

Bitbox Micro 1.0.8

User Manual



1010 music

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Table of Contents

WELCOME	7
Document Overview	7
SET UP BITBOX MICRO IN YOUR EURORACK	8
Connect Inputs and Outputs.....	8
Control the Volume.....	9
Test Your Setup	9
MODULE OVERVIEW	10
Controls Overview	10
Screen Navigation Overview	11
PRESETS	13
To Save Changes to a Preset:.....	13
To Load a Preset:	13
To Create and Name a Preset:.....	14
PADS OVERVIEW	15
The Pads Screen.....	15
The Waveform Screen.....	16
Pad Parameters Screen	17
Pad Selector Grid	17
WAV File Selection Screen.....	17
Multi-WAV Recording Screen	18
WAV Recording Screen.....	18
The Keys Screens	19
WORKING WITH PADS	20
Steps Common to All Pad Modes.....	20
To Select WAV Files and Assign Pad Modes:	20
To View Wave with Start, End, Loop and Slice Points:.....	22
To Configure Pad Parameters and Choose a Pad Mode:	23
Set Up a Sample Pad	27
Single Sample Pads	27

Multi-Sample Pads	30
Set Up a Clip Pad	33
Tips for Synchronizing Clips:	34
Set Up a Slicer Pad	35
To Manually Create or Remove Slices:	37
To Use Auto Scan to Create Slices:	37
To Use Slices to Synchronize Playback of Clip Pads:	38
To Use Slice to Grid:	38
Set Up a Granular Pad	39
To Connect an Audio Input for Sampling:	40
Record a New WAV File	40
To record a WAV file:	41
If you are recording WAVs for the current preset:	43
If you are recording WAVs to build up a library of sounds:	44
Record a Multi-sample Pack	45
Manage WAV Files	50
Working with WAV Files on the MicroSD Card	50
Work with WAV files on the Bitbox Micro	51
To Trim WAV Files:	51
To Delete, Save As or Rename a WAV File:	52
Save and Load Parameters in WAV Files	54
To save the values you have configured for a pad back to the WAV file:	55
Packing Presets	56
To Pack a Preset:	56
WORK WITH KEYS	57
To Play a Sample With the Traditional Keyboard:	57
To Play a Sample, Clip or Granular Mode Pad With the Grid Keyboard:	58
To Play Slicer Mode Pads With Keys:	58
To Select a Scale on the Grid Keyboard:	60

APPLY EFFECTS	61
To Route a Pad to an Effect:.....	61
To Modify Effect Parameters:	61
ADJUST THE MIX	63
To Adjust the Sound Level and Pan of a Pad:	63
To Mute and Unmute Pads:	63
MANAGE PRESETS	64
To Save Changes to a Preset:.....	65
To Load a Preset:	65
To Clean unused WAV files out of a Preset's folder:	66
To Pack a Preset:	66
To Delete a Preset:.....	67
To Rename a Preset:.....	67
To Save Current Changes as a New Preset:.....	68
Work with Preset Files on the MicroSD Card	68
SETTINGS	69
INPUT SETTINGS	71
CV Input	71
To Configure an Input for Use as Gate, CV, Clock or Audio:	71
MIDI Input.....	71
OUTPUT SETTINGS	72
CV Output.....	72
To See the Output Screen:	72
MIDI Output	72
USE MIDI DEVICES WITH BITBOX MICRO	73
Work with MIDI Inputs	73
To Trigger Pad Hits with a MIDI Device:.....	74
To Play Notes and Use Common MIDI Modulation Signals with a Specific Pad or Pads:	75
To Play Notes and Use MIDI Modulation Signals with the Currently Selected Pad:	75
To Configure MIDI modulation for a parameter using named MIDI sources: ..	76

To Use MIDI Learn mode to Modulate Parameters:	77
To use a MIDI CC input to modulate a parameter:	77
To Remove MIDI Modulation from a Parameter:	77
To Use MIDI Notes to Play Slices:.....	78
Use MIDI Program Change to Open a Preset.....	80
To Enable or Disable MIDI Program Changes:	80
Sharing of MIDI Input Channels	81
Work with MIDI Outputs.....	81
Synchronize Playback with a Clock.....	82
Configure Bitbox micro to Follow an External Clock	82
To Connect an External CV Clock:	82
Send the Bitbox Micro Clock Signal to External Devices	83
Reset the Clock	83
CV MODULATION	84
To Use CV Modulation for Pad or FX Parameters:.....	84
CREATE PRESET TEMPLATES FOR RE-USE	86
To Configure a Pad without a WAV file:	86
To Add a WAV file to a Template Pad:	86
REDUCE ALIASING WHEN PLAYING PADS CHROMATICALLY	87
PROCESSOR MANAGEMENT TIPS	88
UPDATE FIRMWARE, AUDIO FILES AND PRESETS	89
Switch to a New MicroSD Card While Operating Bitbox micro	89
Backup Your Presets and WAV Files.....	89
To Install New Firmware:	89
Reset a Bitbox Micro Preset to Factory Settings	90
TECHNICAL SPECS	91
On-Board Memory	91
Maximum Sample Length.....	91
Samples Supported	91
Maximum Number of Voices Supported	91

Pin Mapping for Mini TRS Jack to MIDI 5 Pin DIN Connectors.....	92
STAY UP TO DATE	93
Demonstration Videos and Latest Documentation	93
Connect with Other Bitbox Micro Users	93
Contact Us.....	93

WELCOME

Bitbox micro by 1010music is a compact sampling module for eurorack. With bitbox micro, you can record and play samples, then trigger them using MIDI and CV. Use bitbox micro to record individual WAV files, or use Auto-sampling to easily create a sample bank of your favorite MIDI or CV instrument. You can beat sync your clips to an external clock or use slices to trigger portions of a WAV file. We will start with a quick walk through of the basic features to get you started. Then we will go deep and cover all of the features supported.. Find community, support, wish lists, and firmware updates on our forum at <https://forum.1010music.com>.



Document Overview

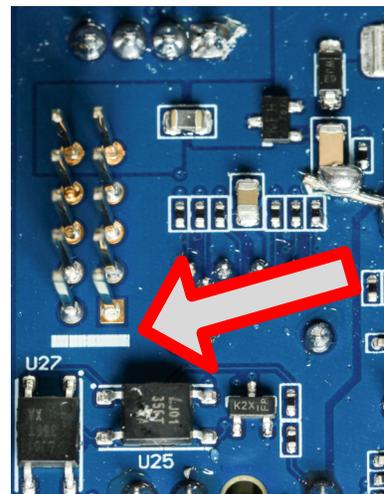
In this manual, we will first quickly make sure you have bitbox micro installed in your eurorack and set up so you can make some sound with it. After that, we will review the basic controls and screens. Next, we will walk through how to set up pads including a description of each of the different pad modes. We will cover the Keys Input mode, how to apply FX and how to adjust the mix. After that, we will cover presets and global settings. That will be followed by discussion of how to use MIDI devices with bitbox micro, along with some more advanced usage features. Lastly, we will delve into managing bitbox micro firmware and files, touch on a couple of technical specs and finally tell you where you can find more information about bitbox micro and other 1010music products.

This manual was written for version 1.0.7 of the bitbox micro firmware. If you have an older version, we strongly recommend that you upgrade. See [UPDATE FIRMWARE, AUDIO FILES AND PRESETS](#) below to learn how to upgrade your firmware.

SET UP BITBOX MICRO IN YOUR EURORACK

Let's get the module in your rack so you can try things out as we cover them here:

1. Insert the microSD card into the MICRO SD slot, notched edge to the right.
2. Turn off your Eurorack and use the ribbon cable to connect the module to power:
 - The narrow connector attaches to the module, with the red side of the cable on the side of the header with a white bar.
 - The wide connector attaches to the Eurorack +12V power supply, with the red side of the cable aligned with pin 1 or the -12V pins on the power supply bus.
3. Mount the module into the rack and then power it up.



After boot up, the bitbox micro displays the Pads screen with a grid of WAV files loaded from one of the presets provided on the microSD card.

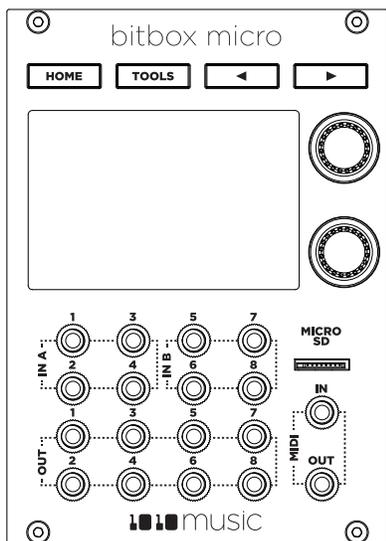
Connect Inputs and Outputs

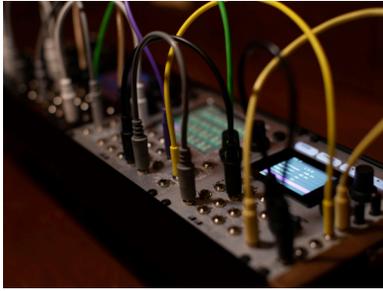
Connect some basic signals to bitbox micro to get started. This module has 8 input and 8 output jacks that support the following connections:

- Inputs 1 – 2: Gate, CV, Clock, Audio
- Inputs 3 – 8: Gate, CV, Clock
- Outputs 1 – 6: Assignable audio
- Outputs 7 – 8: Master audio left and right

Connect Outputs 7 and 8 to speakers or headphones through a mixer. To record audio, connect an audio signal to Inputs 1 and 2.

A gate signal on an input can trigger the corresponding pad. Connect a standard eurorack gate signal to input 3 to try this out.



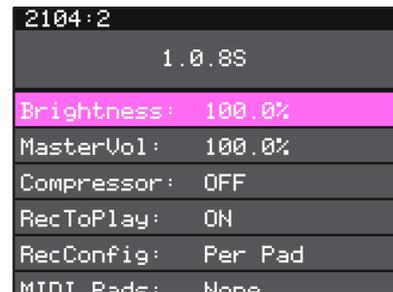


Connect a MIDI controller to the MIDI In jack to trigger pads and modulate parameters. Use the included Mini-TRS to MIDI 5-PIN DIN adapter if needed. This TRS jack supports both Mini-TRS type A and Mini-TRS Type B connections.

Control the Volume

By default, the bitbox micro is configured to play at 80% volume. Here's how to adjust that if needed:

1. Touch Tools one time to display the Settings screen.
2. Turn the top knob until the MasterVol parameter is highlighted pink.
3. Turn the bottom knob to the desired value.

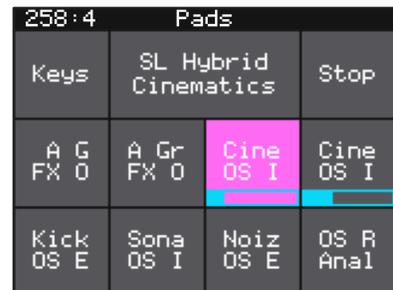


Settings Screen

Test Your Setup

Now let's see what the module sounds like.

1. Push the Home button until you see the Pads screen.
2. Touch a pad to trigger playback. You should hear the sample playing out through the connected audio output. The pad you touched will turn pink to show that it is selected. A blue playback progress bar will grow across the bottom of the pad as the WAV file play progresses.



Pads Screen

If you don't hear anything, try touching a different pad. If you still don't hear anything, push Tools then Home to make sure you really are on the Pads screen. (It will say Pads at the very top middle of the screen.) Then try touching a pad. Next, check your output connections and your volume (See above.)

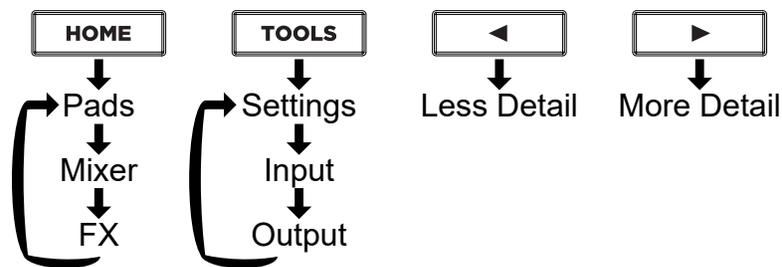
MODULE OVERVIEW

In this section, you will see how the controls generally are used in this module and get an overview of the screen navigation.

Controls Overview

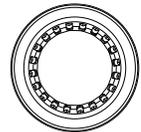
You control bitbox micro using the four white buttons across the top, the two knobs on the right, and the touchscreen.

The four white buttons across the top control which screen is displayed. Push the Home and Tools buttons repeatedly to cycle through the Pads, Mixer and FX screens. Push the arrow buttons to view more or less detail about the selected element.

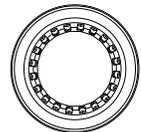


Turn the knobs to select elements and assign values.

Top Knob:
Select an
Element



Bottom Knob:
Assign a
Value

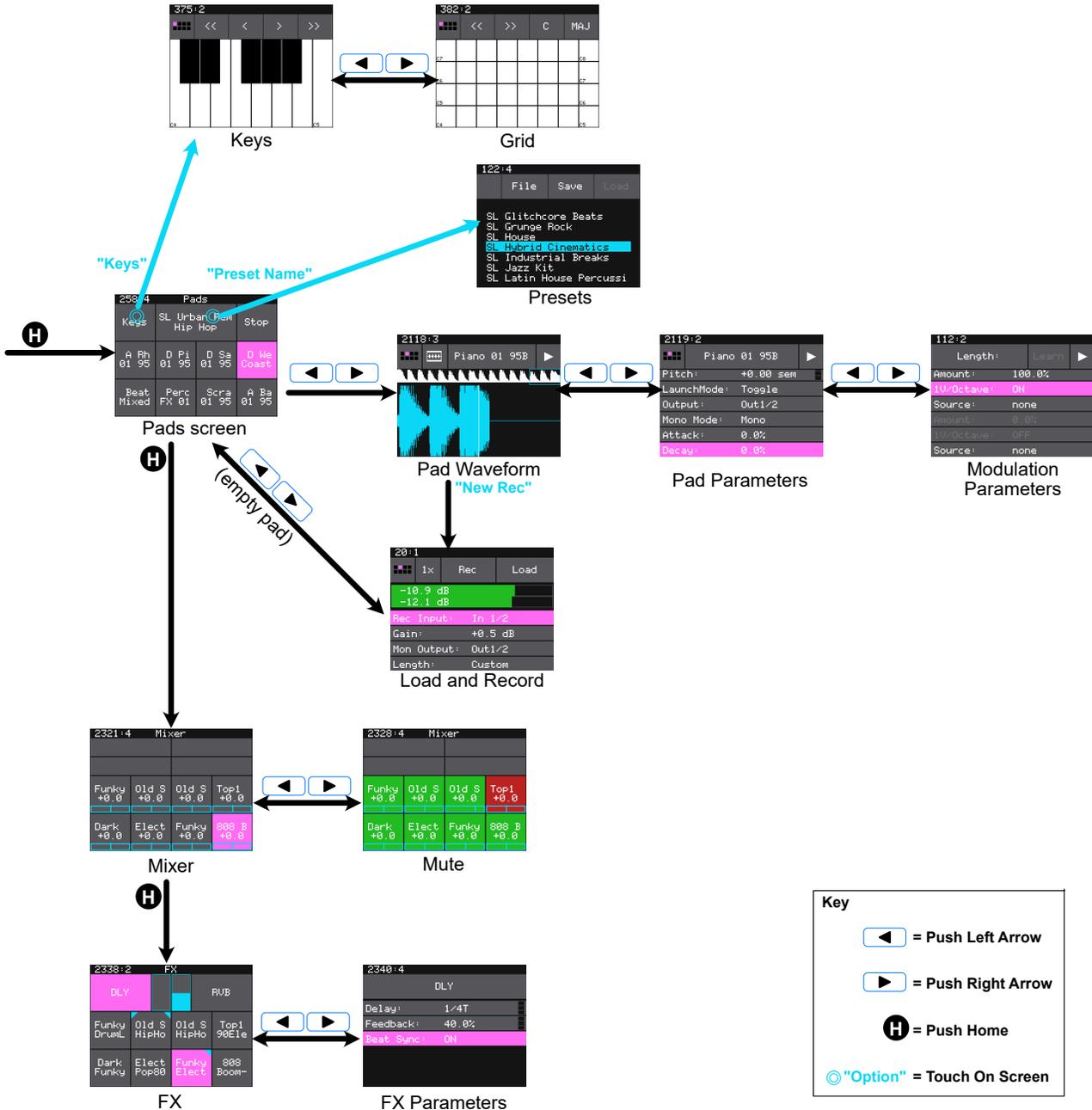


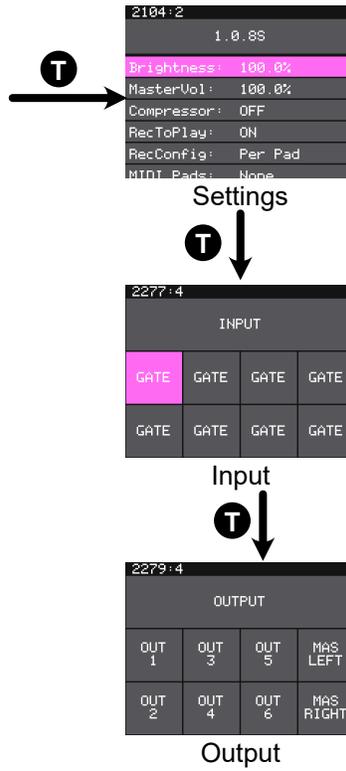
On the touch screen, you can use tap, pinch and stretch gestures to select items, trigger pads, push buttons, zoom in or zoom out.

