# Bento Release Candidate v 1.5.32

## New Features and Improvements since 1.4

### Improved Battery Management

- New Global Battery setting allows you to choose whether to protect the long-term Lifetime of the battery, or allow maximum charging for maximum Runtime.

### New: Shredder Tracks

- New Shredder track type combines slicing with granular

### Multisample Tracks

- Recording wizard: You can now preview the settings when setting up the MX recording wizard. Tap the Play Low and Play High buttons to trigger the first and last note selected to record.
- Edit Individual WAV files in Multisample Sets.
- Multisample: play a note while on the INST dashboard and the graph updates to show the last played note.
- Loading a single file onto a multisample (Mx) track now defaults to Gate mode, matching the Load All Samples path.

### Sequences and Loop Groups

- NEW Step Sequencer for one-shot tracks with up to 256 steps with probability and micro timing
- NEW Loop Groups: select a set of loops to trigger together from the Launch screen and in scenes.
- Sequences and Loop Groups: use left and right arrows to change the selected sequence or loop group within the current track while in the SEQ screens.
- On the Launch pane, tapping a track's header now clears that track's armed sequences or Loop Groups (stops whatever is playing or queued on the track).
- Fold a Sequence: tap along the left edge of a piano roll sequence to hide and then unhide the rows where no notes are triggered.
- Open Ended Recording: turn the Step Count knob all the way to the left and choose Open. You can now record for as long as you want up to the max sequence length. The step count will be set after you stop recording.
- Tempo Popup window: Access common tempo controls from any screen by tapping the bars:beats display between the battery icon and the menu in the lower right corner of the screen.

### Patch browser & patches

- Control Preview Volume using a knob on the Patch browser screen.

- Saving a track patch now renames the track to the saved patch name, and the Tracks pane redraws with the new title.
- The "Saving..." patch-save popup now shows a moving progress pulse instead of sitting static until the write finishes.

## Project browser

- Delete a project: Push PROJ, select the project you want to delete, then tap menu->Delete Project. (BENTO-1032)

## MIDI

- MIDI: use MIDI notes to trigger sequences and scenes.
- Shredder: New CC assignments for the new Shredder Track Types. See details in the appendix.
- Specify a MIDI Port for each MIDI Input and Output: Tell bento to only listen to MIDI In or send MIDI out from a specific port. Port options include TRS 1, TRS 2, USB, and All.

## USB Audio and MIDI

- Bento can now receive 1 stereo channel and send 3 stereo channels of audio over USB.
- Send and Receive MIDI over USB. USB is now a port option when selecting MIDI sources and destinations.

## FX

- NEW DJ Style FX with dual XY pads.
- DJ Style FX include Repeater, Gater, Filter, Bitcrusher, Echo, Echo HPF, and Flanger with 2 parameters each controlled by XY pads.

## Time Clock

- Set your local date and time on the Global Settings screen. (Proj->Menu->Global Settings)
- All files are now date and time stamped.
- See the modified date and time for the selected Project below the Project Browser list.

## Workflow Improvements

- Copy and Paste WAVs Between Track Types
- Play WAV from Tap Position on dashboards and WAV screens.

# How to Use New Features

## Manage the Battery Life

Push Proj, then tap menu->Global Settings. Here you will see a new Battery parameter with the following options:

- **Runtime** - Get the longest possible play time on battery. This mode charges the battery all the way up to its full rated voltage so you can run the unit for the maximum amount of time before needing to plug in again.

- **Lifespan** - Protect the battery and extend its overall life. In this mode, the battery only charges to about 85% of its maximum capacity. You'll still see "100%" on the screen, but that number is scaled to reflect the reduced charge limit. This gentler charging approach helps the battery last longer, especially for users who keep the unit plugged in most of the time. Staying fully topped off all day can shorten battery life, so this mode avoids that stress.

## Set the Date and Time

Bento has an internal clock that is used for setting time stamps on files. To configure the date and time:

1. Press PROJ.
2. Tap menu->Global Settings.
3. Press the Down Arrow until the Date & Time parameters are highlighted. Use the knobs to select the current date and time, using a 24 hour clock.
4. Tap Set Time at the bottom of the screen to save the date and time to the internal clock.

