
LEVEL1
LEVEL2
LEVEL3
LEVEL4
LEVEL5
LEVEL6
LEVEL7
DRUMS
REC
DATA
PITCH
DECAY
LOOP POINT
CUTOFF
RESONANCE
DRIVE
PAN
VOLUME
LAST STEP
SHUFFLE
MUTE
PATT
KIT
SAMPLE
START
END
REVERSE
LOOP
ACCENT
RATCHET
ODDS/PROB
BAR1
BAR2
BAR3
BAR4
SCALE
DIRECT
SOLO
RELOAD
uTIME
BANKS
3
4
5
6
7
8
9
10
11
12
13
14
15
16
DRUMS

# Learn.
# Produce.
# Perform.

**Learn. Produce. Perform.** This is the philosophy of the Bullfrog series – a collaboration between Erica Synths and Richie Hawtin. The Bullfrog Drums is a significant addition to this series, since it focuses on rhythm – a key part of any style of music and the development of this machine involved Richie – an expert of musical rhythm.

The Bullfrog Drums is a versatile instrument – a drum machine, sampler, CV/gate sequencer – all optimized for a learning path in drum programming, sampling techniques, working with samples and integrating into various performance setups. Because it has sample-based voices, this instrument is not limited to percussion sounds – samples can made of be any sound from an abstract noise, a chord stab to drones and beyond. The Bullfrog Drums has a hands-on interface built into a signature Erica Synths aluminium enclosure and will feel intuitive to use in any setup, whether in the studio or on stage.

# Thank you for purchasing the Erica Synths Bullfrog Drums!

## features

- 7 sample-based drum voices
- 7 banks of 32 factory samples by Richie Hawtin and Erica Synths team
- Up to 16 banks for user samples
- 64 MB total sample memory
- Line input for sampling
- Built-in microphone for live sampling
- Built-in speaker
- 7 parameters for sample sound design
- Individual level controls for each voice
- Parameter locks and automations of each parameter
- CV/Gate sequencer for synthesizer control (1V/Oct gate)
- Memory of 4 banks with 16 patterns each
- Memory of 4 banks with 16 kits each
- Memory backup via USB-C
- Versatile, hands-on X0X-style sequencer
- Up to 64 step sequences
- MIDI IN and MIDI OUT
- Stereo output
- 3.5mm headphones output

## what's included

- Bullfrog Drums
- Universal 12VDC wall wart adapter
- User manual

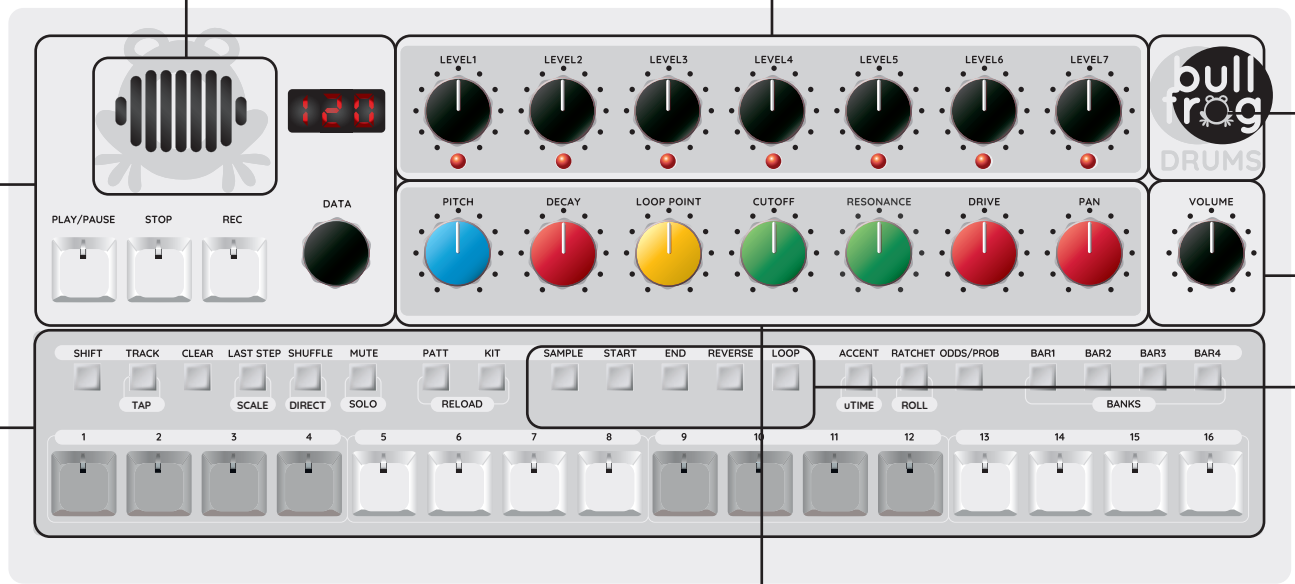
# the interface

The user interface of the Bullfrog Drums consists of 4 main parts: the voice controls, the tempo and main controls, sampling and sample management controls and the step sequencer.

Built in speaker allows for monitoring sounds straight away. The speaker is automatically disconnected once headphones are connected or once the main outputs are connected to the mixer. You can also disconnect the speaker in the configuration settings

The level control section features 7 individual level controls for each track. The LEDs below the LEVEL controls indicate drum levels before level controls and the incoming signal level during sampling

The tempo and main controls section consists of the master tempo control and the main performance controls. The alphanumeric display indicates tempo and other performance and configuration-related information




The step sequencer allows for hands-on, up to 64-step pattern programming both in step or tap modes, as well as performance features like drum mutes, rolls, etc. This section also includes pattern and kit memory

The built-in microphone can be used for live sampling sounds from your surroundings and during field recordings

This is master volume control

The sampling section allows for recording and managing samples to prepare them for use in the voices on the Bullfrog Drums

The sound parameter section features 7 controls for nuanced control of the sample – pitch, decay, loop point, DJ style lowpass/highpass filter cutoff and resonance, overdrive and panning

# connections

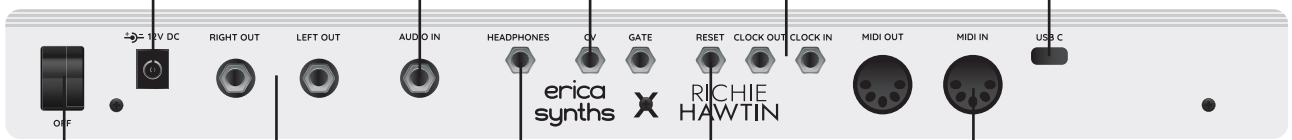
This is the balanced mono input for user sample recording

Clock In/Out connectors are for analogue sync with external gear. PPQ is configurable in the settings

Connect the external power supply here! Use only the PSU supplied with the unit, otherwise you risk permanent damage to the synth

The CV outputs 1V/Oct control voltages and the Gate outputs +5V gates for controlling synthesizers or modular systems.

The USB-C port is for MIDI control, user sample upload and download, pattern and kit memory backup and firmware updates




Flip the switch to turn the Bullfrog Drums on

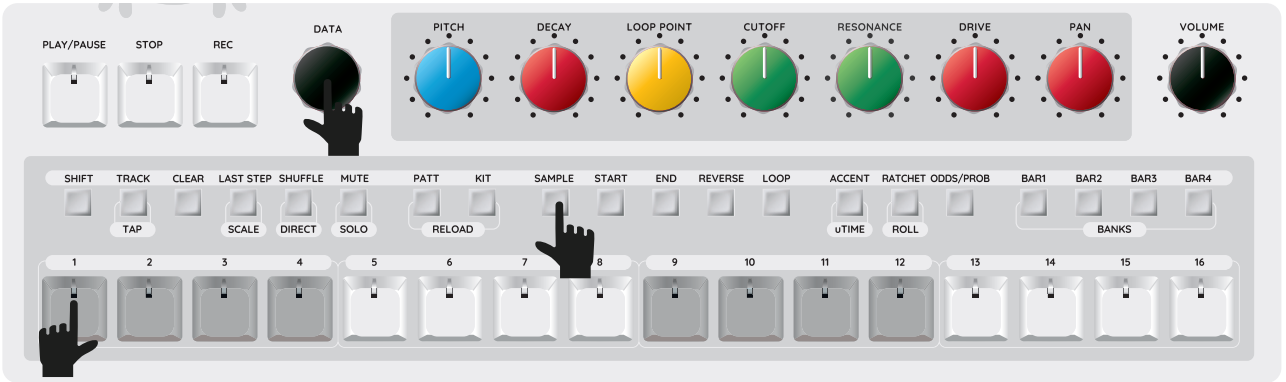
Use the 3.5 mm stereo headphones output for monitoring

The DIN5 MIDI in receives trigger note messages, MIDI CC messages for parameter control and MIDI clock. Please refer to the MIDI implementation chart in the manual. MIDI Out outputs trigger, parameter lock MIDI CC messages and a MIDI clock messages

The master output provides a balanced, line-level stereo signal, you can pan each drum voice individually in a stereo field

