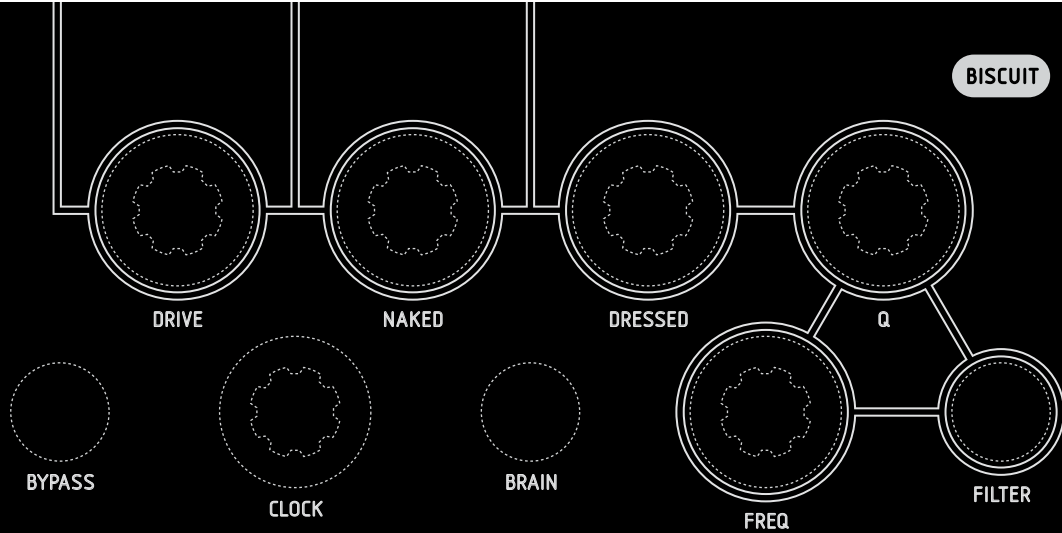


BISCUIT



- 1 TAP
- 2 -/F1
- 3 +/F2
- 4 F3
- 5 WAVE
- 6 DELAY
- 7 PITCH
- 8 STEP

BISCUIT user manual

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Safety warnings and recommendations

Do not eat Biscuit.

Before using BISCUIT, make sure you read all the instructions below, and the User Manual. BISCUIT should be connected to a power supply only of the type described in this manual. The included AC adaptor has some openings on its enclosure for cooling purpose. Do not obstruct these openings, or place things on the top of the AC adaptor which could prevent normal cooling.

If your BISCUIT is unused for a long period of time, disconnect the AC adaptor from the outlet.

BISCUIT, in combination with an external amplification system or headphones, may generate a high sound level, which could potentially damage your ears. Do not operate BISCUIT for a long period of time at a high volume level. It's safer to keep reasonable levels and start with low volume.

Do not expose BISCUIT and its AC adaptor to rain, moisture, dust, sand or dirt.

Do not pour liquids into BISCUIT.

Never use or store BISCUIT near water, for example sea, swimming pool, bathtub, kitchen or bathroom sink.

BISCUIT should be located away from high temperatures (> 35 degrees C), for example direct sunlight in an enclosed vehicle, radiators, heat registers, stoves or other heat sources.

Only clean BISCUIT with a soft, dry cloth. Do not apply any liquids or alcohol.

Do not apply excessive vibration forces to BISCUIT, do not drop it and always transport it in its original packaging or in shock-absorbent material.

Never climb on top of, nor place heavy objects on BISCUIT.

Some parts of BISCUIT are fragile (such as the housing and some electronic components), so dropping it might damage your BISCUIT. Repair work resulting from dropped BISCUIT is not covered by the normal warranty of the product.

Do not leave small children alone with BISCUIT, and do not let them use BISCUIT unless they are capable of following all the rules for the safe operation of BISCUIT.

Do not open (or modify in any way) BISCUIT or its AC adaptor. There are no user serviceable parts inside. Refer all servicing to qualified personnel only. If you think your BISCUIT needs repair, you can send us an e-mail at : support@otomachines.com.

Warning on epilepsy

A very small percentage of individuals may experience epileptic seizures or blackouts when exposed to certain light patterns or flashing lights. If you have an epileptic condition or have had seizures of any kind, consult your physician before using Biscuit.

Warranty

BISCUIT is sold with one year full warranty. This warranty covers all malfunctions that may occur from normal use, and does not cover damage due to abuse, faulty connections or operation under other than specified conditions. Warranty is void when serial number is unreadable, when the device is repaired by unauthorized persons, opened, or tampered with in any way, or if the product was not sold to the end-user through an authorized dealer or the OTO MACHINES website. This warranty is limited to replacement or repair of the product. The unit can only be returned for repair after agreement from OTO Machines. Customer covers shipping cost of faulty BISCUIT to OTO Machines and OTO Machines covers shipping cost back to customer.

Disposal

The trash can symbol indicates that your product must be disposed of properly according to local laws and regulations.

BISCUIT has been tested to comply with the 2004/108/EC EMC Directive.



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1 PRESENTATION

Thank you for choosing the BISCUIT !

BISCUIT is a stereo effects processor. Thanks to a subtle blend of 8-bit digital and analog processing, BISCUIT is able to create a wide range of sounds. It goes from 8-bit character and lo-fi digital artefacts to numeric distortions.

BISCUIT is very useful to add depth and texture to any kind of electronic sound. It works best with synthesizers (digital or analog), bassline, drum machines, loops, samplers or computers, but you can use it with any other source.

BISCUIT is basically an enhanced bit depth and sample-rate reducer, known as "bitcrusher", followed by an analog filter and a simple mixing section (dry/wet). It also offers other features like removing or inverting each of the 8 bits, changing the sample rate from 250Hz to 30kHz, or adding one of the four effects (waveshaper, delay, pitch shifter and step filter).

Biscuit is MIDI compatible.

You can save the complete BISCUIT settings (pots and switches) in 16 presets.

A SysEx dump function lets you save and recall as many presets as you like on your computer.

Features

- Stereo inputs and outputs
- Input gain from $-\infty$ to 15 dB with diode clipping
- Real 8-bit Analog to Digital and Digital to Analog converters
- True analog multimode filter with resonance control
- Variable sample clock from 250 Hz to 30 kHz
- Unique capability of muting and inverting each of the 8 bits
- FX section: Waveshaper, Delay, Pitch Shifter and Step Filter
- Separate level control of dry and 8-bit signals
- 16 presets
- MIDI compatible
- True relay bypass
- Rugged metallic Neutrik® connectors

1.1 USER INTERFACE/ Front Panel |01|

1 DRIVE : Input gain (from $-\infty$ to +15 dB) placed before the AD conversion. A diode clipper protects the converters

2 NAKED : Dry signal level (from $-\infty$ to 0 dB)

3 DRESSED : 8-bit signal level (from $-\infty$ to 0 dB)

4 Q : Filter Resonance

5 FILTER : Filter type. Switch colour indicates which type of filter is selected : Green is for Low-pass, Yellow for Band-pass and Orange for Hi-pass

