

TUBETEC

TR-80h8

User Guide

revision 0.1

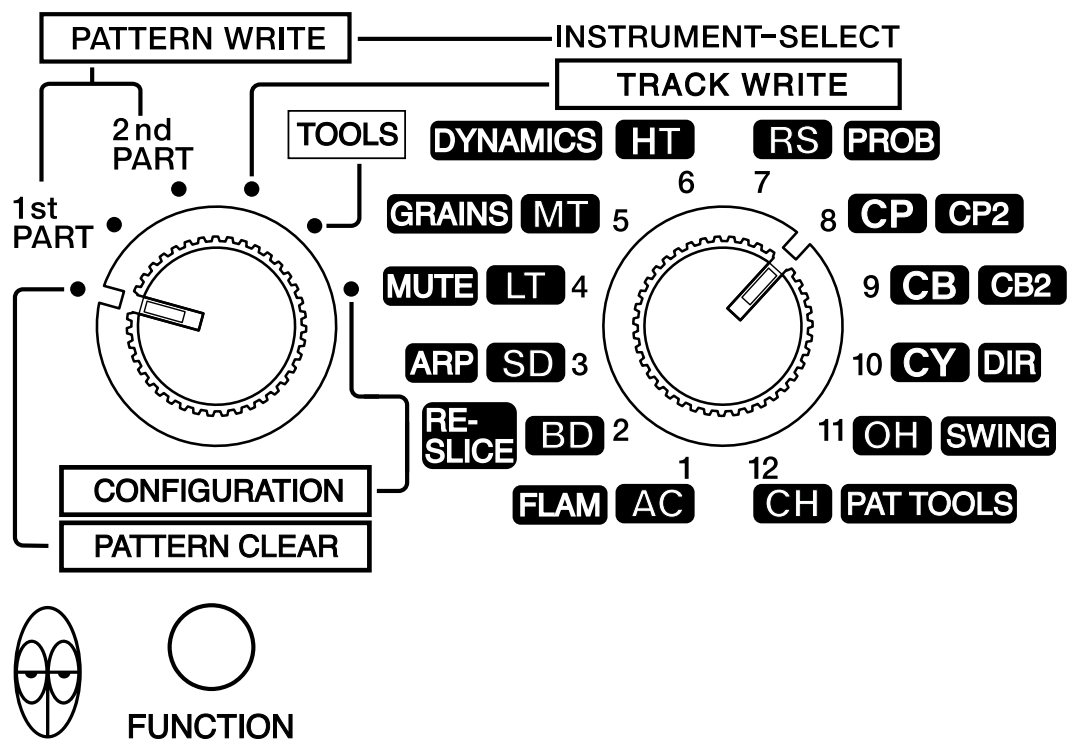


Table of contents

Features.....	4
The TR-8oh8 kit.....	5
Introduction.....	6
Saving patterns and tracks permanently.....	7
Coming from the original.....	8
8oh8 user interface.....	9
Selectors, switches, and buttons.....	9
LEDs.....	10
Buttons.....	10
I/F VARIATION switch.....	10
Button Ghosting.....	10
Instruments.....	11
Steps, patterns and tracks.....	13
PATTERN WRITE.....	14
Selecting the pattern to edit.....	14
Selecting the active instrument.....	14
Programming a pattern.....	14
Live-Clear a playing pattern.....	14
Recording steps (TAP).....	15
Step dynamics.....	16
Step probability.....	16
Quick edit of probability/dynamics.....	16
Sequencing Cowbell 2 and Grains.....	17
Defining the length of a pattern.....	19
Changing the clock divider.....	19
TRACK WRITE.....	20
LEDs in TRACK WRITE.....	20
Changing the playing pattern instantly.....	20
Change the playing pattern synchronised.....	20
TRACK programming.....	21
FILL-IN programming.....	22
FILL-IN track.....	22
Highlighting a pattern.....	23
Fill-In editing mode.....	23
Copy and paste patterns.....	23
Independent pattern edit.....	23
Pattern generator.....	24
Tracks and track slots.....	24
Pattern banks.....	24
TRACK play behavior.....	25
BASIC variation behavior.....	25
FILL-IN parts A and B.....	25
FILL-IN behavior.....	25
PATTERN CLEAR.....	27
Clear patterns.....	27
Save data permanently.....	27
TOOLS.....	28
Flam / Ratchet.....	29
Reslicer.....	33
Arpeggiator.....	35

Mute.....	37
Grains.....	38
Dynamics.....	39
Probability.....	41
CLAP2 Configurator.....	42
Cowbell 2 Configurator.....	44
Play Direction.....	45
Swing.....	46
Pattern Tools.....	47
CONFIGURATION.....	49
Custom Flam.....	50
Drums MIDI IN Channel.....	50
Drums MIDI OUT Channel.....	50
Grains MIDI In Channel.....	50
Grains MIDI OUT Channel.....	50
Dynamics.....	51
Probability.....	51
Cowbell 2 MIDI In Channel.....	51
Cowbell 2 MIDI OUT Channel.....	51
MIDI CONFIG.....	53
Clock.....	53
Various.....	53
MIDI.....	55
MIDI TRS connectors.....	55
MIDI In.....	55
Appendix A: Cheat Sheets.....	59
PATTERN WRITE Cheat Sheet.....	59
TRACK WRITE Cheat Sheet.....	59
CLEAR Cheat Sheet.....	59
APPENDIX B: TOOLS OVERVIEW.....	60
APPENDIX C: CONFIG TOOL OVERVIEW.....	61
APPENDIX C: MIDI CC.....	62
Disposal.....	66
Product Safety Information.....	67

Features

- Replacement processor for TR-808 with extended features
- 11 additional drum sounds including a tunable cowbell and adjustable clap
- Dynamic levels for all instruments
- MIDI input and output
- Improved sequencer but true to the original:
 - Change patterns and program them at any time without having to stop
 - Edit patterns while another one is playing
 - 32 patterns, 128 (arranged in 4 pattern banks)
 - A new track can be programmed on the fly
 - Four dynamic levels per step and instrument
 - And/or four probability levels per step and instrument
 - Per-step pitch sequencing of Cowbell 2 and Graininstrument
 - First and last step for each pattern
 - Copy, paste and clear patterns easily
- 32 patterns that can be chained into a track with up to 64 patterns each
 - 12 tracks can be saved and recalled at any time
 - A new track can be programmed on the fly
 - 8 fill patterns
 - Fill pattern tracks
 - Copy, paste and clear patterns easily
- A pattern generator with twelve different styles
- TOOLS and effects:
 - Instrument muting
 - Beat reslicer
 - Grains: Turns your 808 into a bassline synthesizer
 - Arpeggiator (TOOLS drum sequencer)
 - Ratchet / Flam with 13 different modes
 - Play directions (forward, backward, ping-pong, random)
 - Swing with adjustable amount
 - Shift, copy and paste instrument tracks
- Cymbal, open and closed hihat decay control via MIDI
- Built-in configuration menu to quickly set many additional parameters
- Easy to install, no case drilling needed
- Retain patterns even without battery
- Firmware update via MIDI sysex

The TR-8oh8 kit

The 8oh8 kit includes:

- Drop in replacement micro controller
- MIDI DIN or TRS in connector with cable
- MIDI out TRS connector with cable
- Two 9-pole connector with breakout cables (for extra triggers and decay control)
- 42 pin DIP socket
- Overlay stickers with new menu functions

The MIDI input connection of the 8oh8 can be installed with either the TRS MIDI connector or the DIN socket already present on the original case of the TR-808. For details, please see the install guide.

Introduction

Tubbutec TR-8oh8 is a drop in replacement for the microcontroller of the Roland TR-808 drum machine. It preserves great features of the original firmware and adds several new and essential features for a modern TOOLS performance and expands the sound palette with extra triggers.

The TR-8oh8 is optimised for TOOLS performance and allows quick programming and editing of drum patterns. Drums can be played from the built-in sequencer or via MIDI. The sequencer can also output MIDI messages to trigger other drum machines.

The 8oh8 has 24 instrument channels and is pattern-based. Each pattern can have up to 32 steps and 16 different patterns can be programmed in each pattern group (A and B), for a total of 32 patterns.

Multiple patterns can be chained to a 'track'. Each track consists of up to 64 patterns; a single pattern can occur multiple times in a track, regardless of which pattern group it belongs to.

The 'Fill-In' functionality is also expanded: Up to 64 patterns can be chained into a 'fill track', with the fill pattern advancing each time the fill is triggered according to the AUTO FILL IN switch position.

Many features exist to ease pattern programming and TOOLS performance: The user can mute and unmute instruments with the press of a button or over MIDI.

Multiple play directions can be selected, including a musically meaningful random mode.

A dedicated FLAM instrument triggers flam or ratcheting of other instruments.

Every step has a parameter that can be used to define the probability of the step and/or the dynamic level of the instrument.

Just as in the original firmware, steps can be recorded by tapping and we added the option to also clear the steps while playing - in the style of the TR-606.

You can record a new track while another is playing and start it in sync. This allows very flexible and intuitive TOOLS performances.

Two of the additional instruments are tunable in pitch (CB2 and GRAINS), and the pitch can be sequenced on a per-step basis.

Patterns can also be copied and pasted, allowing quick programming of variations. Patterns and tracks can be saved and will be available the next time you power on the drum machine removing the need for batteries to preserve memory.

More features are accessible via a config menu where you can define MIDI channels, shape the clap sound, set pulse lengths, probability, clock mode and more.

This manual contains a detailed description of all features, followed by a short 'cheat sheet.'

Saving patterns and tracks permanently

The original TR-808 can only keep pattern and track data if batteries are installed. This is also the case with the TR-80h8, but you can also manually save the patterns before turning off the machine, and they will be retained even without a battery. (See Saving patterns and tracks permanently)

When switching pattern banks, the unused banks are always stored in permanent memory. (See Pattern banks)

Coming from the original

You are probably already used to program the TR-808.

With the TR-8oh8 upgrade, the PATTERN WRITE modes (1st PART and 2nd PART) will behave pretty much identical to the original, just with some added features. You should feel right at home.

The **MANUAL PLAY** mode also behaves similarly – you can select a pattern to play and set fill-in patterns the same way as before.

However, we included many new features here and turned **MANUAL PLAY** into a complete track programming mode: **TRACK WRITE**.

This frees up switch positions PLAY and COMPOSE. In the TR-8oh8, these are used for **TOOLS** and **CONFIGURATION** respectively.

We thus arrive at the following modes:

PATTERN CLEAR

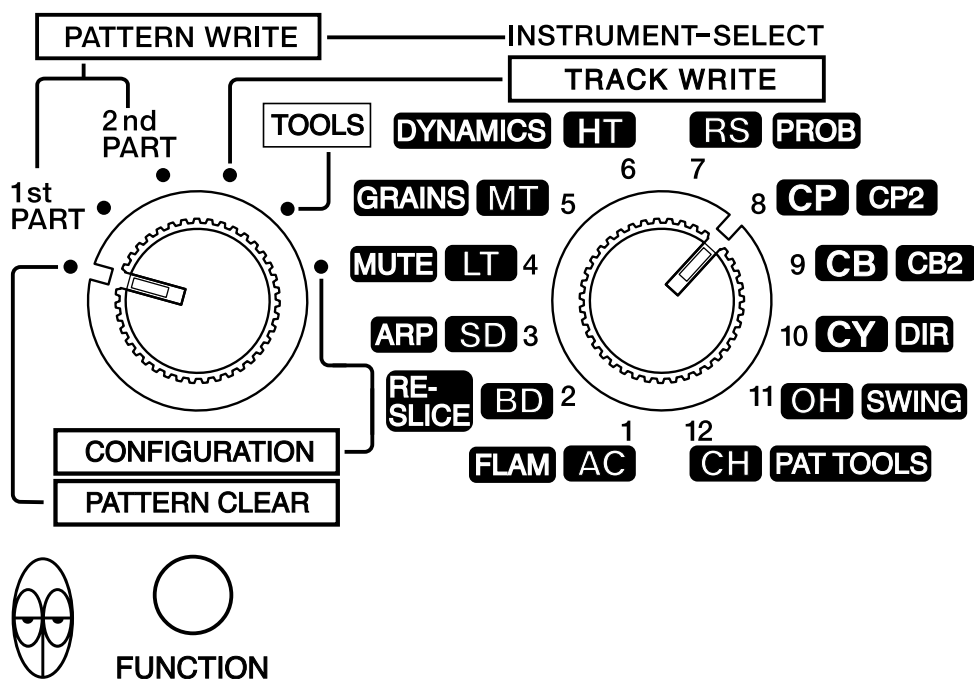
PATTERN WRITE (1st PART and 2nd PART)

TRACK WRITE

TOOLS

CONFIGURATION

The red button previously labelled 'PATTERN CLEAR', 'STEP CLEAR', 'STEP-NUMBER' and 'PRE-SCALE' now has even more functions, and as a result we decided to call it the **FUNCTION BUTTON** instead.



8oh8 user interface

The interaction with the user interface of the original TR-808 is modified to accommodate the new features in the simplest possible way. The stickers included in the 8oh8 kit will fit on the front plate and help you navigate the menu.

