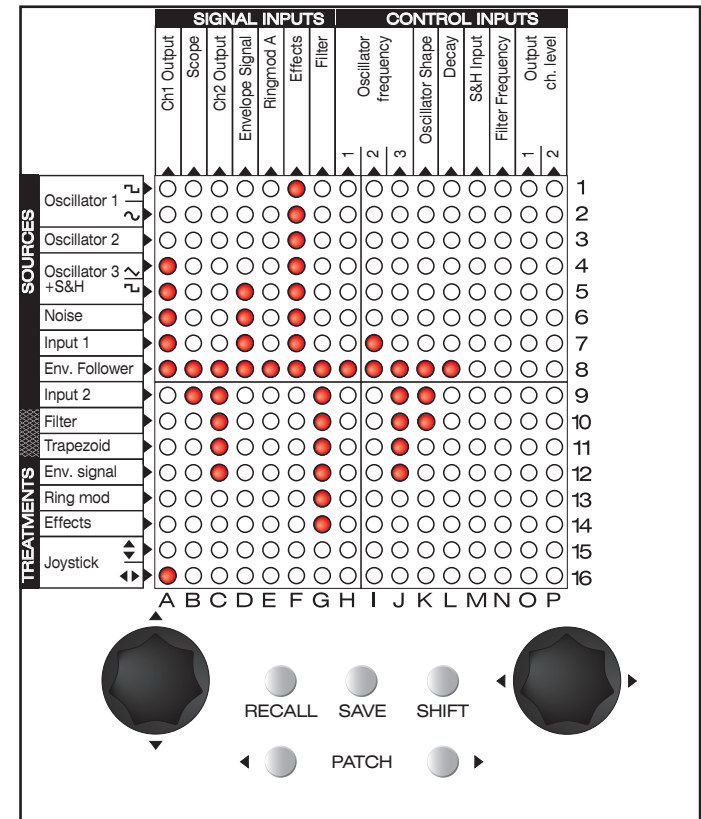
The second SHIFT + Y ENCODER push will get you into the X axis modulation setup screen, indicated by the LED dot in the bottom right corner of the matrix.

Please note that you can attenuate these modulation sources with the LEVEL potentiometers on the joystick.

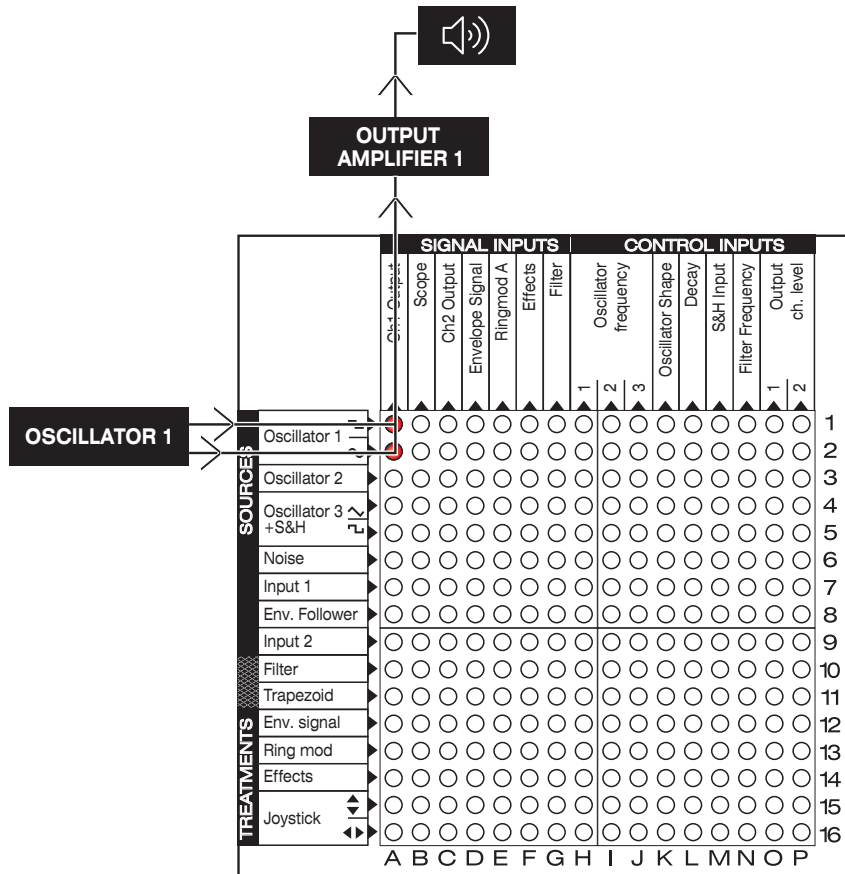
The step count and a play direction of the stepped modulation sources is automatically aligned with the sequencer. On the example to the right, you can see a 12-step modulation pattern designed for the Y encoder.

