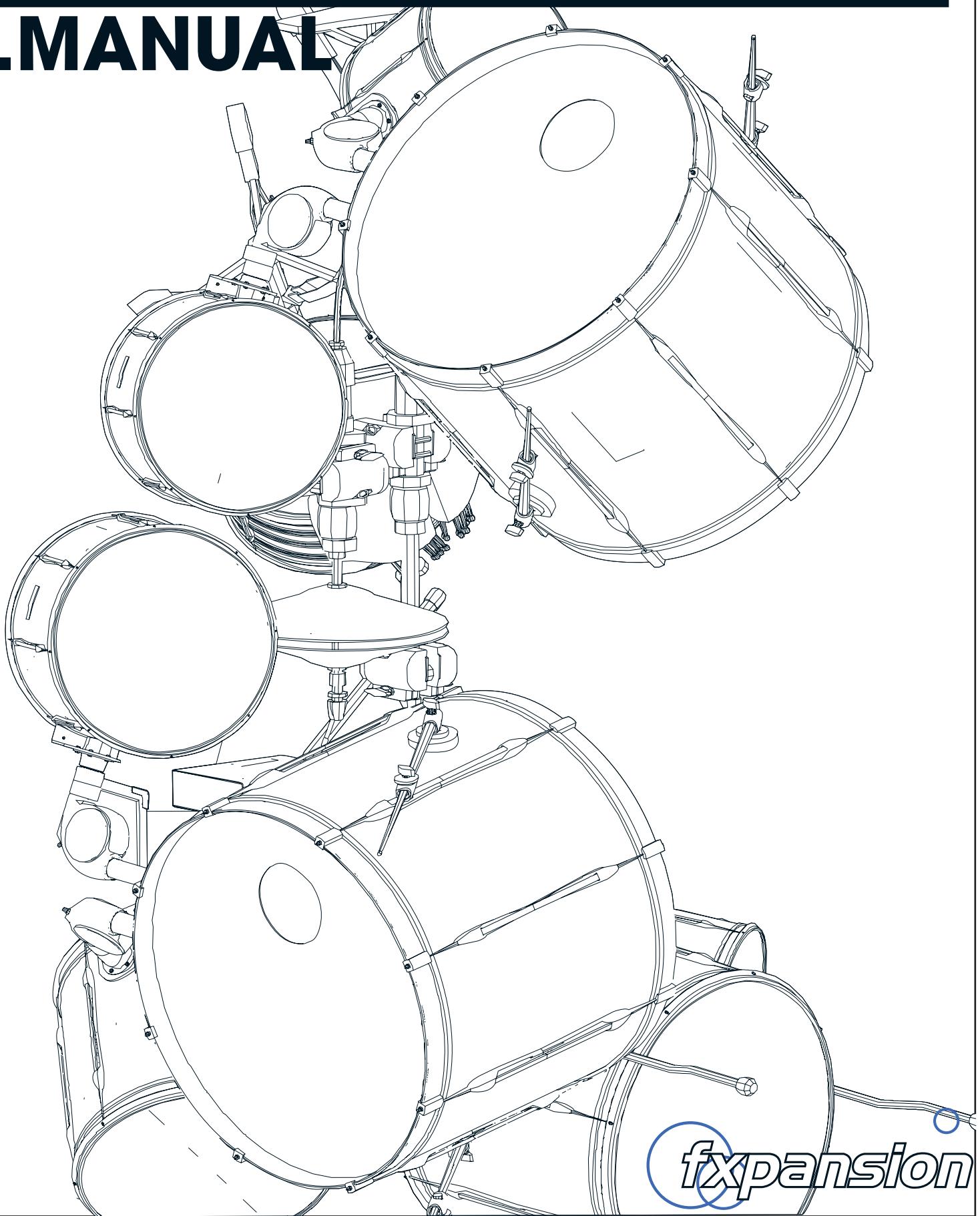


BFD eco

.MANUAL



 **fxpansion**

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Credits

Project lead, programming
 Additional programming
 Web programming
 Graphic design
 Additional graphic design
 Packaging design
 Documentation
 Quality assurance engineering
 Content management
 Marketing & sales
 Artist relations
 Technical support
 FXpansion USA

Audio engineering
 Groove composition
 Additional Groove composition

SKoT McDonald
 Paul Chana, Steve Baker, Angus Hewlett, Jamaine Obeng
 Andreas Schnetzler, Sam Sharp
 Toni Simonet
 Alex Akers
 Rus Brockman
 Mayur Maha
 Andrew Vernon, Tom Meaney, Mike Bugh
 Rory Dow
 Rhiannon Bankston-Thomas
 Clare O'Brien
 Ryan Sellers, Alex Volmer
 Terry Hardin
 John Emrich
 Russ Cannizzo – www.groovemonkee.com
 Jacques Mathias

Breverb Plate by Overloud Technologies – www.overloud.com

Special thanks to the beta testing team!

Ch.1 Introduction to BFD Eco

1:1 BFD Eco basics

BFD Eco is an acoustic drum software instrument which provides multisampled drums, played in a variety of ways (called articulations), and recorded with multiple microphones including real stereo ambience channels. The stereo ambience provides the actual sound of the drums within a room, offering a natural alternative to artificial reverb effects. BFD Eco also contains a Groove engine that plays back realistic drum performances through BFD Eco's sounds.

More detail about the architecture of BFD Eco's sounds can be found in chapter 2.

Launching BFD Eco

1. As a standalone application

On Windows, you'll find the BFD Eco standalone application here:

Program Files/FXPansion/BFD Eco or Start menu/Programs/FXPansion/BFD Eco

On Mac, launch BFD Eco from your Applications folder.

Once you start the application, you may need to set up its audio and MIDI settings. See chapter 11 for details on making these settings.

2. As an instrument plugin within a host

BFD Eco can be launched in a VST/AU/RTAS-compatible host in the same way as any other plugin instrument. See your host documentation for details on this subject, or see chapter 11 for a guide to launching BFD Eco in most major hosts.

BFD Eco's interface

BFD Eco's interface mainly consists of 3 pages, along with a mixer that is always visible. Switch between the pages using the 3 page buttons at the top-left of the BFD Eco interface.



Mixer & kit-piece slots (section 4:2)

The mixer lets you blend between all 12 kit-piece channels, OverHead and Room ambience channels, 2 aux channels and a master channel. You can also perform a number of routing and parallel processing functions.

The kit-piece channels are also *slots* in which to load kit-pieces – double-click on the channel image or right-click on the channel and use the **Load kit-piece** function. This displays the kit-piece browser for loading a kit-piece into the slot.

Kit page (section 4:1)

The Kit page shows a graphical representation of the loaded kit-pieces, and indicates when they are played – the kit-pieces flash whenever their articulations are triggered. You can also click on kit-pieces here in order to preview them.

Channel page (chapter 5)

The Channel page features controls specific to each channel in the mixer. The controls for the currently selected channel are shown.

- Kit-piece channels: Controls for changing the sound and response of a kit-piece – tuning, damping and more.
- Ambience channels: Controls for changing the stereo width and distance of the ambience mics.
- All channels: EQ and 2 assignable FX slots.



Channel page

Grooves page (chapter 6)

The Grooves engine is located in this page, allowing you to play back a library of professionally-produced drum patterns that trigger BFD Eco's sounds internally.



Other interface items and panels

As well as the 3 main pages, BFD Eco also contains the following additional controls and panels:

- **Main preset pickers**

These pickers allow you to load and save BFD Eco Presets, kits and mixer setups. See chapter 3 for more details.

- **Global controls (chapter 7)**

A number of global controls are always visible on the interface.

- **Options and Help menus (chapter 9)**

The Options menu features a number of preference settings for certain aspects of BFD Eco's operation. It also contains the Data path setting, which specifies the location of the BFD Eco audio data. The Help menu, meanwhile, features links to the manual, FAQs, support form and so on.

- **Key Map panel (chapter 8)**

The Key Map panel is accessed from the Options menu and lets you customize the assignment of MIDI notes to BFD Eco's kit-piece articulations.

Note for BFD Eco NFUZD users

BFD Eco NFUZD is a special edition of the BFD Eco software created especially for the NFUZD Audio NSPIRE electronic drumkit. Functionally it is virtually identical to the regular version of BFD Eco although there are a few small differences and additional features such as:

- Export NFUZD Kit
- Default key map for NFUZD Audio NSPIRE drum module
- Exclusive audio content featuring additional articulations (Snare/Tom Rim, Hihat splash and cymbals with Edge and Bell)

This manual usually refers to the software as *BFD Eco*.

When describing features exclusive to the NFUZD edition it is referred to as *BFD Eco NFUZD*.

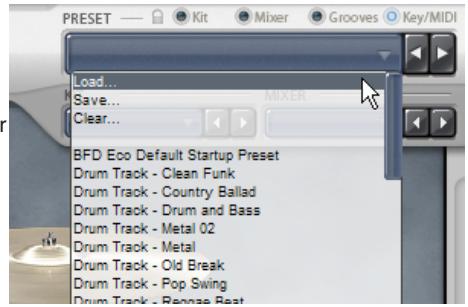
1:2 Loading sounds

Once you've launched BFD Eco and familiarised yourself with its interface, you're ready to load some sounds. See chapter 3 for more detailed information about the various preset types.

• Loading a BFD Eco Preset

Click on the Preset picker drop-down – you can either click on any Preset shown in the menu, or click on **Load...** to open the Preset browser. Double-click on any Preset in the browser listing to load it!

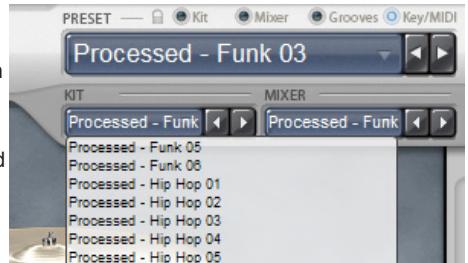
A *Preset* contains information about the entire state of BFD Eco: the kit itself, kit-piece adjustments like tuning and damping, mixer and EQ/FX settings, and also the contents of the Grooves page – try loading one of the “Drum Track...” presets, which each contain an example drum sequence, and start the BFD Eco transport (or your host's transport when using the BFD Eco plugin).



• Loading a kit

Click on the kit picker drop-down – you can either click on any kit shown in the menu, or click on **Load...** to open the kit browser. Double-click on any kit in the listing to load it.

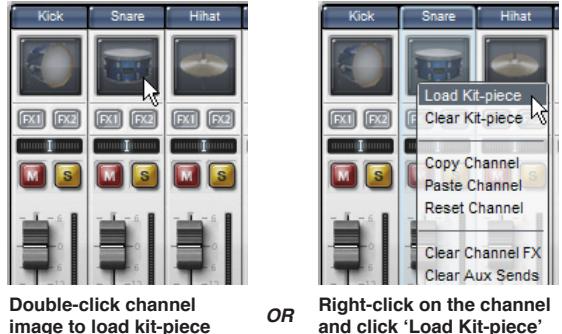
This results in loading the kit – a new configuration of kit-pieces with adjustments like tuning and damping and so on. The state of the mixer and the Grooves page is unchanged.



• Loading a kit-piece

To load an individual kit-piece such as a snare, double-click on the Snare channel image to open the kit-piece browser. You can also right-click anywhere on the Snare channel and click on **Load Kit-piece**. Double-click on any snare in the listing that appears in order to load it.

The new snare replaces the previous snare. Additional adjustments like tuning and damping are unchanged.



1:3 Playing sounds

Once you've loaded some sounds, they can be played using any of the following methods:

• via MIDI

You can play notes via a MIDI keyboard, or from a sequence in your host when running BFD Eco as a plugin. Section 2:4 shows the default MIDI note assignments for BFD Eco's articulations.

• from the Grooves page

The built-in Groove engine allows you to play BFD Eco's sounds with its built-in library of expressive drum patterns. Click on a Groove in the Groove page's browser to hear it through the currently loaded sounds.

• previewing sounds

You can also preview kit-pieces by clicking on them in the Kit page display, or by ALT-clicking on a kit-piece channel image in the mixer.

Ch.2 BFD Eco audio architecture

2:1 Kits, kit-pieces, articulations and velocity layers

Kits

In BFD Eco, a *kit* is a combination of kit-pieces, along with Channel inspector adjustments to each kit-piece.

Kit-piece

Kit-pieces are individual drums, cymbals, hihats or other instruments within a kit. They are each made up of one or more *articulations*, which represent an individual way of playing the kit-piece.

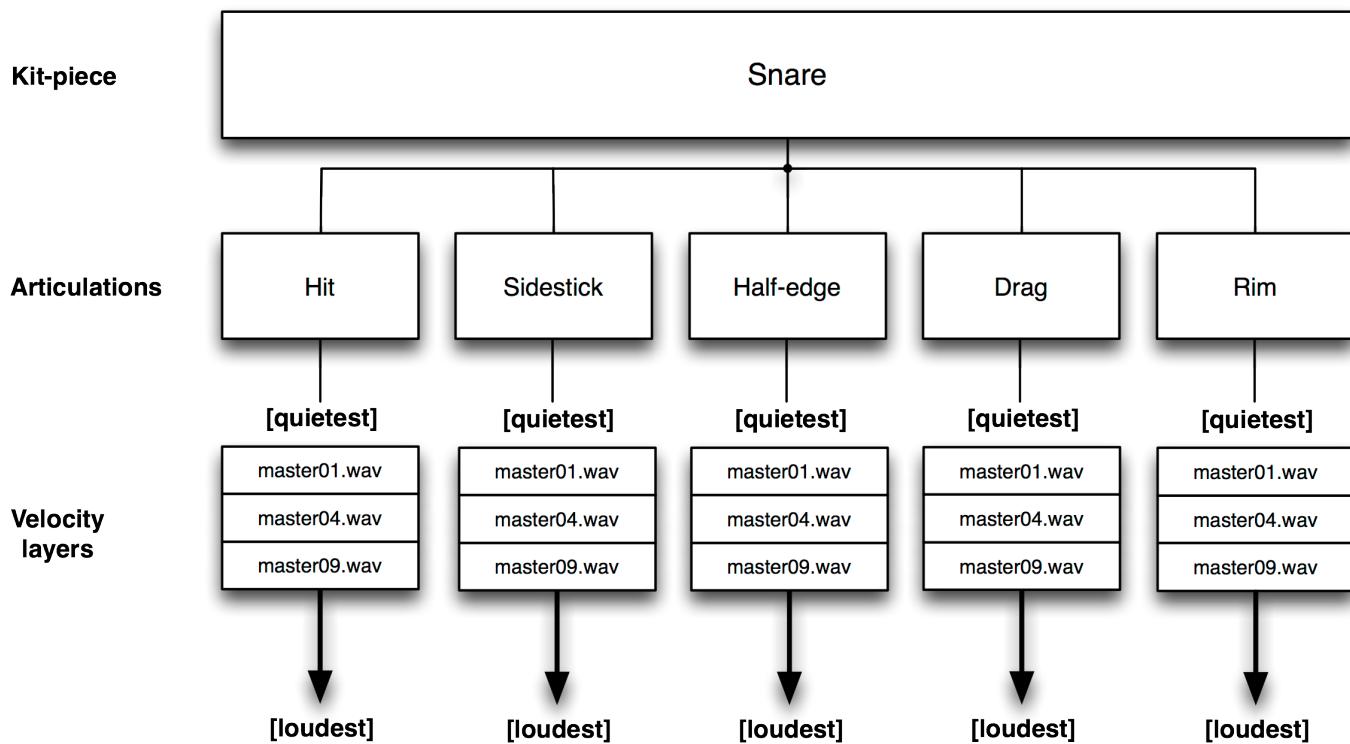
Articulations and velocity layers

The available *articulations* vary for each type of kit-piece. Here is a summary of possible articulations in BFD Eco NFUZD. Please note that some kit-pieces may not contain all possible articulations – in this event, intelligent substitution occurs if a missing articulation is triggered.