If you get lost in the User Interface, push the HOME button up to three times until you get to the screen with the word “Pads” in the black bar across the top. Now you are back to the starting screen.

Screen Navigation Overview

Sometimes it helps to see a map of where you are going. The diagrams on this page and the next show the high level screens on bitbox micro and how to navigate between them. We will discuss each of the screens and provide detailed “How to” steps later.





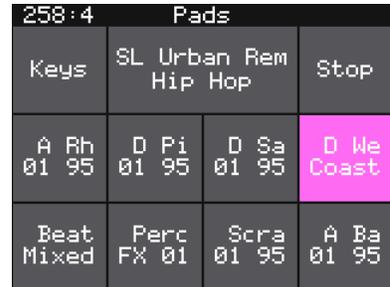
PRESETS

By now you are probably ready to start playing some music. We are going to cover that next. First, let's make sure you know how to save or undo your changes. Bitbox micro stores your configuration work as Presets. A number of demonstration presets are loaded on the micro SD card. Each preset holds a set of 8 pad configurations, along with Mixer, FX, and Input settings. Note that Mute settings are not saved, and the global Settings (the first page when you push TOOLS) are saved on the SD Card apart from the Presets.

Bitbox micro does not save changes automatically. You have to save your preset to preserve your changes. If you turn off the module, or change presets, any changes you have made to the current preset will be lost.

To Save Changes to a Preset:

1. Touch the name of the preset at the top of the Pads screen (SL Urban Rem Hip Hop in the screen shot on the right) to display the Preset Management screen. This screen shows a list of the presets stored on the microSD card with a menu across the top. The currently selected preset is highlighted in blue.
2. Touch Save or touch File then Save As to save changes. Save is disabled if there are no unsaved changes. Save As will create a new preset with the new name, and the old preset will keep its original settings.



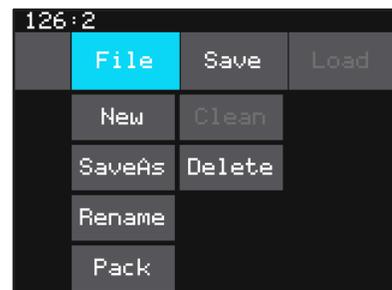
Pads Screen



Preset Management Screen

To Load a Preset:

1. Touch the name of the preset at the top of the Pads screen to access the Preset Management screen.
2. Turn a knob to select a preset, then touch Load to make this the active preset.



Preset Management File Menu

Note:

- ▶ Bitbox micro does not automatically save your changes. Any unsaved changes will be lost when you load a preset or power down the module.

To Create and Name a Preset:

1. Touch the name of the preset at the top of the Pads screen (SL Urban Rem Hip Hop in the screen shot on the right) to display the Preset Management screen.
2. Touch File then New in the top menu. This will create the new preset with a default name, and display the File Naming screen.
3. Turn the knobs to enter a name for the preset. File naming works like old school arcade games. Turn the top knob to move the cursor. Turn the bottom knob to scroll through letters alphabetically. First capital letters are displayed, then lower case, then numbers.
4. Touch Enter to save the name and return to the Presets screen with the new preset selected.
5. Push the PADS button to start working with your new preset from the Pads screen.



File Naming Screen

Note:

- ▶ When bitbox micro first starts up, it loads the last preset you used on this microSD card.

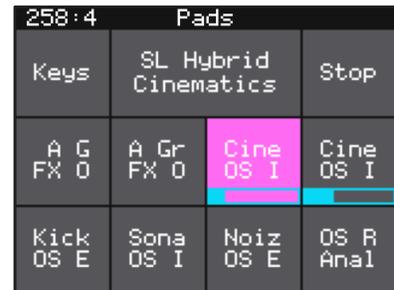
PADS OVERVIEW

Pads are the onscreen cells that are used to load WAV files into Presets and to trigger them. In this section, we will give an overview of the primary screens used when working with Pads and how to navigate between them. In the next section, we will walk through settings and tasks for all pads, followed by settings and tasks specific to each pad mode. Finally, we will discuss how to record single WAV files and automate the recording of a multi-sample bank.

The Pads Screen

When you first turn on bitbox micro, the Pads screen is displayed. If you move away from this screen, you can get back here by pushing the white HOME button at the top of the module.

The 8 squares in the bottom two rows of the screen are the pads. Each pad displays an abbreviated name of the WAV file or folder mapped to the pad. Each pad can be mapped to one WAV file or a bank of WAV files. Touch a pad to trigger it. This will also select it, as indicated by the pink background. You can also use the knobs to select a pad without triggering it. Depending on how the pad is configured, a triggered sample might play all the way through each time you press it, it might play only while you are touching the pad, or it might play until you touch it again. A blue progress bar appears at the bottom of the pad while it is playing. You can trigger multiple pads at once. Push the Stop button in the top right corner of the screen to halt playback of WAV files. A white bar at the bottom of a pad indicates the pad is ready to start at the next quantization break.

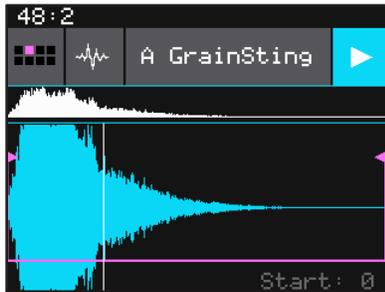


Pads Screen

The black bar along the top of the screen displays the playback clock and the current screen name. The number pair on the left displays the overall playback time in measures and beats.

The Keys button in the top left displays an onscreen keyboard where you can play the notes by pitch shifting the currently selected pad. The text between the Keys and Stop buttons is the name of the currently selected preset. Touch this to go to the Preset Management screen where you can save, load and create new presets.

The Waveform Screen



Waveform Screen

To configure a pad, touch the pad to select it, then push the white right arrow button ► above the screen. This will display the Waveform screen for this pad. There are two versions of the WAV file displayed on the screen. The large blue wave can zoom in or out using pinch and stretch touch gestures. The shorter white wave shows the entire WAV file. You can touch a spot in the white wave

display to change the current display area of the larger blue wave. This can be useful when dealing with long WAV files.

As you turn the top knob, the text in the lower right corner shows you which parameter you are controlling with the bottom knob. Turn the top knob to the left to select Start, then turn the bottom knob to move the pink bracket that represents the audio playback range for the WAV. Turn the top knob to the right to select Length, then turn the bottom knob to adjust the width of the pink bracket and the length of the WAV file section that will be played. If Looping is enabled, a white bracket will appear that represents the looped range. Turning the top knob will now allow you to select Loop Start and Loop End.

There is a series of buttons across the top of the Waveform screen. The left button is the Pad Selector Grid. We will talk about that soon. To the right of that, is the Pad Mode Selector. Touch this button to display the list of Pad Modes, then touch a pad mode to select it.

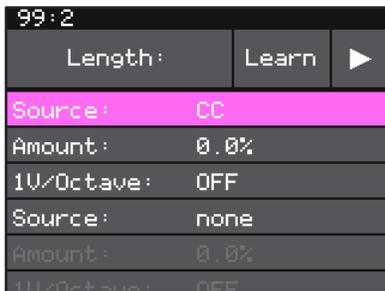
The text in the top row, A GrainSting in the screen shot of the Wave Screen, is the name of the WAV file or directory loaded into this pad. It may be shortened here. The button on the right is the Play button. Touch this button to playback the WAV file. A white cursor will appear on the screen to show the current play position, and the large WAV display will scroll as the current play position moves off screen.



Pad Mode Selection Screen



Pad Parameters Screen



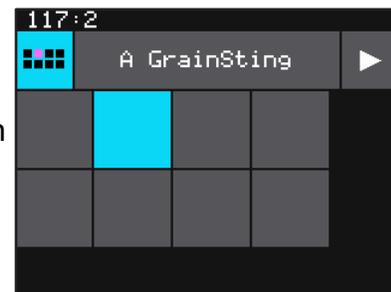
Parameter Modulation Screen

Pad Parameters Screen

Push the right arrow button above the screen again to display the Pad Parameters screen. This screen displays one long list of all of the parameters that can be configured for the current pad. Turn the top knob to select a parameter, as indicated by the pink highlight. Turn the bottom knob to select a value for a the highlighted parameter. If the parameter has three black or blue boxes on the far right of the screen, this parameter is a modulation target. Push the right arrow button again to view the Parameter Modulation screen. We will go into more detail about modulation later. For now, push the white left arrow button ◀ to go back to the previous screen. Push the HOME button to go back to the Pads screen.

Pad Selector Grid

While on the Wave screen or the Pad Parameters screen, the grid icon in the top left corner indicates which pad is currently selected. Touch this icon and a grid will pop up. Touch a pad in the pop up grid to change which pad is selected.



Pad Selector Grid



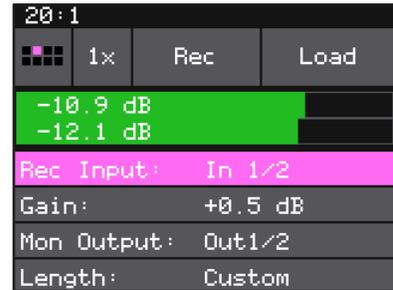
WAV File Selection Screen

WAV File Selection Screen

The name of the loaded WAV file is displayed at the top of the Wave Screen and the Pad Parameters screen (A GrainSting in the screenshots above). Touch this file name to display the WAV File Selection screen where you can choose a different WAV to load into this pad. Touch the file or directory you want, and then touch Load. To either load the file or display the contents of the directory. Touch the caret ^ button to the left of the File button to navigate to the parent file folder. Touch the back arrow <-- to return to the previous screen.

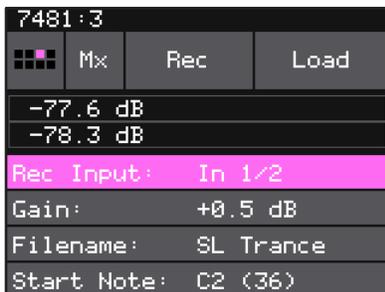
WAV Recording Screen

If you push the right arrow button above the screen while on an empty pad, you will see the WAV recording screen. You can also get to this screen by selecting New Rec from the Pad Mode menu. Before you record, you will need to go into the Inputs screen and configure inputs 1 and 2 for audio. Once that is done, a level meter appears above the list of recording parameters. Scroll through the parameters and set the options for this recording session. Then touch Rec at the top of the screen to begin recording. Push Stop to end recording. The file will be given a default name and will be stored on the microSD card. Bitbox micro will then take you to the Pads screen.



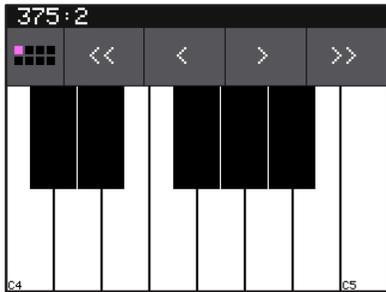
Wav Recording Screen

Multi-WAV Recording Screen



Multi-Wav Recording Screen

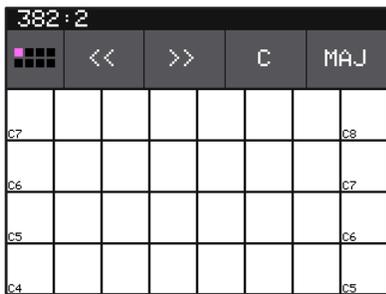
At the top of the WAV Recording Screen, is a small button labeled 1X. This indicates that you are in single WAV recording mode. Touch this and select Mx to set up a multiple WAV recording to automate recording of a sample bank that can be used to create a set of samples of various pitches to use in Multi-Sample mode. We will discuss multi-sample mode and automatic sample bank recording later.



Keys Screen

The Keys Screens

You will find some new ways to play your samples on the Keys screen. To start, please load the preset SO Bells & Chimes that came loaded on the microSD card. Then, on the Pads screen, select either of the pads named Bell Rotos, and then push the KEYS button at the top of the screen. Bitbox micro displays a piano style keyboard on the screen. Touch some of the keys on the keyboard to hear the selected pad play pitch shifted by note. You can adjust which octave is playing by touching the arrow buttons above the keyboard or by turning a knob. The C keys are numbered so you can quickly identify which octave will be playing.



Keys Grid Screen

Push the right arrow button above the screen to access the Keys Grid screen. Use the two buttons in the top right of the screen to select the Key and Scale that will be used by the grid keyboard. Now you can play without worrying about hitting an off-key note.

If you have a slicer pad selected when you are on the Keys screen, the keys and grid squares will trigger different slices. The first slice plays with C2.

WORKING WITH PADS

Each pad in bitbox micro can be assigned a WAV file or a folder of WAV files. You can configure playback options, such as trigger mode and looping, individually for each pad. Once a pad is loaded, you can touch the pad on the main Pads screen to trigger it. You can also use the Keys screen to play the currently selected pad. When you trigger a pad from the Keys screen, a pad with a single WAV file is pitch shifted to correspond to the note played. Multi-sample pads play the WAV file with a root note closest to the played note, with pitch shifting if needed. We'll talk more about multi-samples later.

Steps Common to All Pad Modes

The tasks in this section apply to all pads, no matter which pad mode you select. The first task to create a new pad is to select the WAV file or files and then set the Pad Mode.

To Select WAV Files and Assign Pad Modes:

Push HOME until you are on the Pads screen. This screen has two rows of 4 pads each, for a total of 8 pads. A WAV file or folder of WAV files can be assigned to each of these pads, and each pad is assigned a Pad Mode.

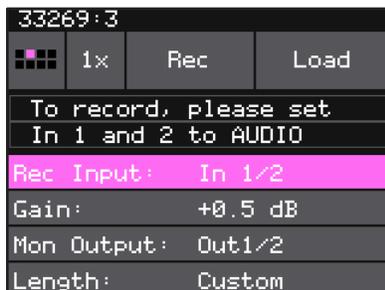
Bitbox micro supports the following pad modes:

Icon	Pad Mode	Description	Reverse Playback	Beat Sync	Set Loop Points	Play Slices	Poly-phony
	Sample	Use to play single notes or drum hits. You can control start and end points for playback and looping. Supports reverse playback, along with forward and bidirectional looping.	✓		✓		8 notes
	Sample: Multi-Sample Mode	Spread a folder full of wav files across the keyboard to get more realistic instrument pitch shifting or to map different sounds to each key on the keyboard.					8 notes
	Clip	Use for synchronized loops and quantized playback, e.g. drum loops and guitar tracks between one and eight measures long.		✓			2 notes

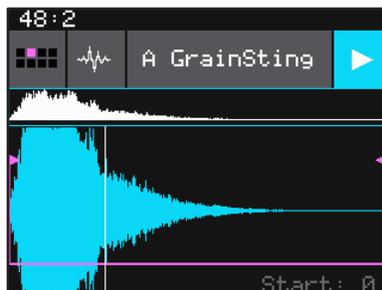
Icon	Pad Mode	Description	Reverse Playback	Beat Sync	Set Loop Points	Play Slices	Poly-phony
	Slicer	Use with a WAV file with different sections that you want to trigger independently.				✓	2 notes
	Granular	Generate new sounds from your samples. The sample is played back in small portions about 10 to 200ms in length, called grains.	✓			✓	mono
	New Rec	Use to start recording a new WAV file or clear a WAV from a pad.					
	New Multi	Automate recording of multiple samples across a range of notes triggered via MIDI.					

Each pad can have a different Pad Mode. You can use the same WAV file in different pads in different Pad Modes. To load a WAV file into a pad:

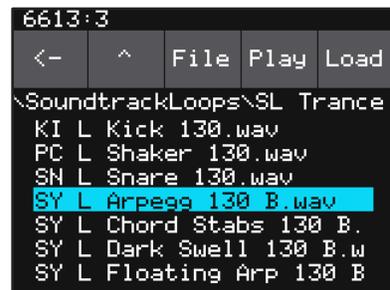
1. Push the HOME button to bring up the Pads screen.
2. Select a pad by touching it or using the control knobs to cycle through the pads. (The top control knob moves the selection horizontally. The bottom control knob moves the selection vertically.) The selected pad is highlighted pink. Touching a pad that is loaded with a WAV file will also trigger playback of the pad.
3. Push the white right arrow button ► above the screen. If the pad was empty, the WAV Load and Record screen will be displayed. If the pad already had a WAV file assigned, the Waveform screen will be displayed.



WAV Load and Record Screen



Waveform Screen



WAV File Selection Screen

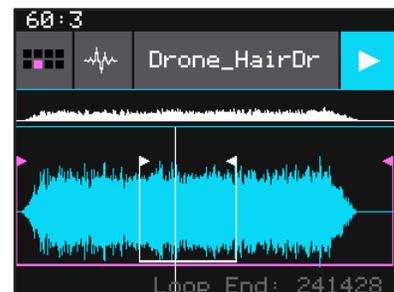
4. If you are on the WAV Load and Record screen, touch Load in the top menu bar. If you are on the Waveform screen, touch the name of the WAV file at the top of the screen (A GrainSting in the example). You will now be on the WAV File Selection screen.
5. From the WAV file selection screen, use the control knobs to scroll through the list of files. Bitbox micro displays the directories at the top of the list followed by the individual files in alphabetical order. The selected file or directory name has a blue highlight. Touch Play to preview the highlighted file. The Play button will turn blue to show that auto-preview is enabled. Bitbox micro will play each WAV file once when you pause on it while scrolling. If you have a CV trigger or a MIDI input trigger playing for this pad, bitbox micro will play the selected WAV file whenever a trigger is received for this pad. Touch the Play button again to disable auto-preview mode. Touch Load to assign the selected WAV file to this pad. When looking at the list of files, list items that start with a slash \ are directories. Load a directory to see its contents. The file path is displayed above the list of files (e.g. SoundtrackLoops\SL Bass Mu in the example above.) Touch the caret ^ to navigate back up the directory tree. Touch the back arrow to go back to the previous screen.