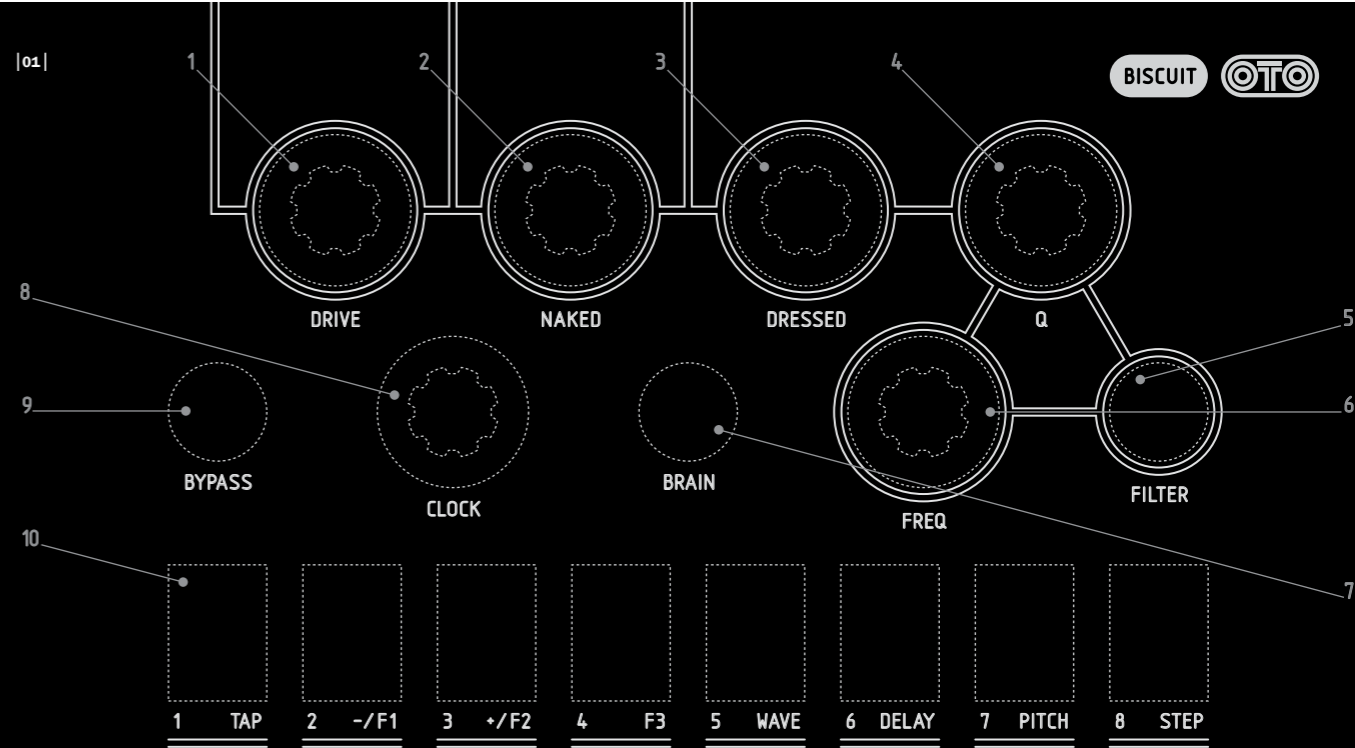
6 FREQ : Filter cutoff frequency (from 20 Hz to 15kHz)

7 BRAIN : When **BRAIN** is off, the switches 1 to 8 are used for Biscuiting (cf Chap. 2). When **BRAIN** is Blue, the switches 1 to 8 are used for selecting FXs and parameters. This switch is also used for recalling and saving Presets and to access the MIDI section

8 CLOCK : Sample Clock Frequency (from 250 Hz to 30 kHz). This pot is also used in the FX section to set parameters

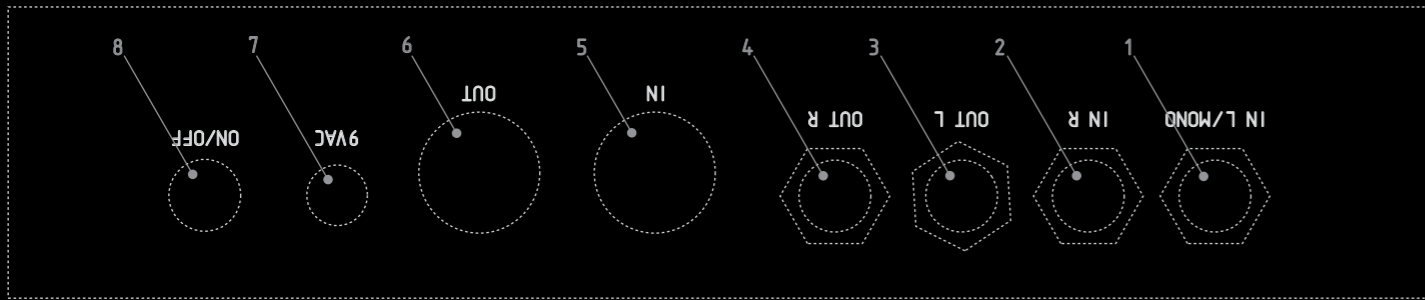
9 BYPASS : True relay bypass. When the switch lights up green, BISCUIT is active. It turns orange when input signal is strong. When its light is off, BISCUIT is inactive and input signal is directly routed to output jacks, with no electronics in between

10 - 1 to 8 : These switches have 2 main functions : muting or inverting the 8 bits and selecting FX type and parameters. They are also used for presets, MIDI section and snapshots



