⚡ BATTERY 4

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N I · NATIVE INSTRUMENTS

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1   Introduction

Welcome to BATTERY 4!

On behalf of the whole team at Native Instruments, we are delighted that you have chosen BATTERY as your tool for highly advanced drum and sample programming, and we'd like to thank you for your trust in Native Instruments products.

Since its previous version, BATTERY has undergone a major review, and we can proudly say that not one stone was left unturned; we have found and shored up the weak spots, taken what's good and improved on it, redesigned the user interface, and added a bunch of exciting new features to make BATTERY an even more powerful tool in your production tool box. We sincerely hope you enjoy this product, and that it will take you to new creative heights! Here's a list of the features awaiting you in BATTERY 4:

- Completely redesigned, high-speed workflow with a strong focus on the main page provides instant access to the most relevant functions
- Multi-functional waveform display with intuitive, gestural interface covers navigation, editing, loops, as well as modulation and envelopes
- Easy, drag-and-drop based usability: assigning MIDI controllers, routing, swapping cells, changing order of FX, instant side-chain compression
- New, high-quality effects: Solid G EQ, Bus Comp, Transient Master, Tape Saturator, One Knob Compressor, and new Filters
- Improved timestretching algorithm (Time Machine Pro)
- New bus system adds a flexible routing layer for processing groups (Snares, Kicks etc.)
- Instant rendering of processed cells to new samples to creatively build new kits / design sounds
- New tag based browser: tag and full text search, search history feature to continue browsing for sounds where you last looked
- Colorized interface design: colored cells indicate instrument type, controls adapt to cell color for clear overview

▪ Library updates: 143 high-quality kits with 79 new kits consequently geared towards electronic music production

1.1 About This Document

This document covers everything there is to know about BATTERY 4. In order to make this manual a handy helper for you, we structured the content as follows:

▪ Chapter ↑2, Quick Start is an introduction to the very basic concepts of BATTERY. Read this and you'll be able to perform the basic operations in no time.

▪ Chapter ↑3, Software Reference is your reference for each and every element on BATTERY's user interface. Find information on what BATTERY's controls do and how to operate them in this chapter.

▪ Chapter ↑4, Additional Tutorials contains some extra tutorials for the less self-explanatory tasks such as automating BATTERY's parameter controls in host application and setting up advanced routing schemes.

▪ In the later chapters, you'll find ↑5, Tips and Tricks, and a ↑6, Troubleshooting / Support chapter.

▪ The Appendix provides information on ↑7.1, Supported File Types, ↑7.1, Supported File Types, and ↑7.3, A Guide to the Library Kits.

▪ Besides the table of contents, you can use the index at the end of this document to find specific information quickly.

1.2 What Other Documents Are There?

Apart from this manual, the following documents are available for BATTERY 4:

▪ The **Setup Guide**: The Setup Guide is always available at www.native-instruments.com/set-up-battery. It guides you through the software installation, registration, and setup process.

▪ The **Library Manual**: The Kits that are provided with BATTERY's Factory Library work well with various musical genres; however, each Kit was designed with a specific genre in mind. For an overview of which Kit works best with which musical style, refer to the BATTERY Library Manual, which you can find under *Open Manual* in the Help menu of the application.

1.3   Document Conventions

This document uses particular formatting to point out special facts and to warn you of potential issues. The icons introducing the following notes let you see what kind of information can be expected:

> Whenever this exclamation mark icon appears, you should read the corresponding note carefully and follow the instructions and hints given there, if applicable.

> This light bulb icon indicates a note containing useful extra information. This information may often help you to solve a task more efficiently, but does not necessarily apply to the setup or operating system you are using; however, it's always worth a look.

Furthermore, the following formatting is used:

▪ Text appearing in (drop-down) menus (such as *Open…*, *Save as…* etc.) and paths to locations on your hard drive or other storage devices is printed in *italics*.

▪ Text appearing elsewhere on the screen (labels of buttons, controls, text next to checkboxes etc.) is printed in light blue. Whenever you see this formatting applied, you will find the same text appearing on the screen.

▪ Important names and concepts are printed in **bold**.

▪ You'll find references to keys on your computer's keyboard in square brackets (e.g., "Press [Shift] + [Return]").

► Single instructions are introduced by this "play button" arrow.

→ Results of actions are introduced by this smaller arrow.

1.4   System Requirements

For the minimum system requirements your computer needs to meet, see the specifications section of the BATTERY product page:

http://www.native-instruments.com/battery4specifications

2 Quick Start

This chapter will walk you through the very basic tasks in your daily work with BATTERY. You'll also learn how to work with cell parameters, apply effects, layer samples, and use effect buses in a few simple steps.

> ⚠ This tutorial presumes that you have already installed, registered, and set up BATTERY as instructed in the separate Setup Guide (see also ↑1.2, What Other Documents Are There?).

2.1 Stand-alone Mode vs. Plug-in Mode

Before you use BATTERY for the first time, it's worth explaining that it has two fundamentally different modes of operation, **stand-alone mode** and **plug-in mode**:

- In **stand-alone mode**, BATTERY runs on its own, behaving like any other software on your computer. In this mode, you'll use BATTERY as a simple software instrument, but you won't be able to record your performance in a way that would allow you to sequence it in sync with other software instruments, or to preserve it for later editing.

- In **plug-in mode**, BATTERY runs as a plug-in within a host application, which is usually a sequencer or DAW (Digital Audio Workstation) application such as Cubase, Ableton Live, or MASCHINE. You can then record and sequence your performance synchronized to the host software's master clock — in sync with other plug-ins — and edit it at a later point.

There is an important technical difference between these modes, concerning the way in which BATTERY handles MIDI and audio streams:

- In **stand-alone mode**, BATTERY will address your MIDI and audio hardware directly, which requires you to specify some details about your hardware and drivers in the Audio and MIDI Settings dialog (see also ↑3.9, Audio and MIDI Settings).

- In **plug-in mode**, audio and MIDI streaming will be handled by the host application.

In this chapter, we will use BATTERY in **stand-alone mode**. For instructions on how to set up BATTERY with your audio interface, refer to the separate Setup Guide (see also ↑1.2, What Other Documents Are There?).

2.2   Basic Operation

1. Locate the application folder labeled "BATTERY 4" on your computer.
2. Double-click "BATTERY 4.exe" (Windows) or "BATTERY 4.app" (Mac OS X). Alternatively, you can use the shortcuts created during the installation process in the usual locations on your operating system.

3. Check whether your audio interface and MIDI devices are set up correctly in BATTERY's Audio and MIDI Settings panel (as instructed in the separate Setup Guide; see also ↑1.2, What Other Documents Are There?).
4. Click on the magnifying glass symbol button in BATTERY's Header. This button is called the Sidebar button, and it hides/shows BATTERY's Sidebar. Click on it once to hide the Sidebar, click again to view it.

5. In the Sidebar, click on the Library tab to open the Library Browser. Click on the Kits button and then on the Factory button to get to the factory Kits. Scroll down to the Bouncin Kit entry and double-click on it (or drag and drop it into the Cell Matrix).
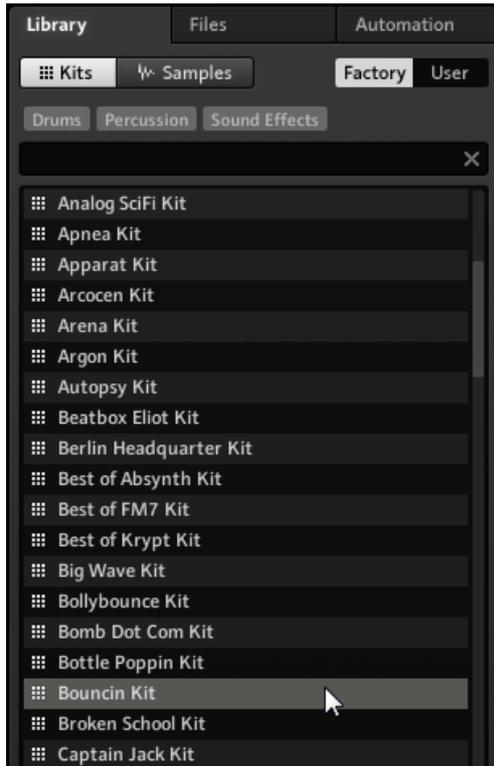
→ You have loaded the Bouncin Kit to BATTERY, which will be our exemplary tutorial Kit for this session.

As you can see, the cells have different colors assigned to them: kicks are red, snares are yellow, claps are pink etc. Let's change the cell color of all kicks to green:

1. Click on the column header above the first column of cells, which contains half of the Kit's kicks. The selected cells will be highlighted with an extra frame, which means that they have been selected for editing.

2. Press [Ctrl]/[Cmd] on your keyboard, and click on the column header above the second column of cells, which will add column 2 to the selection.

3. Right-click (or [Ctrl]-click on Mac OS) on one of the highlighted cells to bring up the context menu.

4. In the *Cell Color* submenu, click on the green square to assign the color to the selected cells.

→ You have assigned a new cell color to the selected cells.

> 💡 You can also select rows of cells for editing by clicking on the rows' letter headers, or even the entire Cell Matrix by clicking on the field where the row and column headers intersect.

> ⚠ For an overview of the default coloring schemes, see ↑7.1, Supported File Types.

As long as multiple cells are selected for editing, any changes made in the context menu (which you just used for assigning colors), the Quick Access area (the middle portion of the screen), or in the Edit area (the area filling the lower portion of the screen), will affect all of

the selected cells; however, only the cell most recently clicked on will be displayed in the Quick Access area's Waveform Control. Let's use multiple selection and the Mute button to mute multiple cells at once:

1. Select the cells containing the kicks, as you already did above.
2. Click on the right button in the lower left corner of one of the cells. This is the Mute button.

→   You have muted the selected cells.

►   Click on the button again to unmute the selected cells.

> The left button in the lower left corner of a cell is the Solo button.

To see which MIDI note a cell is triggered by, select a cell by clicking on it, and have a look at the Key Range area on the left side of the Quick Access area (the middle portion of the screen, where you can see the waveform in the Waveform Control).

The Key Range area displays that the selected cell is triggered from MIDI note C1.

As you can see in the screenshot above, each cell has a MIDI key range assigned to it; in this case it is C1 to C1, which simply means that the relevant cell is triggered by the single MIDI note C1. You can also have multiple MIDI notes trigger one cell (e.g., C1 to D1), AND this also works the other way round; you can trigger multiple cells with a single MIDI note, which is a cool way of layering sounds. To do this:

1. Select two cells from the Kit using [Ctrl]-/[Cmd]-click, e.g., Kick Bouncin 1 and Kick Bouncin 2.

2. Click on the MIDI symbol in the Key Range area. This is the MIDI Learn button. It lights up.

3. BATTERY is now in MIDI learn mode. Hit a key on your MIDI keyboard (or a pad on your MIDI controller), e.g., C1. This will set C1 as the lower note of the MIDI key range. Hit the key again, which will set C1 also as the upper key of the MIDI key range.

→ The MIDI Learn button turns dim. Both cells A1 and A2 are now triggered by MIDI note C1 from your MIDI controller.

You have just learned one way to layer sounds with BATTERY, which is a very useful technique for creating drums and for sound design generally. But there's also another way to do this; by layering multiple sounds in a single cell, which is a vital feature in BATTERY's tool set. To do this:

1. Click on a cell, e.g., B1 (Kick Bouncin 3), to select it for editing.

2. In the Sidebar, click on the Library tab to open the Library Browser. Click on the Samples button and then on the Factory button to get to the factory samples. Type ClosedHH Bouncin 1 in the search box. The sample will appear in the Selection/Results window below.
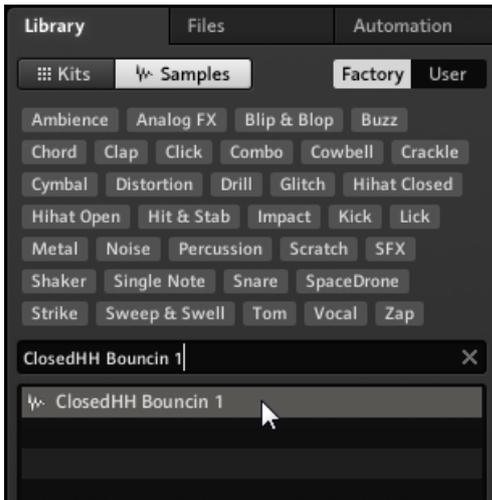
3. Open the Editor page in the Edit area. Drag and drop the ClosedHH Bouncin 1 from the Selection/Results window into the Mapping grid.
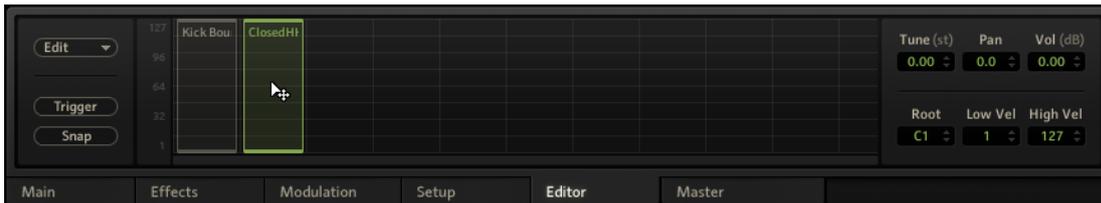
→   You have loaded a second sample layer into the cell. When you trigger cell B1 now, you will hear both the kick sample and the hi-hat sample playing at the same time. (You can also load sample layers directly from your hard drive via the context menu of a cell using the *Add Sample...* entry.)

► Now select cell B1 for editing and go back from the Editor to the Main page. The Waveform Control in the Quick Access area will now provide an additional drop-down menu, allowing you to select the cell's individual sample layers for editing.

Be aware that all changes made on the right side of the Quick Access area (Tune, Pan, Level etc.) affect the whole cell. So when you adjust the panorama setting using the Pan knob, both sample layers will be positioned in the stereo field in the same way.

For advanced layer editing, you have to open the Editor page in the Edit area again (the lower portion of the screen). From here, you can edit the parameters individually for each layer, and you can also influence the trigger behavior of the sample layers within the cell.