**Note**:

- If the battery ever gets completely drained, you will need to reset the date and time settings.
- The clock does not advance while bento is powered down due to a hardware limitation. Please update the date and time at the start of a session when you will be creating files that need current date and time stamps.

## Sequencer Improvements

### Step Sequencing for One-Shot Tracks

1. On the Launch screen, select a sequence for a one-shot track.
2. Press SEQ to open the Step Sequence Editor.
3. Tap Step in the footer to assign step specific parameter settings to the knobs.
4. Use the left Knob or the grid selector in lower left corner to select a Pad to sequence.
5. Use the other knobs to set the values for the event triggers you will add.
6. Tap the steps to add triggers for the selected pad with the currently selected parameter settings. Tap steps again to remove the trigger for that step.
7. Hold a step and turn the knobs to adjust the settings for the selected pad for that step.
8. Tap the Sequence button at the bottom of the screen, then use the knobs to adjust the length of the sequence and its steps.
9. Use the Up and Down arrows to scroll through additional rows of steps if needed. The steps are numbered in the top left corner of each step.

10. Push SEQ again to toggle the view between the Step Sequencer and the Piano Roll sequencer.

**Note**: The Step Sequencer is not available if Snap Mode is Off on the Piano Roll's Sequence view.

### Fold a Sequence

On a one-shot piano roll, double-tap the left edge of the screen to fold the sequence. This will hide any unused pads in the sequence. Double-tap the left edge of the screen again to unfold the sequence.

### Open Ended Recording

On the Sequence tab of the Sequence screen, set Step Count to Open (all the way counter clockwise) to record a sequence as long as you like.

### Tempo Pop-Up

Tap the bars and beats display in the lower right corner of the screen to open the Tempo Pop-up. Here you can control some common sequence parameters, such as BPM. You can also tap the Tap Tempo button to tap in the BPM.

## DJ Style Effects

New DJ style effects allow you to apply effects in real time.

1. Push FX to open the new FX X/Y Grid.
2. Select an effect for the left grid using Knobs 1.
3. Select an effect for the right grid using Knob 8.
4. Touch a grid to instantly apply real time effects to the main audio output. Drag your finger across the grid to change the values of the parameters for the effect.
5. Set Hold for a grid to On if you want the effect to continue to be applied when you lift your finger.

## Loop Groups

Loop Groups allow to define a list of loops that will be launched together from the Launch screen. By default, a loop group is created for each of the top 8 loop pads. You can edit these Loop Groups to meet your needs. The Loop Groups are visible for Loop Tracks on the Launch screen. They take the place of sequences for Loop tracks.

### Creating Loop Groups

1. On the Launch screen, tap to select a loop group for a loop track.
2. Press the SEQ button to open the Loop Group editor.
3. Tap loops in the grid to activate them for the Loop Group. The active loops in the group will start playing when the Loop Group is launched. Active loops have a track color background. Tap a Loop again to deactivate it for the Loop Group.

# Working with USB Audio

Bento can receive one stereo audio signal over USB and send three stereo audio signals that mirror analog outputs 1, 2, and 3. Received USB audio can be included in your FX and audio mix using an External Track. It can also be recorded into WAV files for tracks.

### To Receive USB Audio into bento

1. Use a USB cable to connect the Device port to your computer.
2. Configure your computer to send audio out to the Speakers (bento) output.
3. Navigate to a screen on bento where you can choose an Audio Input source. For example, create a new External Track, select it on the TRACKS screen, then tap menu->Config Track.
4. Turn the knob for the Input or Rec Input parameter and choose USB (for stereo) or USB L (for mono) from the list of inputs. Adjust the input gain as needed.

**Note**: While the device port is connected to your computer, bento will draw power from the computer. If you prefer to power bento separately or have issues with noise, use the provided USB C Power/Data splitter. Connect the USB Power cord to the Power side (black with lightening Icon) of the splitter. Connect the data cord between the data side (silver, USB trident icon) of the splitter and the computer.

### To send USB Audio out of bento

1. Use a USB cable to connect the Data side of the splitter to your computer.
2. Configure your computer to receive audio from the Microphone (bento) input.
3. Bento will send three stereo audio signals to your computer, mirroring analog outputs 1, 2, and 3. Out 1 includes processing from the Mod FX, Reverb, Delay, Compressor, and DJ FX.

