RiffBoxII Users Manual

Introduction

RiffBoxII can provide a large library of up to 250 five-minute backing tracks that can be easily accessed from a stomp box form factor. It utilizes a patented loop recognition technology that makes it easy to record your own playing along with audio editing features that can also be used to create seamless loops from pre-recorded audio.

Here are some of the ways RiffBoxII can enhance your creative process:

- Easily create loops that are timed to the notes or rhythms that you play
- Record music from any external source and then edit it down to specific loop lengths for backing tracks
- Use the loop editor to modify loop start and stop points which are timed to audio events and then store the loops in a massive library
- During live performances, manually or automatically move up and down through the loop library to create interesting backing track combinations
- Time an external drum machine or a DigiTech Trio to your loop playback

This user's manual provides an overview of how to operate RiffBoxII.

Inputs and Outputs

The figures below show the input and output connections in the RiffBoxII side panels. The function of these inputs and outputs will be described in the following sections.
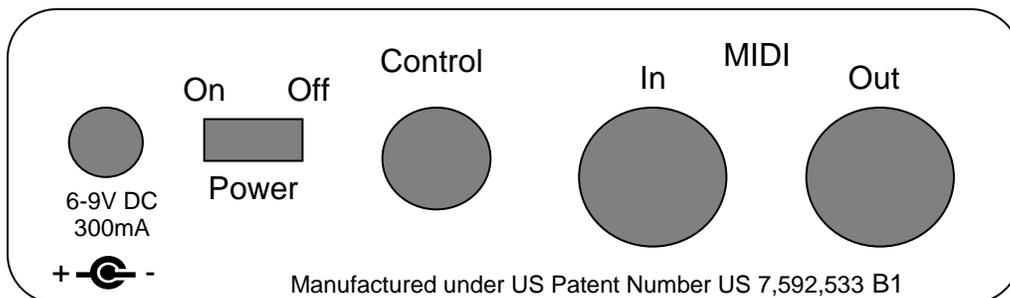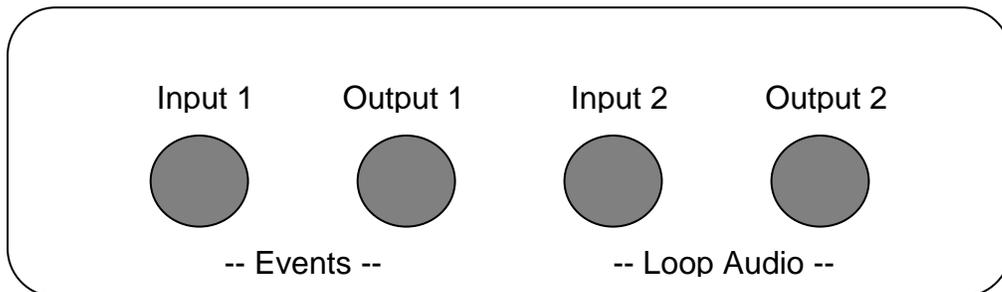
Audio Connections