The Editor page in the Edit area. When this page is opened, the Quick Access area above is replaced by a feature-rich Waveform and Loop Editor. Below you'll find the Mapping editor, allowing you to set velocity regions for the individual sample layers. The displays on the right (Tune (st), Pan etc.) affect the individual sample layers.

Let's adjust the velocity region for the hi-hat layer so that it only will be triggered when you hit the key fairly hard. To do this:

1. Click on the hi-hat layer's Sample Block in the Mapping Grid to select it for editing.
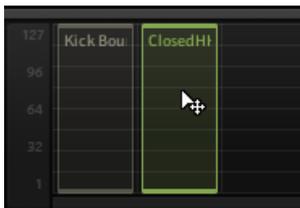
2. Now move the cursor to the lower border of the Sample Block. The cursor changes when hovering over the border. Click and drag the border up to a velocity value of about 105 (you can also see the value in the Low Vel display on the right side of the Mapping Editor).

→ The hi-hat layer will now only be triggered upon receiving a velocity value of between 105 and 128. For any value below, only the kick layer will be triggered.

You can layer multiple samples in a cell this way, and have them all being triggered at once, or only at certain velocity values.

Another handy feature is the Voice Groups module in the Setup page of the Edit area. You can assign multiple cells to a voice group, limit the voice group's maximum number of voices, thereby making the cells cut each other off. Let's have a look at how this works:

1. Trigger two cells with longer samples quickly one after the other, e.g., D10 (SFX Bouncin 3) and C10 (SFX Bouncin 2). You'll notice that the sounds of both cells overlap.

2. Now select them both for editing using [Ctrl]-/[Cmd]-click.

3. Open the Setup page in the Edit area.

4. In the Voice Groups module, open the drop-down menu labeled Kit, and select the entry *1 - <untitled>*.
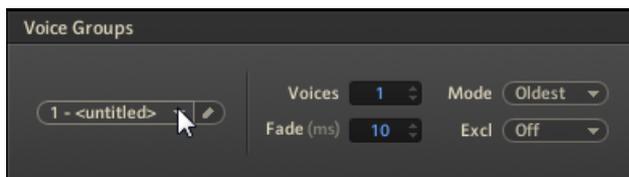
→   You have assigned both cells to voice group 1. The Voices setting should be set to 1 by default (as depicted above), which means that only one voice is allowed to play at a time in the voice group created.

> You can rename the voice group by clicking on the pencil symbol next to the voice group drop-down.

▶   Now repeat step 1 (trigger both cells one after the other).

→   You'll notice that the cells cut each other off with a fade time as specified in the Fade (ms) display of the Voice Groups module.

This is a very handy feature, e.g., for programming realistic drum sets, where an open hi-hat and a closed hi-hat would never play at the same time.

Congratulations! You have learned about BATTERY's basic features. The following section will explain the use of effects and effect buses in a nutshell.

2.3   Effect Modules and Cell Routing

This section will give you a quick introduction to applying effects, as well as some basic routing schemes using BATTERY's bus system.

There are two types of effects in BATTERY: **individual cell effects** and **global master effects**. The cell effects can be found on the Main page and on the Effects pages in the Edit area (the lower portion of the screen). The master effects are situated on the Master page of the Edit area.

To apply a cell effect to a cell:

1. Click on the cell you want to apply an effect to; e.g., cell C1 (Kick Bouncin 5).
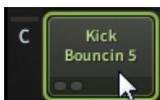
2. In the Effects page of the Edit area, click on the power button of the Compressor module to activate it.

3. Trigger cell C1 by clicking on it.

→   You can now hear the compressor module working.

> To assign one effect to multiple cells, simply select multiple cells for editing with [Ctrl]-/[Cmd]-click, and activate the desired effect module.

> The effect chain runs from left to right, i.e., when using the Filter / EQ module and the Compressor module on a cell, the cell's signal will first be filtered, and then compressed. You can, however, rearrange the order of effects. To do so, click and drag an effect by its handle (in the upper right corner of the module), and place it anywhere desired within the effects chain.

Effects are not only a great tool for making a sound blend in with the mix; they can also be used for sound design. Let's say you've applied a combination of effects to a cell, you like how it sounds, and you want to use this cell as a basis for further work. You can now *render* the cell in place, that is to say, you can convert the cell's sound into a unique copy. To do so:

1. Right-/[Ctrl]-click on a cell with effects applied to it, e.g., cell C1 (Kick Bouncin 5), as we have just applied the Compressor module to it.

2. Select the *Render Cell...* entry from the menu.
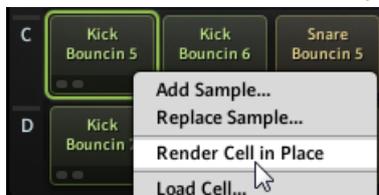
→ The cell's sample will be replaced with a re-sampled version of itself, including the effects applied to it; all effect modules formerly applied will be deactivated automatically. This is not only useful for sound design, but it can also help you to reduce CPU usage.

Now let's have a look at the effects on the Master page of the Edit area. As you can see on the Master page, the Buses module provides five buses: Bus 1, Bus 2, Bus 3, Bus 4, and the Master bus.

The Buses module on the Master page of the Edit area with the Master bus selected for editing.

By default, all cells of a Kit are routed to the Master bus. Conversely, this means that any effect activated on the Master page will be applied to all cells in your Kit. Additionally, you can use the remaining four buses as effect and submix buses. Here's how you do it:

1. Click on Bus 1 to select it for editing.

You'll notice that all cells in the Cell Matrix turn into a dim state. This is because only cells routed to the bus currently selected for editing will remain lit.

2. Click on the Filter / EQ module's power button to activate the module for Bus 1. In the module, select the high frequency range (H), and turn the Gain down to apply a high cut.

3. Now click on the header of row D to select the bottom row of cells for editing.

4. Click and drag one of the selected cells onto Bus 1.

The dashed line signalizes that you are about to route the selected cells to the bus.

→   The bottom row is now lit, which means that the cells are routed to Bus 1. Any changes to the effects activated for the bus will affect all cells routed to it.

The signal path of the cells in row D is now cell > Bus 1 > Master > Stereo output pair 1/2.

💡 You can also change routing settings for cells and buses from their context menus (Right-/[Ctrl]-click).

2.3.1   Effect Presets

Each effect in the Effects and Master pages comes with a set of presets that you can reach by clicking the drop-down menu to the right of each effect module's title. The Preset menu is split into two submenus, one for factory content and one where you can save your own presets. To save the current settings as a preset:

1.   Click the arrow to open the drop-down menu.

2.   Select *Save Preset…* from the appearing Preset menu:

3.   Enter the name of your preset in the field beneath the label Preset Name:
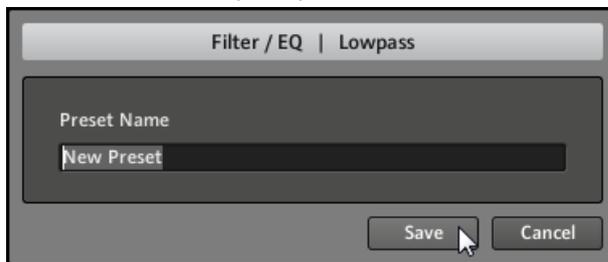
4.   Click Save to finish the process and close the dialog box.

→   The current settings are saved as a user preset file on your hard disk. The preset will appear in the *User* submenu of the current effect module's Preset menu.

To load a preset from the Preset menu:

1.   Click the arrow to open the drop-down menu.
2.   Navigate through the submenus and select a preset to load it.

You are now familiar with the basic concepts of effect usage and routing; however, we've only just scratched the surface here. You can build more complex routing schemes, use effect buses while bypassing the Master bus, and so on. For further information on this, refer to 3.7.6.

3 Software Reference

This chapter is your reference for functional descriptions of every element on BATTERY's user interface. We'll start with a general overview in ↑3.1, General Overview and then break down the individual areas and their further sections and elements from ↑3.2, Application Menu Bar to ↑3.7, Edit Area. In ↑3.8, Preferences, you will find a thorough description of BATTERY's preferences panel, and an overview of the Audio and MIDI Settings panel will follow in ↑3.9, Audio and MIDI Settings.

3.1 General Overview

BATTERY 4 has a straightforward and flexible user interface, with designated areas for drum/sample programming, browsing, automation, modulation, and an effects and routing section.

The user interface.

The user interface consists of the following areas:

(**1**) Application menu bar: The standard application menu bar with file, editing, and viewing options. See ↑3.2, Application Menu Bar for further information.

(**2**) Header: The one-stop shop for global settings such as tempo and master output volume. See ↑3.3, Header for further information.

(**3**) Sidebar: This is where you browse for Kits and samples, organize BATTERY's Library, and automate parameters. See ↑3.4, Sidebar for further information.

(**4**) Cell Matrix: This is the performance section. See ↑3.5, Cell Matrix for further information.

(**5**) Quick Access area: The most frequently used tools for cell editing in one place. See ↑3.6, Quick Access Area for further information.

(**6**) Edit area: Advanced editing, effects, modulation, MIDI features, and routing options are accessible from this area. See ↑3.7, Edit Area for further information.

3.2   Application Menu Bar

The application menu bar provides access to common file and editing options. You can configure the layout of the Cell Matrix and find your way to BATTERY's documentation resources from here. It looks slightly different depending on whether you run BATTERY on Windows or Mac OS.

File Cell Matrix Help
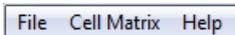
The application menu bar on Windows.

> ⚠ The application menu bar is not available in plug-in mode, i.e., when you are using BATTERY as a plug-in in a host software application; the audio and MIDI settings will then be handled by your host software, while all other options can still be accessed from BATTERY's Header section (see also ↑3.3, Header) and other areas of the software.

There are three menus in the application menu bar:

- File menu: see ↑3.2.1, File Menu for further information.
- Cell Matrix menu: see ↑3.2.2, Cell Matrix Menu for further information.
- Help menu: see ↑3.2.3, Help Menu for further information.

3.2.1   File Menu

The File menu provides access to common file-related tasks, and a link to BATTERY's preferences panel.
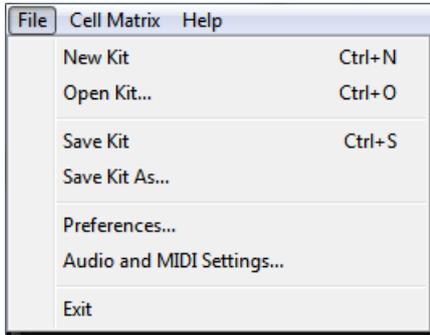
The File menu.

The following options are available:

- *New Kit*: Opens a new Kit. (Windows: [Ctrl]+[N] / Mac OS: [Cmd]+[N]).

- *Open Kit...*: Lets you open a BATTERY Kit file from a specific location on your computer. (Windows: [Ctrl]+[O] / Mac OS: [Cmd]+[O].)

- *Save Kit*: Saves the current Kit under its original name to its original location. (Windows: [Ctrl]+[S] / Mac OS: [Cmd]+[S].)

- *Save Kit as...*: Lets you save the current Kit under a new name to a specific location on your computer. (Windows: [Ctrl]+[Shift]+[S] / Mac OS: [Cmd]+ [Shift]+[S].) Furthermore, there are the following saving options:

  ◦ Patch Only: This option saves the Kit and cell settings along with pointers to where samples reside on your hard disk. It references samples, but does not include them in the file, thus, producing a smaller file size than if the samples were included. Select this option if your file system is unlikely to be changed at a later or point and/or if your are sure you will not be using the Kit on another computer.

- ◦ Patch and Samples: This option saves the Kit and cell settings, and it lets you specify a directory into which the samples will be saved. This is a good choice if you want a transportable patch, e.g., when collaborating with another musician. Specify a sample folder with the Sample sub-directory menu.

- ◦ Monolith: This option saves the Kit and cell settings and all samples into a single BATTERY Kit file. This is a good choice if you want a transportable patch, e.g., when collaborating with another musician.

- ▪ *Preferences…*: Launches BATTERY's preferences panel in a new window. Refer to ↑3.8, Preferences for further information about the preferences panel.

- ▪ *Audio and MIDI Settings…*: Launches BATTERY's Audio and MIDI Settings panel in a new window. Refer to ↑3.9, Audio and MIDI Settings for further information about the Audio and MIDI Settings panel.

- ▪ *Exit*: Shuts down BATTERY. Before shutting down the software, you will be asked if you wish to save the current Kit.

3.2.2 Cell Matrix Menu

The Edit menu provides access to cell-related tasks, such as copying and pasting cells. Most of these are also accessible via right-click/[Ctrl]-click on a cell in the Cell Matrix.
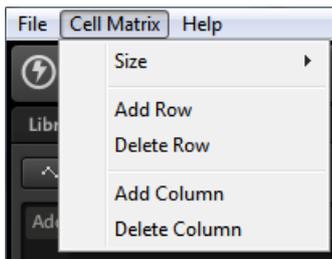
The Cell Matrix menu.

The following options are available:

- ▪ *Size*: Lets you select a layout preset for the Cell Matrix.

- ▪ *Add Row*: Adds a row at the bottom of the Cell Matrix.

- ▪ *Delete Row*: Removes a row from the bottom of the Cell Matrix.

- *Add Column*: Adds a column on the right side of the Cell Matrix.

- *Delete Column*: Removes a column from the right side of the Cell Matrix.

3.2.3 Help Menu

The Help menu provides access to BATTERY's documentation and other sources of information.
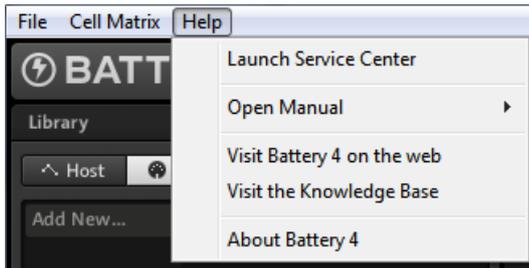
The Help menu.

The following options are available:

- *Launch Service Center*: Launches the Service Center application in a new window. From there, you can manage your NI software licenses, and download software and documentation updates.