Kit-piece type	Articulations within BFD Eco NFUZD library
Kick	Hit, Hit (no snare)
Snare	Hit, Sidestick, Half-edge, Rim, Drag, Rim-click, Flam
Hihat	Closed, 1/4-open, 1/2-open, 3/4-open, open (tip) Closed, 1/4-open, 1/2-open, 3/4-open, open (shank) Pedal, Splash
Toms	Hit, Rim (Rim-shot)
Cymbals	Hit, Bell and Edge
Percussion	Hit, Alt

Each articulation is a folder of numbered samples or audio files, called *velocity layers*. These are recordings of the instrument being struck at varying levels of intensity, from very light to very heavy, arranged across the MIDI velocity range from 0 to 127. When articulations are triggered in BFD Eco, their velocity layer samples are played depending on the velocity of MIDI events received.

Please see section 1:4 for details on the default assignments for kit-piece articulations in the key map for the NFUZED Audio NSPIRE drum module.



Choke articulations

A choke is a special kind of articulation which does not produce any sound – instead, triggering a kit-piece's choke stops any other articulations from the same kit-piece that are currently playing. This feature is useful for choking a cymbal tail early, for example (a drummer would 'stop' the cymbal by 'grabbing' it).

Note that if you play a kit-piece articulation while another from the same kit-piece is still playing, the new articulation chokes the previous articulation. In most situations, this occurs gently. However, if you play a closed hihat articulation while an open articulation is still playing, the open sound is choked immediately, reflecting the behaviour of a real hihat.

2:2 Mic channels

Each velocity layer is a file containing multiple audio channels. These channels are recordings from several sets of microphones. Real drum recording situations commonly use multiple mic setups in order to capture a variety of different aspects of how the kit sounds within a room.

A kit-piece may sound very different depending on mic placement. Snare sounds very different when mic'd from above rather than from below – a mic placed on top captures the ‘pop’ of the skin being struck, while the crunch and sizzle of the wire-mesh snare is captured underneath. Meanwhile, mics inside kick drums tend to pick up the ‘snap’ or ‘click’ of the beater strike (this mic is sometimes placed on the beater side). The main ‘thud’ and low-end power is captured by a mic outside the kick drum (on the side furthest from the drummer).

Drum recording situations also make use of stereo sets of mics to capture the kit as it sounds as a whole within a space. They capture the projection of the kit and its reflections within the room. BFD Eco features the signals from two sets of these mics, called *ambience channels*. Individual directional close mics on various parts of the kit, known as *direct channels* in BFD Eco, sound very ‘dry’ in comparison.

Mic channel	Contents	Kicks	Snares	Toms / Perc	Cyms / Hats
<i>Kick In</i>	The mic inside the kick	Direct Kick In	-	-	-
<i>Kick Out</i>	The mic outside the kick	Direct Kick Out	-	-	-
<i>Snare Btm</i>	The mic under the snare	Bleed	Direct Snare Bottom	-	-
<i>Snare Top</i>	The mic above the snare	-	Direct Snare Top	-	-
<i>Multi</i>	Any other direct mic	-	-	Direct signal	Direct signal
<i>OH</i>	Stereo over-head mic set	All kit-pieces feature a stereo OH ambience channel. The ‘amount’ of each kit-piece in the OH channel can be varied with the Send OH control in the Channel page.			
<i>Room</i>	Stereo room mic set	All kit-pieces feature a stereo Room ambience channel. The ‘amount’ of each kit-piece in the Room channel can be varied with the Send Room control in the Channel page.			

Bleed and Direct channels

‘Bleed’ between mics is a phenomenon that always occurs when recording drums with discrete direct mics for each part of the kit. A dedicated mic intended to capture one part of the kit always picks up some sound from other parts of the kit. In BFD Eco, the only bleed that exists is the kick signal in the Snare Bottom channel, in order to reduce system resource and RAM usage. It is possible to control the level of this bleed with the **Bleed** control at the bottom-left of the interface.

Whether you use bleed or not is up to you and your personal preference. It is recommended to use bleed if you want a ‘realistic’ sound, as bleed always occurs in a multi-mic drum recording. However, if you want to go beyond notions of realism and achieve ‘ideal separation’ for processing each kit-piece discretely, then turn down the level of the bleed to zero.

Ambience channels (stereo)

The ambience channels allow you to approach mixing in BFD Eco in the same way as an actual recording of a drummer playing a kit. Because each instrument is played individually, its ambience channels are discrete. However, since this would simply mean too many channels to conveniently mix, the discrete channels are mixed down to 2 ambience channel ‘buses’ for the OverHead and Room mic positions. However, you can adjust the amount of each kit-piece in the ambience channels, using its **Send OH** and **Send Room** controls.

2:3 Using expansion packs with BFD Eco

When using expansion packs with BFD Eco, only the first 2 ambience channels can be used. In addition, all audio data is loaded in 16 bit quality with a maximum of 24 velocity layers.

2:4 Default MIDI key assignments

The following table shows the default MIDI key assignments for the NFUZD NSPIRE drum module key map in BFD Eco NFUZD.

For more details about the characteristics of each articulation, see the next chapter.

This list corresponds to -2 Octave numbering scheme (the lowest octave is numbered as octave -2). MIDI note numbers are also shown.

MIDI note	MIDI note number	Slot : Articulation	Kit-piece articulation
E3	64	8:2	Cym2 Bell
D3	62	7:2	Crash (Cym1) Bell
B2	59	9:3	Ride (Cym3) Edge
A#2	58	4:3	Floor Tom Rim
A2	57	8:1	Cym2 Hit
G2	55	7:3	Crash (Cym1) Edge
F2	53	9:2	Ride (Cym3) Bell
E2	52	8:3	Cym2 Edge
D#2	51	9:1	Ride (Cym3) Hit
D2	50	6:3	Hi Tom Rim
C#2	49	7:1	Crash (Cym1) Hit
C2	48	6:1	Hi Tom Hit
B1	47	5:3	Mid Tom Rim
A#1	46	3:1	Hihat Open Tip
A1	45	5:1	Mid Tom Hit
G#1	44	3:11	Hihat Pedal
G1	43	4:1	Floor Tom Hit

MIDI note	MIDI note number	Slot : Articulation	Kit-piece articulation
F#1	42	3:9	Hihat Closed Tip
F1	41	11:1	Perc2 Hit
E1	40	2:4	Snare Rim
D#1	39	11:3	Perc2 Alt*
D1	38	2:1	Snare Hit
C#1	37	2:5	Snare SideStick
C1	36	1:1	Kick Hit
D0	26	3:2	Hihat Open Shank
A#-1	22	3:10	Hihat Closed Shank
A-1	21	3:14	Hihat Splash
D#-1	15	10:1	Perc1 Hit
D-1	14	10:2	Perc1 Alt

Additional unmapped articulations

Please note that the default BFD Eco NFUZD key map does not feature mappings for the following articulations:

- Perc3 Hit / Perc3 Alt

These articulations do not feature any trigger input on the NSPIRE drum module.

- Snare Drag / Flam

These techniques are intended to be played by the drummer using the regular Snare Hit articulation.

- Hihat 1/4-open / 1/2-open / 3/4-open (Tip & Shank)

These hihat articulations are intended to be accessed by playing the Hihat Open or Hihat Closed notes in conjunction with the pedal controller (which transmits MIDI CC #4).

All the above unmapped articulations are still present and can be manually assigned to MIDI notes if desired using the Key Map panel (see chapter 8). You may need to do this if connecting a secondary triggering device such as an Octapad-style controller for additional sounds. The additional articulations can also be useful when programming and editing/fine-tuning parts.

After creating any desired assignments, please remember to save your custom key map for future use! BFD Eco loads the last saved/loaded map when it is launched.

Second articulation mappings for Tom and Perc2 slots

Tom slots

These are mapped to the 3rd tom articulation – for the BFD Eco NFUZD data this triggers the Rim articulation (Rim-shot). If loading a tom from an expansion pack without this articulation, a Tom Alt articulation is substituted and played in its place. If a Tom Alt articulation does not exist, the Tom Hit articulation is played.

Perc2 slot

The Perc2 slot is intended to be used with a 4th tom trigger if you use one with your NSPIRE module. Therefore, the 2nd mapping specified in the key map for this slot is for the 3rd articulation: when a tom is loaded into it, this mapping triggers the Rim articulation. If a cymbal is loaded into it, the mapping triggers an Edge articulation. In the event of a 3rd articulation not being present, substitution occurs as described above.

Ch.3 Loading and saving in BFD Eco

3:1 Preset types and kit-pieces

Preset pickers



BFD Eco features preset pickers for the following type of presets:

BFD Eco Presets

A BFD Eco *Preset* stores the entire state of the instrument. Note the capitalization whenever the manual refers to Presets.

Presets also store preference settings that override BFD Eco's default preference settings.

Kits

A *kit* stores the configuration of kit-pieces that form a kit, along with settings for the kit-piece's inspector controls (located on the left side of the Channel page).

- Kit-pieces contained within slots
- Kit-piece inspector settings (except the **Aux1 / Aux2 Send** controls)

Mixers

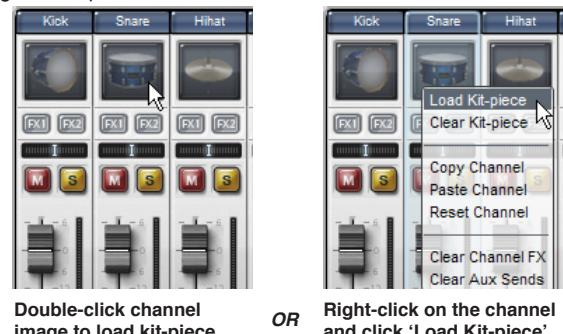
A *mixer* is a preset that stores the state of the mixer, including output routings and FX settings.

- It also stores the state of the **Aux1 / Aux2 Send** controls, located in the Channel page for kit-piece and ambience channels.

Loading Kit-pieces

Kit-pieces (without any additional settings, as opposed to kit-piece presets – see below) do not feature pickers like the main preset types. Instead, they are loaded in either of the following ways:

- Double-click on a kit-piece channel image
- Right-click (or CTRL-click on Mac) on a kit-piece channel and use the **Load Kit-piece** function in the Channel context menu that appears



3:2 Other preset types used in BFD Eco

The following types of preset files both feature preset pickers, although they are not located along with the main preset pickers at the top-right of the BFD Eco interface:

Kit-piece presets

A kit-piece preset stores the entire contents of a kit-piece channel – the kit-piece contained within the channel, its mixer settings and its Channel page settings (including all inspector, EQ and FX slot settings).

The kit-piece preset picker is above the large kit-piece image on the Channel page, when a kit-piece channel is selected. See section 5:1 for more details.

Key map

Key maps store MIDI key assignments for playing articulations.

The key map picker is located in the Key Map panel, accessed via the Options menu. See chapter 8 for more details.

3:3 Using the Preset pickers

As well as a listing of the currently available presets (click on any preset in the list to load it), each preset picker's drop-down menu features the following functions:

Load...

Opens the preset browser (see section 3:5).

Save...

Opens an OS file Save As dialog, allowing you to save current settings as a preset.

Clear...

Clears the contents of BFD Eco relevant to the preset type:

- Preset picker: clears the entire state of BFD Eco
- Kit picker: clears the kit and inspector settings
- Mixer picker: clears the entire mixer and EQ/FX settings
- Key map picker: clears the entire key map



Using the preset picker for BFD Eco Presets

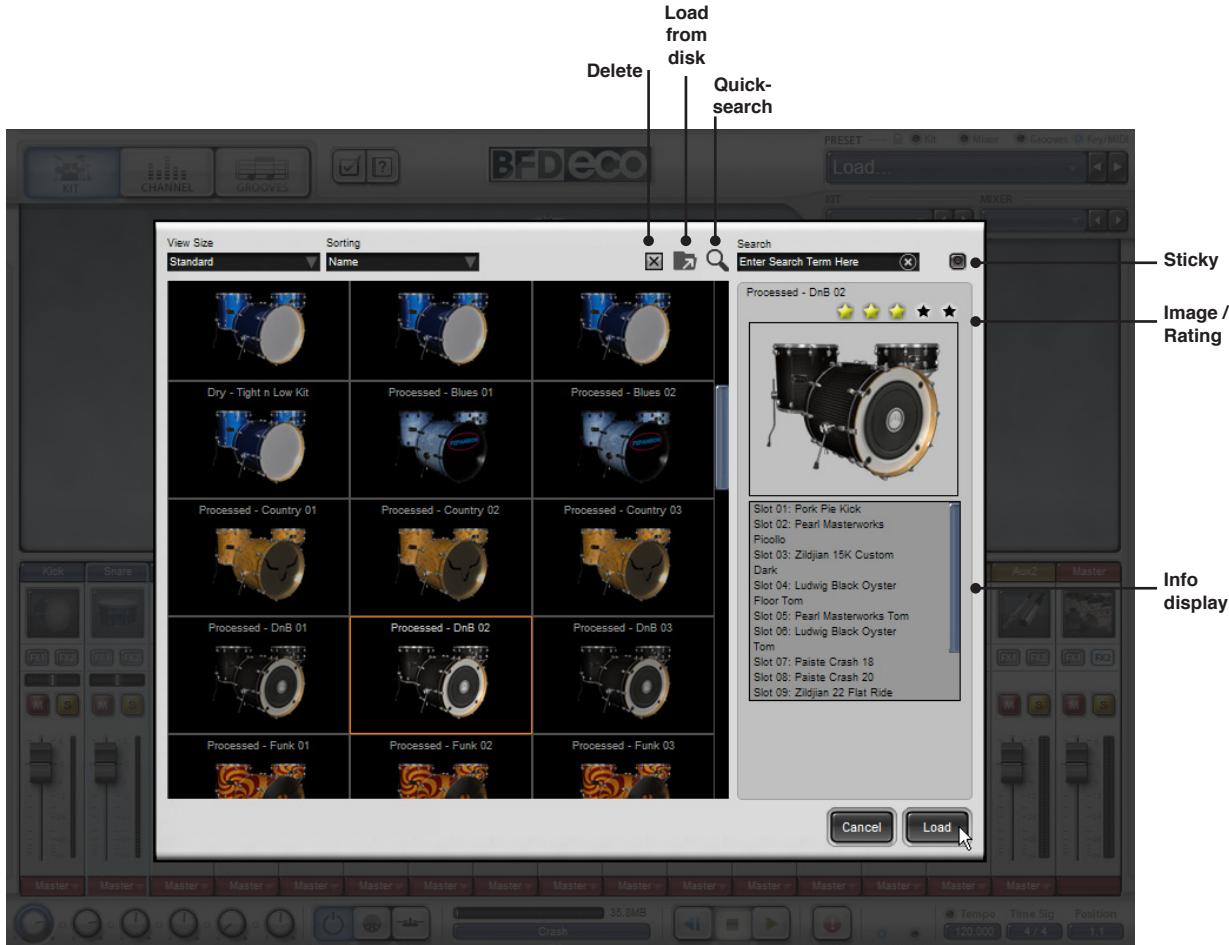
3:4 Lock buttons

Lock buttons exist for the **Kit**, **Mixer**, **Grooves** and **Key/MIDI** (key map and MIDI CC assignments made in Learn mode). Enabling any of these buttons locks the relevant parts of BFD Eco, so that they remain unaffected when you **Load...** or **Clear...** a BFD Eco Preset.

