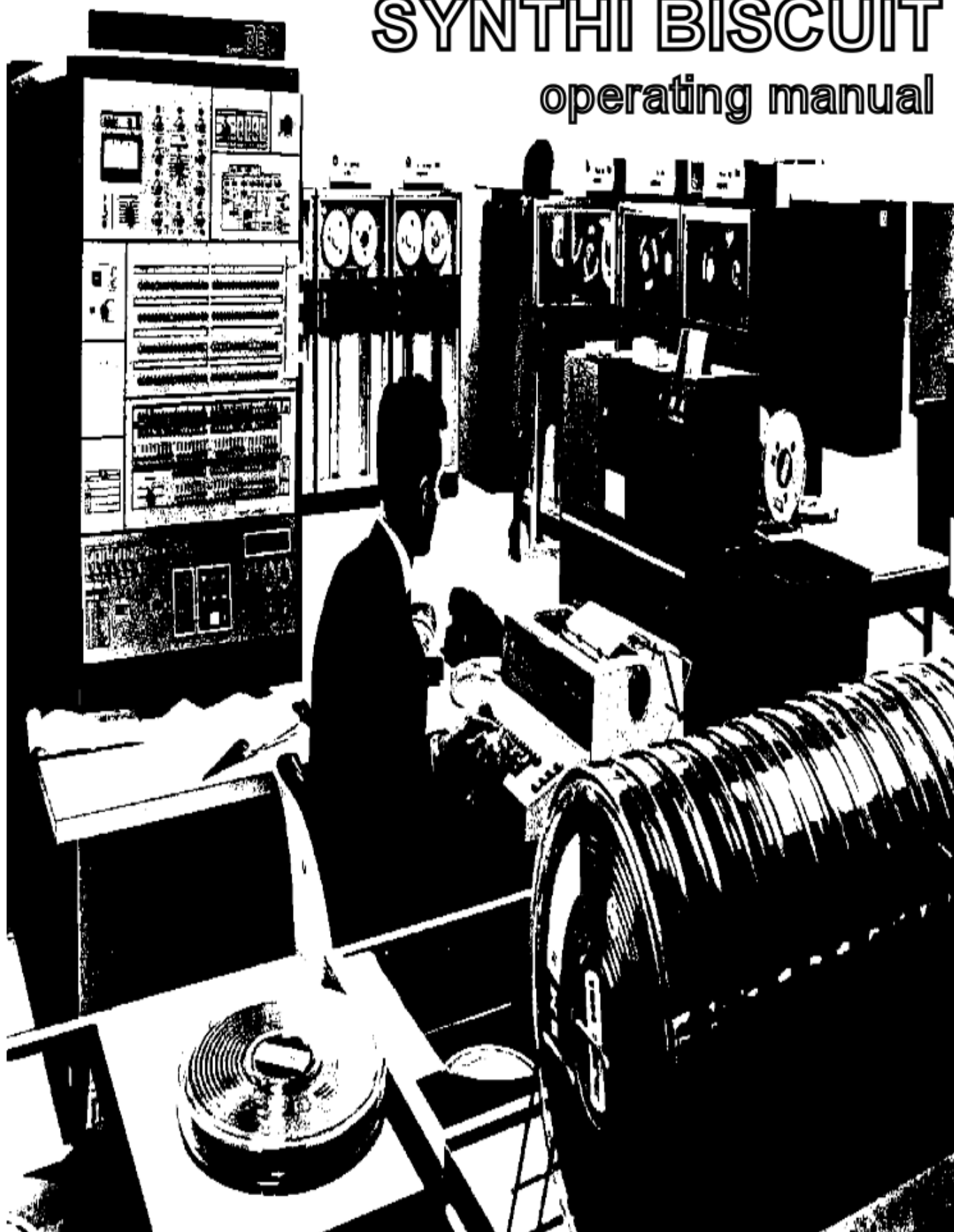


# ELECTRIC TONE SYNTHI BISCUIT

operating manual



The Synthi Biscuit is a multi-fonction 16hp packaged module for the Eurorack system. It offers 16 different algorithms 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 algorithms 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 algorithms it is currently in.

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

For each algorithms, 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.

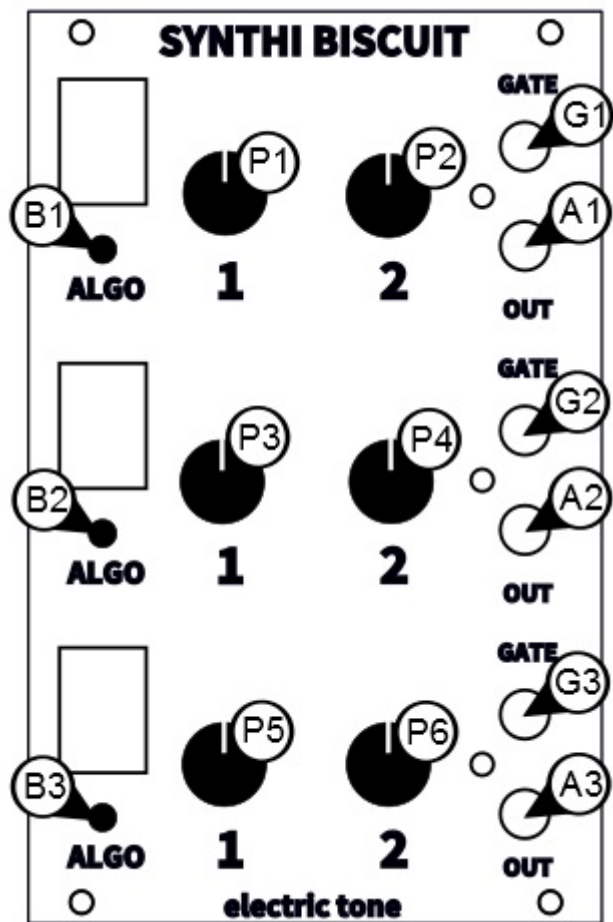
The alternative mode offsets the output to 0-5V range.

##### 2. SAW 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.



### **3. 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.

### **4. EXPO LFO**

LFO made of exponential and logarithmic 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.

### **5. SQUARE WAVE**

the algo gives a square wave output 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.

### **6. SAMPLE AND HOLD**

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

At minimum probability, the function 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 input 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 envelope 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 envelope. The output goes from 0 to 5V.**

**The alternative mode gives access to a LOG curve.**

### **C. ENVELOPPE ATTACK-HOLD-DECAY**

**Another handy envelope 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 output 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 receiving 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 algorithm generates, upon receiving a gate, a serie of gates. The frequency between 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 parameter. 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 parameter set 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/Doefer 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 consumes 30mA on the 12V rail, and 5mA on the negative rail. No 5V required.

### **Cheap Sheet**

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

	<b>gates</b>		
<b>Prob. Gate</b>	<b>Probability</b>	<b>Divider</b>	<b>level</b>

**Electric tone**

<http://electrictonemusic.com/>  
[contact@electrictonemusic.com](mailto:contact@electrictonemusic.com)

**July** 2017.