Throughout this users manual we call a note, chord or drum beat an audio *event*. RiffBoxII needs a relatively clean signal to detect event timing and/or note or chord values correctly. For example, a signal coming from a delay unit can make it hard to detect note timing or it can be difficult to detect note values with a distorted guitar signal. Because of this RiffBoxII contains two input and two output audio jacks as shown in the figure below.
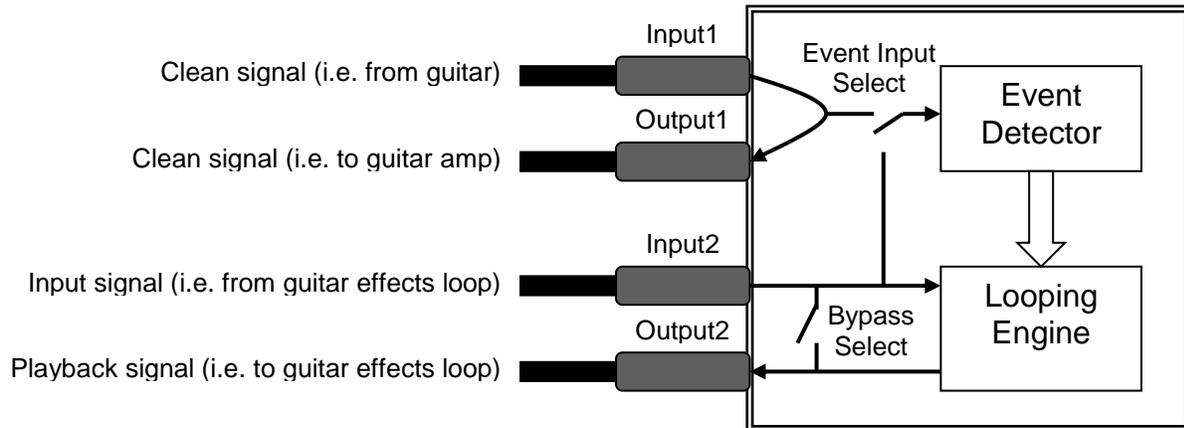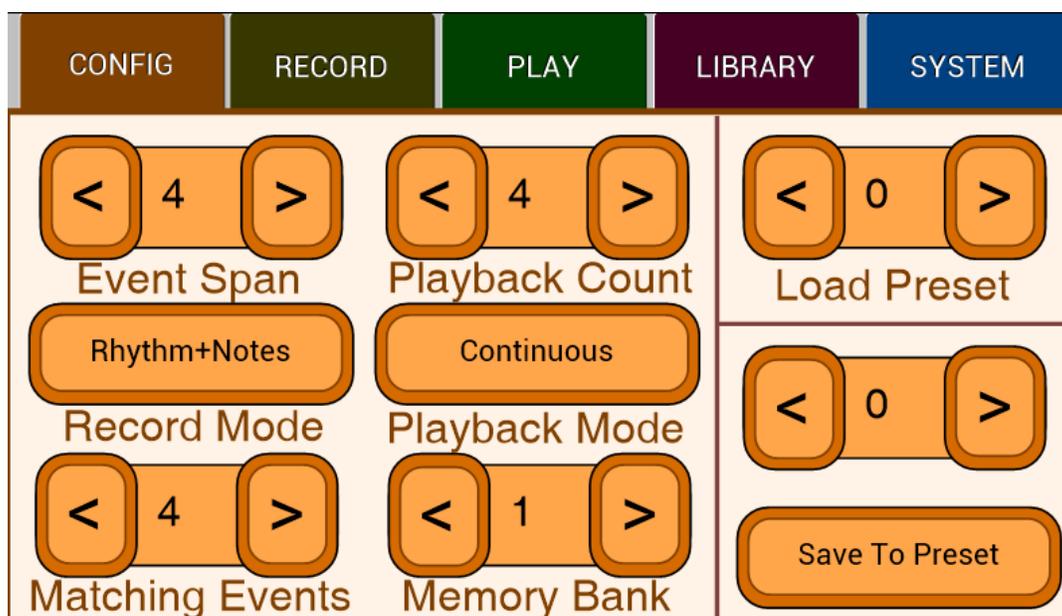
Input1 and output1 are permanently connected in true bypass mode and can be selected as the event detection input signal. For example, a clean guitar signal can be routed through these connections on the way to the guitar amp or effects input. Input2 and output2 are used to record and playback the loop. For example, these signals could be routed from and to the guitar amp effects loop. These signals can also be set in true bypass mode when the looper is not being used.

 If you only plan to record and playback relatively clean signals, input1 and output1 do not need to be connected. In this case, the event detection input signal can be switched to the input2 signal as shown in the figure above.

Configuration Screen

The next sections will describe the controls available on the five main screens. Each screen can be accessed by touching one of the tabs at the top of the screen as shown in the figure below.

 In order to recognize a repeated pattern that you are playing, RiffBoxII needs to examine notes values and/or timing between notes and chords. Once it sees a matching sequence of repeated events, it will automatically start loop playback aligned to this sequence. Let's examine some of the loop recording and playback options shown on the configuration screen below.

CONFIG	RECORD	PLAY	LIBRARY	SYSTEM

< 4 >	< 4 >	< 0 >
Event Span	Playback Count	Load Preset
Rhythm+Notes	Continuous	
Record Mode	Playback Mode	< 0 >
< 4 >	< 1 >	
Matching Events	Memory Bank	Save To Preset

Event Span: In automatic loop recognition modes RiffBoxII will not match events closer to each other than specified by this value. Values range from 2 to 100. It is also used in several other record modes as described below.

Matching Events: In automatic loop recognition modes it specifies the minimum number of consecutive events used to recognize the loop you are playing. A loop is identified when your latest sequence of notes matches an earlier sequence. Values range from 2 to 6. Lower values match faster but with less accuracy.

Special notes: If the Event Span value is less than or equal to the Matching Events value, automatic loop recognition looks at all events from the most recent events played and then scans back to earlier events while looking for a match.

 If the Event Span value is greater than the Matching Events value, automatic loop recognition only looks at groups of events separated by the Event Span value. For example a Event Span value of 20 means that only groups of events separated by 20 events will be compared. See appendix A for more information.