Selectors, switches, and buttons

Most control elements serve similar function to the original and we can easily keep their names.

The 8oh8 firmware expands upon the existing features in the **MANUAL PLAY** mode and turns it into a complete track programming mode. We will from now on call it **TRACK WRITE**. This frees up two positions on the MODE SELECTOR, that were originally used for track programming (PLAY and COMPOSE).

In the 8oh8 these MODE selector positions are **TOOLS**, used to access TOOLS effects, and **CONFIGURATION** that gives access to additional settings.

PATTERN CLEAR

PATTERN WRITE (1st PART and 2nd PART)

TRACK WRITE

TOOLS

CONFIGURATION

The INSTRUMENT/TRACK selector is now also used to select tool and configuration pages. In this context we will refer to it as PAGE SELECTOR.

Throughout this document, we will refer to a specific menu page with the name of the MODE selector position followed by the number and the name of the TOOL selector position. For example:

CONFIG 7 CLOCK or **TOOLS 2 RESLICE**.

Due to the functional expansion of the red button, we will refer to it as the **FUNCTION BUTTON**.

LEDs

To display the steps and selected parameters the LEDs use signalisation like a full LED or a blinking LED. Blinking can happen in different ways: with even time on and off (50% duty cycle), with short pulses on, or with short pulses off.

Buttons

A SHORT PRESS of a button is usually used to activate the function behind it. Sometimes additional functions are accessible by a LONG PRESS (for about a second). For example a short press of a **PATTERN** can be used to switch immediately to that pattern, while a long press of a **PATTERN** can start the recording of a pattern chain.

Button combinations are also possible. For example holding the **FUNCTION** button and pressing a STEP can be used to change the pattern length. Throughout this document, we will refer to this method as **FUNCTION** + STEP.

I/F VARIATION switch

In the TR-8oh8 the I/F VARIATION switch serves two basic functions depending on the selected mode:

In TRACK WRITE mode, it is used to select the INTRO/FILL variation – just like in the original. In PATTERN WRITE MODE however, it is used to select between instrument groups A and B.

Switching the I/F VARIATION switch while in PATTERN WRITE, will not affect the A/B play behavior of fill patterns. However, this means in TRACK WRITE, the I/F switch might not indicate the actual used pattern variation. We do however indicate this inconsistency via LED blinking patterns.

Button Ghosting

Due to way the TR-808 hardware is constructed, pressing more than 2 buttons at the same time can lead to 'ghosting'. When pressing 3 buttons, it can happen that a 4th 'ghost' button is also pressed. This is also true for the original TR-808, and can not be avoided without changes to the hardware.

The TR-8oh8 menu structure is designed with this in mind. It is never necessary to press more than 2 buttons. However, it is good to be aware of this ghosting as one might be tempted to press multiple buttons simultaneously in some cases (e.g. when muting and unmuting).

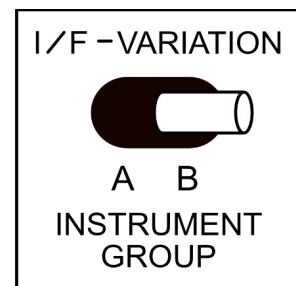
Instruments

The 8oh8 can trigger the original 11 instruments, Accent, 11 additional instruments and a FLAM trigger.

In PATTERN WRITE and some of the TOOLS pages, the I/F VARIATION switch toggles between instrument groups A and B:

Instruments accessible with I/F VARIATION set to A are the normal TR-808 instruments:

- 1 ACcent
- 2 BaseDrum
- 3 Snare Drum
- 4 LowTom
- 5 Mid Tom
- 6 HighTom
- 7 RimShot
- 8 handClap
- 9 CowBell
- 10 CYmbal
- 11 OpenHihat
- 12 ClosedHihat



I/F switch used as instrument group selector

While I/F VARIATION is set to B the INSTRUMENT selector selects:

- 1 **FLAM TRIGGER** – A dedicated channel for triggering Flam/Ratchets
- 2 **HARD KICK**: a harder variant of the bass drum sound
- 3 **SNOISE**: the noisy part of the snare
- 4 **CLOSED SNARE**: a short version of the noisy snare
- 5 **GRAINS**: Instruments are triggered at audio rate to create synth sounds. Can be sequenced internally, or played via MIDI.
- 6 **MARACAS**: triggers the maracas independently from the maracas/clap switch
- 7 **MUTED CLAVES/RIM SHOT**: a short and damped sound of the clave or rim shot
- 8 **CLAP2**: a fully configurable clap with 7 adjustable parameters
- 9 **COW BELL 2**: tunable cowbell that can be sequenced internally, or played via MIDI – even duophonically.
- 10 **FELT CYMBAL**: only one part of the cymbal is triggered, sounds like hitting a cymbal with a felt mallet.

11 **CLOSED CYMBAL:** triggers the short part of the cymbal.

12 **CLICK HAT:** A click-like very short closed hi-hat

The volume knobs for the instruments in group A control also the volume of the instruments in group B:

1 Accent

2 BaseDrum, HARD KICK

3 Snare Drum, SNOISE, CLOSED SNARE

4 LowTom, BRUSH

5 Mid Tom

6 HighTom

7 RimShot, MUTED CLAVES

8 handClap, CLAP2, MARACAS

9 CowBell, COW BELL 2

10 Cymbal, FELT CYMBAL, CLOSED CYMBAL

11 OpenHihat

12 ClosedHihat, CLICK HAT

Steps, patterns and tracks

To understand the naming conventions in this user manual it is good to clarify the structure of the elements of the sequencer.

The smallest unit is a STEP. The duration of a step is defined by the selected SCALE.

A sequence of steps of a single instrument form an INSTRUMENT PATTERN which can be up to 32 steps long. Steps 1-16 belong to 1st PART, steps 17-32 belong to 2nd PART.

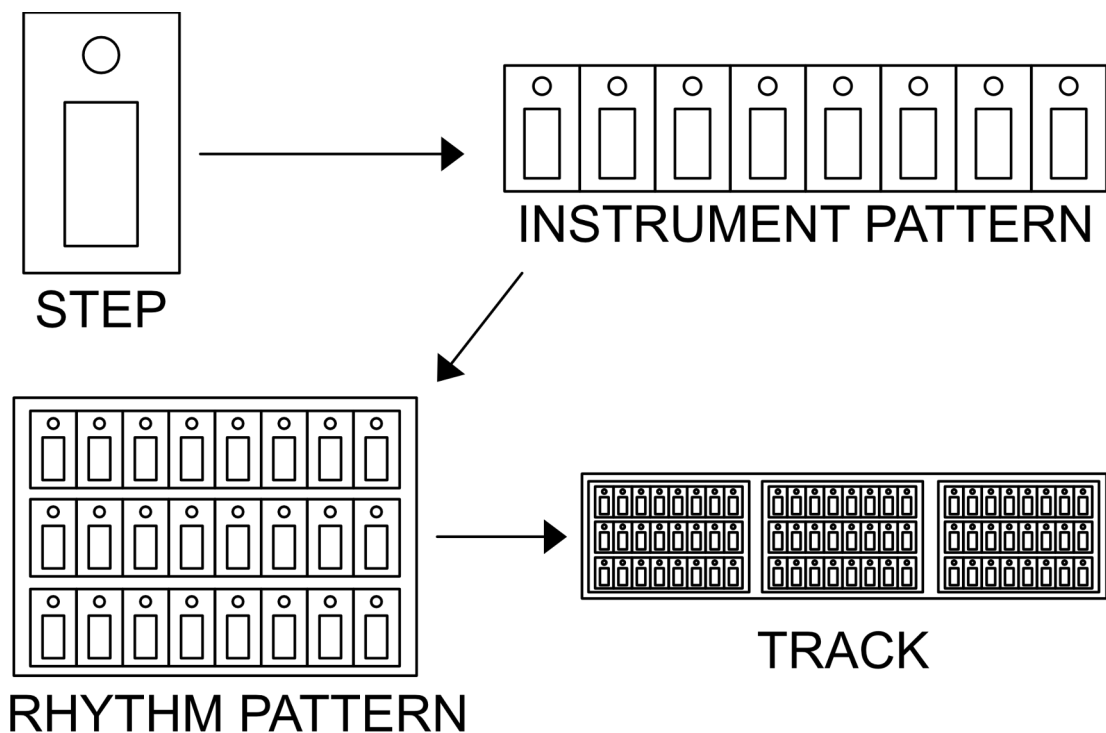
All the instrument patterns that play at the same time create a RHYTHM PATTERN. A rhythm pattern thus has 24 instrument patterns and can be up to 32 steps long (1st PART + 2nd PART).

There are 16 RHYTHM PATTERNS in each VARIATION (A or B) for a total of 32 different RHYTHM PATTERNS.

Four pattern banks are available which results in a total of 128 patterns.

All the instrument patterns within a rhythm pattern have the same length and the same clock divider. Also the A and B variations of a pattern share the same length and clock divider. The 16 RHYTHM PATTERNS are divided into 12 basic patterns and 4 fill-in patterns. The basic patterns are divided into group A and B and are accessed with the BASIC-VARIATION switch. The fill-in patterns are also divided into two groups A and B but use the I/F VARIATION switch to toggle them.

A sequence of rhythm patterns creates a TRACK. A track can chain up to 64 rhythm patterns. The rhythm patterns within a track can have different lengths and different clock dividers.



PATTERN WRITE

With the MODE selector set to PATTERN WRITE (1st PART or 2nd PART) it is possible to edit the single steps of an instrument pattern. Active steps have their LED turned on while inactive steps have the LED off.

When the sequencer is running, the current position is indicated by a short blink if the step is off, or alternatively, if a step is on, the LED briefly turns off.

When holding **FUNCTION**, the quarter notes light up on the STEPs LEDs. The number of steps between the quarter notes defines the resolution of the rhythm pattern.

(See Changing the clock divider)

Selecting the pattern to edit

By default, pattern write always shows the currently playing pattern as defined in TRACK WRITE. As the track advances to the next pattern, so does the pattern shown in PATTERN WRITE.

By highlighting a pattern in TRACK WRITE, a pattern can be edited that is currently not playing. (See Highlighting a pattern).

There is also a special way to select a Fill-In pattern for editing. Here, the currently playing track is replaced temporarily and only the selected Fill-In pattern is playing for easier editing. (See Fill-In editing mode).

Selecting the active instrument

The active instrument is indicated by the INSTRUMENT selector and the I/F VARIATION switch position.

To change the instrument, select the instrument group A or B by toggling the I/F VARIATION switch. Then turn the INSTRUMENT selector to the desired instrument. Once an instrument is selected, the active steps for that instrument are displayed on the STEPs LEDs.

Note: Switching the I/F VARIATION switch while in Pattern Write, will not affect the A/B play behavior of fill patterns.

Programming a pattern

To set or delete a single step, just press the corresponding STEP button.

When a step is activated, the LED lights up.

Live-Clear a playing pattern

Hold the **FUNCTION** button and press TAP while the pattern is running to start erasing the steps of the active instrument. Clearing stops immediately when the **FUNCTION** button is released or if TAP is pressed again.

Recording steps (TAP)

While the sequencer is running, the TAP button can be used to record steps. When hitting the TAP button, the active instrument plays and the current step in the instrument pattern is turned on.

If several patterns are connected in a track, recording can be performed across several patterns.

Step dynamics

You can select one of 4 different dynamic levels for each instrument and for each step.

To set the dynamics of a step hold the STEP button, and set the dynamic level with the PRE-SCALE selector.

By default, when SCALE is set to level 1 a sound with the highest volume is triggered and when the SCALE is set to 4 it will trigger the lowest.

For each instrument it is possible to enable (default) or disable the dynamics in the **TOOLS** **6** **DYNAMICS** menu.

Furthermore, the dynamic levels for each position of the SCALE selector can be modified in the **CONFIG** **6** **DYNAMICS** menu. (See Config → Dynamics).

Step probability

The value set with the PRE-SCALE selector can also be used to set the probability of a step. It is necessary to enable probability on the specific instrument in the **TOOLS** **5** **PROB.** menu. (See TOOLS → Probability)

To set the probability of a step, hold the STEP button and set the probability level with the SCALE selector. By default the probability of a newly set step is 100%. SCALE set to 1 is the highest probability (100%) while the SCALE set to 4 is the lowest. The probability percentages for each position on the SCALE selector can be configured in the **CONFIG** **5** **PROB.** Menu. (See Config → Probability)

Quick edit of probability/dynamics

There are two methods to speed up the process of setting the probability or dynamics on multiple steps at the same time:

It is possible to select multiple steps and then switch the SCALE to a different value. To select the steps simply hold one STEP and press other STEPs one after the other. The selected STEPs will blink. While still holding one step, switch the SCALE selector to edit the parameter. The same SCALE value will be saved on all the selected steps.

Another fast way to do it is to copy the SCALE value of one step simply by holding it while setting new steps. The same dynamic or probability value will be set in the new step. For example if the SCALE of step 1 is set to 3 and the same value is desired on empty steps 5, 9 and 13, then hold step 1 and press steps 5, 9 and 13.

Sequencing Cowbell 2 and Grains

The Cowbell 2 and Grains instruments are special, because they can be tuned and played as a melodic instruments.