The sequence along with the X/Y modulation settings is saved with the currently loaded patch on the matrix mixer. If you want the sequencer to start running when the patch is changed, leave it running before saving the patch. If you wish to start it manually, stop the sequencer before saving the patch.

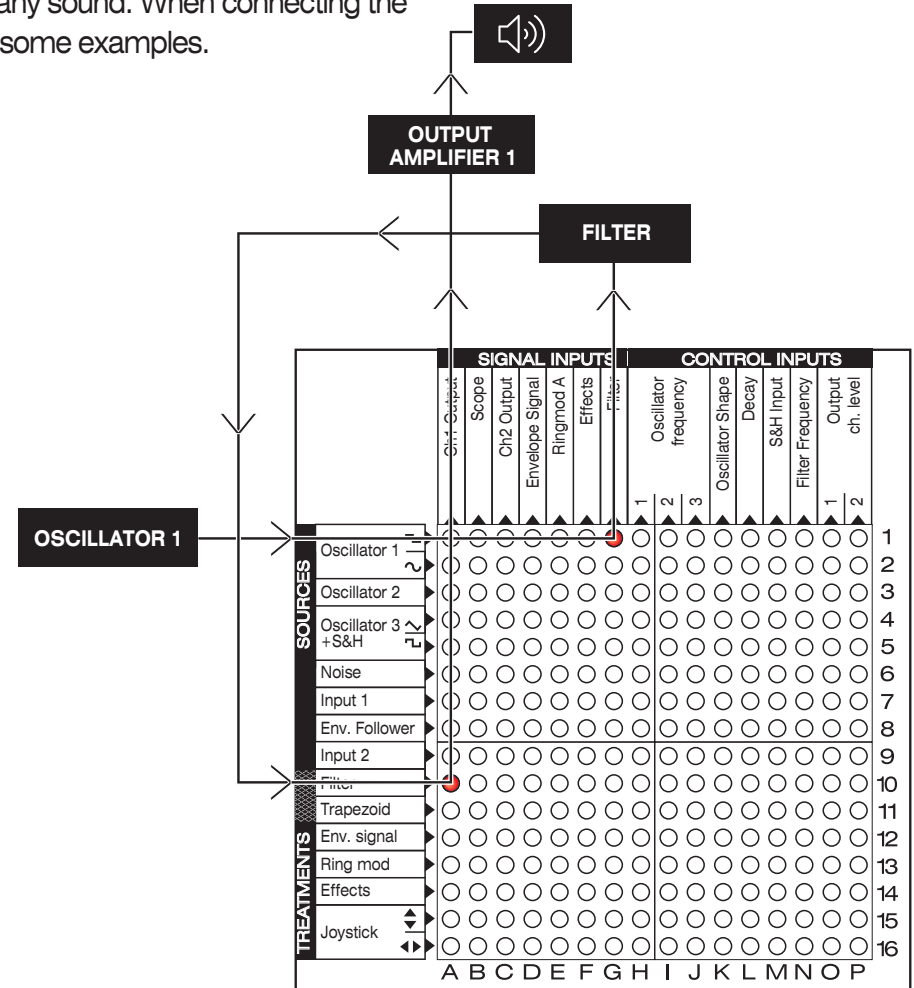
In order to **EXIT** the sequencer screen, push and hold the **SHIFT** button and push the **GATE/SEQ** button.



Building patches on the patch matrix requires a non-linear approach that is bit different from patching a regular synthesizer. Without a patch designed, the SYNTRX II will not make any sound. When connecting the modules, you basically go in circles in and out of the patch matrix. Here are some examples.