Record Mode: This determines how the loop is identified and you can select from the following options. In all these cases except for manual mode, RiffBoxII is armed for recording once the Record button is pressed on the record screen and then the first note played starts the loop recording process.

1. *Rhythm+Notes* – Automatic loop identification is based on both the notes played and the timing between notes (see appendix A)
2. *Notes* – Automatic loop identification is based on the note values played (see appendix A)
3. Rhythm – Automatic loop identification is based on the timing between notes (this mode is good for percussive chords or drum beats, see appendix A)

4. *First Note* – RiffBoxII remembers the first note value played at the start of the loop, and the end of the loop is determined once that note value is played again as long as the event count is larger than the Event Span value
5. *Next Event* – Once loop recording begins, when the play button is pressed on the record screen, the next note played determines the end of the loop as long as the event count is larger than the Event Span value
6. *Event Count* – The end of the loop is determined when the number of events played matches the Event Span value
7. *Manual* – Loop recording starts immediately after the Record button is pressed on the record screen and the loop end point is determined once that button is pressed again

Playback Count: This value is used in various playback modes as described below.

Memory Bank: This is the memory bank used to store the current loop. Values range from 1 to 250. Loops can also be selected using the library screen, which is described below.

Playback Mode: This determines how the loop is played back and you can select from the following options.

1. *Continuous* – Loop continues to play back until you manually stop it.
2. *Max Plays* – The loop is repeated the number of times specified by the Playback Count value which ranges from 1 to 100
3. *Layer Fade* – Each playback of the loop will fade slightly until it is completely faded when is reaches the Playback Count value which ranges from 1 to 100. New layers will be recorded at full volume.
4. *Auto Layer* – When a new layer is recorded (see the playback screen), from 1 to 3 layers will be recorded in a row as specified by the Playback Count value
5. *Match Play* – While a loop is playing, if the user plays on top of the loop with the same rhythm, loop playback will end. This provides a way to end loop playback without the need for a footswitch. The number of consecutive notes matched must be greater than or equal to the Match Play value. Use this value to balance false triggering verses how quickly a match is made.
6. *Play New Layer* – When a new layer is recorded (see the playback screen), the previous loop stops playing and only the new layer continues to play
7. *Mem Bank Up* – Starting at the current memory bank, after the loop is played once, the memory bank number is increased and the next loop is played. This process continues up through the number of loops specified by the Playback Count value at which point the process starts over at the first loop again. To specify how many times a loop will be played before changing to the next memory bank, first go to *Max Plays* mode, set the playback count and then save the preset on the Playback screen as described in the next section.
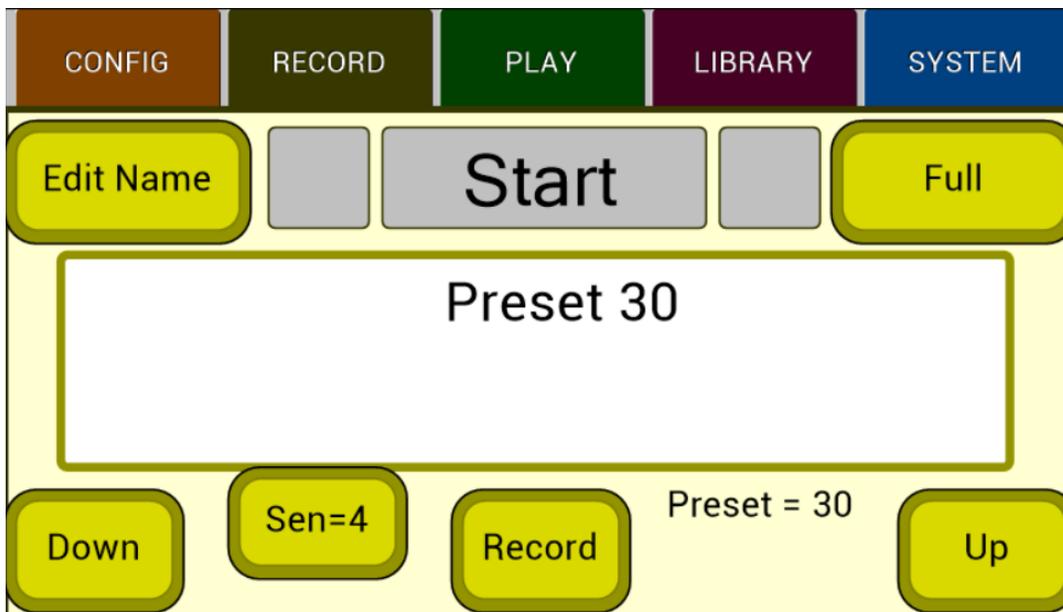
Load Preset: All of the parameters on this page can be stored as presets along with the input sensitivity value and the bypass and MIDI clock output parameters on the system

screen. If any of these parameters have been changed and you try to select a new preset, you will be asked if you want to save the current preset. Presets range from 0 to 49.