The Cowbell sound is composed of two oscillators, and with the 8oh8 it is possible to sequence their base PITCH as well as the pitch interval between them: the SPREAD. On every step it is possible to set the note (C...B), the octave (1-4) and one of 4 spread intervals.

Similarly, it is possible to sequence the PITCH of the GRAINS instrument.

Set CB2 and Grains pitch per step

When sequencing CB2 and Grains steps (just like any other instrument), you can access an extra mode to also sequence the pitch (and spread).

To program a sequence of cowbells or Grains with different notes first set the MODE selector to PATTERN WRITE, select the instrument group B with the I/F VARIATION switch and then select either the instrument 5 GRAINS or 9 CB2.

To set the note on a specific step, hold it and press TAP. It is also possible to select multiple steps and program their pitch simultaneously. (See below).

The selected step(s) will stay selected and the step button can be released. Its LED will start blinking slowly with a regular interval showing that the sequencer is in the note/spread programming mode.

In this mode, the first 12 steps represent 12 notes of one octave from C to B. Steps 13 to 16 represent a range of 4 octaves.

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
C	C#	D	D#	E	F	F#	G	G#	A	A#	B	1	2	3	4
NOTES												OCTAVES			

Along with the blinking LED(s) representing the selected steps, there are two more LEDs that are turned on while in this mode: one in the octaves section (steps 13-16) shows the octave of the current note, and one in the notes section (steps 1-12) that shows the note.

For example if STEP 3 is blinking and STEP 5 and STEP 16 are on means that the note on step 3 is set to E4.

Setting CB2 spread

In case of the CB2 instrument, it is also possible to set the spread of the oscillators for a particular step. While in the note/spread programming mode, switching the SCALE to a different position will set the interval between the two oscillators on the selected step. With SCALE set to 1 there will be no additional SPREAD, and it will increase with every next level on the SCALE switch. Note that base pitch and spread can be set in CONFIGURATION CB2. (Cowbell 2 Configurator).

Programming multiple steps at once

It is possible to set steps simultaneously by selecting multiple steps: hold one step and press others to select them. A fast blinking of the steps will show they are selected. Press TAP while they are still selected to enter the note/spread programming mode. The steps will stay selected and the step buttons can be released. If the steps already have the same note and octave, then the corresponding LEDs will be on.

If the selected steps have different notes or different octaves then no LED will light up on either the notes or octaves, only the blinking steps will display the selected steps. Once the SCALE is switched or a note or octave is pressed, the same spread, note or octave will be set on the selected steps.

Should the selected step be the same as the note or octave step, the blinking on the overlapping step will not be even but with a longer duty cycle (the time on will be longer and the time off will be shorter).

Exit note/spread programming mode

To exit the note/spread programming mode press TAP.

You can then select other steps and program a different pitch for them.

Defining the length of a pattern

The length of a pattern can be defined by a 'first step' and a 'last step'. By default the first step is STEP 1 and the last step is STEP 16.

The last step can be changed by holding **FUNCTION** and pressing one of the STEP buttons. When the step button is released, the first step is set to 1, and the last step is set to the released STEP button.

In order to set both, the first and last steps, hold **FUNCTION** while pressing two STEPS simultaneously. This sets both the first and the last step and only the section between the first and the last step will play.

Holding **FUNCTION** and pressing only one STEP always resets the first step to 1.

To set the length of a pattern longer than 16 steps, set the last step while the MODE selector is on 2nd PART.

It is possible to set the first step in 1st PART and the last step in 2nd PART. To do so press the first step in 1st PART and while holding it change to 2nd PART with the MODE selector and then press the last step.

When holding the **FUNCTION** button, the first and last steps will blink to indicate their position. If the first step is on STEP 1 only the last step will blink.

Note, that the pattern length is applied to both the A and B variations of a pattern.

Changing the clock divider

Hold **FUNCTION** and change the SCALE switch to set the new clock divider of the main clock. The clock divider will become effective at the end of the playing pattern.

Note, that the clock divider / scale is applied to both the A and B variations of a pattern.

TRACK WRITE

In **TRACK WRITE** mode, rhythm patterns can be chained to TRACKS, generated automatically, copied, and pasted.

It is also possible to select a pattern for independent editing - that is editing one pattern, while another one is playing.

LEDs in TRACK WRITE

In **TRACK WRITE** mode, each STEP and its corresponding LED represent one of the 16 RHYTHMS from the current pattern group. There are 24 BASIC RHYTHMS and 8 FILL-Ins. Toggling the BASIC VARIATION switch from A to B will display the patterns from the group A or B on the steps from STEP 1 to STEP 12. Toggling the I/F VARIATION will switch between 'fill-in group' A and B displaying from STEP 13 to STEP 16 four fill-ins from group A or four fill-ins from group B. Rhythms that are part of a track stay lit up all at the same time while the currently playing pattern blinks intermittently. There are always two LEDs that are on: one BASIC RHYTHM and one FILL-IN.

The currently playing pattern LED blinks with 50% duty cycle (the time on equals the time the LED is off) if it is a pattern from group A and will blink with a short time off if it is a pattern from group B.

The two A and B LEDs under the BASIC-VARIATION switch always show to which group the playing pattern belongs (for both BASIC and FILL-IN pattern). The only exception is when a pattern is highlighted (see chapter Highlighting a pattern) in which case the current group LED shortly blinks on while the other LED stays on.

Changing the playing pattern instantly

To instantly change the currently playing pattern, SHORT PRESS a BASIC RHYTHM button (STEP 1 – STEP 12).

The pattern will change instantly after the PATTERN button is released, but will stay in sync, and will continue playing the new pattern on the same step (if both patterns have the same length). Changing the pattern this way, will replace any playing track (with multiple patterns) with a track with only one pattern.

This is identical to programming a track with only one pattern using Track programming method 1.

Change the playing pattern synchronised

To change the playing pattern or track at the end of the current pattern, first arm the new BASIC RHYTHM with a LONG PRESS. The current pattern will stop blinking and only the new pattern lights up. The old pattern (or track) will continue playing until **FUNCTION** is pressed.

After pressing **FUNCTION**, the playing pattern will play until the end and then it will switch to the new pattern.

This is identical to programming a track with only one pattern using Track programming method 2.

TRACK programming

Tracks are chains of rhythm patterns that can be up to 64 patterns long. Tracks will always play in a loop – when the last step of the last pattern is played, the track starts again from the first step of the first pattern.

While a track is playing, you can simultaneously program another one. When track programming is finished, the new track starts after the current pattern finishes playing.

Patterns in a track are defined by their number (1 – 16), but a track does not differentiate between parts A and B. Whether A or B is played is fully determined during playback depending on the position of the variation switches.

There are two ways to program new tracks:

Track programming method 1

To record a track, press a pattern (1-12) and while holding it quickly press another one. These will be the first and second pattern in the track. While still holding down at least one pattern you can then enter more patterns.

A track can not only contain the basic variation patterns (1-12), but also the Fill-In patterns (13-16). However, the first pattern in a track needs to be a basic variation group.

They will be added to the track in the order they are pressed, and a pattern can be added multiple times.

Once you release all PATTERN buttons, the new track will start after the current pattern is finished playing.

The PATTERNS used in the track light up, and the currently playing pattern's LED will be blinking.

Track programming method 2

An alternative track programming mode can be accessed by a long press of only one single PATTERN button for about one second.

The new PATTERN's LED will light up and the current pattern will stop blinking but will continue playing (if there was a track playing it will continue).

The long-pressed pattern is now the first pattern of the new track, and more patterns can be added by pressing them in order, without the need of holding a PATTERN. A track can not only contain the basic variation patterns (1-12), but also the Fill-In patterns (13-16). However, the first pattern in a track needs to be a basic variation group.

When the sequence of patterns added to the track is completed, press **FUNCTION** to exit track programming method 2. The currently playing pattern will continue running until the end, then the new track will start playing and the new playing PATTERN LED will start blinking.

FILL-IN programming

FILL-INS are patterns that play only once before switching back to playing a BASIC RHYTHM or a track of BASIC RHYTHMS. There are 8 fill-ins (4 in each fill-in pattern group) that can be triggered automatically, or manually by pressing TAP.

The behaviour is selected with the AUTO FILL IN switch. If the switch is set to 2, 4, 8, 12 or 16 measures the FILL-IN will play automatically with the selected pace. For example setting the switch to 2 measures will alternate one BASIC RHYTHMS pattern and the selected FILL-IN.

When the AUTO FILL IN switch is set to MANUAL, pressing TAP result in the currently playing pattern to finish followed by a FILL-IN pattern.

It is possible to trigger a FILL-IN with TAP, even when the AUTO FILL IN switch is set to automatic.

To select which FILL-IN will be played, press one of the 4 FILL-IN patterns from STEP 13 to STEP 16.

FILL-IN track

It is possible to create a track of FILL-INS. This means, that every time a fill-in is triggered, the next fill-in in the fill-track will be played. To create a FILL-IN track, it is possible to use the Track programming method 1 or Track programming method 2. It is necessary to start the chain with a FILL-IN pattern (from STEP 13 to STEP 16), while the following patterns added can be BASIC RHYTHMS and/or FILL-INS.

Highlighting a pattern

A single pattern can be highlighted and various features applied to this pattern.

A highlighted pattern

- Is copied and can be pasted
- can be edited independently
- Serves as a way to select a Fill-In pattern for programming in PATTERN WRITE.

To highlight a pattern, press **FUNCTION** + PATTERN. The highlighted patterns will blink rapidly.

Press **FUNCTION** again to remove the highlight.

Fill-In editing mode

While it is easily possible to select one of the basic patterns and editing it while it is playing, this is not the case with the Fill-In pattern. At best (with the Auto Fill In selector set to 2) you can hear it every second pattern.

We therefore implemented a special Fill-In editing mode, that allows you to program a Fill-In pattern, and hear it all the time:

In TRACK WRITE, press one of the Fill-In pattern buttons and while holding the button, change the MODE selector to PATTERN WRITE. The currently playing track will stop playing and the selected Fill-In pattern will play and be shown in pattern write instead. You can now normally edit the Fill-In pattern here.

When switching back to TRACK WRITE, the override is cleared and the track will resume normally.

Copy and paste patterns

When in **TRACK WRITE** mode, you can copy and paste patterns.

After highlighting a pattern (**FUNCTION** + PATTERN), press one or multiple other PATTERN buttons and press TAP to paste the highlighted pattern into these. This will overwrite the existing rhythm pattern.

Independent pattern edit

Independent edit allows you to edit a pattern independently from the currently playing pattern or track.

Highlight a pattern with **FUNCTION** + PATTERN. While a pattern is highlighted, turn the MODE selector to **PATTERN WRITE**. You will see the highlighted pattern even if it is not the pattern that is currently playing. This allows you to program a pattern that is not running. In PATTERN WRITE, independent edit is visualized by all steps LEDs turning off for a short moment every couple of seconds.

To exit this mode, switch back to **TRACK WRITE** and press **FUNCTION**.

This will remove the highlight and the current track and/or playing pattern will be shown again.

Independent edit is the recommended way to edit a Fill-In pattern, as normally

Pattern generator

TR-8oh8 includes a rhythm generator with twelve different styles. The styles range from a simpler four-to-the-floor type to more complex rhythms.

The style can be selected with the INSTRUMENT selector. Position 1 is a custom style that will analyze the current pattern and generate a rhythm similar to the one saved in the selected pattern. If the original pattern is empty this style will not generate anything. Position 2 will generate simpler rhythms while every next position will add more complexity. The last 4 styles generate sparse and unpredictable patterns.

To generate a pattern, select the style with the INSTRUMENT selector then press PATTERN + TAB. Press PATTERN + TAP again to generate another rhythm. The new rhythm will always overwrite the previous one.

Tracks and track slots

Save a track to a track slot

It is possible to save a track into each of the 12 track slots of the **TRACK** selector.

Set the **TRACK** switch to the desired position and pressing **FUNCTION** + TAP saves the track that is currently playing and displayed. The LEDs will briefly turn off to show that the track was saved into the slot.

Load a track from a track slot

To load a track that was saved in one of the 12 positions of the **TRACK** selector, you need to hold **FUNCTION** and set the **TRACK** selector to that position. When the **FUNCTION** button is released, the current pattern will play until the end, and then the track will switch to the new one.

Copy a track from a slot to another

When a track from a track slot is loaded it is then possible to save it to a different slot simply by following the instructions of Save track to a track slot.

Pattern banks

Four banks of 32 patterns are available. A track can only contain patterns from a single bank and only one bank is active at a time.

The pattern banks can be switched in TRACK WRITE:

Press and hold **FUNCTION**, move the **SCALE** switch to select the bank (1-4) and release **FUNCTION** again. The old bank will be stored and the new bank loaded on the fly. The new bank's patterns replace the old ones and the sequencer continues playing.

TRACK play behavior

On the TR-808 the way a track plays is determined not only by the patterns programmed into the track, but also by the BASIC VARIATION switch, the I/F VARIATION switch and the FILL-IN selector.

When a track is programmed with several patterns, the sequencer will switch to the next pattern in a track whenever a pattern has finished playing to the end.