Sending a trigger signal to the reset input resets all tracks to the first step

# sample memory structure and sample management



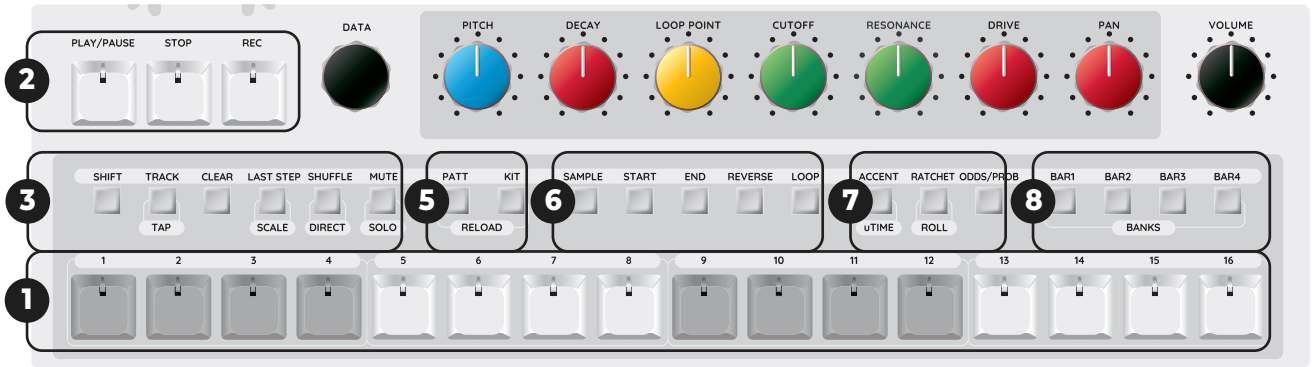

On the Bullfrog Drums, samples are stored in 16 folders, where up to 15 folders (A-Q) are for up to 64 prepared samples (numbered from 1 to 64) and the folder R folder is for up to 64 samples recorded live via the audio input or microphone. In order to access the sample folders, push & hold the SAMPLE button and the LEDs on the stap keys will go on. Hit one of these keys to access the relevant folder; the display will indicate the first sample in the bank, for example, if you push the first step button, the display will indicate A01, which means that you have accessed the first sample in folder A. Now, you can rotate the DATA encoder and browse through the samples. As you advance to a new sample it is played back instantly. You can double-check the sound of the sample by pressing the SAMPLE button. If you just promptly press the SAMPLE button you also can accsess all the samples, holding the SAMPLE just give you quick accsess to to the folders.

The Bullfrog Drums comes with 32 carefully selected factory samples by Richie Hawtin and Erica Synths team in folders A-G and you can add your own samples to each folder and also completely replace the contents of the folders. See USB management instructions on page 21 of this user manual. The factory samples are arranged in folders so that folder A contains Kick Drum samples, folder B - Snare Drum samples, folder C – Toms and Low percussion samples, folder D – Clap and Noisy percussion samples, folder E – Various sounds, folder F – Hi-Hats, folder G – Cymbals.
User samples can be added in folders with the factory samples, as well as in other folders H-O (15 folders in total) and the last letter is R (BANK 16) is saved for recorded samples.
Maximum size for one sample is 512kB which equals to about 5 seconds of play time @ 48Khz. If you want to use longer samples you can import samples at lower sampling rate (like 22kHz) and that will double the sample time.

As you are building the drum PATTERN, you can assign any sample to any voice of the drum machine.

# the sequencer

The sequencer of the Bullfrog Drums is designed to provide maximum hands-on flexibility for studio work and live performances.




1. The main programming pushbuttons are found on the bottom row – they are called STEP KEYS. These are cherry keys, similar to the ones found on some classical drum machines. They are used for step or tap programming. The keys on steps 1-7 represent each percussion voice and each voice can also be triggered manually. By pushing the step key 8, you access the CV/Gate sequencer programming interface.

2. These three keys are for starting and stopping sequences and saving patterns and kits. When you hit START, the sequencer starts running and if you press it a second time, the sequence is PAUSED on the current step. To STOP the sequence and RESET it to the first step, hit the STOP button. The REC button is used for saving patterns and kits, as well as initiating sample recording.

3. There are 6 function buttons representing the most important functions for programming the drum machine and performance features. The SHIFT button allows access to the secondary functions of some buttons. The secondary functions are marked below pushbuttons.

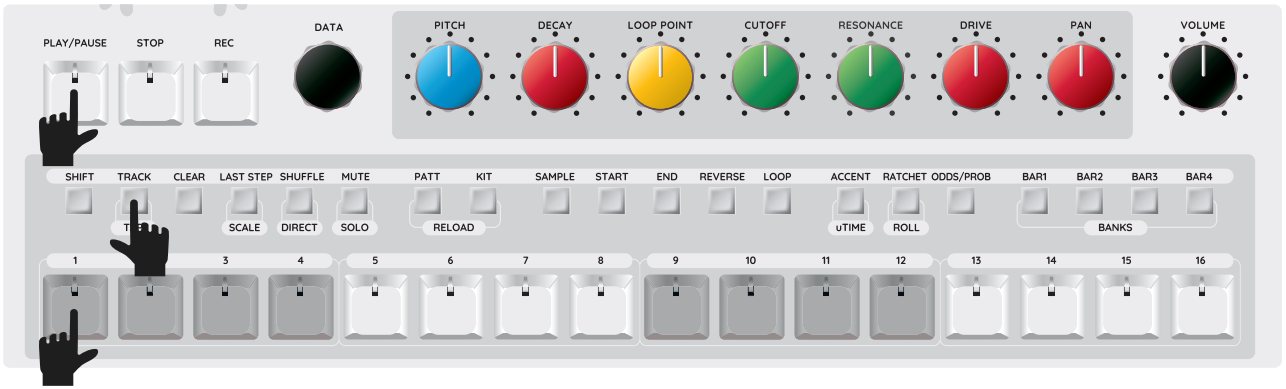
4. By default, the alphanumeric display indicates BPM, but other information, such as sample selection and configuration settings are also displayed on it. The DATA encoder next to it adjusts the BPM and other functions described further on in this manual.

5. These are PATTERN and KIT selection buttons.

6. These are pushbuttons for SAMPLE manipulation.

7. These pushbuttons are for per-step functions that expand the expressive programming of drum patterns.

8. These are the BAR and BANK selection pushbuttons. Each pattern can be up to 64 steps long and it is divided into 4 bars of 16 steps each.

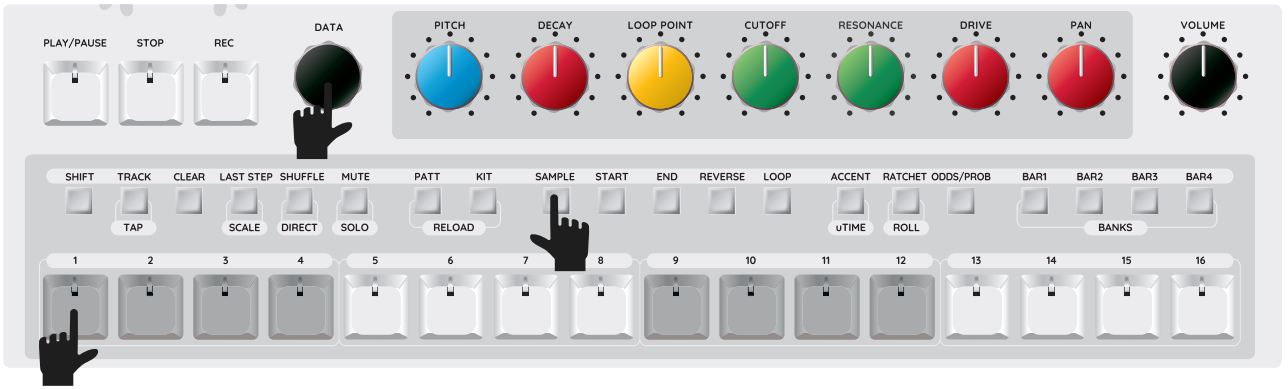



Let’s start the sequence and explore the Bullfrog Drums as we go! As you turn the drum machine on, it boots into a default state. The alphanumeric display indicates 120 BPM, the DATA encoder adjusts BPM (Beats Per Minute – number of quarter notes played in 60 seconds), the sequencer is in step programming mode, the pattern length on all tracks is 16 steps and the scale is 4/4. Once you power-cycle the drum machine, it will continue from the last state you left it in - it will initialize with the last pattern you were programming.

Hit the PLAY/PAUSE  button and the sequencer starts running. Now you need to select which TRACK (drum voice) you want to program. Push and hold the TRACK button and hit one of step keys representing a TRACK (voice), for example, step key 1. Now you can enter triggers for the voice 1 simply by hitting the step keys.
To advance to the next TRACK (voice), push and hold the TRACK button and hit another step key representing the TRACK you want to program and enter drum triggers for this track.
This way you can quickly build a pattern.

You will notice that the Bullfrog Drums will not make any sound, even triggers are entered, because by now there are no samples assigned to the tracks, therefore, let’s do a deep dive into sample selection, programming, saving patterns, adding dynamics to the pattern and other features of the instrument!

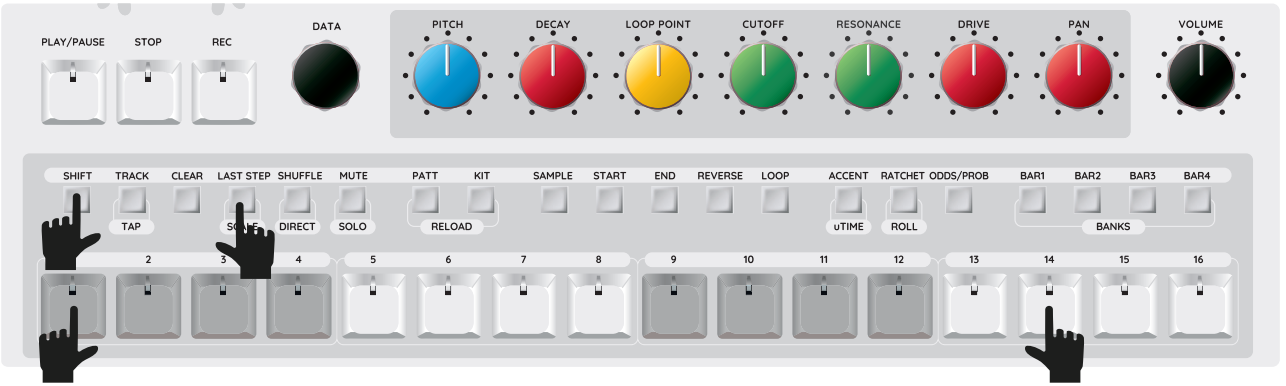
# the sequencer / sample selection




As mentioned above, you can assign any SAMPLE from the sample memory to any voice (TRACK) on the Bullfrog Drums.
Samples are assigned track-by-track. Let's start with TRACK 1, where we have already programmed drum triggers. As the sequencer is running, push the SAMPLE button and use the step keys to select the folder. If you are programming the kick drum, hit the first step key to select folder A. A01 will appear on the display. Now, rotate the DATA encoder to select the sample; a new sample will be played back instantly on the next drum trigger. The display will indicate the number of the selected sample.
Now, select another TRACK (TRACK + step key 1-7) and push the SAMPLE button, select the folder and rotate the encoder to select the sample from the folder.
When assigning samples to tracks, you can assign ANY sample to ANY track, meaning that you can build a seven-track sequence entirely from kick drum samples from folder A or design a sequence of your abstract field recording samples from folder F.

