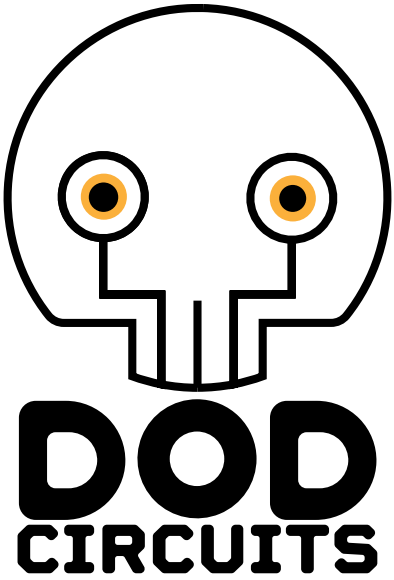
BT110

User Manual



V1.1

BT110

The BT110 is an innovative musical instrument based on Bytebeat synthesis, a fascinating sound method discovered by Viznut in 2011. This technique generates sound waves using simple mathematical operations, opening the door to uniquely abstract and experimental musical creation.

While some features may seem familiar, the BT110 stands out from traditional synthesizers by requiring a different approach to musical creation. Mastering this instrument requires some adaptation, as its use is based on a unique sound design logic.

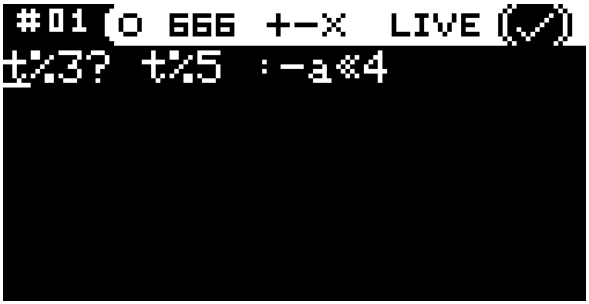
To get the most out of the BT110 and fully explore the richness of Bytebeat synthesis, we recommend starting by using it alone. Take the time to experiment and discover the formulas that work for you before integrating it into your musical setup.

Designed to work harmoniously with other machines, the BT110 offers impressive creative possibilities, but it can sometimes be difficult to achieve satisfactory results immediately. This instrument is the result of an ambitious project aimed at making the power of Bytebeat synthesis accessible through an adapted interface and controls.

We hope that the BT110 will inspire you as much as it has excited us, and that it will become an infinite source of musical pleasure and sound exploration for you.

EDITOR

Editor Mode MODE + 1



The editing screen consists of two distinct parts: The status bar (at the top), and the input area where the user edits a formula.

Editing and navigation are done using controls A and B as well as the numbered keys. Using a PS2 keyboard is possible.

The status bar indicates the different modes and menus in which the user is located.

The editor can compile C-compatible bytebeat formulas.

Formula ID

 Indicates the location of the formula in the BT110′s memory.

Symbol Menu

Indicates what type of symbol will be inserted into the Formula

 Operators +, -, *, …

 Numbers 1, 2, 3, …

 Functions rand(), …

 Variables t, a, b, c, …

 Punctuations ‘ ‘, ‘’’, ‘(‘, ‘)’, …

Playback Mode

 Listen to formula modifications in real-time.

 Lock the current formula.

Chaos Mode

 Allows global modification of the formula.

Compilation Status

Informs about the correct syntax of the formula

 The formula is correct.

 The formula contains a syntax error, a square appears at the height of the first error.

GENERAL

FUNC + MODE	Activate/Deactivate live/hold mode
MODE + 1 held	Display the saved formulas menu
MODE + 1	Switch to the editor screen
MODE + 4	Switch to the editor controls screen
MODE + 6	Activate/Deactivate midi
FUNC + 1	Save the formula
FUNC + 2	Insert a “t”
FUNC + 3	Activate/Deactivate chaos mode

LIVE MODE / HOLD MODE

1	T to zero
2	Next symbol
3	Delete a character
3 held	Delete the formula
4	Move left
5	Previous symbol
6	Move right
A	Move right or left
B	Next or previous symbol
FUNC + 4	Insert a left parenthesis
FUNC + 5	Insert a space
FUNC + 6	Insert a right parenthesis
A Click	Previous symbol type
B Click	Next symbol type

CHAOS MODE

6	Next operators
4	Previous operators
1	Random operators
2	Next numbers
5	Previous numbers
3	Random numbers
FUNC + 4	Insert a random formula of type “operator (t operator number)

CONTROLS

1 t init	tInit corresponds to the initial value of t when a midi note is received
2 global operator	the globop is an operator coupled with a value applied to each occurrence of T
3 tune	the tune is the value of the t increment. It can be positive or negative
4 bitCrush	The bitCrush applies audio deterioration.
5 tt tempo	The tempo acts on the special variable tt and allows its increment to be adapted to a bpm.
6 variable increment	Varinc acts on the increment of the 3 special variables a, b, c placed in the formula.

MEMORY

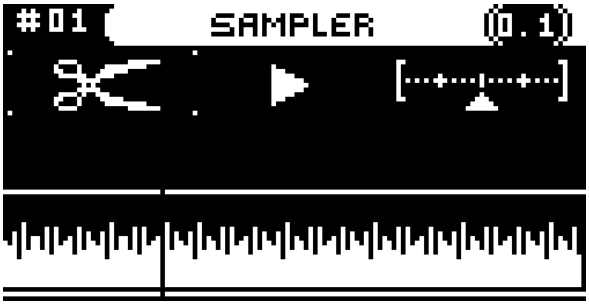
Memory mode — MODE + 1 (held)

The memory mode allows loading a saved formula from the factory memory or saved by the user. The user can save up to 15 formulas in the BT110's memory.