The **Key/MIDI Lock** button is enabled by default when BFD Eco is launched.

3:5 Using preset browsers

A preset browser appears when you use the **Load...** function on any preset picker (for the Preset, kit, mixer or key map), or when you use the **Load Kit-piece** function in the channel context menu (or double-click a kit-piece channel image).



Preset listing, Load and Cancel

The main part of the browser is the preset listing. Click a preset in the listing to select it, and click the **Load** button to load it.

You can also double-click any preset in order to load it.

To exit the browser without loading a preset, click the **Cancel** button.

Previewing kit-pieces in-context (kit-piece browser only)

If you are using the kit-piece browser, selecting a kit-piece in the listing results in it being previewed ‘in-context’ – any MIDI messages for the kit-piece that are sent to BFD Eco result in triggering the selected kit-piece in the browser listing.

View Size / Sorting

The **View Size** drop-down menu sets the size of images shown in the browser listing. The ‘List’ and ‘Details’ settings are text-only, and are slightly faster because of the lack of kit-piece images. The default setting is ‘Standard’.

The **Sorting** drop-down menu sorts items in the listing by ‘Name’ or ‘Star Rating’ (the default setting is ‘Name’). In the kit-piece browser, this drop-down menu also contains ‘Manufacturer’, ‘Artic Count’ (the number of articulations present within the kit-piece), and ‘Disk Size’ (the size of the kit-piece on disk, which is an indication of how much RAM it uses when loaded).

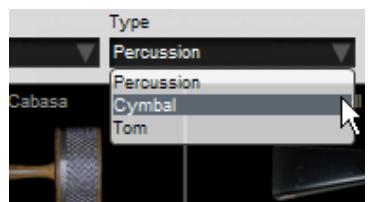
Rating presets or kit-pieces and sorting them by ‘Star Rating’ can make it easier to find your favourites.

These View Size and Sorting settings are recalled between sessions. Their state is stored in the preferences – therefore, they are reset if you re-initialize your preferences.

Type (kit-piece browser for Percussion slots only)

Specifies the type of kit-piece to browse and load for Perc1, Perc2 and Perc3 (Percussion) slots – toms, cymbals or percussion can be browsed and loaded into these slots.

Note that when using cymbals and toms in Percussion slots, only the first two articulations are available, mapped to the slots’ Hit and Alt articulations. This typically means that you cannot use the Edge sounds of cymbals that feature Hit, Bell and Edge articulations. Also, you cannot use rim articulations when using toms from expansion packs that contain them.



Delete

This button is used for removing unwanted presets or kit-pieces from the database, which can make it easier to find the ones you need. You are asked for confirmation before you can continue.

When removing a user preset from the database, BFD Eco also asks if you want to remove its files from disk. Click 'Yes' to remove the files from the relevant user preset location. If you click 'No', the preset's files remain untouched, and they are found during the next rebuild of the database.

BFD Eco never prompts to delete factory-installed preset files or kit-pieces.

Load from disk (Preset, kit and mixer browsers only)

Click this button to display a system file open dialog for navigating to a specific preset. When you attempt to load it, BFD Eco asks if you would also like to import it into the database. This function is intended for loading new files without having to place them in the correct location and rebuild the database.

Search

Narrow down the amount of items shown in the listing by clicking inside the **Search** box and entering one or more search keywords.

Quick-search

Useful search terms are stored in the **Quick-search** drop-down menu to the left of the **Search** text-box. Recent searches are shown in the menu, along with other useful terms.

Sticky

With the **Sticky** button enabled, the browser stays open after a preset/kit-piece is loaded – you can play BFD Eco via MIDI and change between presets without reopening the browser.

Image / Rating

You can rate presets with the **Rating** control above the large image. Ratings can be used as a 'favourites' system when **Sorting** is set to 'Star Rating'.

Info display

The **Info display** varies depending on which type of preset you are currently loading.

Presets/kits: The display shows a list of the kit-pieces within each slot.

Mixers: The display is blank.

Kit-pieces: The display shows audition preview strips for each articulation within the kit-piece, along with additional background information.

Kit-piece articulation audition strips (kit-piece browser only)

The display features an audition strip for each articulation within the selected kit-piece. Click towards the left of the strip to hear lower velocity layers, and to the right for higher layers.

Target slot information (kit-piece browser only)

Displays the following information about the destination kit-piece channel:

Target Slot (slot number and name)

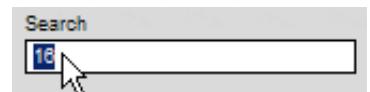
The name/number of the slot to which the kit-piece will be loaded.

Currently in Slot

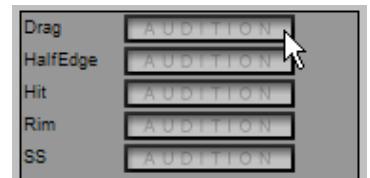
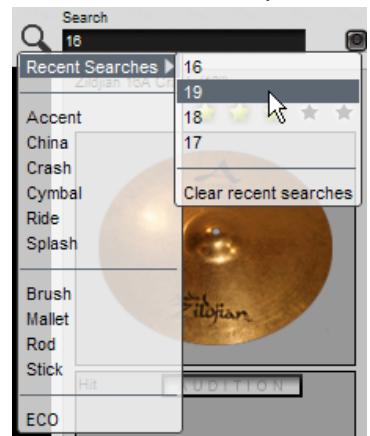
The name of the kit-piece currently loaded into the target slot.

Drum Shop (kit-piece browser only)

This button launches the FXpansion Drum Shop in your web browser, where you can purchase additional sounds for use with BFD Eco.



Above: the Search function
Below: the Quick-search drop-down



Ch.4 Kit Page and Mixer

4:1 Kit page

The Kit page, shown when the Kit page button is active, features a visual representation of the BFD Eco kit layout. All 12 kit-piece channels are represented on the display.

Click the drum heads or the cymbals/percussion to preview the main articulation of the kit-piece at a velocity of 100. You can also ALT-click kit-piece channel images in the mixer for velocity-sensitive previews.



4:2 Mixer

BFD Eco's mixer features several types of channels:

Kit-piece channels

- Mono channels that contain the direct mic signals from a kit-piece.

Kit-piece channels are also kit-piece *slots* – kit-pieces are loaded into them. Double-click a kit-piece channel's image to bring up the kit-piece browser, or right-click (or CTRL-click on Mac) on a channel and use the **Load Kit-piece** function in the channel context menu.

Ambience channels: OH and Room

- Stereo channels that feature the OH and Room signals from all kit-pieces.

The level of each kit-piece in the ambience channels is set by its **OH Send** and **Room Send** controls (located in the Channel page's inspector). By default these are set to send the natural level of all kit-pieces to the ambience channels, which would be the case when recording a real drummer playing a kit in a room.

Aux channels

The Aux1 and Aux2 channels are provided so that you can process several signals simultaneously. Entire channels can be routed to an aux (using the channel's **Output selector**), or variable amounts of channels can be routed using the **Aux1 / Aux2 Send** controls (in the Channel page inspector).

Master channel

The Master channel represents the main stereo output (output 1-2) of BFD Eco. In the default mixer setup, all other mixer channels are routed to the Master, meaning they will all be heard in the main stereo output.

When using the plugin version of BFD Eco, channels can be routed to their own output instead of the Master channel.

In the standalone version, all signals are routed to the Master channel, regardless of whether the output of any channels are routed to their direct outs.

Mixer visibility

The entire mixer can always be seen when using in the Kit, Channel or Grooves pages. However, if you are using the Key Map panel, the ambience, aux and Master channels are not visible.

Selecting channels

Select a channel by clicking anywhere within it. Channel page inspector and EQ/FX operations are performed on the currently selected kit-piece or ambience channel.

Selecting multiple channels

You can select multiple channels in order to perform simultaneous adjustments for the channels in the mixer – for example, the channel's fader, **Pan**, **Mute/Solo** buttons and **Output selector** can all be adjusted for multiple channels.

- CTRL-click (Windows) or Command-click (Mac)

Adds the channel to the current selection. If a channel is already selected, this operation de-selects it.

- SHIFT-click

Creates a contiguous selection between two channels.

4:3 Mixer channel controls



Kit-piece channel controls

Channel image

Kit-piece direct channels

Each kit-piece channel's image features a photo of the kit-piece currently loaded. When a kit-piece channel is empty, the channel image is a representation of the type of kit-piece intended to be loaded into it (although the Perc1, Perc2 and Perc3 channels can load toms and cymbals as well as percussion kit-pieces). When a kit-piece is loaded, ALT-click the image to hear a preview of its main articulation. Click towards the left of the image to preview lower velocities, and towards the right for high velocities.



ALT-click the image to preview the kit-piece

Loading kit-pieces

Double-clicking a kit-piece channel image opens the kit-piece browser, allowing you to load a kit-piece into the channel.

Ambience, Aux and Master channels

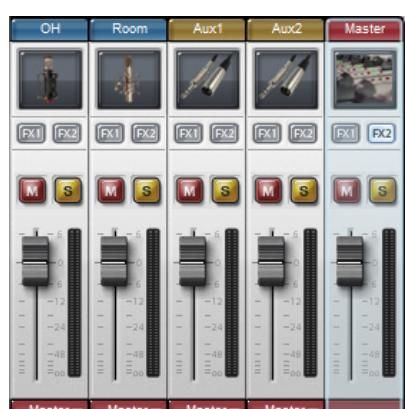
The images on these channels are solely for identification purposes and do not perform any additional functions.

FX1 / FX2 Power

These buttons allow a quick way to enable or bypass the channel's 2 FX devices without needing to switch to the Channel page.

They perform the same function as each FX device's **Power** button (in the Channel page).

Note that these buttons are only active with an FX device loaded in the relevant slot.



Ambience, aux and Master channel controls: note the lack of a Pan control on these channels because they are stereo.

Pan (kit-piece channels only)

All kit-piece channels feature a **Pan** control in order to adjust the position of the mono channel within the stereo field.

Note that a kit-piece channel's panning cannot be applied to its signal in the ambience channels, because the ambience consists of stereo recordings. However, you can use the **Flip LR** button in the Channel page inspector to invert the stereo image of the kit-piece's ambience channels.

Mute / Solo

All channels feature **Mute** and **Solo** buttons.

Level fader / meter

Each channel's level fader adjusts its volume. The level of the channel is indicated by the meter (single for mono channels, dual for stereo channels).

Note that the Master channel fader only affects channels which are routed to the channel. If the output of any channel is set to its direct output, you can use the **Global Volume** control to adjust the level of all channels simultaneously (see chapter 7).

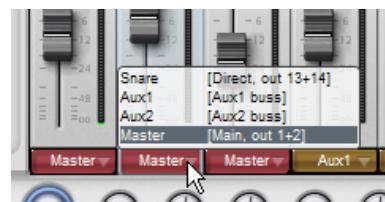
Output selector

The **Output selector** at the bottom of each channel allows you to route its signal to the kit-piece's direct output, to the Aux1 and Aux2 channels, or to the Master channel which is hard-wired to the first stereo output from the plugin.

Note that the signal flow between channels is always from left to right – you cannot route any channel to a channel on its left.

By default, all channels are routed to the Master channel.

In the standalone version, all direct output routings are automatically changed to the Master channel, as the application has a stereo output.



Setting the Snare channel output

Available plugin outputs:

Plugin output	Output name	Contents
1-2	Master	Any signals routed to the Master channel
3-4	OH	Stereo OverHead mic signal – amount of each kit-piece in this channel is set by its channel's OH Send control
5-6	Room	Stereo Room mic signal – amount of each kit-piece in this channel is set by its channel's Room Send control
7-8	Aux1	Aux1 channel – route entire channels to Aux1 using the Output selector, or use the Aux1 Send controls to route variable amounts of channels to Aux1 in parallel
9-10	Aux2	Aux2 channel – route entire channels to Aux2 using the Output selector, or use the Aux2 Send controls to route variable amounts of channels to Aux2 in parallel
11-12	Kick	The direct output of the Kick kit-piece channel
13-14	Snare	The direct output of the Snare kit-piece channel
15-16	Hihat	The direct output of the Hihat kit-piece channel
17-18	Toms	The direct output of the Toms kit-piece channels (Floor Tom, Mid Tom, Hi Tom)
19-20	Cyms	The direct output of the Cymbals kit-piece channels (Crash, Cymbal, Ride)
21-22	Perc	The direct output of the Percussion kit-piece channels (Perc1, Perc2, Perc3)

4:4 Channel context menu

Right-clicking (or CTRL-clicking on Mac) on a channel in the mixer displays the channel context menu.

Load Kit-piece

Opens the kit-piece browser.

You can also double-click a kit-piece channel image to display the kit-piece browser.

Clear Kit-piece

Removes the currently loaded kit-piece from the channel. The channel's additional settings remain unchanged.

Copy Channel

Paste Channel

These functions allow you to copy and paste the contents of a channel. All the channel's controls, with the exception of Mute/Solo buttons, are copied/pasted – this includes the Level, Pan and all controls in the Channel page inspector, EQ and FX slots.

Reset Channel

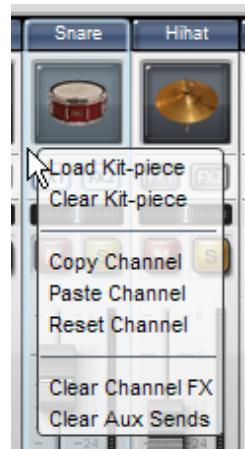
Resets all channel controls to their default settings, except the EQ, FX slots and Aux Sends, which are all unaffected.

Clear Channel FX

Removes any FX devices loaded into the channel's FX slots, and resets the EQ to default settings.

Clear Aux Sends

The values of the **Aux1 / Aux2 Send** parameters for the channel are reduced to 0.



Ch.5 Channel page

Click the Channel page button to display the Channel page. This page features controls that apply to the *currently selected* mixer channel.

There are 3 main areas – the kit-piece preset picker, the inspector and the EQ/FX slots.



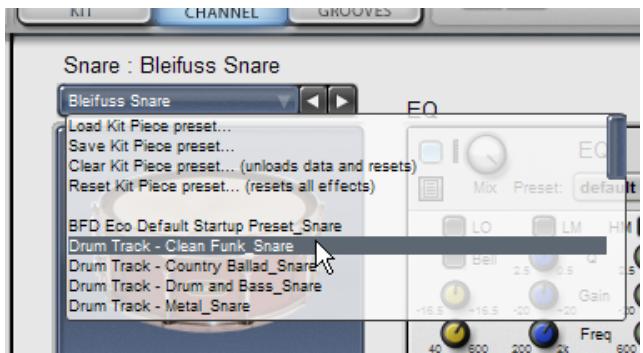
5:1 Kit-piece preset picker

This preset picker provides access to entire channel presets for kit-piece types. These *kit-piece presets* store the state of a kit-piece along with other channel settings. The kit-piece preset picker lets you access kit-piece presets relevant to the currently selected channel.

- the kit-piece itself
- channel inspector settings
- EQ and FX slot settings
- mixer channel fader/pan settings.