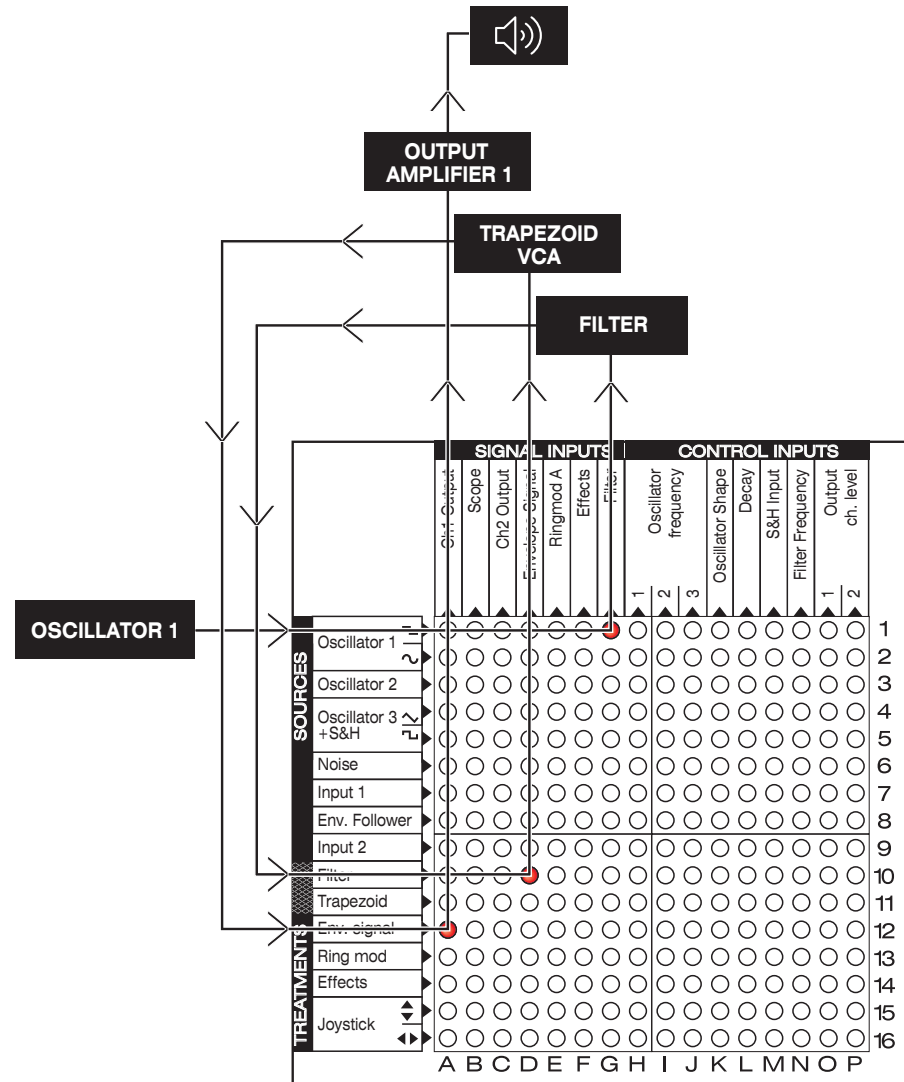


In this basic patch both pulse and sine output signals from the Oscillator 1 go directly into the input of the Output amplifier of the Channel 1. Make Channel 1 level is set at desired value and Panning is at middle. Nothing interesting here, but we have a sound on the output. By adjusting Frequency dial on the Oscillator 1 you can alter the pitch of the sound and by adjusting waveshape and level controls, you can alter the timbre of the sound.



In this patch the pulse wave output signal from the Oscillator 1 goes into the input of the Filter and the output of the Filter is patched into the Output amplifier of the Channel 1. Now you can alter the cutoff frequency and response of the filter and alter the timbre of the sound.

In this patch the pulse wave signal from the Oscillator 1 goes into the input of the Filter and the output of the Filter is patched into the VCA (Envelope signal) linked to the envelope generator (Trapezoid). The signal from the VCA output goes into the Output amplifier of the Channel 1. The looping envelope generator will alter the gain of the VCA, therefore you will hear the change of loudness of the sound on the output.