**Note**: While the device port is connected to your computer, bento will draw power from the computer. If you prefer to power bento separately or have issues with noise, use the provided USB C Power/Data splitter. Connect the USB Power cord to the Power side (black with

# New Shredder Track Type

The **Shredder** is a new track type that combines sample slicing with granular synthesis. Unlike the standard Slicer track which plays slices linearly, the Shredder breaks slices into small “grains” and reassembles them, enabling time-stretching, textural effects, and creative sound design.

When slices are triggered for Shredder tracks, the audio engine breaks the selected slice into many small overlapping grains and plays these grains according to the granular parameters you set. See the full list of Shredder parameters and MIDI CC mappings in the Appendix.

### To use the Shredder

1. Create a new Shredder track from the patch browser.
2. Choose a WAV file. It’s designed to work with files at least a few seconds long.
3. Add slices to the WAV on the dashboard in the same way you would for a slicer track.
4. Configure granular parameters on the Setup view of the dashboard.
5. Use the pads or a MIDI Controller to trigger the individual slices.

**Note**:

- You cannot save or load patches yet.
- You cannot sequence shredder tracks yet.
- The smooth grain shape is used.

### Tips for Use

1. **Freeze effects**: Set Speed to 0% to freeze the playback position and hear grains sourced from a single point in the slice.

2. **Time stretching**: Reduce Speed below 100% while keeping Grain Size moderate for slowed-down textures without pitch change.

3. **Glitchy textures**: Use small Grain Size with high Jitter for rhythmic stuttering effects.

4. **Smooth pads**: Large Grain Size, high Density, and some Detune creates lush, evolving textures from any source material.

5. **Play Thru mode**: Enable this on the WAV page if you want the Shredder to continue past the current slice into the rest of the sample, rather than stopping at the slice boundary.

6. **Velocity sensitivity**: Use the Velocity parameter to add dynamic expression - higher values mean louder notes when you play harder.

## Copy and Paste WAVs Between Track Types

You can now copy and paste WAV files between pads and between tracks for one-shot, loop, slicer and shredder tracks. Open the bank screen or the dashboard for the track you want to edit. Select the pad or loop you want to copy, then tap menu->copy. Go to the bank screen or dashboard for a different pad or track and tap menu->paste to apply the copied WAV file to the selected pad or slicer track.

## Play WAV from Tap Position

Tap a WAV graph to start playing the graph from the tapped position. Tapping within a finger's width of the left edge of the graph will trigger the graph from the beginning.  Zoom in to get more precise triggering.

## Edit Individual Files in Multisample Sets

### Select WAV files on the Dashboard and WAV screens

You can now see the individual WAV files in a multisample set. The dashboard and WAV screen for a multisample track now show you the most recently triggered wav file. The name of the selected WAV is displayed in the lower left of the graph area. Note that some patches use the same WAV file for multiple velocities and notes.

### Edit Start, End and Loop Points for the Track or Patch

1. On the WAV view, use the knobs to adjust the Start and Length parameters to limit the range of the WAV file that is triggered.

2. Here you can also set loop points to control which part of the file is looped during a longer sustain when Loop Mode is On. These settings are stored as meta data in the project. If you save the track as a patch, that patch will remember these settings. These settings do not alter the underlying WAV files.
3. Use the Loop Fade parameter to control the amount of smoothing used when the audio loops.

### Trim WAV files

1. Select the WAV you want to edit on the Dashboard.
2. Tap menu->Edit WAV.
3. Tap the WAV graph to play from the tapped position.
4. Use the knobs to set the Start and End point for the trimmed file.
5. Tap Normalize to even out the volume of the wav.
6. Tap Save to apply the changes to the WAV file on the microSD card. If the file is in the folder for the current project, the file will be edited directly. If the file is in a different folder, the file will be copied to the project folder and the changes will be applied to the copy.

## Control Preview Volume on Patch Browsers

While browsing for patches or WAV files, you can now control the Preview volume.