5:2 Inspector

This section lets you adjust specific aspects of the channel. The controls vary for different kit-piece and ambience channels. There are no inspector settings on the Aux1, Aux2 or Master channels – only the channel photo is shown.



Large channel image

This is a large version of the mixer channel image (see section 4:3). It is solely for identification purposes and performs no additional functions.

Tune

Adjusts the pitch of the kit-piece.

The **Tune** control has no logical real-world equivalent for cymbals and hihats (as opposed to drums with tunable skins), but the ability to tune them is nevertheless provided.

The **Global Tune** control, found towards the bottom-left of the BFD Eco interface, adjusts the pitch of all kit-pieces relative to their individual **Tune** settings (see chapter 7).

Dyn (Dynamics)

Scales the velocity of events played by the kit-piece, from the Groove engine or from incoming MIDI. The control offsets the velocity of incoming events up or down by up to 127.

The **Global Dyn** control, found towards the bottom-left of the interface, offsets the velocity of all kit-piece events relative to their individual **Dyn** settings (see chapter 7).

In/Out (kick only)

Adjusts the balance between inside (**In**) and outside (**Out**) kick drum mics.

The inside mic provides more attack and sounds more 'clicky', while the outside mic contains more sustained, deep low-end.



Inspector display for Kick channel



Inspector display for Snare channel

Bot/Top (snare only)

Adjusts the balance between mics below (**Bot**) and above (**Top**) the snare.

The top mic captures more of the sound of the drum-head (skin), while the bottom mic picks up most of the snare wire sound – the 'crunch' and 'rattle' of a snare drum.

Damp

Reduces the decay of the kit-piece, in a similar way to using a damping method such as a snare ring, a blanket in the kick drum, or damping gel/tape on a cymbal.

Tighten (hihat only)

'Tightens' the sound of closed hihats. The control simulates pressing down hard on a hihat clutch, a process that moves the two hihat surfaces more tightly together.

Note that this parameter is not capable of being MIDI-controlled.



Inspector display for Hihat channel

Width (ambience channels only)

Adjusts the width of the ambience channels' stereo field, from mono to fully enhanced stereo.

Distance (ambience channels only)

Adjusts the distance of each set of ambience mic channels from the kit.

Effectively, this function introduces a delay between the ambience channels and the direct mics. It has a similar effect to the ambience as a 'pre-delay' control has over the processed signal on an digital algorithmic reverb unit.

Ambience controls (kit-piece channels only)

Flip LR

While the stereo position of kit-pieces in ambience channels cannot be adjusted, due to them being stereo recordings, the **Flip LR** button makes it possible to swap the left and right channels of the ambience if you pan a kit-piece to the other side of the stereo field.

OH/Room Amount

These controls adjust the amount of the kit-piece in the OH and Room ambience channels.



Inspector display for OH and Room channels

Aux sends (kit-piece and ambience channels only)

Aux1/Aux2 Send

These controls send variable levels of the channel to the Aux1 and Aux2 channels. Sends are useful for parallel processing such as artificial reverb effects.

Note that it is also possible to route the entire output of one or more channels to the Aux channels. Using Sends allows you to vary the amount of each channel's signal in the Aux channels without altering the original channels' levels.

5:3 EQ and FX slots

All mixer channels – kit-piece, ambience, aux and Master channels – feature a hard-wired EQ and 2 FX slots, each of which can host one of the 15 internal FX devices.

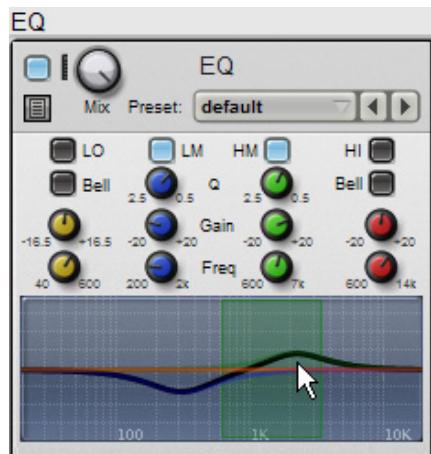
EQ

Each channel has a 4-band EQ hard-wired into it, prior to the 2 FX slots in the signal path. The top section of the EQ device features the same common controls as the FX slots except for an FX picker. See below for more details of these controls. Note that additional EQ devices can be loaded into FX slots if required.

Each of the 4 EQ bands features a power button (**LO**, **LM**, **HM** and **HI**). Note that bands are activated automatically when their settings are adjusted.

The Low (LO) and High (HI) bands are switchable from 'shelf' to 'bell' mode by enabling the **Bell** button. The Low Mid (LM) and High Mid (HM) parametric bands include a **Q** control. All bands feature **Frequency** and **Gain** controls.

The hard-wired EQ features all the extra controls found in the FX slots (see below), with the exception of an FX picker.



Frequency Display control

You can change EQ curves by clicking and dragging the graphical display in the EQ interface.

To edit a band in this way, move the mouse cursor over the display. The display is divided into 4 zones for each band from LO to HI, from left to right. Each zone is highlighted in a different colour, corresponding to the colour of the bands' controls.

- With a band highlighted, click and drag up/down to adjust the band's gain, and left/right to adjust its frequency.
- For the two Mid bands, clicking and dragging up/down while holding down the ALT key allows you to adjust the band's Q.

FX slots

This section describes the common controls of the FX slots. See chapter 10 for more details of each FX device.

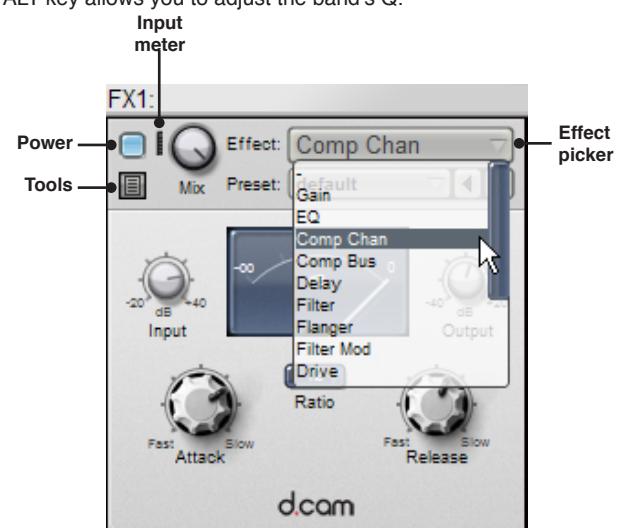
Power

Turns the device on or off. With the button disabled, the effect is bypassed and inactive (its controls cannot be adjusted). These buttons are duplicated on the mixer section, meaning that you can power on/off individual FX without using the Channel page. See section 4:3 for more details.

You can also toggle FX power on all channels using the global **FX Power** button (see chapter 7).

Input meter

Represents the level of the input signal. It is useful for ensuring that the FX device is receiving a signal, and that the input is not clipping.



Mix

The **Mix** control, which blends between the processed (wet) and unprocessed (dry) signals, exists on all BFD Eco FX. By default, all FX are set to 100% wet, but this control allows you to adjust the wet/dry mix as required.

While it is not common to see a wet/dry mix control on compressors, it is available on all BFD Eco FX including its dynamics processors. It can be very useful for parallel compression on a single channel.

Effect picker

Select the desired FX device for the slot using this drop-down menu.

Effect preset picker

Each FX device features its own set of presets, selectable from this drop-down menu. You can cycle through the available presets using the **Previous / Next** buttons.

Tools menu

The Tools menu is displayed by clicking the **Tools** button, or by right-clicking anywhere in the common controls area of the EQ and FX slots. This menu offers a number of functions for managing FX and their settings.

Cut / Copy / Paste Effect

These functions allow you to cut, copy and paste FX devices (with their current settings) between any FX slots on any channel.

Reset Effect

Reverts to the FX device's default settings.

Clear Effect

Removes the FX device from the slot.

Load Preset

Opens an OS file Open dialog that allows you to navigate to and select an effect preset file (the file extension is **.bfdfx**).

The default folder is <Documents>/FXpansion/BFD Eco/Mixers/Effects/<effect>

Save Preset

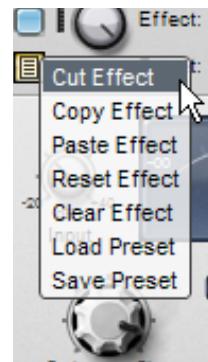
Opens an OS file Save As dialog that allows you to save a preset to any location.

The default folder is <Documents>/FXpansion/BFD Eco/Mixers/Effects/<effect>

It is strongly recommended to store presets in the default folders, for ease of reloading in the future!



Effect preset picker



Ch.6 Grooves

6:1 Introduction to Grooves

The Grooves page is shown when the Grooves button is active, and provides realistic drum patterns (Grooves) in a variety of genres to play using the BFD Eco sounds.



The Grooves page features the following main areas:

- Groove browser (see section 6:2)
- Grooves Mode
- Drum Track (see sections 6:3 to 6:5)
- Additional controls and Groove FX (see section 6:6 and 6:7)

The BFD Eco transport controls are very important when using the Grooves page – see chapter 7 for details of these controls.

Using Grooves

Grooves can be used in the following ways:

- Single mode:** Single Grooves in the browser can be previewed in sync with your host (see section 6:3)
Track mode: Drag & drop Grooves to the built-in Drum Track to create a sequence of Grooves (see section 6:4)
Drag+drop to host/file: Drag & drop Grooves to a MIDI track in your host which is routed to BFD Eco (see section 6:9)

6:2 Groove browser

The Groove browser lets you find and audition Grooves. They can then be dragged to the Drum Track, exported to your host or you can choose to simply loop the selected Groove by using 'Single' Grooves Mode.



Groove list

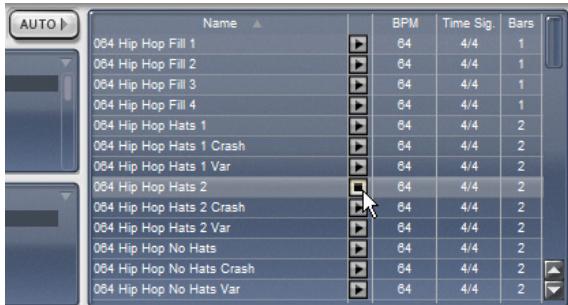
All available Grooves are shown in the list. There are a number of columns which display extra information about each Groove. The list can be sorted by the 'Name' or 'BPM' columns (the other columns represent time signature and length in bars).

Auto-Preview and individual Preview buttons

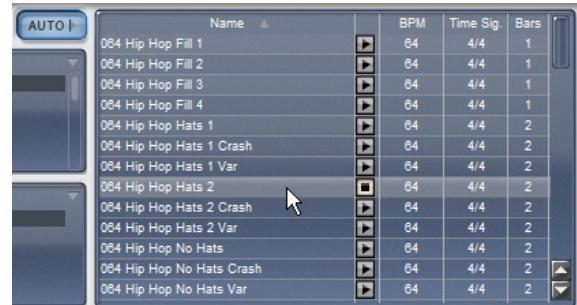
With the **Auto-Preview** button enabled, selecting any Groove in the browser results in it automatically being previewed (in sync with the host if it is playing).

With the **Auto-Preview** button disabled, you must click on a Groove's individual **Preview** button to preview it.

Note that BFD Eco cannot play more than 1 Groove simultaneously – if a Groove is already playing (for example, from the Drum Track), it is muted while Groove browser previews occur. Whenever you stop previewing, the previously playing Groove is restored.



With the Auto-preview button disabled, you must click a Groove's individual Preview button to audition it.



When Auto-preview is enabled, simply select a Groove to audition it.

Category filters

4 category filters are available to narrow down the Groove list, to make it easier to find what you need. Each filter can be set to one of the following categories by using its drop-down menu:

- Library
- Genre
- BPM Range
- Author
- Time Signature
- Fill / Groove

The defaults are Genre, BPM Range, Time Signature and Fill/Groove.

Each of these categories features a number of items with which to filter the Groove list. By default, all filtering is turned off, as each category is set to 'All'.



Selecting a category



Selecting an item with which to filter the category



Search

The **Search** function allows you to find Grooves matching one or more search keywords.

The 'Name', 'Author', 'Library', and 'Genre' information fields are searched.

6:3 Grooves Mode

Grooves Mode

This set of 3 buttons dictates how BFD Eco responds when its transport is started – either using the **Play** button on BFD Eco's transport, or in your host when using BFD Eco as a plugin.



Off

No Grooves start playing automatically when the transport is started. This mode should be used when you are working with your host's MIDI functions to send notes to BFD Eco.

Note that Grooves can still be previewed within the browser, and exported to your host if desired (see section 6:9).

Single

The currently selected Groove is played when the transport is started.

Single mode effectively offers a simple Groove player which indefinitely loops the currently selected Groove in the browser. The current Groove is saved and recalled with the BFD Eco Preset or when saved within a host project.

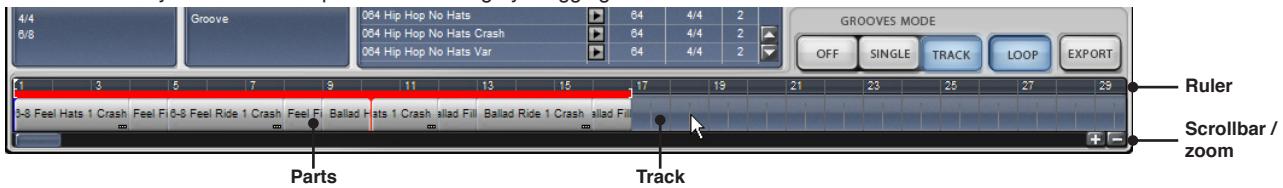
Track

The Drum Track is played when the transport is started.

The functionality of the Drum Track is described in sections 6:4 to 6:7.

6:4 Drum Track

The Drum Track lets you build a drum part for a full song by dragging Grooves from the browser onto a timeline.



Ruler

The **Ruler** represents the Drum Track's timeline in bars and beats.

Track

Grooves are added as *Parts* onto the **Track** timeline using drag & drop (see section 6:5).

Scrollbar / Zoom

The **Zoom** buttons at the bottom-right of the Drum Track control its horizontal zoom level. You can also use the mousewheel while holding down the ALT key to change the zoom level. If the zoom level results in part of the Drum Track not being visible, use the **Scrollbar** to change the visible area.

Drum Track markers

Position marker (blue)

Indicates the current playback position while the Drum Track is playing back.

Click in the **Ruler** (outside the loop indicator if it is active) to set the marker's position – if the Drum Track is currently playing, the playback position ‘jumps’ to this new position. This also ‘disconnects’ host sync while running BFD Eco as a plugin. Stop and start the host transport to ‘reconnect’ synchronization.

Insert marker (red)

Indicates the insertion point when adding a Groove to the Drum Track and when moving or copying parts within it.

Its position also specifies the point at which Parts are split, when using the **Split Part at Marker** function in the Track context menu.

Changing the insert marker position

To change the position of the **Insert marker**, click the desired position on the Track.

Start marker (white)

- Standalone mode or host transport stopped**

The white start marker indicates the point in the Drum Track to which the position marker is sent when using the **Return to start** button on the transport.

The next time the BFD Eco transport is started, playback starts from the **Start marker** point. You can press the **Return to start** button during playback, which causes the play position to jump to the start marker immediately.

- Host transport started**

The Drum Track playback position always starts in sync with the host position.

You can click the **Stop** or **Return to start** buttons on BFD Eco’s transport during playback in order to ‘disconnect’ the synchronization between host and plugin. To re-establish host synchronization, stop and restart your host transport.