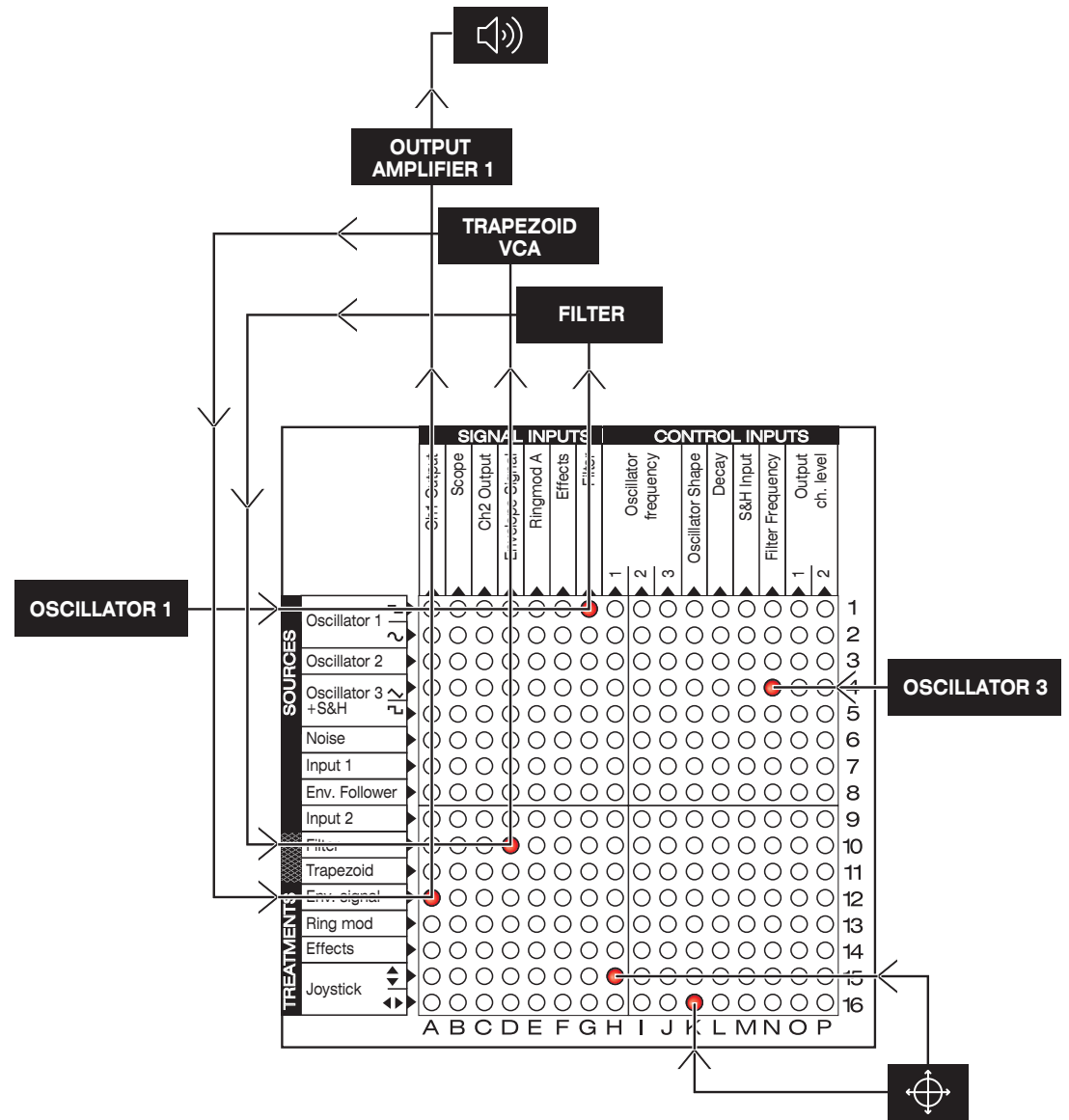


In this patch the pulse wave signal from the Oscillator 1 goes into the input of the Filter and the output of the Filter is patched into the VCA (Envelope signal) linked to the envelope generator (Trapezoid). The signal from the VCA output goes into the Output amplifier of the Channel 1.

Now, let's add some modulation sources!

The cutoff frequency of the filter will be modulated by the Oscillator 3 sawtooth wave, the pulse width of Oscillator 1 signal is modulated by the horizontal movement of the Joystick, and the pitch of the Oscillator 1 will be modulated by the vertical movement of the Joystick. Set the Joystick signal levels to desired amount and enjoy modulation madness!