Tracks play in a loop: when the end of a track has been reached, the sequencer will start again with the first pattern of the track.

BASIC variation behavior

When the BASIC VARIATION switch is set to A, the sequencer will only play part A patterns. When it is set to B, only part B patterns.

When the switch is set to A/B, the sequencer will first play part A of a pattern, followed by part B. When part B has finished playing, the sequencer proceeds with part A of the next pattern in the track.

In some modes, toggling the switch will not change the behavior, for example when editing a pattern independently. (See Independent pattern edit).

The BASIC VARIATION LEDs still show the state, even if it is different from the switch position:

Variation A: The A LED is turned on

Variation B: The B LED is turned on

Variation A/B: Both LEDs are on, the currently playing variation is blinking

These LEDs are also used to show which variation of the FILL patterns is currently playing.

FILL-IN parts A and B

When a fill in pattern is played, the state of the I/F VARIATION switch determines if parts A or B are played. However, when the switch is toggled outside the TRACK WRITE mode, the part is not altered. In that case, the discrepancy between the switch position and the switch state is shown with LEDs:

- The A/B variation LEDs show the variation while the Fill pattern is playing
- The Fill pattern LED [TODO: how does it blink differently?]

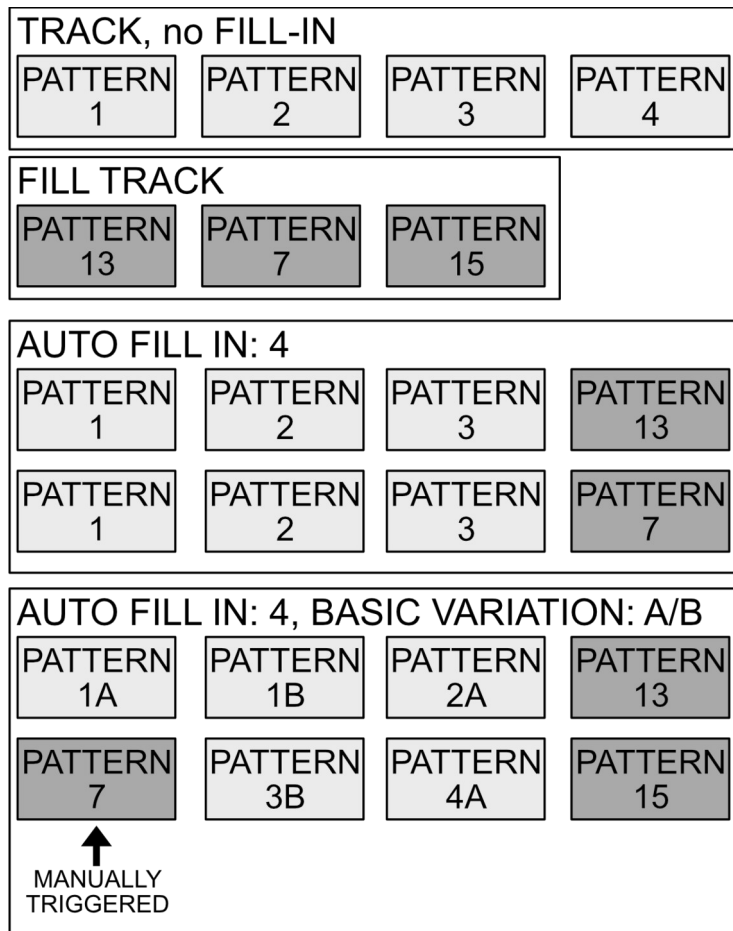
FILL-IN behavior

A FILL-IN pattern always replaces a pattern of a track, as opposed to interrupting it.

When your track contains four patterns 1-4, setting the AUTO FILL IN switch to 4, will result in patterns 1,2,3,FILL,1,2,3,FILL playing, not 1,2,3,FILL,4,...

When the BASIC VAARIATION switch is set to A/B, the A and B patterns play alternatingly. When a FILL pattern is triggered (via AUTO FILL, or manually), the FILL pattern replaces part A or B, but not both.

This behavior makes sure that a track will always stay in synchornized, no matter the setting of the AUTO FILL switch or if a FILL is triggered manually.



Here are examples showing the TRACK play and FILL-IN behavior. You can see how the FILL-IN pattern replaces patterns of the TRACK, in this case each 4th pattern as the AUTO FILL switch is set to 4.

With BASIC VARIATION set to A/B, the fill in pattern only replaces one part (here the B part). When FILL is triggered manually, it might also replace an A part.

You can also see how the FILL-IN track can contain non-FILL in patterns, pattern 7 in this case.

The normal TRACK can also contain patterns of the FILL group (13-16). This is not shown here.

PATTERN CLEAR

Clear patterns

In order to clear complete rhythm patterns hold **FUNCTION** and SHORT PRESS PATTERN whilst in CLEAR mode. With the BASIC-VARIATION switch select if the basic pattern from only the group A or the basic pattern from only the group B will be erased. To erase both set the switch to AB.

Similarly, the I/F VARIATION switch will determine if the fill-in pattern from group A or B will be erased.

To clear the whole pattern and also reset the first step to STEP 1 and the last step to STEP 16 hold **FUNCTION** and LONG PRESS PATTERN. In the case of a pattern reset a progress bar will appear. When the pattern has been completely cleared and the pattern length was reset, only the 1st PART will be playing (steps 1-16). Note, that when a pattern is reset, both variation A and B will have the pattern length reset.

Save data permanently

All patterns and tracks can be saved permanently before turning off the machine. The patterns will stay in memory even without batteries installed. To store all patterns into permanent memory press **FUNCTION** + TAP whilst in CLEAR mode. A progress bar will show when the saving is over. The process of saving the patterns into memory does not interrupt the playing sequence.

TOOLS

There are 12 TOOLS, some of which are live effects

- 1 **FLAM** – Trigger flam or ratcheting effects
- 2 **RESLICE** – Beat skipping and repeat
- 3 **ARP** – Arpeggiator
- 4 **MUTE** – Mute and unmute instruments
- 5 **GRAINS** – trigger drums at audio rate to create basslines
- 6 **DYNAMICS** – enable/disable per instrument
- 7 **PROBABILITY** – enable/disable per instrument
- 8 **CLAP 2** – Change the clap 2 sound
- 9 **COWBELL 2** – Adjust cowbell 2 pitch and spread
- 10 **DIRECTION** – 4 different play directions
- 11 **SWING** – Set swing amount
- 12 **PAT TOOLS** – Copy, paste, shift and modify instrument tracks

These tools can be accessed by setting the MODE selector to **TOOLS** and then selecting the effect with the TOOL selector.

TOOLS		1	2	3	4	5	6	7	8	9	10	11	12	13 1	14 2	15 3	16 4								
The 24 instruments		AC	BD	SD	LT	MT	HT	RS	CP	CB	CY	OH	CH	I/F: A				I/F-VARIATION							
		FLAM	BD2	SD2	SD3	GRAIN	MA	RS2	CP2	CB2	CY2	CY3	CH2	I/F: B				A B							
1	FLAM	I/F-VARIATION A B INSTRUMENT GROUP Select 24 instruments with 1-12 and I/F switch												1 2 3 4 Interval length/ number of steps		2 3 5 NUMBER OF TRIGS		Custom flam							
2	RE-SLICE	8421				1/41/31/2				12345				132		132									
		RANDOM JUMP (quantization)												BEAT REPEATER (steps)				AUTO RANDAUTO REPEAT							
3	ARP	I/F-VARIATION A B INSTRUMENT GROUP Select 24 instruments with 1-12 and I/F switch												1 2 3 4 1: Normal arp, replacing 2: Euclidean arp, replacing 3: Normal arp, overlaying 4: Euclidian arp, overlaying				REST		HOLD ARP				LATCH	
4	MUTE	I/F-VARIATION A B INSTRUMENT GROUP Select 24 instruments with 1-12 and I/F switch																1234 MUTE GROUPS							
5	GRAINS		BD	SD	LT	MT	HT	RS	CP	CB	CY	OH	CH												
6	DYNAMICS	I/F-VARIATION A B INSTRUMENT GROUP Select 24 instruments with 1-12 and I/F switch																							
7	& PROB																								
8	CP2	TRIG COUNT	TRIG TIME	TRIG VOLUME	TAIL VOLUME	REVERB VOLUME	REVERB PREDELAY	RANDOM	← select with shift																
9	CB2	BASE PITCH	BASE SPREAD	SCALE SPREAD	← use 1 2 3 4				← select with shift																
10	DIR	FWD	BCK	RND	P-P																				
11	SWING	AMOUNT																							
12	PAT TOOLS	I/F-VARIATION A B INSTRUMENT GROUP Select 24 instruments with 1-12 and I/F switch												LEFT RIGHT SHIFT		COPY		PASTE							

Flam / Ratchet

The **TOOLS** **1** **FLAM** menu includes flam (or ratchet) effects that can be used to create subdivisions of steps as well as various kinds of tuplets, e.g. triplets or quintuplets.

A dedicated flam trigger instrument let's you sequence exactly which steps are flammed. Additionally, you can define which instruments are affected by the flam and select one of 13 flam patterns. Some are sub-divisions of a single step, some span multiple steps.

You can even define your own 16-step custom flam pattern with its own clockdivider.

The flam effect is triggered for every step that has a FLAM TRIGGER instrument set (See Instruments).

Enable flaming instruments

For each instrument it is possible to enable or disable the flam effect.

A flam enabled instrument will play as flammed whenever a FLAM TRIGGER is also set on the same step.

To enable the flam on an instrument, first turn the **TOOLS** selector to **1** **FLAM**. The first 12 STEPS represent the INSTRUMENT of group A or B. Switch the I/F VARIATION to toggle between 2 instruments groups and display on the first 12 STEPS instruments 1-12 from group A and instruments 13-24 from group B.

The last 4 STEPS and the SCALE switch set the type of the flam. To enable flam, press one of the flam types from STEP 13 to STEP 16. It will start blinking showing that flam is enabled. Press it again to turn flam off. The LED will stop blinking and stay on. Press an INSTRUMENT (STEPS 1-12) to enable or disable flam on the single instrument from the selected instrument group. The LED will turn on when flam is enabled.

Select flam type

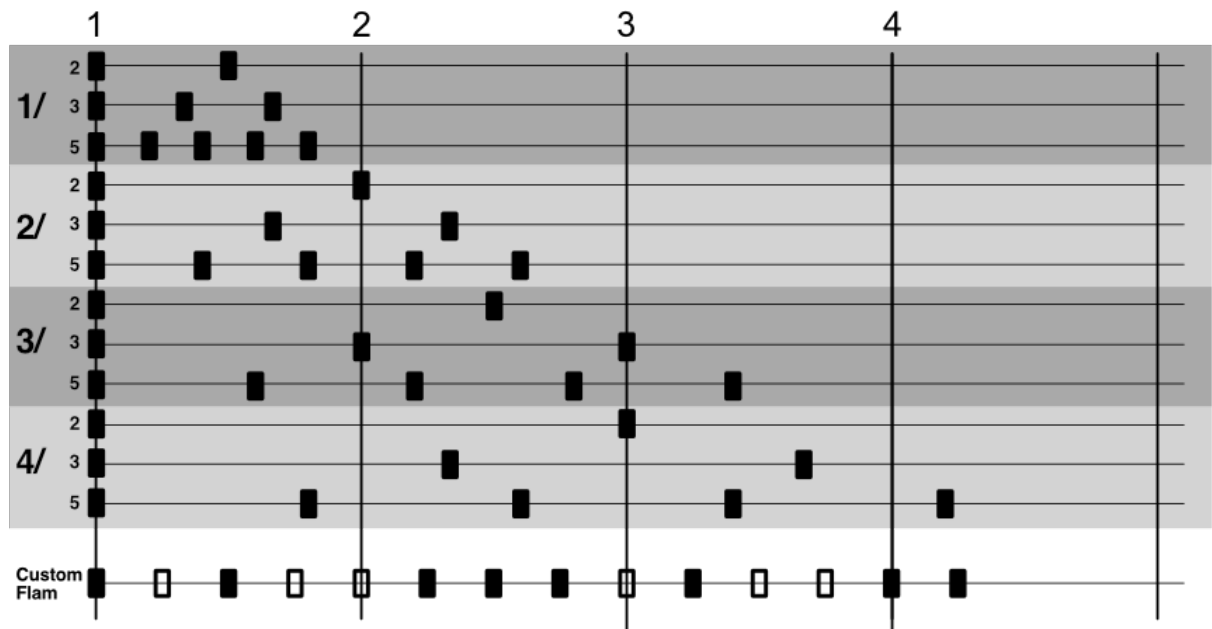
Multiple flam types are available. Two parameters define the type of the flam: the number of flam triggers and the interval in which the beats will occur.

The number of triggers is set by pressing STEP 13, 14 or 15 which correspond to 2, 3 or 5 triggers.

The interval set with the SCALE switch and can be 1, 2, 3 or 4 steps.

