



USER MANUAL

Updated April 19th 2024

Thank you for choosing Blast Beats!

Please visit our website to stay up-to-date with the latest firmware updates. As the feature set is expected to evolve on a regular basis, we highly recommend checking the website for updates to this manual.

We highly value any feedback or ideas you may have, so please do not hesitate to contact us at info@twisted-electrons.com.

Features Overview

At the heart of this Groove Box lies a YMF-262 Chip, also known as the OPL3 FM Chip. This is the same chip that was previously used in the SoundBlaster16/ SoundBlaster PRO2 sound cards, which were found in 90s computers. The Blast Beats is equipped with two Stereo YAC512 DACs, which allow for four individually assignable outputs, providing flexibility when it comes to multi-tracking and instrument routing.

Blast Beats features 10 voices, which include 6 drum voices: kick, SD, tom, closed hat, open hat, and cymbal; as well as 4 synth voices. Each synth voice can be dual or quad-operator, depending on the chosen algorithm.

Other notable features of the Blast Beats include 8 waveforms per operator, 56 faders with per-step automation, and 32 illuminated buttons. This includes 3 mode buttons (top left), 3 transport buttons (bottom left), a top row of 10 voice buttons referred to as "top10" in this manual, and a bottom row of 16 step buttons referred to as "bottom16."

The Blast Beats also comes equipped with a DIN5 MIDI IN and OUT, allowing each track to receive and transmit MIDI, as well as USB for firmware updates. Additionally, it includes 4 assignable MONO T/S 1/4" outputs, 1 MONO T/S 1/4" MIX output (with all instruments mixed to one output), 1 DUAL MONO T/S 1/4" headphone output (which is the same as mix on both sides), analog sync in and out via 1/8" mono TS jack, and a MicroSD for data storage.

Power supply Specs

Please use the included power supply. For your information, BlastBeats requires a 9-volt, center-positive supply that is able to provide at least 550mA.

About Drum and Synth Voices

The YMF262 FM chip synthesises drum sounds using several FM operators. Some operators are shared between instruments. As a result some of Blast Beats' faders affect several instruments at once:

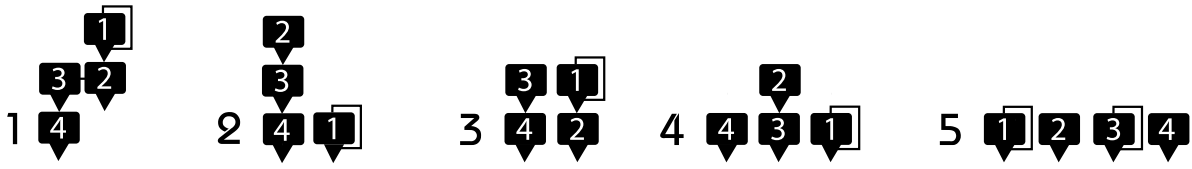
- Hats and Tom share the same pitch modulation;
 - The multiplier of the snare will also affect the pitch of the hats & tom.
- This hardware limitation/quirk can however lead to interesting surprises.

There are 4 synth instruments. Synths 1 and 2 are monophonic (one voice) whereas synths 3 and 4 are duo-phonic (2 voices) and differ in the way their 2 voices are triggered:

-Synth 3 has 2 overlapping voices useful for duo-phonic chords. You can record 1 or 2 notes on each step for synth3.

-Synth 4 triggers both voices at once. They can be detuned using the operator3 tune fader allowing fat bass lines or chord stabs.

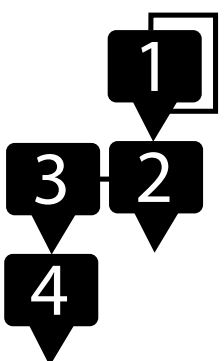
You can choose between 5 algorithms for each synth instrument with the algo fader. The Snare drum is special in that some waveforms silence the instrument. As a result we have disabled waveforms 4,5,6



Synth Algorithms

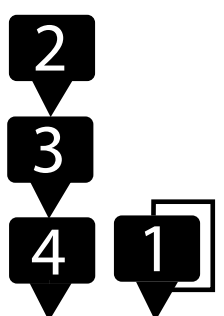
The synth voices of Blast Beats comprise up to four oscillators, which are referred to as operators. The algorithm icons display numbered boxes that represent the operators, and the arrows represent the modulation signal path. When an operator receives the signal from a previous operator, its frequency is modulated by it, also known as frequency modulation (FM). Certain operators feed back into themselves, which is represented by a line joining the top and bottom of the operator. Blast Beats has five different algorithms for the synth voices:

Algo1



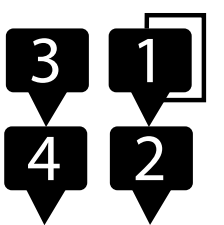
Operator 4 serves as the carrier. When operators 1 to 3 are muted, operator 4 produces a pure waveform. However, operator 4 is modulated by all previous operators in the chain, making this algorithm capable of producing the most complex sounds. Operator 1 modulates operator 2, operator 2 (also known as op1+op2) modulates operator 3, and operator 3 (also known as op1+op2+op3) modulates operator 4. The amount of modulation stacks up with each step, so operator 4 is likely to distort at the end of the modulation chain.

Algo2



Operator 1 is left unmodulated, but applying vibrato with the op2 fader will cause it to bend. Operators 2-4 are set up similarly to Algo1. Operator 4 is the carrier and is modulated by operator 3, which is in turn modulated by operator 2.

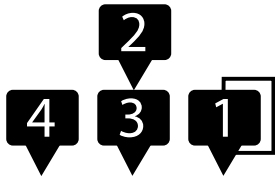
Algo3



This algorithm splits the chain into a pair of 2op synths that can be detuned using the tune fader. Operator 4 is a carrier modulated by operator 3, and operator 2 is a carrier modulated

by operator 1.

Algo4



Operators 1 and 4 are carriers with no operators modulating them, while operator 3 is a carrier modulated by operator 2.