- *Open Manual*: Opens a submenu with links to various documentation items.

- *Visit Battery 4 on the web*: Opens the BATTERY 4 product homepage in your standard web browser.

- *Visit the Knowledge Base*: Opens the NI Knowledge Base in your standard web browser.

- *About...*: Launches the About splash screen with version and software licensing information. The software credits are also displayed here. Click on the About splash screen again to close it.

3.3   Header

The Header is BATTERY's control area and tool box for global operations such as Kit management, adjusting master levels, tempo, and polyphony/voicing management. It also provides access to file, editing, and layout options.
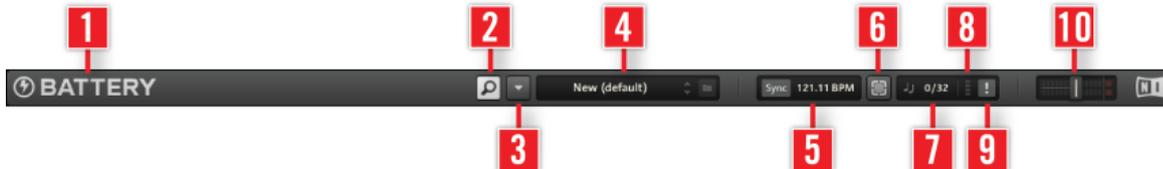
BATTERY's Header.

The controls are:

(**1**) BATTERY logo: Click on the logo to launch the About splash screen with version and software licensing information. The software credits are also displayed here. Click on the About splash screen again to close it.

(**2**) Sidebar button: Toggles the visibility of the Sidebar. (For further information about the Sidebar, refer to ↑3.4, Sidebar).

(**3**) Application menu button: The application menu button provides access to file, editing, and layout options (such as the application menu bar, see also ↑3.2, Application Menu Bar), and links to BATTERY's documentation resources.

The options are:

- *File*: Standard file options and an entry for accessing the preferences panel.
    - *New Kit*: Opens a new Kit. (Windows: [Ctrl]+[N] / Mac OS: [Cmd]+[N].)
    - *Open Kit...*: Lets you open a BATTERY Kit file from a specific location on your computer. (Windows: [Ctrl]+[O] / Mac OS: [Cmd]+[O].)
    - *Save Kit*: Saves the current Kit under its original name to its original location. (Windows: [Ctrl]+[S] / Mac OS: [Cmd]+[S].)

◦ *Save Kit as...*: Lets you save the current Kit under a new name to a specific location on your computer. (Windows: [Ctrl]+[Shift]+[S] / Mac OS: [Cmd]+ [Shift]+[S].) The subsequent saving dialog presents you with additional options for saving a Kit. See ↑3.2.1, File Menu for further information.

◦ *Preferences...*: Launches BATTERY's preferences panel in a new window. Refer to ↑3.8, Preferences for further information about the preferences panel.

◦ *Audio and MIDI Settings...*: Launches BATTERY's Audio and MIDI Settings panel in a new window. Refer to ↑3.9, Audio and MIDI Settings for further information about the preferences panel.

▪ *Cell Matrix*: Change the layout of the Cell Matrix with the following menu entries:

◦ *Size*: Lets you select a layout preset for the Cell Matrix.

◦ *Add Row*: Adds a row at the bottom of the Cell Matrix.

◦ *Delete Row*: Removes a row from the bottom of the Cell Matrix.

◦ *Add Column*: Adds a column on the right side of the Cell Matrix.

◦ *Delete Column*: Removes a column from the right side of the Cell Matrix.

▪ *Help*: This menu provides links to documentation and other sources of information:

◦ *Launch Service Center*: Launches the Service Center application in a new window. From there, you can manage your NI software licenses, and download software and documentation updates.

◦ *Open Manual*: Opens a submenu with links to various documentation items.

◦ *Visit Battery 4 on the web*: Opens the BATTERY 4 product homepage in your standard web browser.

◦ *Visit the Knowledge Base*: Opens the NI Knowledge Base in your standard web browser.

◦ *About...*: Launches the About splash screen with version and software licensing information. The software credits are also displayed here. Click on the About splash screen again to close it.

(**4**) Kit menu: Displays the name of the currently loaded Kit. The adjacent arrow buttons allow you to quickly load Kits into BATTERY; this works in two different ways:

- In case the current Kit was loaded via the File Browser (see also ↑3.4.2, Files Browser) or per drag-and-drop, clicking on the arrow buttons will load the **next/previous Kit located in the current Kit's folder**.

- If the current Kit was loaded via the Library Browser (see also ↑3.4.1, Library Browser), clicking on the arrow buttons will load the **next/previous Kit located in the relevant Library folder**, taking into account the tags you have used to narrow down your selection when loading the current Kit.

(**5**) Tempo display/control and Sync button: The Sync button synchronizes the internal clock to the tempo of a host software application when using BATTERY as a plug-in. When the Sync button is disabled, BATTERY follows its own tempo; i.e., when you use audio files that contain embedded timing information (such as REX loops, ACID wav files, and Apple Loop files), the loop will play back at the tempo set with the tempo control. The tempo display provides three input methods for setting the tempo: clicking and dragging the tempo; double-clicking and typing in the value; tapping on the BPM label repeatedly (the label then displays TAP, and acts as a tap tempo button).

(**6**) Selection Follows MIDI Input button: With this option enabled, BATTERY switches cell focus automatically upon receiving MIDI notes. In other words, when you hit a key on your keyboard, not only will the relevant cell be triggered, but the cell focus will also switch to the cell, and the cell's content will be accessible in the Quick Access area (see also ↑3.6, Quick Access Area).

(**7**) Voice monitor/control: Displays the number of currently active voices on the left side, and the voice limit (maximum number of voices allowed) on the right side. Click and drag the number on the right side to change the voice limit. This setting will be saved with the Kit.

(**8**) CPU meter: Monitors BATTERY's CPU usage.

(**9**) Panic button: Click this button to reset BATTERY's audio engine. This will stop all audio from playing immediately.

(**10**) Output level meters / slider: The output level meters display the levels of BATTERY's outputs. The slider on top controls the overall levels of all output section channels. To avoid distortion, you should prevent the meters from going into the red. This setting is not saved with a Kit; however, it is saved when using BATTERY as a plug-in in a session with a host software, and will be recalled the next time you load that session.

3.4   Sidebar

The Sidebar contains the Library Browser, the File Browser, and the Automation page:

- The Library Browser lets you search for sounds and Kits in BATTERY's Library, and categorize and organize your samples and Kits (refer to ↑3.4.1, Library Browser for further information).

- The Files Browser lets you search your computer's file structure for sound files and Kits. You can bookmark your favorite locations and import files to BATTERY's Library from the Files browser (refer to ↑3.4.2, Files Browser for further information).

- The Automation page lets you assign BATTERY's parameter controls to MIDI controllers and to automation controls in a host software (refer to ↑3.4.3, Automation Page for further information).

> You can toggle the visibility of the Sidebar on/off with the Sidebar button in the Header. See also ↑3.3, Header.

3.4.1   Library Browser

The Library Browser provides access to BATTERY's extensive sound library — you can categorize and organize your sound files and Kits from here.
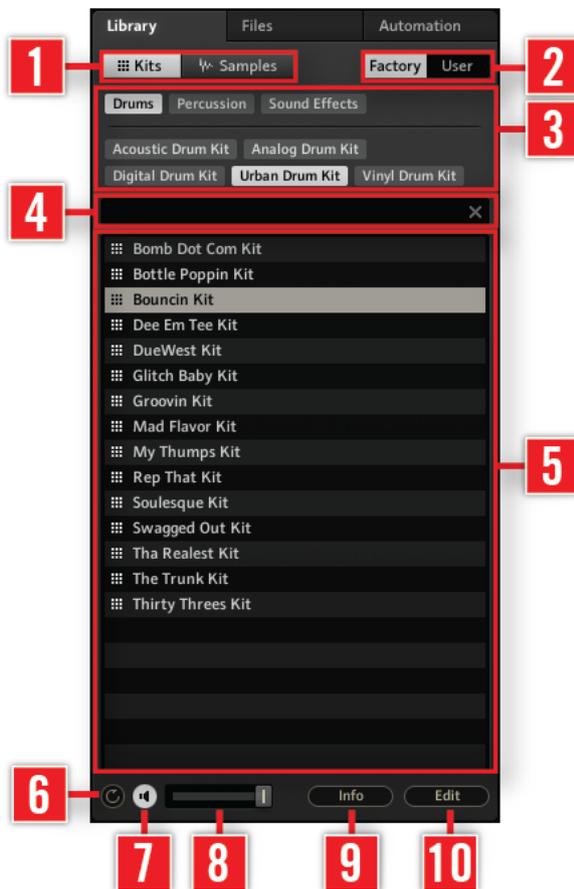
The Library Browser in the Sidebar.

These are the controls:

(**1**) Kits button and Samples button:

- The Kits button lists all BATTERY Kits available in the Library. Narrow down your selection with the tags in the Category window, and select whether to display factory kits or your own user Kits with the Factory/User button, respectively.

▪ The Samples button lists all samples available in the Library. Narrow down your selection with the tags in the Category window, and select whether to display factory samples or your own user samples with the Factory/User button, respectively.

(**2**) Factory button and User button:

▪ The Factory button sets the Selection/Results window to display factory content only.

▪ The User button sets the Selection/Results window to display user content only.

(**3**) Category window: Provides a two-level tag filter system for narrowing down the selection in the Selection/Results window below. The second category level appears once a tag in the first level has been clicked.

(**4**) Search box: Type in a specific term to narrow down the selection in the Selection/Results window below.

(**5**) Selection/Results window: Lists Library content according to your selection.

(**6**) Loop button (circular arrow symbol): When active, the currently previewed sound will be continuously looped.

(**7**) Preview button (speaker symbol): Toggles the previewing function on/off. When active, you will hear a preview of the sample currently selected in the Browser.

(**8**) Preview Level meter / Preview Level control slider: Displays the output level of the sample being currently previewed in the Browser. Use the slider on top to adjust the previewing output level.

(**9**) Info button: Displays additional information for the item selected in the Selection/Results window.

(**10**) Edit button: Opens the Edit panel, where you can edit category tags and add additional information to the item selected in the Selection/Results window.

▪ Category button: Edit first-level category tags in the left column and second-level category tags in the right column.

▪ Properties button: Add additional information to your samples/Kits, and assign a color to the item's list entry from here.

3.4.2 Files Browser

The Files Browser lets you search your computer's file structure for samples and Kits. You can bookmark your favorite locations and import files to BATTERY's Library from here.

The Files Browser in the Sidebar.

These are the controls:

(**1**) Favorites bar: Add locations on your hard drive to the Favorites bar by right-clicking an item in the Selection/Results window, and selecting the *Add to Favorites* entry.

(**2**) Navigation bar: Lets you navigate through your computer's file structure.

- Go Up button (upwards pointing arrow symbol): Navigates to the parent folder.

- Breadcrumbs navigation bar: Displays the folder hierarchy down to the folder that is currently open in the Selection/Results window.

- Recently visited locations (clock symbol): Opens a list of currently visited locations. Click on an entry to open it in the Selection/Results window.

(**3**) Selection/Results window: Displays the folder content of the current folder.

(**4**) Loop button (circular arrow symbol): When active, the currently previewed sample will be continuously looped.

(**5**) Preview button (speaker symbol): Toggles the previewing function on/off. When active, you will hear a preview of the sample currently selected in the Browser.

(**6**) Preview Level meter / Preview Level control slider: Monitors the level of the sample being currently previewed in the Browser. Use the slider on top to adjust the output level.

(**7**) Info button: Displays additional information for the currently selected item in the Selection/Results window.

(**8**) Import button: Allows you to import files from your file system to the Library. See ↑4.1, Importing Files to the Library for a tutorial on importing samples from your file system to the Library, and how to use the Library's tagging system to tag the files for convenient use.

3.4.3   Automation Page

The Automation page allows you to assign BATTERY's parameter controls (e.g., the output volume control knob of a specific effect module in BATTERY) to control elements on a MIDI controller, and to automation control IDs in a host application. These destinations are reflected by the Automation page's Host and MIDI buttons:

- The Host button: Assign BATTERY parameter controls to automation control IDs in a host application from here. You can then automate the parameter from within your host software, e.g., to record volume changes of a specific cell throughout a track.

▪ The MIDI button: Assign BATTERY parameter controls to keys, knobs, faders, wheels, or any other control element on a MIDI controller from here. You can then control the relevant BATTERY parameter control directly from your MIDI controller. This is what you'll want when using BATTERY in stand-alone mode.

In a host application (that is, in plug-in mode), you'll also be able to record the MIDI data as automation to a MIDI track. Some hosts even allow you to configure certain MIDI CC (control change) numbers to be recorded into a separate automation track instead of the MIDI track, which basically gives you the same results as automating parameters via the host's automation control IDs (see Host button above); however, the latter are easier to edit afterwards.

The Automation page in the Sidebar.

These are the controls:

(**1**) Host button and MIDI button: These buttons select between the two possible types of parameter control automation (host automation and MIDI automation).

(**2**) Control mapping entry: When you click on Add New... (**5**), a new control mapping entry will be added to the mapping list.

- In case of a **host mapping**, the entry will be labeled Drag to any Knob or Slider.... You can then drag and drop the selection cross hair (**3**) onto a parameter control in the user interface. The relevant parameter control will henceforth be addressable for automation from within your host application. For further instruction, consult the relevant documentation of your host application.

- In case of a **MIDI mapping**, the entry will first be labeled Use the Controller you would like to add..., which means you should turn a knob or move a slider on your MIDI controller. The entry will subsequently be labeled Drag to any Knob or Slider.... You can then drag and drop the selection cross hair (**3**) onto a parameter control in the user interface. The relevant parameter control will henceforth be assigned to the control element on your MIDI controller.
  Note: If BATTERY does not respond to any movement on your MIDI controller, check if the controller is activated in the MIDI section of the Audio and MIDI Settings dialog (see also ↑3.9.2, Routing Page), or in the MIDI settings dialog of your host application.