You can also trigger samples while the sequencer is not running – just push the SAMPLE key, select the folder, rotate the encoder to select the sample and push the SAMPLE button to inspect the sample.

# preparing the patterns – last step, scale and play direction




Before you start programming patterns, we recommend setting up the scene. Each TRACK of the Bullfrog Drums can have a different LENGTH, PLAY DIRECTION and SCALE (time division).

Start by selecting the TRACK. For example, if you want to program triggers for voice 1, push and hold the TRACK button and hit step key 1.

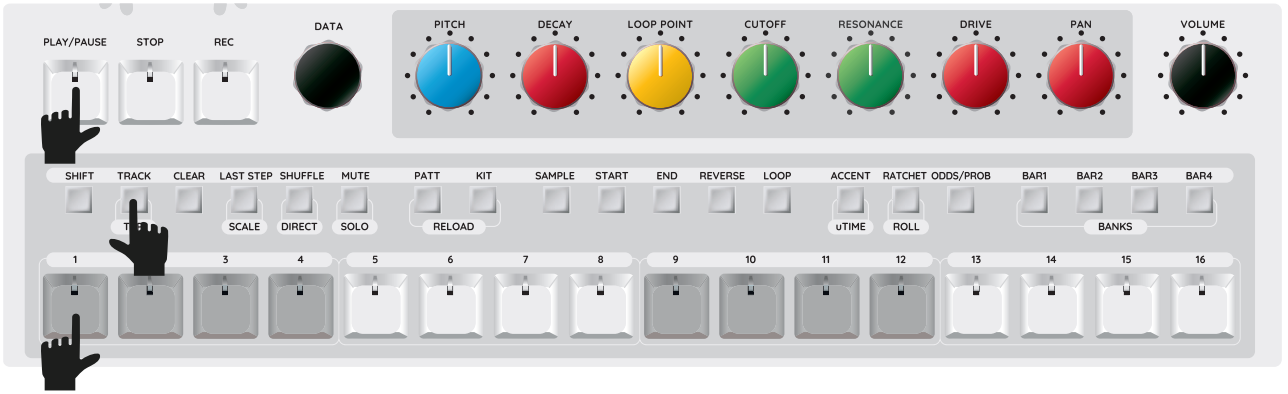
To set the TRACK LENGTH, push and hold the LAST STEP button and push the relevant step key to set the TRACK LENGTH. If you want to set a track length of 14 steps, push step key 14. If you wish to set a TRACK LENGTH longer than 16 steps, use the BAR buttons in the top-right corner to navigate through the four sets of 16 steps (BARS) and set the track length the same way as before – by pushing the relevant step key. Alternatively, you can push and hold the LAST button and rotate the encoder to set desired last step. While the TRACK is playing, the BAR buttons will blink to indicate the active BAR.

For more advanced setups, for example, designing an entire performance on the Bullfrog Drums and switching between patterns during the performance, you may want to set the MASTER LENGTH. To set the MASTER LENGTH, push and hold the LAST button and push the ENCODER. The alphanumeric display will indicate, for example M16, which means that the master length is 16 steps. Rotate the encoder to set a desired MASTER LENGTH. The maximum master length is 64 steps. If you set the MASTER LENGTH, all tracks, no matter how long they are, will loop until the master track is completed. For example, if you set the MASTER LENGTH to 64 steps, but the voice 1 track is 16 steps, the voice 1 track will be played 4 times until it advances to the next pattern. If the master length is 16 steps, but the voice 1 track is 64 steps, normally when playing a single pattern, the voice 1 track will loop through all 64 steps, but now as you switch to another pattern, the Bullfrog Drums will complete only 16 steps (master length) before the next pattern.

To set the TIME DIVISION, push and hold the SHIFT button and push the LAST STEP/DIVISION button. The button will light up and the time division settings will appear on the alphanumeric display. Rotate the encoder to set the desired time division. Available time divisions are: 1/8, ¼, ½, ¾, 1, 3/2, 2 and 4.

To set the PLAY DIRECTION, push and hold the SHIFT button and push the SHUFFLE/DIRECT button. The button will light up and the alphanumeric display will indicate the play direction. Now you can rotate the encoder to select the PLAY DIRECTION. The available directions are forward (FWD), backward (BWD, Ping-Pong (PP), Ping-Pong with repeat on the last step (PP2) and random (RND).

# programming the patterns




The Bullfrog Drums has two programming modes – STEP programming where you enter steps for voice triggering track-by-track and TAP mode where you tap in the triggers while the sequencer is running. The default mode is STEP mode.

In STEP mode, hit the START key and let the sequencer run, rotate the encoder to set the BPM and proceed to track-by-track programming.

Push and hold the TRACK button and hit one of the step keys representing a TRACK (voice), for example, voice 1. Now you can enter voice 1 triggers simply by hitting the step keys.

To advance to the next TRACK (voice), push and hold the TRACK button and hit another step key representing the TRACK you want to program. For example, push step key 7 representing voice 7 and use the step keys to enter triggers for voice 7, etc.
If you have set a TRACK LENGTH longer than 16 steps, use the BAR buttons to navigate through the four sets of 16 steps and enter triggers into the relevant BAR.

To use TAP programming, push and hold the SHIFT button and push the TAP (TRACK) button and it will light up. Now the sequencer is in TAP programming mode. Hit the START button to start the sequence (you may want to STEP program HiHats in advance as a tempo reference), and push the REC button to initiate TAP programming. Now, use the first 7 step keys to tap in drum triggers.

In case you want to CLEAR triggers in a certain track, push and hold the CLEAR button and push the relevant step key. For example, to remove all triggers from the voice 1 track, push and hold the CLEAR button and push step button 1.

If you want to alter/correct the track you have programmed in TAP mode, you can simply set it to STEP mode and add or remove steps one-by-one, as desired.

# programming the cv/gate track


The Bullfrog Drums has a built in CV/GATE sequencer to send note information to the Bullfrog synthesizer, modular system or any other instrument that accepts CV/GATE signals. The CV is calibrated for a very accurate 1V/Oct response in an 10 octave range and the GATE output gives +5V gate signals.

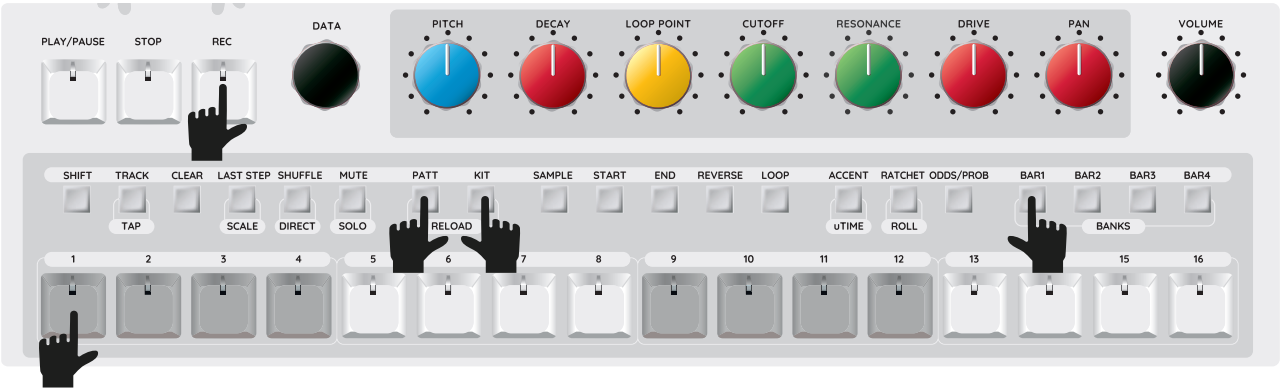
To program the CV/Gate track, push and hold the TRACK button and push STEP KEY 8. The display will indicate CV. Now hit the STEP KEYS to tap in active steps - steps that output gates and therefore trigger sounds on the synthesizer. By default, all active steps will output C0 (0V) and a 10% long gate.

To change the NOTE (CV) setting on the active steps, push and hold the relevant step key (the display will indicate current note) and rotate the ENCODER to select the desired note. As you rotate the encoder, the display will indicate notes and the selected note is played straight away. By holding the SHIFT button and rotating the encoder you can go between octaves.

To adjust the GATE length, push the ENCODER and the display will indicate GAT. Now, push and hold the relevant step key (the display will indicate the current gate length as a percentage) and rotate the ENCODER to set the desired gate length. The gate length changes in increments of 10% and a 100% gate length means that it will merge with the next step.

You can also add SLIDES to the steps. To do so, while in CV/GATE programming mode, push the ACCENT button to enable the SLIDE mode. Now press the step keys there you where you want to have slides, and the LEDs on the step keys will become half dim. To exit SLIDE mode press ACCENT button again.