Algo5



In this final setup, all operators are carriers singing along together as individuals

Note: When selecting a synth track and moving some of its faders, the **algorithm** used by this instrument is shown as a reminder by a **blinking LED** (top row LED's 1-5, to reflect algorithms 1-5).

Step Edit Mode

Entering Step Edit Mode:

To start editing individual steps in your pattern, activate **Step Edit Mode** by pressing the **Step** button. While the sequencer is playing and you're in Step Edit Mode, the 16 buttons at the bottom represent the steps of the pattern on the current page.

LED Chasing

Each step will briefly blink to show the sequencer's current position.

Patterns can extend over up to 4 pages (64 steps). By default, the blinking indicator for the current step is only visible if the step is on the page you're viewing. If you want to see the blinking indicator loop through every step, regardless of the page you're on, you can change the setting. Simply hold down the **Function** button and then press the **Step** button.

This action allows the step indicator to blink for every step, making it easier to track the sequencer across multiple pages.

- To return to the default setting, where only the steps on the current page blink, repeat the process: hold the "Function" button and press the "Step" button again.

Selecting a page

If a pattern is longer than one page (more than 16 steps), users can select different pages by pressing the **Step** button to flick through them. The top row of LEDs aka "top10" will briefly indicate the current page.

Refer to the "[Length Mode](#)" section of the manual to learn how to add pages.

Selecting an instrument

Blast Beats includes 10 voices, comprising of 6 drum voices and 4 synth voices.

To edit a specific voice, press any of the **top10** voice buttons. If the sequencer is stopped, selecting a voice will trigger it, allowing you to preview its sound.

Cloning a synth

To copy the sound of a synth to another, hold down the top button of the source synth and press the top button of the destination synth. For instance, to copy synth1 to synth3, hold down top button #7 and press top button #9.

Cloning a step

It is possible to clone steps from one step to another. This will also clone any automations applied to the step. Firstly, ensure that the REC button is unlit. Then, hold down the **REC** button and press the **first step** that you wish to **copy**. Finally, press any other **steps** where you want to **paste** the copied step. This will change the state of the step, including its on/off status and note number.

X0X style step input

When the REC button is disabled, you can easily switch individual steps on or off by pressing the lower 16 buttons. If the sequencer is not running, synths 1 to 4 will play the note of the selected step, making it easier to identify which note you are enabling or disabling.

Step nudging / micro stepping

To enhance the rhythmic variation of your pattern, you have the option to delay the triggering of a step. To specify the delay duration, press and hold the desired step for a second, then press one of the top buttons to set the delay time.

To uniformly adjust the timing (nudge) of all steps within the selected track, press and hold the **function** button, then press one of the top buttons to apply the desired nudging value to the entire track (useful to quantise after a record).

Transposing a synth step

Hold a **synth step** and press the **kit/patt** or **function** button to transpose the step up or down respectively by 1 semitone. The synth will play the new note.

Real time drum input

With **REC** armed and Blast Beats running press top10 buttons 1 to 6 to punch in a drum beat.

Real time synth input

When **REC** is armed and Blast Beats is running the 16 bottom buttons can be used to punch notes into the sequencer in real time. The bottom LEDs represent the keys of a piano - the lit LEDs are white keys

Synth monitor mode

To practice playing a synth using the 16 bottom buttons prior to recording it without arming REC, you may activate the synth monitor mode. To do so, simply **double-tap** any of the **last four top buttons** to toggle the synth monitor mode on or off. When activated, the bottom LEDs of the Blast Beats will represent the keys of a piano, with the lit LEDs indicating the white keys. This feature is a useful tool for honing your skills before recording, and can be easily disabled by **double-tapping** the **top buttons** once again to resume normal operation.

Changing the synth octave (recording)

To change the playback octave for synths and drums, hold down the **REC** button and select the low, normal, or high octave by pressing the **kit/patt**, **step**, or **function** buttons, respectively.

Changing the synth octave (playing)

To transpose the octave of a specific voice, hold down its corresponding top 10 button and use the following menu buttons:

The **Kit/Patt** button: Transposes the playback **down** by one octave. Pressing it twice will transpose down by two octaves.

The **Step** button: Sets the default **mid range** octave.

The **Function** button: Transposes the playback **up** by one octave.

To transpose **all voices** simultaneously, **double-tap** any of the aforementioned buttons.

Step by step synth MIDI input

To activate or deactivate the step-by-step synth mode, hold the **REC** button and press the **RUN** button. In this mode, when Blast Beats is stopped and REC is armed, you can input a melody step-by-step by tapping the bottom 16 buttons. A blinking bottom 16 LED indicates the currently edited step. The LEDs will chase from left to right once step-by-step mode is activated.

If you reach the end of the sequence, which is 16 steps for a one-page song, it will loop back to step 1 and overwrite endlessly. You can input a **rest** by pressing the **step** button. Additionally, you can input notes via MIDI using channels 1-4, or other channels depending on the MIDI channel routing.

If you wish to start over at any time, toggle **REC** off, then on again to reset the step recorder to the first step.

Arbitrary step synth MIDI input

Press and hold a **step button** of a synth track for at least one second.

While holding the button, play a note on your MIDI controller that is set to the same MIDI channel as the synth. This will input or change a note for that step in the sequence. If the step button you are holding is already lit, indicating it has a note assigned, playing a new note will update it to the new note you play.

Undo/redo

Whenever you press REC before recording some changes, Blast Beats creates a snapshot of the current pattern. You can undo (and redo) the changes by holding **function** and pressing **REC** in step mode.

Page rotate

You can rotate the steps of the selected page to the left or to the right, effectively shifting the steps backwards or forwards. To do so hold **step** and press **kit/patt** to shift the pattern to the **left** or **function** to shift the pattern to the **right**.

Key / Scale Change Mode

In this mode, you can modify the key and mode of your pattern, which will affect all synth tracks simultaneously.

To access the key change mode, hold the **step** button and press **run**

To exit this mode and return to the previous mode, press **kit**, **step**, or **function** depending on which mode you wish to enter.

Transposing

Once you have entered the key change edit mode, use the 16 bottom buttons to transpose your pattern. These buttons represent the keys of a piano, with the illuminated buttons representing the white keys.