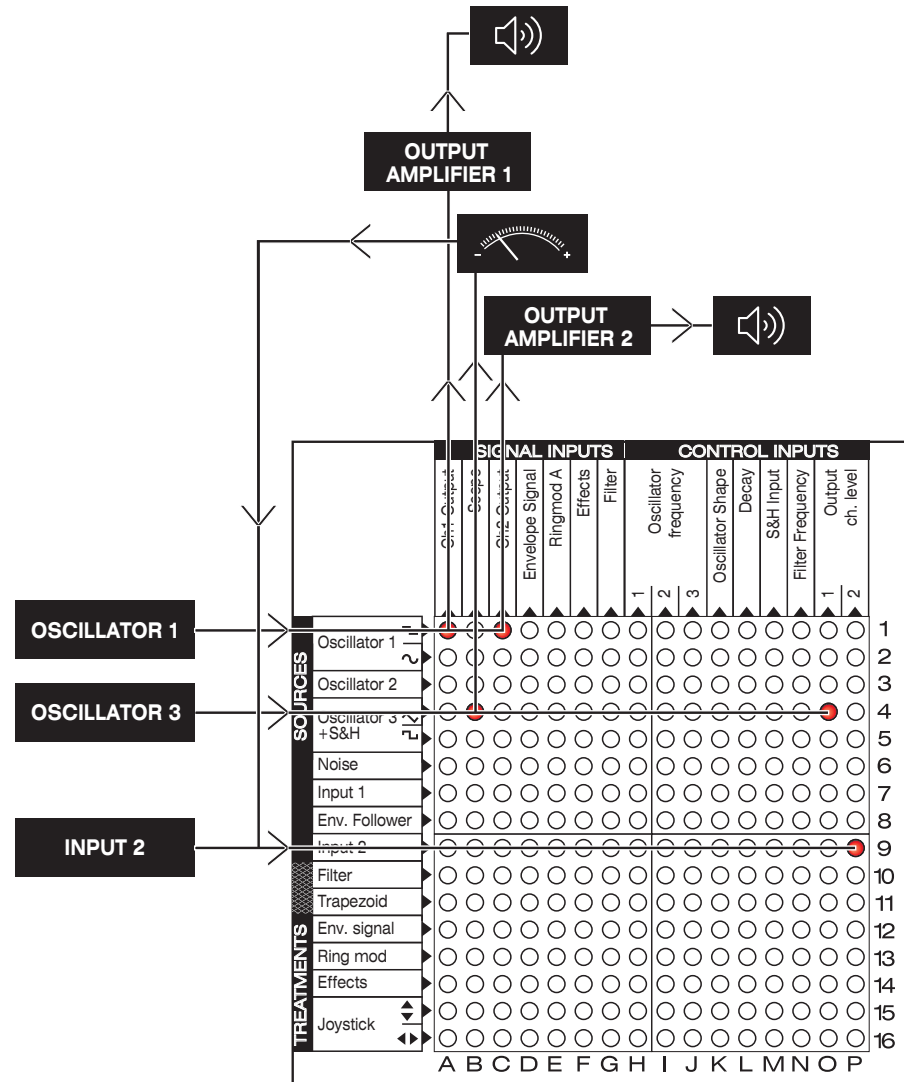
Remember, you can record motion of the Joystick and achieve automations.



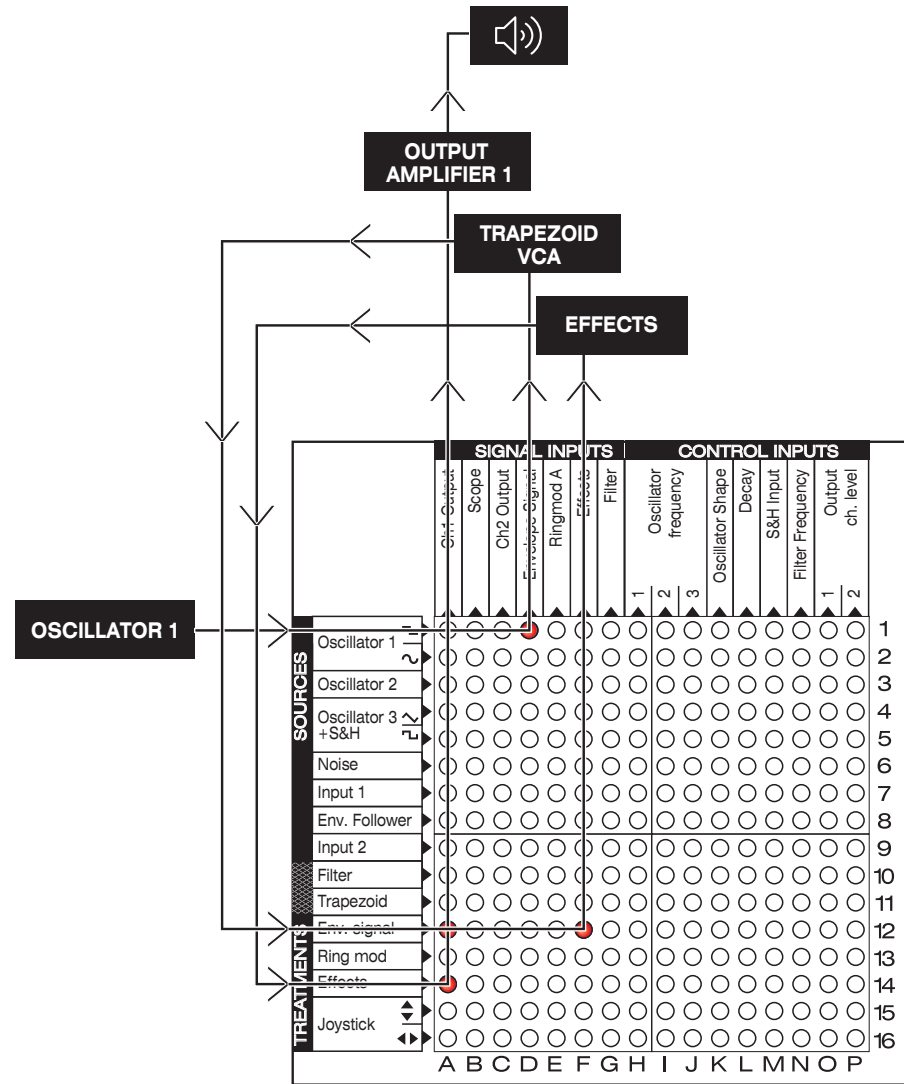
This is an example of the patch that provides stereo panning effect. The pulse wave signal from the Oscillator 1 goes to both Output Channel 1 and Output Channel 2. Make sure, both LEVEL knobs on the Output Amplifiers are set to desired volume and the Channel 1 is panned all way left, while the Channel 2 is panned all way right.