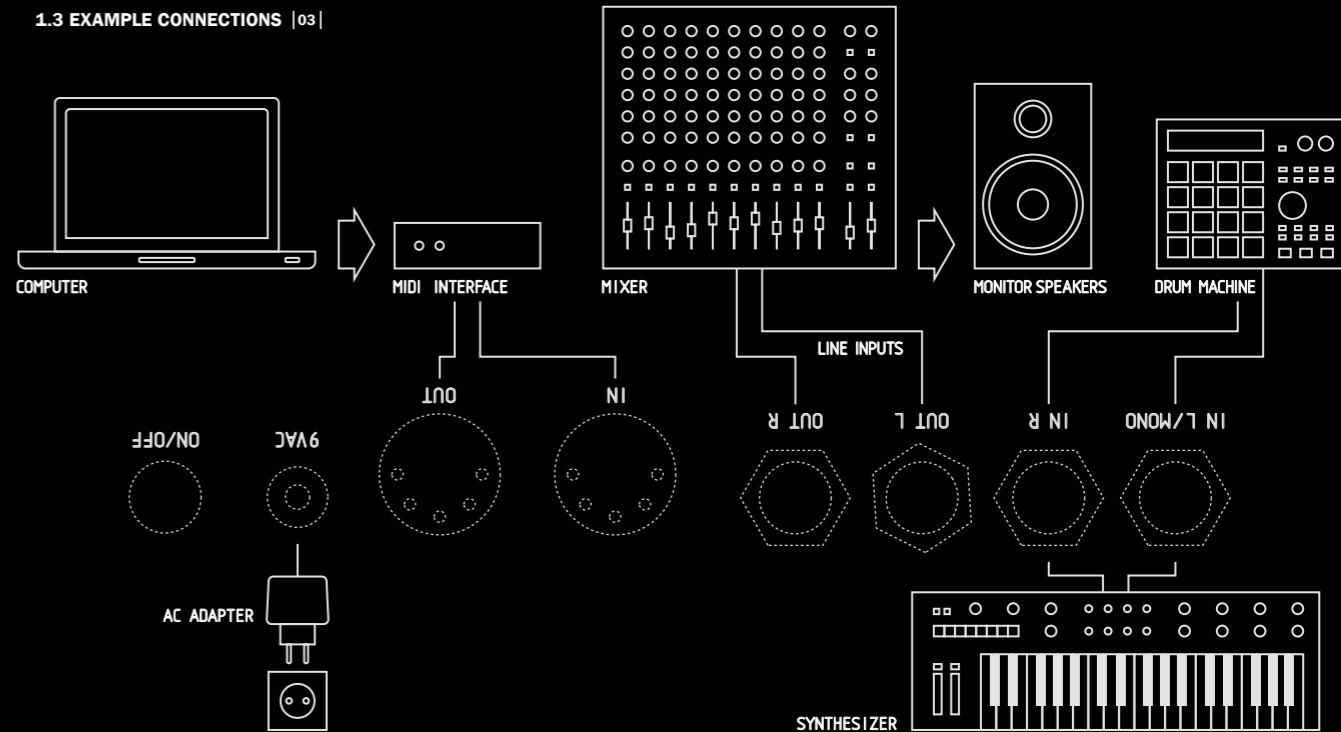
1.2 REAR PANEL |02|

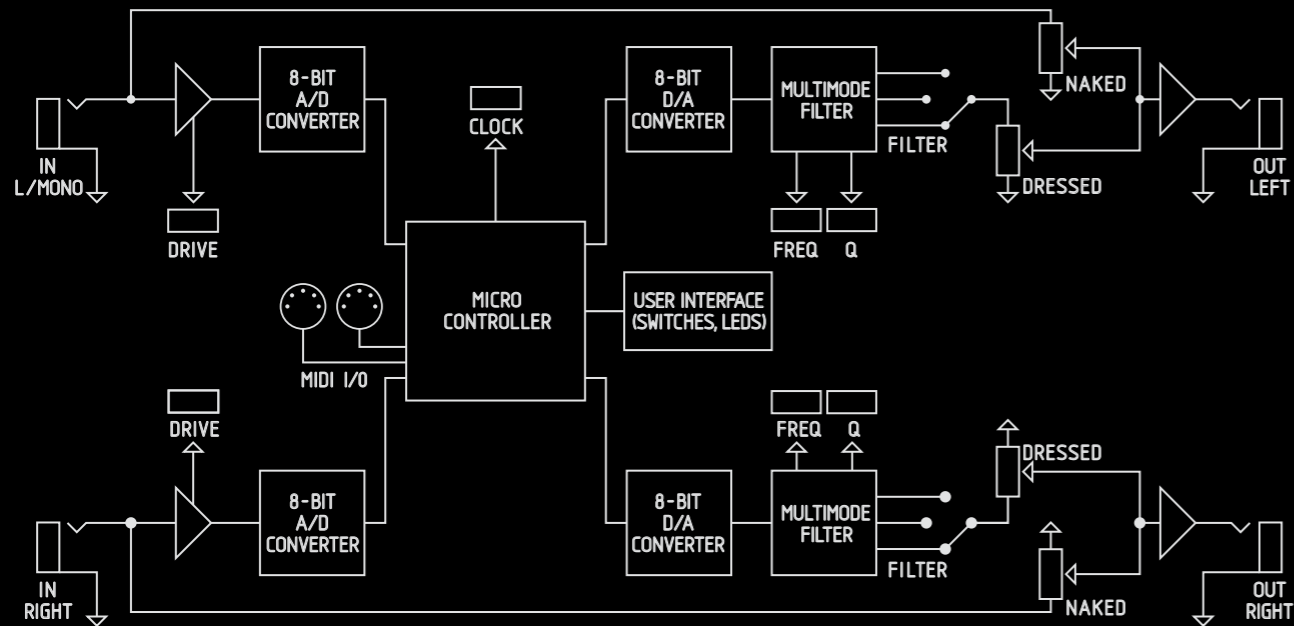
- 1 IN L/MONO** : Left or Mono input. Unbalanced 1/4" jack
- 2 IN R** : Right input. Unbalanced 1/4" jack
- 3 OUT L** : Left output. Unbalanced 1/4" jack
- 4 OUT R** : Right output. Unbalanced 1/4" jack
- 5 MIDI IN** : MIDI input
- 6 MIDI OUT** : MIDI output
- 7 AC ADAPTOR INPUT** : Only use a 9 volts AC adaptor, 500 mA minimum with a 2.1mm plug
- 8 POWER SWITCH**



|02|

1.3 EXAMPLE CONNECTIONS |03|





After changing gain by using the **DRIVE** pot, the sound is converted into an 8-bit digital signal. The sample clock can be adjusted from 250 Hz to 30 kHz. By lowering the sampling frequency aliasing effects are produced. You can mute or invert each of the 8 bits using the 8 rectangular switches. The sound is then converted into an analog signal and goes to a multimode filter to be mixed with the direct signal (via the **NAKED** and the **DRESSED** pots).

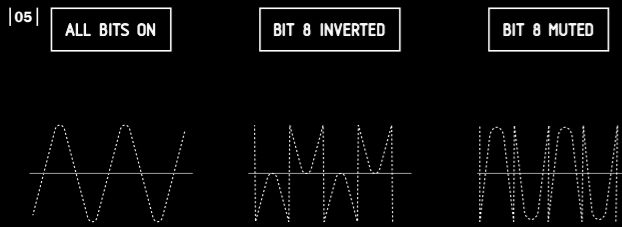
1.5 SET THE INPUT LEVEL

The **DRIVE** pot adjusts the signal level at the BISCUIT input. Turn this pot counterclockwise for strong input signals, and clockwise for weaker signals.

The **BYPASS** switch lights up green when BISCUIT is active, and for no or moderate input signal. The light goes from green to orange to indicate a strong signal.

In normal use, the **BYPASS** switch should change to orange quite often.

If the **BYPASS** switch lights up orange when the **DRIVE** pot is below its 9 o'clock position, it means that your input signal is too strong (loud line-level for example). Reduce the source level to obtain a better **DRIVE** range and to avoid clipping.



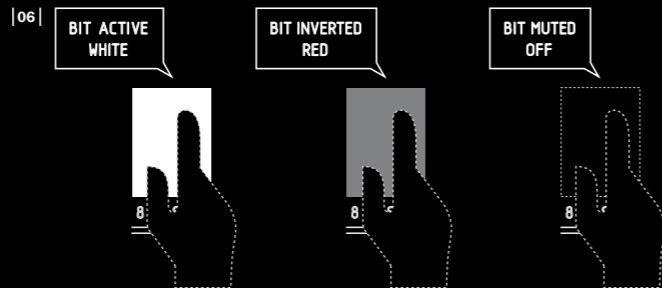
2. BISCUITING

BISCUIT's main function is to modify the 8 bits status with the 8 rectangular switches. Depending on the modifications applied (bits inverted, muted, the bit number) the conversion will reproduce a sound faithful to the original or totally deconstructed.

Muting or inverting some of the bits can generate strong distortions, with an intense digital character. |05|

You're in Biscuiting mode when the **BRAIN** switch is off. The colour of the 8 rectangular switches shows us the different bit status. To modify their state, just press any rectangular switch. |06|

NB : High order bits (6,7,8) are the most « powerful » bits. Changing their state produces stronger distortion than changing the state of low order bits (1, 2, 3). Changing « 1, 2, 3 » bits produces subtle effects



and is often used for bit reduction or for adding noise to signal. **BISCUIT has a level compensation system. However depending on the input signal, distortion can still be very loud. Keep the « DRESSED » pot in check to avoid hearing problems.**

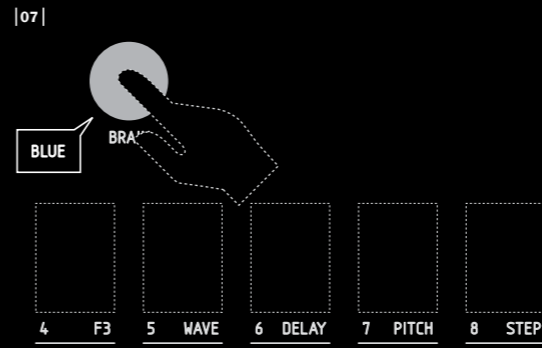
Shortcuts

When you press the « 1 » and « 2 » switches simultaneously, the 8 bits are in their normal state (they're all white)

When you press the « 1 » and « 3 » switches simultaneously, the 8 bits are all inverted (they're all red)

When you press the « 1 » and « 4 » switches simultaneously, the 8 bits are off

NB : You can save your 8 bits configuration in one of the 8 memory slots called "Snapshot" (cf Chap. 4).

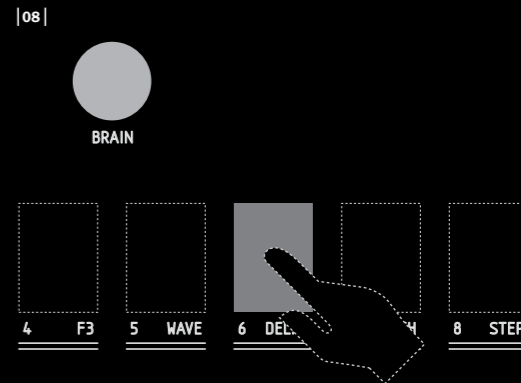


3. EFFECTS

You can add one of the four following effects to your 8-bit modifications : **WAVESHAPER, PITCH SHIFTER, DELAY and STEP FILTER.**

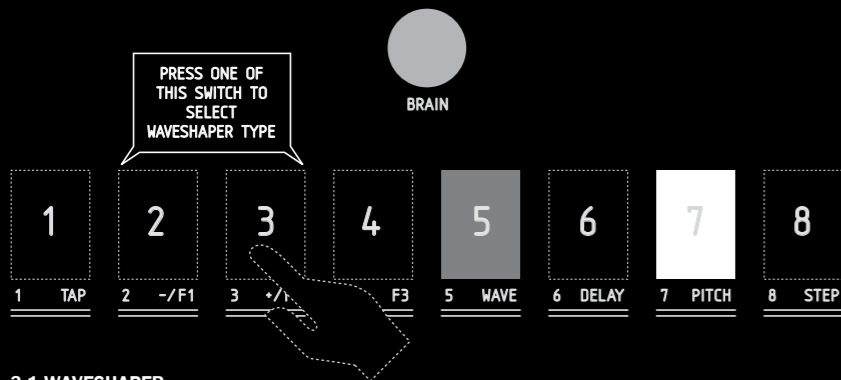
BISCUIT is a dual mono effect (there are two « BISCUIT » in the box). WAVESHAPER and STEP FILTER are stereo, DELAY and PITCH SHIFTER are mono. Direct signal (**NAKED**) is always stereo.