If the **REC** button is illuminated, you can also record the key changes.

To clear automated key changes please refer to the [clear function](#).

Setting the tonic

Hold function and use the 16 bottom buttons to chose the tonic (root note).

Scales and Modes

The top 10 keys are used to choose the mode according to this list:

1 **Chromatic** - A scale consisting of 12 pitches, each a semitone apart. This mode applies no constraint to the incoming note.

2 **Major** (Ionian) - A diatonic scale characterized by the intervals: whole, whole, half, whole, whole, whole, half.

3 **Minor** (Aeolian) - A scale with a natural minor tonality, noted for its intervals: whole, half, whole, whole, half, whole, whole.

4 **Dorian** - A scale that combines a minor third with a major sixth, with intervals: whole, half, whole, whole, whole, half, whole.

5 **Lydian** - A major scale but with a raised fourth, creating a distinct sound, described by the intervals: whole, whole, whole, half, whole, whole, half.

6 **Mixolydian** - A major scale with a flattened seventh, known for its intervals: whole, whole, half, whole, whole, half, whole.

7 **Blues** - Characterized by its use of the flattened third, fifth, and seventh, the Blues scale provides a unique sound with intervals: minor third, whole, half, half, minor third, whole.

8 **Melodic Minor** - A scale that ascends with the intervals: whole, half, whole, whole, whole, whole, half, and often descends like the natural minor scale.

9 **Harmonic Minor** - Distinguished by the raised seventh interval, creating a distinctive sound, with intervals: whole, half, whole, whole, half, augmented second, half.

10 **Gypsy** - Known for its minor third and augmented seconds, creating a very distinct and exotic sound, with intervals: whole, half, augmented second, half, half, augmented second, half.

Kit / Pattern Mode

In this mode you can change and chain patterns, and assign different kits to each pattern. Press **kit/pat** to enter this mode.

About Kits and Variations (previously referred to as Banks)

Blast Beats Kit Management Overview:

- Each song in Blast Beats can utilise up to 10 unique drum kits, with each kit offering 4 variations. This means you have access to 40 variations per song.
- Starting with firmware version 4.0, Blast Beats introduced a feature that allows each song to have its own set of drum kits. This means the drum kits are now "sandboxed" for each song, ensuring they don't overlap or interfere with kits from other songs.

How to Use Separate Kits for Each Song:

Prepare Your SD Card: For each song you have on your SD card, create a new folder named **KITS** inside the song's specific folder.

Loading Kits with Songs:

- When you select a song on BlastBeats, the system will automatically look for a **KITS** folder within that song's folder.
- If a **KITS** folder is found, BlastBeats will use the kits located there for that song.
- If no **KITS** folder is found within the song's folder, Blast Beats will default to using the general **KITS** folder located at the root of your SD card. This behaviour is the same as in firmware versions prior to 4.0.

Utility Tool for Easy Kit Management:

- We've included a utility tool named `copyKit.zip`. This tool is designed to simplify the process of copying your default kit folder into every song's subfolder on your SD card.

Follow the instructions provided inside the zip file for both Mac and Windows users.

Changing Kit

Press a top10 button at any time to change the kit assigned to the current pattern.

You can automate kit changes per step: simply change the kit with **REC** lit! To clear kit automations **hold kit/patt** and press **clear**.

Kit Reload

You can reload a kit from the SD card at any time. This will clear any unsaved changes. To do this, hold down the **function** button and press **kit/patt**

Cloning Kits

Cloning kits comes in handy when you want to create variations of the same kit. To clone a kit, hold down the top10 button of the kit you wish to duplicate, and press the destination kit's button (any other top10 button) to paste it. You can make multiple clones at once.

Changing kit Variations

To select a variation of the currently active kit, follow these steps:

1. Ensure you are in kit/pattern mode by pressing the **kit/patt** button.
2. Hold the **kit/patt** button and then press one of the **first four top buttons** to select a variation. The LED corresponding to the active variation will flash to indicate your selection.

Cloning kit Variations

To duplicate a kit variation onto another, follow these steps:

1. Press and hold the **kit/patt** button.
2. While still holding **kit/patt**, press and hold one of the **first 4 top buttons** corresponding to the variation you wish to copy.
3. Without releasing **kit/patt** or the button for the source variation, press any of the other first 4 top buttons corresponding to the variations you want to overwrite with the copied variation.

Changing Pattern

To change patterns, press any of the bottom 16 buttons. If the sequencer is stopped, the new pattern will start playing immediately. However, if the sequencer is running, Blast Beats will cue the next pattern and make the change when it reaches the last step of the last page of the current pattern. In this case, the next pattern will be indicated by a blinking bottom 16 LED.

All tracks resync after a pattern change.

Cloning Pattern

To clone a pattern, simply hold down the bottom 16 button of the pattern you want to clone, and press any other bottom 16 button where you want to paste it. Note that when changing patterns, the assigned kit will be loaded automatically.

Chaining Patterns

You can chain together up to 256 patterns to create a song. To do so, first press the REC button to arm the sequencer (the REC LED should begin blinking). Then, press the first pattern in your song to begin recording the chain. This will overwrite any previously recorded chain.

During the chain recording phase, the current pattern will blink to indicate that it is armed. You can include multiple repetitions of the same pattern in your chain. Once you have reached the end of your desired chain, press REC again to finalize the sequence. The current pattern will stop blinking and Blast Beats will automatically return to the first pattern in the chain and loop the entire sequence endlessly.

If you stop the sequencer, it will reset to the first pattern in the chain.

Clear the chain

Suppose we want to play only pattern 1

- press REC to arm Blast Beats,
- press bottom16 button1,
- press REC again to un-arm Blast Beats (before pattern 1 reaches the end of its cycle if the sequencer is running).

Add or replace patterns in the chain

Start the song by pressing run. Now you can arm the REC button at any point and press bottom16 buttons to swap patterns in the chain. If the end of the chain is reached with REC still armed, you will extend the chain until you disarm REC or stop the sequencer.

