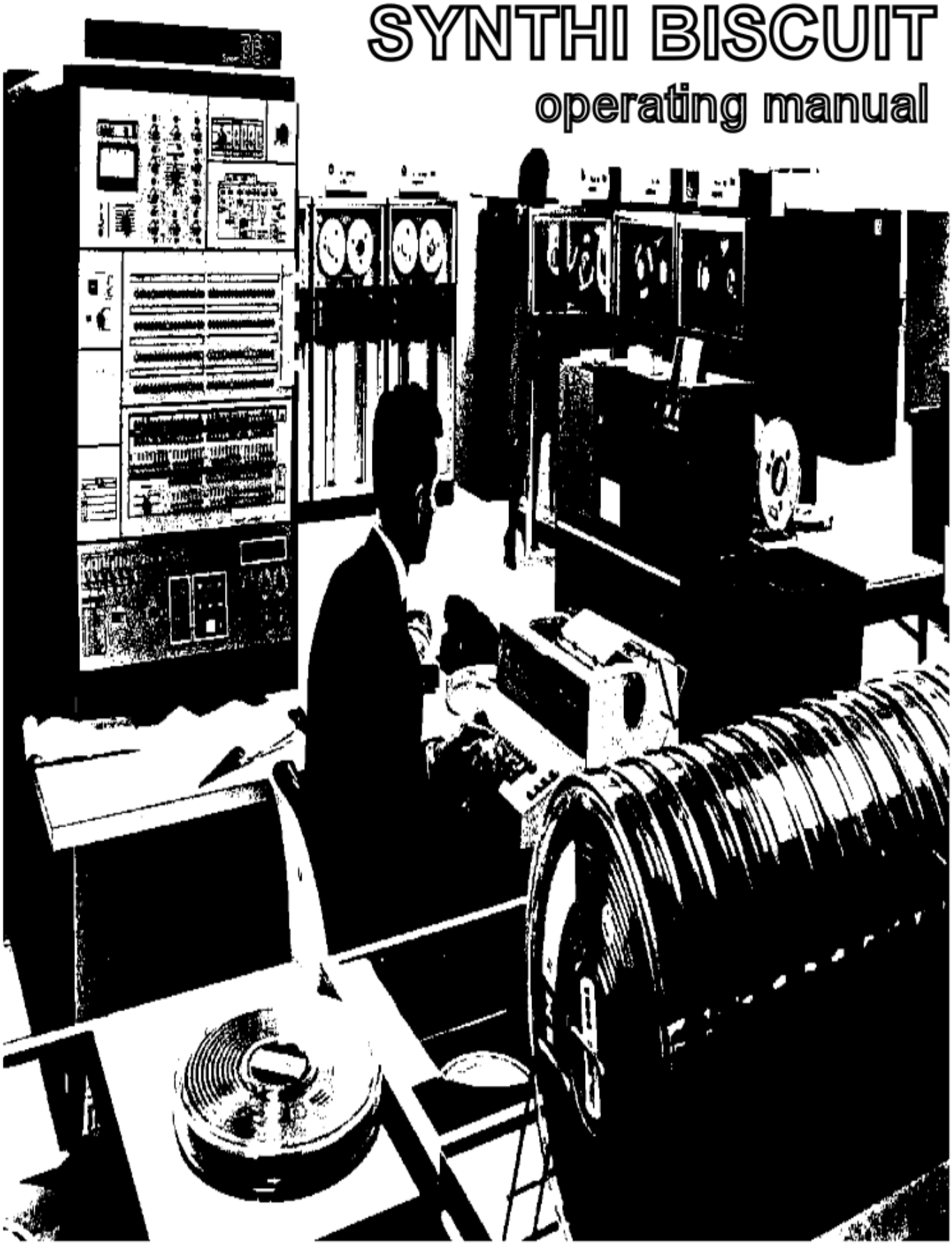
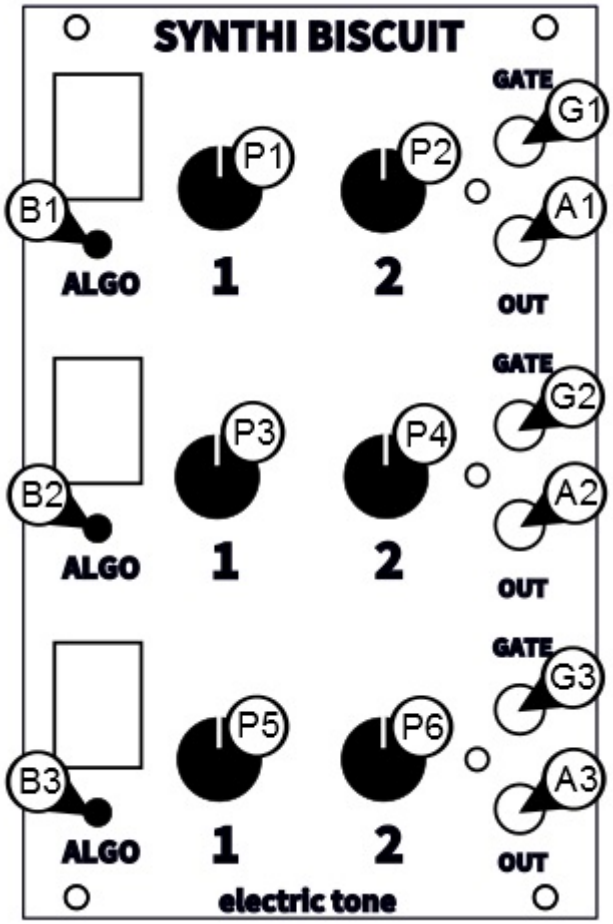
ELECTRIC TONE SYNTHI BISCUIT