Now, we are sending triangle wave of the Oscillator 3 to the SCOPE Output and to the Output level of the Channel 1. Because the Scope Output is normalled to Input 2, the signal from the Oscillator 3 is automatically applied to the Input2.

Set the Input 2 gain to LINE and INVERT the signal. Then send the inverted signal to Output level of Channel 2. Now, the volume of the channel 1 is changing, depending on the frequency of the Oscillator 3 and the volume of channel 2 is changing with inverted signal of the Oscillator 3. Adjust Oscillator 3 triangle signal level and the Input 2 signal level in order to achieve desired depth of panning.



This is an example of a basic patch with EFFECTS. The pulse wave signal from the Oscillator 1 is connected to the input of the VCA (Envelope Signal), and the output of the VCA is routed both to Channel 1 Output and Effects module input. The output of the Effects also is patched to Channel 1 Output. The relation between Envelope Signal level (DRY) and Effects level (WET) settings will provide you desired DRY/WET mix.

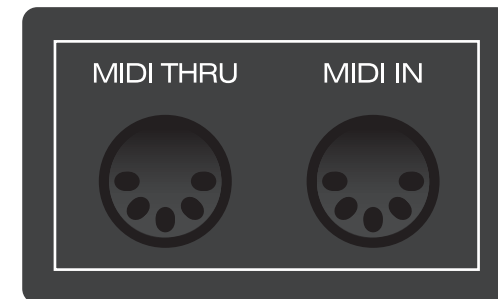


The SYNTRX II has basic MIDI implementation – you can select a MIDI channel on which the SYNTRX II receives MIDI note, note on (gate), pitch wheel, modulation wheel (assigned to the VCF cutoff) messages, as well as two configurable CC messages and a note velocity message that is assigned to the VCF cutoff. The SYNTRX II receives only one MIDI note at a time, and it is higher note priority.

If no external CV is patched into the relevant inputs, MIDI note messages control the pitch of the VCOs, if external CV is used, MIDI notes are added to the external analogue CV, so you can use the MIDI keyboard or sequencer to transpose the pitch of the VCOs.

MIDI CC messages are added to the joystick X and Y control voltages correspondingly, so you can address them via same patch matrix connection points as the joystick. MIDI CC message assignment is described in the CONFIGURATION SETTINGS section on this manual.

You can send MIDI panic message by pushing and holding SHIFT button and pushing REC/CLEAR button for 3 seconds.





All configuration settings on the SYNTRX II are done via the patch matrix. In order to access the configuration settings, push and hold the **SHIFT** button and push the **< PATCH** button. The configuration setting screen will appear. There are two kinds of configuration settings – per-patch and global ones.

Per-patch settings are saved with the individual patches, while global settings are applied to all patches.

Use the left (Y) encoder to navigate through the configuration setting menu pages and the right encoder (X) to alter the settings. A LED dot in the far-right column indicates the page you are in. Every setting starts with an info screen that turns into a running line with the name of the setting, on the bottom part of the screen you can see the configuration options.