(**3**) Selection cross hair: Use the selection cross hair to assign BATTERY's parameter controls to a control mapping entry via drag-and-drop.

(**4**) Value control limitation scale: Use this scale to set minimum and maximum values for the parameter controls being addressed by a MIDI controller or your host software. As an example, this can be helpful when you want to automate a volume slider with a slider on your MIDI keyboard, but you don't want the volume to exceed a certain level after pulling the slider back up.

(**5**) Add New... entry: See (**2**).

3.5   Cell Matrix

The Cell Matrix is the heart of BATTERY, the place where everything performance-related takes place.

A 12x4 Cell Matrix layout.

A few facts about the Cell Matrix that you should be aware of:

▪ The Cell Matrix consists of a flexible number of rows and columns.

▪ It can contain up to 128 cells (16x8).

▪ Each cell can hold up to 128 samples (yes, you can load multiple samples into a cell); in a cell with multiple sample layers, the samples can either be simply layered (i.e., triggering the cell plays all sample layers at once) or velocity-switched (i.e., different velocity levels trigger different samples, e.g., to simulate realistic dynamics; see also ↑3.7.5, Editor Page for further information on editing layers).

▪ You can group cells for editing by multi-selecting them via [Ctrl]-/[Cmd]-click, or by selecting whole rows or columns of cells with the column (1-16) and row (A-H) buttons.

▪ Each cell has an individual Solo and Mute button, but you can also solo and mute whole rows or columns. The Solo button and the Mute button are situated in the lower left side of a cell. The Solo button is the left button, lighting up yellow when activated, the Mute button is the right one, lighting up red.

▪ When you right-click ([Ctrl]-click on Mac OS) a cell, you will be presented with a context menu, which provides numerous editing options; you can assign colors to cells, route cells to various destinations, save and load individual cells or groups of cells etc. Refer to ↑3.5.2, The Cell Context Menu for an overview of the cell context menu.

- Sample editing tools and frequently used cell controls can be found in the Quick Access area below the Cell Matrix (see ↑3.6, Quick Access Area for further information).

3.5.1   About Cell States

A cell can be in any of the following states: **In Focus**, **Selected for Editing**, **Triggered**, and **No Samples Loaded**. Additionally, there are the following visualizations when the Master page of the Edit area (see also ↑3.7, Edit Area) is opened: **In Focus**, **Routed to Current Bus**, **Not Routed to Current Bus**, and **Routed to Current Bus's Side-chain**.

The states are visualized in the following way:

- **In Focus**: When you click on a cell, it gets highlighted with a colored frame (reflecting the cell's color as assigned in its context menu). The cell is now **In Focus** (which means the Quick Access area and the Edit area display parameters specific to that cell), and it is **Selected for Editing** (which means any parameter changes made in the Quick Access area and the Edit area will affect that cell —.see also ↑3.6, Quick Access Area and ↑3.7, Edit Area, respectively) Multiple cells can be **Selected for Editing** (see below), but only one cell can be **In Focus**.

- **Selected For Editing**: You can select multiple cells for editing by [Ctrl]-clicking ([Cmd]-click on Mac OS) them one after another. In this case, only the most recently selected cell will be **In Focus** (as described above), while the other cells will only be **Selected for Editing**. Cells that are only **Selected for Editing** have a gray frame instead of a colored one. All cells that are **Selected for Editing** will be affected by changes made in the Quick Access area and the Edit area. (See also ↑3.6, Quick Access Area and ↑3.7, Edit Area.)

- **Triggered**: The cell body lights up.

- **No Samples Loaded**: Only the Cell Matrix background is visible.

When the Master page in the Edit area is opened:

- **In Focus**: When the Master page in the Edit area is open, cells in focus have a gray frame instead of a colored one. The colored frame is preserved for cells that are routed to the currently selected bus (see below).

- **Routed to Current Bus**: When clicking on one of the buses, all cells routed to that particular bus will display a colored frame (reflecting the cells' color as assigned via their context menus). To route a cell to a bus, simply drag-and-drop the cell onto the bus. (See also Buses section in ↑3.7.6, Master Page).

- **Not Routed to Current Bus**: When clicking on one of the buses, all cells that are not routed to that particular bus will be dimmed.

- **Routed to Current Bus's Side-chain**: When a cell is used to trigger the Master page's Compressor module in side-chain mode, the cell will display SC in its lower right corner. (See also the Buses and the Compressor Module sections in ↑3.7.6, Master Page for further information.)

3.5.2 The Cell Context Menu

The context menu provides various cell-related editing options. To open the context menu:

▶ Right-click ([Ctrl]-click on Mac OS) on a cell in the Cell Matrix.
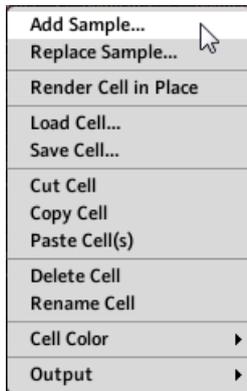
The context menu of a cell.

The following options are available:

- *Add Sample...*: Launches the file browser, where you can navigate through your computer's file structure to select and load a file to the cell. You can also load samples to a cell via drag-and-drop.

- *Replace Sample...*: Launches the file browser, where you can navigate through your computer's file structure to select a file and replace the cell's current content with it.

- *Render Cell in Place*: Selecting this option will re-sample the cell's content, i.e., the cell's sample(s) will be replaced with a re-sampled version of itself including any effects and parameters applied to it. This is a handy tool for sound design, or in case you are running low on CPU power.

- *Load Cell...*: Launches the file browser, where you can navigate through your computer's file structure to select a BATTERY Cell file (*.nbcl) and load it to the current cell.

- *Save Cell...*: Launches the file browser, where you can navigate through your computer's file structure to select a folder to save the Cell to. The Cell will be saved as a BATTERY Cell file (*.nbcl).

- *Cut Cell*: Cuts the cell including its content and settings.

- *Copy Cell*: Copies the cell to the clipboard.

- *Paste Cell(s)*: Pastes the content from the clipboard to the currently selected cell(s).

- *Delete Cell*: Empties the cell and resets all cell parameters to a default setting.

- *Rename Cell*: Lets you rename the selected cell.

- *Cell Color*: Opens a submenu where you can assign a color to the cell.

- *Output*: Select an output destination for the cell from here. Available options are *Master* (BATTERY's main output), one of BATTERY's effect/submix *Buses* 1-4, or any of the *Direct Out* channels, which let you bypass BATTERY's main output completely, and route, e.g., directly to a mixer channel in your host software.

3.6   Quick Access Area

The Quick Access area is situated below the Cell Matrix. It provides quick access to the most frequently used tools for cell editing. The Quick Access area consists of the **Waveform Control**, the **Sample Picker**, and the **Quick Access controls**.
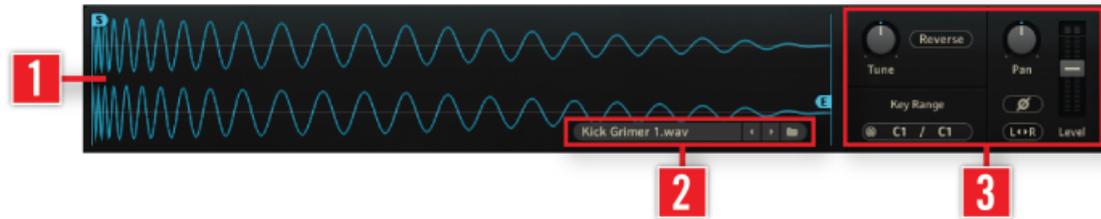
The Quick Access area below the Cell Matrix.

The Quick Access area is present at all times, except for when the Editor page or the Master page is open (refer to ↑3.7.5, Editor Page and ↑3.7.6, Master Page for further information).

These are the sections and controls:

(**1**) Waveform Control: Adjust the start and end points of a sample, apply envelopes, quick-load samples, and select sample layers from the cell for editing:

- Sample Start/End markers: Adjust the sample's start and end points by clicking and dragging the start (S) and the end markers (E), respectively.

- Volume Envelope overlay: Only visible when the Volume Envelope module on the Main page is active (refer to ↑3.7.1, Main Page for information on how to adjust the volume envelope settings).

- Pitch Envelope overlay: Only visible when the Pitch Envelope module on the Main page is active (refer to ↑3.7.1, Main Page for information on how to adjust the volume envelope settings).

- Zooming/scrolling: Click and drag up/down anywhere in the waveform to zoom in/out on the sample, respectively. Click and drag left/right anywhere in the waveform to scroll left/right in the sample.

(**2**) Sample Picker: Displays the name of the currently loaded sample / sample layer. The adjacent arrow buttons allow you to quick-load other samples into the cell. This works in two ways:

- In case the current sample was loaded via the Files Browser (see also ↑3.4.2, Files Browser) or per drag-and-drop, clicking on the arrow buttons will load **the next/previous sample available in the current sample's folder**.

- If the current sample was loaded via the Library Browser (see also ↑3.4.1, Library Browser), clicking on the arrow buttons will load **the next/previous sample available in the Library**, taking into account the tags you have used to narrow down your selection when loading the current sample.

Whenever there is more than one sample layer in a cell, an additional drop-down menu appears on the left side of the sample name field. From that menu, you can select the sample layer to be displayed and edited in the Waveform Control.

> ⚠ Keep in mind that the controls on the right side of the Waveform Control (Tune, Pan etc.) affect the whole cell, not the individual sample layers! Tuning, panning, and volume settings for individual sample layers can be done from the Editor page (see also ↑3.7.5, Editor Page).

(**3**) Quick Access controls: This area controls the basic sonic characteristics, and the MIDI key assignments of the selected cell(s).

- Tune knob: Click and drag this knob to change the pitch of the cell (and all sample layers contained). The range is three octaves up (turning the knob to the right), and three octaves down (turning the knob to the left). [Shift]-click + drag to finely adjust this parameter.

- Reverse button: Click this button to reverse playback for the cell (and all sample layers contained).

- Pan knob: Click and drag this knob to position the cell in the stereo field. [Shift]-click + drag to finely adjust this parameter.

- Level meter/slider: Monitors the cell's output level. Click and drag the slider up/down to adjust the level. [Shift]-click + drag to finely adjust this parameter.

- Key Range control: Determines the MIDI note(s) that trigger the cell. For example, a Key Range of C2 / C2 means that the cell will play only upon receiving data from MIDI note C2. If you set it to C1 / E1, then all notes in that range will trigger the cell, i.e., C1, C#1, D1, D#1, and E1.
  You can double-click the field and enter an alphanumeric value, or click the Learn button (the MIDI symbol button) and press two keys on your keyboard, one after the other. Make sure the Selection Follows MIDI Input button in the Header (see also ↑3.3, Header) is deactivated when using the Learn button, otherwise the cell focus will switch to another cell when pressing a key on your keyboard.

- Phase Invert button: Inverts the phase of the cell.

- L/R Swap button: Swaps the stereo channels of the cell.

3.7   Edit Area

The Edit area is where advanced cell and Kit processing takes place: apply effects and enve-lopes to cells; edit the triggering behavior of sample layers in a cell; modulate your sounds with a variety of sources; route cells to various destinations (via buses); and apply master effects. Take your creativity to the max by manipulating samples with anything from subtle to extreme.

The Edit area with the Main page opened.

The Edit area is organized in themed pages, which you will access by clicking on the relevant tab in the lower portion of the user interface. The following pages are there:

- Main page: see ↑3.7.1, Main Page for further information.

- Effects page: see ↑3.7.2, Effects Page for further information.

- Modulation page: see ↑3.7.3, Modulation Page for further information.

- Setup page: see ↑3.7.4, Setup Page for further information.

- Editor page: see ↑3.7.5, Editor Page for further information.

- Master page: see ↑3.7.6, Master Page for further information.

3.7.1 Main Page

The Main page holds the basic tools for tinkering with the sound of the individual cells of your Kit; pitch and volume envelope modules, basic filters, a sample engine selection, a one-knob compressor, and send controls for delay and reverb effects can be found here.

The Main page in the Edit area.

Refer to the following sections for descriptions of the individual modules on the Main page.

Volume Envelope Module

Apply a volume envelope to the currently active cell from here. You can see the envelope shape against the waveform in the Waveform Control (see also ↑3.6, Quick Access Area) when hovering over this module.

The Volume Envelope module.

The controls are:

- Power button: Activates/deactivates the envelope.

- Envelope mode selectors: The two envelope symbols on the right side of the section header let you choose between two basic types of volume envelope: AHDSR (**A**ttack, **H**old, **D**ecay, **S**ustain, **R**elease), which is represented by the left envelope symbol, and AHD (**A**ttack, **H**old, **D**ecay), which is represented by the right envelope symbol. Typically, the AHDSR envelope is for sustained samples while the AHD envelope is more for "one-shot" sample playback. AHD mode disables the Sustain and Release controls below.

- Attack knob: Determines the time it takes for the envelope to reach its maximum level.

- Hold knob: Determines how long the envelope will remain at its maximum level. Set this to 10-30ms to add punch to the signal.

- Decay knob: Determines the time it takes for the envelope to fall from the hold level to the sustain level.

- Sustain knob: Determines the level that will be maintained in the sustain phase as long as the incoming MIDI note is held. Sustain control is not available in AHD mode (see envelope mode selectors description above).

- Release knob: Determines the time it takes to return to zero level after receiving a MIDI note-off command (i.e., the MIDI trigger ends). Release control is not available in AHD mode (see envelope mode selectors description above).

> ⚠ In case you selected multiple cells before activating the envelope, the most recently selected cell (with a colored frame) will be displayed in the Waveform Control; however, all selected cells (those with a gray frame) will be affected by the envelope settings.

Pitch Envelope Module

Apply a pitch envelope to the currently active cell from here. You can see the envelope shape against the waveform in the Waveform Control when hovering over this module.

The Pitch Envelope module.

The controls are:

- Power button: Activates/deactivates the envelope.

- Envelope mode selectors: The two envelope symbols on the right side of the section header let you choose between two types of pitch envelope: standard mode (with Amount, Decay 1, Break, and Decay 2 controls), which is represented by the left envelope symbol, and easy mode (with only an Amount, and a Decay control), which is represented by the right envelope symbol.