# memory structure, saving, recalling and deleting patterns and kits




The Bullfrog Drums has a memory of 4 BANKS with 16 PATTERNS and KITS each, it can be backed up to a computer via the USB port, refer to the CONFIGURATION SETTINGS for the backup procedure.

A PATTERN on the Bullfrog Drums represents information of drum triggers, CV/Gate information, parameter locks and automations.
A KIT on the Bullfrog Drums represents information of selected samples for all 7 voices, level settings for all 7 voices, as well as the positions of the 7 controls (pitch, decay, loop point, etc.) that contribute to the sound of each voice.

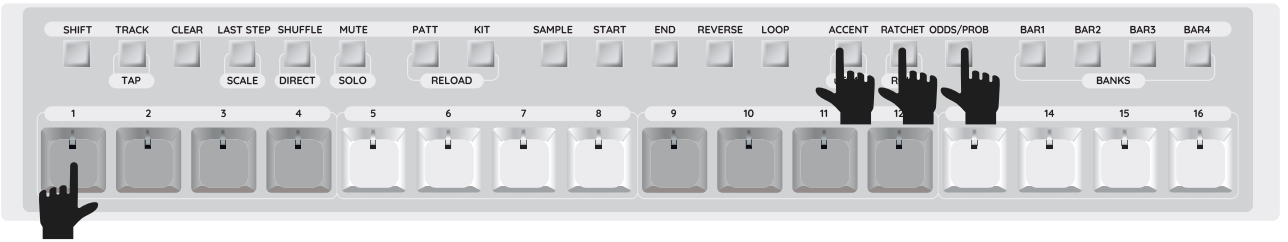
Before you start making a new PATTERN, push the PATTERN button, then select the BANK where the pattern will be saved – just push one of the 4 BANK (BAR) buttons - and push one of the step keys, representing PATTERNS. For example, you can select PATTERN 1 by pushing step key 1. Once you are happy with the pattern you have created, you can SAVE it by pushing the REC key. The pattern is saved into the current pattern slot. If you want to save a pattern in a DIFFERENT slot, push and hold REC key and push a STEP KEY representing a slot for saving a pattern. Now push the PATTERN SELECT button again to exit pattern select mode.
If you want to COPY the pattern in another slot, for example slot 2, you need to SAVE it into the relevant slot. To do so, push the PATTERN button, then push and hold the REC key and push the STEP 2 key. Now the pattern is copied into slot 2 and you can alter it to develop a performance. If you want to copy the pattern into another BANK, select another BANK and hit the step key representing the slot you wish to save the pattern in.

If you want to delete, in other words, CLEAR the pattern, push and hold the CLEAR button and push the step key representing the pattern you want to clear.

KITS have exactly the same memory structure and operation as PATTERNS. In order to save or recall a KIT, push the KIT button, then proceed by selecting the BANK and use the step keys to select the memory slot for the kit.

PATTERNS and KITS on the Bullfrog Drums can be INDEPENDENT or LINKED. If they are independent, changing the pattern will not change the kit; the selected kit will remain active until you change the kit. If they are linked, every pattern change will also result in the kit change that is linked to the pattern. You can link patterns and kits in the configuration settings as described on page 20 of this user manual.

# per-step features – accent, ratchet, probabilities and microtiming




In order to add some dynamics to your drum patterns, the Bullfrog Drums has several per-step features that let you spice up any static drum pattern.
The Bullfrog Drums has a configurable ACCENT, both in the global settings and per-track settings. By default, the drum machine has the GLOBAL ACCENT ON and in the configuration settings menu you can configure the step key response for the accent input (see the CONFIGURATION SETTINGS section on page 19). The LEDs in the step keys have two levels of brightness each – full (accent) and dimmed (no accent). The step keys in the global accent configuration can have two response options – ONE STEP (1) or TWO STEP (2). If the ONE STEP response is selected, when step triggers are programmed, all steps are accented, meaning that the first push of the step key enters an accented trigger and the second push of the same key removes the trigger. If TWO STEP response is selected, the step keys allow entering accented or non-accented steps, meaning that the first push of the step key enters an accented trigger, the second push removes the accent and the LED in the step key gets dimmed, and the third push of the key removes the trigger.

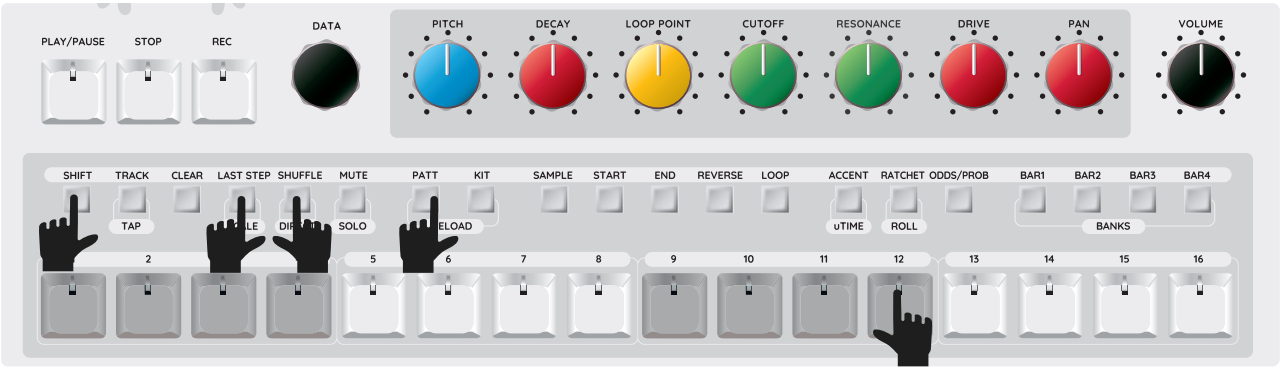
Furthermore, you can adjust the accents after the pattern is designed. To do so, push the ACCENT button and manipulate the accent settings with the step keys. If the accent mode is selected, all step keys are automatically set to the two-step response mode.
You can program per-step RATCHETS (trigger repeats on specific steps) on the Bullfrog Drums. Push the RATCHET button, push and hold the step key for which you want to program the ratchets and rotate the encoder to set the desired number of ratchets. Available ratchet count is: 1(no ratchet), 2, 3, 4, 5, 6, 7, 8.

Push and hold the SHIFT button and push RATCHET button to access ROLLS. Now, push and hold some of first 7 step keys, representing drum voices, to initiate rolls on respective drum voice or several voices. Rotate the ENCODER to set a ROLL RATE.
In the ROLL mode you can toggle the CONTROLL ALL function with the SHIFT key! While its on (SHIFT is lit) you can, for example, apply filter to all voices at the same time while doing the ROLL with the step keys, after you press the SHIFT again all "CONTROL ALL" adjustments will be dropped.

In order to make your drum patterns less predictable and repetitive, you can set PROBABILITIES and ODDS of triggers on selected steps. To program the chance of a step playing, push the ODDS/PROB button, push and hold the relevant step key and rotate the encoder to set the desired probability. If you rotate the encoder counterclockwise 1/8, 1/7, 1/6, 1/5, ¼, 1/3, ½, 2/3, ¾, 7/8 ODDS are available, clockwise – 10%, 25%, 50%, 75% and 90%.

Last but not least, per-step MICROTIMING is available, which means that voice triggers are moved up to 50% up or down off the trigger grid. To program microtiming, push and hold the SHIFT button and push the uTIME (ACCENT) button. The LED on the uTIME button will be dimmed. Now, push and hold the relevant step key and rotate the encoder to set the desired timing offset. By rotating the encoder counterclockwise, the trigger is moved backwards – it will trigger before the regular trigger in the grid, by rotating it clockwise, the trigger is moved forward and it will trigger a bit after the regular trigger in the grid.

# during performance




The Bullfrog Drums offers several features that make the instrument particularly useful in live performances.

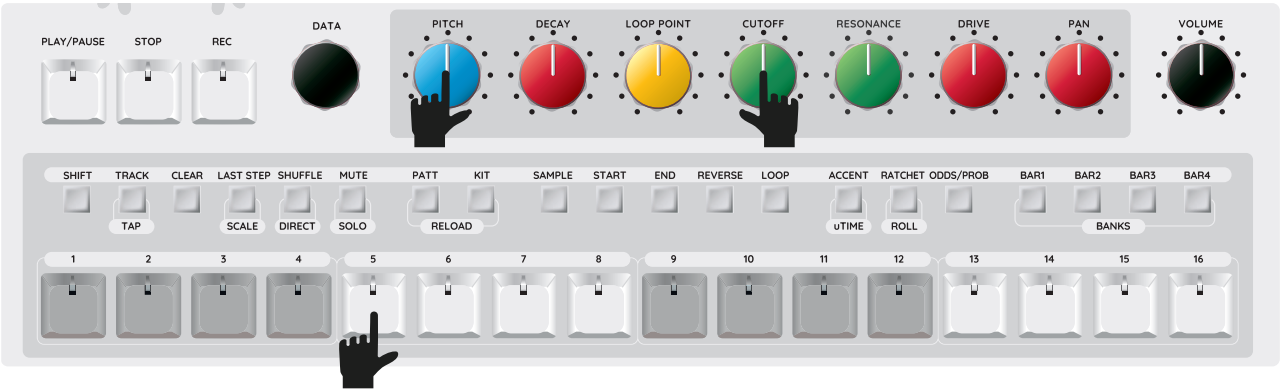
If you alter the drum PATTERN or KIT during a performance, you can instantly RELOAD the original state. To do so, push and hold the SHIFT button and push RELOAD (PATTERN) or RELOAD (KIT) button and the currently running pattern or kit will be reloaded in its original state.