Changing the Start marker position

To change the position of the **Start marker**, click in the **Ruler** while holding down the ALT key.

If you click twice in the Ruler, the first click sets the blue position marker and the second click sets the white start marker.

6:5 Adding parts to the Drum Track

To add a Part to the Drum Track, drag and drop any Groove from the browser to the desired position in the Drum Track. The insertion point is shown by the red **Insert marker**. Once a Groove has been dropped onto the Track, it is referred to as a *Part*.



1. Drag a Groove from the browser over the Drum Track
2. The position at which it will appear is indicated by the red Insert marker
3. Drop the Groove to add it as a Part at the Insert marker position



You cannot layer multiple Parts on top of each other – only one Part can be playing on the Drum Track at once. If you require more complex sequencing, you must use MIDI tracks in your host to send events to BFD Eco. You can drag & drop Grooves to host MIDI tracks – see section 6:9.

6:6 Manipulating Parts on the Drum Track

Selecting Parts

Click on a Part to select it. Several adjacent Parts can be selected by clicking on the song background and drawing a selection box over the desired Parts. You can also select multiple parts in the following ways:

- CTRL-click (Windows) or Command-click (Mac)

Adds the Part to the current selection. If a Part is already selected, this operation de-selects it.

- SHIFT-click

Creates a contiguous selection between two Parts.

Moving selected Parts

Using drag & drop

To move Parts within the Track using drag & drop:

1. Select one or more parts and then drag them left/right along the Track.
2. The position at which they will be dropped is shown by the red **Insert marker**.
3. Release the mouse button to drop the part at the desired position.

If there is a gap between the insert marker and subsequent Parts identical to or greater than the size of the moved Part(s), the moved Part(s) simply slot into the gap.

If there is no gap, or a gap smaller than the moved Part(s), all subsequent Parts in the track are nudged later in time by the length of the moved Part(s) – in other words, the gap is preserved.

Using the Track context menu

The Track context menu features **Cut selected Parts** and **Paste Parts at Marker** functions for Part selections, which can be used as an alternative method of moving Parts.

Copying selected Parts

Parts are copied using drag and drop while holding down the ALT key. This follows exactly the same behaviour as that which occurs when moving Parts, except that the original Part is copied instead of being moved.

Parts can also be copied using the **Copy selected Parts** and **Paste Parts at Marker** functions in the Track context menu.

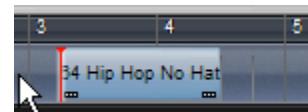
Changing the size of Parts

When the mouse cursor is moved over the right/left edges of a Part, it indicates that you can change its size by clicking and dragging left/right.

Click the right edge and drag towards the left in order to shorten the Part. A truncation indicator at the right of the Part shows that it has been shortened. The length of a shortened Part can be increased by clicking the right edge and dragging towards the right.

Click the left edge of a Part and drag towards the right in order to change the Part's start point. A truncation indicator at the left of the Part shows that its start point has been changed. Click the left edge of the Part and drag towards the left in order to move the start point towards the start of the Part.

It is not possible to change the length of a Part beyond that of the original Groove.



Truncation indicators show Part has been shortened and start point has been changed

Track context menu

Right-click (or CTRL-click on Mac) on the Drum Track to display the Track context menu, featuring several additional functions for manipulating Parts on the Drum Track. The available functions on the menu depend on whether you click on an empty area of the Track, or on a selection of Parts.

Cut selected Parts

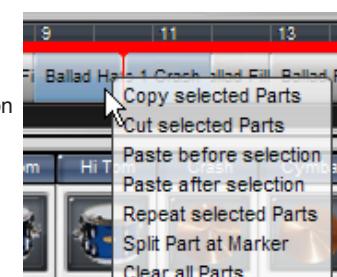
Removes the selected Parts from the track and stores them in the clipboard.

Copy selected Parts

Stores the selected Parts in the clipboard.

Paste before selection / Paste after selection

These functions are visible in the Track context menu when the Insert marker is positioned within a selected Part. They allow you to paste any Parts in the clipboard before or after the currently selected Part in the Track.



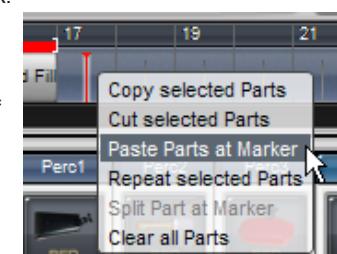
Track context menu when right-clicking on a Part

Paste Parts at Marker

Pastes any Parts stored in the clipboard to the point indicated by the Insert marker.

This function is visible in the Track context menu when the Insert marker is positioned on an empty section of the Track.

Parts are inserted sequentially in their original order. Their relative positions when they were originally copied are not retained.



Track context menu when right-clicking on empty Track

Repeat selected Parts

Creates a copy of all selected parts, which are inserted sequentially at the end of the last selected part.

Split Part at marker

Splits the Part at the **Position marker**.

When a Part is split, the first of the resulting two Parts has a truncation indicator at its right, to show that it has been shortened, and can be increased. The second of the resulting Parts has a truncation indicator at its left side, to show that the start point has been changed.

Clear all Parts

Clears the current contents of the Drum Track. You are asked for confirmation before you can continue.

6:7 Additional Drum Track controls



Loop

Causes playback to repeat between the **Loop indicators** in the Drum Track.

When the **Loop** button is enabled, two Loop indicators (for the Start and End of the loop) appear on the **Ruler**. When the **Position marker** reaches the **End Loop indicator**, playback loops back to the position specified by the **Start Loop indicator**.

Adjust the position of the Start and End Loop indicators by clicking and dragging them left and right along the ruler.

Export

Exports a stereo mixdown of the contents of the Drum Track, from the Master channel output.

Clicking the Export button displays a file Save As dialog, allowing you to select a folder to which to save the exported audio file.

Before you can use this function, there *must* be Grooves present in the Drum Track. The Export function cannot be used when sending MIDI notes to BFD Eco from your sequencer/DAW/host. In such cases, you must use the recording/mixdown functions of your host.

Only channels whose outputs are routed to the Master channel will be heard in the audio export. If you need to record audio from the multiple direct outputs, you must use your host's recording/mixdown functions.

6:8 Groove FX



The Groove FX section contains several functions to alter the feel of Grooves. For example, you can add 'humanization' effects like timing randomization and syncopation, or tighten up the feel with the **Quantize** function. Note that the **Humanize Vel** function affects the Groove engine as well as MIDI note input (see chapter 7).

Quantize

Forces Groove events towards quantization to a 16th-note grid.

The parameter adjusts the amount of quantizing applied from zero (minimum position) to fully quantized (maximum position). Settings between these values allow you to tighten up timing without losing the entire feel of the original Grooves.

Humanize Time

Applies varying amounts of timing randomization to playing Groove events.

Lower settings are recommended for subtle and non-intrusive humanization, while high settings can result in extremely sloppy timing.

Swing

Applies a variable amount of non-destructive swing to playing Groove events.

Simplify

Applies an algorithm that selectively mutes events in terms of 'importance' to the Groove. As the control is increased, more events are muted.

This parameter essentially behaves as a 'threshold' on a 'complexity gate'. It is very useful if you find a Groove to be too 'busy' – for example, with a lot of ghost notes that intrude upon the rest of your song too much.

6:9 Exporting Grooves as MIDI

Grooves can be exported as MIDI from BFD Eco in the following ways:

1. Drag & drop as host MIDI part to host MIDI track

Drag and drop any Groove from the browser to a MIDI track in your host. The Groove appears as a standard MIDI part/clip/sequence. The current Key Map is used to translate the Groove's articulation triggers into suitable MIDI notes.

Once the Groove has been exported in this way, it can be edited using your host's editing facilities such as the piano roll, and manipulated with its MIDI functions such quantize etc.

When using host MIDI tracks to trigger BFD Eco's articulations, remember to set **Grooves Mode** to 'Off' if it isn't already.

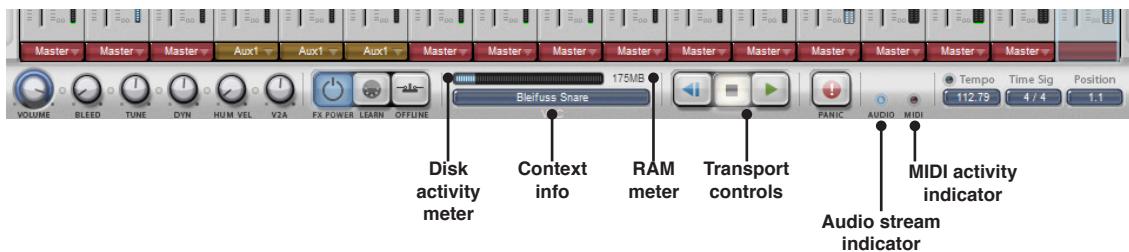
Note that although you can export to a MIDI track that is set to trigger BFD Eco, you can route the exported MIDI clip to any other instrument if required.

2. Drag & drop as MIDI file to disk folder

Drag and drop any Groove from the browser to your desktop (or any other folder on your hard disk) to export it as a MIDI file. The current Key Map is used to translate the Groove's articulation triggers into suitable MIDI notes.

The file is saved as a standard MIDI file, which can be imported into any compatible software or hardware device for playback and editing.

Ch.7 Global controls



Bleed

Adjusts the level of kick bleed in the Snare Bottom channel. See section 2:2 for more details about bleed.

Global Tune

Adjusts the tuning of all kit-pieces, relative to their individual **Tune** settings in the Channel page.

Global Dyn (Dynamics)

Adjusts the velocity of incoming MIDI or Groove events up or down by up to 127, relative to the kit-pieces' individual **Dyn** settings in the Channel page inspector.

Hum Vel (Humanize Velocity)

Adjusts the amount of velocity randomization that occurs. This is applied both to events generated by MIDI input *and* by the Groove engine.

Volume

Adjusts the level of all channels simultaneously.

As it is possible to use multiple channels with the BFD Eco plugin, the **Volume** control lets you adjust all channels together. The Master channel fader only affects channels routed to it. If any channel is routed to a direct output, only the Volume control can function as a 'global' level control that affects all channels in BFD Eco.

V2A

Adjusts the amount of amplitude scaling in response to incoming MIDI velocity. By default, this control is set to 50%.

With a setting of 0, there is no amplitude scaling applied – each velocity layer is played back at its actual level with the natural dynamics of the kit-piece unchanged. When V2A is set to 100%, the amplitude is more linearly scaled across the velocity range.

FX power

Powers on/off all currently enabled FX on all channels.

Offline

The **Offline** button should be enabled when performing a non-realtime 'offline' bounce. It ensures that BFD Eco has enough time to deliver the data from disk.

When using BFD Eco during normal playback, this button should be disabled.

Learn

Enables/disables MIDI Learn mode.

This function allows you to assign interface controls to MIDI continuous controllers (MIDI CCs) and even notes, so that you can use physical keys, knobs, faders or other controllers to adjust BFD Eco's interface controls.



- When the **Learn** button is enabled, an overlay appears on the interface, with all MIDI-controllable parameters highlighted in green.



- Click the desired control and then do one of the following:
 - move the physical knob, fader or other variable controller to assign a MIDI CC
 - play a MIDI key to assign the note – this is especially useful for buttons



- The assigned MIDI note/CC number is overlaid on the control.

MIDI CC assignments are loaded and saved with BFD Eco Presets and in host projects containing the BFD Eco plugin.

When the **Key/MIDI Lock** button is active, MIDI CCs are not restored from BFD Eco Presets.

Learn context menu

While MIDI Learn mode is active, right-click on any assignable control to display the Learn context menu, which contains the **Clear automation** function.

Clear Automation

Clears the control's current MIDI assignment. If the parameter has not yet been assigned to a MIDI CC, this function is greyed out on the menu.

Clear All Automation

Clears all current MIDI CC assignments.



Managing MIDI CC assignments

There is no dedicated preset format for MIDI CC assignments – they are simply saved within a BFD Eco Preset or with the host project when using the BFD Eco plugin. It is possible to define a default Preset saved with your preferred MIDI CC assignments. See section 9:1 for more details.

The **Key/MIDI Lock** button affects both key maps and MIDI CC assignments when loading BFD Eco Presets. However, when loading a host project containing BFD Eco, the MIDI CC assignments saved within it are always restored.

Disk activity meter

Indicates the amount of disk bandwidth currently being used by BFD Eco.

RAM meter

Displays the amount of RAM that is currently being used by BFD Eco.

Context info

Shows the name and value of any control under the mouse cursor, or of the control currently being adjusted.

Audio stream indicator

Highlights when BFD Eco has successfully launched within the host audio engine or when the standalone application has successfully initialized the specified audio device. In other words, it indicates whether the software is functioning correctly.

MIDI activity indicator

Highlights whenever BFD Eco receives any MIDI input.

Transport controls

Play

Starts playback when using the standalone application, or when the host is stopped (when using BFD Eco as a plugin).

Note that when the host is started, playback restarts in sync with the host.

Return to start

Resets the playback position to the **Start marker** position. This button can be used during playback without pressing **Stop** first. Doing so ‘disconnects’ synchronization if using BFD Eco as a plugin in a host. To re-establish synchronization, stop and restart your host’s transport.

Stop

Stops Groove playback.

This is possible even when the BFD Eco plugin is playing in sync with the host – Groove playback in BFD Eco stops while the host keeps playing. If you click the **Play** button after using the **Stop** button, playback commences from the position at which it was previously stopped, and is not synchronized to the host position. To re-establish host synchronization, start and stop the *host* transport.



Panic

Immediately stops any currently playing sounds or Grooves.

Beat light

Flashes on every beat when BFD Eco’s Groove engine is playing.

Tempo

Allows you to set a tempo when using the standalone application. Either click and drag the Tempo control, or double-click it, type a new tempo and hit ENTER. When running BFD Eco as a plugin, the Tempo indicator cannot be adjusted because the plugin is locked to the host tempo.

Time Sig (Time Signature)

Allows you to set a time signature when using the standalone application. Double-click the **Time Sig** indicator, type new values separated by a ‘/’ and hit ENTER.

Position

Indicates the current playback position, in bars and beats, of either the host (when using the plugin), the Drum Track or the current Groove.

Record

Activating the **Record** button starts recording the audio from BFD Eco’s master output to disk – the button flashes to indicate this is occurring. Please note that any channel(s) that you wish to be present in the recording must first be routed to the master output. Click the **Record** button again to stop recording. Subsequent use of the Record function results in creating sequentially numbered audio files. The location of the files is specified using the **Record path** setting in BFD Eco’s Options menu.

Show Jukebox player

The Jukebox player offers a simple way to play audio files such as backing tracks to practice with. See chapter 12 for more details.

Ch.8 Key Map panel



The Key Map panel allows you to customize the MIDI note assignments for all kit-piece articulations. It is also possible to define a hihat pedal MIDI CC, for expressive playing with an electronic drumkit.

Click the **Close** button to exit the Key Map panel and return to the previous page.

8:1 Key map picker

The key map picker functions in the same way as other preset pickers in BFD Eco. **Load Key Map...** displays a browser similar to those for Presets, Kits and Mixers. The **Save Key Map...** function displays an OS ‘Save As’ dialog for saving the current key map.

The **Clear Key Map** function allows you to remove all current key map assignments so that you can create a new map from scratch, while **Reset Key Map** reverts to the last-saved version of the currently loaded map.

Default key map

When BFD Eco is launched, it loads the last saved key map that was in use. If you make some assignments, make sure you save the key map so it can be loaded when BFD Eco is next launched.