- Amount knob: Sets the degree to which the envelope affects pitch.

- Decay 1 knob: Edits the time for the envelope to go from its initial level (as set with the Amount control) to the level set with the Break knob.

- Break knob: This control adjusts the point where the envelope *breaks*, i.e., the min/max value from where it moves back towards zero (the pitch can be either higher or lower than the cell's normal pitch).

- Decay 2 knob: This determines how long it takes for the level set with the Break knob to decay back to zero again.

> ⚠ In case you selected multiple cells before activating the envelope, the most recently selected cell (with a red frame) will be displayed in the Waveform Control; however, all selected cells (those with a gray frame) will be affected by the envelope settings.

Velocity Module

Lets you adjust how much the input velocity will affect the volume and pitch of the triggered cell(s).
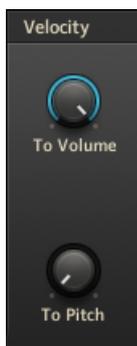
The Velocity module.

The controls are:

- To Volume knob: When set to 0 %, velocity will not affect the volume of the triggered cell, i.e., no matter how hard you hit the key or pad, the output volume will always be 100% of the cell's volume setting. Turning the knob all the way to the right will translate the input velocity to a percentage of the cell's volume level (with an underlying minimum value of -inf dB).

- To Pitch knob: When set to 0 st., velocity will not affect the pitch of the triggered cell, i.e., no matter how hard you hit the key or pad, the cell will always play at its original pitch. Turning the knob to the right will translate the input velocity to semitones (with an underlying minimum value of 0 st., and a maximum value of +12 st.)

Engine Module

The engine module allows you to select between two basic sampler engine modes: Sampler mode and Stretch mode. The former has an additional submode that emulates the sound of two legendary hardware samplers. An additional mode, Beat mode, is available for samples containing timing information, such as REX files, ACID wav files, and Apple Loop files.

The Engine module.

The controls are:

- Sampler: In Sampler mode, BATTERY stores sample data in the system memory, reads it out from memory, and applies any needed pitch-shifting by re-sampling the audio data.

  ◦ Standard button: Activates BATTERY's standard sampler engine.

- ◦ Vintage button: Activates vintage interpolation modes, which emulate the sonic characteristics of two legendary samplers often used in Hip Hop and electronic music. With Vintage mode active, you can select one of the sampler emulations from the drop-down menu below.

▪ Stretch: In Stretch mode, BATTERY uses granular synthesis to alter sample speed while preserving the original pitch information.

- ◦ Standard button: Activates BATTERY's standard stretch engine, with individual Grain control (determines the size of the sound particles used for resynthesis); Speed control (changes the playback rate independently of pitch; the length values are expressed as percentage, e.g., 100% plays back the sound at the original speed, 200% doubles the speed, 50% halves the speed etc.; a value of 0 stops playback entirely and freezes the sound), and Smooth control (adjusts the amount of granular micro-envelopes to reduce unwanted artifacts, thus, altering the sonic character of the re-synthesis process; note that small values generally cause a buzzier sound).

- ◦ Pro button: Activates BATTERY's Pro stretch engine. Use the Speed control to change the length of the sample(s). The length values are expressed as percentage of the original length.

▪ Beat: When you load a sample containing timing information (such as a REX file, an ACID wav file, or an Apple Loop file) into a cell in BATTERY, the Engine module will automatically be set to Beat mode. The individual slices of the sample will play back at the speed determined by the module's controls, or synchronized to BATTERY's internal clock (or that of your host application), depending on the module's settings in its Sync menu. These are the controls:

- ◦ Expand button: Click this button to expand the individual slices of the sample to individual cells in BATTERY, starting with the next empty cell. In BATTERY's preferences (see also ↑3.8.4, Loading Page), there is also a setting to make this the default behavior.

- ◦ Sync menu: Selecting *Sync Off* uncouples the sample from BATTERY's internal tempo, or that of your host software. Selecting one of the note values synchronizes the sample's slices to the beats of BATTERY's internal clock (or that of your host software).

- ◦ Speed button: The Speed knob alters the sample's playback speed without altering its pitch.

◦ Smooth button: Adjusts the attack and release of the individual slices to prevent clicks.

Filter Module

A simple high-pass / low-pass filter to be applied to the selected cell(s).

The Filter module.

The controls are:

▪ Power button: Activates/deactivates the filter.

▪ High Cut handle: Sets the frequency above which the signal will be attenuated.

▪ Low Cut handle: Sets the frequency below which the signal will be attenuated.

Compressor Module

A one-knob control feedback compressor to smooth out the audio signal.

The Compressor module.

The controls are:

- Power button: Activates/deactivates the module.

- VU meter: Displays the amount of gain reduction in real-time.

- Amount knob: Adjusts the amount of compression.

Sends Module

Contains two knobs that control the amount of the signal to be sent to the delay and reverb units in the Master page (see also ↑3.7.6, Master Page).

The Sends module.

The controls are:

- ▪ Delay knob: Determines the amount of signal to be sent to the Delay module on the Master page.

- ▪ Reverb knob: Determines the amount of signal to be sent to the Reverb module on the Master page.

> ⚠ Refer to ↑3.7.6, Master Page for instructions on adjusting the delay and the reverb module.

3.7.2   Effects Page

The Effects page is where you can apply effects to a cell's audio output to enhance its sonic richness or make it blend in with the mix.

The Effects page in the Edit area.

Refer to the following sections for descriptions of the individual modules on the Effects page. For information on effect presets, see ↑2.3.1, Effect Presets.

Saturation Module

The Saturation module provides expansion/compression/saturation effects for the selected cell(s). Unlike a standard audio compressor/expander, saturation works on individual sample bits, not the overall sound. Therefore it can greatly alter the sound of even the shortest samples.

The Saturation module.

The controls are:

- Power button: Activates/deactivates the module.

- Preset menu (arrow button): Opens the Preset menu. The Saturation module comes with the following factory presets:

  ◦ *Classic*: *Classic Distortion*

  ◦ *Drums*: *Cranked*, *Dirty Kick*

  ◦ *Tape*: *Aggressive Tape*, *Warm Tape*

- Saturation type selection menu: Provides you with three basic types of saturation: Classic, Drums, and Tape.

- Gain knob: Controls the input gain of the effect. This will increase the amount of tape distortion and compression.

- Warmth knob: Controls the low frequency boost/cut of the effect. (Only available in Tape saturation mode.)

- HF knob: Controls the high frequency roll-off starting frequency. Frequencies above this point will be attenuated. (Only available in Tape saturation mode.)

- Output knob: Controls the output gain of the effect.

LoFi Module

The Lo-fi module decreases the quality of the audio signal by lowering the resolution or sample rate, and by adding noise and coloration to it.

The LoFi module.

The controls are:

- Power button: Activates/deactivates the module.

- Preset menu (arrow button): Opens the Preset menu. The LoFi module comes with the following factory presets:

  ◦ *8bit Lofi*

  ◦ *Crackle*

  ◦ *Dark Bitcrusher*

  ◦ *Noizy*

  ◦ *Oldschool*

- Bits knob: Re-quantizes the signal to an adjustable bit depth. Fractional bit levels (such as 12.4 bits) are possible and can add considerable grit. Audio CDs have a quantization depth of 16 bits, old samplers frequently used 8 or 12 bits, and 4 bits evoke memories of countless irritating children's toys.

- **Hertz** knob: Re-samples the signal to an adjustable sample rate. The re-sampling is done without any kind of (usually mandatory) low-pass filtering, which causes all kinds of wonderful aliasing artifacts. The sample rate goes all the way down to 50 Hz, which will not leave much of the original signal.

- **Noise** knob: Adds hiss to the audio signal.

- **Color** knob: Adjusts the frequency characteristic of the noise and acts as a low-pass filter.

- **Output** knob: Adjusts the module's output level.

Filter / EQ Module

The Filter / EQ module changes the frequency characteristics of the signal (cell) passing through it in various ways. A filter is basically a special kind of amplifier that changes gain only at specific frequencies of the signal, either boosting or cutting those.

The Filter / EQ module.

The controls are:

- Power button: Activates/deactivates the module.

- Preset menu (arrow button): Opens the Preset menu. The Filter / EQ module comes with the following factory presets:

  - *Solid G-EQ*: *Solid G-EQ Loudness*

  - *3-Band EQ*: *3-Band EQ Kick Fattener*, *3-Band EQ Telephone Setting*

  - *Lowpass*: *4 Pole Lowpass*

◦ *Highpass*: *2 Pole Highpass*

◦ *Bandpass*: *4 Pole Bandpass*

◦ *Peak/Notch*: *Notch Filter*

◦ *Effect*: *Formant Filter*

▪ Filter / EQ type selection menu: There are several filter modes available from the selection menu, which all affect the sound differently:

◦ Solid G-EQ: The Solid G-EQ is modeled on high-quality analog circuitry. It is a 4-band parametric EQ.
The adjustable filter bands are: L (low frequency band); LM (low-mid frequency band); HM (high-mid frequency band); and H (high frequency band). They can be selected with the tab buttons above the controls.
The available controls are: Freq (adjusts the center frequency of the frequency band, at which the boost or cut will occur); Bell button (toggles the bell shape of the frequency band — only available for L and H bands); Q (as it were, a bandwidth control — only available for LM and HM); Gain (adjusts the amount of boost or cut at the frequency band); Output (adjusts the module's output level).

◦ 3-band EQ: This is a classic 3-band EQ. Each of the three bands has three parameter knobs: Freq (adjusts the center frequency of the frequency band, at which the boost or cut will occur), BW (adjusts the range of frequencies over which boosting or cutting occurs, from narrow to broad), and the Gain (controls the amplitude increase after the filter, which can be used to compensate for amplitude reduction due to the filter, or to increase the soft saturation of the effect).

◦ Lowpass: This mode contains filters which attenuate signals above the cutoff frequency, allowing low frequency signals to pass through; hence, the name lowpass.
The available filters are: Ldr 1P (1-pole lowpass which attenuates frequencies above the cutoff at a rate of -6 dB/octave); Ldr 2P (2-pole lowpass, which attenuates frequencies above the cutoff at a rate of -12 dB/octave); Ldr 4P (4-pole lowpass which attenuates frequencies above the cutoff at a rate of -24 dB/octave); and Daft (a more aggressive 2-pole lowpass filter which attenuates frequencies above the cutoff at a rate of -12 dB/octave). They can be selected with the tab buttons above the controls.
The following controls are available per filter: Cutoff (adjusts the frequency above which signals will be attenuated.); Reso (with a value greater than 0, this control will

boost a small frequency range around the cutoff frequency); and Gain (controls the amplitude increase after the filter, which can be used to compensate for amplitude reduction due to the filter, or to increase the soft saturation of the effect).

∘ Highpass: This mode contains filters that attenuate signals below the cutoff frequency, allowing high frequency signals to pass through, hence, the name highpass.
The available filters are: Ldr 1P (1-pole highpass which attenuates frequencies below the cutoff at a rate of -6 dB/octave); Ldr 2P (2-pole highpass which attenuates frequencies below the cutoff at a rate of -12 dB/octave); Ldr 4P (4-pole highpass which attenuates frequencies below the cutoff at a rate of -24 dB/octave); and Daft (a more aggressive 2-pole highpass filter which attenuates frequencies below the cutoff at a rate of -12 dB/octave). They can be selected with the tab buttons above the controls.
The following controls are available per filter: Cutoff (adjusts the frequency below which signals will be attenuated); Reso (with a value greater than 0, this control will boost a small frequency range around the cutoff frequency); and Gain (controls the amplitude increase after the filter, which can be used to compensate for amplitude reduction due to the filter, or to increase the soft saturation of the effect).

∘ Bandpass: This mode attenuates signals above and below the cutoff frequency (or more correctly, the resonant frequency).
The available filters are: Ldr 2P (ladder circuit 2-pole bandpass which attenuates frequencies above and below the cutoff at a rate of -12 dB/octave); Ldr 4P (ladder circuit 4-pole bandpass which attenuates frequencies above and below the cutoff at a rate of -24 dB/octave); SV 2P (clean 2-pole bandpass which attenuates frequencies above and below the cutoff at a rate of -12 dB/octave); and SV 4P (clean 4-pole bandpass which attenuates frequencies above and below the cutoff at a rate of -24 dB/octave). They can be selected with the tab buttons above the filter controls.
The following controls are available per filter: Cutoff (adjusts the frequency below which signals will be attenuated); Reso (with a value greater than 0, this control will boost a small frequency range around the cutoff frequency); and Gain (controls the amplitude increase after the filter, which can be used to compensate for amplitude reduction due to the filter, or to increase the soft saturation of the effect).

∘ Peak/Notch: A notch filter removes a specific frequency band from the signal. It can be thought of as the inverse of a bandpass filter — in fact, it is sometimes referred to as a "band reject" filter. A peak filter, on the other hand, is quite different - it simply adds a resonant peak to the signal, without doing much attenuation to the signal.
The available filters are: Ldr Peak (unique filter that accents frequencies at the cut-

off); Ldr Notch (cuts two narrow bands of frequencies at either side of the cutoff); SV Notch (clean 4-pole notch filter which attenuates frequencies at the cutoff); and SV BR (band reject filter, which attenuates frequencies at the cutoff). They can be selected with the tab buttons above the filter controls.

The following controls are available per filter: Cutoff (adjusts the frequency below which signals will be attenuated); Reso (with a value greater than 0, this control will boost a small frequency range around the cutoff frequency); and Gain (controls the amplitude increase after the filter, which can be used to compensate for amplitude reduction due to the filter, or to increase the soft saturation of the effect — this one is only available for Ldr Peak and Ldr Notch).

- ◦ Effect: Filters in this category don't match any of the traditional filter characteristics, and are suited for special effects.