operating manual



The Synthi Biscuit is a multi-fonction 16hp packaged module for the Eurorack system. It offers 16 different algorythms in 3 similar sub-modules. A sub-module consists of 2 variable parameters, a gate input, an analog output, a display and a selection button.



The parameters knobs (P1...P6) allow changes in the algorythms used (speed lfo, gate time, random factor ect...). The result is available at the analog output(A1...A3). The input gates (G1, G2,G3) accept a gate greater than 0.7V (it can aslo be triggered by non-sharped signals). The two potentiometers and the gates have different roles depending on the algorythms it is currently in.

To browse through the algorythms, click the algo buttons (B1,B2,B3), The display will show which one of the algorythms is used.

For each algorythms, an alternative mode can be accessed when pressing the algo button for about 3 seconds. The decimal point of the display will shine. To exit the alternative mode, press the button for 3 seconds again.

LIST AND ALGORYTHM FONCTIONS:

0. SINE

this is a sine wave that oscillates from 8 sec. to 40Hz. The first control sets the speed, the second aplies phase distortion to the waveform. The output goes from -5V to 5V.

The gate input resets the waveform.

The alternative mode offsets the output to 0-5V range.

1. TRIANGLE

this is a triangle wave that oscillates from 8 sec. to 40Hz. The first control sets the speed, the second controls the slopes of both rising and failling edges.

The gate input resets the waveform.

The alternative mode offsets the output to 0-5V range.

2. SAW DOWN

This is a saw that grows downward, from 8 sec. to 40Hz. The first knob sets the speed, the second knob gradually reduces the slope to create a pulse-like waveforms. The output goes from -5V to 5V.

The gate input resets the waveform.

The alternative mode offsets the output to 0-5V range.

3. SAW UP

This is a saw that grows upward. The frequency goes from 8 sec. to 40Hz. The second knob gradually reduces the slope to create a pulse-like waveforms. The output goes from -5V to 5V.

The gate input resets the waveform.

The alternative mode offsets the output to 0-5V range.

4. SQUARE WAVE

the algo gives a square wave ouptut which duty-cycle is controlled by the second knob. The frequency goes from 8 sec. to 40Hz. The output goes from -5V to 5V.

The gate input resets the waveform.

The alternative mode offsets the output to 0-5V range.

5. EXPO LFO

LFO made of exponential and logartymic curves. The first knob sets the speed, while the second waveshapes the output. The frequency goes from 8 sec. to 40Hz. The output goes from -5V to 5V.

The gate input resets the waveform.

The alternative mode offsets the output to 0-5V range.

6. SAMPLE AND HOLD

Inspired by some old happy-hippy west coast random generator, this algorythms gives you access to random voltages. The fist knob set the probability of changes whilst the second one sets the resolution (from 256 possible steps, to a binary output (0/5V)).

At minimun probabilty, the fonction takes a sample from a known and repetitive waveform. If the probability knob increases, the waveform is progressively mixed with a random generator giving less predictable numbers.

The alternative mode offsets the output to 0-5V range.