You can MUTE one or multiple tracks. Push the MUTE button and it will light half dimmed up to indicate that the Bullfrog Drums are in MUTE control mode. Here you will see that all active drum triggers – LEDs in the step keys representing drum voices - will blink as they are triggered. You can push the step keys that represent drum tracks (voices) to mute/unmute them. LEDs on the step keys of the muted voices will turn ON. This way you can easily see the active and muted voices. Sometimes you may not have any signal from a voice, even when the level control is at the maximum setting – in such situations it is most likely that the voice is simply muted. You can easily inspect the mute status by pushing the MUTE button. If you mute the CV/Gate track (track 8), the gate is muted, meaning that external instruments will not receive gate information and notes will not trigger. By default the CV output will continue outputing per step CVs, but you can configure the CV output to output constant 0V (C0) while the CV/Gate track is muted. See configuration setting on the page 20 of the manual.

You can SOLO one or several tracks at time. Push and hold the SHIFT button and push the MUTE/SOLO button - it will become fully lit. You can now select the track you wish to SOLO by pushing the relevant STEP key.

You can apply SHUFFLE to one or several tracks. SHUFFLE will automatically apply drum trigger “floating” around their position on the grid and add a more human feel to the drum tracks. To do so, select the track you wish to shuffle, for example, voice 7 with HiHat samples (push and hold the TRACK SELECT and push step key 7), then push and hold the SHUFFLE button and use the step keys to set the desired shuffle amount. All step keys before the selected one will be lit to indicate the shuffle amount. If only step key 1 is lit, there is no shuffle; if you hit key 8, keys 1-8 will be lit and this means that 50% shuffle is applied. The more keys are lit, the higher the shuffle amount.

# parameter locks and automations




Two more features make the Bullfrog Drums sound more dynamic and diverse – PARAMETER LOCKS and AUTOMATIONS.

PARAMETER LOCKS are per-step settings of sound controls – voice levels and sound parameters (pitch, decay, etc.). This means that every step in the pattern can have, for example, a different pitch value for the sample. While the sequencer is running, push and hold the step key for which you would like to lock a parameter (for example, step key 5) and adjust a position of the control (for example PITCH). The sequencer will automatically record this new position and the level of the voice 2 will be automatically adjusted when the sequencer reaches this step. In same way you can adjust the position of any of the 14 sound-related controls. Please note that parameter locks do not apply to the LEVEL controls.

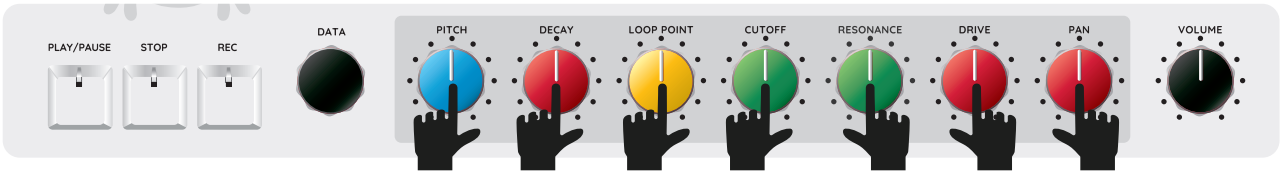
AUTOMATIONS are recorded movements of the voice controls. The recording of the voice controls is synchronized to the sequencer steps. To record the automation, push and hold the REC key. Now, rotate any voice sound parameter control and the motion will be automatically recorded and played back. Because the automation recording is tied to the sequencer grid, longer automations may start overriding themselves, as the sequencer resets to STEP 1 while the automation is being recorded. Parameter locks and automations can be configured in two modes - please, refer to page 21 of this user manual.

In the step programming mode you can COPY and PASTE steps with all parameter lock information. To COPY the step push and hold the relevant step key and push the REC key. To PASTE the step push and hold a destination step key, hold the SHIFT button and push the REC key.

Parameter locks and automation are SAVED with the PATTERN and the saving procedure is identical to pattern saving – push the PATTERN button, select the pattern slot and push the REC key.

To CLEAR unsaved parameter locks and automations, push and hold the SHIFT button and push the CLEAR button. All unsaved parameter locks and automations will be cleared. You can CLEAR automations of the specific control (for example PITCH only) by pushing and holding the CLEAR button and rotating the relevant control (PITCH).

# working with samples




The Bullfrog Drums is a sample player and sampler – you can select previously prepared samples from the sample memory as described above, or you can sample sounds live using the built-in microphone or the external audio input.

Let's start with pre-recorded samples! Once a sample is loaded into the voice, you have 7 controls for detailed control over the sound of the sample:

PITCH - the sample playback speed. In the 12 o'clock position, the sample is played back at the original speed, turning the knob clockwise will increase pitch by up to +24 semitones, turning it counterclockwise will reduce it by up to -24 semitones.

DECAY – if the decay knob is set all the way clockwise, the sample will be played back in its original amplitude without alteration – no envelope is applied. As you turn the knob counter-clockwise a decay envelope with the longest decay time of 6'' is applied and sample gradually fades out. Decay envelope is particularly useful when playing looping samples.

CUTOFF – adjusts the timbre of the sound. In the 12 o'clock position, the filter is fully open, and the knob has no effect on the sound. Turning the knob clockwise will apply HIGHPASS filtering, turning it counter-clockwise will apply LOWPASS filtering.

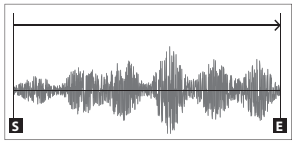
RESONANCE – boosts frequencies at the cutoff point and adds some overtones. No resonance is applied if this knob is fully counter-clockwise.

DRIVE – overdrives the audio signal. No drive is applied if it is turned fully counter-clockwise.

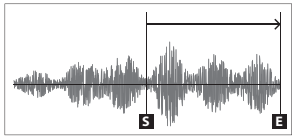
PAN – pans the sample left or right in the stereo field. In the 12 o'clock position, the sound is panned to the center of the stereo field.

LOOP POINT – by pushing the LOOP button, you can initiate sample looping. The LOOP POINT control defines start of the loop - with the loop point control all way counterclockwise the sample will loop in its entire length, when you rotate the loop point knob clockwise the looping point moves from the start of the sample to its end thus shortening the sample. Please note, that by default when the sample is triggered, it's initially played in its entire length, and then it jumps to the loop point and keeps looping until the sound fades out depending on the decay setting.

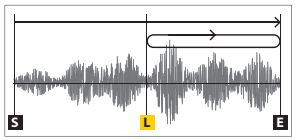
## SAMPLE PLAYBACK SCENARIOUS - NORMAL PLAYBACK



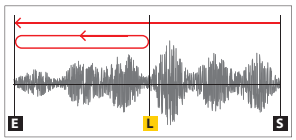

Normally sample is played back full length from the START to END



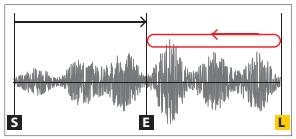

If START and END points are moved, the sample is played back from the START POINT to the END POINT




If the LOOP POINT is introduced, the sample playback starts from the START POINT, plays to the END POINT and then keeps looping between the LOOP POINT and the END point



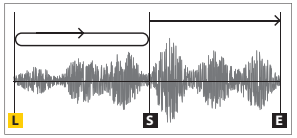

If the START POINT by some reason is set to the right from the END POINT, the sample plays back in REVERSE, and looping occurs in REVERSE between the LOOP POINT and the END POINT




If the LOOP POINT is outside the START – END segment to the right, after initial playback between the START POINT and END POINT, looping occurs in REVERSE between the LOOP POINT and the END POINT

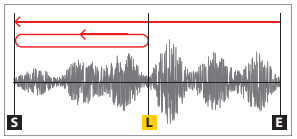
Once the sample is selected, you can adjust its START point. To do so push the START button (it will lit) and rotate the DATA encoder to move the start point to any desired position. A display will give a visual reference of the start point position and the new position is saved with the KIT. When building a pattern, parameter locks can be applied to the start point so that each step in the sequence has different start point of the sample. To apply start point parameter locks push the START button, push and hold relevant step key (you can push several keys at once) and rotate the DATA encoder to adjust the start point of the sample. Parameter locks for the start point are saved with the PATTERN.

Same goes with the END POINT of the sample. Push the END button and rotate the DATA encoder to adjust the end point of the sample. A display will give a visual reference of the end point position.

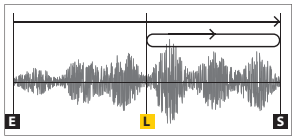



If the LOOP POINT is outside the START – END segment to the left, after initial playback between the START POINT and the END POINT, looping occurs in between the LOOP POINT and the START POINT

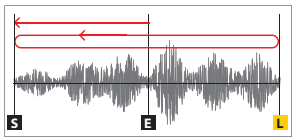
## SAMPLE PLAYBACK SCENARIOUS - REVERSE PLAYBACK



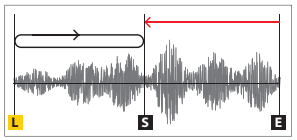

If the LOOP point is introduced in REVERSE mode, the sample playback starts from the END POINT, plays to the START POINT and then keeps looping between the LOOP POINT and the START POINT




If the START POINT by some reason is set to the right from the END POINT, the sample plays back NORMALLY, and looping occurs between the LOOP POINT and the START POINT




If the LOOP POINT is outside the START – END segment to the right, after initial playback between the END POINT and the START POINT, looping occurs in REVERSE between the LOOP POINT and the START POINT




If the LOOP POINT is outside the START – END segment to the left, after initial REVERSE playback between the END POINT and the START POINT, looping occurs in NORMAL mode between the LOOP POINT and the START POINT

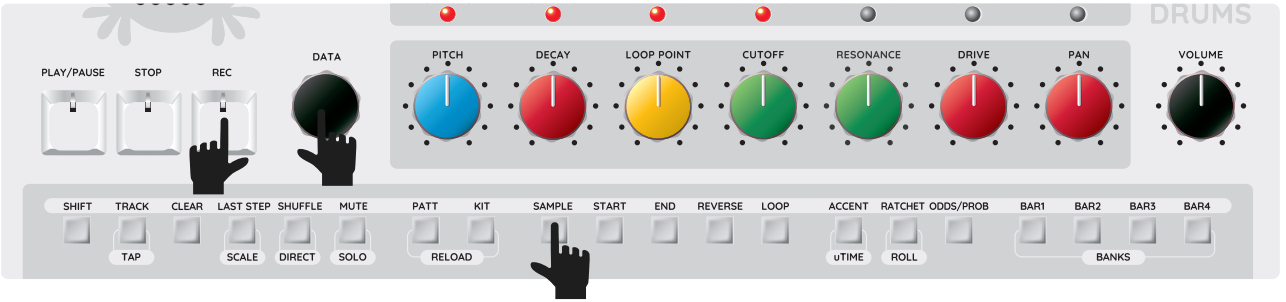
Push the REVERSE button and it will reverse playback of the sample. When sample is reversed, you can manipulate it in the same way as regular sample.