**The patch-relevant settings (per-patch settings) come first, and they are:**

- **FX MODE.** The delay and reverb effects can be set to TAPE or BBD mode. The screen (see the example to the right) shows FX BD (running line - FX BBD) and the options are OFF and ON. If you select ON, the BBD mode is activated.
- **FEEDBACK ON THE REVERB.** Instead of the default tone adjustment on the reverberation effect, you can have a feedback adjustment. At the maximum clockwise setting of the FEEDBACK knob, the reverb will work as a sampler that samples a certain amount of audio depending on the TIME setting and will loop it. The screen shows REV F (running line - REVERB FEEDBACK) and the options are OFF and ON. If you select ON, the feedback mode on the reverb is activated.
- **DELAY TIME setting.** The matrix shows DELL (running line - DELAY LENGTH). You can choose between SHORT and LONG modes.
- **PORTAMENTO TIME.** The matrix shows P-TM (running line - PORTAMENTO TIME). Sets a default portamento time on the internal sequencer and/or MIDI in discrete steps from 0 to 100, where 100 corresponds to 1" of portamento time.

**The global settings are:**

- **DEFAULT GATE LENGTH OF THE SEQUENCER** allows you to set the default gate length of the built-in sequencer. The screen shows SQGL (running line - SEQ GATE LENGTH). The gate length has discrete settings and the available options are 15%, 30%, 50%, 65%, 80%, 100%.
- **PATCH RANDOMIZATION DENSITY** sets the density of the connection points when randomizing patches. The screen shows RNDD (running line - RANDOM DENSITY), and you can set randomization density from 0-80%.

- **PATCH RANDOMIZATION AREA** sets the area on the matrix, where the randomization takes place. The screen shows RNDA (running line - RANDOM AREA), and you can push the right encoder to set the randomization area. As soon you push the right encoder, a setup screen appears. There are three steps in the randomization area setting. First, you will see a brighter dot in the top left corner of the area and you can use encoders to adjust the top size of the area; once done, click the right encoder and the brighter dot will move to the bottom right corner, and you can adjust the area from the bottom right corner. Once happy with the size of an area, click the right encoder again and you can move the randomization area across the matrix. Click the right encoder to exit to the main menu.

		SIGNAL INPUTS							CONTROL INPUTS								
		Ch1 Output	Scope	Ch2 Output	Envelope Signal	Ringmod A	Effects	Filter	Oscillator frequency	Oscillator Shape	Decay	S&H Input	Filter Frequency	Output ch. level			
									1	2	3			1	2		
SOURCES	Oscillator 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	1	
	Oscillator 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	2	
	Oscillator 3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	3	
	Noise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	4	
	Input 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	5	
	Env. Follower	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	6	
	Input 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	7	
TREATMENTS	Filter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	8		
	Trapezoid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	9		
	Env. signal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	10		
	Ring mod	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	11		
	Effects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	12		
	Joystick	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	13		
		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	14		
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	15			
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	16			
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

- **MIDI CHANNEL.** The screen shows M-CH (running line - MIDI CHANNEL) and the options are 0 – 16, where 0 is OMNI mode – the SYNTRX II receives MIDI messages from all channels.
- **SEQUENCER CLOCK SOURCE.** The screen shows CLKS (running line – CLOCK SOURCE). Rotate the right encoder to choose between MIDI clock (MIDI) and internal sequencer clock (INT).
- **MIDI CLOCK DIVISION.** The screen shows CLKD (running line - CLOCK DIV). This setting allows you to select the MIDI clock division. Possible settings are 1, /2, /4, /8.
- **PITCH BEND RANGE.** The screen shows M-PB (running line - MIDI PITCH BEND). Sets the range of the pitch bend wheel of the MIDI controller. Available options are 0-12 semitones. Rotate the right encoder to make a selection.
- **MIDI NOTE OFFSET.** The screen shows M-NO (running line - MIDI NOTE OFFSET). This setting allows you to match tuning of the SYNTRX II with the one on your favorite MIDI controller or DAW, and it provides up to 3 octaves offset. Rotate the right encoder to apply desired offset.
- **VELOCITY ON THE CUTOFF** adds velocity sensitivity to the cutoff of the VCF. The screen shows VELC (running line - VELOCITY CUTOFF) and you can set the depth of VCF velocity sensitivity in 10 discrete steps (0-10).
- **VCF KEY FOLLOW** sets the VCF to key follow mode. The screen shows KEYC (running line - KEY CUTOFF) and by rotating the right encoder you can set the depth of VCF keyboard tracking in 10 discrete steps (0-10).
- **MIDI CC TO X** allows you to add external modulation to any parameter of the SYNTRX II via the X axis of the joystick. The screen shows CC X (running line - MIDI CC X). Rotate the right encoder to select the MIDI CC message; the default setting is CC 70.
- **MIDI CC TO Y** allows you to add external modulation to any parameter of the SYNTRX II via Y axis of the joystick. The screen shows CC Y (running line - MIDI CC Y). Rotate the right encoder to select the MIDI CC message; the default setting is CC 71.
- **PATCH VIEW MODE.** The screen shows P-VW (running line - PATCH VIEW). This setting allows you to select how the patch memory is displayed when patches are saved or recalled - MTX mode displays saved patches as a grid in the matrix, while NUM - as numbers.
- **MIDI DAC MANUAL CALIBRATION.** The screen shows CALIB (running line - CALIBRATION). Although the SYNTRX II comes tuned and calibrated, you may want to recalibrate it for your preferred MIDI controller. Set the Oscillator 1 octave switch to -3, the Tune knob to 5 and connect a chromatic tuner to the SCOPE OUTPUT and connect the OUTPUT 1 to a mixing console or a speaker. Now, push the right encoder and the SYNTRX will advance to calibration mode. The screen will show C0. Adjust the Tune knob to read C0 on the tuner. Now, rotate the left encoder, and the screen will show C1. If the tuner does not read exactly C1, rotate the right encoder until the tuner reads exactly C1, rotate the left encoder again and adjust the right encoder until tuner reads exactly C2. Proceed the same way till you adjust the C8. Once done, push the right encoder to exit the calibration screen.
- **MATRIX DIMMING** allows you slightly dim the entire matrix if you find the default setting too bright. The screen shows MIX D (running line – MATRIX DIM) and you can turn it ON or OFF.
- **FIRMWARE VERSION INDICATION.** The screen shows FW-V (running line - FW VERSION). This screen indicates the current firmware version.
- **FACTORY RESET.** The screen shows FRST (running line - FACTORY RESET). In order to perform a factory reset push the right encoder and the firmware update screen will appear. If you change your mind, push the left encoder (noted by the X in the bottom left corner); if you want to proceed with the FW update push and hold the right encoder (noted by V in bottom right corner). This will initiate countdown to the factory reset. Keep holding the encoder until reset is completed. NB! The factory reset will delete all your patches.