Save to Preset: This allows you to save the current preset values into a different preset location. Whenever a preset is saved, MIDI input channel, event input, foot switch mode and MIDI thru are also saved in a special flash memory location so that they maintain their settings during the next power-on.

Record Screen

The record screen is shown in the figure below. This is the screen to select when you want to start recording a loop. The three gray boxes at the top are used to show notes or rhythm counts during the recording process. For record modes using notes it also shows if you are playing notes that are generally in tune (make sure your instrument is in tune for these modes to work properly). Notes that are not recognized as being in-tune will light up the left or right boxes in red. Notes that are in-tune light up the center box green. All three boxes will also turn red to indicate input signal clipping.

CONFIG	RECORD	PLAY	LIBRARY	SYSTEM

Edit Name		Start		Full

Preset 30

Down	Sen=4	Record	Preset = 30	Up

   The button in the upper right can select 'Full' frequency range or 'Low Pass' filtering of the event detection signal. For example, this can be useful to get rid of high frequency artifacts in guitar chords. It does not affect the frequency range of the loop audio recording.
   The name of the preset is shown in the middle of the screen. The Edit Name button allows you to change the preset name using up to 16 characters. The Sen= button allows you to change the event trigger sensitivity based on your input volume and playing style. This input sensitivity value is stored with each preset. The Up and Down buttons allow you to cycle through the presets before starting a loop recording. The Record button is used differently in various record modes, for example to arm or abort automatic looping modes or to start and stop the manual recording mode. A three-

button footswitch can also be used to control the three buttons across the bottom of the screen (see appendix C).

Note: If the maximum recording time is exceeded, loop playback will begin when the maximum time is reached.

Playback Screen

The playback screen can be used to play and edit loops. There are tick marks showing each event in the loop along with a red playback line that moves from left to right as the loop is played. In the example screen below, it shows a loop containing events 1-13 and events 2-10 are currently being played. The Start Event and Stop Event values can be used to modify the loop playback length as identified by the left and right green boxes. In this example, the loop will play to event 10 before looping back to event 2.
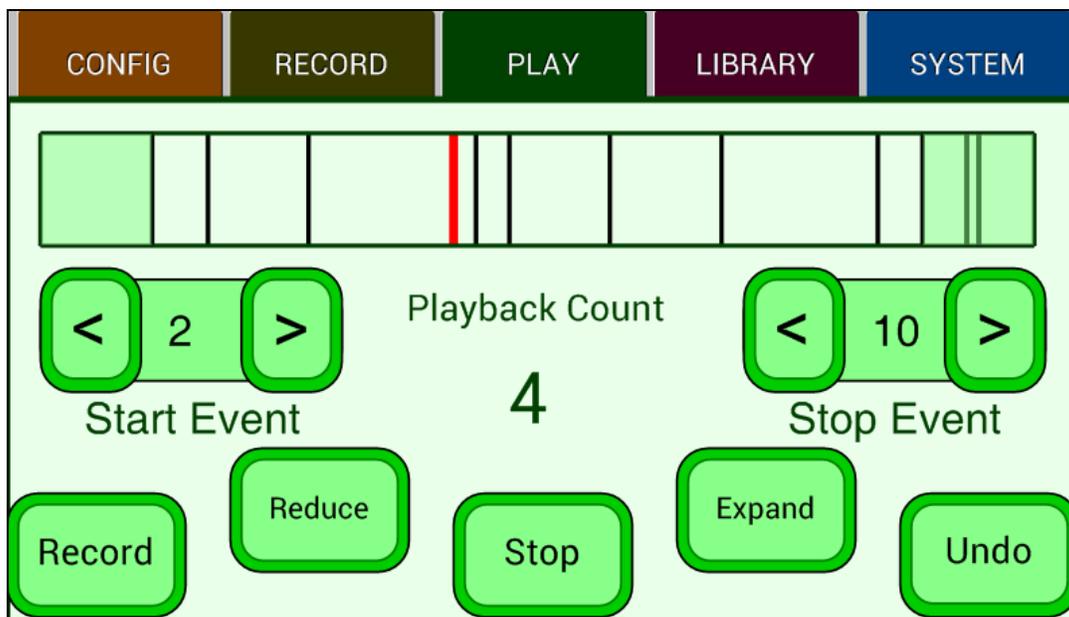
Special Notes: Up to 100 events can be displayed on the screen at one time and there are a maximum of 200 event times stored. If there are more than 100 events in a loop, only the first 100 events will be displayed. Also, if over 200 events are played, event 200 will always represent the most recent event played. In this case, events event times that would have normally been stored between events 199 and 200 will be lost.