The 12 possible combinations create the following subdivisions, names are chosen assuming each step is a 16th note:

Interval	2 Repetitions		3 Repetitions		5 Repetitions	
1	1/2	32 nd	1/3	3x 32 nd triplets	1/5	5x 64 th quintuplets
2	2/2	2x 16 th notes	2/3	16 th triplet	2/5	32 nd quintuplets
3	3/2	16 th duplets	3/3	3x 16 th notes	3/5	16 th quintuplets
4	4/2	8 th notes	4/3	8 th triplet	4/5	16 th quintuplet



A flam example

For example: setting a closed hihat at every second step, selecting 16th triplet as the flam type (SCALE on 2 and STEP 14 turned on) and triggering the flam with the FLAM TRIGGER instrument on the same steps as the hihat will result in a triplet hihat groove. It is also possible to trigger the effect only occasionally, which creates alternating 8th notes and 16ths triplet notes.

The FLAM TRIGGER instrument is also affected by MUTE and Probability. This allows sequences with flams or triplets triggered more or less sparsely.

Custom Flam

The custom flam mode can be selected by pressing STEP 16 in the **TOOLS 1** **FLAM** menu.

It is possible to program your own flam pattern in the **CONFIG 1 CUST. FLAM** menu. The STEPS define the flam pattern while the SCALE switch defines the duration of a step in the flam pattern:

SCALE 1: step is 32nd note

SCALE 2: step is 64th note

SCALE 3: a step is 32nd triplet note

SCALE 4: a step is 64th triplet note

To make it easier to shape the flam pattern let's first program a simple rhythm with a flammed instrument. For example:

1. Put a 4 on the floor BD for reference: in PATTERN WRITE set the INSTRUMENT switch to BD and INSTRUMENT I/F VARIATION to I, then turn on the STEPS 1, 5, 9, 13.
2. Select SD and turn on the STEPS 5 and 13.
3. Select the FLAM instrument by selecting the instrument group B with the I/F VARIATION switch and turn the INSTRUMENT switch to position AC **1** then turn on STEPS 5 and 13 so they match the SD steps that are on.
4. In **TOOLS 1 FLAM** menu select instrument group A with the I/F VARIATION switch and enable FLAM for the SD by pressing STEP 3. Select the custom type of flam by pressing STEP 16.
5. Now enter the **CONFIG 1 CUST. FLAM** just by changing the MODE switch to **CONFIGURATION**. Set SCALE to 1 and turn on STEP 1 then press START/STOP to hear the programmed rhythm.
6. Add additional steps to the custom flam pattern by pressing STEP 5 and STEP 9
7. Switch the SCALE to other positions and set other steps to hear how it affects the flam pattern and adjust to taste.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
I/F: A	AC	BD	SD	LT	MT	HT	RS	CP	CB	CY	OH	CH	2	3	5	Custom
I/F: B	FLAM	BD2	SD2	SD3	GRAIN	MA	RS2	CP2	CB2	CY2	CY3	CH2	NUMBER OF TRIGS			flam

1
2
3
4

Interval length
number of steps

Reslicer

The Reslicer is an effect that makes the reading head of the sequencer jump in a musical or glitchy way. It can be used to quickly add momentary variations to the pattern without modifying it permanently.

The Reslicer also includes beat repeating effects spanning multiple steps, or subdivisions of a single step.

Reslicer effects can be triggered live, or run automatically to create ever lasting variations of a pattern.

Access it in the **TOOLS** 2 **RESLICE** menu.

The running LED will show the movement of the reading head through the steps of the pattern giving a direct view of the applied effect.

Pressing the STEP buttons in this menu will create different effects that can be grouped into 3 different zones:

- skipping steps (1-4)
- beat repeat (5-12)
- and auto skip/repeat (13-16).

Pressing STEPS 1-4 makes the play pointer jump and continue playing while it is being held. Releasing a button will move the play pointer back to where it would have been, had it not jumped.

- Step 1: Jump by 8 steps
- Step 2: Jump by a random multiple of 4 steps (0, 4, 8, 12)
- Step 3: Jump by a random multiple of 2 steps (0, 2, 4, 6, 8, 10, 12, 14, 16)
- Step 4: Randomly jump to any position

Holding one of the buttons 5-12 creates a beat repeat effect:

- Step 5: Repeat current step at a rate of $\frac{1}{4}$ step
- Step 6: Repeat current step at a rate of $\frac{1}{3}$ step
- Step 7: Repeat current step at a rate of $\frac{1}{2}$ step
- Step 8: Repeat current step at a rate of 1 step
- Step 9: Repeat 2 steps (the current and the next)
- Step 10: Repeat 3 consecutive steps
- Step 11: Repeat 4 consecutive steps
- Step 12: Repeat 5 consecutive steps

The last 4 buttons (13-16) turn on different levels of automatic randomisation and automatic beat repeat. The level defines the probability that the effect will be turned on on a step. A higher level triggers the effect more often. To turn the automatic mode off press the current level (where the LED is on).

- Step 13: set automatic randomiser to level 1
- Step 14: set automatic randomiser to level 2
- Steps 13+14: set automatic randomiser to level 3
- Step 15: set automatic beat repeater to level 1

- Step 16: set automatic beat repeater to level 2
- Steps 15+16:set automatic beat repeater to level 3

TOOLS effects (buttons 1-12) are also applied if auto effects are turned on and will override their behaviour.

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
8	4	2	1	1/4	1/3	1/2	1	2	3	4	5	1	3	2	1
RANDOM JUMP (quantization)				BEAT REPEATER (steps)								AUTO RAND		AUTO REPEAT	

Arpeggiator

The arpeggio effect can be found in the **TOOLS 3 ARP** menu. It is basically a little sequencer that plays the drum sounds repeatedly in the order they are entered. There are two arp kinds: normal and Euclidean. Furthermore for each of these kinds you can define if the arpeggiator should replace the currently playing pattern, or overlay drums on top of it.

These four modes can be selected with the SCALE selector:

- 1: Normal arp, replacing
- 2: Euclidean arp, replacing
- 3: Normal arp, overlaying
- 4: Euclidian arp, overlaying

The euclidian arp distributes the pressed (or latched) notes evenly across a fixed number of steps. The distribution is calculated using a Euclidean algorithm.

Adding notes to the arpeggio

In the **ARP** menu, the first 12 STEPs represent 12 instruments either from the instrument group A or B, depending on the position of the I/F VARIATION switch. Hold an INSTRUMENT to add notes to the arpeggio. To enter the same instrument multiple times, at the beginning of the arpeggio hold HOLD ARP on STEP 14 and then press the INSTRUMENT. Rests can be inserted by pressing REST on STEP 13. Accents are not entered in the arpeggio since an accent doesn't produce any sound. It is instead added to the next instrument pressed after it. Same happens with the flam instrument, the flam effect is added to the next instrument pressed after it. **The flam type selected in the **TOOLS 1 FLAM** menu is applied even if the flam is turned off or the arped instrument has flam disabled.**

The arpeggio is on as long as at least one INSTRUMENT, HOLD ARP or REST are held. When all buttons are released the sequencer continues playing in sync.

Latching the arpeggio

To keep the arpeggio running without holding down a button, it can be latched with the LATCH on STEP 16. Pressing LATCH again unlatches the arpeggio. Unlatching the arpeggio makes the current pattern continue playing in sync. The STEP 16 LED will show if latch is on or off. When the arpeggio is latched, holding HOLD will allow to add new notes to the current arpeggio. If HOLD is not held, a new arpeggio will start at the press of an INSTRUMENT.

Save arpeggio to pattern

While an arpeggio is playing and the LATCH is on, it is possible to copy it into the current pattern with FUNCTION+TAB. If the arpeggio is longer than 32 notes it will be truncated. If the arpeggio fits in the pattern multiple times, the pattern length will be set in a way that will make the arpeggio loop seamlessly. For example if the arpeggio contains 3 notes, saving it to the pattern will set the pattern length to 15 steps. If the arpeggio contains 35 notes only the first 32 will be saved. When the

arpeggio mode is set to 'overlaying' (both Euclidean and Normal arp) the pattern length will not be modified.

Mute

An essential performance tool is muting the instruments. Here you can activate and deactivate instruments while the sequencer is running and without modifying the patterns.

Mutes can be found in the **TOOLS** **4** **MUTE** menu.

Here the first 12 STEPs represent 12 instruments either from the instrument group A or B, depending on the position of the I/F VARIATION switch. The LEDs are on when an instrument is active (not muted) and off if the instrument is muted.

Pressing each of the instrument's buttons will switch between the muted and active states.

Whenever the instruments are triggered, the LEDs will shortly blink as additional optical feedback.

There are four mute groups that can be selected on STEP 13 to STEP 16. To see this feature in action, after powering up go into **TOOLS** **4** **MUTE** menu and first press STEP 13 to activate the mute group 1. Mute only the first 4 instruments and then press STEP 14 to load the mute group 2. Now mute only the instruments 5-8. Alternating the two mute groups will alternate the muted instruments.

Press **FUNCTION** to mute all instruments at the same time.

Press **TAP** to unmute all instruments at the same time.

Exiting the MUTE page will keep the muted instruments silent. Check this page when you don't hear the triggered steps.

Muting acts on all patterns globally.

The mute groups will be saved in the non-volatile memory when exiting the **TOOLS** menu.

On power up all instruments are active, regardless of what is saved in the mute groups. Only after the first press of a mute group the mute state will be applied. This behaviour is intentional to avoid confusion due to muted instruments.

	○ 1 1	○ 2 2	○ 3 3	○ 4 4	○ 5 5	○ 6 6	○ 7 7	○ 8 8	○ 9 9	○ 10 10	○ 11 11	○ 12 12	○ 13 1	○ 14 2	○ 15 3	○ 16 4
I/F: A	AC	BD	SD	LT	MT	HT	RS	CP	CB	CY	OH	CH	1	2	3	4
I/F: B	FLAM	BD2	SD2	SD3	GRAIN	MA	RS2	CP2	CB2	CY2	CY3	CH2	MUTE GROUPS			

Mute tool

Grains

The GRAINS tool allows you to trigger instruments up to audio rate. This can be used to synthesize baselines or granular sound effect. The trigger frequency ranges from 4.09Hz (C-3) to 261.63Hz (C4).

Grains can be played via MIDI with a dedicated MIDI channel, or directly sequenced on the 8oh8.

Bassdrum, Toms/Congas, and Claves/RS are very useful as basslines, the Snare is usable when the Snappy parameter is turned down. The other instruments result in less desirable sounds when triggered at audio rate, but might be interesting at lower rates.

It is possible to select multiple instruments which will all be triggered together and thus layered.

The sound can often be shaped by the TR-808 sound parameters, for example BD TONE.

Selecting the Grainstruments

It is possible to select one or more of the TR-808 instruments to be used as Grains. We will refer to these instruments as Grainstruments.

With the MODE selector set to TOOLS and the TOOL selector set to GRAINS, each step button (2 .. 12) corresponds to a specific instrument (BD ... CH). Press a button to turn this particular instrument on or off.

Sequencing Grains

The pitch and gate of Grains can be sequenced on a per-step basis and is accessible in the instrument group B of the MT instrument. Details on how to sequence the pitch, see Sequencing Cowbell 2 and Grains.

Transposing Grains

The pitch of a grain is always defined by the sum of the latest MIDI note on the Grains channel and the note defined by the sequencer. This means you can use MIDI to transpose the Grains pitch of the sequencer, or alternatively use the sequencer to transpose the pitch defined via MIDI.

Grains MIDI support

The Grains MIDI channel can be defined via CONFIG GRAINS MIDI CHAN and supports notes and pitch bend. Note, that the octaves above C4 will wrap to the highest octave.

Combining grains and normal drums

Grains can be simply combined with normal drums. However, when an instrument (e.g. BD) is used as Graininstrument, it will be inaudible. There are two ways to circumvent this:

- Program the grains steps in a way so they do not interfere with the BD steps
- Use Accent on the BD steps in order to differentiate the Accented BD from the lower volume Grains sounds.

Dynamics

There are four levels of dynamics that can be set per step on each instrument (except for the ClaP/MARacas). Changing the level on a step triggers an instrument with a different volume. Each level can be adjusted to a specific volume in the **CONFIG 6 TRIG LEN** menu. In the **TOOLS 6 DYNAMICS** menu it can be defined which instruments will have the dynamics defined by the value set on a step with the SCALE selector. Toggle trigger dynamics for each instrument on the first 12 STEPS, switch the instrument group with the I/F VARIATION switch to access the instruments from group A or B. Note that the level set with SCALE on each step is also used to set the probability per step (if probability is enabled for that same instrument).

Set a dynamic level per step

By default, when setting a step, it will put it to the same dynamic level as set by the original TR-808. This corresponds to level 4 in the 80h8. To change the dynamics on a STEP move the SCALE selector while holding the STEP. If the SCALE selector is already on the wanted level, it is necessary to switch SCALE to a different position and back to register it.

To change the level on multiple steps, hold one STEP and press the other STEPS to select them. The STEPS LEDs will blink as long as at least one STEP is being held showing that they are selected. While the steps are selected, move the SCALE selector to set the level on all the selected steps.

It is also possible to copy/paste STEPS, by simply holding the STEP to be copied and pressing empty STEPS. The newly set steps will have the same level as the step being held. Also see Step dynamics in the PATTERN WRITE chapter.

