

HOW TO TAME SKIPPY



Skippy is a polyrhythmic (linear and logarithmic) matrix and non-matrix sequencer that offers four completely independent (but synchronized) tracks.

▷ PRINCIPLE

■ Skippy operates either on a real-time time passing calculation (non-matrix mode) or based on a fixed step duration concept like many sequencers (matrix mode). Both modes can coexist track by track. For example, a **TILES** sequence is a matrix function where a step has a predetermined value in the sequence, and depending on the algorithm, a gate will or will not be generated at each step. On the other hand, with a Gaussian sequence, the notion of fixed step value disappears.

Depending on the algorithm, a new time value will be assigned to each step, allowing time progression outside any matrix notion. Some functions commonly found in sequencers as matrices are calculated in real time here, based on duration. Skippy's **EUCLID** function, for example, operates this way.

To retain the notion of rhythm and repetition, however, the always fixed unit in a sequence is the time it takes Skippy to complete one screen revolution. This value remains repetitive regardless of the number of steps or the chosen algorithm. This time is determined, track by track, by the **BPM** function.

▷ INTERFACE

- Each track is represented by a color that can be found on the four buttons, the four circles on the screen, and the four output LEDs.

Track 1: red; Track 2: yellow; Track 3: green; Track 4: blue

- A gate is sent to each CV output (1 to 4) at the same time and for the same duration as the corresponding LED. The output voltage is 5V.

[The limited edition Pure White version of Skippy has a black and white interface only.]

- The central encoder button is used to navigate through the functions by turning it left or right. When the encoder is pressed briefly, the function name changes color from white to violet (except for the **RESET** function, which is always displayed in violet). Pressing the button again exits the function, and the function name changes back from violet to white. You can then navigate through the functions again.

- When the function name is in violet, turning the encoder will change the values associated with the selected function AND the illuminated button(s). For example, if the red button and the blue button are lit, selecting the number of steps (**STEP** function) will only change the number of steps for tracks 1 and 4. It is possible to select or deselect a button even when the function is already selected to adjust the tracks individually or as a group.

- Upon startup, Skippy advances step by step, symbolized by a white dot moving around the circle of each color. The startup begins at the bottom and rotates in the direction determined by **WAY**.

It may happen, depending on the manipulation, that Skippy loses track of which step to use or that the tracks become unsynchronized. The **RESET** function allows restarting all four tracks simultaneously (the **CV clock in** input can also be used for this purpose; see system functions).

▷ SYSTEM FUNCTIONS

- By long pressing the encoder, you enter System mode. Long pressing the encoder again returns you to the game functions.

In System mode, you select the function by turning the encoder, and then you configure it by briefly pressing its button.



→ SAVE

- By turning the encoder, you can choose the save position from 0 to 64 (65 slots). The name of the save is its number; there is no possibility to edit the name.

PLEASE NOTE that the data automatically replaces any existing data in the chosen slot.

- If the save process is successful, the message “OK” appears in green. In case of an error (for example, if the SD card is missing), the message “ERR” appears in red.

Saves are made on an internal SD card that is already installed. It is not intended to be easily removed: no data can be written to it except for the save data.

- If you want to duplicate the content of this card (to use it on another Skippy, for example), you must do it with the **MODULE OFF AND DISCONNECTED**, or else you risk damaging the circuit.



→ LOAD

- By turning the encoder, you can choose the position of the data to load from 0 to 64 (65 slots).

If the loading process is successful, the message “OK” appears in green. In case of an error (for example, if no data is present in that slot or if the SD card is missing), the message “ERR” appears in red.



→ NEW

- A click on the encoder restores the default data, and a second click exits the System functions.



→ CLK/RST

- Allows you to choose whether the CV **clock in** input is used for an external clock or a CV reset (restarts all sequences simultaneously from 0). The input can be Gate or Trigger, starting from 3V.



→ CLK

- This function allows you to choose the multiplication or division of an external clock and calibrate Skippy accordingly. Please note that depending on the frequency of the external clock, Skippy may enter an ultra-fast mode during clock calculation and run at a very high frequency. In such cases, the **NEW** function should be used to return to a more normal operation.

The external clock will provide Skippy with an average of the passing time. Despite this external clock, Skippy will still retain the ability to have non-matrix times. Therefore, it is normal for an irregular external clock (with swing, for example) not to be strictly followed by Skippy.

The internal clock (CV **clock out**) will also be multiplied or divided, even if no external clock is connected.



▷ GAME FUNCTIONS AND ALGORITHMS

→ BPM

- Can be adjusted from 10 to 400. With an external clock, this value can be much higher due to clock multiplication (**CLK** function). The limit will be the computation time for each function. When an external clock is connected, “EXT” is displayed instead of the BPM value, and it is not possible to change this value.



→ STEP

- The minimum number of steps is 1, and the maximum is 64 per screen rotation.
- Some functions may force a specific number of steps or constrain them in a matrix or temporal multiple (e.g., **POLYR, JAZZY**). It is possible to change the number of steps at any time, but this can obviously alter the values of an algorithm (e.g., **EUCLID**).



→ BEGIN AND END

- You can choose not to start or end at 0 and use an arc instead. The notions of beginning and end depend on the direction of rotation: the end can become the beginning, and the beginning can become the end—it’s a matter of perspective.
- Not all functions allow this adjustment, and some algorithms will force the beginning and end to be at 0.



→ GATES

- You can adjust the duration of each gate. With high values and very short times, the results can generate contradictory durations and may not separate the steps correctly.