Note:

- ▶ There may be considerable differences in volume levels of WAV files depending on how they were originally recorded. Be careful when previewing the WAVs on the load screen or you could get a rude surprise if you switch between soft and loud WAV files.

To View Wave with Start, End, Loop and Slice Points:

Once you have loaded a WAV file, you will be on the Waveform screen. There are a number of important features on the Waveform screen. The grid icon in the top left of the screen, immediately below the clock counter, provides a graphical representation of which pad in the grid you are configuring. You can touch it to bring up a pad selection grid. Touch a square in the grid to change which pad you are working with. The icon just to the right of that is a button that allows you to select the Pad Mode. The text in the top bar displays the first characters of the name of the loaded WAV file, and can be touched to choose a different file. Trigger playback by touching the arrow button on the right.



Waveform Screen

There are two views of the waveform displayed on the screen. The top view always displays the full waveform with a blue square indicating the subsection of the waveform that is displayed in the bottom, bigger waveform. You can use pinch and stretch touchscreen gestures to zoom in and out of the waveform, then swipe to scroll along the length of the waveform. You can quickly jump to a different section of a long waveform by touching that section of the wave in the top view.

If the pad is in Sample or Granular mode, the bottom waveform shows a pink bracket that indicates the portion of the WAV file that will be played by this pad. Turn the top knob to select which end of the bracket you want to move, then turn the bottom knob to move the bracket. If this pad uses looping, a white bracket is displayed to show the loop points. Turn the top knob to choose the loop start or loop end point and then turn the bottom knob to adjust it.



WAV Screen with Slice Points

If the pad is a Slicer you will see pink bars that indicate the position of the slices. If a wav has slices embedded in it, you may also see slices when the pad is in Clip mode.

To Configure Pad Parameters and Choose a Pad Mode:

1. Touch the icon immediately to the left of the WAV file name at the top of the screen to display the Pad Mode selector. Touch one of the options to set the Pad Mode. The icon changes to represent the selected Pad Mode. See the table at the beginning of this section for a description of each of these modes.
2. From the Waveform screen, push the right arrow button to display the Pad Parameters screen. Turn the top knob to scroll through the list of parameters. Turn the bottom knob to set the value for the selected parameter. Push the left arrow button to go back to the Waveform Screen.



Pad Mode Selector

3. On the Main Pad Parameters page, there are three buttons below the measure and beat count. The left most button is the grid icon and pad selector. Touch this icon to change which pad you are editing. The pink square indicates which pad you are currently editing. The second button is the WAV file name. Touch it to select a different WAV file. The third button is the Play button. Touch it to trigger playback of the pad. The playback functionality will depend on the other parameter settings. The WAV file is playing when this button is highlighted blue. When this square is filled in white, the pad is queued up to begin when the appropriate quantization break is reached.

4. Some of the pad parameters are the same for all Pad Modes, while others vary by mode. . Here are the parameters that are the same for all Pad Modes:



Pad Parameters Screen

Parameter	Description	Range of Values	Mod Target?
Level	Adjusts the loudness level of the pad	-96dB to +12dB	Yes
Filter	Applies either a high pass or low pass filter to this pad.	-100% to +100% Negative values apply a low pass filter. Positive values apply a high pass filter.	Yes
Pitch	Adjusts the pitch of the pad up or down	-24.0 to +24.0 semitones	Yes
Launch Mode	This controls how a note trigger affects the playback of a pad.	Trigger: Activate the Pad by touching the pad or through MIDI note on. Bitbox micro will start playback of the WAV file and play through to the end. Gate: Begin the WAV file playback in the same manner as Trigger mode. But in Gate mode, playback will stop when you release the touch or the MIDI note is released. Toggle: Begin the WAV file playback in the same manner as Trigger mode. When another trigger event happens, the playback will stop.	No
Output	The output of this pad is sent to the output or outputs selected here. It will always also be sent to the Master Outs on Jacks 7 and 8.	Out1/2, Out 3/4, Out 5/6, Out 1, Out 2, Out 3, Out 4, Out 5, Out 6	No

Parameter	Description	Range of Values	Mod Target?
Attack	The time it takes for the sound to reach its loudest level	0.0 to 100.0% The attack percentage is a logarithmic scale between 0 and 9 seconds.	No
Decay	How long it takes for the sound to go from the initial peak to the sustain level	0.0 to 100.0% The decay percentage is a logarithmic scale between 0 and 38 seconds.	No
Sustain	The volume level that the sound maintains when you hold a note	0.0 to 100.0%	No
Release	The release specifies how long the note will continue to play and fade out when the note is released. In Gate mode, the release begins when the touch ends, the gate signal goes low, or the MIDI note off event occurs. In Toggle mode, the release begins when the toggle off occurs. In Trigger mode with sample pads the release begins when reaching the Loop End point in loop mode, or the Start + Len point when not looping. In Trigger mode for Clips and Slicers, the release has no effect.	0 to 100% The release percentage is a logarithmic scale between 0 and 38 seconds.	No
Excl Group	Exclusive Grouping. When Excl X is selected, there will not be an exclusive behavior for this pad. When a pad is assigned to an Exclusive Group, any other pad in this group will stop whenever a pad in the group is triggered.	Excl X, Excl A, Excl B, Excl C or Excl D	No
MIDI In	<p>Specifies a MIDI channel to be used to play this pad chromatically or sliced across keys. and for some MIDI parameters.</p> <p>More than one pad can be assigned to the same MIDI channel. In this case, all assigned pads will be triggered.</p> <p>Any MIDI channel that is mapped to a pad using this parameter no longer triggers any events for MIDI parameters set to OMNI.</p> <p>Modulation sources PTCH (pitch bend), MODW (Modulation Wheel), MVOL (Volume control), and MPAN (Pan control) follow this channel assignment.</p> <p>See the section Use MIDI Devices with Bitbox micro below for more information.</p>	None, Ch1 through Ch16.	No

Parameter	Description	Range of Values	Mod Target?
Pad Note	Controls which MIDI note on the MIDI Pads channel will trigger playback of this pad.	Default, C#-1 through G9. C#-1 maps to MIDI Note Number 0.	No

Note:

- ▶ The Master Left and Master Right outputs (output jacks 7 and 8) will always contain a mix of all of the outputs.

Several of the pad parameters have three black boxes on the right edge. These pads are modulation targets, and these boxes are used to control the modulation parameters. We will discuss modulation later in the [Work with MIDI Inputs](#) section.

The remaining configuration options for a pad vary based on which Pad Mode (sample, multi-sample, clip, slicer or granular) is selected. We will walk through the configuration of each of the Pad Modes next.

Set Up a Sample Pad

Use a sample pad when you only want to play or loop through a WAV file with no slicing and no beat synchronization within the playback. You can also use this mode when you have a bank of samples that you want to map across the keyboard. We will first discuss Sample mode pads loaded with a single sample, and then explain the special case of multi-samples.

Single Sample Pads

A sample pad loaded with a single sample supports reverse playback, along with forward and bidirectional looping. You can also use the Start and Len parameters to play a portion of the WAV file.

Follow the steps in the previous section to create a sample pad and open the Pad Parameters Screen. An example of a good WAV file to use for a sample pad is `\Soundopolis\Sci Fi\Zap_007.wav`. The table below describes the parameters available that are specific to a sample pad with a single sample loaded.

Sample Parameter	Description	Range of Values	Mod Target?
Mono Mode	Controls the polyphony of the pad. Select Monophonic to restrict playback to one note at a time for this pad. Select Polyphonic to play multiple notes at a time. Sample pads support 16-note polyphony. Clip mode and Slicer mode support 2-note polyphony. Granular mode is monophonic. There is a limit of 32 voices across all pads at one time.	Mono, Poly	No
Interp	Controls Playback quality option. For most WAV files, the Normal mode provides high quality playback with a moderate draw on the processor. If you hear aliasing during playback of your WAV file, set this parameter to HighQ mode. HighQ mode has a higher draw on the processor, so it is recommended that you use Normal mode unless you are having issues.	Normal, HighQ	No

Sample Parameter	Description	Range of Values	Mod Target?
Loop Mode	<p>Controls whether the WAV file plays in a loop, and the direction of the loop.</p> <p>When looping is enabled, if you have the Launch Mode set to Trigger, looping will happen for the duration of the Release phase of the note.</p> <p>If you have the Launch Mode set to Gate, looping plays through the gate pulse and the release time.</p> <p>If you have the Launch Mode set to Toggle, looping starts to play when the initial pulse is received and continues until the terminating toggle pulse is received.</p> <p>If Loop Mode is Bidirect, and Rev is ON, playback will start from the end of the sample, and then loop as described, but starting with the Loop End to Loop Start pass.</p>	<p>None: Plays once from the value assigned to the Start parameter through the value assigned to the Length parameter.</p> <p>Forward: Plays from the value assigned to the Start parameter through the value assigned to the Loop End Parameter, then jumps back to the value of the Loop Start parameter. Play continues to loop between Loop Start and Loop End for the duration of the note.</p> <p>Bidirect: Works similarly to forward, but loop playback proceeds from Loop Start to Loop End then backwards to Loop Start. It then repeats the looping back and forth.</p>	No
Loop Fade	<p>The amount of overlap used in the cross fade at the loop points. The cross fade is accomplished by overlapping part of the WAV file from before the loop start point. This number represents how long the overlap content should be. If this is set to 100%, it will use an overlap that is the same length as the loop. If it is 10%, it will use an overlap that is 10% of the length of the loop. In order to truly loop 100%, the length of the WAV file before the loop point must be as long as the loop length. Otherwise, the cross fade will max out at a lower number. Loop fade does not work with Reverse looping.</p>	0 to 100%	No
Rev	<p>When Reverse is ON, the WAV file will play in reverse.</p>	ON, OFF	No

Sample Parameter	Description	Range of Values	Mod Target?
Root Note	<p>The base sample will play for the note specified here. The sample will be pitch shifted up or down one semi-tone for each note away from the root note. This will load from the WAV file if available when you add the WAV to the preset. You can specify a different value here to be used for this WAV on this pad in this preset.</p> <p>When None is specified, the sample is assumed to have a root note of middle C.</p> <p>If you save the WAV file from this pad, the Root Note value will be saved with it.</p>	None, C#-1 through G9	No
Start	Point where playback will begin when playing forward or ends when playing in reverse. Expressed as a sample number.	0 to number of samples in the file	Yes
Length	When Loop Mode is None, how long the sample will play past the value of the Start parameter. Expressed in samples.	0 to number of samples in the file	Yes
Loop Start	<p>Point where the looping will begin when playing forward, or looping will end when playing in reverse. Expressed in samples. Must be before or equal to LpEnd.</p> <p>LpStr is read from the WAV file when sample is loaded, and saved to the WAV file when the WAV is saved.</p>	0 to number of samples in the file	Yes
Loop End	<p>Point where the looping will end when playing forwards, or looping will begin when playing in reverse. Expressed in samples. Must be after or equal to LpStr.</p> <p>LpEnd is read from the WAV file when a sample is loaded, and saved to the WAV file when the WAV is saved.</p>	LpStr to number of samples in the file	Yes

You can also set the values for Start, Len, LpStr and LpEnd from the Waveform screen. When viewing the waveform, the pink bracket on the large waveform represents the Start and Len parameters. If Loop Mode is set to Forward or Bidirect, you will also see a white frame that defines the Loop Start and Loop End points. Turn the top knob to choose which bracket you want to control. The current selection and its value is displayed in text in the lower right corner of the Waveform screen. Turn the button knob to move the currently selected bracket. The sensitivity of the control knob depends on the Zoom level. Use two finger pinch gestures to zoom out to make big adjustments. Then use two finger stretch gestures to zoom in to make fine adjustments.



Waveform Screen

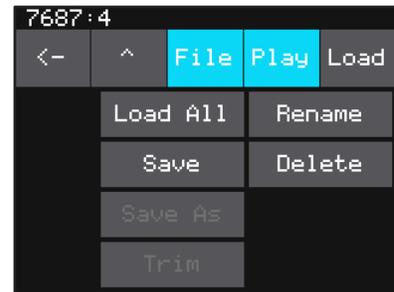
Multi-Sample Pads

Multi-sampling is a useful tool for improving the sound quality when playing samples pitch shifted, and when you want to map a number of different WAV files to different keys on the keyboard.

If you have a number of samples of a single instrument at various pitches with root notes defined for each WAV file, you can load these samples together on one pad to reduce the amount of pitch shifting required to play a broad range of notes. Put the files you want to use in one multi-sample pad into a single directory by themselves. There are several folders of samples like this in the **\Symplesound** folder. To load one of these sample banks into a pad:

1. Push the HOME button to bring up the Pads screen.
2. Select a pad by touching it or using the control knobs to cycle through the pads.
3. Push the right arrow button. If the pad was empty, the Load and Record screen will be displayed. If the pad already had a WAV file assigned, the Waveform screen will be displayed.
4. If you are on the Load and Record screen, touch Load in the top menu bar. If you are on the Waveform screen, touch the name of the WAV file at the top of the screen. You will now be on the WAV File Selection screen.

5. From the WAV file selection screen, use the control knobs to scroll through the list of files and directories. The selected file name has a blue highlight. When looking at the list of files, list items that start with a slash \ are directories. Load a directory to see its contents. The file path is displayed above the list of files. Touch the caret ^ to go back to the parent directory. Highlight one of the files in the directory of samples that you want to load into the pad. A good example of a directory to use with multi-samples is **\Symplesound\Housepiano**. You can select any file within that directory.



WAV File Selection Screen - File Menu

6. Touch **File** and then **Load All**.

Bitbox micro will now load all of the files in the current directory into this pad and map the files to notes across the keyboard based on the root notes defined in the WAV files. Now, use the KEYS screen or an external MIDI controller to play notes for that pad, and bitbox micro will play the sample with the root note that is closest to the note played, and pitch shift as needed to achieve the necessary tone.

You can also use multi-sampling to map multiple waves across the keyboard. This can be useful if you have a folder full of drum sounds that you want to trigger with a keyboard. If you follow the steps above and load a folder where the files do not have root note mappings, it will load the files in alphabetical order, map the first file to note C2, and then each subsequent file to the next note above that. If you load the folder **\SoundtrackLoops\SL Video Game Phrases**, you can see this in action. This folder has 8 samples which get mapped to notes C2 through G2.

You can use bitbox micro to map the files to specific notes if you want. Open the WAV files as individual samples on bitbox micro and edit the Root Note parameter. Save the WAV file with the root note information. See [Save and Load Parameters in WAV Files](#) below to learn how to do this. After you have done this for all of the files in the folder, use File-> Load All to load them all into a pad and you will hear that the notes are mapped accordingly.

Because a multi-sample pad uses multiple samples, it is not possible to set start, length, loop start or loop end points for these pads. Therefore, it doesn't make sense to enable looping for these pads either. As a result, the related parameters are not used when multiple samples are loaded in a pad.

Note:

- ▶ Multi-sampling can quickly use a lot of samples. In order to prevent potential issues, bitbox micro limits you to loading 80 wav files at a time. If you hit that limit, it won't load any more wav files until you free up some slots by clearing out a pad. There is also a limit of 64 WAV files per pad.
- ▶ If you change the pad mode of a multi-sample pad to something other than sample, it will load only the first sample in the folder and work with that. You will need to reload the files to change back to multi-sample mode.
- ▶ Anytime you use File -> Load All to load a directory of samples into a pad the pad mode will automatically be changed to Sample.

Set Up a Clip Pad

Use Clip Mode for WAV files where you want to use synchronized loops and quantized playback for the entire WAV file. Clip Mode works well with drum loops between one and eight measures long, but there is no hard limit to the length. This is the only Pad Mode that supports beat synchronization. An example of a file that works well with Clip Mode is \SoundtrackLoops\SL Trance\SY L Arpegg 130 B.wav. This clip is used in the preset SL Trance.