Reduce: This button will reduce the number of events shown on the screen based on the current Start Event and Stop Event values. In this example, pressing Reduce will change the screen to only show events 2 through 10 on the playback bar. After pressing reduce, this button will change to 'Save'. Pressing Save will save the reduced loop starting with event 1. In this example, the saved loop would shift events 2-10 to events 1-9 and get rid of the top three events. This also saves the number of times the loop is played in *Mem Bank Up* mode as described in the last section.

Expand: This will expand the playback bar to show all of the recorded events in the loop, including the ones not being played. If the loop cannot be expanded any further, 'Cannot Expand' will be displayed in the playback bar.

Record: You can start recording a new layer on top of the current loop using this button. Recording will start at the beginning of the loop and stop at the end of the loop. You cannot add a layer until the loop has been reduced to show only the current active events. Also, once a layer is recorded, you can no longer expand the loop past the current events shown. In that case, when you stop playing the loop it is saved in its reduced form.

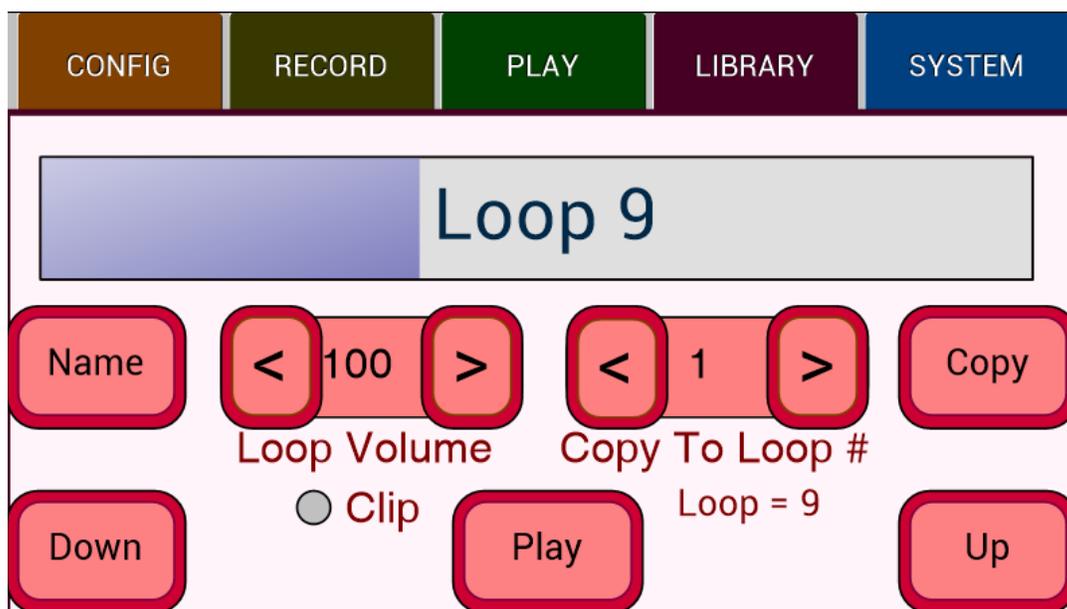**Undo:** You can undo the last layer recorded. Only the last layer can be undone.

Stop / Play: This button can be used to start and stop loop playback. A three-button footswitch can be used to control the three buttons across the bottom of the screen (see appendix C). When ending loop playback, press once to stop at the end of a loop, press twice to stop immediately.

Library Screen

The library screen can be used to manage and play a loop library of up to 250 five-minute loops. The current loop name is shown in the loop progress bar.

Name: Allows you to change the name of a loop using up to 16 characters. You cannot change the name of an empty loop.

Loop Volume: The loop playback volume can be adjusted from 0 to 150 with 100 representing 0db and 150 about +3db. When adjusting volume, make sure the clipping indicator is not turning red. The loop volume is saved with the loop data when playback is stopped allowing each loop to have a different volume setting.

CONFIG	RECORD	PLAY	LIBRARY	SYSTEM

Loop 9

Name	< 100 >	< 1 >	Copy
	Loop Volume	Copy To Loop #	
	○ Clip	Loop = 9	
Down	Play		Up

Copy To Loop #: The current loop can be copied to the specified memory bank when the Copy button is pressed.