To activate and set effects, press the **BRAIN** switch which lights up blue. |07|



Press one of the four switches on the right to activate or deactivate one of the four effects. |08| You can only have one effect activated at a time. The corresponding switch lights up red to show you which effect is currently selected. The effect name is written underneath the switches.

Depending on the chosen effect, you have different parameters to set. These parameters are accessible through the « - / **F1** », « + / **F2** », « **F3** » switches and the **CLOCK** pot (acting as « DATA ENTRY » in this case).

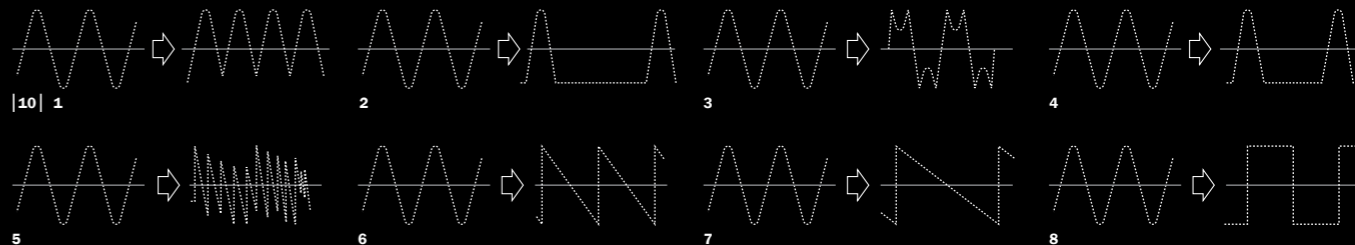


3.1 WAVESHAPER

A waveshaper is a device that modifies the signal waveform using digital processing. BISCUIT offers you 8 types of waveshaping. These treatments can create distortions (type 1 to 5) very different from Biscuiting (cf chap 2), or even generate a synthesizer waveform (type 6 to 8).

Only the « - / **F1** » and « + / **F2** » switches are used in this effect. They allow you to select one of the 8 types of waveshaping. The switch lit up white indicates the current selection. |09|

The **CLOCK** pot acts as usual (changing the sampling frequency), except for the last 3 waveshapers (oscillators) where **CLOCK** sets the filter attack.



WAVESHAPER TYPES |10|

1/ Rectifying : The negative parts of the signal are inverted and become positive. This waveshaper creates an octave up effect, similar to a fuzz octave pedal.

2/ Alternate rectifying : Only the positive parts of the signal are used, and one of two are taken off. This waveshaper creates a distorted octave down effect.

3/ Bat Fuzz : Beyond a certain threshold, sound is inverted, as in a mirror.

4/ Biscuit : This create a fifth down effect with some crunchy saturation added.

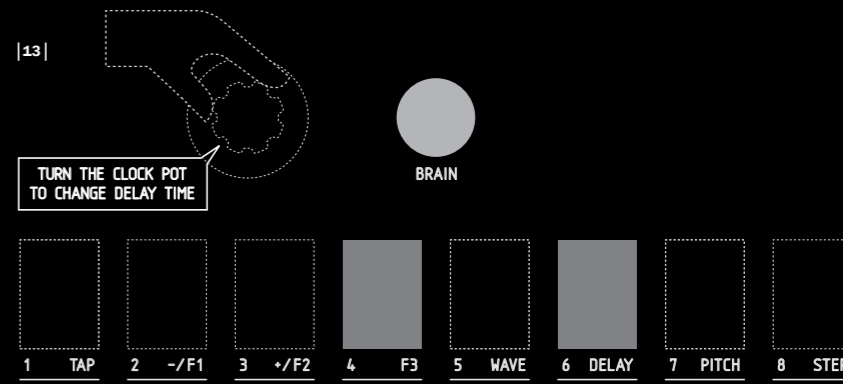
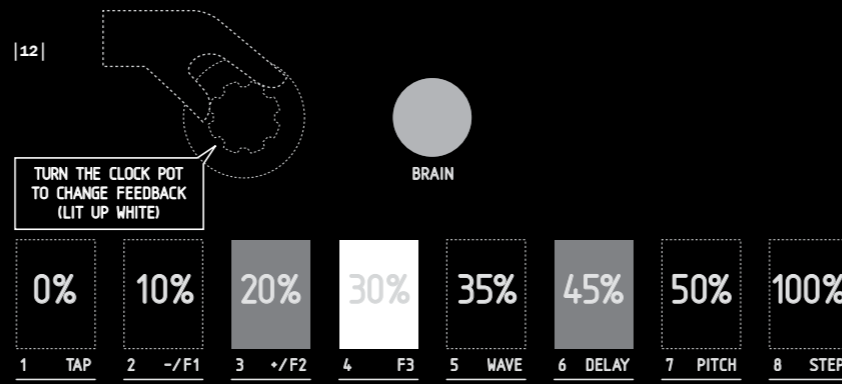
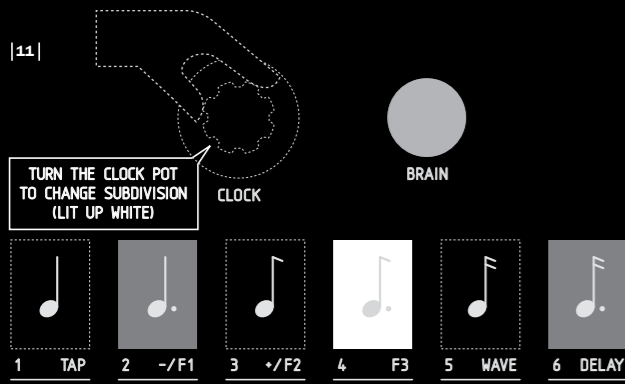
5/ Swap : The 1 to 4 bits are swapped with the 5 to 8 bits. This distortion is pretty radical and full of high harmonics. It may be close to white noise depending on the signal level. Try to lower the DRIVE pot to get different sound colours.

The 6, 7 and 8 waveshapers are little synthesizers. They generate a waveform that tracks input signal frequency. These 3 waveshapers work best on bass synth sounds but can lead to stunning results on other sources.

The **DRIVE** pot works at the same time on the sensitivity of the filter attack and on the detection of input signal to generate the waveform. To allow the oscillator to work properly, BISCUIT needs a certain amount of input signal. Thus the **BYPASS** switch should often light up orange. Adjust the **DRIVE** pot to obtain a stable sound and a well-defined attack.

The **CLOCK** pot sets the level of the filter attack.

When the incoming signal attacks are not detached (legato), the filter attack will not be triggered. Play staccato or play on a keyboard (connected to MIDI in) to trigger attacks. Check that the NOTE ON function in the MIDI menu is on.(cf Chap5)



3.2 DELAY

6/ Sawtooth wave oscillator at input signal frequency.

7/ Sawtooth wave oscillator an octave below the input signal frequency.

8/ Square wave oscillator an octave below the input signal frequency.

NB : Even if you can use both Biscuiting and Waveshapers at the same time, the different waveform modifications it creates can sometimes conflict, resulting in a very low sound level. In order to have a better understanding of the Waveshapers, start using them with the 8 bits in their normal state (the 8 switches lit up white).

This is an 8-bit mono delay. Only the left input is used. The delay output is sent on both left and right outputs and can be mixed with the direct stereo signal, via the **DRESSED** and **NAKED** pots.

The « **TAP** », « **- / F1** », « **+ / F2** », « **F3** » switches are used to set delay parameters:

TAP : Tap this switch in rhythm to set the delay time. The switch will flash in rhythm. If BISCUIT receives a MIDI BEAT CLOCK message, the « **TAP** » switch will be inactive and the delay time will follow the MIDI tempo (unless you have deactivated the MIDI CLOCK RX function in the MIDI menu. Chap 5).