Key maps are saved within BFD Eco Presets, and within host projects containing BFD Eco.

Key/MIDI Lock

By default, the **Key/MIDI Lock** button is enabled. This means that key map assignments are not affected when a BFD Eco Preset is loaded, or when the **Clear Preset...** function is used in the Preset picker. This is because you generally should not need to change your key map for every project. Simply disable the **Key/MIDI Lock** button in order to restore key maps embedded within Presets.

8:2 Creating assignments

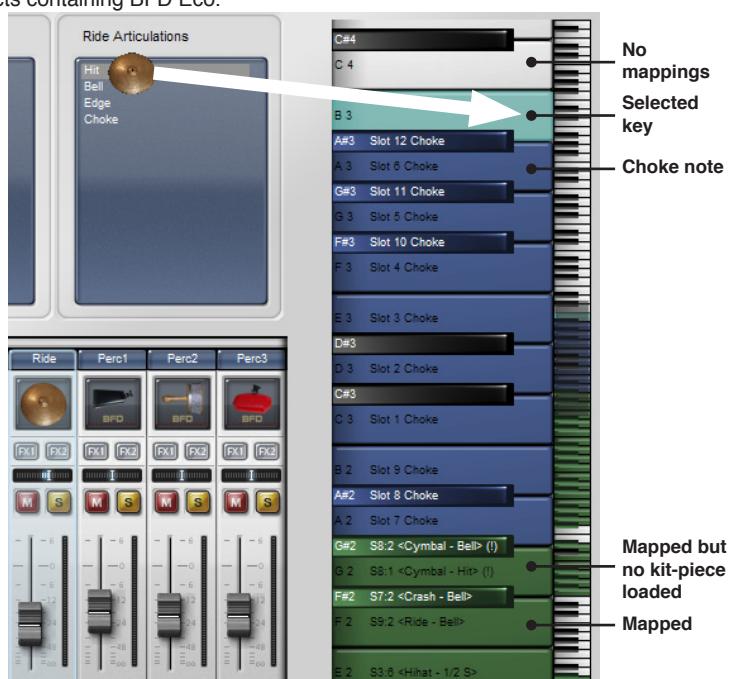
A vertical keyboard is shown at the right side of the interface, and represents the entire MIDI keyboard range from the lowest at the bottom, and the highest at the top.

The selected kit-piece channel's articulations are shown in the **Articulations** section.

The keys are colour-coded to indicate their current status, illustrated by the screenshot.

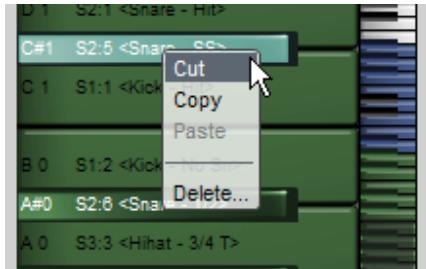
Creating an assignment

1. Select the desired kit-piece channel by clicking its image.
2. You can optionally play the MIDI note to which you wish to assign an articulation if the **Key Select** button is activated – the relevant key is highlighted on the on-screen keyboard. Alternatively, scroll up and down the keyboard using the keyrange selector.
3. Drag and drop an articulation from the **Articulations** section to the desired key. If the key is not currently in view on the keyboard, you can scroll up or down by moving the mouse towards the high and low ends of the keyboard.



8:3 Key context menu

Right-click (or CTRL-click on Mac) on any of the vertical keys to display the key context menu. This menu contains functions to **Cut**, **Copy** and **Paste** assignments between keys, as well as to **Delete** any assignment on a key.



8:4 Hihat control

The hihat features more articulations than any other kit-piece, and a number of additional controls for adjusting the playing response.

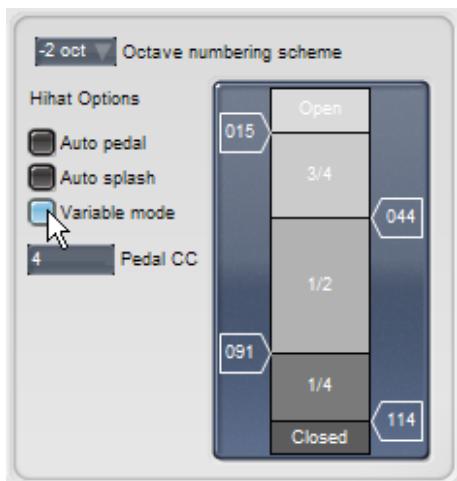
Variable mode and Pedal CC

Variable mode is provided if you use an electronic drumkit and would like to use variable hihat pedal control in order to access all positions between open and closed.

1. enable the **Variable mode** button
2. set any notes transmitted for Tip sounds to a Tip hihat articulation
3. set any notes transmitted for Shank sounds to a Shank hihat articulation
4. set the MIDI CC transmitted by the hihat pedal using the **Pedal CC** control

For example, here are the typical notes for a Roland brain such as the TD20 or TD12.

Roland note	MIDI note (note no.)	BFD Eco suggested mapping
Open bow	A#1 (46)	Open tip
Closed bow	F#1 (42)	Closed tip
Open edge	D0 (26)	Open shank
Closed edge	A#-1 (22)	Closed shank
Pedal	G#1 (44)	Pedal



When the **Variable mode** is enabled, the 'bow' or tip notes trigger Tip articulations and the 'edge' or shank notes trigger Shank articulations, with the position between open and closed being dictated by the pedal MIDI CC, which is MIDI CC #4 for Roland drum brains.

Setting transition points between hihat positions for the hihat pedal MIDI CC

When **Variable mode** is enabled, the hihat pedal position slider becomes active. The slider features 4 points which can be adjusted to form 5 zones – one each for Closed, 1/4-open, 1/2-open, 3/4-open and Open articulations. These are arranged from bottom to top, reflecting the travel of the hihat pedal on an electronic drumkit – when the pedal is fully up (open), its value is 0; when it is fully down (closed), its value is 127.

In the above screenshot, the following MIDI CC values are required to trigger each hihat position when a tip or shank hihat note is received:

Open:	0-15
3/4-open:	16-44
1/2-open:	45-91
1/4-open:	92-114
Closed:	115-127

Disabling Variable mode – access to open/closed only

With **Variable mode** disabled, the notes transmitted from the Roland hihat triggers either closed or open tip/shank articulations. Recording hihat performances in this way means that editing and quantizing is much easier (due to not having to edit a MIDI CC in parallel to notes). You can subsequently edit the notes to play other available hihat articulations such as 1/4-open, 1/2-open etc.

Pedal note choking

In both cases, the pedal note (G#1, sometimes termed a 'foot-chick') chokes any playing hihat articulations.

Auto Pedal

This function, when enabled, generates a pedal note articulation whenever the incoming hihat pedal MIDI CC value reaches 127. You should only need to use this function if your electronic drumkit does not send out a pedal note when the hihat pedal is fully depressed.

Auto Splash

If this function is enabled, a hihat splash articulation is generated when the hihat pedal is opened and closed very quickly.

8:5 Adjusting Velocity Response

The Velocity Response controls adjust how each kit-piece slot responds to the velocity of MIDI notes received. The settings can be set to different values for each kit-piece slot – they are shared between all articulations within the slot.

Vel Hi, Vel Lo

These controls remap the incoming MIDI velocity range to a specific portion of the kit-piece's available range of velocity layers. For example, setting **Vel Lo** to 64 and **Vel Hi** to 127 means that only the top half of the velocity layer range – in other words, the 'hard hits' – will be played.

For example:

- An incoming note with velocity value 1 would play a layer half-way through the range which would usually be played by a velocity of 64.
- An incoming note with velocity value 64 would trigger an articulation which would usually be played by an incoming velocity of 96.

Curve

This control adjusts how note input velocities are distributed across the available range of the articulation's velocity layer samples (after the **Vel Hi** and **Vel Lo** settings are applied).

By default, a *linear* 1:1 mapping is used - the active range of MIDI input velocity is distributed proportionally across the available velocity layers for each articulation in the kit-piece. This is shown as a straight diagonal line.

Click and drag *upwards* on the **Curve** control to vary the response towards an *inverse-exponential* curve. Lower velocities are concentrated within the quiet part of the velocity layer range (approximately the first 25%) with higher velocities spread over the middle and loud parts of the velocity layer range (the remaining 75%).

Click and drag *downwards* on the control to vary the response towards an *exponential* curve. Lower velocities are spread over the quiet and middle parts of the velocity layer range (approximately the first 75%) with higher velocities concentrated over the loudest part of the velocity layer range (the remaining 25%).

8:6 Additional controls

MIDI Log

The **MIDI Log** is provided to help during the mapping process and to troubleshoot MIDI-related problems. It displays a real-time readout of incoming MIDI messages which can be useful when creating key map assignments. Click the **Clear Log** button to reset the display.

Octave numbering scheme

Changes the MIDI note octave numbering scheme. When this is set to 'Normal', the lowest octave is numbered 0. Some sequencers/drum modules number the lowest octave as -1 or -2.

8:7 Articulations and slots

Please note that each kit-piece slot or channel contains a fixed number of articulations, which are detailed in section 2:1.

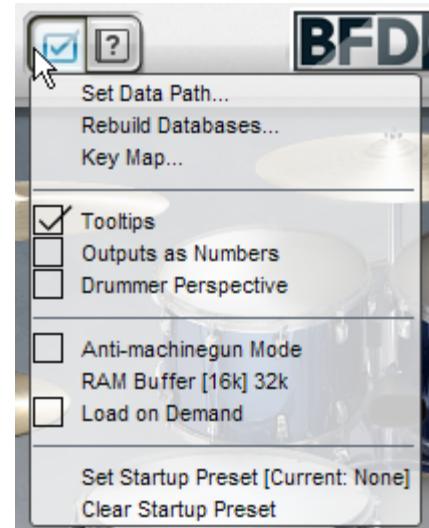
- Not all kit-pieces contain all articulations. Whenever a kit-piece lacks a certain articulation, a suitable articulation is substituted when it is triggered from a mapped MIDI key or a Groove event.
- The Perc1, Perc2 and Perc3 channels can load percussion, tom and cymbal kit-pieces. However, only the first 2 articulations are available, which are triggered with the slot's Hit and Alt key map assignments.

Ch.9 Options and Help menus

9:1 Options menu

When BFD Eco is launched, the preference settings from the last time you used the software are used.

When you save a Preset or a host project containing the BFD Eco plugin, the current preferences are saved with it, and recalled when the session is restored.



Set Data Path...

Opens the data path panel, which allows you to set up one or more folders that contain BFD Eco-compatible data (kit-piece audio and Grooves). At least 1 data path must exist in order for BFD Eco to be usable!

Multiple data paths can often be useful if you purchase additional expansions, but lack the space on a single hard disk for all the data.

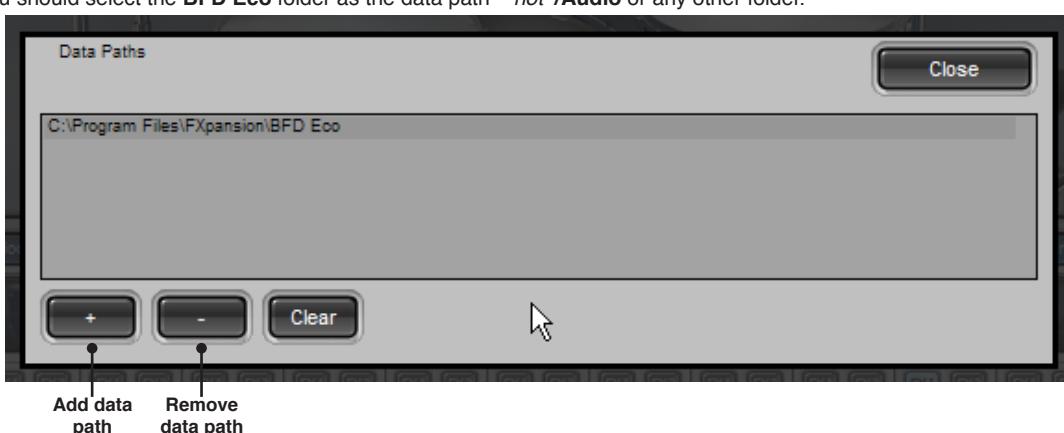
To add a data path, click the **Add data path** button. An OS browser dialog is displayed, allowing you to navigate to and select the desired folder. When you select a data path, the database of kit-pieces and Grooves is refreshed. To remove a data path, select it in the list, and click the **Remove data path** button. Clicking the **Clear** button removes all data paths from the list.

After you install BFD Eco, the path for its supplied data is already specified in this panel.

When setting a data path, you should select the top level of the folder – here's an example:

**BFD Eco /Audio
/Grooves**

In this case, you should select the **BFD Eco** folder as the data path – *not /Audio* or any other folder.



Rebuild Databases...

This function rescans the currently-specified data path(s), and rebuilds BFD Eco's internal databases.

Key Map...

Opens the Key Map panel, to assign kit-piece articulations to MIDI notes (see chapter 8).

Tooltips On / Off

This setting lets you switch off tooltips if you find them distracting.

Outputs as Numbers On / Off

Most hosts display each plugin output as a name, while some display them as numbers. This option lets you set how channel outputs are labelled in the mixer, so they match what is shown in your host.

Drummer Perspective On / Off

When this setting is turned off, the kit is heard from the 'audience' perspective – in other words, on the other side of the kit to the drummer – all pan settings (including any **Flip LR** settings for kit-pieces' ambience channels) and ambience channels are inverted relative to their current settings. When the setting is enabled, the kit is heard from the drummer's perspective – all direct pan and ambience settings are unchanged.

Anti-machinegun Mode On / Off

With this setting enabled, the same velocity layer is never played twice in succession for an articulation. This removes the 'machinegun effect'.

RAM Buffer 16k / 32k

The RAM buffer is used to store the *initial* portion of each velocity layer of all kit-piece articulations in memory. When a layer is triggered, the buffer is played while the sound is queued up from disk and played immediately afterwards. Smaller RAM buffers use less memory, but require faster disk performance. Larger values use more RAM, but allow more time for disk access.

Load on Demand On / Off

This feature is intended for conserving RAM by only loading the velocity layers that you need, as they are played, *in their entirety*. No disk-streaming occurs when this feature is enabled.

Before any notes are played, a single velocity layer is loaded. When you play a certain velocity layer, the cached layer is played with amplitude scaling (according to the velocity of the MIDI input event) while the actual layer is loaded from disk. The next time this layer is triggered, the actual layer is played. As more velocity layers are triggered (with varying note input velocities), more layers are loaded from disk, and RAM usage increases.

If you use the **Humanize Vel**, **Anti-machinegun Mode** or **Dynamics** functions, a greater variety of layers are used, therefore increasing the amount of RAM used.

If you can live with the approximated audio the first time a layer is triggered, Load on demand can save a lot of RAM – even if you eventually play all layers for an articulation, there are other articulations and kit-pieces which aren't played as frequently and so will not occupy much RAM.

Using Load on demand in the studio

In the studio, Load-on-demand may be more sensible to use after a drum track is programmed, to free up RAM for other tasks in your host. Ensure that you play the song fully from beginning to end, in order to load all required velocities. This results in consistent playback until further layers are played/programmed, or until the Humanize/Dynamics controls are used.

Using Load on demand during live performance

Load on demand allows very fast changing between kits during live performance. The differences between the initial amplitude-scaled and eventually loaded velocity layers may not be such a concern because of noisy, distorted PA systems and less-than-ideal venue acoustics and listening conditions.