Once you are happy with the alterations to the samples, you can save all settings as a KIT.

When the sample is first loaded, positions of the control knobs do not have any effect, only when you rotate them through their default positions the effect starts taking place. See POT CATCH CONFIGURATION on the page 20. Normally parameter alterations ar applied to the selected voice only, but you can alter sound parameters on ALL VOICES SIMULTANEOUSY - push and hold the SHIFT button and rotate, for example, the PITCH knob. All seven voices will change pitch at once.

# sampling

As mentioned above, on the Bullfrog Drums you can record samples live. Sampling is performed when the sequencer is stopped.




Push and hold the SAMPLE button and push the REC key. Sampling options will appear on the display, and now you can rotate the ENCODER to browse through the options.

The first option is the source selection SRC. Push the DATA encoder and rotate it to select between MIC (built-in microphone) or LIN (line level audio input).

LVL adjusts sapling source audio level. An incoming audio level is indicated by 7 LEDs below level controls. Push the DATA encoder and rotate it to adjust the maximum level. Make sure, the level does not exceed maximum threshold – the last LED has to lit ocassionally.

MON sets the monitor ON/OFF. Set it to ON if you want to hear the incoming audio signal on the output. BAR 4 button is a shortcut for a monitor ON/OFF while in the SAMPLING mode.

THR setting adjusts the audio level threshold that will automatically trigger for sampling. Push the DATA encoder and rotate it to adjust the threshold – threshold is indicated by brighter, constantly glowing level LED.

ASN (assign) ON/OFF sets the sample auto assign. If set to ON the sample will be automatically assigned to the track which was open when you entered the sample mode.

TIM setting adjusts maximum recording time from 0.2s to 5s.

Once happy with the settings, push the REC button and sample recording will start as soon the audio signal reaches previously defined threshold. If you wish to record a sample instatntly, set the lowest threshold. A sample recording progess is indicated by 16 LEDs on the step keys. Maximum sampling time is up to 5", and recording will stop automatically as soon the 16th step is reached. You can monitor incoming signal on the AUDIO IN by pushing BAR4 button. If you wish to stop recording earlier push the REC or STOP key.

Now you can examine sample by pushing the first step key – once the key is pressed the sample will be played back in full length as it was recorded. Now, if neccessary, you can trim the sample – adjust start and end point of it. Push the START button (the LED will lit) and rotate the DATA encoder to adjust the start point of the sample. While adjusting the start point you can inspect the sample by pushing the PLAY key.

Push the END button (the LED will lit) and rotate the DATA encoder to adjust the end point of the sample. While adjusting the end point of the sample you can inspect the sample by pushing the PLAY key.

As described above you can also trim the sample per step while in the START and END screens. You can also save multiple samples from one recording with different START and END trims while in the SAMPLE screen.

Once happy with the sample, push the ENCODER key to save it. The sample is automatically stored in the last position the sample memory slot R. You can DELETE recorded samples. Once in R folder rotate the ENCODER to select a sample, you want to delete, push and hold the CLEAR button and push the ENCODER - a confirmation message N/Y will appear in the display. Now, rotate the encoder to select Y and push it to delete the sample.

# configuration settings

To enter the configuration settings push and hold the SHIFT button and push step key 16 (CONFIG). Now, you can navigate through configuration menu sections by rotating the DATA encoder and select the settings submenu by pushing the DATA encoder.



**1. CLOCK SOURCE SETTINGS**

The first step key provides access to the CLOCK SOURCE settings. Push the encoder to enter the menu and rotate it to select among INT – internal clock, MID – MIDI clock and EXT – external analog clock, connected to the CLOCK IN socket.
Push the encoder to confirm selection.


**2. MIDI PORT SETTINGS**

The second step key provides access to the MIDI PORT selection. Push the encoder to enter the menu and rotate it to select between DIN5 and USB. Push the encoder to confirm selection.

# configuration settings


**3. MIDI OUT SETTINGS**

The third step key provides access to the MIDI output configuration. Push the encoder to enter the menu and rotate it to select among OFF – no MIDI messages are transmitted, THR – MIDI output is configured to MIDI thru mode, and 1 – 16 representing MIDI channels.
The last setting - MLT - activates MIDI MULTI CHANNEL mode. If this setting is selected, it automatically applies to the MIDI INPUT configuration. Push the encoder to confirm selection.


**4. MIDI INPUT SETTINGS**

The fourth step key provides access to the MIDI INPUT settings. Push the encoder to enter the menu and rotate it to select among OFF – no MIDI messages are received, OMNI – the synth receives MIDI messages on all channels, and 1 – 16 representing MIDI channels.
The last setting - MLT - activates MIDI MULTI CHANNEL mode. If this setting is selected, it automatically applies to the MIDI OUTPUT configuration. If you switch back to single channel mode, the MIDI output is automatically set on the MIDI channel 1. Push the encoder to confirm selection.


**5. MIDI CLOCK OUTPUT SETTINGS**

The fifth step key provides access to the MIDI CLOCK OUTPUT settings. Push the encoder to enter the menu and rotate it to select among OFF – no MIDI clock messages are transmitted, ON – MIDI clock messages are transmitted when the sequencer is playing and CON – MIDI clock messages are transmitted continuously.
Push the encoder to confirm selection.


**6. CLOCK IN SETTINGS**

The sixth step key provides access to the CLOCK INPUT PPQ settings. Push the encoder to enter the menu and rotate it to select 1, 2, 4 or 24 PPQ. Push the encoder to confirm selection.


**7. CLOCK OUT SETTINGS**

The seventh step key provides access to the CLOCK OUTPUT PPQ settings. Push the encoder to enter the menu and rotate it to select 1, 2, 4 or 24 PPQ. Push the encoder to confirm selection.


**8. GLOBAL ACCENT SETTINGS**

The eighth step key provides access to the GLOBAL ACCENT selection. Push the encoder to enter the menu and rotate it to select between 1 or 2 step response. See the manual above for ACCENT implementation. Push the encoder to confirm selection. This setting adds that all accents will be enabled on all tracks by default!


**9. PATTERN LOADING SETTINGS**

The ninth step key provides access to the LAST PATTERN LOAD configuration. Push the encoder to enter the menu and rotate it to select between ON and OFF. If ON is selected, upon next power up of the HexDrums, the last active pattern is loaded automatically. Otherwise, the drum machine powers up with no pattern loaded. Push the encoder to confirm selection.


**10. PATTERNS AND KIT LINKING**

With KIT LINK ON, an active kit is saved together with the pattern. You can select a different kit after the pattern is loaded. With KIT LINK OFF, you can separately select PATTERNS and KITS.


**11. INVERTED ODDS SETTINGS**

The eleventh step key provides access to the INVERTED ODDS settings. Push the encoder to enter the menu and rotate it to select between ON and OFF. With inverse odds enabled, the configured per-step ODDS1 will play the step on the last pass rather than the first (the opposite for ODDS2), for example, if a step has 1/3 ODDS1 enabled, by default, the step will be played in the first pass and omitted in the following two. With inverse odds ON, the step will be omitted in the first two passes and played in the third.


**12. BAR FOLLOW**

If some tracks are longer that 16 steps, you can activate the Bar Follow option, which will indicate currently active BAR by sequentially lighting up BAR select pushbuttons. Push the encoder to enter the Bar Follow menu and rotate it to select between ON and OFF.


**13. BPM LOAD**

You may want to load a pattern with it's initially intended BPM without need to adjust it manually. If BPM Load is activated, the original BPM is saved and loaded as soon you switch to a new pattern. Push the encoder to enter the BPL menu and rotate it to select between ON and OFF settings.


**14. CV OUTPUT MUTING**

Here you can configure CV output behavior, in case the CV track is muted. You can select one of 3 options: STAY – the CV output follows CVs of the sequence, while the sequencer is running, FREEZE – the CV is halted on the note that was the last used, when the CV track is muted and DROP – the CV output drops to 0V.


**15. POT CATCH**

Each drum kit has specific potentiometer positions and when you change the kit, in most cases, these positions will be different. In the POT CATCH ON setting, you need to rotate the relevant potentiometer through the previously saved position before it starts altering the parameter, thus providing a continuous change in sound. With POT CATCH set to OFF, the potentiometer, once rotated, will have an immediate effect on the sound. This provides more hands-on control over the sample parameters, but it may alter the sound radically. Push the encoder to enter the PCT menu and rotate it to select between ON and OFF settings.