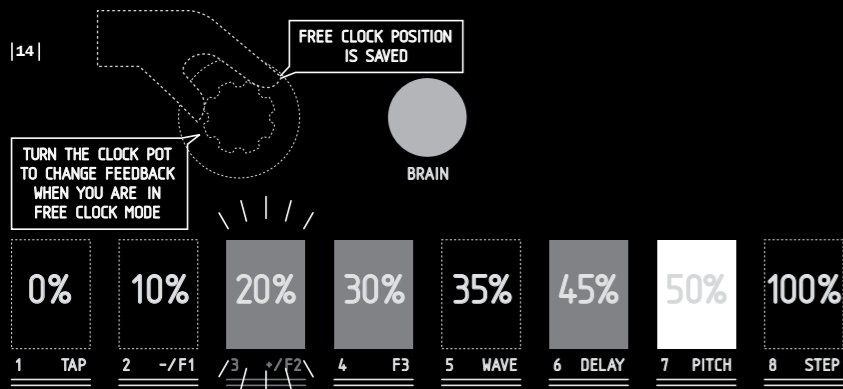
F1 : subdivisions : |11| When this switch lights up red, the **CLOCK** pot allows you to select the tempo subdivision. You can choose between six different subdivisions :

- Quarter Note (switch 1 lights up white)
- Dotted Quarter Note (switch 2 lights up white)
- Eighth (switch 3 lights up white)
- Dotted Eighth (switch 4 lights up white)
- Sixteenth (switch 5 lights up white)
- Dotted Sixteenth (switch 6 lights up white)

F2 : Feedback : When this switch lights up red, the **CLOCK** pot sets the delay reinjection level: from 0 (switch 1 lights up white) to 100% (switch 8 lights up white). |12|

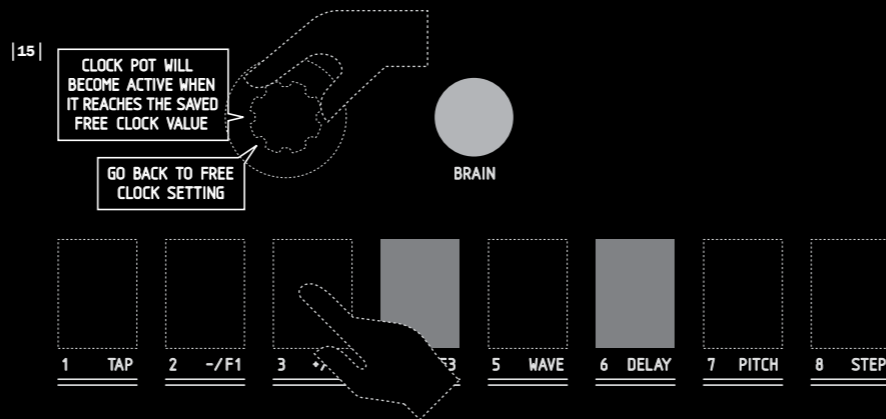
F3 : Free Clock : When this switch lights up red, the TAP TEMPO or the MIDI BEAT CLOCK are inactive. The delay time is now set by the **CLOCK** pot. |13|

If you press the « **F3** » switch again (it turns off), delay will go back to TAP TEMPO or the MIDI BEAT CLOCK.



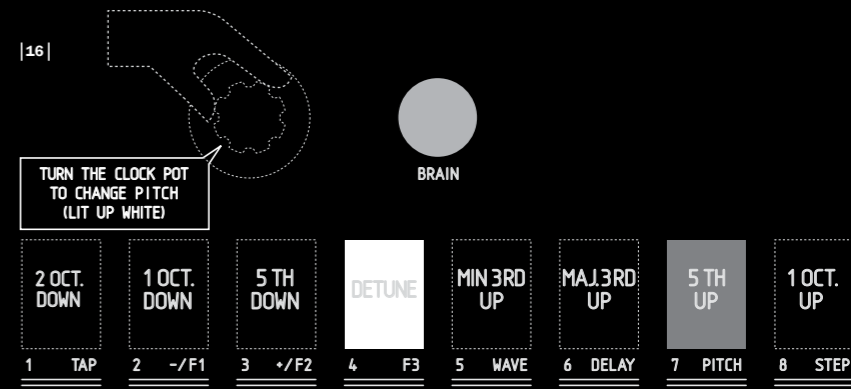
You can still set your delay feedback when the « **F3** » switch (FreeClock) is on. Press the « **+F2** » (Feedback) switch (that flashes red) and set your delay feedback by moving the CLOCK pot (cf **+F2** : FEEDBACK). The « **F3** » switch still lights up red and has saved the last freeclock setting. |14|

By pressing the « **F2** » switch again you go back to the freeclock function. The **CLOCK** pot's physical position may very well be different than the previous freeclock setting, since you moved it to set the delay feedback. |15|



To prevent a sudden jump of the delay time, the **CLOCK** pot will not be active until it reaches the previous value. The **BYPASS** switch will briefly turn blue to indicate this.

NB : BISCUIT modifies the delay time by changing its sampling frequency. The longer the delay (slow tempo and dotted quarter note), the lower the sampling frequency. Some aliasing may appear when the input signal contains H.F. harmonics.



3.3 PITCH SHIFTER

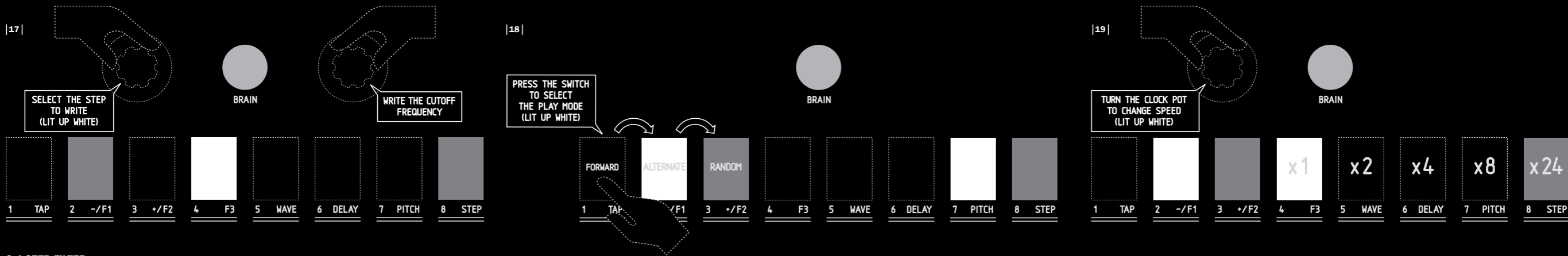
An « Old School » 8-bit transposition is applied to the signal. Only the left input is used, the pitch shifter output is sent on both left and right outputs and can be mixed with the direct signal.

The **1** to **4** switches are inactive in this mode.

Only the **CLOCK** pot is used in this effect. It selects the transposition value, indicated by one of the 8 switches lit up white. |16|

- 1/ 2 Octaves down (C 1)
- 2/ 1 Octave down (C 2)
- 3/ 1 Fifth down (F 2)
- 4/ Detune : signal is transposed by some hundredths of a semitone (C 3)
- 5/ 1 Minor third up (D #3)
- 6/ 1 Major third up (E 3)
- 7/ 1 Fifth up (G 3)
- 8/ 1 Octave up (C 4)

NB : You can also select the transposition value by using a MIDI keyboard. The notes are written between parentheses.



3.4 STEP FILTER

STEP FILTER allows you to memorize 8 positions (steps) of the **FREQ** pot and to read these different steps one after the other. Many settings of Play Mode, Speed and Number of steps are available. The STEP FILTER speed depends on TAP TEMPO or MIDI BEAT CLOCK. A MIDI START message will lock the first step to the beginning of the first bar.

The « **TAP** », « - / **F1** », « + / **F2** », « **F3** » switches are used to set the STEP FILTER parameters.

When the « - / **F1** », « + / **F2** » and « **F3** » switches are off, the **CLOCK** pot acts as usual (modification of the sampling frequency).

TAP : Tap this switch in rhythm to set the STEP FILTER speed. The switch will flash in rhythm. If BISCUIT receives a MIDI BEAT CLOCK message, the « **TAP** » switch will be inactive and the STEP FILTER speed will follow the MIDI tempo (Unless you have deactivated the MIDI CLOCK RX function in the MIDI menu. Cf Chap 5).