Up and Down: Used to cycle through the loop library. If these buttons are pressed during loop playback, the next loop will start playback at the end of the current loop.

Stop / Play: This button can be used to start and stop loop playback. A three-button footswitch can be used to control the three buttons across the bottom of the screen (see appendix C). When ending loop playback, press once to stop at the end of a loop, press twice to stop immediately.

System Screen

The system screen shown below allows control of various system and MIDI functions.
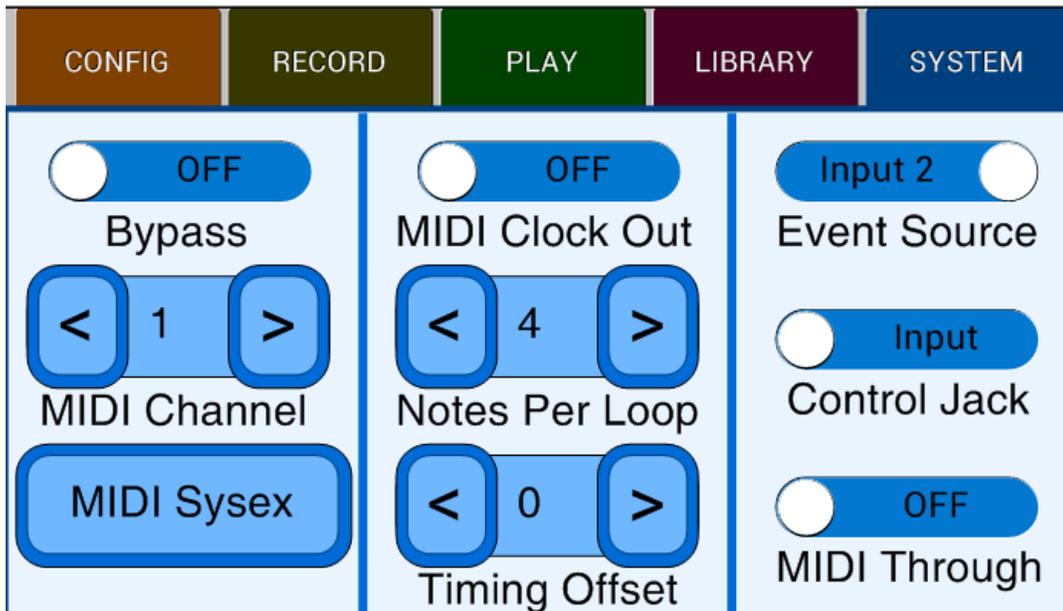
Bypass: This turns on true bypass switch between Input2 and Output2. This is saved as a preset value.

MIDI Channel: This sets the MIDI input channel. See the MIDI implementation section for more information.

MIDI Sysex: This opens the MIDI Sysex Utility screen, which is described in the next section.

MIDI Clock Out: This turns on the MIDI clock output that can be used to send MIDI timing information to an external drum machine based on the loop timing (see appendix D). This is saved as a preset value.

Notes Per Loop: This adjusts the MIDI drum machine timing by setting the notes per loop from 2 to 100. This is saved as a preset value.

Timing Offset: Adjusts the MIDI clock output timing compared to the loop timing. Values range from 0 to 24, which represents from 0 to one quarter note delay in MIDI output timing. This is saved as a preset value.

Event Source: Selects the event source as either Input1 or Input2.

Control Jack: Set this as an input when using an external 3-button footswitch. Set this as an output to synchronize a DigiTech Trio to the loop (see appendix E).

MIDI Through: When this is on, the MIDI input is looped to the MIDI output. When MIDI Through is enabled, MIDI Clock Out is disabled.