Freeze the chain

To temporarily disable the chain (and repeat any pattern) without clearing it you can freeze it. hold REC and press freeze to freeze and unfreeze the chain.

Press kit/patt and function at the same time to enter song mode. Both kit/patt and function LEDs will light at the same time.

The 160 available songs are arranged in 10 folders/banks of 16 songs
To load a new song tap a top10 button to select a folder, Then tap a bottom16 button to load a song.

1 song consists of:

16 patterns (up to 64 steps per pattern (arranged in 4 pages of 16 steps))

A chain of up to 256 pattern changes can be recorded per song.

Kits and songs are saved separately. The songs share the same kits.

Song Mode

Press **kit/patt** and **function** at the same time to enter song mode. Both kit/patt and function LEDs will light at the same time.

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To load a new song tap a top10 button to select a folder, Then tap a bottom16 button to load a song.

1 song consists of:

16 patterns (up to 64 steps per pattern (arranged in 4 pages of 16 steps))

A chain of up to 256 pattern changes can be recorded per song.

Kits and songs are saved separately. The songs share the same kits.

Function Mode

Press function to enter this mode to edit the following functions:

Save Mode

Save Song (patterns)

The SD card can be updated to save the current song to any location within a designated range of folders and locations. You can choose a different destination folder within the range of 1 to 10 by pressing any top10 button, and confirm the location within the range of 1 to 16 by pressing any bottom 16 button. The current folder and location are lit when you enter save mode.

It is important to note that Blast Beats will only write to the SD card when the sequencer is stopped. If the sequencer is running, it will wait until the next instance that it is stopped (by pressing "run") to save any updates to the SD card.

Save kits (sounds)

Press the flashing kit/patt button to save the kits. This will not save your patterns!

Length Mode

Adjusting Track Duration

The "Length Mode" feature provides you with the flexibility to set the duration of a track, ranging from 1 to 64 steps. This is done by defining the number of 16-step pages and adjusting the endpoint of the track on the final page. For example, to create a track of 20 steps, you would allocate 2 pages, with the second page ending at step 4. This indicates the track concludes 4 steps into the second page, offering precise control over the track's length.

This functionality enables you to alter the length of individual tracks or all tracks simultaneously, ensuring versatility in your music creation process.

Selecting Number of Pages:

- To set the number of 16-step pages for across all tracks simultaneously, use the **first four buttons** at the top. This action sets the same number of pages for every track.

To apply changes to the **selected track only**, press and hold the function button while choosing the number of pages.

Selecting the final Step

Use the bottom buttons to specify the final step on the last page, determining its overall length. To adjust the endpoint for a all tracks at once, press a bottom button to set the last step.

To adjust the endpoint for a **selected track only**, hold down the **function** button while setting the last step.

Important Note:

Track 1 (BD), known as the master track, plays a critical role by governing the timing for chaining patterns and automating sequences. Its settings influence the overall project timing and sequencing.

Manual Resynchronization:

Adjusting the duration of various tracks can lead to unpredictable results (which is intended). If you need to quickly re-sync the tracks to step 1, hold the **Function** button and press the **Run** button.

Quick change of selected track:

To adjust the lengths of different tracks without leaving the length editing mode, simply hold down the 'Step' button and press one of the top buttons to select another track.

Copy Page

When in length mode, hold the **REC** button and press a page to copy it.

Then, press any other page to paste it, this includes all voices.

To paste only the data from the selected voice, hold the **function** button while performing the paste action.

Clear Mode

- Single fader automation:** Hold **clear** and move a fader to erase its automation.
- Track Automation, Pattern Automation:** Hold **clear** and press **REC** a first time to clear all automation associated with the selected track. Press **REC** a second time (without releasing **clear**) to clear all the automation associated with the current pattern, including tricks, tremolo, vibrato, kit change, volumes and routing automation
- Track clear** (single voice): Hold **clear** and press a **top10** button to erase the steps and automation of a single track.
- Pattern initialise:** Hold **clear** and press **kit/patt** to erase the current pattern resulting in a blank 16-step pattern.
- Wiggle automation:** hold **clear** and press **wiggle** to reset the wiggle depth automation.
- Vibrato rate** automation: hold **clear** and press **vibrato** to reset the vibrato rate automation.
- Tremolo rate** automation: hold **clear** and press **tremolo** to reset the tremolo rate automation.
- Swing** automation: hold **clear** and press the **swing** button to clear the swing automation.
- Clear Kit** (set all faders to zero): **double tap** the **clear** button when in clear mode.
- Clear key changes:** hold **clear** and press **run**

Wiggle Mode

This function adds randomness to any fader. To assign the wiggler to a fader, hold **wiggle** and **move a fader**. Set the depth of the wiggler: press any of the **top10** buttons once to apply the wiggle depth to the current pattern. **Double click** any top10 buttons to apply the depth to all patterns of the song at once. You can also automate the wiggle depth. Simply light the **REC** button and wiggle depth changes will be recorded and played back.

To disconnect individual faders from the Wiggle hold **Wiggle+clear** and move the fader. To clear all faders assigned to the wiggler: hold **wiggle** and press **clear**.

Shuffle kit: Hold **wiggle** and press **kit/patt** to randomise the kit (automatically move some random faders)

Shuffle pattern: Hold **wiggle** and press **step** to randomise the **pattern** (automatically enable or disable steps). You can configure wiggle to occur on all steps or only the active ones. Please use tool to enable or disable this option

Swing Mode

Use the top10 buttons to set the amount of swing. Each pattern of a song has its own swing setting.

You can also automate the swing setting. Simply light the REC button and swing setting changes will be recorded and played back.

Wonky Swing:

Pressing Swing while holding Function activates "Wonky Swing": instead even numbered steps, odd numbered steps are offsets by Swing

Mute Mode

In this mode use the top10 buttons to mute/unmute a channel

Mute Pages (or skip page playback)

You have the option to skip certain pages within a pattern by muting them. You can mute up to three pages simultaneously.

To mute a page, press and hold the **Mute** button. While holding **Mute**, press the page button you wish to skip. This page button will start flashing, indicating that it is now muted and will be skipped during playback.