The following parameters are specific to Clip Mode:

Clip Parameter	Description	Range of Values	Mod Target?
Mono Mode	Controls the polyphony of the pad. Select Monophonic to restrict playback to one note at a time for this pad. Select Polyphonic to play multiple notes at a time. Sample pads support 8-note polyphony. Clip mode and Slicer mode support 2-note polyphony. Granular mode is monophonic. There is a limit of 24 voices across all pads at one time.	Mono, Poly	No
Loop Mode	Controls whether the WAV file plays in a loop. The whole WAV file will be played in the loop for clip pads. Only forward looping is supported with clip pads.	On, Off	No
Beat Count	Enter the number of beats in the clip file to give bitbox micro more information to work with when synchronizing playback to the current clock. If set to Auto, bitbox micro will attempt to detect the beat count automatically.	Auto, 1 to 512	No
Quant Size	Use Quant Size to quantize when the playback starts and stops. Quantization will cause playback to snap to a musical grid with intervals specified by the Quant Size parameter. When quantization is used, the note trigger will cause playback to start and end on the next quant size boundary. For example, if the Quant Size is set to 1-bar and you press the pad, the playback will begin at the start of the next bar.	None - always start and stop immediately 1/16, 1/8, 1/4, 1/2, 1 bar, 2 bars, 4 bars, 8 bars	No
Sync	Sync is only enabled when quantizing is enabled (the Quant Size parameter is not None.) The Sync feature prevents timing drift that can occur when the length and BPM of a clip does not align exactly with the tempo of playback. When Sync is used, bitbox micro will realign the audio to match the clock at the step size specified here. Even slight differences between WAV file BPM and clock tempo can cause significant drift over time. Select a value for Sync that will control the size of the musical unit to which the clip will be synchronized. Choose small settings, like 1/16th, for rhythmic or percussion clips. Choose large settings, like 1-bar, for sustained tones or drones	None – playback will occur at the original rate. Looping will happen as soon as the sample ends. 1/16, 1/8, 1/4, 1/2, 1 bar, Slice (See To Use Slices to Synchronize Playback of Clip Pads below for more information.)	No

Let's talk some more about Quant Size and Sync. When a Quant Size other than None is selected, the playback of the wave file will be delayed until the next selected unit of music as specified in Quant Size. This will ensure that your playback "snaps to the grid" of the beats established by your clock. Sometimes, the WAV file you are playing is longer than one beat. For example, the WAV file might contain a 2 bar drum riff. For a clip pad, bitbox micro will make some assumptions about where the beats in your file occur. In Clip mode, bitbox micro will play the whole 2 bar riff when the note is triggered. But the beats in the WAV file might not be playing at the same tempo as the clock speed. If you leave Sync set to None, the WAV file will play in its entirety and will get out of sync with your clock. If your WAV file tempo is faster than your clock tempo, it will sound like the beats are running ahead of the rest of the music. If your WAV file tempo is slower than your clock tempo, it will sound like your drums are lagging. If you want to fix that, then choose the value for Sync that identifies how tightly you want to snap to the clock while the WAV file is playing in response to a single sustained note trigger. While the note is playing, the sync will cause the playback of the WAV file to jump to the next selected sync increment in the file when the corresponding clock time has passed. So if the WAV was a little faster than your clock, the playback position will jump backwards to move the playback of the WAV to the selected clock increment. If the WAV is slower than your clock, the playback position will jump ahead to the selected clock increment. This will work well if the difference between the BPM of your WAV file and the BPM of your clock is small. It will sound like a stutter if the difference is large. See [Synchronize Playback with a Clock](#) below to learn how to follow an external clock.

Note:

- ▶ Bitbox micro assumes your clips use 4:4 time. If you are using other time signatures or polyrhythms, bitbox micro will have trouble synchronizing the clip.

Tips for Synchronizing Clips:

- Make sure your WAV file starts at the beginning of a measure and ends at end of a measure. There should be no blank space at either end and it should loop cleanly at full length.
- Help bitbox micro determine the beat count. Bitbox micro will use the following methods in this order to identify the beat count:
 - Look at the BeatCount parameter when it is not Auto
 - Look for a valid ACID Tag in the WAV file that includes the beat count
 - Try to calculate it using the following assumptions:
 - the time signature is 4:4
 - the beat count is a power of two (2, 4, 8, 16, 32, 64, ...)
 - the clip tempo is close to the current clock tempo

Set Up a Slicer Pad

Slicer Mode is useful when a single WAV file has multiple sections that you want to trigger independently. For example, if you have a drum riff you may want to trigger different drum hits within the drum riff independently. Or if you have a recording of a vocal track, you may get an interesting effect if you skip around to playback different words or phrases over time.

In order to use Slicer mode effectively, you will need to identify slices within the WAV file. Bitbox micro can automatically detect the slice points within the wave file, and you can manually add or remove slice points. The WAV files in the folder **\SountrackLoops\SL Trance** are good examples to try with slice mode.

The parameters in the table below are specific to Slicer Mode:

Slicer Parameter	Description	Range of Values	Mod Target?
Mono Mode	Controls the polyphony of the pad. Select Monophonic to restrict playback to one note at a time for this pad. Select Polyphonic to play multiple notes at a time. Sample pads support 8-note polyphony. Clip mode and Slicer mode support 2-note polyphony. Granular mode is monophonic. There is a limit of 24 voices across all pads at one time.	Mono, Poly	No
Loop Mode	Controls whether the slice playback is looped. This does not work with Launch Mode of Trigger. Use Launch Mode of Gate or Toggle if you want to loop slices.	ON, OFF	No
Beat Count	Enter the number of beats in the clip file to give bitbox micro more information to work with when synchronizing playback to the current BPM. If set to Auto, bitbox micro will attempt to detect the beat count automatically. Only used when Sync is set to ON.	Auto, 1 to 512	No
Quant Size	Use Quant Size to quantize when the playback starts and stops. Quantization will cause playback to snap to a musical grid with intervals specified by the Quant Size parameter. When quantization is used, the note trigger will cause playback to start and end on the next quant size boundary. For example, if the Quant Size is set to 1-bar and you press the pad, the playback will begin at the start of the next bar.	None - always start and stop immediately 1/64, 1/32T, 1/32, 1/16T, 1/16, 1/8T, 1/8, 1/4T, 1/4, 1/2T, 1/2, 1 bar, 2 bars. Assumes 4/4 time.	No

Slicer Parameter	Description	Range of Values	Mod Target?
Sync	<p>The Sync feature prevents timing drift that can occur when the length and BPM of a clip does not align exactly with the tempo of playback. When Sync is used, bitbox micro will realign the audio to match the clock at the step size specified here.</p> <p>Even slight differences between WAV file BPM and clock tempo can cause significant drift over time. Select a value for Sync that will control the size of the musical unit to which the clip will be synchronized. Choose small settings, like 1/16th, for rhythmic or percussion clips. Choose large settings, like 1-bar, for sustained tones or drones.</p>	<p>OFF – playback will occur at the original rate. Looping will happen as soon as the sample ends.</p> <p>ON – bitbox micro will synchronize the playback of the slice.</p>	No
Slice	<p>Indicates which slice will be played when a note is triggered. You can use modulation to vary this value over time.</p>	1 through the number of slices in the pad.	Yes
Slice Seq	<p>When Slice Seq is set to a value other than None, each new note will advance the selection of the next slice to play.</p> <p>The value of this parameter controls the order in which slice selection is advanced.</p> <p>Send when modulation is used, every time the Modulation Source receives a high signal, the slice sequencer will be advanced to the next step in the sequence. Use a CV (not a gate) input for modulating this parameter.</p>	<p>None: This parameter will not be used to control the order of playback of slices.</p> <p>Forward: A trigger will cause the playback to move to the next slice.</p> <p>Backwards: A trigger will cause the playback to move to the previous slice</p> <p>Random: A trigger will cause the playback to move to a randomly selected slice</p> <p>Stagger: A trigger will cause the playback to move through the slices in a somewhat random way. It will move forward a few slices, then back a couple of slices, and repeat.</p>	Yes
PlayThru	<p>Controls whether or not playback continues through the end of the slice.</p>	<p>ON – playback will continue past the end of the slice to the end of the file.</p> <p>OFF – playback will stop at the end of the triggered slice.</p>	No

In addition to setting parameters for a slicer pad, you also need to create the slices. There are three ways to do this: manually, auto scan, and slice to grid. When you configure slices manually, you use the Split and Join menu options to add and remove splits. The manual process may also be used to refine the results after you use auto scan or slice to grid. When you use auto scan, bitbox micro uses an internal algorithm to decide where to place the splits. You can control the sensitivity of the algorithm. When you use slice to grid, you define a fixed number of slices and bitbox micro will create splits that evenly divide the WAV file into the specified number of slices.

To Manually Create or Remove Slices:

1. On the Waveform screen for the slicer pad touch the menu item with the three dots "...". This will display the Waveform Slicing menu.
2. Use touch gestures to move the waveform so the fixed cursor position (the vertical white line) is at the position where you want to add another slice point. Touch Split to create a slice point. The slice point is shown as a pink horizontal line with a small pink square near the bottom.
3. Use touch gestures to move the waveform so the fixed cursor position (the vertical white line) is on or near a slice point that you want to remove. Touch Join to remove the slice point.



Waveform Slicing Menu

You can have as many or as few slices as you want.

To Use Auto Scan to Create Slices:

1. From the Waveform screen for the slicer pad, touch the menu item with the three dots "...". This will display the Waveform Slicing menu.
2. Touch **Scan** and then use a control knob to select a **Threshold** percentage for the sensitivity of the scan. The lower the threshold, the higher the number of slices that will be created. Touch **OK** when you are ready to scan. (You can touch anywhere outside of the Threshold field to cancel the scan.) Bitbox micro will detect and create slice points in the file automatically. The slice points are shown as pink horizontal lines with a small pink square near the bottom.



Waveform Slicing Threshold

To Use Slice to Grid:

1. From the Waveform screen for the slicer pad, touch the menu item with the three dots "...". This will display the Waveform Slicing menu.
2. Touch **Grid** and then use a control knob to select the number of **Slices** to create. Touch **OK** when you are ready to scan. (You can touch anyplace outside of the Slices field to cancel the scan.) Bitbox micro will automatically divide up the WAV file evenly into the number of slices you specified. The slice points are shown as pink horizontal lines with a small pink square near the bottom.



Waveform Slicing Grid Count

You can adjust the results of the slice to grid or auto scan by manually adding or removing slices to get the slices that match your creative vision.

To Use Slices to Synchronize Playback of Clip Pads:

You can use slices in a clip pad to synchronize playback of the beats in the clip. When the value of the **Sync** parameter for a clip pad is set to **Slice**, bitbox micro will use the location of the slices in the WAV file as the location of the “beats” for Sync purposes in order to prevent timing drift.

But how do you get slices in a clip pad? First configure the pad in Slicer Mode, create the slices, and then change the Pad Mode to Clip. The slices will still be visible on the Waveform screen and can be used for synchronization.

Set Up a Granular Pad

The final pad mode is granular mode. Granular is similar to sample mode, but with the additional ability to use multiple grains when playing back your sample. You can use granular to facilitate loop cross fading and to generate new sounds from your samples. In this mode, the sample is played back in small portions about 10 to 200ms in length, called grains. You can control the size, count, spread and playback speed of the grains.

Granular pads support all of the same parameters as sample pads, except for Mono Mode. Granular pads do not support Polyphony. They do support the following additional parameters:

Granular Parameter	Description	Range of Values	Mod Target?
Grain Size	The size of the small segments of the WAV file that will be played, measured in number of samples.	1024 to 16384 , which is about 10ms to about 200ms	No
Grain Count	How many different grains are layered together during playback.	2 to 8 . Keep in mind that more grains require more processor power.	No
Spread	The width of the range from which the grains are randomly chosen for playback. The range is centered around the current playback position in the WAV file.		No
Speed	How quickly the playback of the grains advances through the source WAV file. At 100% it will sound most like the original file. At 50% it will be half speed. At 200%, it will progress through the WAV file at twice the original rate.	0 to 200%	Yes

In granular mode, the root note is used as a guide for randomizing the slice positions. If the source file is a single tone, make sure the root note is set correctly to achieve more musical sounds. If the source WAV file has multiple tones, experiment with the root note parameter to get the effect you want or set it to None to remove this factor from the grain engine.

If you want to get use granular mode to generate tonal content, use a very low speed, a high grain count, small grain size, and small spread.

To start with something that is close to the original wav file, set the spread to 0, speed to 100%, Grain size to 1024 and grain count to 2. These settings are useful when you want to use granular mode to smooth out the cross-over points for your loops.

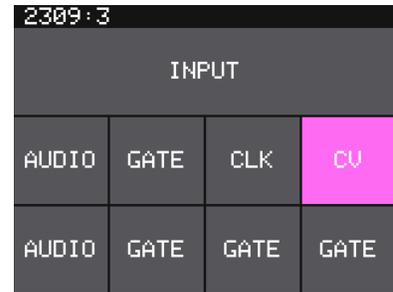
Record a New WAV File

Bitbox micro comes with over 800 WAV files loaded on the microSD card. You can also record new WAV files to create your own custom sound.

Before you can record, you have to set up bitbox micro to receive the audio signal.

To Connect an Audio Input for Sampling:

1. Push TOOLS twice to display the Input screen. This screen displays a 2 x 4 grid that represents the 8 input jacks on the module.
2. Touch the top left square that corresponds to input jack 1 to select it.
3. Turn the bottom knob to change the setting for this input to AUDIO.
4. Touch the bottom left square that corresponds to input jack 2 to select it.
5. Turn the bottom knob to change the setting for this input to AUDIO.
6. Connect an audio signal to input jacks 1 and 2.



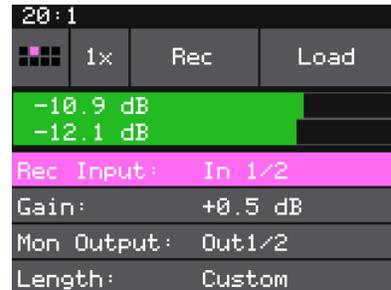
Input Screen

Note:

- ▶ Bitbox micro assumes Eurorack level audio is coming in to the **AUDIO IN** jack at +/-5V. If you are using a line level signal of +/- 1V you may need to adjust the input gain on the recording screen. You could also use a mixer or preamp with your microphone or other input to adjust the level of the incoming signal.
- ▶ If you are not recording in stereo, you only need to configure and connect to one input jack.

To record a WAV file:

1. Connect an audio input for sampling as described on the previous page.
2. Push the HOME button to display the Pads screen.
3. Touch a pad to select it. With the pad selected, press the right arrow button. If the pad is empty, bitbox micro will display the Load and Record screen. If the pad is already loaded, bitbox micro will display the Waveform screen. If you are on the Waveform screen, press the Pad Mode icon to the left of the WAV file name at the top of the screen and then touch New Recording. You will now see the Load and Record screen.
4. Just above the recording parameters, you will see a VU meter that shows the audio input levels if you have set up the inputs correctly. Refer back to [To Connect an Audio Input for Sampling](#) if needed.
5. Configure your recording session by selecting values for the following parameters:



WAV File Load and Record Screen

Recording Parameter	Description	Range of Values
Rec Input	Choose which input to record. You can choose one or both audio inputs, or you can choose to resample the signal being sent to outputs 1 and 2.	In 1/2, In 1, In2, Resam
Gain	The VU meters represent the level of the signal to be recorded. You can adjust the gain to get the desired level and avoid clipping.	-96.0 dB to + 20.0 dB
Mon Output	The output where you will be able to monitor the incoming signal being recorded.	Out 1/2, Out 3/4, Out 5/6, Out 1, Out 2, Out 3, Out 4, Out 5, Out 6
Length	This parameter allows you to specify a length of time that you want to record, in terms of notes and bars. When Custom is selected, touch the Stop button to stop recording.	Custom, 1/4, 1/2, 1 bar, 2 bars, 4 bars, 8 bars, 16 bars, 32 bars, 64 bars, 128 bars

Parameter	Description	Range of Values
Rec Quant	This parameter lets you quantize the recording to start and stop at the designated musical time interval. This is not available when Threshold recording is enabled (RecThresh=On).	<p>None - always start and stop immediately</p> <p>1/16 - quantize to the next sixteenth note time</p> <p>1/8 - eighth note</p> <p>1/4 - quarter note</p> <p>1/2 - half note</p> <p>1 bar - a whole note assuming 4/4 time</p> <p>2 bars</p> <p>4 bars</p> <p>8 bars</p>
RecThresh	Use the threshold recording option if you want to start recording when a sound level threshold is reached.	On, Off
Threshold	When threshold recording is enabled, this controls the minimum sound level required to trigger recording to begin.	-96.00 dB to +0.00 dB
Rec Mon	Controls whether the input signals received through IN1 and IN2 are played out through Out1 and Out2 to enable you to monitor the recording.	<p>Off - Inputs are never played through the outputs.</p> <p>Auto - Inputs play through the outputs while recording or the recording screen is visible.</p> <p>On - Inputs always play through the outputs.</p>
RecToPlay	When this is On, and Length is not Custom, bitbox micro will automatically start to play the pad when recording ends.	On, Off

6. Test your configuration by sending a signal to the audio Input. The source will play through the selected output if the **Rec Mon** setting is **ON** or **Auto**. Take a look at the VU meter to see how the Gain affects the signal. For best results leave some room (a few dB) between your loudest level and the max allowed, which is 0dB. If a red bar appears to the right of the level, the signal is clipping and the level of the input signal should be lowered for best quality.

7. To start recording, touch the REC button at the top of the screen. If you are using threshold recording, the recording will start once the input level meets the threshold level specified. If you selected a time value for Length, recording will stop after the selected length of time. The Load and Record screen displays a running clock of measures and beats and time duration of the recording. There may be a delay between when you touch Rec and when the recording starts as bitbox micro waits to quantize the recording to the selected Rec Quant time interval. See [Synchronize Playback with a Clock](#) below for more information about clocks and quantization.
8. Touch Stop to end recording. There may be a delay between when you touch Stop and when the recording ends due to quantization. When the recording has stopped, the main screen is displayed with the new WAV file loaded in the selected pad. The file name will be RC with a numeric suffix. We will discuss changing file names and managing WAV files in [Manage WAV Files](#) below. If you have RecToPlay set to ON, bitbox micro will automatically start to play the new sample when recording ends if the Length parameter was used for recording.

When you record a new WAV file, the file is stored on the microSD card in the folder associated with the preset. This folder is located under **\Presets** and has the same name as the preset. For example, if your preset name is **KickinGroove** then your recordings will be in the folder **\Presets\KickinGroove**. How you will work with these files depends on whether you are recording samples to build a library to use in presets in the future, or whether you are recording WAVs specifically for the current preset.

If you are recording WAVs for the current preset:

1. Record WAVS until you get the files you need. The WAVs are stored in the preset specific folder.
2. Assign the WAVs you want to use to individual pads.
3. Touch the Preset name at the top of the Pads screen to open the Preset Management screen. If you have any other non-recordings in the preset, you may want Pack the preset. To do so, touch File and then Pack to create copies of the other files in the preset folder.
4. On the Preset Management screen, touch File and then Clean to delete any WAV files in this preset's folder that are not used by this preset. This will permanently remove these WAV files from the microSD card.