MIDI Sysex Utility

This screen comes up when the MIDI Sysex button is pressed on the system screen.
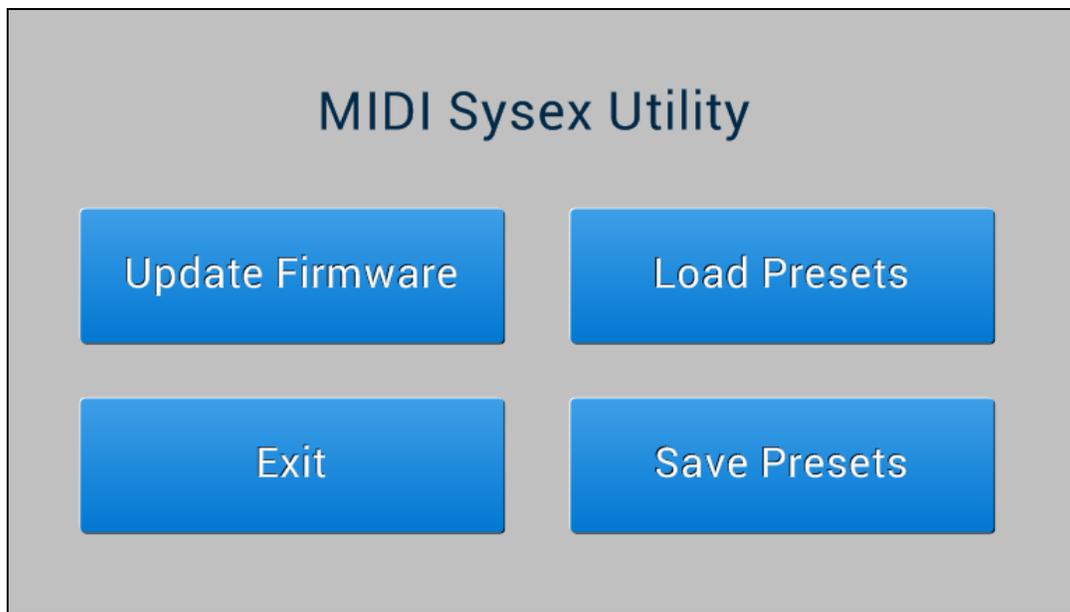
Update Firmware: This starts the process of updating the firmware in RiffBoxII. See the firmware update guide for more information.

Save Presets: This will dump all preset values into a 4002-byte MIDI sysex file. Connect the RiffBoxII MIDI output port to your computer so that the computer can receive sysex files using an application such as MIDI-OX.

Load Presets: This can be used to load presets from a MIDI sysex file. Connect the RiffBoxII MIDI input port to your computer so that the computer can send sysex files using an application such as MIDI-OX.

MIDI Implementation

This section describes all of the parameters and functions that can be controlled using MIDI. MIDI program change messages can be used to select preset values from 0 to 49. The MIDI CC implementation is shown in the table below.

CC Number	Parameter	Value Range
20	Event Span value	2-100
21	Matching event value	2-6
22	Select memory bank 1-125	1-125
23	Select memory bank 126-250	1-125
24	Record mode	1-7
25	Playback mode	1-7
26	Playback count	1-100
27	Low pass event input filter off-on	0 or 127
28	Loop playback volume	0-127
29	MIDI clock output enable off-on	0 or 127
30	MIDI clock notes per loop	2-100
31	MIDI clock offset	0-24
32	Toggle record start-stop/abort	1
33	Three-button footswitch emulation	1,2,3
34	Toggle playback start-stop	1
35	Record new layer	1
36	Undo layer recording	1
37	Setting the low playback event 1-100	1-100
38	Setting the low playback event 101-200	1-100
39	Setting the high playback event 1-100	1-100
40	Setting the high playback event 101-200	1-100
41	Reducing the playback loop length	1
42	Expanding the playback loop length	1
43	Save current preset values	1
44	Turn bypass off-on	0 or 127
45	Input sensitivity	0-9
46	Set current active screen	0-4

Appendix A: Automatic Loop Recognition Modes

Loops are automatically recognized and played back when the record mode is set to Rhythm+Notes, Notes or Rhythm. For short loops, set the Event Span value to less than or equal to the Matching Events value. In this case, your more recent playing back to your earlier playing will be scanned to see if anything matches. For medium length loops you can set the Event Span value higher than the Matching events value so that only events separated by an estimated loop length will be scanned. To do this, first set the record mode to Rhythm, play the loop you want to record and then look at the event count value in the record screen which can be used to give RiffBoxII a hint of your estimated loop length. To enter this value, go back to the configure screen, set the Event Span value to this number and then set your desired record mode. For long

loops, it's best to set the record mode to First Note, Next Event or Manual. You can adjust the loop start and stop points after recording by using the playback screen.

Appendix B: Recording External Audio

RiffBoxII can be used to store a large number of pre-recorded backing tracks that can be used in live performances or for practicing your playing. This appendix provides a step-by-step guide for recording these tracks.