## Trigger Sequences, Loop Groups and Scenes via MIDI

To use a project level MIDI Channel to trigger sequences and Scenes:

1. Open the Project Settings Screen (Proj->Menu->Project Settings)
2. Select a Project level MIDI Channel and Port using the ProjMIDIInPrt and ProjMIDIInCh parameters.
   **NOTE:** The MIDI Channel Selected here cannot be the same as the MIDI Channel assigned to any of the tracks.
3. Turn on MIDI Note mapping by setting Note Map to On.
4. Connect your MIDI Controller to the port selected on the Project Settings screen.
5. Set your MIDI Controller to send notes over the channel selected on the Project Settings screen.
6. Send MIDI notes to trigger the specified action:

| Action | MIDI Note |
|---|---|
| **Trigger a Song Scene** | Notes 2 - 9 map to Scenes 1 - 8. |
| **Trigger Previous Scene** | 34 |
| **Trigger Next Scene** | 35 |
| **Trigger Sequences or Loop Groups** | Track 1: 64-71<br>Track 2: 72- 79<br>Track 3: 80-87<br>Track 4: 88-95<br>Track 5: 96-103<br>Track 6: 104-111 |

| | |
|---|---|
| | Track 7: 112-119<br>Track 8: 120-127 |

# Bug Fixes

## Changes since 1.5.27 (beta 4)

- Multisample recording: sometimes the process would create a bad file with white noise in it
- Multisample recording: sometimes the record monitoring would not work.
- Multisample recording: Play Low and Play High onscreen buttons didn't follow knob based changes of the MIDI channel selection

## Miscellaneous

- Spontaneous crash: Some units were occasionally crashing while sitting idle. This has been resolved.
- Patch browser: sometimes the wrong patch could be loaded after changing the patch type filter.
- USB Host MIDI caused poor device response time.
- MIDI Aftertouch did not work as a Pressure modulation source.
- Couldn't use the knobs to scroll the cursor position on the text keyboard.

## Sequences

- Sequences: couldn't enter notes by tapping when Snap is OFF.
- Metronome: metronome did not play on new empty tracks.
- Sequences: problems entering notes via touch screen after using the Double feature.

## Instrument Screens

- Wav Edit: normalize was only working on 48kHz WAV files
- No play head on the WAV Edit screen
- Multisample and One-shot: on the INST WAV view, the Start button sometimes got stuck until you moved the Length.
- Wavetable: if you loaded an invalid wavetable file, the resulting pop-up could not be dismissed.
- One-shots: removed the non-functional RecToPlay option from the recording screens.
- Granular: on the WAV Edit screen, there was no way to stop the preview from playing after tapping the waveform.
- Load All for one-shot tracks included preview.wav.
- The envelope for one-shots ignored the Decay and Sustain parameters.
- Loops: All launch modes behaved like Toggle mode.
- Sometimes multisample recording produced bogus WAVs

## FX

- Switching FX algorithms no longer produces an audible tick.

# Known issues

We list these issues to raise awareness of known work arounds for infrequently occurring issues and to help avoid confusion about how bento is working.

## Sound Output

| Issue | Work around |
|---|---|
| On some hardware, sometimes after installing new firmware, the audio sounds bad the first time bento is started. (BENTO-1685) | Disconnect and reconnect the audio cable. |
| Shredder tracks cannot route audio to Outputs 2 or 3 by themselves | Combine the track with another track on the same output. Or, use output 1 instead |

## Recording

| Issue | Work around |
|---|---|
| Recording loops while following MIDI clock when there is a significant mismatch between internal tempo and incoming clock may not produce good files. For example 80 and 120BPM (BENTO-2468) | Set the internal tempo to match the incoming clock while recording loops. |

## Potential Data Loss

- Change Patch > 'New' does not retain sequences (BENTO-2450)
- LAUNCH: The active loop group is forgotten across sessions (BENTO-2172)

## Confusing UI Issues

- mixer: metronome level meters do not work (BENTO-2588)
- mixer: phones output level meter should include the metronome level (BENTO-2589)
- Loop WAV screen: The start and end brackets appear on the waveform, but you can't control these parameters for Loop tracks. The brackets should be hidden. (BENTO-2790)