  The available filters are: Frm 1 (a formant filter, designed to mimic the frequency response of the human vocal tract, which can be used to emulate the talk box effect); Frm 2 (a formant filter with slightly different characteristics compared to Frm 1, designed to mimic the frequency response of the human vocal tract — it can also be used to emulate the talk box effect); Vow A (vowel filter that simulates the resonant frequencies of the human vocal tract); Vow B (vowel filter that simulates the resonant frequencies of the human vocal tract, like Vow A but with slightly different characteristics); and Phaser (creates a distinct comb filter effect by using an allpass filter design that radically alters the phase relations in your signal). They can be selected with the tab buttons above the filter controls.

  The following controls are available for the vowel filters and the phaser: Cutoff (adjusts the frequency below which signals will be attenuated); and Reso (with a value greater than 0, this control will boost a small frequency range around the cutoff frequency).

  The formant filters have the following controls: Talk (controls the frequency response of the filter, which can be used to morph between vowel sounds); and Sharp (increases and decreases the peaks and notches in the response, analogous to the resonance control of the other filters); Size (controls the center of the frequency response, analogous to the cutoff control of the other filters).

⚠️ Filters require a fair amount of CPU power, so make sure they are turned off when not needed.

Compressor Module

Add punch and control dynamics with the compressor module. Compression is a signal processing technique that is commonly used in recording. It reduces peaks and raises low-level signals to produce a higher average signal level.

The Compressor module.

The controls are:

- Power button: Activates/deactivates the module.

- Preset menu (arrow button): Opens the Preset menu. The Compressor module comes with the following factory presets:

  ◦ *Pro*: *Slammed*

  ◦ *Solid Bus*: *Drum Bus*, *Master Setting*, *Nice and Punchy*, *Parallel Compression*

- Compressor mode selection menu: Lets you select one of the three available compressor modes Solid Bus Comp, Classic, and Pro.

- Thresh knob: Sets the level above which compression begins. E.g., with a threshold of -10dB, signals below that level will be relatively unaffected, but signals above that level will be attenuated. The degree of attenuation is set with the Ratio knob.

- Ratio knob: Indicates the ratio of input-signal-to-output-signal once a signal exceeds the threshold. E.g., a ratio of 3:1 means that if a signal is above the threshold, a 3dB increase in input level yields only a 1dB increase in output level.

- Attack knob: Determines how long it takes for the compression effect to kick in once the input signal exceeds the threshold. The higher the value, the more percussive the effect, with the tradeoff being higher peak levels. Lower values result in a more squashed sound, but keep peaks to a minimum.

- Release knob: Sets how long it takes for the compressor gain to return to normal after the input signal has gone below the threshold.

- Makeup knob: The Makeup knob is only available in Solid Bus Comp mode. It lets you compensate for the gain reduction during compression. This only affects the processed signal, so if you turn the Mix knob all the way left (see below), you will hear no difference.

- Mix knob: The Mix knob is only available in Solid Bus Comp mode. It lets you adjust the ratio between mixed and original signal. In other words, if you turn the knob all the way to the left, you will hear the signal as if the compressor was being bypassed; however, the Output knob (see below) will still affect the overall output level of the signal. Setting the knob all the way right, you will hear only the processed signal.

- Output knob: Adjusts the output level of the module.

> Mysterious compression increases: If it seems like there's been a sudden increase in compression without increasing the compression amount, the input signal going to the compressor may have increased.

> Compression requires a fair amount of CPU power, so make sure the module is turned off when not needed.

TM (Transient Master) Module

The Transient Master is an easy to use compressor, designed to control the attack and sustain of a sound. Instead of following the amplitude of the sound like a traditional compressor, it follows the general envelope and is not as susceptible to changes of input gain. It is best used on sounds with fast attacks, like percussion, pianos or guitars. The Transient Master can also be quite extreme in some cases, so use it with caution.

The TM module.

The controls are:

- Power button: Activates/deactivates the module.

- Preset menu (arrow button): Opens the Preset menu. The TM module comes with the following factory presets:

  ◦ *British Setting*

  ◦ *No Attack*

  ◦ *Room Remover*

  ◦ *Snare Enhancer*

  ◦ *Tight Kick*

- Attack knob: Controls the scaling of the attack portion of the input signal's volume envelope. Increasing this parameter will add more punch and decreasing it will reduce sharp attacks.

- Sustain knob: Controls the scaling of the sustain portion of the input signal's volume envelope. Increasing this parameter will add more body to the sound and decreasing it will reduce the sound's tail.

- Input knob: Controls the input gain to the effect.

- Output knob: Controls the output gain after the effect. For dynamic effects like compressors, this is very important.

3.7.3 Modulation Page

The Modulation page allows you to modulate your sound with a variety of sources, including LFOs (**L**ow **F**requency **O**scillators), envelopes, aftertouch, and external MIDI controllers.

The Modulation page in the Edit area.

This can not only add dynamics and color to a patch, but in conjunction with a software sequencer host, it can automate functions that add dramatic, real-time changes. Since these modulation sources can also be MIDI controllers, it's possible to feed signals from external hardware MIDI fader boxes and manipulate the sound as a real-time performance. If you record these signals in a sequencer, you can have the best of both worlds: real-time improvisation and signal warping, recorded as automation data for later playback.

Refer to the following sections for descriptions of the individual modules on the Modulation page.

LFO 1 and LFO 2 Modules

The LFOs (**L**ow **F**requency **O**scillators) provide a periodic modulation effect.

The LFO modules.

The controls are:

- Waveform selection menu: Choose from sine, saw, pulse, or random waveform here.

- Sync selection menu: This syncs the frequency to BATTERY's internal tempo, or to your host's tempo when using BATTERY as a plug-in in sync mode (see also "Tempo display/control and Sync button" in ↑3.3, Header). In the latter case, the Frequency (Freq.) knob indicates note values rather than an absolute rate.

- Retrigger button: When enabled, the LFO cycle is retriggered on each incoming note.

- Freq knob: Varies the LFO modulation rate.

- Attack knob: Sets the time over which the LFO signal fades in after triggering.

- PW knob: The pulse width knob changes the waveform's duty cycle. For example, it can continuously vary the square waveform's width.

Modulation Envelope Module

The envelope adds a modulation signal that varies over time in a non-periodic way.

The Modulation Envelope module.

The controls are:

- Envelope mode selection menu: The two envelope symbols on the right side of the module header let you choose between two basic types of volume envelopes:

  ◦ AHDSR (left): An AHDSR (**A**ttack, **H**old, **D**ecay, **S**ustain, **R**elease) envelope. Typically the AHDSR envelope is for samples with a significant sustain time (especially when played from a MIDI keyboard).

  ◦ AHD (right): A simple AHD (**A**ttack, **H**old, **D**ecay) envelope. This envelope is well suited for one-shot sample playback.

- Curve knob: Sets the shape of the envelope curves from concave, to linear (0), to convex.

- **Attack** knob: Determines the time it takes for the envelope to reach its maximum level.

- **Hold** knob: Determines how long the envelope will remain at its maximum level. Set this to 10-30ms to add punch to a signal.

- **Decay** knob: Determines the time it takes for the envelope to fall from the held level to the sustain level.

- **Sustain** knob: Determines the level that will be maintained in the sustain phase as long as the incoming MIDI note is held. Sustain control is not available in AHD mode.

- **Release** knob: Determines the time it takes to return to zero level after receiving a MIDI note-off command (i.e., the MIDI trigger ends). Release control is not available in AHD mode.

Modulation Slots Module

This module provides up to eight modulation paths on two pages (1 - 4 and 5 - 8), each selected by a corresponding drop-down menu.

The Modulation Slots module.

A modulation path consists of a modulation source and a modulation destination. The amount slider determines the amount of modulation.

> ⚠ Please note that certain modulation sources cannot be routed to certain targets. These targets will not be available as an option from the corresponding modulation destination selection menu on the right side.

The controls are:

- Modulation Source selection menu: Selects the modulation source. Available modulation sources are:

  ◦ *None* (no modulation)

  ◦ *Velocity*

  ◦ *Pitchbend*

  ◦ *Poly AfterTouch* (polyphonic aftertouch)

  ◦ *Mono AfterTouch* (monophonic channel aftertouch)

  ◦ *Key Position*

  ◦ *MIDI CC* (MIDI controllers)

  ◦ *Random Unipolar*

  ◦ *Random Bipolar*

  ◦ *Constant*

  ◦ *Release Velocity*

  ◦ *LFO1*

  ◦ *LFO2*

  ◦ *Modulation Envelope*

  ◦ *Volume Envelope*

  ◦ *Pitch Envelope*

- Inv. button: Changes the amount of the Modulation Amount slider into a negative value.

- Modulation Amount slider: Determines the depth of the effect on the modulation destination. The range is from 0% to 100%. If any combination of modulations exceeds an effect level of 100%, the value will be limited to the maximum value.

- Modulation Destination selection menu: Selects the modulation destination. Available modulation destinations are:

  ◦ *None*

  ◦ *Volume*

- ◦ *Pan*

- ◦ *Tune*

- ◦ *Saturation*

- ◦ *Lo-Fi*: *Bits*, *Hertz*, *Noise Level*.

- ◦ *Solid G-EQ*: *L Frequency*, *L Gain*, *LM Frequency*, *LM Q*, *LM Gain*, *HM Frequency*, *HM Q*, *HM Gain*, *H Frequency*, *H Gain*.

- ◦ *3-Band EQ*: *Band 1 Frequency*, *Band 1 Bandwidth*, *Band 1 Gain*, *Band 2 Frequency*, *Band 2 Bandwidth*, *Band 2 Gain*, *Band 3 Frequency*, *Band 3 Bandwidth*, *Band 3 Gain*.

- ◦ *Filter*: *Cutoff*, *Resonance*.

- ◦ *Formant Filter*: *Talk*, *Sharp*, *Size*.

- ◦ *LFO 1*: *Frequency*, *Intensity Multiply*, *Intensity Add*.

- ◦ *LFO 2*: *Frequency*, *Intensity Multiply*, *Intensity Add*.

- ◦ *Modulation Envelope*: *Attack*, *Hold*, *Decay*, *Sustain*, *Release*, *Intensity Multiply*, *Intensity Add*.

- ◦ *Volume Envelope*: *Attack*, *Hold*, *Decay*, *Sustain*, *Release*, *Intensity Multiply*, *Intensity Add*.

- ◦ *Pitch Envelope*: *Decay 1*, *Break*, *Decay 2*.

- ◦ *Sample Start*

- ◦ *Loop Start*

- ◦ *Loop Length*

> If for some reason the modulation intensity is not sufficient, you can route several modulation strips to one destination!

3.7.4 Setup Page

The Setup page provides tools specifically designed for drum playing and programming. You can use them to fine-tune cells/Kits, or create totally new sounds out of the existing library content. All effects/parameters are cell-based, which means that each cell can have totally different settings.
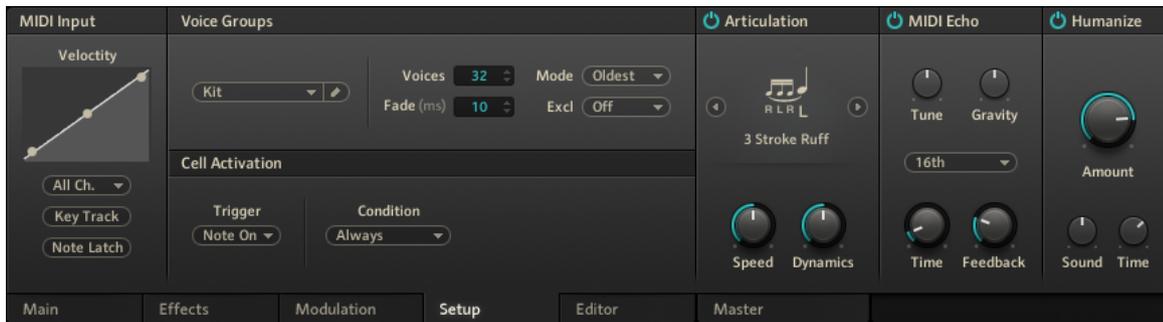
The Setup page in the Edit area.

Refer to the following sections for descriptions of the individual modules on the Setup page.

MIDI Input Module

The MIDI Input module lets you customize the MIDI channel and velocity response of cells, and change their trigger behavior.


The MIDI Input module.

The controls are:

- Curve: Use the handles to adjust the velocity curve for a cell.

- MIDI channel drop-down menu: Specify whether a cell should receive data from all MIDI channels, or only a specific MIDI channel with this menu.

- Key Track button: When activated (lit) and the key range exceeds one note (see also "Key Range control" in ↑3.6, Quick Access Area), all samples in the current cell will change pitch in response to the MIDI input. E.g., if the key range is C1-D1 and you play D1 with Key Track on, the pitch will be two semitones higher than if you had played C1. When disabled, the cell's pitch will be determined solely by its root key and the Tune knob (see also ↑3.6, Quick Access Area).

- Note Latch button: Activate this button to "latch" incoming notes, i.e., play a note to trigger the sample, play the note again to stop it.

Voice Groups Module

The Voice Groups module allows you to create virtual groups with limited voices. This can be useful when, e.g., simulating a real drum set, where an open and a closed hi-hat would never occur at the same time; you'd assign both cells to a voice group and set the Voices setting to 1, which would allow only one of the cells in the voice group to play at a time. But there can be a number of creative reasons for using voice groups.
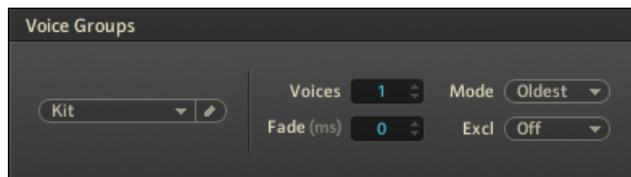
The Voice Groups module.

The controls are:

- Voice group selection menu: Assign a cell to either no voice group (this is the default Kit setting), or to any of the 128 available voice groups from here. Use the pencil button to rename a voice group for more transparency.

- Voices display: Set the number of voices allowed for the given voice group (1 to 127) with this control.

- **Mode** menu: Select a mode to decide which notes to "steal" if the voice group runs out of voices. You can choose from: *Kill Any* (any note is removed); *Kill Oldest* (the earliest note played is removed); *Kill Newest* (the last note played is removed); *Kill Highest* (the highest note played is removed); or *Kill Lowest* (the lowest note is removed). E.g., if the voice group allows for three simultaneous voices, and you play four notes in a row, the first note will be muted in order for the fourth note to be audible when you set the Mode to *Kill Oldest*.