1	Load the selected formula into the editor
2	Move the cursor up
3	Close the saved formulas menu
4/6	Toggle between factory/saved formulas
5	Move the cursor down
FUNC held	Preview the selected formula

SAMPLER

Sampler Mode (Editor) MODE + 2

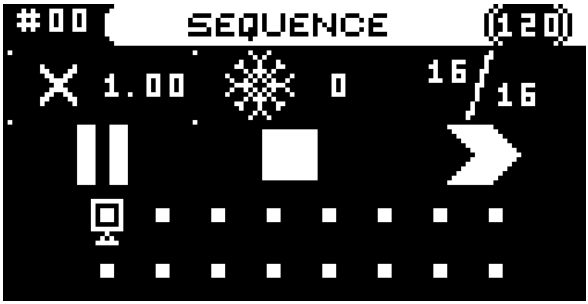


The sampler allows looping a recording of a formula. The sample can be played backward, at different speeds, and reduced/enlarged.

1	**Trim Mode**
A	reduce/enlarge the sample from the left
B	reduce/enlarge the sample from the right
2	**Speed Mode**
A	increase/decrease the sample playback speed
B	toggle between normal/reverse playback
3	**Position Mode**
A	move the sample left/right
B	reduce/enlarge the sample

SEQUENCER

Sequencer Mode MODE + 3

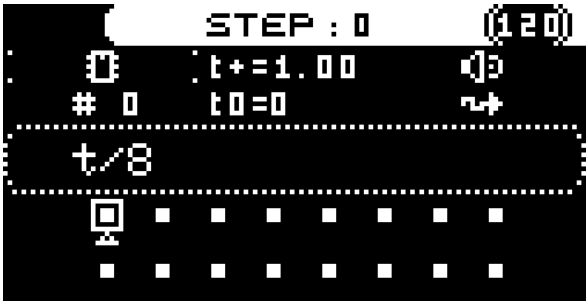


This mode allows playing sequences of 16 steps. Each step can load a formula from the factory or saved formulas.

1	Playback speed
2	Freeze
3	Sequence length
4	Play/Pause
5	Stop
6	Playback direction
A	Move the cursor

SEQUENCE STEP

Step Mode FUNC held



The step mode allows controlling various parameters of a selected step independently of the others.

1	Formula origin (factory/saved)
2	t increment
3	Mute/Unmute
4	Loaded formula number
5	t init (if reset T is enabled in controls)
6	Step playback direction
A	Move the cursor
B	Modify the parameter

CONTROLS

Controls Mode — MODE + 4

1 reset T	At the start of a new step, t is reset to 0, otherwise t increments independently of the step change
2 Bpm	Determines the sequence playback speed (midi disabled)

MEMORY

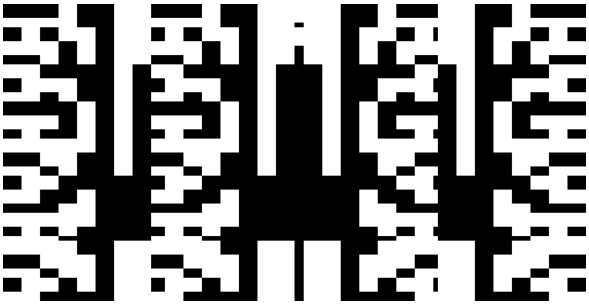
Memory Mode — MODE + 3 (held)

The sequencer's memory mode allows saving up to 4 sequences with the parameters of each step.

1	Load the selected sequence into the sequencer
2	Move the cursor up
3	Close the saved formulas menu
4/6	Toggle between loading/saving sequences
5	Move the cursor down
6	Step playback direction
A	Move the cursor
B	Modify the parameter

VISUALIZER

Visualizer Mode	MODE + 5



It is possible to display a visual result of your ByteBeat synthesis and switch between different modes.

2	Next visualizer
5	Previous visualizer
B	Slow down/Speed up the display frequency

CONFIGURATION

Configuration Mode	DOUBLE MODE

This mode allows modifying the general configuration of the device.

stereo	Activate stereo on the audio output
midiMode	Switch between MIDI input DIN or USB
midiChannel	Allows modification of the MIDI channel
autosave	Allows activation/deactivation of the automatic saving of the current editor formula
keyboard	Allows modification of the default keymap for the PS2 keyboard
about	Displays a QRCode pointing to the DODCircuits website
update	Puts the device in Bootloader mode to load the firmware

MIDI

The various parameters of the BT110 are controllable using MIDI CC.

Editor

Parameter	Description	CC	CC Min	CC Max
t increment	modifies how much the T increment changes	22	−16	16
reset t	resets the value of t to 0	24	0	1

Sampler

Parameter	Description	CC	CC Min	CC Max
sample start	modifies the sample start point	30	0	127
sample end	modifies the sample end point	31	0	127
sample position	modifies the start and end points of the sample simultaneously	32	0	127

Audio

Parameter	Description	CC	CC Min	CC Max
prescaler	modifies the audio generation speed	40	0	127
top pwm	modifies the pwm top wrap	41	0	127
pwm frequency	modifies the pwm frequency	41	0	127
Other				
panic	resets all midi parameters	70	0	127

HAPPY DISCOVERY!

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