If you are recording WAVs to build up a library of sounds:

1. Create a new preset to host the content from your recording session.
2. Record into pads as desired. Bitbox micro places the WAVs into the preset's folder.
3. You can optionally use your computer to move the WAV files from the preset's folder on the microSD card into sound library folders on the card. When you want to use these files in another preset, point to the WAV files you moved to the library folders. Then pack up those presets to preserve copies of the WAVs you used.

Note:

- ▶ Bitbox micro won't stop you from loading a WAV file from Preset B's folders into Preset A. However, if you do this, you could potentially break Preset A if you ever move or rename Preset B for any reason. Therefore, if you have WAV files that you want to re-use across presets, we encourage you to move these WAV files into library folders outside of the \Presets folder, and to Pack your presets often.
- ▶ If you record into a loaded pad, the original WAV file remains intact on the microSD card and a new WAV file is created.
- ▶ If you have **RecToPlay** set to **ON**, bitbox micro will automatically start playing the new sample when recording ends if the Length parameter was used for recording.
- ▶ Bitbox micro streams the recording directly to your microSD. The length of your recording is limited to the space available on the microSD card.
- ▶ Use the **Resam** input option to layer recordings, apply effects or capture new clips.

Record a Multi-sample Pack

Bitbox micro's Auto-Sample feature makes it easy to create a multi-sample pack if the source you are recording can be triggered by MIDI or CV. You can also create a multi-sample pack manually if needed.

Recording a multi-sample pack starts out the same way as recording a single sample, but you use the 1x button next to the grid icon to change to Multi (Mx) mode.

To Auto-Sample a Multi-sample Pack:

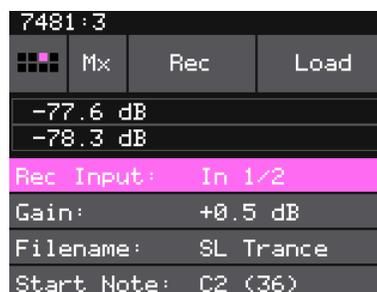
In Auto-sample mode, you can choose the range of notes to be recorded, how many steps between recorded samples, how many velocity layers to include, and the length of the notes. Once you start recording, bitbox micro will send out CV and MIDI signals to trigger the notes and record each note into a separate WAV file. When finished, you will have a folder full of WAV files that you can use as a multi-sample pack.

1. First you need to set up the outputs from bitbox micro to the source to be recorded.
MIDI: If you want to trigger the source using MIDI, connect the MIDI out of bitbox micro to the MIDI input of the instrument to be recorded. Bitbox micro's MIDI output uses the mini-TRS B standard. Use the included MIDI adapter if needed. See [Pin Mapping for Mini-TRS Jack to MIDI 5 Pin DIN Connectors](#) below for more information.
CV: If you want to trigger the source using CV, connect Out 1 of bitbox micro to the pitch control of the instrument to be recorded. Connect Out 2 of bitbox micro to the Gate control of the instrument to be recorded. Bitbox micro will sound out a CV signal on Out 1 that maps 1 V per octave. -2V= C0, 0V=C2, 2V=C4, 5V = C7.
2. Next, connect the audio output or outputs from the source to Input Jacks 1 and 2 on bitbox micro.
3. Now let's make sure bitbox micro is set to use Input 1 and 2 for audio. Push TOOLS twice on bitbox micro to display the Input screen. Select the box for Input 1 by touching or turning the top knob. Turn the bottom knob to select Audio. Do the same for Input 2.
4. Now we can set up the pad for recording. Push the HOME button to display the Pads screen.
5. Touch a pad to select it. With the pad selected, press the right arrow button. If the pad is empty, bitbox micro will display the Load and Record screen. If the pad is already loaded, bitbox micro will display the Waveform screen. If you are on the Waveform screen, press the Pad Mode icon to the left of the WAV file name at the top of the screen and then touch New Recording. You will now see the Load and Record screen.

- At the top of the Load and Record screen, touch the 1x button next to the grid icon at the top left of the screen. The Mode Selector menu will drop down. Touch Multi. You are now in Multi or Mx mode. The list of recording parameters is different to support this mode.



WAV File Load and Record Screen - Mode Selector



WAV File Load and Record Screen - Mx Mode

- Select values for the following parameters to configure your recording session:

Recording Parameter	Description	Range of Values
Rec Input	Choose which input to record. You can choose one or both audio inputs, or you can choose to resample the signal being sent to outputs 1 and 2.	In 1/2, In 1, In2, Resam
Gain	The VU meters represent the level of the signal to be recorded. You can adjust the gain to get the desired level and avoid clipping.	-96.0 dB to + 20.0 dB
Filename	The name of the folder that will store the multi-sample bank recordings. It will also be used as a prefix for the individual file names.	Push the right arrow button to open the file naming screen. Turn the bottom knob to choose a letter. Turn the top knob to move the cursor position.
Start Note	The note that will be sent out as a trigger to record the first WAV file.	C#-1 (1) through G9 (127)
End Note	The note that will be sent out to trigger the last WAV file that will be recorded.	C#-1 (1) through G9 (127)
Sample Every	How many semi-tones or notes are between each WAV file recorded. Set to 1 to record a WAV file for each note. Set to 12 to record one note per octave.	1 through 16

Recording Parameter	Description	Range of Values
Vel Layers	The Auto-sampler can record a WAV file for different velocity levels per note. Choose how many different velocity levels will be recorded.	1 through 16
MIDI Chan	This is the channel that will be used to send out the MIDI signal to generate the notes on the external instrument.	1 through 16
Note Length	In seconds, the length of time that the note gate will be on.	1 to 60
Release Len	In seconds, the length of time that recording will continue after the note length is over. This will record the tail of the note.	1 to 16
Rec Mon	Controls when the incoming audio signal will be played out through the outputs chosen for Mon Output as well Outs 7 and 8.	<p>On - the audio input will always be played.</p> <p>Auto - the audio input will only be played when you are on the recording page for this pad.</p> <p>Off - the audio input will never be played out.</p>
Length	Not used.	
Rec Quant	Not used.	
RecThresh	Not used.	
Threshold	Not used.	
Mon Output	The output where you will be able to monitor the incoming signal being recorded.	Out 1/2, Out 3/4, Out 5/6, Out 1, Out 2, Out 3, Out 4, Out 5, Out 6

Notes:

- ▶ Be sure to choose a unique value for the Filename parameter or bitbox micro will replace the files in the existing directory with new recordings.
- ▶ The Auto-sampler will generate both CV and MIDI outputs at the same. Connect the one you want to use. Try using both to record two instruments together.

8. Touch the Rec button at the top of the screen and sit back and let the auto-sampler do its work. Bitbox micro will display which note it is currently recording. When recording is complete, the files will be saved on the microSD card and the Waveform screen is displayed.
9. You can touch Stop to discontinue. Completed recordings will still be on the micro SD card. You can remove them with the Preset Clean command.

When the auto-sampling is complete, you will have a series of WAV files in a new folder. The folder name will be \Presets\Working with WAV Files on the microSD Card below for more information about file organization. The WAV files will be named <Filename> + "-" + <MIDI Note Number> + "-" + <MIDI Velocity>. For example, if your preset name is Pet Sounds and your multi-sample filename is Cat Meows, an example file name would \Presets\Pet Sounds\Cat Meows\Cat Meows-036-100. Each WAV file will have the Root Note parameter set based on the MIDI Note used to trigger it. The pad used for recording will be changed to a Multi-Sample pad with the new sample bank loaded.



**WAV files created by
Auto-sampler**

To Manually Record a Multi-sample pack onto bitbox micro:

If you want to capture an instrument that doesn't respond to CV or MIDI, here is how to do it:

1. Create a preset for the multi-sample pack. Let's call it MyBank.
2. Record individual WAV files into the new MyBank preset. Delete any extra files that are not needed.
3. Do the steps 3 through 7 for each WAV file in the sample bank:
4. Load the file in a pad.
5. Set the value of the root note parameter if you want to ensure bitbox micro maps the files to the correct note. For example, if you recorded a sample for C3 and you want that sample to be used when you play C3 and pitched shifted for notes on either side of it, then set the root note parameter for that WAV file to C3. Otherwise, the files will be mapped to the keys in alphabetical order starting at C2.
6. On the Pad Parameters screen, touch the WAV file name at the top of the screen to display the WAV File Management Screen.

7. Touch File then touch Save to save the root note to the WAV file. See [Save and Load Parameters in WAV Files](#) below for more information about saving WAV file parameters.
8. Once you have the WAV files set up, open the Preset where you want to use the multi-sample pack. Let's call it MySong.
9. Create a new sample pad and use "Load All" to load the multi-sample preset's folder into the sample. For our example, that would mean using "Load All" for the folder \presets\MyBank into the multi-sample pad.
10. Pack up the target preset (MySong in our example) to copy the multi-sample files into a sub-folder under the target preset's folder. In this case, you would end up with the following folder: **\Presets\MySong\MyBank**
11. Now you are free to delete or move the original MyBank preset if desired, or leave it there for future re-use.

Manage WAV Files

Bitbox micro comes with hundreds of WAV files bundled with the firmware. You can load WAV files into pads in order to add them to a preset. We talked about how to configure pads previously in this document. Here we will discuss what tasks you can perform to manage the WAV files themselves. First we will cover how to find and work with the files when using the microSD card on your computer. Then we will cover tasks you can do with the files on bitbox micro.

Working with WAV Files on the microSD Card

You can use the microSD card with your computer to manage the WAV files on the card. You can load new WAV files onto the card or backup your existing WAV files for safekeeping. Bitbox micro is compatible with all standard WAV files.

You can use a microSD Adapter to insert your microSD card into your computer. There are adapters that allow you to insert the card into an SD Card reader and some that work with USB. Once the microSD card is in your computer, you may use standard file techniques to rename the WAV files, reorganize them into directories, delete them, copy them onto your computer or copy them onto other microSD cards. We recommend that you occasionally make backup copies of your presets and WAV files, especially before upgrading to new firmware.

Bitbox micro supports organizing WAV files into folders and sub-folders. You can create your own folder structure on the microSD card.

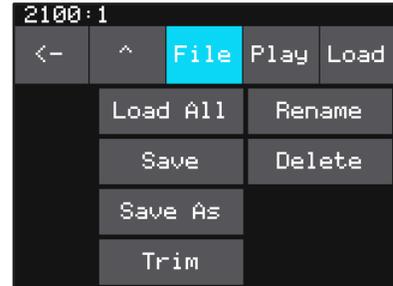
Bitbox organizes new recordings together with the preset where they were created. Each preset has a folder on the microSD card under the \Presets folder with the same name as the preset. When you record a WAV file, it will be stored in the folder for that preset. For example, the first new recording for the **My Kickin Grooves** preset will be saved as **\Presets\My Kickin Grooves\RC000001.wav**. When you load an existing WAV file into a pad, the preset will have a pointer to that WAV file in its source folder. If you want to gather copies of all of the files for a preset into the preset folder, use the [preset pack](#) option.

Work with WAV files on the Bitbox Micro

To Trim WAV Files:

When recording new samples, you sometimes get some unwanted material at the start or the end of the WAV file. Here's how to trim the file:

1. Open a pad with a WAV file you want to trim.
2. Set the pad mode to Sample.
3. On the WAV screen, turn the top knob to select the Start parameter, then turn the bottom knob to move the left side of the pink bracket to where you want the new file to begin. Turn the top knob to select the Length parameter, then turn the bottom knob to set the length of the pink bracket to the desired end point for the WAV file.
4. Touch the name of the WAV file at the top of the screen to display the WAV File Management screen.
5. Touch File and then Trim. Bitbox micro will ask if you want to Trim and Save? Touch OK to overwrite the WAV file with the portions outside of the pink bracket trimmed off. Touch anywhere else on the screen to cancel.
6. Save your preset to save the change to the pad. Otherwise, the length parameter for the pad will be wrong when you reload the preset.



WAV File Management - File Menu

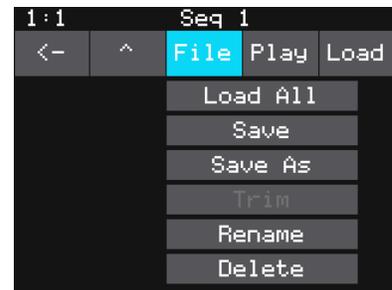
Note:

- ▶ You may want to use **File -> Save As** before you trim the file to give yourself a backup copy of the file.

To Delete, Save As or Rename a WAV File:

When you use bitbox micro to delete a WAV file, that file is removed from the microSD card. This file will no longer be available for use by presets. This means that any presets that previously used this WAV file will no longer include this WAV file. To delete a WAV file:

1. Touch a loaded pad on the Pads screen to display the Waveform Screen.
2. Touch the name of the WAV file at the top of the screen to display the WAV Edit screen.
3. Use the control knobs to scroll to the WAV file you want to delete. You may need to load directories to navigate to the file you want to delete.
4. Touch **File** to display the WAV File Actions menu.
5. Touch **Delete** to delete the selected WAV file from the microSD card. Touch **Save As** to save a copy of the WAV file with a different name. Touch **Rename** to change the name of the file on the microSD card.
6. If you select **Delete**, bitbox micro will display a confirmation prompt. Touch **OK** to confirm, or touch anywhere else to cancel.
7. If you select **Rename** or **Save As**, bitbox micro displays the File Naming screen. Turn the top knob to position the cursor. Turn the bottom knob to select a space, an upper case letter, lower case letter or number. Touch **Clear** to erase the current name. Touch **Enter** to save your changes. Touch **Cancel** to go back without saving your changes.
8. You can **Load** a different WAV file from here as well.
9. Touch the back arrow <-- in the top left to go back to the Waveform or Pad Parameters screen.



WAV File Actions Menu



File Naming Screen

Note:

- ▶ If you delete, move or rename a WAV file, it will no longer be available for use by presets that were previously using it. The name of the WAV file will still appear in the Preset, but the Waveform screen will be blank until you load a new WAV file into the pad.
- ▶ To remove a WAV file from a pad without deleting the file, go to the Waveform screen and touch the Pad Mode icon to the left of the file name, and then touch **New Recording**. You can press **PADS** to go back to the Pads screen without loading a file and the pad will be empty.
- ▶ Bitbox micro supports samples in the WAV file format. It supports 1 or 2 channel files with 16, 24 or 32 bit resolution at any sample rate. 48kHz is the preferred sample rate.
- ▶ WAV file names may use Alpha Numeric Characters (A-Z, 0-9) and some special characters. The following characters are NOT allowed:
“ / \ ? * < > : |
File names must be less than 256 characters, including the path name. Files that do not conform to these naming constraints will not be recognized by bitbox micro.

Save and Load Parameters in WAV Files

There are several pad parameters that bitbox micro can read from and write to WAV files. These parameters are:

Parameter	Description	Supported Pad Modes
Root Note	<p>When you use the Keys screen or MIDI Notes to play this sample, the base sample will play for this root note. The sample will be pitch shifted up or down one semi-tone for each note away from the root note. Bitbox micro will read the root note from the WAV file if available when you add the WAV to the preset. However, you can specify a different value here to be used for this WAV on this pad in this preset.</p> <p>If you save the WAV file from this pad, the Root Note value will be saved with it.</p> <p>Stored in the WAV smpl tag.</p>	Sample (Single and Multi), Granular
LpStr	<p>Point where the looping will begin when playing forward, or looping will end when playing in reverse. Expressed in samples. Must be before or equal to LpEnd.</p> <p>LpStr is read from the WAV file when sample is loaded, and saved to the WAV file when the WAV is saved.</p> <p>Stored in the WAV smpl tag.</p>	Sample (Single)
LpEnd	<p>Point where the looping will end when playing forwards, or looping will begin when playing in reverse. Expressed in samples. Must be after or equal to LpStr.</p> <p>LpEnd is read from the WAV file when a sample is loaded, and saved to the WAV file when the WAV is saved.</p> <p>Stored in the WAV smpl tag.</p>	Sample (Single)
BeatCount	<p>Enter the number of beats in the clip file to give bitbox micro more information to work with when synchronizing playback to the current BPM.</p> <p>Stored in the WAV acid tag.</p>	Clip
Slice Points	<p>The slice markers that are inserted into the file. Some other software calls these Cue Points.</p> <p>Stored in the WAV cue points.</p>	Slicer, Clip

These parameters are saved in a format that is commonly used by other music products. This means you can set these values in the other product and then use them in bitbox micro, and the reverse.

When bitbox micro first loads a WAV file that has parameters stored in it, it will load the values of the parameters that are in the WAV and use default values for the other parameters. If you change a value of one of these parameters for the pad, those changes only apply to this pad and are not automatically saved back to the WAV file. This allows you to override parameters for specific pads. Bitbox micro also makes an assumption about the pad mode based on the parameters that are available in the WAV file. If there are slices in the WAV, then it sets the pad mode to slicer. If there are loop points in the WAV, then it sets the pad mode to sample.

To save the values you have configured for a pad back to the WAV file:

1. Open the WAV screen for the pad.
2. Touch the name of the WAV file at the top of the screen to display the WAV selection screen.
3. Touch File and then Save or Save As. If you selected Save, bitbox micro will save the configured parameters into the same WAV file you have loaded. If you chose Save As, you will see the WAV file naming screen. Type in a new name to save the changes to a different WAV file, and then touch Enter to save. Bitbox micro will now load the newly modified WAV file into the pad.

To revert back to the parameter and slice values stored in the WAV file, simply reload the file into the pad.