Set Startup Preset

Specifies a BFD Eco Preset to load when the plugin or standalone application is launched. The name of the currently specified Preset is shown. A startup Preset is especially useful for recalling your preferred MIDI CC assignments whenever BFD Eco is launched.

Clear Startup Preset

Clears any currently specified startup Preset so that BFD Eco opens with a factory default state when it is launched.

Export NFUZD Kit

This function displays the NFUZD Export dialog which allows you to export the current kit/mixer audio in a format which can be loaded into NFUZD NSPIRE series drum modules. See chapter 12 for more details.

Show Jukebox player

The Jukebox player offers a simple way to play audio files such as backing tracks for jamming/practicing purposes. See chapter 12 for more details on how to use the Jukebox panel.

Record path

This setting specifies a location to which to record audio files to disk using the Record function (initiated by activating the **Record** button in the Global controls section). Multiple files recorded in the same **Record path** location are automatically sequentially numbered. See chapter 8 for more details on the Record function.

9:2 Help menu

Launch PDF manual

Launches the BFD Eco manual in your system's default PDF reader (you must install Adobe Acrobat Reader or another PDF reader on Windows).

Launch BFD Eco Online FAQ

Launch BFD Eco Online Support

Launch BFD Eco Online Forum

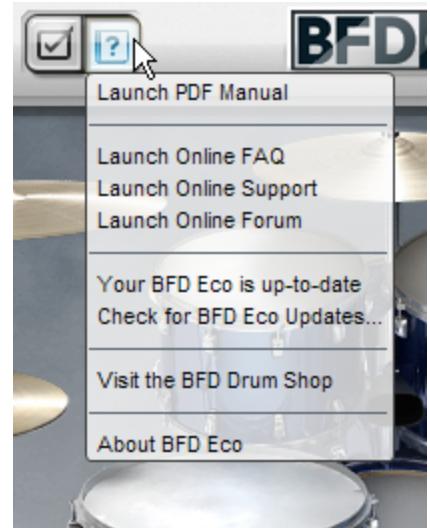
These web pages, launched in your default browser, are your first port of call for help with BFD Eco.

Check for BFD Eco updates...

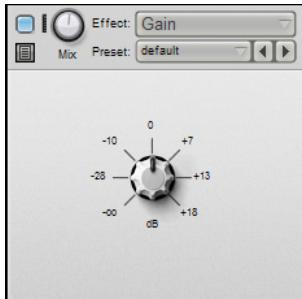
Checks the FXpansion site for newer versions of BFD Eco.

About BFD Eco

Opens the credits and version number box for BFD Eco.



Ch.10 FX devices



Gain

This effect is a simple tool for increasing or decreasing a channel's gain. The **Gain** control sets the channel's gain between -inf dB and +18 dB.

Comp Chan

This is a DCAM circuit-modelled channel compressor, based on a classic 'limiting amplifier' design. Increase the **Input** control to make the sound more compressed, and adjust the **Output** level as required. Use the **Ratio**, **Attack** and **Release** controls to affect the compression characteristics.

Comp Bus

The Comp Bus is a DCAM circuit model of a classic British console bus compressor design, and features **Threshold**, **Ratio**, **Makeup**, **Attack** and **Release** controls.

The **Key HP** control allows you to highpass-filter the signal used for the amplitude-detection circuit, while the **Analog Limit** control applies nonlinearities to the detection circuit, resulting in a compression characteristic that is more transparent on attacks.

Delay

This is a classic stereo delay line. As well as **Time** and **Feedback** controls, it features a **Swing** control for achieving a variety of delay feels, and adjustable **LowCut** and **HighCut** filters in the feedback chain.

The **Sync** control switches between time-based (Sec) and tempo-synced (BPM) delay times. The **SumInput** control (available on stereo channels only) sums the left and right inputs to a single mono signal and feeds one delay line instead of two.



Filter

The Filter effect provides simple 1-pole high-pass and low-pass filters. Each filter features power (**LPin** and **HPin**) and frequency (**LPFreq** and **HPFreq**) controls.

Flanger

The Flanger effect is a short modulated delay line with feedback to the input. It is used for a sense of movement and for psychedelic effects.

The **Freq** control sets the frequency of the sine LFO used to modulate the flanger's delay time, while the **Depth** control adjusts the amount of modulation. The **Pos** (Position) control adds up to 10ms to the flanger's delay time. The needle display in the Flanger effect represents the delay time modulation.

The **Feedback** control adjusts the amount of the processed signal that is fed back into the input. Higher settings result in a more pronounced flanging effect, with settings over 50% leading to extreme comb filter type effects.

The **Mode** button dictates the phase relationship between the input and processed signals. With the button disabled, the two signals are in phase (resulting in a more pronounced flanging effect); with it enabled, the signals are out of phase.

The **Spread** and **Phase** controls are only available on stereo channels. Spread adjusts the panning of the left and right channel processed signals, while Phase offsets the phase of the internal LFOs for the left and right channels.

Filter Mod

This is a DCAM circuit-modelled multimode resonant filter with modulation and drive. As well as the **Pitch** (cutoff frequency) and **Res** (resonance) controls, the filter features a **Mode** control to switch between low-pass, band-pass, high-pass, peak and notch modes. There is even an audio-rate **FMDepth** control which sets the amount of cutoff modulation derived from the input signal's waveform. The Drive function features controls for input (**Drive**) and output (**OutDrive**) drive stages.

The effect contains a built-in envelope follower for modulating the cutoff frequency with the amplitude of the input signal. It features controls for **Attack**, **Release** and **Env Depth**.

Drive

Drive is a versatile, DCAM-modelled overdrive/distortion effect. The **HPFreq** and **LPFreq** controls allow you to filter the signal before the distortion stage, while the **Mode** control switches between 4 different distortion models – 'Diode', 'OTA', 'OpAmp' and 'HalfRect'.

The **Dirty** control sets the amount of the distorted signal that is heard at the output, while the **Clean** control sets the amount of the signal that was filtered out before the bitcrushing stage by the high-pass and low-pass filters. The **Tone** control is a simple 1-pole low-pass filter to remove unwanted high-frequencies from the Dirty signal.



BitCrusher

This effect emulates the digital distortion that occurs when lowering the bit-depth or sample-rate of an audio signal. Adjust the bit-depth with **Bits** control and the sample-rate with the **Freq** control. The effect also includes a **Drive** control for adding distortion.

Like the BitCrusher effect, it features pre-distortion high-pass and low-pass filters before the distortion stage, as well as similar **Dirty**, **Clean** and **Tone** controls.

RingMod

This effect is used for radical timbral shifts and experimental effects. It multiplies the input signal with its internal oscillator, the shape and pitch of which are set with the **Mode** and **Pitch** controls. The **Drive** control sets the amount of distortion on the input signal.

TinCanVerb

This effect is a recreation of a low-end room reverb unit, perfect for emulating 'cheap and nasty' onboard synth FX. Use the included Overloud Breverb Plate device for high-quality reverb FX.

As well as the ubiquitous **Size**, **Decay Time** and **Damp** parameters, TinCanVerb features **Pinch** and **Squeeze** controls for manipulating the room shape, while the **Freeze** control loops the current reverb buffer indefinitely until it is turned down again – useful for dubby special effects.

NoiseGate

The Gate attenuates the signal until its amplitude reaches the **Threshold** level. The **Attack** and **Release** controls set the speed at which the gate opens and closes after the signal goes above or below the threshold, while the **Hold** control forces the gate to remain open for a certain length of time after it is opened.

The **HFPreq** and **LFPreq** controls allow you to high-pass and low-pass filter the signal used for the amplitude-detection circuit, while the **Key Listen** button allows you to listen to this signal.

Increasing the **Hysteresis** control smooths the gate's response, at the expense of sensitivity to small changes around the threshold level.



Env Shaper

The Envelope Shaper allows you to adjust transients and change the dynamic shape of a signal in a different way to using a compressor. The **Sensitivity** control adjusts the Env Shaper's peak detection circuit. Detected peaks are affected by the **Attack** and **Sustain** transient processing.

The **Attack** control adjusts the intensity of the attack phase of transients in the audio. Increase the control to intensify attack transients, and decrease it to soften transients.

The **Sustain** control adjusts the intensity of release portions of transients in the audio, which increases or decreases the apparent sustain of sounds in the signal. Increase the control for more sustain, and decrease it for less sustain. This control is useful for adjusting the perceived level of ambience in a channel. Very low settings can produce damping effects for drum sounds.

The processed signal level can be adjusted using the **Gain** control, between -12 dB and +12 dB.

Breverb Plate

The duration of the reverb tail is dictated by the **Time** and **Size** controls, while the **Diffusion** parameter adjusts the degree to which the initial echo density increases over time. The **Predelay** control adjusts the time that elapses between the input signal and the onset of reverberation.

The **Shape** control dictates the contour of the reverberation envelope. At the minimum setting, reverberation builds explosively and decays very quickly. As the control is raised, reverberation builds up more gradually and sustains longer.

The **Low** control sets the frequency under which the reverb effect is attenuated, while the **High** control sets the frequency over which the reverb effect is attenuated.

Ch.11 Standalone application and plugin usage

Using the BFD Eco Standalone application

The BFD Eco standalone application is provided so that you can use the software without requiring a host in order to use it. It can be convenient to operate BFD Eco in this way for live use or quick drum composition. You can either save a BFD Eco Preset of your work for later recall in a host, or simply use the built-in audio and MIDI export functions in order to create files that can be imported into other software or devices.

It is also very useful as a means of authorizing BFD Eco, as the plugin-initializing mechanisms of many hosts can disrupt the authorization process.

Please note that if you require functionality such as multiple outputs or advanced synchronization (except slaving to MIDI clock), you should use a suitable host, such as Plogue Bidule (www.plogue.com).

Tempo and time signature

When running BFD Eco as a standalone application, you can change the tempo and time signature settings directly on the interface (see chapter 7). Double-click each control, type a new value and hit ENTER or RETURN.

Open Audio Preferences

This panel specifies the standalone application's audio settings accessed via the the standalone application's standard OS menu-bar (**BFD Eco / Preferences** on Mac; **Options** on Windows).

Samplerate

The standalone application attempts to detect this setting for your audio device. In some cases this may not be possible due to the device's driver not properly responding to the standalone application's request. In such cases, set the **Samplerate** to the same value as that defined in your audio device's control panel.

Buffer size

Again, the standalone application attempts to detect this setting for your audio device. In some cases this may not be possible due to the device's driver not properly responding to the standalone application's request. In such cases, set the **Buffer size** to the same value as that defined in your audio device's control panel.

Output device (Mac)

ASIO device (Windows)

On Mac OSX, all available CoreAudio devices are shown in the **Output devices** drop-down menu. Select the desired audio interface device with which you want to use the BFD Eco standalone application. Note that the **Input device** setting does not have any effect for BFD Eco, which does not use external audio signals for any functions.

On Windows, available ASIO devices are shown in the ASIO device drop-down menu. Select the desired audio interface device with which you want to use the BFD Eco standalone application. If your audio interface lacks an ASIO driver, it is often possible to achieve good results using the free ASIO4ALL universal ASIO driver, which can be downloaded from www.asio4all.com

Open ASIO Panel (Windows only)

On Windows, this function brings up the ASIO control panel for your audio device, in which you can adjust its settings if required.

This function is not available on Mac – in order to adjust your audio card's settings on Mac, you must directly launch its particular companion software/control panel.

Audio Channels

This section shows the available stereo output pairs for the currently selected **Output device**. To enable multi-output operation (if your audio interface has more than a single stereo output), activate the *All outputs* setting. Outputs for each channel are set via the Output Selector controls (see section 4:3).

Open MIDI Preferences

This panel specifies MIDI input and output settings from the BFD Eco standalone application and is accessed via the application's menu-bar.

Input Devices

This section specifies the MIDI input port(s) for playing BFD Eco. All detected MIDI input ports in your system are detected and displayed – activate any available port to enable MIDI input from the port to BFD Eco. You can select more than one MIDI port if required.

Each input port features an additional 'CLK' checkbox – activate this checkbox for any port on which to receive MIDI clock. To successfully slave to the clock signal, the Sync to MIDI clock setting must be activated (see below).

Output Devices

BFD Eco is capable of transmitting the output of the Groove engine as MIDI notes with which to trigger other MIDI devices. In the Output Devices section, all MIDI out ports in your system are detected and displayed – activate any available port to enable the MIDI output. Only 1 output port can be specified.

Sync to MIDI clock

Enabling the **Sync to MIDI clock** function results in the BFD Eco standalone application responding to MIDI clock from specified MIDI input ports in order to synchronize with another device. You must make sure that the currently enabled MIDI ports include the port on which the clock is being transmitted and that the relevant port's 'CLK' checkbox is activated.

The standalone application can only slave to an external master MIDI clock source. It cannot send out its own MIDI clock – if you need such functionality, please use BFD Eco as a plugin in a suitable host/DAW that supports these features.

Using BFD Eco as an RTAS or AAX plugin in Digidesign Pro Tools 7.x or later

The RTAS version of BFD Eco requires Pro Tools 7-10. For best performance, version 7.1 or later is highly recommended. The AAX version requires at least Pro Tools 10 (Pro Tools 11 or later recommended). BFD Eco cannot be used in Pro Tools 6.x, or any earlier versions.

Launching BFD Eco

1. Insert the BFD Eco multi-channel plugin (RTAS or onto a stereo Instrument track. The Instrument channel's output plays the output of the first stereo pair - channels 1-2.

Setting up additional output monitoring

By default, all channels in BFD Eco are routed to the Master channel in the BFD Eco mixer, which is hard-wired to the first stereo output (output 1-2).

In order to separate channels into discrete outputs, you must first route the relevant channels to the desired outputs in the BFD Eco mixer.

Once the channels are routed as desired, do the following to monitor each output separately:

1. Create a mono or stereo Aux track, depending on whether you want to monitor an additional mono or stereo output from BFD Eco.
2. Set the input of the Aux track as the relevant stereo or mono output from BFD Eco – after the plugin is inserted into the project, its outputs become available as track input sources.
3. Repeat this process for as many additional BFD Eco outputs that you need to monitor.

If you encounter any problems performing the steps above, please consult your host's documentation or contact the manufacturer's tech support channels – BFD Eco operates in the same way as any other multiple-output instrument plugin.

Using BFD Eco as an AU plugin in Apple Logic 8 or later

Logic 8 currently has a limitation on the number of outputs available from a plugin. When using BFD Eco in Logic 8, only outputs 1-24 are available – stereo outputs 1-8 and mono outputs 1-8.

The AU format does not support MIDI output from plugins – therefore, BFD Eco's MIDI Out function cannot be used in Logic 8.

Launching BFD Eco

1. Insert the BFD Eco multi-channel AU plugin onto an audio instrument channel. The instrument channel's output plays the output of the first stereo pair - channels 1-2 – as well as any other outputs which have not yet been assigned to be monitored from an additional Aux channel.
2. Create a track in Logic's Arrange window, corresponding to the audio instrument channel on which you inserted BFD Eco. You can now play BFD Eco from this track.

Setting up additional output monitoring

By default, all channels in BFD Eco are routed to the Master channel in the BFD Eco mixer, which is hard-wired to the first stereo output (output 1-2).

In order to separate channels into discrete outputs, you must first route the relevant channels to the desired BFD Eco outputs in the BFD Eco mixer.