# configuration settings


**16. PARAMETER LOCK AND AUTOMATION CONFIGURATION**

Normally automations and parameter locks apply to active triggers in a specific voice - if you record an automation, each change of the setting is registered at next active trigger. But with longer samples (samples that play or decay for multiple steps, while the sequencer is running) you may want to hear changes on all steps while sample is playing.
With a PLK setting OFF automations are recoded normally - on active triggers only. With a PLK setting ALL automations are recorded played back on all steps of the sequence.


**17. PITCH QUANTIZATION**

Choose between continuous sample pitch adjustment or chromatic. This also applies to automation and parameter locks. Chromatic pitch will usually sound more musical!


**18. CALIBRATION**

The Bullfrog Drums come calibrated from the factory, but you may want to adjust calibration specifically for your synthesizer or modular system. There are two ways to perform calibration: 1) using a digital voltmeter (at least 0.01V accuracy, but better 0.001V accuracy), 2) using a synthesizer and chromatic tuner. If you use the voltmeter, plug a patchcable in the CV OUT socket and connect the voltmeter to a tip and sleeve. Now push the encoder to enter the CALIBRATION mode. Once in the calibration mode each STEP KEY from 1 to 10 represent 1V reference voltage - pushing the first key CV out will be 0v, the second 1V, the third 2V, etc. To perform calibration, push the SECOND step key and see the voltmeter reading. It has to be close to 1V. Now rotate the ENCODER to get exactly 1V reading. Then push the SIXTH key and rotate the encoder to get exactly 5V reading. Push the encoder to confirm calibration. If you use a tuner for calibration, connect a synthesizer or VCO module to the CV OUT and connect a tuner to the audio output of a synthesizer or VCO. Calibration procedure is identical to one described above, but, instead of observing voltage on the CV output, you monitor pitch of the VCO. The second step key has to generate C1, the sixth - C5. You can also check other step keys in order to adjust the CV output of the Bullfrog to your VCO calibration. Once happy push the encoder to confirm calibration.


**19. USB ACCESS FOR SAMPLE UPLOAD AND BACKUP.**

The twentieth step key ensures USB connection. Connect your computer to the USB port and push the encoder. The Bullfrog Drums will appear as an external HDD and you can upload user samples here. For user sample upload, please, refer to the next page of this manual. For Patterns, Kits and the system backup simply copy contents of your Bullfrog Drums folder to your computer. Push the encoder to return to the settings menu. NB! It may take few seconds before the HexDrums return to the settings menu.


**20. DFU - FIRMWARE UPDATE MODE**

1. Download the latest firmware (.uf2) file.
2. Press the DATA encoder while on the DFU page
3. The Bullfrog Drums will appear as an external drive on your computer.
4. Drag and drop the .uf2 firmware file onto the BULLFROG_D drive.
5. After update check the version in the CONFIG menu.

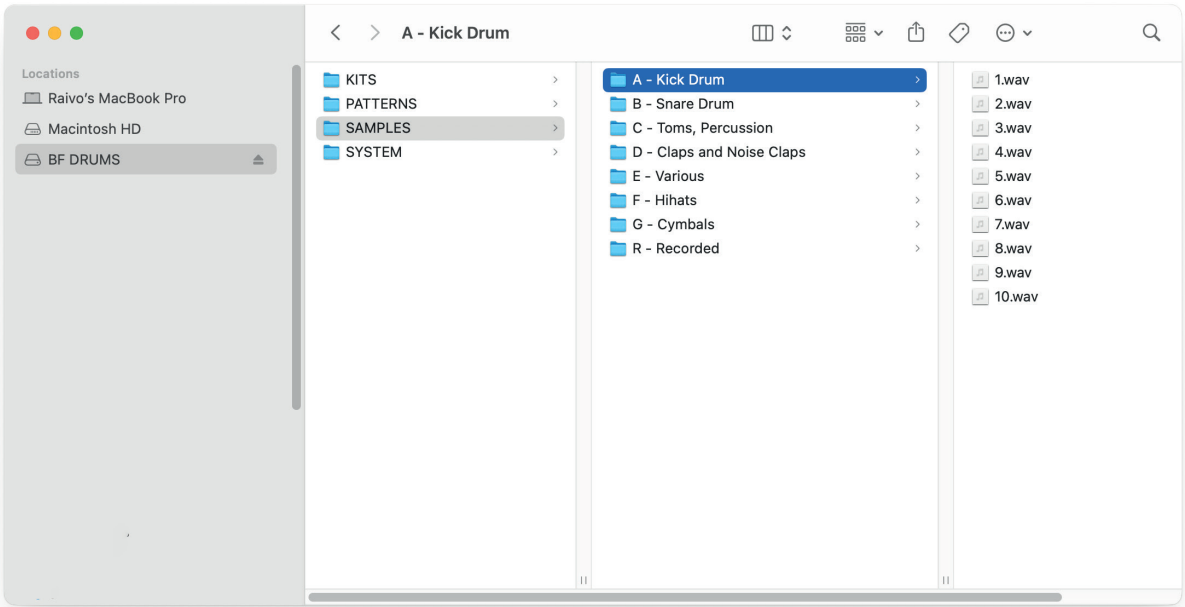

**21. FACTORY RESET**

Press the DATA encoder and hold it for 5 seconds to do the factory reset.
NB! All user patterns will be lost!


**22. FIRMWARE VERSION**

See the installed firmware version!

# user sample upload

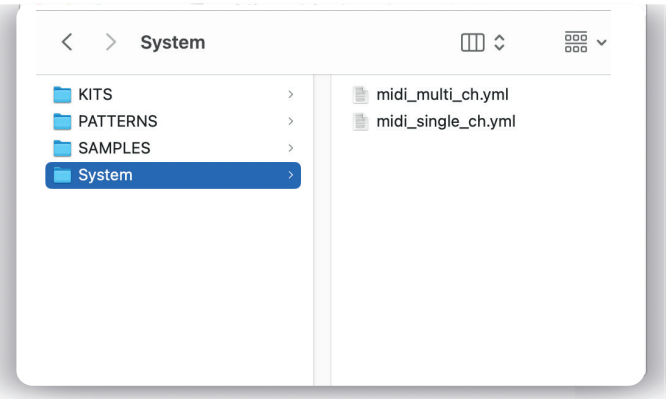


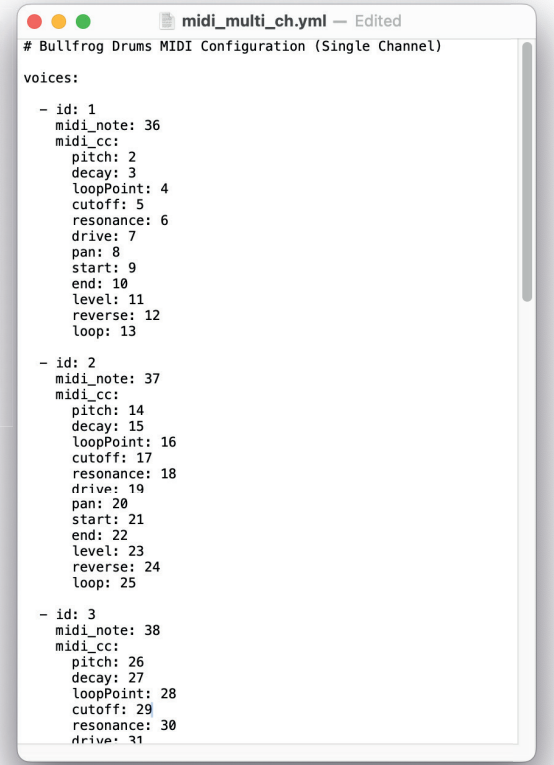

Prepare your samples! Samples must be .WAV 48 kHz 16 bit mono with maximum size of 512KB for each sample.. Samples are stored in individual folders A-Q as described above, where folder R is reserved for samples recorded live on the Bullfrog Drums. You may add comments in the folder name (for example, A - kick), but the folder name must start with a capital letter A - Q otherwise the instrument will not recognize it. Sample names must be numbers 1 - 64.

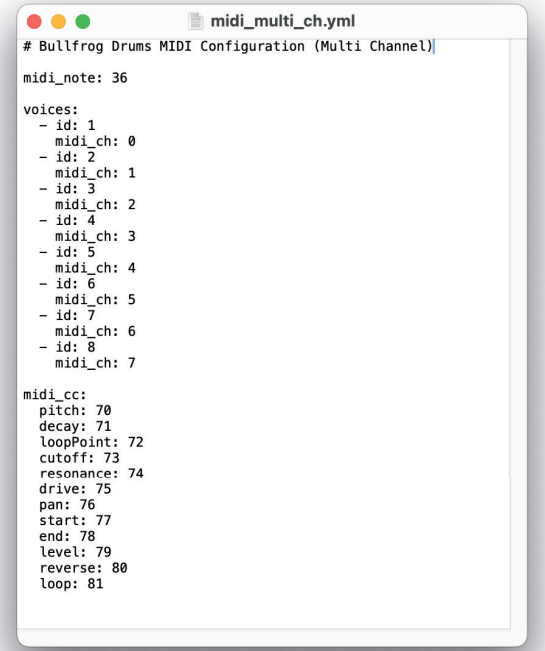
Upload your samples! Connect the Bullfrog Drums to your computer, select USB in Configuration settings and push the encoder. Bullfrog Drums will appear as an external HDD on your computer. Open the HDD you will find 16 folders (A-Q) for sample upload. Drag and drop your samples in the relevant folders and you've made Bullfrog Drums your signature instrument!