# Appendix

## Shredder Parameters

| Parameter | Range | Mod Target? | Description |
|---|---|---|---|
| **Level** | -96.0 dB to +12.0 dB | Yes | Controls the audio level of this track |
| **Pitch** | -24.00 to +24.00 | Yes | Use this to pitch shift the playback of the WAV |
| **Filter** | -100.0% to +100.0% | Yes | Filter cutoff frequency and filter type. Negative values set the cutoff frequency of a low pass filter. Positive values set the cutoff frequency of a high pass filter. |
| **Res** | 0.0% to 100.0% | Yes | Filter resolution. Controls the amount of gain boost applied to the audio signal at the cutoff frequency. |
| **Pan** | -100% to +100% | Yes | Controls the stereo panning of the audio signal. Negative values pan left, positive values pan right. |
| **Overdrive** | 0 to 100% | No | Sets the level of distortion applied to the track's output audio. Caution: Overdrive causes significantly higher track audio levels. |
| **Poly** | Mono, Poly 2 | No | Controls how many slice triggers can play at once |
| **Beat #** | | | Does not work. Will be removed in a future build. |
| **Grain Size** | 0 to 100% | No | The length of the small segments of the WAV file that will be played, ranging from about 20 msec to about 1 second. |
| **Density** | 0 to 100%, only if Beat sync is disabled. | No | How much grains overlap. Higher density creates thicker, more continuous sound. |
| **Jitter** | 0 to 100% | No | How much random deviation is applied to the timing of the triggering of the grains. At 0%, it's machine like and smooth. At 100% it's chaotic. |
| **Speed** | 0-200% | No | How fast the playback position moves through the slice. 0% freezes position; 100% is normal speed; 200% is double speed |
| **Pitch** | | | This is a dupe with a parameter on the Sound view and will be removed. |
| **Detune** | 0 to 100% | No | Random pitch variation between grains. Creates chorus-like thickening. Ranges from 0 to 1 semitone. |

| Parameter | Range | Mod Target? | Description |
|---|---|---|---|
| **Window** | 0 to 100% | Yes | Position within the slice where grains are sourced from. |
| **Launch Mode** | Trigger, Toggle, Gate | No | **Trigger**: Play the track from the pads or from a MIDI controller. bento will start playback of the WAV file and play through to the end.<br>**Gate**: Begin the WAV file playback in the same manner as Trigger mode. But in Gate mode, playback will stop when you release the pad or the MIDI note.<br>**Toggle**: Begin the WAV file playback in the same manner as Trigger mode. When another trigger happens for this note, the playback will stop. |
| **Attack** | 0 to 100% | Yes | Fade-in time. 100.0% = 9 seconds. |
| **Decay** | 0 to 100% | Yes | Time to fall from peak to sustain level. |
| **Sustain** | 0 to 100% | No | Level held while note is sustained |
| **Release** | 0 to 100% | Yes | Fade-out time after note release. |
| **Velocity** | 0 to 100% | No | How much note velocity affects output level. |
| **Shape** | Saw, Rev Saw, Triangle, Pos Tri, Sine, Pos Sine, Square, Pos Square, Random | No | LFO waveform |
| **Depth** | 0 to 100% | Yes | LFO Modulation Intensity |
| **Rate** | 0 to 100% | Yes | The frequency of the LFO from about 0.1Hz to 12 Hz. |
| **Beat Sync** | On, Off | No | Synchronize LFO to project tempo |
| **Restart** | On, Off | No | Reset LFO phase on each slice trigger? OR is it each Grain? |
| **Sel Slice** | 1 thru Number of Slices | No | This is the currently selected slice that will be controlled by Slice Pos. |
| **Slice Pos** | 1 thru length of sample | No | Sets the sample position at which the selected slice begins playing when triggered. |
| **Scroll** | On, Off | No | Disables screen scrolling during slice playback. Useful when screen is zoomed in on a small region of the sample |
| **Play Thru** | On, Off | No | Specifies if the audio engine plays from the beginning of one slice to the beginning of the next slice (Play Thru = Off) or if it plays from the beginning of one slice to the end of the sample (Play Thru = On). |

## Shredder CC Assignments

| Shredder Parameter | MIDI CC |
|---|---|
| **Level** | 7 |
| **Pitch** | 94 |
| **Pan** | 10 |
| **Attack** | 73 |
| **Decay** | 75 |
| **Release** | 72 |
| **Filter Cutoff** | 74 |
| **Filter Resonance** | 71 |
| **Reverb Send** | 91 |
| **Delay Send** | 92 |
| **Mute** | 6 |
| **Solo (future)** | 38 |
| **LFO Depth** | 12 |
| **LFO Rate** | 13 |
| **Density** | 21 |
| **Grain Size** | 23 |
| **Window** | 24 |
| **Jitter** | 25 |
| **Speed** | 27 |