Enable dynamics per instrument

To enable or disable the dynamics on an instrument go to the **TOOLS 6 DYNAMICS** menu and press on the STEP number of the respective instrument.

Toggle the I/F VARIATION switch to access the instrument group A or B. When the LED turns on, it means the dynamics are enabled.

Setup different dynamic levels

To change the volume on each level of the SCALE selector go to **CONFIG 6 DYNAMICS** menu, put the SCALE selector to the position you want to edit and then set the volume by pressing on one of the 16 STEPS. By default the volume set on position 4 of the SCALE selector is set to 12. This is the same volume the instruments are triggered with on the original TR-808. The value on SCALE position 4 is locked to 12 and can't be edited. The default volume on position 3 is set to 9, position 2 is set to 5 and position 1 is set to 1.

For example set the SCALE selector to 3 then press STEP 16 to set the dynamics to the maximum volume possible. Note that this level will exceed the original TR-808 level and the position 3 will set a higher volume than position 4.

Dynamics on ClaP/MaRacas

The original ClaP and Maracas instruments can't be triggered dynamically because of the circuit that triggers and shapes these sounds. To bypass this limitation use the Clap 2 and Maracas 2 instruments that can be shaped and react to dynamics.

	○ 1 1	○ 2 2	○ 3 3	○ 4 4	○ 5 5	○ 6 6	○ 7 7	○ 8 8	○ 9 9	○ 10 10	○ 11 11	○ 12 12	○ 1 1	○ 2 2	○ 3 3	○ 4 4
I/F: A	AC	BD	SD	LT	MT	HT	RS	CP	CB	CY	OH	CH				
I/F: B	FLAM	BD2	SD2	SD3	GRAIN	MA	RS2	CP2	CB2	CY2	CY3	CH2				

Turn dynamics on and off in the **TOOLS** **6** **DYNAMICS** menu.

Probability

There are four levels of probability that can be set per step on each instrument.

Each level can be adjusted to a specific percentage in the **CONFIG 7 PROB.**

menu. It is possible to enable or disable probability on an instrument in the **TOOLS**

7 PROBABILITY menu. Note that the level set on each step is also used to set the dynamics per step (if dynamics are enabled for that instrument).

Set step probability

By default, when setting a step it will set its probability to 100%. To change the level on a step in PATTERN WRITE, move the SCALE selector while holding the step. To change the level on multiple steps hold one STEP and press on the other STEPS to select them. The STEPS will blink as long as at least one STEP is being held showing that they are selected. While the steps are selected move the SCALE selector to set the level on all the selected STEPS. Also see Step dynamics in the PATTERN WRITE chapter.

Enable probability per instrument

To enable or disable the probability feature on an instrument go to the **TOOLS 7 PROBABILITY** menu. The STEPS represent the 12 INSTRUMENTs of the instrument group selected with the I/F VARIATION switch. Press an INSTRUMENT to enable or disable probability for that particular instrument.

When the LED is turned on, the probability is enabled.

Set probability levels

By default, the probability percentage when SCALE is set to level 1 is 25%, level 2 is 33%, level 3 is 50% and level 4 is 100%. To change the probability percentage on each level go to **CONFIG 7 PROB.** Put the SCALE selector to the position you want to edit and set the percentage by pressing one of the STEPS. The SCALE level 4 is always 100% and cannot be changed. When SCALE is on any other position (1, 2 and 3) pressing a STEP will set the percentage to STEP number/16. For example set the SCALE selector to 3 then press button 11 to set the probability on level 3 to 11/16 which is approximately 69%. Switch the SCALE to 1 and press button 1 to set the probability of level 4 to 1/16 which is approximately 6%.

	○ 1 1	○ 2 2	○ 3 3	○ 4 4	○ 5 5	○ 6 6	○ 7 7	○ 8 8	○ 9 9	○ 10 10	○ 11 11	○ 12 12	○ 13 1	○ 14 2	○ 15 3	○ 16 4
I/F: A	AC	BD	SD	LT	MT	HT	RS	CP	CB	CY	OH	CH				
I/F: B	FLAM	BD2	SD2	SD3	GRAIN	MA	RS2	CP2	CB2	CY2	CY3	CH2				

Probability on/off

Dynamics on/off

CLAP2 Configurator

The CLAP2 sound can be highly configured. Let's take a look at what elements compose a clap sound: a burst of noises with a sharp attack and short release simulates the clapping near to the listening position, these claps are followed by a noise with a longer decay that simulates the undefined clapping of the crowd located further away from the listening position, along these two sounds a darker and quieter noise with a long attack and a decay that lasts beyond the tail simulates the reverberation in a hall. These parameters can be shaped to create different effects:

- the number of short claps can set the number of people close to the listener
- the volume of short claps can change the intensity of their clapping
- the volume and length of the tail define the size of the crowd
- the time interval between the short claps sets the tightness of the clapping
- the volume and length of the reverb will define the sound absorption of the room and the shape of the hall
- a pre-delay of the reverb defines the size of the hall
- the amount of randomization of the time between the short claps can be used to add variations to the claps and can make it more realistic

CLAP2 parameters and their ranges

The clap parameters can be configured in the **TOOLS** **8** **CLAP2** menu or via MIDI CC messages (see MIDI chapter for details).

Hold **FUNCTION** to display the 7 possible parameters on the first 7 STEPS and press on one to select it. The currently selected parameter will blink.

After selecting the parameter, release **FUNCTION** and a number of LEDs will light up showing the value of the parameter.

If the parameter is overlapped by the blinking LED of the parameter, the blinking will be shorter.

Set the value by pressing on one of the STEPS. The parameters can be accessed on the first 7 STEPS in this order:

1. Number of short claps: 0 (STEP1) to 15 (STEP16) short claps
2. Time between short claps: 1ms to 16ms
3. Volume of the short claps: 1 quiet to 16 loud
4. Volume and length of the tail: 0 (STEP1) quiet & short to 15 (STEP16) loud & long
5. Intensity of the reverberation: 1 quiet to 16 loud
6. Pre-delay of the reverberation: 1ms (STEP1) to 121ms (STEP16) in steps of 8ms
7. Randomness of time between short claps from 1 (regular) to 16 (chaotic)

Shaping the CLAP2 sound

To set the number of short claps in the CLAP2 sound first select the parameter with **FUNCTION** + STEP1. Release both buttons and then set the number of short claps from 1-16 with a press on the respective STEP button.

To set the time between short claps press **FUNCTION** + STEP2, release them and then set the number of ms from 1-16 with the respective STEP button.

To set the intensity of the short claps press **FUNCTION** + STEP3, release them and then set the level of the short claps with the respective STEP button.

To set the intensity and length of the tail press **FUNCTION** + STEP4, release them and then set the length of the CLOSED SNARES with the respective STEP button.

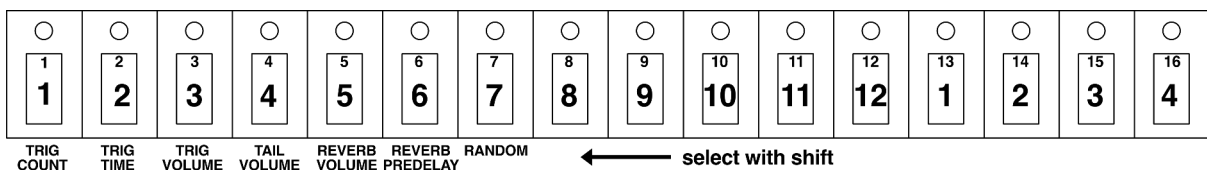
To set the intensity of the reverberation press **FUNCTION** + STEP5, release them and then set the intensity with the respective STEP button.

To set the pre-delay of the reverberation press **FUNCTION** + STEP6, release them and then set the pre-delay with the respective STEP button.

To randomize the claps press **FUNCTION** + STEP7 then set a randomization amount by pressing the respective STEP button.

A note on the reverberation intensity parameter

The circuit that creates the long attack of the reverberation might not make it audible when the reverberation intensity is set to a very low level and the sound is triggered at longer intervals (3-4 sec). It might take a few triggers in a short sequence to get the reverberation to an audible level. No reverb sound is audible on triggers that are apart more than 3 seconds when the intensity is set to 1, or at 6 seconds intervals when the intensity is 2. Triggers will always produce an audible reverb sound with the intensity set to 4 or higher.



Cowbell 2 Configurator

The Cowbell 2 instrument consists of 2 oscillators that are detuned to each other. This page let's you configure the base pitch and spread of the Cowbell 2 instrument.

The pitch and spread can also be sequenced (See Sequencing Cowbell 2 and Grains) or played via MIDI. The sequenced and MIDI pitches are always in relation to the base pitch and spread configured here.

The Cowbell 2 configurator can be accessed via the TOOLS 9 CB2 menu

Configure the Cowbell 2 base pitch

TODO:

Configure the Cowbell 2 base spread

TODO:

Configure the Cowbell 2 'scale' spreads

TODO:

Play Direction

Four play directions are available: Forward, Backward, Random and Ping-Pong. In each case, the actual play position in a pattern is memorised, so switching between these modes will not cause the sequencer to get out of sync. Pattern changes in track mode also use this underlying position, so a pattern change always occurs correctly in sync.

Set play direction

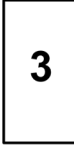
To change the play direction, go to **TOOLS** **10** **DIRECTION** menu and select between the direction by pressing one of the first four STEPS. A blinking LED will show which mode is selected, while on the last 8 LEDs an animation will show the type of play direction.

Forward and Backward modes are self-explanatory.

The Ping-Pong mode alternates between first playing the pattern forwards and then playing backwards. The first and last steps of a pattern are played twice to maintain the correct pattern length.

The Random play mode does not play the steps in completely random order but rather jumps in the pattern based on an algorithm that is optimized to produce interesting and rhythmically meaningful results.

The four play directions act on all patterns and are not saved.

  1	  2	  3	  4
FWD	BCK	RND	P-P

Swing

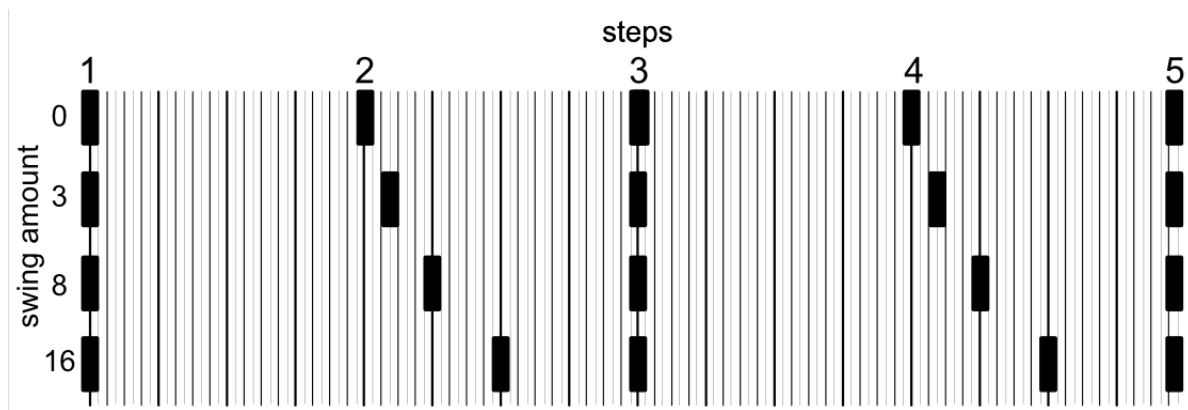
The 8oh8 includes a swing clock generator that works with the internal, external or MIDI clock.

When swing is activated, every second step is delayed by a time proportional to the step length. Fifteen swing amounts are possible, ranging from 1/32th to 16/32th.

The maximum setting of 16 results in a 3-to-1 rhythm, and a setting of 8 results in a 5-to-3 rhythm.

You can use one of the trigger outputs (CB, CP or AC) to clock other gear, effectively converting a straight clock into a 'swung' clock.

Swing amount can be set in the **TOOLS** **11** **SWING** menu. Press a STEP from 1-16 to set the swing amount, where 1 turns swing off while 16 sets it to maximum swing.



Pattern Tools

In the pattern tools menu it is possible to edit single instrument patterns: select a group of instruments and shift their patterns left or right, copy the pattern of one instrument and paste it into another. These edits are destructive, which means that they are applied to the sequence and the previous sequence is overwritten.

Shifting a pattern left will move steps left by one step while the first step will be moved into the last step. Shifting a pattern right will move the steps right by one step while the last step will be moved into the first step.

Shifting affects only the section of the pattern between the first and the last step.

The menu is divided into two sections:

- STEP1-STEP12 represent the instruments and work in combination with the I/F VARIATION switch to toggle between the two instrument groups
- STEP13-16 are controls:
 - STEP13: Shift Left
 - STEP14: Shift Right
 - STEP15: Copy
 - STEP16: Paste

Shift patterns

To shift one or multiple patterns it is first necessary to select them. Press an instrument on STEP1-12 to select it and toggle the I/F VARIATION switch to access instruments from the other group. To quickly select all instruments press TAP and to un-select all instruments press FUNCTION. The LED of the selected instruments will light up.