### Firmware update

The firmware update is performed via MIDI sysex. Download the sysex file from the SYNTRX II page on [www.ericasynths.lv](http://www.ericasynths.lv). Power the SYNTRX II off, connect it to the MIDI interface and open a sysex tool (for example, MIDI-OX for PC and SysEx Librarian for Mac) on your PC or Mac. Now, push and hold both the REC/CLEAR and GATE/SEQ buttons and power the SYNTRX on. The matrix will show a firmware update screen. Send the firmware file via the sysex tool and the matrix will indicate the status of the firmware update. It typically takes couple of minutes to complete the update. Once done, restart the SYNTRX II and your new firmware will be installed!



## SAFETY INSTRUCTIONS

Please follow the instructions for the use of the Erica Synths SYNTRX II below, because only this will guarantee the proper operation of the module and ensure the warranty from Erica Synths.



Use the SYNTRX II exclusively with the power supply unit (PSU) supplied with the system. Powering it with other PSU units may cause permanent damage to the device.



Water is lethal for most electric devices unless they have been rendered waterproof. The SYNTRX II is NOT intended for use in a humid or wet environment. No liquids or other conducting substances should be allowed into the module. Should this happen, the module should be disconnected from mains power immediately, dried, examined and cleaned by a qualified technician.



Do not expose the instrument to temperatures above +50° C or below -20° C. If you have transported the instrument in extremely low temperatures, leave it at room temperature for an hour before plugging it in.



Transport the instrument carefully. Never let it drop or fall over. The Warranty does not apply to instruments with visual damage.



SYNTRX II must be shipped in the original packaging only. Any instrument shipped to us for return, exchange and/or warranty repair must be in its original packaging. All other deliveries will be rejected and returned to you. Ensure that you keep the original packaging and technical documentation.

## DISPOSAL

This device complies with EU guidelines and is manufactured and confront RoHS without the use of lead, mercury, cadmium or chrome. Nevertheless, this device is special waste and disposal in household waste is not recommended.

User manual by Girts Ozolins@Erica Synths.  
Design by Ineta Briede@Black8 & Maija Vitola@Black8.

Copying, distribution or any commercial use in any way is prohibited and needs the written permission of Erica Synths.

The specifications are subject to change without notice.

If you have any questions, feel free to contact us on SUPPORT section on [www.ericasynths.lv](http://www.ericasynths.lv)

## WARRANTY

You will find the Erica Synths terms of warranty at [www.ericasynths.lv](http://www.ericasynths.lv)

Items for return, exchange and/or warranty repair should be sent us according to the guidelines on SUPPORT section on [www.ericasynths.lv](http://www.ericasynths.lv)