→ PROBA

- This is a random function where you can adjust the probability of not triggering a step that should have been played. This function is disabled for algorithms that require regularity (e.g., **JAZZY**).



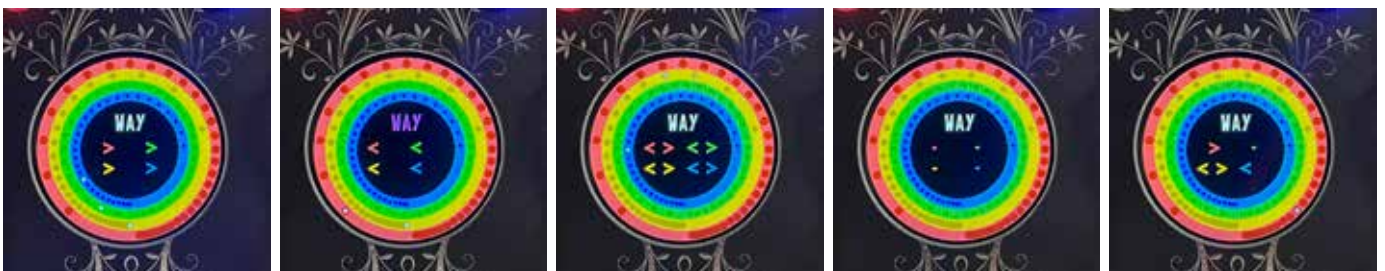
→ CHAOS

- This is a random temporal function that randomly speeds up the time between each step. This function is disabled for functions that require regularity (e.g., **JAZZY**).



→ WAY

- The mean of the life: left (<), right (>), but also Ping Pong for the indecisive (<>) or complete stop (-) for the contemplative. This last option can be seen as a pause function and allows you to change other parameters by stopping time.
- It is often necessary to use the **RESET** function afterward to resynchronize the tracks.
- A **PAUSE** function is also available for live play.



→ SWING

- You can choose a swing between two steps. This option does not apply to all algorithms.



→ GAUSS

- This temporal function distributes the chosen number of steps according to a logarithmic algorithm. The higher the Gauss value, the more the spaces between points are modified. You can choose a positive or negative value to determine whether the tightest points are concentrated at the beginning or end. Please note that with certain values, the last point may have a duration of several seconds, tens of seconds, or even minutes. This is a normal behavior of the Gaussian distribution. However, the last value is clipped to avoid representing hours. The **WAY** ping-pong function can yield good results with this function.



→ EUCLID

- The Euclidean distribution of this function is calculated in real time (Bjorklund's algorithm). It can be freely used regardless of the number of steps chosen from 1 (which has no effect!) to 64. Skippy displays known remarkable Euclidean combinations, but you can use any combination. The indicator is displayed as follows: Number of displayed steps / number of available steps, for example, 11/32. The first number is chosen with the encoder, and the second number is the number of steps from the **STEP** function. Choosing a value of 0 cancels the function.



→ TILES

- This is a matrix function where a number of silent steps follows a number of played steps. The total number of steps is not forced to be a multiple of these alternating steps, so depending on the choice of **STEP**, there may be a break in this alternation with each rotation. It is, of course, possible, by choosing the right number of **STEP**, to have a regular alternation of steps and silences.



→ POLYR

- This is a non-matrix function where two tempos alternate (for example, 4/3). The total number of steps is recalculated to achieve this alternation regularly and without changing it with each rotation. The value of **STEP** is recalculated and modified accordingly.



→ JAZZY

- This is a matrix function that divides 32 steps into 4 units of eight steps, of which only three are played. At each unit, the last step is shifted. For example, [0xx0x000] [0xx00x00] [0xx000x0] [0xx0000x]. The number of steps in **STEP** is automatically forced to 32.



→ SPIN

- Allows rotation to the right or left for matrix and Euclidean functions. This value is not saved.



→ PAUSE

- By pressing the corresponding color button, you can mute each track, indicated by the blinking button. This function is mainly intended for live play and does not allow changing the parameters of the muted tracks. To do that, use the **WAY** function instead.



→ RESET

- Moves the playback head of all tracks to 0 to resynchronize them.
- A double-click on the encoder displays “Sync” and forces all four tracks to return to 0 on each rotation. This allows the playback head to be realigned even if the selected time divisions result in infinite time divisions (for example, with 120 BPM, 32 steps for track 1, 33 steps for track 2, 34 steps for track 3, and 35 steps for track 4: it is impossible to achieve a perfectly “falling into place” synchronization).
- A second double-click restores Skippy’s normal operation, where the rhythm settles despite time drift...



TECHNICAL SPECIFICATIONS

10 HP Depth: 32 mm

Power consumption: +12 V: 0 mA; -12 V: 0 mA; +5 V: 200 mA

The internal SD card is used only for saving data; no other data can be stored on it.

BIBLIOGRAPHY

Some reading on music theory and applied mathematics:

- Coll., *Music and Mathematics, From Pythagoras to Fractals*, Oxford University Press, 2003
- Arbonés (Javier) et Milrud (Pablo), *L'Harmonie est numérique*, RBA, 2013
- Maor (Eli), *Music by the Numbers*, Princeton University Press, 2018
- Siron (Jacques), *La Partition intérieure, Jazz, Musiques improvisées*, Outre Mesure, 1992, 11th ed. 2020.
- Toussaint (Godfried T.), *The Geometry of Musical Rhythm*, CRC Press, 2020

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Peace and Love,
Gilles de Kaona.