Note:

- ▶ If you use an existing file name when you use **Save As**, the old file will be overwritten with the current WAV file and parameters.

Packing Presets

After you spend time carefully creating a preset, you don't want to worry about it getting broken if you make changes to that WAV file or re-organize your sample library. You may also want to gather up all of the files used in a preset so you can move it to another microSD card or archive it on your computer. The Pack feature was created to address these needs.

To Pack a Preset:

1. Load the preset you want to pack.
2. On the Pads screen, touch the preset name at the top of the screen to open the Preset Management screen. Touch File then Pack. Bitbox micro will find all of the WAV files that are assigned to pads and copy them into the folder for this preset. Multi-sample banks will be copied to a sub-folder.

Note:

- ▶ If you continue to add WAV files to your preset after you pack it, the preset will still point to these WAV files in their source folders. Pack the preset again to copy these files over.
- ▶ If the Pack option is disabled, then the preset is fully packed already.

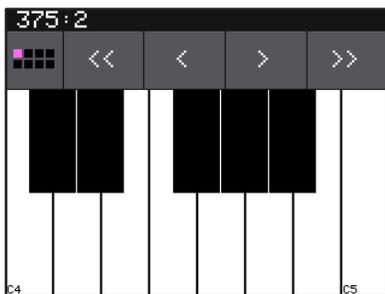
WORK WITH KEYS

The Keys screens provide two alternative ways for you to play WAV files that have been loaded into pads. When you select a sample or clip pad to play with Keys, bitbox micro will play the WAV file for that pad pitch shifted based on the triggered note. The native sample will play with the root note, and it will shift up or down the appropriate number of semitones based on the note you play. When you select a slicer pad to play with Keys, bitbox micro will map the slices in the pad to the notes on the keyboard. When you use a multi-sample pad with Keys, it will play the sample that has the root note closest to the played note and then pitch shift as needed.

There are two Keys input modes. The first time you touch the Keys button at the top of the Pads screen, bitbox micro will display a traditional black and white keyboard. Push the right arrow button to switch to the grid keyboard. Use the left arrow button to go back to the traditional keyboard layout. On the grid keyboard, you can trigger four octaves of notes within the scale specified using Scale selection buttons in the top right of the screen, so you don't have to worry about scale specific sharps and flats. Use the arrow buttons at the top of the screen to access additional octaves.

To Play a Sample With the Traditional Keyboard:

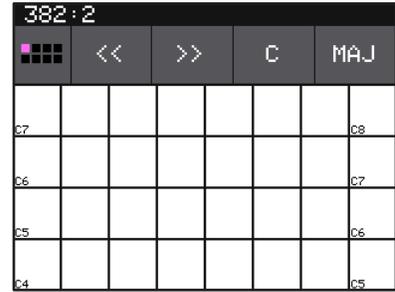
1. On the Pads screen, touch a pad or turn a knob to select the desired pad. The pad will be pink when selected.
2. Touch the Keys button at the top left of the screen to display the Traditional Keyboard screen. Touch the keys on the screen to play notes. You can slide your finger across the screen to play adjacent notes.
3. Touch the arrow buttons at the top of the screen or turn a knob to scroll left or right one note or one octave. The current octave label is displayed on each C note.



**Traditional Keyboard
Screen**

To Play a Sample, Clip or Granular Mode Pad With the Grid Keyboard:

1. On the Pads screen, touch a pad or turn a knob to select the desired pad.
2. Touch the Keys button at the top left of the screen to display the Traditional Keyboard screen. Push the right arrow button to display the Grid Keyboard screen. Touch the grid squares on the screen to play notes. You can slide your finger across the screen to play adjacent notes.
3. Touch the arrow buttons at the top of the screen to scroll up or down one octave. The current octave label is displayed on each root note.



Grid Keyboard

To Play Slicer Mode Pads With Keys:

You can use the Keys screen to trigger individual slices within a pad. Here is a basic example of how to do this:

1. Create a slicer pad and create 4 or more slices by either using the Scan feature or manually creating the slices.
2. Set the following values for the pad parameters:

Parameter	Value	Explanation
Launch Mode	Trigger	This will cause the WAV slice to play from beginning to end when a trigger is received. Other values will work, but let's use this for the example.
Loop Mode	Off	We will turn off looping for this example.
Slice	3	This does not impact how the Keys screen plays the slices.
Slice Seq	None	We will not use the Slice Sequencer in this example.

3. On the Pads screen, with the slicer pad selected, touch Keys to go to the Traditional Keyboard screen.
4. Play C2 on the Traditional Keyboard screen. You will hear that slice 1 is played.
5. Play D#2 and slice 4 will be played. Keys C2 and up are now mapped to Slices 1 and up for playback.
6. Push the right arrow button to go to the Grid Keyboard screen. Bitbox micro will display numbered squares in the grid for each slice in the WAV file. Use the arrows at the top of the screen to access additional octaves if needed. Bitbox micro will display one square on the grid for each slice in the pad.
7. Touch a numbered square on the grid to play that slice.
8. Touch STOP at the top of the screen to stop playing all slices. (The SLICE button next to the STOP button does not do anything, it is just a reminder that this is a slice pad.)



Grid Keyboard for Slices

Note:

- ▶ On the traditional keyboard, the last slice will be played for all notes above the last slice. Nothing will play for notes below C2.
- ▶ If you use the Grid-based keyboard with a slicer pad, the slices are mapped to the notes available in the selected scale.
- ▶ The steps above show a simple example of using Keys alone to trigger different slices within one pad. You can use this with Loop Mode ON with Launch Modes of Gate or Toggle to achieve different effects. You could also use this with Slice Seq if you wanted to have the Slice Seq control what slices play when a pad trigger is received.



Grid with Scale Mode Selector

To Select a Scale on the Grid Keyboard:

1. On the Grid keyboard, touch the left Scale Selector button to display a list of values for the Root Note. Touch an option to select it. Alternatively, you can turn any knob while on the grid keyboard to change the Root Note.
2. Touch the right Scale Selector button to display the Scale or Mode options. Turn any knob to scroll through the values. Touch the screen or any button when the desired value is displayed.

Note:

- ▶ To find the right key to match some music, tap a root note on the grid while turning a knob to scan through the root notes.

APPLY EFFECTS

Bitbox micro has two effects that can be applied to as many pads as you want. You apply an effect by selecting the send amount for the pad for each of the desired effects (Delay and Reverb) and then configuring the parameters for that effect. After the effect is applied, the wet stereo signal is routed to Outs 1 and 2 as well as the Master Outs. All pads will get the same parameter values for an effect.

To Route a Pad to an Effect:

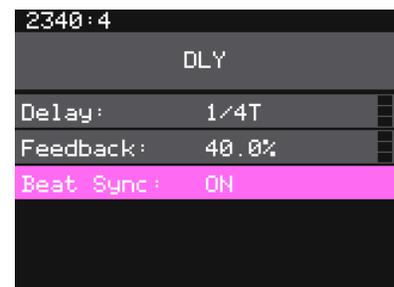
1. Push the HOME button repeatedly until you see the FX Screen. (It's the third screen behind the HOME button.)
2. On the FX screen, touch the pad that you want to use. Touching a pad does not trigger it on this screen.
3. Turn the top knob to set the Delay send amount for the pad. This is the amount of the signal from this pad that you want to send to the Delay for effects processing. You can also use the touch screen to slide the level bar graph for the effect. When a pad is sending some of its signal to Delay, a blue triangle is displayed in the top left corner of the pad. Turn the bottom knob to apply Reverb to the pad and a blue triangle will appear in the top right corner of the pad.



FX Screen

To Modify Effect Parameters:

1. Push the HOME button repeatedly until you see the FX Screen. (It's the third screen behind the HOME button.)
2. Touch the DLY or RVB box at the top of the screen to select it. The currently selected effect is highlighted pink.
3. Push the right arrow button to display the effect parameters screen for the selected effect.
4. Turn the knobs to adjust the effect parameters. You will hear the impact of the parameter changes in real time. Here are the available effect parameters:



Delay Effect Parameters Screen

Effect	Parameter	Settings	Mod Target?
Delay	Delay	Determines the delay length. When Beat Sync is On, delay is specified in musical intervals: 1/64, 1/32, 1/16, 1/8T, 1/16D, 1/8, 1/4T, 1/8D, 1/4, 1/2T, 1/2, 1 bar When Beat Sync is Off, delay is specified as a percentage from 0% to 100%.	Yes
	Feedback	0 to 100%. Determines the amount of regeneration or echo in the delayed signal.	Yes
	Beat Sync	This parameter controls whether the delay is measured in musical time intervals or percentage.	No
Reverb	Decay	0 to 100%. How long the reverberation will ring out.	Yes
	Damping	0 to 100%. The amount of damping that is applied to the reverb. Higher values will make the reverb end sooner.	Yes
	Predelay	0 to 100%. Determines the amount of delay in the signal before the reverberation is applied. In real life, this is related to how close the sources is to the walls.	No

Note:

- ▶ The same effect parameter values are applied to all pads that are sending signals to that effect.
- ▶ The Reverb effect is very processor intensive. Bitbox micro does not limit what you can do based on anticipated processor needs. As a result, it is possible to overdrive the processor, causing crackling and drop outs. See [Processor Management Tips](#) below for more information about preventing sound artifacts.

ADJUST THE MIX

On the Mix screen you can independently adjust the volume and pan of each pad. The number on the pad represents the dB level of the audio output. The bar at the bottom of the grid cell represents the pan position for the pad. Pan is only available if the pad is routed to a stereo output. When the pan line is in the middle, the output is balanced equally between left and right. A solid blue bar below the sound level indicates a pad is actively playing. A red bar at the top of a cell indicates that pad is muted.

To Adjust the Sound Level and Pan of a Pad:

1. Push the HOME button repeatedly until you see the Mixer Screen. (It's the second screen behind the HOME button.)
2. Touch the pad you want to adjust. This will not trigger the pad.
3. Turn one of the top two knobs to adjust the level of the currently selected pad.
4. Turn one of the bottom two knobs to adjust the pan, if available.



Mixer Screen

Note:

- ▶ You can hear adjustments to pan and volume in real time when a pad is playing.

To Mute and Unmute Pads:

The mixer screen also allows you to mute individual pads.

1. Push the right arrow button on the Mixer screen to enter Mute Mode. In this mode, active pads have a green background and muted pads have a red background.
2. Touch a pad while in Mute Mode to toggle its mute state.
3. Push the right arrow button again to go back to controlling level and pan. Any muted pads will have a red bar across the top of the pad.



Mixer Screen in Mute Mode

Note:

- ▶ Mute might be handy if you want to use a pad to drive an external MIDI device when the device is available, but play a pad when it's not. Muted pads still play out over MIDI.

MANAGE PRESETS

Bitbox micro stores a set of pad configurations, FX settings and Mixer settings as a preset. You can save as many presets as you want, as long as there is room for the files on your microSD card. When you turn on bitbox micro, it automatically loads the most recently used preset on this microSD card. The microSD card that comes with bitbox micro has dozens of presets and corresponding WAV files.

When bitbox micro loads a preset, it loads the set of WAV files and configured parameters for each pad saved in the preset. Review the provided presets to see some examples of bitbox micro features in action. The presets that are loaded on bitbox micro use only a fraction of the WAV files that are available on the microSD card. You can use the microSD card to load your own WAV files into bitbox micro, as well as record new ones. Bitbox micro also enables you to customize and create your own presets.

Presets are saved on the microSD card when you choose to save them. **If you load a different preset without first saving the current preset, you will lose your work.** If you change to a different microSD card, you will have a different set of presets. When you switch to a different preset, all previous settings will be replaced with the settings of the newly selected preset, which may be blank.

Bitbox micro stores all of the preset xml files in sub-folders under the \Presets folder. Each preset has its own sub-folder with the name of the preset, and a preset.xml file within that sub-folder. E.g. the preset **My Kickin Grooves** will be stored as a file named preset.xml in the \Presets\My Kickin Grooves folder. When you first start working with the preset, it will point to the WAV files in their source folders. The **Pack** function will copy all of the used WAV files into the preset folder.

When you create a new recording, it will be stored in the folder for that preset. For example, the first new recording for the **My Kickin Grooves** preset will be saved as **\Presets\My Kickin Grooves\RC000001.wav**.

In summary:

- All of the preset folders are gathered under one **\Presets** folder at the root.
- Before you Pack a preset file, the .xml file lives in its own sub-folder under **\Presets** which is created as soon as you create a preset, but the WAV files stay in their source folders until you pack them.

All presets have a file named **preset.xml** under the folder that has the name of the preset. This file contains all of the settings for this preset.

We covered how to create a new preset in [To Create and Name a Preset](#) above. We will cover more preset and WAV file management tasks next.

Note:

- ▶ Presets **are not saved automatically** in the background. This ensures that you don't make unintended changes to a preset.

To Save Changes to a Preset:

By now you may have added a few pads to your preset and spent some time configuring them. If you want to keep the results of your efforts, you will need to save the preset. Bitbox micro does not automatically save changes as you work. If you change to a different preset or unplug bitbox micro, you will lose your work. To save the preset:



**Preset Management
Screen**

1. On the Pads screen, touch the name of the preset at the top of the screen to display the Preset Management screen.
2. Touch **Save** to store your changes to the currently loaded preset.

To Load a Preset:

1. On the Pads screen, touch the name of the preset at the top of the screen to display the Preset Management screen.
2. Use the knobs to scroll through the list of presets. The blue highlight indicates the currently selected preset.
3. Touch **Load** to load into bitbox micro the information that was previously saved for this preset. The only values that are not stored in each preset are the values on the TOOLS pages. These are global settings that apply across presets and are stored separately on the microSD card.

To Pack a Preset:

After you spend time carefully creating a preset, you don't want to worry about it getting broken if you make changes to that WAV file or re-organize your sample library. You may also want to gather up all of the files used in a preset so you can move it to another microSD card or archive it on your computer. The Pack feature was created to address these needs.

1. Load the preset you want to pack.
2. On the Pads screen, touch the name of the preset at the top of the screen to display the Preset Management screen. and then touch **File->Pack**. Bitbox micro will copy all of the WAV files used by this preset into the preset's folder. Any multi-sample banks will be copied with their folder. The preset.xml file will be updated to point to these copies of the WAV files and will be saved.

Note:

- ▶ If you continue to add WAV files to your preset after you pack it, the preset will still point to these WAV files in their source folders. Pack the preset again to copy these files over.
- ▶ If the **Pack** option is disabled, then the preset is fully packed already.

To Clean unused WAV files out of a Preset's folder:

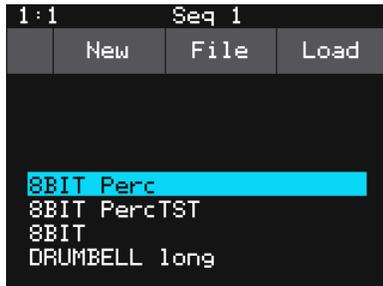
If you change which WAV files are loaded in your Pads, you may want to remove any unused WAVs from the preset folder.

1. Load the preset you want to clean.
2. On the Pads screen, touch the name of the preset at the top of the screen to display the Preset Management screen and then touch **File->Clean**. Bitbox micro will prompt you to confirm "Del Unused WAVs?" If you choose **OK**, bitbox micro will search the preset folder for any WAV files that are not mapped to pads in this preset. Any unmapped WAV files in this preset's folder will be deleted. Bitbox micro will save the preset.xml file as part of this process.

WARNING: this action cannot be undone. Touch anywhere besides **OK** to cancel this operation..

To Delete a Preset:

When you delete a preset, you remove the preset from the list of presets on the Preset Management Screen, and you delete the corresponding XML file from the microSD card. You also delete all of the WAV files in this preset's folder and sub-folders. You cannot undo this action. To delete a preset:



**Preset Management
Screen**

1. On the Pads screen, touch the name of the preset at the top of the screen to display the Preset Management screen.
2. Use the control knobs to scroll through the list of presets. The blue highlight indicates the currently selected preset.
3. Touch **File** to display the Preset File Menu.
4. Touch **Delete** to delete the highlighted preset. Touch **OK** to confirm the delete, or touch anywhere on the screen to abort the operation.

To Rename a Preset:

1. On the Pads screen, touch the name of the preset at the top of the screen to display the Preset Management screen.
2. Use the control knobs to scroll through the list of presets. The blue highlight indicates the currently selected preset.
3. Touch **File** to display the Preset File Menu.
4. Touch **Rename** to display the keyboard screen.
5. Touch the back arrow <- to erase the preset name or turn a knob to position the cursor where you want type. Then use the onscreen keyboard to type in a new name. Use the carat button ^ to toggle between upper- and lower-case letters. Touch the **123** button to display the numeric keyboard if needed. When the name is complete, touch enter to save the name and return to the Presets screen with the preset selected.

Note:

- ▶ Renaming a preset does not load that preset.

To Save Current Changes as a New Preset:

Sometimes while working on a preset, you decide to save your changes to a different preset in order to save your work while still preserving the original preset state. To save current changes as a new preset:

1. On the Pads screen, touch the name of the preset at the top of the screen to display the Preset Management screen.
2. Touch File to display the Preset File Menu.
3. Touch Save As. Bitbox micro displays a touch screen keyboard you can use to enter a new name. Touch the enter button to save the changes and go back to the Pads screen with the renamed preset loaded.

Note:

- ▶ If you enter a name that is already in use, you will replace the old file with the current preset.

Work with Preset Files on the MicroSD Card

Preset files can be backed up on your computer or shared with other bitbox micro users. The presets are saved as XML files on the microSD card. Each preset is saved in a preset.xml file in a folder with the name of the preset under the **\Presets** folder. For example, a preset named **April Gig** will be stored as **\Presets\April Gig\presets.xml**. If you have packed a preset, all of the WAV files for that preset will be stored in the preset's folder.