F1 : **WRITE** : When this switch lights up red, you can record any position of the **FREQ** pot (Filter cutoff frequency) in one of the 8 steps. The **CLOCK** pot allows you to choose one of the 8 steps (that lights up white). To record a cutoff frequency value, you just have to move the **FREQ** pot to the desired

position. If you don't touch the **FREQ** pot, the previous value will not be erased. [17]

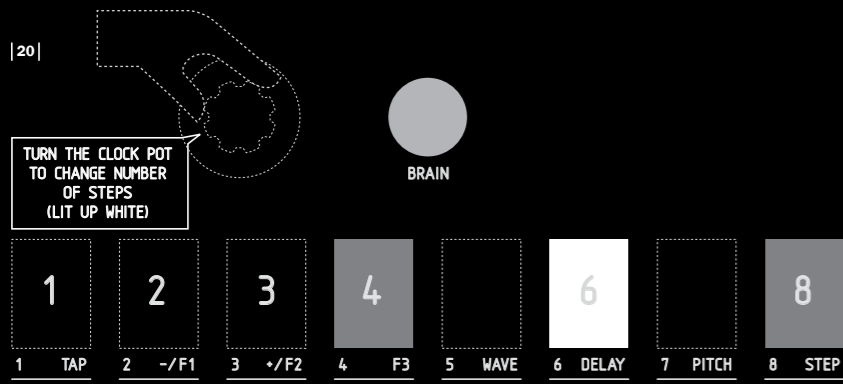
F2 : **RUN** : When this switch lights up red, you can choose one of the 3 play modes and select one of the 5 speeds. Press the « **TAP** » switch to select one of the 3 play modes, indicated by one of the 3 first switches lit up white. [18]

1/ Forward : The steps play from left to right, looping back to step 1 when the last step is reached (depending on the NUMBER parameter).

2/ Alternate : The steps play from left to right. When the last step is reached (depending on the NUMBER parameter), the steps play in reverse, from right to left.

3/ Random : The steps play at random.

Move the **CLOCK** pot to select one of the 5 speeds, indicated by one of the last 5 switches lit up white. [19]



4/ Speed x1 : The STEP FILTER goes at the TAP TEMPO or MIDI BEAT CLOCK Speed.

5/ Speed x2 : The STEP FILTER goes twice as fast as the TAP TEMPO or MIDI BEAT CLOCK Speed.

6/ Speed x4 : The STEP FILTER goes four times as fast as the TAP TEMPO or MIDI BEAT CLOCK Speed.

7/ Speed x8 : The STEP FILTER goes eight times as fast as the TAP TEMPO or MIDI BEAT CLOCK Speed.

8/ Speed x24 : The STEP FILTER goes 24 times as fast as the TAP TEMPO or MIDI BEAT CLOCK Speed.

F3 : NUMBER : When the switch lit up red, you can choose the number of steps with the CLOCK pot. One of the 2, 3, 4, 6, 8 switches lit up white indicating the current number of steps. |20|

Summary of the fx parameters : |21|

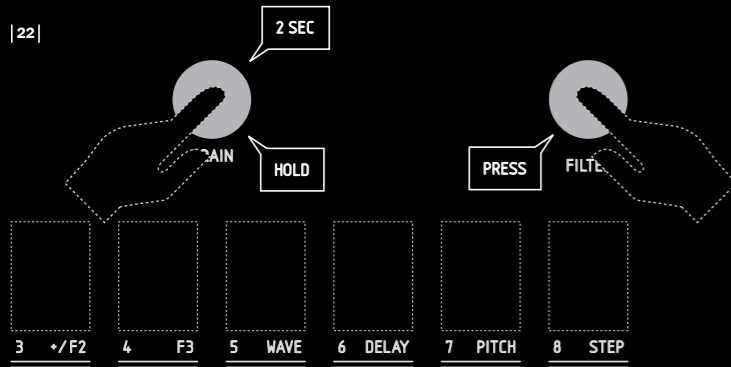
	TAP	-/F1	+/F2	F3
WAVESHAPER (1)	NOT USED	- SELECT ONE OF THE 8 WAVESHAPER	+ SELECT ONE OF THE 8 WAVESHAPER	NOT USED
DELAY	TAP TEMPO	DIVISION (2) ♪ ♪ ♫ ♫ ♫ ♫	FEEDBACK (2) FROM 0 TO 100%	FREE CLOCK (2) DELAY TIME
PITCH SHIFTER (3)	NOT USED	NOT USED	NOT USED	NOT USED
STEP FILTER	TAP TEMPO & SELECT THE PLAY MODE WHEN F2 IS LIT UP	WRITE SELECT THE STEP WITH CLOCK MOVE FREQ TO WRITE	RUN SPEED (2) : x1 x2 x4 x8 or x24 PLAY MODE (hit TAP) : fwd, alt, random	NUMBER (2) 2, 3, 4, 6 or 8 STEPS

NB 1 : The CLOCK pot sets the filter attack for the WAVE number 6, 7 and 8 (oscillators).

NB 2 : Use the CLOCK pot to modify the parameters.

NB 3 : The CLOCK pot select the pitch : - 2 oct, - 1 oct, - 5th, detune, + 3rd m, + 3rd M, + 5th, + 1 oct.

| 22 |



4. PRESETS

You can save all the BISCUIT functions (pots position, switches, filter, bypass, fx) in one of the 16 presets.

4.1 SAVING A PRESET

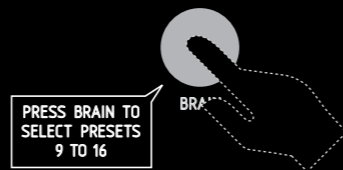
While pressing the **BRAIN** switch, press the **FILTER** switch.

Keep pressing the **BRAIN** switch for 2 seconds. | 22 |

The switches **1** to **8** flash red. Press one of the switches **1** to **8**, all the Biscuit functions will be saved in the corresponding preset.

24

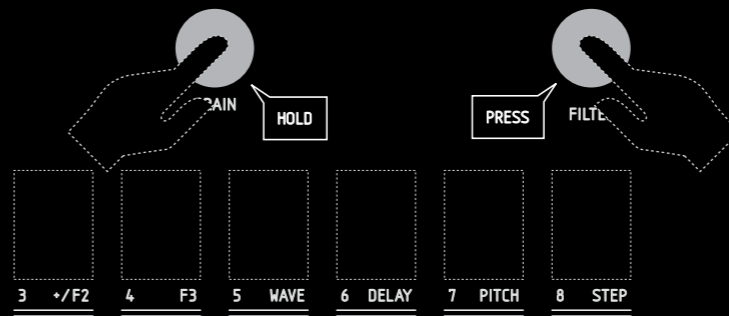
| 23 |



Switches will then revert to the display of the 8 bits status.

To save the presets 9 to 16, do the same as explained above. When the 8 switches flash red, press the **BRAIN** switch again. The **BRAIN** switch turns blue. | 23 | You can then save to one of the presets 9 to 16 by pressing one of the switches **1** to **8**.

| 24 |



4.2 RECALLING A PRESET

While pressing the **BRAIN** switch, press the **FILTER** switch. | 24 |

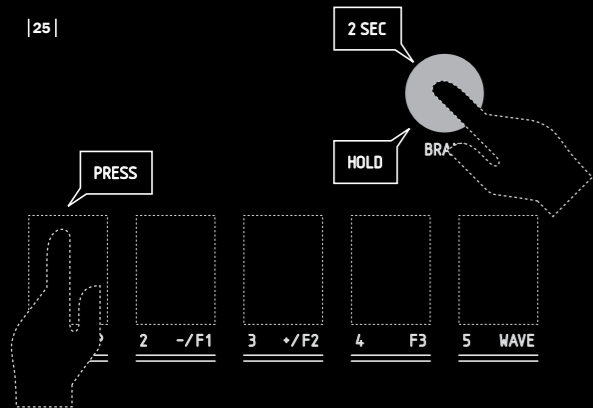
The switches **1** to **8** flash white. Press one of the switches **1** to **8** to recall the desired preset. Switches stop flashing. The selected switch will light up for 2 seconds.

Switches then revert to the display of the 8 bits status.

To recall one of the presets 9 to 16, do the same as explained above. When the 8 switches are flashing white, press the **BRAIN** switch again. The **BRAIN** switch turns blue. | 23 | You can now select one of the presets 9 to 16, by pressing the switches **1** to **8**.

To exit the « saving a preset » or « recalling a preset » mode, press again the **FILTER** switch while pressing the **BRAIN** switch, or wait for 10 seconds. BISCUIT will revert to its regular state.

25



4.3 SNAPSHOTS

You can save your 8 bits configuration in one of the 8 memory slots called « Snapshot ».