Once the channels are routed as desired, do the following to monitor each output separately:

1. Create a mono or stereo Aux channel, depending on whether you want to monitor an additional mono or stereo output from BFD Eco.
2. Set the input of the Aux channel as the relevant stereo or mono output from BFD Eco – after BFD Eco is inserted into the project, its outputs become available as track input sources.
3. Repeat this process for as many additional BFD Eco outputs that you need to monitor.

If you encounter any problems performing the steps above, please consult your host's documentation or contact the manufacturer's tech support channels – BFD Eco operates in the same way as any other multiple-output instrument plugin.

Using BFD Eco as a VST plugin or an AU plugin in Ableton Live

On Mac, Ableton Live supports both VST and AU plugins. When using the VST plugin, it is possible to use BFD Eco's MIDI Out feature to send MIDI to another track from BFD Eco. The AU format does not support MIDI output from plugins, so this feature is unavailable when using the AU plugin.

Launching BFD Eco

1. Drag and drop the BFD Eco VST or AU plugin (Mac only) from the Plug-In Devices list into the Live workspace.

Setting up additional output monitoring

By default, all channels in BFD Eco are routed to the Master channel in the BFD Eco mixer, which is hard-wired to the first stereo output (output 1-2). In order to separate channels into discrete outputs, you must first route the relevant channels to the desired BFD Eco outputs in the BFD Eco mixer.

Once the channels are routed as desired, do the following to monitor each output separately:

1. Create an audio track.
2. Click the 'I-O' button on the right hand side of the Live interface to reveal each track's input/output settings.
3. Set the 'Audio From' selector to the BFD Eco track.
4. Set the selector immediately underneath this to the required BFD Eco output.

Live does not possess mono tracks. Therefore, it treats BFD Eco's 16 mono outputs as 8 stereo output pairs. In order to monitor a mono output properly, insert Live's Utility plugin (found in the Audio FX folder in the Live Devices list) onto an audio track set up as above. Set up the Utility plugin so that it monitors either the right or left of the channel, panned to the centre.

If you encounter any problems performing the steps above, please consult your host's documentation or contact the manufacturer's tech support channels
– BFD Eco operates in the same way as any other multiple-output instrument plugin.

Using BFD Eco as a VST plugin in Cubase SX

Launching BFD Eco

1. With a project open, bring up the VST Instruments panel.

2. Click on an instrument slot and select the BFD Eco plugin. Cubase SX automatically creates all additional BFD Eco outputs in its mixer.

By default, all channels in BFD Eco are routed to the Master channel in the BFD Eco mixer, which is hard-wired to the first stereo output (output 1-2). In order to separate channels into discrete outputs, you must first route the relevant channels to the desired BFD Eco outputs in the BFD Eco mixer.

3. Assign a MIDI track in the Project Window to BFD Eco.

If you encounter any problems performing the steps above, please consult your host's documentation or contact the manufacturer's tech support channels
– BFD Eco operates in the same way as any other multiple-output instrument plugin.

Using BFD Eco as a VST plugin in Cubase 4 or later

Launching BFD Eco

1. With a project open, bring up the VST Instruments panel.

2. Click on an instrument slot and select the BFD Eco plugin. If Cubase asks you whether it should create a MIDI track routed to the plugin, click 'Yes'.

3. Cubase 4 does not automatically create additional BFD Eco outputs in its mixer. To enable the additional outputs, click the output button in the VST Instruments panel for BFD Eco (it is to the right of the 'e' button that shows the plugin interface). In the pop-up list that appears, you can enable individual or all outputs. This button is described on page 63 of the Cubase 4.1 plug-in reference PDF manual.

By default, all channels in BFD Eco are routed to the Master channel in the BFD Eco mixer, which is hard-wired to the first stereo output (output 1-2). In order to separate channels into discrete outputs, you must first route the relevant channels to the desired BFD Eco outputs in the BFD Eco mixer.

3. Assign a MIDI track in the Project Window to BFD Eco if you did not click 'Yes' in step 2.

If you encounter any problems performing the steps above, please consult your host's documentation or contact the manufacturer's tech support channels
– BFD Eco operates in the same way as any other multiple-output instrument plugin.

Using BFD Eco as a VST plugin in Sonar

Launching BFD Eco

1. With a project open, use the Insert menu to insert BFD Eco as a soft synth:

Insert • Soft Synths • [VST plugins folder name] • BFD Eco

2. In the synth properties dialog box that appears, you can choose to set up BFD Eco's additional outputs in the Sonar mixer. Unfortunately, this dialog box does not include an option to create all the required stereo and mono outputs, so it is recommended to choose 'All Synth Audio Outputs: Stereo', and afterwards manually change the stereo channels created for BFD Eco's mono 1-16 outputs to mono channels. If you do not know how to do this, please consult your Sonar documentation or contact Cakewalk support.

By default, all channels in BFD Eco are routed to the Master channel in the BFD Eco mixer, which is hard-wired to the first stereo output (output 1-2). In order to separate channels into discrete outputs, you must first route the relevant channels to the desired BFD Eco outputs in the BFD Eco mixer.

If you need to use BFD Eco's MIDI Out function, remember to check the 'Enable MIDI Out' checkbox in the synth properties dialog.

3. If the 'MIDI Source' checkbox was not left checked in the dialog box, you need to create a MIDI track and route its output to BFD Eco.

If you encounter any problems performing the steps above, please consult your host's documentation or contact the manufacturer's tech support channels
– BFD Eco operates in the same way as any other multiple-output instrument plugin.

Using BFD Eco as a VST plugin in FL Studio

Launching BFD Eco

1. BFD Eco is not displayed in the plugin list by default. To make it part of the list select 'More...' to popup a list of all available plugins. From the bottom-right of this window click 'Refresh' then 'Fast Scan (recommended)'.
2. Enable the checkboxes next to the BFD Eco plugin which is shown in red (meaning that it is a newly found plugin).
3. Now you can add BFD Eco to the project by selecting 'Channels • Add one...' and then selecting BFD Eco.
4. Assign BFD Eco to an FX track, using the 'Channel Settings' window. This FX track plays BFD Eco's outputs 1-2.

Setting up additional output monitoring

By default, all channels in BFD Eco are routed to the Master channel in the BFD Eco mixer, which is hard-wired to the first stereo output (output 1-2). In order to separate channels into discrete outputs, you must first route the relevant channels to the desired BFD Eco outputs in the BFD Eco mixer.

Once the channels are routed as desired, do the following to monitor each output separately:

1. Enable the additional outputs using the down-arrow menu, just underneath the red plugin icon in the top-left corner of the plugin window.
2. The additional outputs occupy the FX tracks after the FX track you originally specified for BFD Eco's main output (1-2).

If you encounter any problems performing the steps above, please consult your host's documentation or contact the manufacturer's tech support channels – BFD Eco operates in the same way as any other multiple-output instrument plugin.

Using BFD Eco as a VST plugin in Reaper

Launching BFD Eco

1. Create a new track and bring up the FX Browser.
2. Add the BFD Eco plugin (located in the VSTi section of the FX Browser).

Setting up additional output monitoring

By default, all channels in BFD Eco are routed to the Master channel in the BFD Eco mixer, which is hard-wired to the first stereo output (output 1-2).

In order to separate channels into discrete outputs, you must first route the relevant channels to the desired BFD Eco outputs in the BFD Eco mixer.

Once the channels are routed as desired, do the following to monitor each output separately:

1. Bring up the FX Chain for the track on which you inserted BFD Eco.
2. Right-click on the BFD Eco VSTi in the FX Chain and click on the 'Build multichannel routing for output of selected FX' function in the menu that appears.
3. The default settings for this function result in 7 extra stereo channels and 16 mono channels being added to the Reaper mixer, with the relevant outputs from BFD Eco routed accordingly.

Potential problems

Missing plugin

Windows

- You must make sure that your host application is set to use the VST plugins folder to which you installed BFD Eco. See your host's documentation or contact its manufacturer's tech support if you do not know how to do this.
- By default, the BFD Eco installer suggests the VST folder defined in the HKEY_LOCAL_MACHINE • SOFTWARE • VST registry key. Unless you changed this location during the installer, this is where the BFD Eco plugin is installed.
- If you cannot find the BFD Eco VST plugin, you can copy it into the VST plugins folder of your choice from the following folder:
C:\Program Files\FXPansion\BFD Eco
• (this is the default BFD Eco application path, although you may have specified a different location during the installer)

Mac

- The VST plugin is installed to Library • Audio • Plug-Ins • VST
- The AU plugin is installed to Library • Audio • Plug-Ins • Components
- There are not many situations when your host will not find the BFD Eco plugin. However, if you use Logic, you need to make sure the BFD Eco AU plugin is properly validated in the Logic AU Manager, located in Logic's Preferences menu. Please see the Logic documentation if you are unsure how to do this.

Ch.12 Additional features for NFUZD NSPIRE-series electronic drumkits

Exporting kits to NFUZD Audio NSPIRE format

BFD Eco provides an export function for the NFUZD Audio NSPIRE series, accessible via the **Export NFUZD Kit** function in BFD Eco's Options menu. This feature creates a mixed-down sample-bank file which can be loaded into any of 3 user soundbank 'slots' within the NSPIRE module.

The kick, snare, hihat, toms and percussion are mixed down to create mono sounds while cymbals are mixed to stereo. All mixer and effects settings which are active are applied to the exported sounds.

Module sound-bank slot number

The NSPIRE drum module contains 3 slots for custom user sample-banks - specify which slot should be used for the sample-bank using this setting. This setting is actually stored in the sample-bank filename (*bfd01.bin*, *bfd02.bin* or *bfd03.bin*) and can be changed by simply renaming it.

Please note that a maximum of 3 user sample-banks – *bfd01.bin*, *bfd02.bin* and *bfd03.bin* – can exist on the USB stick, or in any single folder, at any one time. If the specified sample-bank number already exists within the specified **Export folder**, BFD Eco warns that data will be overwritten if you proceed.

To avoid this situation please delete existing sound-bank .bin files as required or specify a new Export folder (in the latter case, you will need to copy the file to an NFUZD USB stick, renaming or deleting files as necessary, to eventually load the file into the NFUZD module).

Module key path

BFD Eco must have access to a USB stick which has been prepped in your NSPIRE drum module, or a file unique to your NSPIRE module which is created during this process called **nfuzd.key**. The exported sample-bank can be used **only** on the NSPIRE module which originally prepped the USB stick (and therefore which created the **nfuzd.key** file).

This setting defaults to the USB key path if it is found. Use the **Browse** button to specify the USB key path if it is not found automatically or to specify any other folder on your system which contains the required **nfuzd.key** file.

Export folder

This setting specifies the location to which to export the sample-bank. By default, this folder is set to the same location as the **Module key path** setting. However, using the **Browse** button it is possible to specify any folder on your hard disk using this setting and subsequently copy exported banks to the USB stick to load into your NSPIRE module.

Export

Click this button to begin the export operation. Please be patient as the process may take a few minutes to be completed.

Cancel

Click the **Cancel** button to return to the main BFD Eco interface without performing an export.

Jukebox player

The Jukebox player offers a simple way to play/practice along with any audio file such as your favourite music, backing tracks and so on. This function exists within a separate window - click the **Show Jukebox player** button in the Global controls area or use the **Show Jukebox player** function in BFD Eco's Options menu. To close the player window, use the standard OS controls at the upper-left (Mac) or upper-right (Windows) of the window.

The Jukebox player's audio output is routed to BFD Eco's master output (the first stereo output) although it is not affected by the master channel's settings or effects. It can therefore be routed to your NFUZD NSPIRE module (using its Aux input or when using the module as an audio interface) along with BFD Eco's audio output. Use the Jukebox player panel's Volume control to adjust its level relative to the other audio within BFD Eco's master channel.

Choose

The **Choose** button displays an OS file browser for loading audio files into the Jukebox player playlist.

Rwd

Click this button to rewind to the beginning of the currently playing audio file.

Play

The **Play** button starts playback from the play position in the current audio file.

Pause

This button pauses playback until it is clicked again.

Loop

When the **Loop** button is activated, the current audio file is repeated after it has finished playing.

Next, Previous

Clicking these buttons result in switching to the next or previous audio file.

Up, Down

These buttons are used to re-order the playlist by moving the currently selected audio file up (before the previous file) or down (after the next file).

Volume

The **Volume** control adjusts the level of the Jukebox player's output relative to the other signals in BFD Eco's master channel.

Importing user samples

BFD Eco NFUZD allows you to import mono or stereo WAV files to make your own single-articulation kit-pieces with a single velocity layer which is amplitude-scaled with velocity.

It is important to note the following:

- There can be only 1 articulation in the kit-piece, mapped to the primary Hit articulation for the slot into which it is loaded. Any additional articulation mappings for the slot will also fall through to this single articulation.
- Each kit-piece created using this process must be designated as a Kick, Snare, Tom, Cymbal or Percussion kit-piece – it then appears in the kit-piece browser for that particular kit-piece type.
- It is not possible to create Hihat kit-pieces as a minimum of 2 articulations would be required.
- The kit-piece only produces sound in the direct bus - the kit-piece channel itself. It cannot produce audio in the OH or Room channel although it can be stereo and can be sent to Aux1 or Aux2 for processing with artificial reverb.
- There can be only a single velocity layer in the kit-piece - its amplitude level varies with incoming note velocity.
- An imported sample can be 16-bit or 24-bit WAV with a sample-rate of 44.1 kHz but the resulting kit-piece can only play back at 16-bit like all other sounds within BFD Eco.

Sample Importer panel

In order to create a kit-piece from a sample, you must open the Sample Importer panel using the **User Sample Import...** function on BFD Eco NFUZD's Options menu.

Sample

Click the **Sample Browse** button to add a sample. Any mono or stereo WAV file can be selected, but it must be at a sample rate of 44.1kHz, at a bit depth of either 16 or 24 bit. The resulting kit-piece can only play back at 16-bit like all other kit-pieces within BFD Eco.

Destination

Select a data path to which to save the imported sample as a kit-piece by clicking this drop-down menu and selecting the desired path.

To use a new data path to which to save the imported kit-piece, it must first be specified with the **Set Data Path** function in BFD Eco NFUZD's Options menu.

If you receive an error when importing samples, make sure that you have adequate permissions to write to the data path, and try again.

Kit-piece Type

This drop-down menu specifies the type for the imported kit-piece. The kit-piece can be classified as Kick, Snare, Tom, Cymbal or Percussion – after the process is complete, it is added to the database and is visible in the kit-piece picker/browser for relevant slot types.

It is not possible to create Hihat kit-pieces as at least 2 articulations would be required.

Kit-piece Name

Click this text-box and enter a name for the created kit-piece. This name identifies the kit-piece in the kit-piece picker and browser.

Photo settings

You can specify any JPEG, PNG or TGA image file as a photo to associate with the kit-piece. If no image is specified, a default image is used.

Browse button

Clicking the **Browse** button opens a system file open dialog allowing you to browse to a JPEG, PNG or TGA file to specify as the imported kit-piece's photo. The file must have a resolution of 180x150 pixels.

Clear button

Clicking this button removes the photo currently specified for the kit-piece.

Import & Cancel

Click the **Import** button to save the user kit-piece into the database. If you change your mind and decide that you don't want to create a kit-piece at this time, click the **Cancel** button to return to the BFD Eco NFUZD interface.

When a kit-piece is imported, it is *not* loaded into the current slot but is added to the database. It can then be loaded into a slot like any other kit-piece – it is visible in the kit-piece browser panel for the relevant kit-piece slot type.