To shift the pattern of the selected instruments press STEP12 to shift left or STEP13 to shift right. The selected instruments will blink shortly to show the shifting was applied.

Copy and Paste a pattern

To copy a pattern press STEP15 (Copy) + instrument (STEP1-STEP12 & I/F VARIATION to select the instrument group). The copied instrument will blink fast while all other selected instruments will turn off. STEP15 will stay lit to show that an instrument pattern is ready to be pasted. Select the instrument group with I/F VARIATION switch then press an instrument (STEP1-STEP12) + STEP 16 (Paste) to paste the copied instrument pattern into it. The instrument pattern will be overwritten by it.

While a pattern is copied (the STEP15 LED is on) it is possible to repeat the pasting process to paste the same pattern into multiple instruments.

Pressing shift left or right while a pattern is copied will not actually shift the pattern but will exit the copy/paste mode. It is also possible to exit the copy/paste mode by pressing STEP15 (Copy) again or by pressing FUNCTION.

Quick Copy/Paste

To quickly copy an instrument pattern into another first hold one instrument (STEP1-STEP12 & I/F VARIATION) to make it blinking quickly (the instrument pattern is copied and ready to be pasted) then press another instrument to paste it in. It is possible to paste a copied pattern into multiple instruments: while the first instrument is held and blinking press any other instrument the pattern should be pasted into.

	○ 1 1	○ 2 2	○ 3 3	○ 4 4	○ 5 5	○ 6 6	○ 7 7	○ 8 8	○ 9 9	○ 10 10	○ 11 11	○ 12 12	○ 1 1	○ 2 2	○ 3 3	○ 4 4
I/F: A	AC	BD	SD	LT	MT	HT	RS	CP	CB	CY	OH	CH	LEFT	RIGHT	COPY	PASTE
I/F: B	FLAM	BD2	SD2	SD3	GRAIN	MA	RS2	CP2	CB2	CY2	CY3	CH2	└ SHIFT ┘			

Pattern tool: Select one or more instrument tracks, then shift, copy and paste them.

CONFIGURATION

CONFIG		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	CUST. FLAM	SET SCALE PATTERN															
2	MIDI IN CH	MIDI CHANNEL															
3	MIDI OUT CH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
4	GRAINS IN CH																
5	GRAINS OUT CH																
6	DYNAMICS	SET LEVEL DEFINE PROB / DYNAMICS FOR SET LEVEL															
7	PROB.																
8	CB IN CH	MIDI CHANNEL															
9	CB OUT CH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
10	MIDI CONF	DRUM INPUT	DRUM OUTPUT	GRAINS INPUT	GRAINS OUTPUT	CB2 INPUT	CB2 OUTPUT	MIDI MERGER	MIDI CLK OUTPUT								
11	CLOCK	INTERNAL DIN-SYNC	MIDI														
12	VARIOUS	A/B at playback	A/B when recording	← TRACK behaviour						select with FUNCTION →				CONFIG RESET	TOOLS RESET	SHOW FW VERS.	

When the MODE selector is set to **CONFIGURATION**, the TOOL SELECTOR can be used for various configurations.

To permanently save the configuration into the non volatile memory exit the **CONFIGURATION** by turning the MODE selector.

Custom Flam

It is possible to program your own flam pattern in the **CONFIG 1 CUST. FLAM** menu. The STEPS define the flam pattern while the SCALE switch defines the duration of a step in the flam pattern.

For a detailed explanation see TOOLS -> Custom Flam.

Drums MIDI IN Channel

To select the drums MIDI channel that the 8oh8 will listen to, enter the **CONFIG 2 MIDI IN CH** menu and press one of the STEPS to set the corresponding MIDI IN channel. The first step is MIDI channel 1, the last step is MIDI channel 16.

The drums MIDI input channel can be fully disabled. See MIDI CONFIG.

Drums MIDI OUT Channel

To set the MIDI channel that the 8oh8 will use when sending MIDI triggers out, enter the **CONFIG 3 MIDI OUT CH** menu and press one of the STEPS to set the corresponding MIDI OUT channel. The first step is MIDI channel 1, the last step is MIDI channel 16.

The drums MIDI output channel can be fully disabled. See MIDI CONFIG.

Grains MIDI In Channel

To set the MIDI channel that the 8oh8 will use when receiving MIDI notes to play the Cowbell or send MIDI notes from the Cowbell track, enter the **CONFIG 4 GRAINS IN CH** menu and press one of the STEPS to set the corresponding MIDI OUT channel. The first step is MIDI channel 1, the last step is MIDI channel 16. The Grains MIDI input channel can be fully disabled. See MIDI CONFIG.

Grains MIDI OUT Channel

To set the MIDI channel that the 8oh8 will use when sending Cowbell 2 notes, enter the **CONFIG 5 GRAINS OUT CH** menu and press one of the STEPS to set the corresponding MIDI OUT channel. The first step is MIDI channel 1, the last step is MIDI channel 16.

The Grains MIDI output channel can be fully disabled. See MIDI CONFIG.

Dynamics

Setup different dynamic levels

To change the volume on each level of the SCALE selector go to **CONFIG 6**

DYNAMICS menu, put the SCALE selector to the position you want to edit and then set the volume by pressing on one of the 16 STEPS. By default the volume set on position 4 of the SCALE selector is set to 12. This is the same volume the instruments are triggered with on the original TR-808. The value on SCALE position 4 is locked to 12 and can't be edited. The default volume on position 3 is sets to 9, position 2 is set to 5 and position 1 is set to 1.

For example set the SCALE selector to 3 then press STEP 16 to set the dynamics to the maximum volume possible. Note that this level will exceed the original TR-808 level and the position 3 will set a higher volume than position 4.

To learn more about how to set the dynamics per step see the Dynamics section in the TOOLS chapter of this manual.

Probability

To change the probability percentage on each level go to **CONFIG 7 PROB.**

Put the SCALE selector to the position you want to edit and set the percentage by pressing one of the STEPS. The SCALE level 4 is always 100% and cannot be changed. When SCALE is on any other position (1, 2 and 3) pressing a STEP will set the percentage to STEP number/16. For example set the SCALE selector to 3 then press button 11 to set the probability on level 3 to 11/16 which is approximately 69%. Switch the SCALE to 1 and press button 1 to set the probability of level 4 to 1/16 which is approximately 6%.

In the **TOOLS 7 PROBABILITY** menu it can be defined which instruments will have the probability defined by the value set on each step with the SCALE selector. See Probability chapter in TOOLS to set the probability on a step.

Cowbell 2 MIDI In Channel

To set the MIDI channel that the 8oh8 will use when receiving MIDI notes to play the Cowbell or send MIDI notes from the Cowbell track, enter the **CONFIG 8**

COWBELL IN CH menu and press one of the STEPS to set the corresponding MIDI OUT channel. The first step is MIDI channel 1, the last step is MIDI channel 16. The Cowbell MIDI input channel can be fully disabled. See MIDI CONFIG.

Cowbell 2 MIDI OUT Channel

To set the MIDI channel that the 8oh8 will use when sending Cowbell 2 notes, enter the **CONFIG 9 COWBELL OUT CH** menu and press one of the STEPS to set

the corresponding MIDI OUT channel. The first step is MIDI channel 1, the last step is MIDI channel 16.

The Cowbell 2 MIDI output channel can be fully disabled. See MIDI CONFIG.

MIDI CONFIG

In the **CONFIG 10 MIDI CONF** menu it is possible to turn MIDI features and channels on and off.

STEP 1: Enable or disable Drums MIDI NOTE input

STEP 2: Enable or disable Drums MIDI NOTES output

STEP 3: Enable or disable Grains MIDI NOTE input

STEP 4: Enable or disable Grains MIDI NOTES output

STEP 5: Enable or disable CB2 MIDI NOTE input

STEP 6: Enable or disable CB2 MIDI NOTES output

STEP 7: Enable or disable the MIDI merger.

STEP 8: Enable or disable MIDI CLOCK OUT

Clock

In the **CONFIG 11 CLOCK** menu it is possible to select the clock source between INTERNAL or MIDI by pressing respectively STEP 1 or STEP 2. If set to MIDI clock the START/STOP button will be ignored and the machine will only respond to MIDI transport messages to start and stop. See the MIDI chapter for more details.

Various

In the **CONFIG 12 VARIOUS** menu it is possible to toggle various features and perform a factory reset. A blinking LED shows that the feature is enabled.

Track variation behavior

Set the track variation to 'Decide variation during playback' by pressing step 1, or 'decide variation during recording' by pressing step 2. For details see chapter **[TODO TODO]**

Factory reset

In the **CONFIG 12 VARIOUS** the factory reset feature is hidden by default and it will only become available while **FUNCTION** is held. Two separate resets are possible:

- Reset of the CONFIGURATION settings
- Reset of the TOOLS settings

While holding **FUNCTION**, the LEDs on STEP 13 and STEP 14 will blink fast. These two STEPS represent respectively the two reset options.

To reset the settings in the CONFIGURATION menu to factory defaults, hold the **FUNCTION** + STEP 13. STEP LEDs will start turning on like a progress bar from STEP 1 to STEP 16. Releasing the held button at any time before all LEDs are on

will abort the reset and the settings will remain untouched. Only when the progress bar reaches the end all LEDs will go off and the factory reset will be completed.

To reset the settings in the TOOLS menu to factory defaults hold the **FUNCTION** + STEP 14. STEP LEDs will start turning on like a progress bar from STEP 1 to STEP 16. Releasing the held button at any time before all LEDs are on will abort the reset and the settings will remain untouched. Only when the progress bar reaches the end all LEDs will go off and the factory reset will be completed.

In the same manner it is also possible to reset both CONFIGURATION and TOOLS simultaneously. Simply hold **FUNCTION** + STEP 13 + STEP 14 until the end of the progress bar. Releasing any of the held button will stop the reset and leave the settings untouched.

Show firmware version

Holding STEP 16 will display the firmware version encoded into the LEDs.

MIDI

The TR-8oh8 can also be used via MIDI to trigger sounds and edit every parameter.

This can simply be achieved by sending Note-On and Note-Off messages for the instruments or CC messages to edit the settings or editing FX parameters.

The normal instruments only react to Note-On messages. Certain instruments however have an alternative 'gate mode', which reacts to both Note-On and Note-Off messages.

Sending a note with maximum velocity (127) will also trigger the ACcent channel. All notes and CC messages can be remapped to other MIDI notes/CC through a web app.

MIDI TRS connectors

The TR-8oh8 **comes with TRS MIDI connectors Type A (the MIDI 2.0 Standard)**.

Adapters to DIN-Midi are available and use the following connections:

TRS	Tip	Ring	Sleeve
DIN	5	4	2

MIDI In

The TR-8oh8 accepts various MIDI messages.

For MIDI NOTES and CC messages it always listens only to the MIDI channel set in the **CONFIG 1 MIDI IN CH.**

MIDI CLOCK and transport MIDI messages (MIDI start and stop) are enabled if "Clock Source" is set to MIDI. To set the clock source to MIDI go to **CONFIG 7 CLOCK** menu and press STEP button 2. The LED will start blinking. If it blinks on and off with regular intervals it means that MIDI clock messages are being received at the MIDI input. If no MIDI clock is being sent to the MIDI in of the TR-8oh8 the LED will blink with a shorter time off.

Triggering the sounds with MIDI NOTE ON messages can be enabled or disabled in **CONFIG 8 VARIOUS** by pressing STEP 1. A blinking LED shows that this feature is enabled (default).

MIDI CC messages are always considered, irrespective of the enabled or disabled MIDI NOTES IN. Only CC messages received on the selected MIDI IN channel will be considered.

Drum MIDI note input

The TR-8oh8 reacts to Note On messages on the Midi-In channel with the following default notes. Since they can be changed using our web app, they might be different on your machine:

Normal trigger instruments (velocity sensitive)

INSTRUMENT	NOTE		INSTRUMENT	NOTE
ACcent	34		FLAM	33
Base Drum	35		BaseDrum2	36
Snare Drum	38		Snare Drum 2	40
LowTom	45		CLOSED SNARE	37
MidTom	47		BRUSH	48
HighTom	50		MARACAS	70
RimShot	75		MUTED CL/RS	76
ClaP*	39		CLAP 2	41
CowBell	56		COWBELL 2	53
Cymbal	49		FELT CYMBAL	51
OpenHihat	46		CLOSED CYMBAL	52
ClosedHihat	42		CLICK HAT	44

(*) Not velocity sensitive

Gated instruments (not velocity sensitive)

INSTRUMENT	NOTE		INSTRUMENT	NOTE
Gated FLAM FX	81		Gated Maracas	118
Gated Closed Snare	85		Gated FELT CYMBAL	99
Gated SNOISE	88		Gated CLOSED CYMBAL	100
Gated BRUSH	96		Gated CLICK HAT	92

These are the notes defined in the MIDI drum standard (with the exception of AC and FLAM).

Reception of these notes will trigger the instruments. Gated instruments will stay on until a note off is received. In the case of the FLAM FX, the effect will be applied to all the instruments triggered while the FLAM FX note is held.

Accent AC is also triggered when one of the other instruments receives velocity value 127 (the maximum volume).