To unmute a page and include it back in the playback, press the flashing page button again. It will stop flashing and remain lit solidly, indicating that it is active and will not be skipped.

By muting pages, you can creatively alter the pattern playback to suit your performance or composition needs.

Solo

in this mode use the top10 buttons to solo a channel

Prob

In this mode set the trigger probability of a channel.

Select a channel: hold prob and use a top10 button

Now release prob and set the level of probability (chances out of 10 of triggering) with the top10 buttons.

Stutter / Drill

This function enhances performance by allowing you to quickly repeat a the current Step, similar to a Blast Beat in drumming. To activate this, press and hold the top 10 buttons. This will repeat the current Step at different speeds, which are fractions of the current tempo. For added variation, you can hold the wiggle button while executing a stutter; this will randomize the steps of each stutter. Any stutter performed will be recorded if the rec (record) indicator is on.

The Stutter feature offers two unique modes: the standard Stutter and Drill. To switch between these modes, hold the **tempo** and press **stutter**.

In drill mode, the sequencer doesn't pause but instead repeats every step of a pattern in its sequence, ensuring a continuous flow. Conversely, the Normal Stutter mode maintains a single step, repeating it for as long as the Stutter is active.

Bend (spindown effect)

Hold bend to bend the global tuning of the FM chip downwards. Use the top10 buttons to set the bend strength. Hold function during a bend to spin up!

Freeze

When freeze is held, the communication between Blast Beats and the FM chips is suspended leading to sustained notes and glitches (can be combined with bend and stutter)

Tremolo

Use the top 10 buttons to set the tremolo rate (each pattern has its own tremolo rate).

This function will continuously modulate the volume of the operator.

A different tremolo rate can be assigned to each pattern.

You can also automate the tremolo rate on each step. Simply light the REC button and tremolo rate changes will be recorded and played back.

There are 3 available speed ratios: slow, normal and fast. Hold **them** and press **kit/patt**, **step** or **function** to adjust set the speed ratio.

Vibrato

Use the top 10 buttons to set the vibrato speed (each pattern has its own vibrato rate). This function will modulate the pitch of the operator. A different vibrato rate can be assigned to each pattern. You can also automate the vibrato rate. Simply light the REC button and vibrato rate changes will be recorded and played back.

You can also adjust the maximum range of the vibrato. Hold **function** and press any top ten button to set the maximum depth.

There are 3 available speed ratios: slow, normal and fast. Hold **vibr** and press **kit/patt**, **step** or **function** to adjust set the speed ratio.

Vibrato / Tremolo waveform

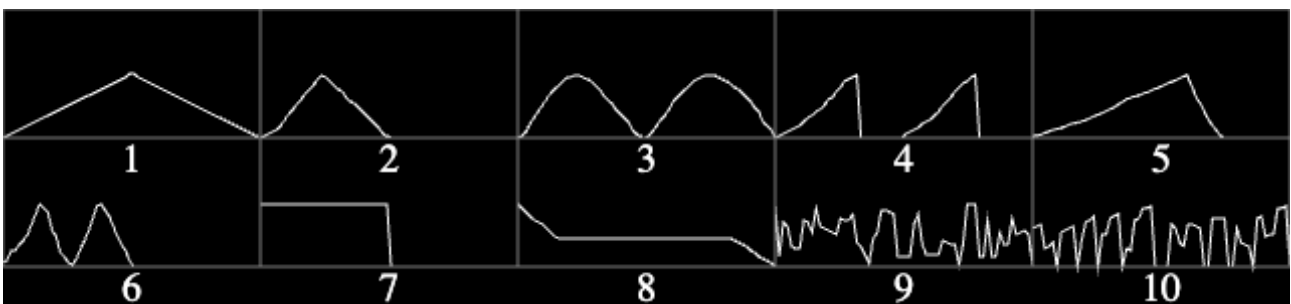
To enhance the vibrato and tremolo effects on your device, you have the option to select from 9 additional waveforms.

Here's how to customize these effects:

First, activate function mode. While in this mode, hold down the **trem** (for tremolo) or **vibr** (for vibrato) button to initiate waveform selection.

Selecting a Waveform:

With the **trem** or **vibr** button still held, press any of the top 10 buttons to choose a new waveform. The device's first 8 buttons roughly correspond to waveforms depicted on the device's top, including an updated ramp waveform assigned to button #5. Buttons 9 and 10 are designated for random waveforms, adding an element of unpredictability to your sound. Here is a visual representation of the available waveforms:



Automation of Waveform Changes:

Waveform changes can be automated within your sequence. With the **REC** function active, adjust the waveform selection as desired.

Phones

Use the top10 buttons to set the phones level (recalled at startup).
You can automate this parameter per step, just change it with REC lit.

Mix

Use the top10 buttons to set the mix level (recalled at startup).
You can automate this parameter per step, just change it with REC lit.

Route

With this function you can assign the instruments to any of the 4 outputs. Note some instruments are locked together (snare+hats , tom+cymbal). This is a hardware limitation due to the way the voices are created by the YMF262. Hold route and press a top10 button select a target instrument. Release route and now press the first 4 top10 buttons to attach/detach the target voice to outputs 1-4 (you can route a voice to multiple outputs to make it louder in the main mix).

You can also automate this parameter per step, just change it with REC lit.

Route presets

You may find it beneficial to adjust routing dynamically to align with a particular configuration, such as directing specific voices to designated effects pedals. This flexibility is facilitated through the use of routing presets. To save the current routing setup, simply activate the routing function, hold down the **REC** button, and press any of the **top ten** buttons to assign the setup to one of the ten available slots. To retrieve a saved preset, hold the **function** button and select any of the top ten buttons. Routing presets are stored on the EEPROM independently from songs or cards. The latest used preset is reloaded a startup.

Sequencer Clock

Internal Mode Syncing

Blast Beats will automatically start up in internal clock mode.

Analog & MIDI Clock Out

Blast Beats will send a 5V pulse every 2 steps (2PPQ) at all times. It also transmits MIDI clock through the MIDI OUT jack.