Snapshots only save the 8 bits status. If you want to save all the BISCUIT functions (pots, effects and parameters), use the Presets (cf Chap 4).

The 8 snapshots are independent from the presets.

SAVING A SNAPSHOT

While pressing the **BRAIN** switch, press the « **1 TAP** » switch.



Keep pressing the **BRAIN** switch for 2 seconds. | 25 |

The switches **1** to **8** flash red. You can now press one of the switches **1** to **8** to save the 8 bits status in the corresponding snapshot. The switches revert to their regular states.

RECALLING A SNAPSHOT

While pressing the **BRAIN** switch, press the « **1 TAP** » switch. | 26 | The switches **1** to **8** flash white. You can now press one of the switches **1** to **8** to recall the corresponding snapshot. The switches stop flashing and revert to their regular states.

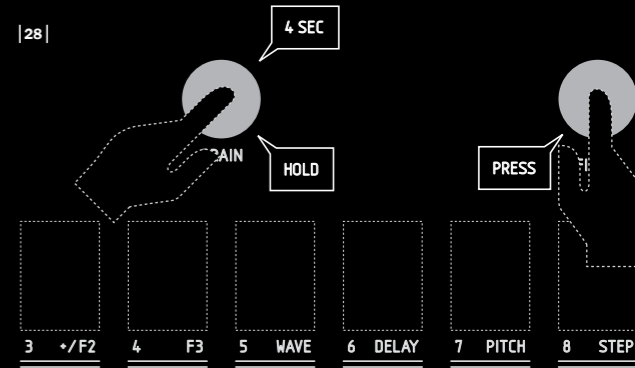
1	2	3	4
LOVE 8	OLD COMPUTER	BITS BENDING	DARK SIDE
5	6	7	8
NOISE ADDER	STEP FAZOR	RUSTY JAM	DELAY DELay delay
9	10	11	12
BROKEN DELAY	CONTINENTAL	NAUTILUS	MIDLINE
13	14	15	16
DETUNE	BECQUEREL	DIRTY LEAD	DIGITAL DUCK

4.4 POTENTIOMETERS POSITION

Once you recall a preset, the physical position of a pot may not be the same as in the preset.

To prevent a sudden jump of volume after recalling a preset, the preset value will reach the pot value in a smooth fade of 1 second.

If you want to know the original value of a pot in the preset you just recalled, keep pressing the **BRAIN** switch and move this pot. The **BYPASS** switch turns blue when the pot reaches the preset value.

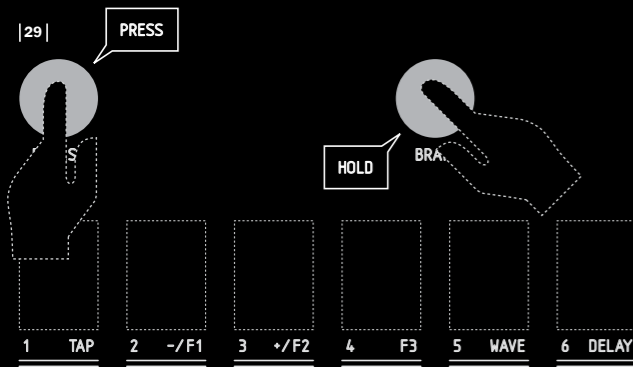


4.5 FACTORY PRESETS

The 16 BISCUIT presets contain factory settings called the factory presets. | 27 |

By saving your own presets, you will erase these factory presets.

You can still recall these 16 factory presets whenever you want. While pressing the **BRAIN** switch, press the **FILTER** switch. Keep pressing the **BRAIN** switch for 4 seconds. | 28 | The switches 1 to 8 will first flash red after 2 seconds, and will flash pink 2 seconds later. Press one of the switches **1** to **8** to recall the desired factory preset. Switches stop flashing. Only the selected switch stays alight for 2 seconds.

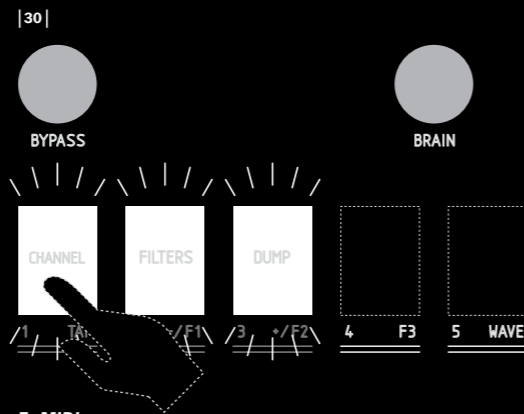


Switches then revert to their regular function.

To recall one of the factory presets 9 to 16, do the same as explained above. When the 8 switches are flashing pink, press the **BRAIN** switch again. The **BRAIN** switch turns blue. You can now select one of the factory presets 9 to 16, by pressing the switches **1** to **8**.

To exit the « factory preset » mode, press the **FILTER** switch while pressing the **BRAIN** switch, or wait for 10 seconds. BISCUIT will revert to its regular state.

NB : When you recall a factory preset, it doesn't erase the corresponding user preset.

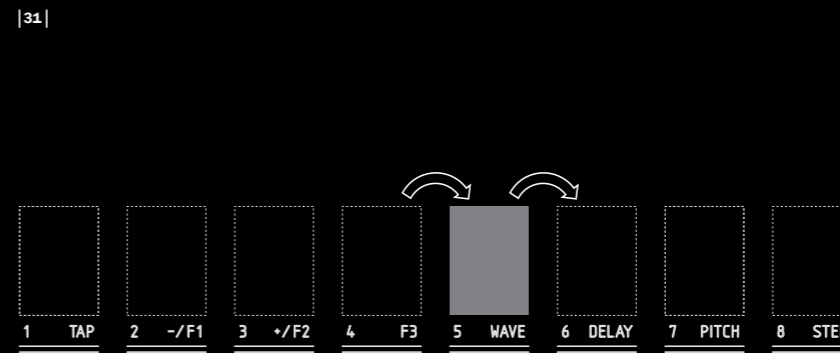


5. MIDI

BISCUIT is MIDI compatible. Every pot and switch can send its own Continuous Controller (known as « CC »).

BISCUIT accepts the following incoming MIDI messages:

- CONTINUOUS CONTROLLER [37] for all BISCUIT controls (pots, switches and effects),
- BEAT CLOCK,
- PROGRAM CHANGE,
- NOTE ON (for Waveshapers nr 6,7,8 & Pitch shifter)

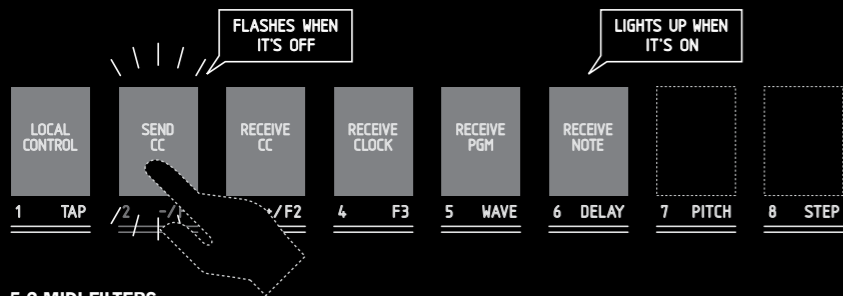


5.1 MIDI CHANNEL

The switches **1** to **8** light up red alternately, in a forward/ backward movement. [31]

Press one of the switches **1** to **8** to assign the desired MIDI CHANNEL to BISCUIT. The MIDI Channel selected will be the same for transmission and reception of MIDI data.

To assign one of the MIDI channel 9 to 16, do the same as explained above. When you see the blinking movement, press the **BRAIN** switch again. **BRAIN** switch turns blue. [32] You can now select one of the MIDI channel 9 to 16, pressing the switches **1** to **8**.



5.2 MIDI FILTERS

The switches **1** to **6** light up or flash red. When the switch is flashing, the corresponding function is inactive, and when the switch is on, the function is active. Press one of the switches **1** to **6** to activate or deactivate the following functions : |33|

1/ LOCAL CONTROL : Internal connection between the physical controls (pots and switches) and the BISCUIT electronics can be enabled or disabled. This can be useful with an external sequencer.