1. Connect your audio source to Input 2 and adjust the volume to avoid clipping
2. Connect Output 2 to your amplifier or mixer
3. On the SYSTEM screen, set the event source to Input 2
4. On the CONFIG screen, set record mode to Manual and select the memory bank you want to use
5. Go to the RECORD screen
6. Press record, start the audio playback and note the event number shown in the center gray box where the loop starts
7. Note the event number where the loop ends, turn off the audio source and press play which will switch to the PLAY screen
8. Adjust the loop start and stop events to the numbers you noted above
9. Press Reduce to show only the events playing back
10. Go to the LIBRARY screen and change the loop name to something meaningful
11. Adjust the loop playback volume if needed while the loop is playing

Appendix C: Using a Footswitch

RiffBoxII can be controlled from a three-button footswitch as described in the Record, Playback and Library screen sections of this manual. It can also be controlled from a MIDI footswitch using MIDI messages as described in the MIDI implementation section.

 RiffBoxII has been tested with the DigiTech FS3X 3-button footswitch. To make this work, connect the footswitch with a quarter inch stereo cable to the RiffBoxII footswitch jack. Make sure the FootSw Jack control on the system screen is set to input.

 A MIDI pedal or multi-effects unit with MIDI output capability can be used to control almost any parameter in RiffBoxII using either MIDI program change messages or MIDI continuous controller messages as shown in the MIDI implementation section. To make this work, connect a MIDI cable from the output of the pedal to the MIDI input on RiffBoxII. Make sure that the MIDI channel on the system screen is set to the same value as on the pedal.

Appendix D: Using an External Drum Machine

An external MIDI device such as a drum machine or MIDI controller can be synchronized to the loop playback using MIDI clock messages. For every quarter note, 24 MIDI clocks are output from RiffBoxII. To make this work, connect the MIDI output of RiffBoxII to the MIDI input on the drum machine or other MIDI device. This MIDI channel is not used in this mode.

 The MIDI clock output is enabled on the system screen. This screen also allows you to change the number of quarter notes per loop. The start of the MIDI clock sequence is synchronized to the beginning of the loop. This synchronization point can be delayed by

0 to 24 MIDI clocks (up to one quarter note) by using the Timing Offset control on the system screen.

   Changing the Notes Per Loop or Timing Offset controls can be done during loop playback, but changes in MIDI clock output timing can cause unpredictable results and may take some time to settle depending on the MIDI controller used. A better way is to change these values when the loop has stopped playing and then test them out by starting loop playback.

Appendix E: Using a DigiTech Trio

The DigiTech Trio can be used create a backing tracks of bass and drums based on your loops. To do this, connect your Trio to RiffBoxII as shown below. Connect the RiffBoxII footswitch jack to the Trio control input using either a mono or stereo cable. Make sure to set the FootSw Jack control to an output on the system screen. Connect the output 2 jack on RiffBoxII to the guitar input jack on Trio. Connect the amp output signal from Trio to your guitar amp or the mixer output to you mixer.

Trio

To amp or mixer — Amp Out

Guitar In — From RiffBoxII Output 2

Control In — From RiffBoxII Footswitch Jack
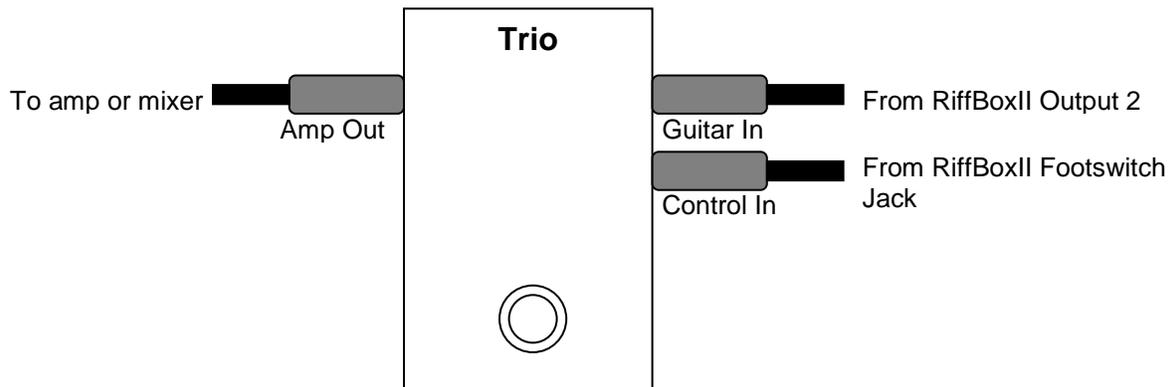
   To start the process, hold down the Trio footswitch to clear the current song. That's the only time you need to touch the footswitch. Now, when a loop has been recorded on RiffBoxII and starts to play back, or if a loop is played from memory, Trio will learn the loop as it is played the first time and then Trio will start playing back on top of the loop after that point. When you stop the loop playback on RiffBoxII, it will automatically signal Trio to stop playback as well. Please see the Trio users manual for more information on how it operates.