7. FLUCTUATING VOLTAGE

This is a voltage that goes UP and DOWN in straight line creating random modulation. The first knob sets the speed, the second the resolution (for staircase like fluctuating voltage).

The alternative mode offsets the output to 0-5V range.

8. TWO STEPS SEQUENCER

The clock inputed to the input gate determines which value (parameter 1 or 2) is at the output. The voltage scale is 0V-5V.

The alternative mode gives to the potentiometers the full range possible (-5V to 5V).

9. RANDOM SEQUENCER

A sequencer is feeded with random values. It works as you regular sequencer. At each clock the sequencer is moving up and output a new voltage. The first paramater determines the length of the sequence (from 1 steps to 16 steps), the second parameter sets the number of repetitions before the sequencer is re-seeded with a new set of values.

When the second knob is put at maximum, the re-seeding is stopped and the sequencer repeats endlessly until the repetition knob is moved back again. However, you can still manipulate the length of the sequence with the first potentiometer.

In the alternative mode the sequence is read randomly (instead of going up).

A. PATTERN GENERATOR

the pattern generator works similarly to the random sequencer, however it outputs gate patterns. A 16 beat pattern is built randomly and is repeated a number of time determined by the length control (second potentiometer). The first control, set the number of beats that the sequencer will go through before going back to the first one.

When the second knob is put at maximum, the re-seeding is stopped and the sequencer repeats endlessly until the repetition knob is moved back again. However, you can still manipulate the length of the sequence with the first potentiometer.

In the alternative mode the sequence is read randomly (instead of going up).

b. ENVELOPPE ATTACK-DECAY

A handy enveloppe generator, the first parameter sets the attack while the second sets the decay time. The gate acts as a trigger and its duration has no effect on the enveloppe. The ouput goes from 0 to 5V.

The alternative mode gives access to a LOG curve.

C. ENVELOPPE ATTACK-HOLD-DECAY

Another handy enveloppe generator, the first paramater sets the attack while the second sets the decay time. The output stays high until the gate input goes low. The ouput goes from 0 to 5V.

The alternative mode gives access to a LOG curve.

d. DISRUPTIVE CLOCK

This a clock that can be disrupted by an incoming gate. Upon receving a gate the clock will jump to a random value to return linearly to its previous speed. The first paramater sets the speed, the second the gain applied to the disruption.

The alternative mode adds even more disurption. The input gate besides modifying the speed will also cancel out a serie of output gates.

E. BURST GATE

The burst gate algorythm generates, upon receiving a gate, a serie of gates. The frequency betweens the gates is set with the first parameter, the second one set the number of output gates.

The alternative mode distributes the gates randomly into the packet.

F. PROBABILITY GATE

An incoming gate is reproduced depending on the probability factor set by the first paramater. The second parameter divides the input clock by 1 to 32. Great for adding randomness in your patch. It may also work only as a divider with the first paramater sets to 0.

The alternative mode allows the output to no longer be gates by varying levels.

Geeky details:

The synthi biscuit responds to all Eurorack/Doepfer requirements on power supply(12V/0V/-12V) and power connector (2X8). However, although the module is protected against unexpected silliness, pay attention when installing your module (or any other modules for that matter...) unless you want the magic smoke to escape and ruin your day.

The Synthi Biscuit commsumes 30mA on the 12V rail, and 5mA on the negative rail. No 5V required.

Cheap Sheet

Algo	1	2	SECOND MODE
Sine	speed	Phase distortion	Offset 0-5V
Triangle	speed	Phase distortion	Offset 0-5V
Saw up	speed	Phase distortion	Offset 0-5V
Saw down	speed	Phase distortion	Offset 0-5V
Square	speed	PWM	Offset 0-5V
Expo	speed	waveshape	Offset 0-5V
Sample and hold	speed	resolution	Offset 0-5V
Fluct. Voltage	speed	resolution	Offset 0-5V
Two steps seq.	Voltage 1	Voltage 2	Full range (-5/+5)
Random sequencer	Number of steps	Number of repetitions	Random read
Pattern Generator	Number of steps	Number of repetition	Random read
Env. Attack/decay	Attack	Decay	LOG curve
Env. Attack/hold/ decay	attack	Decay	LOG curve
Disruptive clock	Speed	Disruption gain	More disruption
Burst gate	Frequency of	Number of gates	Randomisation of the gates

	gates		
Prob. Gate	**Probability**	**Divider**	**level**

Electric tone
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