# midi implementation

In single channel mode you can control all voices via single MIDI channel, in multichannel mode each voice can be set to a dedicated MIDI channel. Find the default MIDI mapping tables below. You can configure the MIDI CC mapping in the .yml files in the SYSTEM folder in USB mode (see the screenshot attached). To switch between SINGLE and MULTI channel modes go to the MIDI INPUT or MIDI OUTPUT settings of the BULLFROG DRUMS. Velocity of each voices NOTE will also change the VOLUME of the played NOTE. Send max velocity for full volume! In MULTI mapping mode each voice can also respond to MIDI notes – meaning C-4 will be the default pitch, like when you have the PITCH knob set to 12 o clock. C-2 will be lowest and C-6 highest.



## VOICE 1 — SINGLE CHANNEL MIDI MODE MAPPING — VOICE 2

| PARAMETER | MESSAGE | VALUE |
|---|---|---|
| TRIGGER NOTE | C-4 NOTE ON | VELOCITY [0-127] |
| PITCH | 2 | [0-127] |
| DECAY | 3 | [0-127] |
| LOOP POINT | 4 | [0-127] |
| CUTOFF | 5 | [0-127] |
| RESONANCE | 6 | [0-127] |
| DRIVE | 7 | [0-127] |
| PAN | 8 | [0-127] |
| START | 9 | [0-127] |
| END | 10 | [0-127] |
| LEVEL | 11 | [0-127] |
| | 12 | ON [0-64] OFF [64-127] |
| REVERSE ON/OFF | 13 | ON [0-64] OFF [64-127] |
| LOOP ON/OFF | | |

| PARAMETER | MESSAGE | VALUE |
|---|---|---|
| TRIGGER NOTE | D-4 NOTE ON | VELOCITY [0-127] |
| PITCH | 14 | [0-127] |
| DECAY | 15 | [0-127] |
| LOOP POINT | 16 | [0-127] |
| CUTOFF | 17 | [0-127] |
| RESONANCE | 18 | [0-127] |
| DRIVE | 19 | [0-127] |
| PAN | 20 | [0-127] |
| START | 21 | [0-127] |
| END | 22 | [0-127] |
| LEVEL | 23 | [0-127] |
| REVERSE ON/OFF | 24 | ON [0-64] OFF [64-127] |
| LOOP ON/OFF | 25 | ON [0-64] OFF [64-127] |

## VOICE 3 — SINGLE CHANNEL MIDI MODE MAPPING — VOICE 4

| PARAMETER | MESSAGE | VALUE |
|---|---|---|
| TRIGGER NOTE | E-4 NOTE ON | VELOCITY [0-127] |
| PITCH | 26 | [0-127] |
| DECAY | 27 | [0-127] |
| LOOP POINT | 28 | [0-127] |
| CUTOFF | 29 | [0-127] |
| RESONANCE | 30 | [0-127] |
| DRIVE | 31 | [0-127] |
| PAN | 32 | [0-127] |
| START | 33 | [0-127] |
| END | 34 | [0-127] |
| LEVEL | 35 | [0-127] |
| REVERSE ON/OFF | 36 | ON [0-64] OFF [64-127] |
| LOOP ON/OFF | 37 | ON [0-64] OFF [64-127] |

| PARAMETER | MESSAGE | VALUE |
|---|---|---|
| TRIGGER NOTE | F-4 NOTE ON | VELOCITY [0-127] |
| PITCH | 38 | [0-127] |
| DECAY | 39 | [0-127] |
| LOOP POINT | 40 | [0-127] |
| CUTOFF | 41 | [0-127] |
| RESONANCE | 42 | [0-127] |
| DRIVE | 43 | [0-127] |
| PAN | 44 | [0-127] |
| START | 45 | [0-127] |
| END | 46 | [0-127] |
| LEVEL | 47 | [0-127] |
| REVERSE ON/OFF | 48 | ON [0-64] OFF [64-127] |
| LOOP ON/OFF | 49 | ON [0-64] OFF [64-127] |

# midi implementation

## VOICE 5 — SINGLE CHANNEL MIDI MODE MAPPING

| PARAMETER | MESSAGE | VALUE |
|---|---|---|
| TRIGGER NOTE | G-4 NOTE ON | VELOCITY [0-127] |
| PITCH | 50 | [0-127] |
| DECAY | 51 | [0-127] |
| LOOP POINT | 52 | [0-127] |
| CUTOFF | 53 | [0-127] |
| RESONANCE | 54 | [0-127] |
| DRIVE | 55 | [0-127] |
| PAN | 56 | [0-127] |
| START | 57 | [0-127] |
| END | 58 | [0-127] |
| LEVEL | 59 | [0-127] |
| REVERSE ON/OFF | 60 | ON [0-64] OFF [64-127] |
| LOOP ON/OFF | 61 | ON [0-64] OFF [64-127] |

## VOICE 6

| PARAMETER | MESSAGE | VALUE |
|---|---|---|
| TRIGGER NOTE | A-4 NOTE ON | VELOCITY [0-127] |
| PITCH | 62 | [0-127] |
| DECAY | 63 | [0-127] |
| LOOP POINT | 64 | [0-127] |
| CUTOFF | 65 | [0-127] |
| RESONANCE | 66 | [0-127] |
| DRIVE | 67 | [0-127] |
| PAN | 68 | [0-127] |
| START | 69 | [0-127] |
| END | 70 | [0-127] |
| LEVEL | 71 | [0-127] |
| REVERSE ON/OFF | 72 | ON [0-64] OFF [64-127] |
| LOOP ON/OFF | 73 | ON [0-64] OFF [64-127] |

## VOICE 7 — SINGLE CHANNEL MIDI MODE MAPPING

| PARAMETER | MESSAGE | VALUE |
|---|---|---|
| TRIGGER NOTE | B-4 NOTE ON | VELOCITY [0-127] |
| PITCH | 74 | [0-127] |
| DECAY | 75 | [0-127] |
| LOOP POINT | 76 | [0-127] |
| CUTOFF | 77 | [0-127] |
| RESONANCE | 78 | [0-127] |
| DRIVE | 79 | [0-127] |
| PAN | 80 | [0-127] |
| START | 81 | [0-127] |
| END | 82 | [0-127] |
| LEVEL | 83 | [0-127] |
| REVERSE ON/OFF | 84 | ON [0-64] OFF [64-127] |
| LOOP ON/OFF | 85 | ON [0-64] OFF [64-127] |

VOICE 3, 4, 5, 6, 7 = MIDI channels 3, 4, 5, 6, 7

**VOICE 1 (MIDI CHANNEL 1)** — **MULTI CHANNEL MIDI MODE MAPPING** — **VOICE 2 (MIDI CHANNEL 2)**

| PARAMETER | MESSAGE | VALUE |
|---|---|---|
| TRIGGER NOTE | C-2 to C-6 (C-4 = default pitch) | VELOCITY [0-127] |
| PITCH | 70 | [0-127] |
| DECAY | 71 | [0-127] |
| LOOP POINT | 72 | [0-127] |
| CUTOFF | 73 | [0-127] |
| RESONANCE | 74 | [0-127] |
| DRIVE | 75 | [0-127] |
| PAN | 76 | [0-127] |
| START | 77 | [0-127] |
| END | 78 | [0-127] |
| LEVEL | 79 | [0-127] |
| | 80 | ON [0-64] OFF [64-127] |
| REVERSE ON/OFF | 82 | ON [0-64] OFF [64-127] |

| PARAMETER | MESSAGE | VALUE |
|---|---|---|
| TRIGGER NOTE | C-2 to C-6 (C-4 = default pitch) | VELOCITY [0-127] |
| PITCH | 70 | [0-127] |
| DECAY | 71 | [0-127] |
| LOOP POINT | 72 | [0-127] |
| CUTOFF | 73 | [0-127] |
| RESONANCE | 74 | [0-127] |
| DRIVE | 75 | [0-127] |
| PAN | 76 | [0-127] |
| START | 77 | [0-127] |
| END | 78 | [0-127] |
| LEVEL | 79 | [0-127] |
| REVERSE ON/OFF | 80 | ON [0-64] OFF [64-127] |
| LOOP ON/OFF | 82 | ON [0-64] OFF [64-127] |


erica synths x richie hawtin

bull frog

learn. produce. perform

# Punchy basslines? Sequence the Bullfrog from Bullfrog Drums!

## safety instructions

Please follow the instructions for the use of the Erica Synths Bullfrog Drums below, because only this will guarantee the proper operation of the module and ensure the warranty from Erica Synths.

Use the the Bullfrog Drums exclusively with the power supply unit (PSU) supplied with the system. Powering it with other PSU units may cause permanent damage to the device.

Water is lethal for most electric devices unless they have been rendered waterproof. The the Bullfrog Drums is NOT intended for use in a humid or wet environment. No liquids or other conducting substances should be allowed into the module. Should this happen, the module should be disconnected from mains power immediately, dried, examined and cleaned by a qualified technician.

Do not expose the instrument to temperatures above +50° C or below -20° C. If you have transported the instrument in extremely low temperatures, leave it at room temperature for an hour before plugging it in.

Transport the instrument carefully. Never let it drop or fall over. The Warranty does not apply to instruments with visual damage.

The Bullfrog Drums must be shipped in the original packaging only. Any instrument shipped to us for return, exchange and/or warranty repair must be in its original packaging. All other deliveries will be rejected and returned to you. Ensure that you keep the original packaging and technical documentation.

## disposal

This device complies with EU guidelines and is manufactured and confront RoHS without the use of lead, mercury, cadmium or chrome. Nevertheless, this device is special waste and disposal in household waste is not recommended.

User manual by Girts Ozolins@Erica Synths.
Design by Ineta Briede@Black8.



The specifications are subject to change without notice.

If you have any questions, feel free to contact us on SUPPORT section on www.ericasynths.lv

## warranty

You will find the Erica Synths terms of warranty at www.ericasynths.lv

Items for return, exchange and/or warranty repair should be sent us according to the guidelines on SUPPORT section on www.ericasynths.lv

User manual V1, April 2026