Analog Slave Mode

Plug a 1/8" mono TS cable into the sync input to activate Analog Slave mode. In this mode Blast Beats will advance 2 steps on every received pulse (2PPQ). MIDI clock is ignored in analog Slave mode.

Blast Beats will automatically reset to step 1 if no pulses have been received for several seconds. Pressing run in this mode will reset the sequencer to step 1.

MIDI Slave Mode

Blast Beats will automatically sync to incoming MIDI clock. MIDI slave mode is activated when Blast Beats receives a MIDI Start command. Pressing run in this mode will reset the sequencer to step 1. Blast Beats will go back to Master mode after receiving a MIDI Stop command.

Note: MIDI clock is read/handled but not sent by Blast Beats.

Setting The Tempo (Master Mode)

Tap tempo

Press a tempo button at least 3 times to tap the tempo. If Blast Beats isn't running it will start on the third tap.

Manual a.k.a BPM tempo

Press and hold the tempo button then press the top10 buttons to input the tempo in beats per minute. You can input either 2 or 3 digit BPM values.

For example to set Blast Beats to 123 BPM:

Hold tempo and tap first, second then third top10 button

Fader Automation

When in step mode you can record and automate the faders.

Note: fader automation also transmits MIDI CC

Recording a fader

To record a fader simply press the REC button in step mode (the REC LED will flash). Now the sequencer will record and repeat the fader movements. Press REC again to no longer record the faders.

Deleting automation for a single fader

To delete the automation of a single fader press function to enter function mode. Now hold clear and move the fader for which you wish to delete the automation.

Step lock automation (A.K.A parameter locks)

You can record a fader position in non-real-time to any step. hold a bottom button to define the step and move the fader. Note REC must be off.

Deleting all fader automation

To delete all the fader automation of the current pattern press function to enter function mode. Now hold clear and press REC.

Trick Automation and step edit

In function mode you can record and play back the 3 available trick functions that are stutter, bend and freeze

Recording a trick

To record a trick simply press the REC button in function mode (the REC LED will flash). Now the bends, freezes, and stutters that you activate will be recorded and played back.

Deleting trick automation

To delete trick automation press function to enter function mode. Now hold clear and press stutter, freeze or bend to the delete the respective automation

Step Editing trick automation

You can edit the trick automation using the 16 step buttons just like you would edit the steps of a regular beat.

To access the trick step edit page hold **step** and press **stutter**, **bend** or **freeze** to access the respective editors.

You can edit tricks across multiple pages of your pattern.

Press **step** to turn the page.

To exit trick step editor press **function**, **kit/patt** , **step** + any **top10** button, or repeat the same procedure you used to enter the trick step editing mode.

Bend and Freeze step edit

Bend and freeze trick automation are edited the same way in that a single press of the bottom 16 buttons will turn the trick on or off for any step.

Enable / Disable Bend and Freeze automation

When you first power Blast beats on bend and freeze automations are enabled. Hold function and press bend or freeze to enable or disable them respectively. Repeat to enabled them again.

Stutter step edit

Stutter trick step edit allows you to activate and deactivate the stutter on any step, but it also allows you to choose the stutter rate per step. Press a bottom 16 button to select a step. If no stutter automation is present on the step the LED will light and stutter will be added. Next press any of the top10 buttons to select the rate of the stutter for the selected step. To clear a stutter on a step, press any LIT bottom 16 button twice

Enable / Disable stutter automation

When you first power Blast beats on stutter automation is enabled. Hold function and press Stutter to enable or disable it. Repeat to enabled it again

Special Startup Settings

There are special settings that can be changed by holding a specific button at startup. These settings can also be changed with the TOOL. Visit twistedelectrons.com/tool for more information.

Safe envelope ranges

Hold length button at startup to toggle safe envelope ranges on or off. The length LED will blink once or twice to indicate the new setting. 1 blink = on. 2 blinks =off. When Safe mode is on, the att(ack) and dec(ay) faders keep the envelope speeds within pre set ranges judged useful for drum machines.

When safe is off, the faders reach the full range of the chip allowing very long to infinite attack and release times (drones).

Faster pitch fall (default=off)

Hold bend button at startup to toggle this on setting or off. the LED of the button will blink once or twice to indicate the setting. Once=on twice=off.

When faster pitch fall is on the fall faders will pull the tune of the instrument up or down 4x faster.

Useful for fast paced music.

MIDI channel routing

Hold route at startup to enter MIDI channel routing.

Blast Beats listens and transmits to 5 MIDI channels of your choice:

Drums (default CH10)

SYNTH 1 (default CH1)

SYNTH 2 (default CH2)

SYNTH 3 (default CH3)

SYNTH 4 (default CH4)

To change the channel select a target by pressing the following top buttons:

Top button 1-6 selects the drum voice

Top button 7-10 selects SYNTH1 to SYNTH4 respectively

Now press any bottom button (1-16) to choose the channel.

Power-cycle Blast Beats to resume normal operation.

Factory reset

Hold clear at startup to reset the settings to factory default. This can be useful if Blast Beats isn't behaving as expected after an accidental setting change.

These are the default settings:

Fall rate=normal

Current song=1

Current folder=1

Swing=off

Phones and Mix volume=6

All voices routed to all outputs

Safe envelope ranges = on

MIDI Channel routing:

Drums=CH10

Synth1=CH1

Synth2=CH2

Synth3=CH3

Synth4=CH4

Factory resetting won't affect the SD card data

File Structure (SD Card)

IMPORTANT:

The included micro SD card contains all your song and pattern data. The card is required for Blast Beats to operate. At start-up if the card is not detected all the LEDs will blink twice every second until the card is inserted.

From a single SD card Blast Beats can load up to 160 songs (10 bank folders X 16 song folders).

There are 3 main folders on your card labelled KITS, SONGS & VGM.