The MIDI input channel can be set in the **CONFIG 2 MIDI IN CH** and is 10 by default.

Grains MIDI note input

The Grains instrument can be played chromatically on a dedicated MIDI channel set via **CONFIG 4 GRAINS MIDI IN CH**.

The Grains pitch also reacts to Pitch Bend messages on this channel.

MIDI notes for the Grains instrument can be in the range between ??? and ????. Any notes above that will be wrapped to the highest octave.

Cowbell MIDI note input

The Cowbell 2 instrument can be played chromatically on a dedicated MIDI channel set via **CONFIG 8 CB2 MIDI IN CH**.

You set the pitch via MIDI notes on the CB2 MIDI channel, but the trigger has to happen via the sequencer, or via the Drum MIDI channel.

The cowbell can be played duophonically in the following way: When one note is received, both oscillators will have the same pitch, but spread apart according to the currently set spread. When at least two notes are on at the same time, the two oscillators will be tuned differently. It is recommended to set the spread to 0 in order to properly play the CB2 instrument duophonically.

MIDI notes for the Cowbell 2 pitch instrument can be in the range between [?? and ???.]

Drum MIDI output

The TR-8oh8 outputs MIDI NOTE ON and NOTE OFF messages via its MIDI output defined in **CONFIG 3 MIDI OUT CH**

It can be activated/deactivated in **CONFIG 10 MIDI CONF**

The velocity depends on the level set via the SCALE switch.

Accented instruments have a velocity level of 127.

Grains MIDI output

The sequenced Grains pitch and gate is sent via the MIDI note on and off messages on the MIDI channel defined in **CONFIG 5 GRAINS MIDI IN CH**.

It can be activated/deactivated in **CONFIG 10 MIDI CONF**

Cowbell 2 MIDI output

The sequenced Cowbell 2 is sent via the MIDI channel defined in **CONFIG 5 GRAINS MIDI IN CH**. For each step, note on and off messages are sent.

It can be activated/deactivated in **CONFIG 10 MIDI CONF**

MIDI Clock input

The TR-8oh8 can be synced via MIDI clock if the clock source is set to MIDI in **CONFIG 11 CLOCK SOURCE**

MIDI Clock output

When the internal clock generator is selected as clock source, the TR-8oh8 can also output a MIDI clock. To enable or disable sending the MIDI clock out messages, go to **CONFIG 10 MIDI CONF** and press STEP 8. A blinking LED shows that the feature is enabled (default)

Appendix A: Cheat Sheets

TODO: Make sure this covers all 8oh8 functions

PATTERN WRITE Cheat Sheet

Writing Steps	press STEP buttons
Instrument select	INSTRUMENT selector, I/F VARIATION A or B
Clear	Hold FUNCTION+TAP while running
Tap recording	TAP current instrument
Last step	FUNCTION + STEP → last step
First + Last step	FUNCTION + 2 x STEP → range
Change scale	FUNCTION + SCALE selector
Set step levels	Hold step + SCALE selector (levels can be dynamics, probability, or both)
Multiple step levels	Hold one STEP, select more, SCALE selector

TRACK WRITE Cheat Sheet

Each STEP button is a PATTERN

Access pattern banks	Toggle I/F VARIATION
Change pattern instantly	Press PATTERN
Change pattern in sync	Long-press PATTERN, press FUNCTION
Quick track programming	Press PATTERN, while holding, more PATTERN
Track programming	Long-press PATTERN, press more PATTERN, press FUNCTION when finished
Highlight pattern	FUNCTION + PATTERN
Remove highlight	FUNCTION
Copy + paste	Highlight PATTERN, press other PATTERN to paste
Independent edit	Highlight PATTERN, MODE to PATTERN WRITE
Pattern generator	Select style with RHYTHM TRACK selector, Highlight PATTERN, Long-Press TAP
Save track to slot	Select RHYTHM TRACK, Long-press TAP
Load track from slot	Hold FUNCTION, Select RHYTHM TRACK

CLEAR Cheat Sheet

Each STEP button is a PATTERN

Clear pattern	FUNCTION + PATTERN
---------------	--------------------

APPENDIX B: TOOLS OVERVIEW

TOOLS	☐ 1 1	☐ 2 2	☐ 3 3	☐ 4 4	☐ 5 5	☐ 6 6	☐ 7 7	☐ 8 8	☐ 9 9	☐ 10 10	☐ 11 11	☐ 12 12	☐ 13 1	☐ 14 2	☐ 15 3	☐ 16 4	
The 24 instruments	AC	BD	SD	LT	MT	HT	RS	CP	CB	CY	OH	CH	I/F: A	I/F: B			
1 FLAM	FLAM	BD2	SD2	SD3	GRAIN	MA	RS2	CP2	CB2	CY2	CY3	CH2	I/F: A B				
	Select 24 instruments with 1-12 and I/F switch												Interval length/ number of steps 1 2 3 4				
2 RE-SLICE	8	4	2	1	1/4	1/3	1/2	1	2	3	4	5	1 2 3 4				
	RANDOM JUMP (quantization) —												BEAT REPEATER (steps) —				
3 ARP	Select 24 instruments with 1-12 and I/F switch												REST	HOLD ARP	LATCH		
4 MUTE	Select 24 instruments with 1-12 and I/F switch												1	2	3	4	
5 GRAINS	BD	SD	LT	MT	HT	RS	CP	CB	CY	OH	CH						
6 DYNAMICS & PROB	Select 24 instruments with 1-12 and I/F switch																
8 CP2	TRIG COUNT	TRIG TIME	TRIG VOLUME	TAIL VOLUME	REVERB VOLUME	REVERB PREDELAY	RANDOM	select with shift									
9 CB2	BASE PITCH	BASE SPREAD	SCALE SPREAD	use 1 2 3 4									select with shift				
10 DIR	FWD	BCK	RND	P-P													
11 SWING	AMOUNT —																
12 PAT TOOLS	Select 24 instruments with 1-12 and I/F switch												LEFT SHIFT	RIGHT	COPY	PASTE	

[illegible]

APPENDIX C: MIDI CC

Some parameters can also be controlled via MIDI CC.

The tables below show value ranges and the resulting parameter values. These changes are directly visible in the **TOOLS** and **CONFIG** TOOL menus. In order to save these settings, enter and exit the menus, or save manually. **TODO update**

CLOCK SETTINGS	CC	Value
CLOCK SOURCE	16	0 – 63: internal clock 64 – 127: MIDI clock
PATTERN SCALE (Scale of current pattern is changed when finished playing)	17	0 – 31: divider = 6 (16th notes) 32 – 63: divider = 3 (32th notes) 64 – 95: divider = 8 (16th triplets) 96 – 127: divider = 4 (32nd triplets)
FX SETTINGS	CC	Value
SWING AMOUNT	21	0 – 127
Play DIRECTION	84	0 – 31: forward 32 – 63: backward 64 – 95: random 96 – 127: ping-pong
Set FLAM MODE	23	0 – 15 flam disabled 16 – 31 flam mode 1 32 – 47 flam mode 2 48 – 63 flam mode 3 64 – 79 flam mode 4 80 – 95 flam mode 5 96 – 111 flam mode 6 112 – 127 custom flam

FLAM SETTINGS	CC	Value
Set FLAMMING instrument	32 – 47	0 – 63: No flam 64 – 127: Flam
ACcent	32	"
BaseDrum	33	"
Snare Drum	34	"
LowTom	35	"
HighTom	36	"
Cymbal	37	"

FLAM SETTINGS	CC	Value
OpenHihat	38	"
ClosedHihat	39	"
DEEP KICK	41	"
CLOSED SNARE / SNOISE / CLAP	42	"
MID BASS DRUM	43	"
BRUSH	44	"
FELT CYMBAL	45	"
CLOSED CYMBAL	46	"
CLICK HAT	47	"

MUTE	CC	Value
MUTE instrument	48 – 63	0 – 63: Unmuted 64 – 127: Muted
ACcent	48	"
BaseDrum	49	"
Snare Drum	50	"
LowTom	51	"
HighTom	52	"
Cymbal	53	"
OpenHihat	54	"
ClosedHihat	55	"
FLAM FX	56	"
DEEP KICK	57	"
CLOSED SNARE / SNOISE / CLAP	58	"
MID BASS DRUM	59	"
BRUSH	60	"
FELT CYMBAL	61	"
CLOSED CYMBAL	62	"
CLICK HAT	63	"
MUTE all instruments	85	>= 64: mute all instruments
UNMUTE all instruments	86	>= 64: unmute all instruments

RESLICER	CC	Value
Select repetition rate	89	0 – 127 → Rate 64 th – 5 steps
Trigger selected repetition	90	When >= 64
Select Random offset	87	0 – 127 → 1 step – 8 steps
Trigger selected random offset	88	When >= 64
RANDOMIZER	69 – 72	
Random offset by multiple of 8	69	0-63: disable, 64-127: enable
Random offset by multiple of 4	70	"
Random offset by multiple of 2	71	"
Random offset by multiple of 1	72	"
BEAT REPEAT rate	73 – 80	
Repeat at a rate of 64th note	73	"
Repeat at a rate of 32th triplets	74	"
Repeat at a rate of 32th note	75	"
Repeat at a rate of 16th note	76	"
Repeat 2 steps	77	"
Repeat 3 consecutive steps	78	"
Repeat 4 consecutive steps	79	"
Repeat 5 consecutive steps	80	"
AUTO RANDOMIZER	81	0 – 31: disable 32 – 63: level 1 64 – 95: level 2 96 – 127: level 3
AUTO BEAT REPEATER	82	0-31: disable 32 – 63: level 1 64 – 95: level 2 96 – 127: level 3

CLAP shaping	CC	Value
Number of short claps	64	0-7: no short pulse 8-15: 1 pulse 16-23: 2 pulses ... 15 pulses
Time interval between short claps	65	0-7: 1ms 8-15: 2 ms 16-23: 3 ms ... 16 ms
Short clap level	66	0 - 127
Timing variation	67	0 - 127
level of clap tail	68	0 - 127

Voice decay	CC	Value
OH decay	24	0 – 127 decay can only be made shorter
CY decay	25	0 – 127 decay can only be made shorter

Manual version 1.0

This work is licensed under CC BY-NC-SA 4.0. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-sa/4.0/>

No 'AI' was used in writing this document.

The most recent version of this manual can be found at tubbutec.de/TR-8oh8/

Thank you Tamo, Zora, Alex, Mitja, Tobì

All trademarks, service marks and company names are the property of their respective owners.

Disposal

Electronics can be repaired, please do not throw them away if defective.

But if you must:

This product is marked with the crossed-out wheeled bin symbol and must not be disposed of with household waste. Please take it to a designated collection point for recycling of electrical and electronic equipment. Proper disposal helps protect the environment and human health.



The packaging and manual are made of paper. Please dispose accordingly.



Questions? Suggestions? Complaints? Praise?

Please write to support@tubbutec.de

for other options, please visit: <https://tubbutec.de/contact/>



Product Safety Information

DIY Synthesizer Kit

Important Safety Information

This product is intended for experienced hobbyists aged **14 years and older** with basic knowledge of electronics. Improper assembly, handling, or usage may result in injury, damage, or malfunction. **Please read and follow all instructions carefully.**

General Warnings

1. **Electrical Hazards:**
 - The kit contains electronic components that may involve exposure to low-voltage electricity.
 - Ensure the power supply does not exceed the voltage and current ratings specified in the assembly guide.
 - Avoid touching TOOLS circuits or connections while powered on.
 - When installing in a synthesizer, make sure it is unplugged. Some synthesizers may expose high voltage when the case is open.
2. **Small Parts:**
 - Contains small parts that can pose a choking hazard. Keep out of reach of children under 3 years old.
3. **Heat and Fire Risk:**
 - Some components may generate heat during operation. Do not leave the synthesizer unattended when powered on.
 - Use only components provided or specified by the manufacturer to avoid overheating or fire hazards.
4. **Sharp Edges:**
 - Certain parts, such as leads or enclosures, may have sharp edges. Handle with care and use protective gloves if necessary.
5. **Soldering:**
 - Soldering iron temperatures can exceed **400°C**. Use caution to avoid burns. Always solder in a well-ventilated area to avoid inhalation of fumes.

Usage and Assembly

- **Intended Use:** This kit is designed for hobbyist use to build a functional synthesizer. It is not a toy.
- **Assembly Guidance:** Follow the included step-by-step instructions. If any part is unclear, consult the manufacturer or seek advice from experienced individuals.
- **Testing and Operation:** Test the synthesizer only after all connections are secure and verified against the schematic provided.

Environmental Safety

- Dispose of electronic components, packaging materials, and soldering byproducts responsibly and in accordance with local regulations.

Maintenance

- Periodically inspect the synthesizer for wear, loose connections, or exposed wiring.
- Disconnect the power supply before performing any maintenance or adjustments.

Liability Disclaimer

- The manufacturer is not liable for injuries, damages, or malfunctions resulting from improper assembly, modification, or use of this product outside its intended purpose.

Contact Information

If you have any questions or require assistance, contact our support team at:

Tubbutec GmbH, Storkowerstr. 115A
10407 Berlin
Germany
support@tubbutec.de