- **Fade (ms)** display: This sets the time that voices overlap before cutting each other off completely (i.e., the previously played voice sustains for a while even after a new voice has been triggered). This prevents an overly abrupt transition between voices. Available settings are 0 to 999 milliseconds.

- **Excl** menu: This is an advanced programming feature that allows for even more complex muting schemes; assign multiple voice groups to an exclude group to make the assigned groups mute each other.

> You could assign a "silent" sample (no sound) to a group so that triggering this cell turns off any loops that are playing, and silences the output.

> Take some hi-hat sounds and set them to exclusive voice groups, for example with the open hi-hat assigned to voice group 1 and the closed hi-hat to voice group 2. Now the open hi-hat sound can be set to more voices, five for example. This allows some "trails" to be heard. The second voice group can be set to one voice. Both of these groups should now be assigned to exclude group 1. With this setup, you obtain the effect of trailing drum sounds while having a controlled polyphony (voice group 1) and you can still mute that group with the closed hi-hat.

Cell Activation Module

The Cell Activation module allows you to determine conditions under which a cell is allowed to be triggered. Usually a cell is triggered upon receiving a MIDI note, which is expressed by the default settings of Trigger being set to *Note On*, and Condition being set to *Always* in this module.
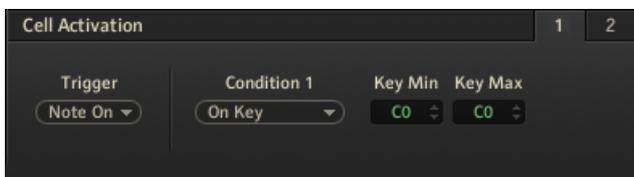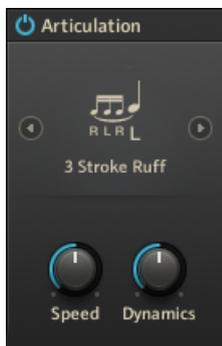
The Cell Activation module.

The controls are:

- Tabbed pages 1 and 2: The pages provide you with two menus for setting up nested conditions. Page 2 is only available when Condition 1 is not set to *Always*.

- Trigger selection menu: A cell can be triggered either by a *Note On* command (default setting) or a *Note Off* command. If you choose *Note Off*, the cell will be triggered when you release the key. Velocity and duration will work the same way as with *Note On*, only after you release the note. This is important when combining the *Note Off* trigger with articulations such as Roll or Geiger Counter in the Articulation module.

- Condition 1 and 2: The Condition menus provide the following options:

  ◦ *Always*: *Always* means that there is no condition to be fulfilled for a cell to be triggered by a MIDI note. This is the default setting.

  ◦ *Start on Key*: With this function, you can activate a cell with a specific key/pad (range) on your keyboard. The two key-number fields (Key Min and Key Max) will appear right next to the menu when this option is selected. Here you can set the specific key range that will allow the cell to be triggered by incoming MIDI notes. E.g., if cell A1 is triggered by MIDI note C1 (which you assign with the Key Range controls of the Quick Access area; see also ↑3.6, Quick Access Area), and the Start On Key condition is set to C2/C2, then pressing C2 on your keyboard will activate the cell, that is, you will hear it playing upon pressing C1 on your keyboard. Press C2 again, and the cell will no longer be triggered by the C1 key.

  ◦ *Start on Controller*: This function allows cells to be triggered depending on the position of a MIDI controller, e.g., on the position of the mod wheel. Choose the controller number of the controller you want to use for activating a cell (CC), then set the Min and the Max values in between of which the condition will be fulfilled.

- ◦ *Cycle Round Robin*: This function allows you to cycle through various cells using only one key on your keyboard. It's good to start with an example: select multiple cells and press the Learn button (the MIDI symbol button) in the Quick Access area (see also ↑3.6, Quick Access Area); then hit a key twice on your MIDI keyboard. You have just assigned all selected cells to be triggered by that one MIDI note; now back in the Setup page, set the cell activation to *Cycle Round Robin*. You can now assign a Position in the cycle to each of the selected cells. Let's say you've assigned cells A1 through A6 to be triggered by MIDI note C1, and you have then assigned cells A1 through A6 to the Position numbers *1* to *6* in the cycle; the cells will then play successively when you hit MIDI note C1 on your controller repeatedly.
Once you get the hang of it, this can turn out to be a very frequently used feature. Position sets the position of the cell in the cycle; Cycle Nr. is used to set up further cycles that run simultaneously to the first one; Reset CC is used to assign a MIDI note to reset the relevant cycle to position 1.

- ◦ *Cycle Random*: This works the same way the *Cycle Round Robin* function does, only you cannot influence the order of the cells being played.

Articulation Module

Use Articulation to add articulation presets to your performance. It is important to note that each articulation can sound different on different instruments. Also, since many of them alter velocity, be sure to check the Velocity To Volume modulation settings in the Velocity module on the Main page (see also ↑3.7.1, Main Page).

The Articulation module.

These are the controls:

- Power button: Activates/deactivates the module.

- Articulation selection menu: There are ten different articulation presets available in the articulation selection menu. Depending on the articulation selected, the buttons below will have different functions. Use them to adjust articulation parameters such as velocity, speed, or depth of the effect:

  - *Alternate Stroke*: Produces sounds that slightly vary in character.

  - *Release Stroke*: Plays the original note and produces a second stroke when you release your MIDI key.

  - *Flam*: Plays two notes in rapid succession, the first of which is a grace note.

  - *Drag*: An exaggerated flam-like effect.

  - *3 Stroke Ruff*: A nice military-style drum effect.

  - *Roll*: A continuous drum roll.

  - *Buzz*: A buzz-like effect.

  - *Muted*: By quickly fading in and out, this produces a "muted" version of your drum sound.

  - *Speed Roll*: A very fast drum roll. The duration of the triggered sample is also shortened, so even though many notes are triggered, the voice count is reasonable.

  - *Geiger Counter*: Produces a random Geiger-like effect.

MIDI Echo Module

The MIDI Echo module can be used to create a variety of tempo-syncable echo effects.

The MIDI Echo module.

The controls are:

- Power button: Activates/deactivates the module.

- Tune knob: Use this control to adjust the tuning of the echoes.

- Gravity knob: Use this control to adjust the gravity of the echoes. When turned clockwise, there'll be less gravity and the echoes get slower. When turned counterclockwise, the echoes get faster.

- Note value selection menu: Set the echo time to either a tempo-based value (which is synchronized to BATTERY's tempo control or your host's tempo), or an absolute time-based value (*Sync Off*), which is independent of the host tempo.

- Time knob: If you select *Sync Off* from the note value selection menu above, the Time knob will let you set an absolute echo time value of 10 to 1000 milliseconds. With sync activated, the value depicted represents the numerator for the note value.

- Feedback knob: Set the number of echoes from 1 to 100. If you feel that adjusting this control has no effect, make sure to check the Velocity To Volume modulation settings in the Velocity module on the Main page (see also ↑3.7.1, Main Page). With a high modulation amount (near 100), the last echoes might not be audible.

Humanize Module

The Humanize module can be used to add a slight randomization to the sonic characteristics and the timing of your performance.

The Humanize module.

The controls are:

- Power button: Activates/deactivates the module.

- Amount knob: Adjusts the amount of randomization of Sound and Time.

- Sound knob: Slightly randomizes the sonic characteristics such as velocity, tune, and volume.

- Time knob: Slightly randomizes the timing of the notes played.

3.7.5 Editor Page

The Editor page contains audio editing tools, a loop editor, and a layer and mapping editor, all of which provide you with extensive editing features for cells, down to the level of editing individual sample layers within a cell.
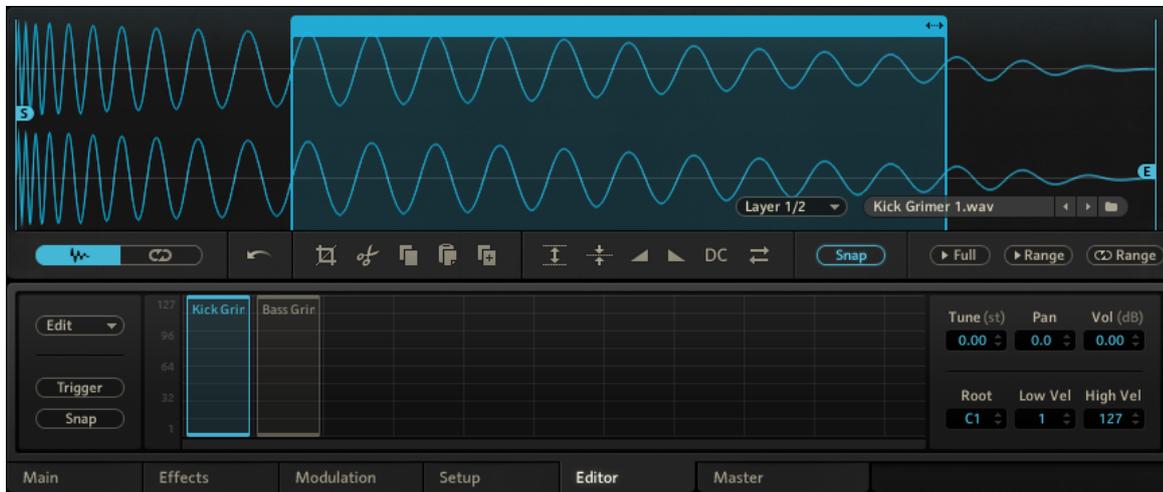
The Editor page.

When you open the Editor page:

- The Quick Access area (see also ↑3.6, Quick Access Area) is converted to a full-blown **Wave and Loop Editor**.

- The Edit area contains the **Mapping Editor**.

Refer to the following sections for descriptions of the individual areas.
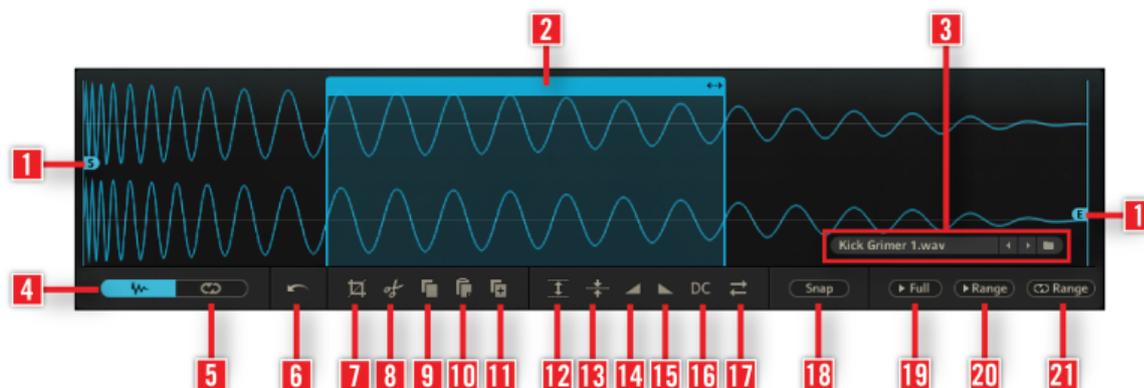
Wave Editor

The Wave Editor allows you to destructively edit the audio samples within a cell. When there are multiple sample layers in a cell, you can edit each of the layers individually.

To open the Wave Editor:

► Click the Wave Editor button below the Waveform Control.

The Wave Editor provides the following controls:

The Wave Editor on the Editor page.

(**1**) Sample Start/End markers: Adjust the sample's start and end point by clicking and dragging the start (S) and the end marker (E), respectively.

(**2**) Sample Region selector: Selects the region to edit. You can adjust the size of the region by clicking and dragging on either side of the Sample Region selector.

(**3**) Sample Picker: Displays the name of the currently loaded sample / sample layer. The adjacent arrow buttons allow you to quick-load other samples into the cell. Whenever there is more than one sample layer in a cell, an additional drop-down menu appears on the left side of the sample name field. From that menu, you can select the sample layer to be displayed and edited in the Waveform Control. Refer to ↑3.6, Quick Access Area for further information on the Sample Picker.

(**4**) Wave Editor button: Opens the Wave Editor in the Waveform Control.

(**5**) Loop Editor button: Opens the Loop Editor in the Waveform Control.

(**6**) Undo button: Undoes the previous operation performed in the Wave Editor.

(**7**) Crop button: Removes all audio data before and after the selected region.

(**8**) Cut button: Cuts out the selected region from the sample.

(**9**) Copy button: Copies the selected region from the sample.

(**10**) Paste button: Pastes audio from the clipboard into the selected region of the sample.

(**11**) Duplicate button: Copies the selected region and appends it at the end of the sample.

(**12**) Normalize button: This adjusts the volume of the selected region to a standard, optimum level.

(**13**) Silence button: Inserts silence in the selected region.

(**14**) Fade In button: Use this to fade your sample in over a selected region.

(**15**) Fade Out button: Use this to fade your sample out over a selected region.

(**16**) DC Correct button: Eliminates DC drifts in the selected region.

(**17**) Reverse button: Reverses the sample.

(**18**) Snap button: When enabled, all markers snap to the next location where the waveform crosses the zero line, or to another marker.

(**19**) Play Full button: Click the Full button to hear the whole sample, from start to finish, which means from Start marker (S) to End marker (E).

(**20**) Play Range button: Click the Range button to hear what's within the Sample Region selector.