You can use a microSD Adapter to insert your microSD card into your computer. You can then use standard file techniques to rename the preset folders, delete them, copy them onto your computer or copy them onto other microSD cards. We recommend that you occasionally make backup copies of your presets, especially before upgrading to new firmware. Keep in mind that if you move a preset file to another microSD card, it will only work properly if the WAV files needed for that preset are on the new card in the same directory structure. The pack function makes that much easier.

Note:

- ▶ Bitbox micro stores all presets in self named folders under the **\Presets** folder. Bitbox micro will not find them if you move the XML files outside of these folders or move these folders outside of the **\Presets** folder.

SETTINGS

The Settings screen is the home for global parameters that apply across presets. This is where you can adjust the Master output volume and control the screen brightness. Push TOOLS to open the Settings screen. Turn the top knob to select a parameter and turn the bottom knob to adjust the value of the selected parameter.

Here are the available settings:

2104.2
1.0.8S
Brightness: 100.0%
MasterVol: 100.0%
Compressor: OFF
RecToPlay: ON
RecConfig: Per Pad
MIDI Pads: None

Settings Screen

Parameter	Description
Brightness	Controls the brightness of the display screen.
MasterVol	Controls the volume of the signal going to the Master Left and Master Right outputs (output jacks 7 and 8).
Compressor	When set to On , bitbox micro will apply a compressor to the signals sent to Out 1 and 2. Pads that are mapped to Outs 3, 4, 5 or 6 will bypass the compressor.
RecToPlay	If you have RecToPlay set to ON , bitbox micro will automatically start to play the new sample when recording ends if the Length parameter was used for recording.
RecConfig	When this is set to Global , changes made to recording settings on the Pad Loading and Recording screen will apply to all empty pads. When this is set to Per Pad , these changes only change the current pad and do not change what is used for other empty pads. Use Per Pad when you want to set up a Template preset with different recording configurations for each pad.
MIDI Pads	<p>This is used to specify which MIDI channel is used to trigger pads. If a channel selected here is also chosen as the MIDI IN channel for a pad, that pad will also play notes in response to signals received on this MIDI channel. See the section Use MIDI Devices with Bitbox micro below for more information.</p> <p>When this parameter is set to Omni, pad hits can be triggered by all MIDI channels. However, any MIDI channel that is assigned as the MIDI In for a pad or as the MIDI Keys parameter will be excluded from the list of channels that will trigger pad hits.</p> <p>MIDI Program Change messages received on this channel will be processed by the bitbox micro if the ProgChange parameter is set to ON.</p>

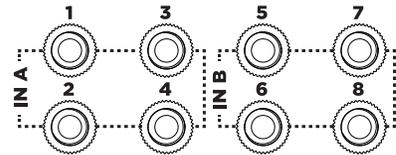
Parameter	Description
MIDI Keys	<p>This is used to specify which MIDI channel is used to play notes for the currently selected pad. If a channel selected here is also chosen as the MIDI IN channel for a pad, that pad will also play notes in response to signals received on this MIDI channel. See the section Use MIDI Devices with Bitbox micro below for more information.</p> <p>When this parameter is set to Omni, notes will be triggered for the currently selected pad by all MIDI channels. However, any MIDI channel that is assigned as the MIDI In for a pad or as the MIDI Pads parameter will be excluded from the list of channels that will trigger notes for the currently selected pad.</p> <p>MIDI Program Change messages received on this channel will be processed by the bitbox micro if the ProgChange parameter is set to ON.</p>
ProgChange	<p>When set to ON, bitbox micro will respond to MIDI program change messages received on the MIDI Pads and MIDI Keys channels by opening the Preset that maps to the specified program number. See the section Use MIDI Devices with Bitbox micro below for more information. Program change messages on other channels will be ignored.</p> <p>Remember that bitbox micro does not automatically save changes. This means that when you change presets you will lose any unsaved changes.</p>

INPUT SETTINGS

CV Input

Bitbox micro has 8 configurable input jacks. All of the inputs can support Gate, CV, and Clock signals. Inputs 1 and 2 can also be configured for use as audio inputs.

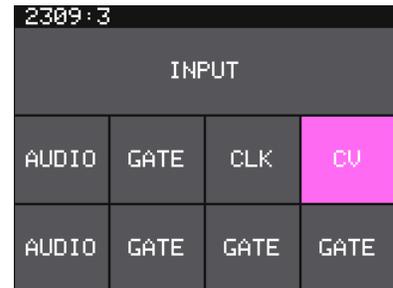
Inputs	Gate	CV	Clock	Audio
Inputs 1 – 2	✓	✓	✓	✓
Inputs 3 – 8	✓	✓	✓	✗



By default, all of the inputs are configured as Gate inputs. In this mode, a high signal received to an input will trigger the corresponding pad. If you want to use an input for something else, you will need to change the input settings.

To Configure an Input for Use as Gate, CV, Clock or Audio:

1. Push the TOOLS button twice to display the Input screen.
2. Select an input by touching it or turning the top knob. The selected input is pink.
3. Turn the bottom knob to select the setting for this input.



Input Screen

Input Mode	Usage
Gate	Use Gate when you want to use an external CV Gate to trigger a pad.
CV	Use CV when you want to use control voltage to modulate a parameter
Clock	Use Clock when you want bitbox micro to follow the tempo set by external device. The input must be 4PPQs.
Audio	Use Audio when you want to record an audio signal. Input 1 and 2 only.

MIDI Input

Bitbox micro also accepts MIDI input through the MIDI In Jack. We will go into depth about using MIDI later. The MIDI input can connect directly to MIDI devices that use mini TRS cables following the Type A and Type B standards. Use the provided MIDI adapter to connect to MIDI 5-pin DIN.

OUTPUT SETTINGS

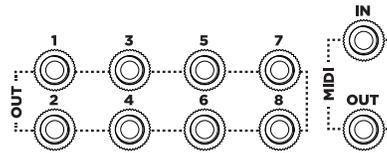
CV Output

Bitbox micro has 8 audio outputs. Each pad can be mapped to either a stereo pair or a single output from Outputs 1 through 6. Outputs 7 and 8 are the master outputs. They will play the sum of the audio sent to all of the outputs.

When the Compressor setting is on, the compressor is applied to outputs 1 and 2. Outputs 3 through 6 will bypass the compressor.

2279:4			
OUTPUT			
OUT 1	OUT 3	OUT 5	MAS LEFT
OUT 2	OUT 4	OUT 6	MAS RIGHT

Output Screen



The Output screen displays a visual representation of the 8 outputs. There are no configuration options on this screen.

To See the Output Screen:

1. Push the Tools button 3 times.

MIDI Output

The bitbox micro uses the MIDI Output jack to send a MIDI signal to the instrument you are recording in Auto-Sample mode. The MIDI Output uses mini TRS Type B. Use the included MIDI adapter to connect to MIDI 5 Pin DIN or to a mini TRS Type A device.

USE MIDI DEVICES WITH BITBOX MICRO

If you prefer a more tactile input mode, you can use a MIDI device to play pads. MIDI can also be used to modulate the sound that is playing and to synchronize clocks with other instruments. You can also use a MIDI Program change to open a different preset. If you'd like to auto-sample an external instrument, you can connect it to the MIDI Output of bitbox micro.

Work with MIDI Inputs

To start using a MIDI Controller with bitbox micro, plug your MIDI input device into the MIDI In TRS jack. Bitbox micro's MIDI TRS input supports both Type A and Type B TRS connections. If you need to connect to a MIDI 5 Pin DIN connector, use the MIDI adapter that came with bitbox micro. You can use MIDI inputs in a few different ways:

- Trigger pad hits
- Play notes and use common MIDI modulation signals only with a specific pad or pads
- Play notes and use common MIDI modulation signals with whichever pad is currently selected.
- Use MIDI Continuous Controllers (CCs) to modulate various pad and effect parameters
- Use a MIDI Program Change to change the selected Preset

You can combine these different MIDI input modes to use more than one at a time, but there are some rules about how they interact. First, we will talk about how to use each of these MIDI play modes and then we will discuss how they interact with each other.

To Trigger Pad Hits with a MIDI Device:

Bitbox micro has a MIDI Pads parameter on the Settings screen that defines which MIDI channel can trigger pads. By default, this value is set to Omni, which means that it will respond to all MIDI channels. You can configure a specific channel by changing the value of the MIDI Pads parameter on the Settings screen.

1. Push TOOLS to display the Settings screen.
2. Turn the top knob to scroll to the MIDI Pads Parameter, then turn the bottom knob to select the MIDI channel that you want to use to trigger pads. Set this to Omni to respond to all MIDI input channels that have not been otherwise assigned.
3. Connect your MIDI device to the bitbox micro MIDI In jack and configure it to use the MIDI channel selected for the MIDI Pads channel.
4. Play some notes on your MIDI device to trigger pads. The table on the right shows the default mapping of MIDI note numbers to the bitbox micro pads. The range for pads is Note 36 (usually C2) through Note 51 (usually D#3/ Eb3). You may need to shift your MIDI device up or down octaves to reach these notes.

48	49	50	51 D#3
44	45	46	47
40	41	42	43
36 C2	37	38	39

Default Mapping of MIDI Notes to Pads

Notes:

- ▶ You can change which MIDI Note triggers a pad on the Pad Parameters screen for each pad. Set the value of the Pad Note to the note you want to use to trigger this pad using the MIDI Pads input.

5. Push HOME and you can watch the pads activate on the Pads screen as you play notes on your MIDI device.

To Play Notes and Use Common MIDI Modulation Signals with a Specific Pad or Pads:

You can also configure a specific pad to respond to MIDI notes on a specific channel by assigning a MIDI channel to the pad on the pad's parameters screen. How the pad responds will depend on the Pad mode.

1. Push HOME, and select the pad you want to control with the MIDI Device.
2. Push the right arrow button twice to see the Pad Parameter screen, and then use the top knob to scroll down to see the MIDI related parameters.
3. Set the MIDI In parameter to assign a specific channel to this pad and now your MIDI device transmitting on this channel will play this pad. If the pad is in sample (single), granular or clip mode, each MIDI note will play the pad pitch shifted in the same way the Keys screen works. If the pad is a Slicer, each MIDI note will play a slice of the file in the same way it works on the Keys screen. If the pad is using multi-sample, the notes will trigger the appropriate sample based on root note or sample mapping.

Notes:

- ▶ You can have more than one pad mapped to a specific MIDI channel. In this case, bitbox micro will play all mapped pads when a note is received on that channel.
- ▶ If you are using a modulation source other than **MIDI CC** for this pad, then the corresponding MIDI Modulation signals received on this pad's **MIDI In** channel (e.g. MIDI Velocity) will be applied as configured for this pad.

To Play Notes and Use MIDI Modulation Signals with the Currently Selected Pad:

This is a more global version of the procedure described in the previous section. The difference is that here you are setting up a MIDI channel that is not pad specific. Whichever pad is currently selected will respond to the MIDI channel specified as the MIDI Keys channel. As with the MIDI Pads setting, you can select OMNI for the MIDI Keys channel to have bitbox micro respond to all channels in this way. However, any channel that is assigned to anything else is pulled from the pool of MIDI channels that bitbox micro responds to in Omni mode.

1. Push TOOLS and then scroll down to the MIDI Keys parameter.
2. Turn the bottom knob with MIDI Keys highlighted to select the MIDI Channel bitbox micro will use as the global keys channel.

3. Connect a MIDI Device to bitbox micro and set the device to use the channel assigned to MIDI Keys.
4. Go to the Pads screen and select a pad to play via MIDI. Play notes on the MIDI Device and you will see and hear the currently selected pad respond to the MIDI notes. Select a different pad and play notes on the MIDI Device and you will see and hear the new pad respond.

Notes:

- ▶ If you have the same channel assigned to both a specific pad and to the MIDI Keys setting, the assigned pad and the currently selected will both respond to the MIDI input.

To Configure MIDI modulation for a parameter using named MIDI sources:

1. From the Pads screen, touch the pad you want to modulate.
2. Push the right arrow button to go to the Pad Parameters screen.
3. Set the MIDI In parameter to a MIDI channel to be used to modulate this pad.
4. Scroll to select the parameter you want to modulate.
5. Push the right arrow button to display the Modulation Parameters screen.
6. Use the control knobs to select a value for the Source parameter for each modulation source you want to use. This parameter specifies which signal will be used to control this parameter. The following named MIDI sources are available:

None – no modulation source will be used.

Trig - The pad is triggered. This is only useful with the slice sequencer.

VEL – MIDI Velocity or the Velocity slider on the Pads screen. This is note specific.

PTCH – MIDI pitch bend signal

MODW – MIDI Mod Wheel

MVOL – MIDI Volume

MPAN – MIDI Pan

7. Use the control knobs to select the Amount of modulation that will be applied. This is used to increase or decrease the amount of impact the modulation will have on this parameter. At the default value of 0%, no modulation is applied.

Notes:

- ▶ The Modulation sources described in this section only impact the pad if the modulation signal is received on the **MIDI In** channel for this pad.
- ▶ Modulation is available for pad and effect parameters.

To Use MIDI Learn mode to Modulate Parameters:

You can use a broad range of MIDI controls to modulate some of the pad parameters, such as Filter and Pitch, and some of the FX parameters, such as Reverb Decay and Delay Feedback. It can be challenging to determine which MIDI CC number is sent by any given control on your MIDI device. To make it easier to use these MIDI CCs, bitbox micro has the ability to learn which control you want to use for modulation for any given parameter.

To use a MIDI CC input to modulate a parameter:

1. Connect a MIDI controller to bitbox micro.
2. Navigate to the pad parameter or FX parameter you want to modulate.
3. With the parameter selected, push the right arrow button. This brings up the Modulation Sources screen.
4. Touch **Learn** in the top right corner to enable MIDI CC learning mode.
5. Move the MIDI control, such as a knob or slider, that you want to use with this parameter. When bitbox micro has learned the mapping, the **Learn** button will turn from blue to gray, and the **Source** parameter will change to **MIDI CC**.
6. Adjust the **Amount** of modulation you want to allow with this controller.
7. Now play the pad and use the controller and you will hear the modulation. The Modulation box associated with this mapping will be labeled **CC**.

To Remove MIDI Modulation from a Parameter:

1. Go to the Modulation Parameters screens for that parameter.
2. Scroll to select the Modulation Source you want to clear.
3. Set the **Source** to none.

Notes:

- ▶ Different parameters work differently with MIDI CC inputs. For example, for the Filter parameter, the values are bi-polar with 0 at the middle of the range for the control by default. But with the Start parameter, the values only move in one direction.
- ▶ You can map the same MIDI control to more than one parameter on more than one pad or effect.
- ▶ MIDI CC controls use the on-screen parameter value as a starting point. Bitbox micro then maps the range of the controller to values from the starting point to the value of Starting Point +/- the Modulation Amount parameter. For example, if the Filter parameter is set to 20%, and you set the Modulation Amount to 15%, then the lowest value of the control will map to 5% (20% - 15%), and the highest value of the control will map to 35% (20% + 15%).
- ▶ MIDI CC mappings are recorded in the bitbox micro preset as a mapping to a specific MIDI CC number on a specific MIDI Channel. If you swap out MIDI controllers, and the new controller uses the same MIDI CC number and channel, it will continue to modulate the assigned parameter.
- ▶ The MIDI channel assigned to a pad does not need to match the MIDI channel used for MIDI CC modulation.
- ▶ There is a maximum of 8 MIDI CC mappings per pad.

To Use MIDI Notes to Play Slices:

When a Slicer pad responds to MIDI Notes, it plays individual slices within the WAV file.

1. Create a slicer pad and create 4 or more slices by either using the Scan feature or manually creating the slices.
2. Set the following values for the pad parameters:

Parameter	Value	Explanation
Launch Mode	Trigger	This will cause the WAV slice to play from beginning to end when a trigger is received. Other values will work, but let's use this for the example.
Loop Mode	Off	We will turn off looping for this example.
Slice	3	This doesn't impact how the MIDI device or Keys screen plays the slices.
MIDI	Choose a MIDI channel not used by other pads or the MIDI Pads or MIDI Keys settings.	We want to see the difference between the default MIDI behavior on the MIDI Keys and MIDI Pads Channels and using MIDI to trigger slices, so we need to use a separate channel. MIDI notes received on the channel you select here will choose a slice to play.
Slice Seq	None	We will not use the Slice Sequencer in this example.
PlayThru	OFF	For this example, we want to stop sample playback when we reach the end of the slice.

3. Connect a MIDI device for input that uses the MIDI Channel you selected for the MIDI parameter. Play MIDI note 36 (usually C2). You will hear that slice 1 is played.
4. Play MIDI Note 39 and slice 4 will be played. MIDI Notes 36 and up are now mapped to Slices 1 and up for playback.

The steps above show a simple example of using MIDI alone to trigger different slices within one pad. You can use this with Loop Mode ON with Launch Modes of Gate or Toggle to achieve different effects. You can also turn ON PlayThru for even more fun.

Use MIDI Program Change to Open a Preset

Some MIDI controllers support a MIDI command to trigger a program change. Bitbox micro can be configured to respond to MIDI program changes by loading a preset. Bitbox micro will map the presets on the device in alphabetical order to program numbers. The first preset on the device will be mapped to program 1. Keep in mind that when you change presets, even with a program change, bitbox micro does not save your changes. So be sure to save your preset if needed before initiating a program change.

Because of the potential for data loss, bitbox micro has a parameter on the Settings screen that allows you to control whether or not the device responds to program change signals. By default, this is set to off.