2/ SEND CC : Enables the physical controls (pots and switches) to send their corresponding CONTINUOUS CONTROLLER message. |37|

3/ RECEIVE CC : Enables BISCUIT functions (drive, filter,...) to be controlled by incoming CONTINUOUS CONTROLLER messages |37|

4/ RECEIVE CLOCK : Enables DELAY and STEP FILTER tempo to be synchronised to the incoming BEAT CLOCK messages (including START and CONTINUE).

5/ RECEIVE PGM : Enables BISCUIT to follow incoming PROGRAM CHANGE messages.

6/ RECEIVE NOTE : Enables BISCUIT to accept incoming NOTE ON messages. (for Waveshapers nr 6,7,8 & Pitch shifter).



5.3 PRESETS DUMP

This sub-menu allows you to save one or all BISCUIT presets to a computer and recall them back later, using a SysEx (System Exclusive MIDI message) library utility. Connect BISCUIT to your computer's MIDI interface to send and receive presets.

The switches **1** to **4** light up red. Press one of the switches **1** to **4** to access the following DUMP actions : |34|

1/ SEND ONE PRESET : The switches **1** to **8** flash white. Press one of the switches **1** to **8** to send the desired preset as a SysEx file.

To send one of the presets 9 to 16, do the same as explained above. When the **8** switches are flashing white, press the **BRAIN** switch again. **BRAIN** switch turns blue. You can now send one of the presets 9 to 16, by pressing the switches **1** to **8**.

2/ SEND ALL PRESETS : The 16 presets will be sent in a unique SysEx file.

3/ RECEIVE ONE PRESET : The switches **1** to **8** flash red. Press one of the switches **1** to **8** to select the preset destination. The corresponding switch will turn pink, waiting for a manually sent SysEx file from the computer.

STATUS	DESCRIPTION
0xF0	SYSTEM EXCLUSIVE
0x00	OTO MACHINES ID 1
0x20	OTO MACHINES ID 2
0x70	OTO MACHINES ID 3
0x01	BISCUIT ID
0x01	PRESET DUMP CODE
0xvv	PRESET NUMBER (00 TO 15)
0xvv	PRESET PACKED DATA (40 BYTES)
0xF7	END OF EXCLUSIVE

4/ RECEIVE ALL PRESETS : The switches **1** to **8** light up pink, waiting for a SysEx file from the computer (you should send the SysEx file manually). The 16 presets from the SysEx file are now stored in the BISCUIT's 16 presets.

To exit the « MIDI SETTING » mode, press the **BYPASS** switch again while pressing the **BRAIN** switch, or wait for 10 seconds. BISCUIT will revert to its regular state.

The table |35| shows you the content of BISCUIT's SysEx DUMP messages.

SYSEX NOTA BENE :

If you encounters problems when sending or receiving presets by SysEx, try to :

- **set the delay between played messages or buffers of the program being used to transfer the SysEx messages to 250 ms,**
- **reduce the transmit speed of the program being used to transfer the SysEx messages,**
- **update the drivers for your MIDI interface,**
- **remove any devices between your interface and BISCUIT such as MIDI thru boxes, mergers, splitters ...**
- **use another interface.**

PRESETS	PROGRAM CHANGE NUMBER							
1	0	16	32	48	64	80	96	112
2	1	17	33	49	65	81	97	113
3	2	18	34	50	66	82	98	114
4	3	19	35	51	67	83	99	115
5	4	20	36	52	68	84	100	116
6	5	21	37	53	69	85	101	117
7	6	22	38	54	70	86	102	118
8	7	23	39	55	71	87	103	119
9	8	24	40	56	72	88	104	120
10	9	25	41	57	73	89	105	121
11	10	26	42	58	74	90	106	122
12	11	27	43	59	75	91	107	123
13	12	28	44	60	76	92	108	124
14	13	29	45	61	77	93	109	125
15	14	30	46	62	78	94	110	126
16	15	31	47	63	79	95	111	127

5.4 PROGRAM CHANGE

You can recall a BISCUIT preset from a MIDI controller or a computer using PROGRAM CHANGE messages.

PROGRAM CHANGE allows you to recall 128 programs but there's only 16 presets in BISCUIT memory.

The first 16 PROGRAM CHANGE messages (0 to 15) correspond to the 16 BISCUIT presets. The following 16 PROGRAM CHANGE messages (16 to 31) will correspond also to the 16 BISCUIT presets,...

The following table indicates which BISCUIT preset is recalled by a PROGRAM CHANGE message |36|

	CC NUMBER	CC NUMBER (HEX)	VALUES
DRIVE	14	0E	0 to 127
NAKED	15	0F	
DRESSED	16	10	
Q	17	11	
CLOCK	18	12	
FREQ	19	13	
BIT 1	20	14	0 to 42 = OFF
BIT 2	21	15	43 to 84 = ON
BIT 3	22	16	85 to 127 = INVERSE
BIT 4	23	17	
BIT 5	24	18	
BIT 6	25	19	
BIT 7	26	1A	
BIT 8	27	1B	
BYPASS	28	1C	0 to 63 = ON (BISCUIT DEACTIVATED) 64 to 127 = OFF (BISCUIT ACTIVATED)
FILTER MODE	29	1D	0 to 42 = LOW-PASS 43 to 84 = BAND-PASS 85 to 127 = HI-PASS
FX	30	1E	0 to 25 = OFF 26 to 50 = WAVE SHAPING 51 to 75 = DELAY 76 to 100 = PITCH SHIFTER 101 to 127 = STEP FILTER
WAVE TYPE	31	1F	0 to 15 = 1/HI RECT. 16 to 31 = 2/ALT. RECT. 32 to 47 = 3/BAT FUZZ 48 to 63 = 4/BISCUIT 64 to 79 = 5/SWAP 80 to 95 = 6/SAW OSC. 96 to 111 = 7/LO SAW OSC. 112 to 127 = 8/LO SQUARE OSC.
DELAY DIVISION	32	20	0 to 21 = QUARTER NOTE 22 to 42 = DOTTED QUARTER NOTE 43 to 63 = EIGHTH 65 to 84 = DOTTED EIGHTH 85 to 105 = SIXTEENTH 106 to 127 = DOTTED SIXTEENTH

	CC NUMBER	CC NUMBER (HEX)	VALUES
DELAY FEEDBACK	33	21	0 to 15 = 0 % 16 to 31 = 10 % 32 to 47 = 20 % 48 to 63 = 30 % 64 to 79 = 35 % 80 to 95 = 45 % 96 to 111 = 50 % 112 to 127 = 100 %
DELAY FREE CLOCK	34	22	0 to 63 = OFF 64 to 127 = ON NOTICE : DELAY TIME IS CONTROLLED BY THE CLOCK CC (N*19) IN FREE CLOCK MODE.
PITCH SHIFT	35	23	0 to 15 = 2 OCTAVE DOWN 16 to 31 = 1 OCTAVE DOWN 32 to 47 = 1 FIFTH DOWN 48 to 63 = DETUNE 64 to 79 = 1 MINOR THIRD UP 80 to 95 = 1 MAJOR THIRD UP 96 to 111 = 1 FIFTH UP 112 to 127 = 1 OCTAVE UP
STEP FILTER PLAY MODE	36	24	0 to 42 = FORWARD 43 to 84 = ALTERNATE 85 to 127 = RANDOM
STEP FILTER SPEED	37	25	0 to 25 = x 1 26 to 50 = x 2 51 to 75 = x 4 76 to 100 = x 8 101 to 127 = x 24
STEP FILTER NUMBER	38	26	0 to 25 = 2 26 to 50 = 3 51 to 75 = 4 76 to 100 = 6 101 to 127 = 8

6.SPECIFICATIONS

Input		General	
Input Connectors	2 x unbalanced 1/4" jacks	Size (W x H x D)	190mm x 60mm x 117mm
Maximum Input Level	+ 14,7 dBu (Naked) + 5 dBu (Dressed, Drive pot @ 10 o'clock position)	Weight	7.48" x 2.36" x 4.60" 580 g / 1.27 lb
Impedance	390 k ohms		
Output		External 9VAC power supply included	
Output Connectors	2 x unbalanced 1/4" jacks	Power Consumption	4,2 Watts max
Maximum Output Level	+ 14,7 dBu (Naked) + 5 dBu (Dressed)	Size (W x H x D)	75mm x 80mm x 50mm 2.95" x 3.15" x 1.96"
Impedance	220 ohms	Weight	245 g / 0.53 lb

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(All measurements done with a 1kHz sine wave)

Model

BISCUIT

Serial N°

0001



Oto machines. Made in France