Each have 10 sub-folders labeled BANK1 to BANK10

Each main folder contains 16 song folders labelled 1 to 16

Each song folder contains the following files:

AUTO.BB (automation)

BANKS.BB (kit bank assignments)

CHAIN.BB (pattern chain)

10x DRUMX.BB (drum kits/presets where X= 1-10)

PAT-D1.BB to PAT-D16.BB (drum patterns)

PAT-S1.BB to PAT-S16.BB (synth/melodic patterns)

10x SYNTAX.BB (synth kits/presets where X=1-10)

Starting with firmware version 4.0, you now have the capability to associate a unique set of KITS with each song, enabling you to tailor the KITS specifically for that song without altering the main kits located in the root folder. This feature essentially creates a sandbox environment for each song. To utilize this, simply drag the KITS folder into your SONG folder, and the system will prioritize these kits for playback. If no specific KITS folder is found within the SONG folder, the system will default to using the KITS folder located at the root of your card.

We've developed a set of script files—one batch file for PC users and one shell script for Mac users—that simplify the process of duplicating your KITS folder across all the song folders on your card. This functionality allows you to effortlessly create a copy of your kits folder within every subfolder of your card. You can find these essential files along with readme instructions inside the 4.X update zip file.

Each kit folder contains the following files:
DRUM1.BB to DRUM10.BB (drum fader positions)
SYNT.BB to SYNT10.BB (synth fader positions)
You can safely mix and match these files between folders.

Firmware Updates

Important:

The Blast Beats code was be ported to a different MCU in September 2023 following a global shortage of the original MCU.

As a result there are 2 revisions and 2 sets of firmware. **Revision2** aka **R2** has the marking **BB.R2.** in the serial number under the unit.



R2 will only accept firmware labelled R2. Only use R2 firmware if your Blast Beats is revision 2

Update procedure for R1 ONLY:

Connect Blast Beats to your computer with a standard USB type A to type B cable (the kind typically used by a printer). PLEASE DO NOT USE A USB HUB!

Some hubs may prevent communication between the PC and BlastBeats

-Hold the run button and power on Blast Beats. (nothing will light up, blast beats is in update mode)

-Connect the USB cable between Blast Beats and the computer.

-Your computer sees a hard drive labelled "UPLOAD_DISK"

-Now delete the file located on the disk and replace with the new firmware file.

-The disk will automatically eject from your computer and Blast Beats will reboot with the new firmware installed.

Update procedure for R2 ONLY (2 possible methods):

-Unzip the firmware file, you should see a new file labelled:

SD_USB_MSC_Application.bin

This is the file we need to feed to BlastBeats

Update Method 1 (SD): RECOMMENDED!

-Copy the bin file to the root of the micro SD card (using a card reader or micro SD slot in your computer if available).

-Insert the card into Blast Beats and power the unit on.

Blast Beats will detect the new firmware and update itself.

Note: The firmware file will be removed from the card after the update is complete.

Update Method 2 (USB):

-Connect blast beats to your computer with the card inserted into the unit.

-Hold run and power on the device.

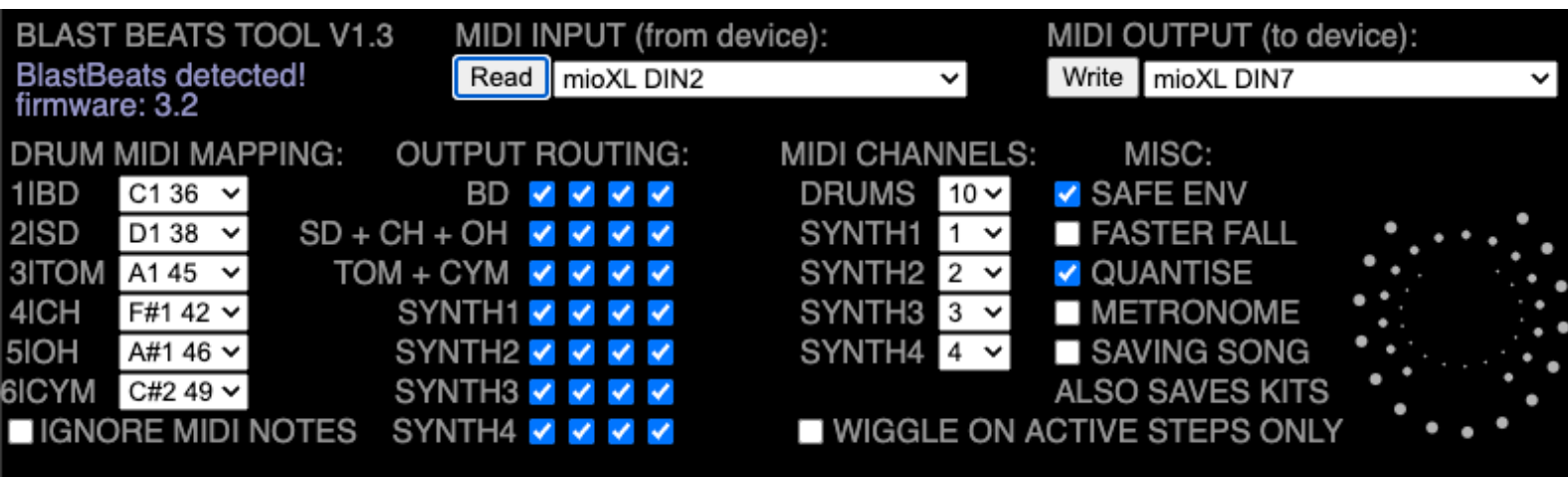
-After a few moments your computer will display the contents of the SD card

-Copy the bin file to the root of the micro SD card

-The disk will automatically eject from your computer and Blast Beats will reboot with the new firmware installed.

Note: If blast beats doesn't restart after a while, turn it off and on again.

The firmware file will be removed from the card after the update is complete.



MIDI Tool

A MIDI tool is available easily configure parameters within Blast Beats. The tool is hosted on a web page and requires no drivers or software downloads. It does however require a WebMIDI enabled web browser (Google Chrome is a good example). Please visit twistedelectrons.com/tool to use the tool.

To start using the tool choose the MIDI inputs and outputs connected to Blast Beats and press the **Read** button. The tool will synchronise with BlastBeats then you are free to make any changes.