To Enable or Disable MIDI Program Changes:

1. Push TOOLS.
2. Set the ProgChange parameter to select the value desired.

If you set ProgChange to ON, when you initiate a MIDI program change on any connected MIDI channel, bitbox micro will change to the corresponding preset.

NOTE:

- ▶ Bitbox micro supports using MIDI Program Changes to access the first 128 presets. This limit is the result of how MIDI manages program banks.
- ▶ Bitbox micro does not pass through or send out MIDI Program Changes.

Sharing of MIDI Input Channels

How do all of these MIDI Input channel assignments work together? Basically, they all work together, with one big exception for Omni settings. Any channel that is assigned to anything else will no longer be included in the list of channels responded to by a parameter with the Omni setting. Here's another way to think about it:

- If the MIDI In channel is assigned on a pad, that pad will always respond to MIDI notes received on that channel.
- The currently active pad will always respond to MIDI notes on a given MIDI channel if that channel has been specifically assigned as the MIDI Keys channel on the Settings screen.
- Pad hits will be triggered by notes on an incoming MIDI channel if that channel has been specifically assigned as the MIDI Pads channel on the Settings screen.
- If the MIDI Keys parameter is set to Omni, and the incoming notes are on a MIDI channel that has not been specifically assigned to anything else (a pad's MIDI In, or the MIDI Pads parameter), then the currently selected pad will respond to notes on this channel.
- If the MIDI Pads parameter is set to Omni, and the incoming notes are on a MIDI channel that has not been specifically assigned to anything else (a pad's MIDI In or the MIDI Keys parameter), then the incoming notes will trigger pad hits.

As a result, if you, for example, assign the same MIDI channel to both a specific pad's MIDI In parameter and to the MIDI Pads parameter on the Settings screen, notes on that channel will be played by that specific pad and they will trigger pad hits. This gives you lots of flexibility but could result in confusing results if you aren't careful.

Work with MIDI Outputs

The MIDI Output on bitbox micro is only used for auto-sampling. You can read about that in [To Auto-Sample a Multi-sample Pack](#) above.

Synchronize Playback with a Clock

Bitbox micro can either run on its own internal clock or follow an external clock. It can also provide a clock signal for other devices to follow.

Configure Bitbox micro to Follow an External Clock

There are a few different musical clock sources that you can use with bitbox micro:

Name	Description	Priority
Clock In	Bitbox micro gets a Clock signal from an input jack set to CLK. Bitbox micro expects a clock pulse signal with 4 pulses per quarter (PPQs), or a pulse per 16th note.	1
MIDI Input via MIDI In TRS port	When a MIDI signal is connected to the MIDI In TRS jack, bitbox micro will follow MIDI Start, Stop and Clock messages	2
Bitbox micro Internal Clock	When no other clock input is provided, bitbox micro will use its own internal clock. The bitbox micro clock is fixed at 120 BPM. Use an external clock to adjust the BPM.	3

Bitbox micro displays the current clock time in the top left corner of most screens in the format <measure>: <beat>. If more than one clock input is available, the highest priority clock signal (lowest priority number) will be used. Bitbox micro can adjust the timing of the playback of a clip pad to synchronize it with a specified unit of musical clock time.

To Connect an External CV Clock:

Bitbox micro can follow a CV clock that is connected to any one of the input jacks. You must configure the input on the Input screen and connect the CV signal to the corresponding jack:

1. Push TOOLS twice to display the Input screen.
2. Select the square that corresponds to the input jack you want to connect to a clock signal.
3. Turn the bottom knob to change the input setting to CLK. Only use the CLK setting for one input at a time.
4. Connect a CV CLK signal playing at 4 PPQ to the corresponding input jack.

NOTE:

- ▶ The Clock input must use 4 pulses per quarter (PPQs), or a pulse per 16th note.
- ▶ If MIDI and CLOCK inputs are both used, Bitbox micro will select the highest priority clock based on the following order of priority: 1.) CLOCK Input; 2.) MIDI Input; 3.) Internal Clock.
- ▶ See [Work with a Clip Pad](#) above for more information about synchronizing clips.

Send the Bitbox Micro Clock Signal to External Devices

Bitbox micro sends out a MIDI clock signal through the TRS MIDI output. Be sure to check TRS Mini-jack compatibility. See [Pin Mapping for Mini TRS Jack to MIDI 5 Pin DIN Connectors](#) below for more information about compatibility. The MIDI out uses TRS MIDI Type B.

Reset the Clock

You can use the following methods to reset the clock counter back to 1:1:

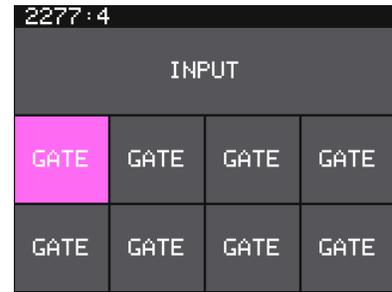
- Stop the Clock input for a few seconds and then restart it.
- Receive MIDI play and MIDI clock signal.
- Power down the module.

CV MODULATION

You can connect a control voltage (CV) signal to bitbox micro in order to apply modulation to a pad or FX parameter. To do so, you will need to reconfigure one of the 8 input jacks for CV use. This means that jack will no longer be able to trigger the associated pad. Keep this in mind when you choose which input you will use.

To Use CV Modulation for Pad or FX Parameters:

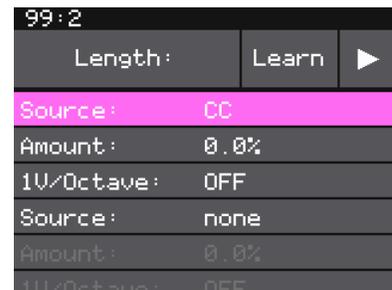
1. Push the TOOLS button twice to display the Input screen.
2. Select the input you want to use by touching the input on the screen or turning the top knob. The selected input is pink.
3. Turn the bottom knob to set the input to CV.
4. Connect a CV signal to the corresponding input jack.
5. Go to the parameters screen for the pad or FX you want to modulate. For a pad parameter, touch the pad on the Pads screen, then push the right arrow button twice to display the Pad Parameters screen. For an effect parameter, touch the name of the effect (DLY for example), and then push the right arrow button.
6. Turn the top knob to select the parameter you want to modulate. The parameter tables earlier in the document indicate which parameters can be modulation targets. When looking at the parameters list, the modulation targets have three little boxes on the right edge of the parameter list. If one of these boxes is blue, there is a modulation source selected for that modulation slot.
7. Push the right arrow button to display the Modulation Parameters screen.



Input Screen



Pad Parameters Screen



Modulation Parameters Screen

8. Select the Source parameter for the modulation slot you want to configure. Each Source parameter starts another modulation slot. There are three modulation slots per parameter. Turn the bottom knob to select the modulation source. Choose EXT 1 through EXT 8 to match which input you configured above.
9. Select the corresponding Amount parameter, and set a value to adjust how much the CV signal will affect the parameter. When set to 0.0% (the default), there will be no modulation. When set to 100% the full range of impact can be used. Some Pad parameters also use the 1V/Octave parameter to map the CV voltage to control pitch. Set this to on to have 1 volt change in CV signal map to 1 octave change in pitch or note selection.

Note:

- ▶ If you want to use CV to play notes, you will need to use two inputs. Use the Gate for the pad to trigger the note. Use a separate CV input to modulate the pitch.
- ▶ Each parameter that is a modulation target can have up to three modulation sources.

CREATE PRESET TEMPLATES FOR RE-USE

Preset template support was added in response to requests from some users who like to set up their presets a certain way each time, and other users who want to configure a preset in preparation for a live performance. Preset templates allow you to configure the pad mode, output, MIDI settings, modulation and other settings before you have associated a WAV file with the pad.

A preset template is simply a preset that has pads which have been configured but do not have WAV files associated with them. Preset templates can also store all of the other information a standard preset has, including FX, Mixer and Input settings.

To Configure a Pad without a WAV file:

1. Select the pad you want to configure as a template on the Pads screen.
2. Push the right arrow button. If the pad is loaded with a WAV file, this will display the WAV screen. In this case, touch the pad mode icon on the top left of the screen and then select New Recording to remove the WAV file mapping. You will now see the Load and Record screen.
3. Push the right arrow button again to see the Parameters screen for this pad.
4. Set the Pad Mode in the list of parameters.
5. Update the other available parameters as you normally would.
6. Save the preset.

To Add a WAV file to a Template Pad:

1. Select the pad you want to configure as a template on the Pads screen.
2. Push the right arrow button to display the Load and Record screen.
3. Touch Load if you want to use an existing WAV file. Otherwise, begin recording a new WAV as usual.

NOTE:

- ▶ Not all parameters are available before you add a WAV file to the Pad. For example, you cannot add loop points to a sample mode pad because bitbox micro does not know how long the file will be.
- ▶ You can use the FX and Mixer screens to configure other elements as needed.

REDUCE ALIASING WHEN PLAYING PADS CHROMATICALLY

Bitbox micro offers two choices for the interpolation algorithm used to play pads Chromatically. The first algorithm is called Normal mode. In this mode, bitbox micro may introduce some aliasing with some WAV files when pitch shifting notes to play sample, multi-sample and granular pads chromatically. The second algorithm is the High Quality (High Q) algorithm. This algorithm reduces the aliasing, but it requires more processing power, leaving less room to do other things. By default, your pads will use the Normal mode algorithm. You can configure a sample, multi-sample and granular pad to use the High Quality algorithm when needed. Here's how to configure this option:

1. Open the Pad Parameters screen for the pad that is experiencing aliasing.
2. Set the value of the Interp parameter HighQ.

Note:

- ▶ The High Quality setting uses more processing power. This means you may encounter drop outs or crackling sooner when this option is selected. See [Processor Management Tips](#) below to learn techniques to avoid drop outs and crackling.
- ▶ This option only applies when playing sample, multi-sample and granular pads chromatically. If you are not playing the pad chromatically, it's best to leave it set to Normal to avoid unnecessary drain on the processor.

PROCESSOR MANAGEMENT TIPS

If you have experienced drop outs or crackling sounds with bitbox micro, you have probably pushed the processor to its limits. Bitbox micro does not limit what you can do based on anticipated processor load. We have tried to balance the design of the system to optimize what you can do without over driving the processor while still giving you room to make creative choices. That being said, here are some tips you can use to reduce your processor load and the corresponding chance of encountering sound artifacts:

- Configure your pads to run monophonic whenever possible. On most percussion sounds, you won't hear the difference and this is an easy win.
- Disable the reverb by making sure no pads have RVB applied on the FX screen. This is an expensive algorithm that can also be done off board. Keep in mind that the reverb will continue to run for 60 seconds after you disable it, so you won't get the benefit for a short while.
- Use mono samples instead of stereo where appropriate. Stereo samples are twice the work to load and play.
- Use 48kHz samples when possible—especially for stuff played at unity pitch. This gives the CPU less work to do.
- Use the pad level filters sparingly.
- Reduce the number of grains used for pads in granular mode.
- For sample, multi-sample and granular pads, use Normal mode for the Interp parameter. The HighQ mode uses more processor cycles.

UPDATE FIRMWARE, AUDIO FILES AND PRESETS

You can update the bitbox micro firmware to get the latest features and other updates. The firmware can be updated with the factory image, which includes the original presets, or just the firmware itself. You can also choose individual presets to copy over to your microSD Card.

Switch to a New microSD Card While Operating Bitbox micro

You can switch to a different microSD card while operating bitbox micro. Simply remove the current card and insert the new one, then load a preset from the new card as usual. Just make sure you save any changes before you remove the original card.

Backup Your Presets and WAV Files

Before you use a microSD card to update firmware, backup the files that are stored on the microSD card:

Remove the microSD card from the bitbox micro module and insert it into your computer. You may need to use a microSD adapter for your computer (not included).

Copy the files from the microSD card onto your computer.

To Install New Firmware:

Here are the steps required:

1. Download the desired firmware onto your computer. You can find the latest firmware images on the forum at <https://forum.1010music.com>. You must be a registered user of the forum to access the download files. Forum registration is free.
2. Unpack the zip file. Some browsers do this automatically for you. Make sure the name of the .bin file is exactly MICRO.BIN (all upper case). If you have a previous version on your computer, sometimes the file gets renamed during download to create a unique file name.
3. Prepare a microSD card with the FAT32, MSDOS Fat, or ExFat format. The card that comes with bitbox micro is formatted properly, but you may need to reformat a card that came from somewhere else.
4. If you want to replace the Presets with the factory image, copy the full unzipped contents of the zip file onto a microSD card. If you do not want to overwrite your presets, copy only the MICRO.BIN file to the microSD card.
5. Turn off power to the module.

6. Place the updated microSD card in bitbox micro.
7. While powering up the module, hold the white right arrow button. When you see the words “Erasing” or “Programming” on the screen, let go of the button.
8. When the upgrade finishes in about 15 seconds, the unit will restart with the new software.

Reset a Bitbox Micro Preset to Factory Settings

If you want to reset one or more of the bitbox micro presets to the original factory settings, you can copy individual preset folders onto your microSD card.

1. Download the bitbox micro firmware onto your computer. You can find the available firmware images on the forum at <https://forum.1010music.com>. You must be a registered user of the forum to access the download files. Forum registration is free.
2. Unpack the zip file. Some browsers do this automatically for you.
3. Find the folder in the \Presets folder in the unpacked content that has the same name as the preset you want to restore. Copy the folder into the Presets folder on the microSD card to replace the folder on the card. Keep in mind that you will also need the WAV files that go with that Preset and you may need to copy those over as well.
4. Insert the microSD card into the MICRO SD slot of bitbox micro.
5. Touch the preset name at the top of the Pads screen to display the Presets selection screen.
6. Select any preset to load the updated presets.

TECHNICAL SPECS

On-Board Memory

Bitbox micro has 64MB of on-board RAM. However, this is a cache--not a hard limit to what can be loaded at once.

Maximum Sample Length

Bitbox micro streams the longer samples from the microSD card, so the maximum length is a function of the maximum file size for a sample. The maximum file size is 4GB, which can be many hours depending on the sample rate and bit depth. Bitbox micro caches smaller samples as needed.

Samples Supported

Bitbox micro supports stereo samples. It can record in stereo and has stereo outputs.

Bitbox micro supports samples in the WAV file format. It supports 1 or 2 channel files with 16, 24 or 32-bit resolution at any sample rate. 48kHz is the preferred sample rate. The bitbox micro engine uses a 24-bit ADC and DAC.

WAV file names may use Alpha Numeric Characters (A-Z, 0-9) and some special characters. The following characters are NOT allowed: double quotes, forward slash, back slash, question mark, asterisk, less than and greater than symbols, the colon and the pipe symbol (" / \ ? * < > : |). File names must be less than 256 characters, including the path name. Files that do not conform to these naming constraints will not be recognized by bitbox micro.

Maximum Number of Voices Supported

Bitbox micro supports 16-note polyphony for pads in Sample Mode, 2-note polyphony in Clip and Slicer Modes, and one note polyphony in Granular mode. Nothing in bitbox micro will prevent you from trying to play 16 voices on all 8 pads at the same time. However, the CPU can be overloaded if you play too many notes at once while also using effect. You can reliably play 32 voices across all pads simultaneously. Beyond that, you may encounter some sound quality issues like crackling. The exact breaking point depends on whether effects are running, the CPU load and other factors.

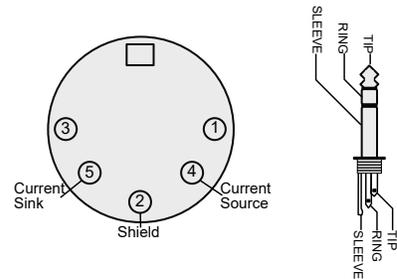
Pin Mapping for Mini TRS Jack to MIDI 5 Pin DIN Connectors

The musical instrument industry currently uses several different ways of mapping MIDI 5 Pin DIN signals to mini TRS jack connectors. The diagram below to the right shows the numbering of the pins on a MIDI connector and the labels of the connection components of a mini TRS jack. The MIDI input for bitbox micro can connect directly to a MIDI device that uses mini TRS Type A or Type B. No adapter is required.

The MIDI output for bitbox micro is compatible with mini TRS Type B. Type B devices use cables that use the following mapping of MIDI signals between female MIDI connectors and mini TRS jacks:

MIDI Signal	MIDI Connector	Mini TRS Type B
Current Source	Pin 4	Tip
Current Sink	Pin 5	Ring
Shield	Pin 2	Sleeve

MIDI Connector to Mini TRS Jack Signal Mapping



5 Pin DIN and Mini TRS Jack Connectors

For more information on the use of adapters, read the blog post on our website, [Mini TRS Jacks for MIDI Connections Compatibility Guide](https://1010music.com/stereo-minijacks-midi-connections-compatibility-guide) at:

<https://1010music.com/stereo-minijacks-midi-connections-compatibility-guide>

Note:

- ▶ 1010music MIDI Adapters do not pass through power.

STAY UP TO DATE

Demonstration Videos and Latest Documentation

You can find links to video demonstrations of bitbox micro on our website at <https://1010music.com/microdocs>. You can also look there for updated versions of this user manual and the Quick Start Guide.

Connect with Other Bitbox Micro Users

There is a very active community of users of 1010music products at forum.1010music.com. If you have a question about bitbox micro that isn't answered in this manual, this is your best source for help. We actively monitor the wish list sub-forums for ideas for future versions of our products. Forum registration is free. We hope to see you out there!

Contact Us

Are you loving bitbox micro? Have questions? You can contact us through our website at <http://1010music.com/contact-us>.