IMPORTANT: press the Write button to save any changes or they will be lost!

A MIDI interface and 2 MIDI cables are required to connect Blast Beats to the editor. The editor cannot communicate with Blast Beats directly over USB at this time.

MIDI Implementation

Blast Beats responds to the following Note On messages by default. Note that you can change these notes using the tool. Visit twistedelectrons.com/tool for more information.

Drum voices MIDI NOTES

Drums will transmit MIDI notes out of the MIDI port when triggered by the internal sequencer allowing you to use Blast Beats as a MIDI drum sequencer! Here are the factory default note assignments:

INSTRUMENT	MIDI NOTE
1 BD	36
2 SD	38
3 TOM	45
4 CLOSED HAT	42
5 OPEN HAT	46
6 CYMBAL	49

Drum voices MIDI CC

Below is the MIDI control change implementation for the drum parts

PARAMETER	MIDI CC#	RANGE
Bass drum carrier volume	20	0-127
Bass drum carrier waveform	21	0-127
Bass drum carrier feedback	22	0-127
Bass drum carrier multiplier	23	0-127
Bass drum carrier tune	24	0-127
Bass drum carrier fall	25	0-127
Bass drum carrier attack	26	0-127
Bass drum carrier decay	27	0-127
Bass drum modulator volume	28	0-127
Bass drum modulator waveform	29	0-127

PARAMETER	MIDI CC#	RANGE
Bass drum modulator multiplier	30	0-127
Bass drum modulator multiplier fall	31	0-127
Bass drum modulator attack	32	0-127
Bass drum modulator decay	33	0-127
Snare volume	34	0-127
Snare waveform	35	0-127
Snare multiplier	36	0-127
Snare tune	37	0-127
Snare tune fall	38	0-127
Snare attack	39	0-127
Snare decay	40	0-127
Hats Volume	43	0-127
Hats waveform	45	0-127
Hats multiplier	55	0-127
Hats tune	56	0-127
Hats fall	57	0-127
Hats attack	51	0-127
Hats Decay	54	0-127
Tom vol	42	0-127
Tom waveform	44	0-127
Tom multiplier	48	0-127
Tom tune	46	0-127
Tom fall	47	0-127
Tom attack	50	0-127
Tom decay	53	0-127

Synth voices MIDI CC

Below is the MIDI control change implementation for the synth parts

Volume OP1	20	0-127
Waveform OP1	21	0-127
Feedback OP1	22	0-127
Algorhythm all operators	23	0-127
Multiple OP1	24	0-127
Attack OP1	25	0-127
Decay OP1	26	0-127
Volume OP2	27	0-127
Waveform OP2	28	0-127
Multiplier OP2	29	0-127
Tremolo	30	0-127
Vibrato	31	0-127
Attack OP2	32	0-127
Decay OP2	33	0-127
Volume OP3	34	0-127
Waveform OP3	35	0-127
Feedback OP3	36	0-127
Tune	37	0-127
Multiplier OP3	38	0-127
Attack OP3	39	0-127
Decay OP3	40	0-127
Volume OP4	41	0-127
Waveform OP4	42	0-127
Multiplier OP4	43	0-127
Tremolo	44	0-127
Vibrato	45	0-127
Attack OP4	46	0-127
Decay OP4	47	0-127

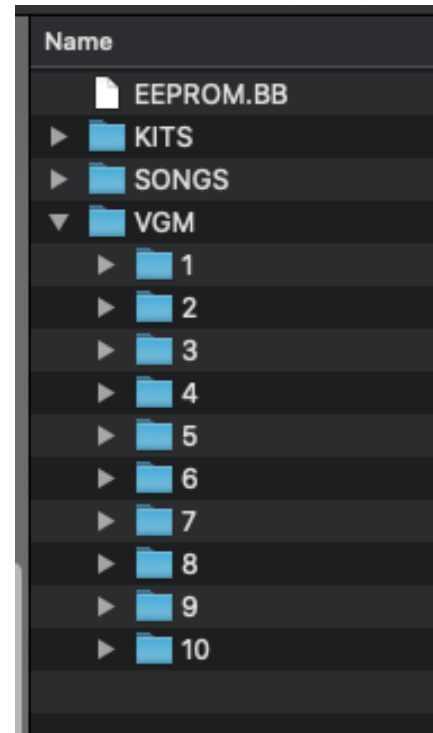
VGM Jukebox mode

Blast Beats can play **V**ideo**G**ame**M**usic tunes !

To enter jukebox mode, hold the tempo button during startup.

Blast Beats will search for a folder named VGM on the root directory of your SD card. Inside the VGM folder, Blast Beats requires 10 subfolders labeled 1 to 10. Please refer to the picture for the required file structure.

The top 10 buttons are used to select the folder. The bottom 16 buttons will light up as files are detected. Each folder can contain up to 16 files. If there are more than 16 files present in a folder, Blast Beats will choose the first 16 files in alphabetical order.



To start playback, press any lit bottom button. Blast Beats will play the selected song and continue to loop it if a loop point is present within the song. Otherwise, it will stop and return to the menu.

To interrupt playback, press the run button.

Important: The VGM files must be uncompressed .vgm files, specifically in the YMF262/OPL3 format. You can usually find tunes in a compressed .vgz format on websites like <https://vgmrips.net/packs/chip/ymf262>.

It's easy to uncompress these files. Simply rename the desired file's extension from .vgz to .vgm.gz. For example, rename "track1.vgz" to "track1.vgm.gz". Then, open the renamed file using your favorite file archiver program (e.g., Winrar, Winzip, 7zip) and extract the .vgm file contained within.

Troubleshooting

Problem: BlastBeats won't boot - all the LEDs flash 3 times endlessly!

Solution: This occurs if BlastBeats can't find an SD card, please check that it is inserted correctly...

Problem: I can't update the firmware, the mass drive that appears on my windows10 computer appears corrupt.

Solution: Please check that your motherboard USB chipset is fully compatible with windows10, indeed windows10 might appear to run fine on some older motherboards but some devices, but there may be issues with some USB devices including Blast Beats. If available please try another computer.