(**21**) Loop Range button: Loops the audio material within the Sample Region continuously.
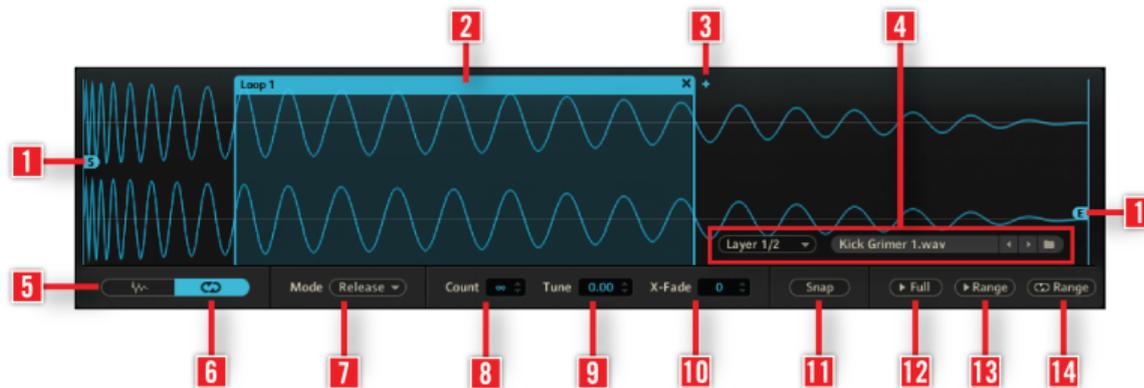
Loop Editor

The Loop Editor allows you to create up to four loop regions in a sample. In case there are multiple sample layers in a cell, you can create loops for each of the sample layers individually.

To open the Wave Editor:

► Click the Loop Editor button below the Waveform Control.

The Loop Editor provides the following controls:

The Loop Editor above the Mapping Editor.

(**1**) Sample Start/End markers: Adjust the sample's start and end point by clicking and dragging the start (S) and the end marker (E), respectively.

(**2**) Loop Region selector: Set the loop region by clicking and dragging on either side of the Loop Region selector. Click on the x in the upper right corner of the selector to delete the loop.

(**3**) Add Loop button: Adds a loop to your sample. In case of more than one loop in your sample, click on an individual Loop Region selector to select it for editing.

(**4**) Sample Picker and Layer Selector: Displays the name of the currently loaded sample / sample layer. The adjacent arrow buttons allow you to quick-load other samples into the cell. Whenever there is more than one sample layer in a cell, an additional drop-down menu appears on the left side of the sample name field. From that menu, you can select the sample layer to be displayed and edited in the Waveform Control. Refer to ↑3.6, Quick Access Area for further information on the Sample Picker.

(**5**) Wave Editor button: Opens the Wave Editor in the Waveform Control.

(**6**) Loop Editor button: Opens the Loop Editor in the Waveform Control.

(**7**) Mode menu: This menu determines whether the loop is played until the volume envelope has passed its release phase (*Loop until End of Envelope*), or to the exact moment the key is released (*Loop until Key Release*).

(**8**) Count display: This control determines the number of times the loop will repeat before continuing to play through the rest of the sample. Possible repetition settings are 0 to 127, and infinite. If you set it to 0, the loop repeats for as long as the key is held.

(**9**) Tune display: Each loop can be tuned independently, from an octave down to an octave up.

(**10**) X-Fade display: The X-Fade function blends some of the end of a loop in with its beginning to create a more seamless loop. The display field shows the length of the section being mixed in (samples being the unit of length here).

(**11**) Snap button: When enabled, loop start and end points will snap to the nearest zero crossing in the waveform to prevent unwanted transition noises; however, some sound designers loop at non-zero-amplitude points to create buzzier sounds. Experiment with snapping to see what works best for you. This feature is global, i.e., all loops in the sample are affected by it.

(**12**) Play Full button: Click the Full button to hear the whole sample, from start to finish, which means from Start marker (S) to End marker (E).

(**13**) Play Range button: Click the Range button to hear what's inside the selected loop.

(**14**) Loop Range button: Loops the material within the loop region continuously.

Mapping Editor

The Mapping Editor allows you to edit sample layers, and to define velocity trigger zones for the sample layers in a cell. In other words, when you drag-and-drop a sample onto a cell, a velocity zone covering the whole velocity range from 1 to 127 is created in the Mapping Editor, which means that no matter how hard or soft you hit the key (or pad) assigned to that cell, the sample will always be triggered. The Mapping Editor allows you to restrict sample layers to be triggered only within certain velocity zones.

The visual representation of the velocity zone is the Sample Block in the Mapping grid. You can also adjust things such as transitioning behavior between sample layers with different velocity zones. Furthermore you can set properties such as tuning and panning for individual layers from the Mapping Editor.

The Mapping Editor.

These are the controls:

(**1**) Edit menu: The Edit menu provides the following options (be aware that the layer-specific options affect only the layers currently selected for editing in the Mapping grid):

- *Add Layer...*: Launches the file browser, where you can navigate through your computer's file structure to select and load a sample layer to the cell. You can also drag-and-drop audio files into the Mapping grid. (Note that when you drag-and-drop an audio file onto a layer in the grid, the layer will be replaced, however, all layer settings — such as tune, pan etc. — stay unaffected.)

- *Cut Layer(s)*: Cuts the currently selected layer(s) from the cell.

- *Copy Layer(s)*: Copies the currently selected layer(s) to the clipboard.

- *Paste Layer(s)*: Pastes a layer(s) from the clipboard to the cell.

- *Delete Layer(s)*: Deletes the currently selected layer(s) from the cell.

- *Set Velocity Crossfades*: If the velocity range over which a layer is triggered overlaps with that of another layer, it is possible to crossfade between the layers to provide a smoother transition. Selecting this menu entry brings up a dotted line in the Sample Block, which represents the crossfade velocity boundaries of the layer. Use the cursor to adjust these boundaries for each individual layer.

- *Remove Velocity Crossfades*: Removes any crossfade velocity boundaries from the selected layers.

- *Stack Layers*: Auto-arranges the cell's layers so that together they span the entire velocity range of the cell in equal shares.

- *Reset Stacked Layers*: Resets all layers so that each one covers the entire velocity range.

- *Auto-Spread Layers*: Auto-arranges the cell's layers so that together they span the entire velocity range of the cell, wherein the upper and lower velocity border of neighboring Sample Blocks meet half way. In case of previously overlapping layers, the borders stay in place.

- *Reset Overlapping Layers*: Auto-arranges overlapping Sample Blocks, wherein the upper and lower velocity border of neighboring Sample Blocks meet half way.

(**2**) Trigger button: When activated, the sample layer is played back when clicking on its Sample Block in the Mapping grid.

(**3**) Snap button: When activated, moving velocity limits snaps to velocity limits of neighboring layers.

(**4**) Sample Block: A Sample Block is the visual representation of a sample layer and its velocity range in the cell.

(**5**) Mapping grid: The Mapping grid allows you to select the individual layers of a cell for editing by clicking on their Sample Blocks. You can also adjust a layer's velocity limits by clicking and dragging the Sample Block's lower/upper borders.

(**6**) Root display: This field sets the original pitch (note center), which usually equals the pitch at which the sample was recorded. The root key also defines the basis for pitch shifting; for each semitone (note) that you deviate from the selected root key note, BATTERY will pitch-shift the selected layer by one semitone. For example, if a layer's Root key is set to C1, and you play a D1 note, the sample will be pitched up by two semitones.

(**7**) Low Vel display: Sets the lower velocity limit of a layer. This is equivalent to clicking and dragging the lower border of the layer's Sample Block.

(**8**) High Vel display: Sets the upper velocity limit of a layer. This is equivalent to clicking and dragging the upper border of the layer's Sample Block.

(**9**) Tune (st) display: Changes tuning of a layer from −12 up to +12 semitones.

(**10**) Pan display: Positions the layer in the stereo field: from -100 (fully left); to 0 (center); to +100 (fully right).

(**11**) Vol (dB) display: Adjust each layer's volume individually with this control.

3.7.6 Master Page

The Master page provides a range of high-quality effects — just as the Effects page does (with the exception that the Effects page's LoFi module was exchanged for a Limiter module) — but they are applied to the entire Kit instead of individual cells: Reverb, Delay, Filter / EQ, Compressor, TM (Transient Master), Saturation, and Limiter modules are available here. There are also four additional submix/effect buses available on this page, which allow you to group cells for collective processing before sending them to the main outs.

The Master page in the Edit area.

Refer to the following sections for descriptions of the individual modules on the Master page.

Buses Module

BATTERY provides a main effect / mix bus, and four additional effect/submix buses for processing multiple cells at once before sending them to the main outputs (via the Master bus); that way you can, e.g., send one group of percussive elements—let's say kick drums and snares—through a compressor on Bus 1, and some hi-hats through Bus 2 with a high-pass filter applied to create a submix within BATTERY.

Additionally, you can also route any cell and/or effect/submix bus directly to one of the additional direct outs, available via the cells'/buses' context menus (right-click/[Ctrl]-click). The main output is by default routed to direct outs Stereo 1/2. Use the remaining direct outs to bypass the Master bus, and to, e.g., address mixer channels in your host application directly.

The Buses module.

The modules are:

- Bus 1 - Bus 4: These are the buses for additional effects routing / submixing; click on a bus to select it, drag-and-drop a cell (or a group of cells) onto a bus to route it through the bus. When you select a bus, all cells routed through it will be lit, while the cells not routed through the bus will remain dimmed.
  The buses' output level meters display the overall levels of the cells being routed through them. The slider on top controls the levels. To avoid distortion, you should prevent the meters from going into the red.
  When you right-click on a bus, the subsequent context menu provides you with two options: *Rename FX Bus* and *Output*. The former one is self-explanatory; click on it to rename the bus. The *Output* entry holds a submenu, which lets you select a destination for the FX bus: route it to the Master bus from here, or bypass BATTERY's main effects engine and select one of the remaining direct outs as destination.
  The effects available for each of the four buses are identical to the effects available for the Master bus; however, the default order of the effects in the effect chain is slightly different. You can change the order of effects in the chain by clicking and dragging the upper right corner of the relevant module and positioning it anywhere within the effect signal chain.

> ⚠ The cell state representations in the Cell Matrix are slightly different depending on whether the Master page or one of the other pages in the Edit area is opened. For more information on this, refer to ↑3.5.1, About Cell States.

- Master: This is the main effect bus, and all cells are routed through it by default. The output level meter displays the overall output level of the bus. The slider on top controls the overall output level of the bus. To avoid distortion, you should prevent the meters from going into the red.

Reverb Module

The Reverb module adds acoustic space to your signal (a reverb simulates the complex reflections that occur when sounds play in an actual acoustic space).

The Reverb module.

There are two modes available here: standard (algorithmic) and convolution reverb. They are selectable by clicking on the two symbols on the right side of the module's header; the left symbol represents the convolution reverb while the right symbol selects the algorithmic mode.

The controls in convolution mode are:

- Power button: Activates/deactivates the module.

- Size knob: Sets the room size, which affects how long the reverberation lasts. Higher values are equivalent to larger rooms.

- HP knob: High-pass filter (a filter that lets high frequencies pass but filters out lower ones). Rotate the knob to set the frequency at which the filter starts filtering.

- LP knob: Low-pass filter (a filter that lets low frequencies pass but filters out higher ones). Rotate the knob to set the frequency at which the filter starts filtering.

- Convolution display: Click the arrow-shaped buttons next to the display to select one of the presets for the reverb module. You can also drag and drop samples from the Library Browser, or .wav files from your desktop directly onto the display to use them as reverberation templates for the convolution reverb.

- Reverse button: When this button is activated, the reverb is played back in reverse.

- Return slider: Determines the amount of reverb.

The controls in standard (algorithmic) mode are:

- Power button: Activates/deactivates the module.

- Size knob: Sets the room size, which affects how long the reverberation lasts. Higher values are equivalent to larger rooms.

- Pre-Delay knob: Introduces a short amount of delay (0-180ms) before the reverb takes effect. This simulates the reverb response in large rooms, where a short time elapses between the time a signal occurs and when it first bounces off of a room surface.

- Color knob: Determines the type of material used to construct the room. Lower values are softer surfaces (e.g., wood), higher values are harder surfaces (e.g., concrete).

- Damp knob: Sets the amount of absorption in the room from drapes, people, acoustic treatment etc. Higher values simulate more absorption.

- Stereo knob: Higher values increase the stereo effect. Use lower values to simulate sitting closer to the stage, and higher values for sitting further back in the hall.

- Return slider: Determines the amount of reverb.

Delay Module

A simple but flexible delay effect to add depth and color to your signal.

The Delay module.

The controls are:

- Power button: Activates/deactivates the module.

- Sync selection menu: Sync the delay to your host's tempo with the selected note value.

- **Feedb** knob: This sends a portion of the output back into the input of the delay line, which creates repeating echoes. A value of 0 produces only one echo, higher values give multiple echoes.

- **Time** knob: The interval in milliseconds between hearing the clean signal and the first delay of the delayed signal.

- **Pan** knob: Setting a value higher than 0 results in a panning effect where each consecutive echo alternates between the left and right channel. The higher the value, the greater the stereo spread; at a value of 100 signals alternate between the far left and far right channels.

- **Damp** knob: Reduces (damps) high frequencies in the delayed signal. Higher values reduce the highs further. With feedback applied (described above), each successive echo has progressively lower high-frequency response.

- **Return** slider: Determines the amount of delay.

Filter / EQ Module

The Filter / EQ module changes the frequency characteristics of the signal (cell) passing through it in various ways. A filter is basically a special kind of amplifier that changes gain only at specific frequencies of the signal, either boosting or cutting those. This module is very similar to the Filter / EQ module on the Effects page (see also ↑3.7.2, Effects Page); however, different filter modes have different filter bands.

The Filter / EQ module.

The controls are:

- Power button: Activates/deactivates the module.

- Preset menu (arrow button): Opens the Preset menu. The Filter / EQ module comes with the following factory presets:

  - *Solid G-EQ*: *Solid G-EQ Loudness*

  - *3-Band EQ*: *3-Band EQ Kick Fattener*, *3-Band EQ Telephone Setting*

  - *Lowpass*: *4 Pole Lowpass*

  - *Highpass*: *2 Pole Highpass*

  - *Bandpass*: *4 Pole Bandpass*

  - *Peak/Notch*: *Notch Filter*

  - *Effect*: *Formant Filter*

- Filter / EQ type selection menu: There are several filter modes available from the selection menu, which all affect the sound differently:

  - Solid G-EQ: The Solid G-EQ is modeled on high-quality analogue circuitry. It is a 4-band parametric EQ.
    The adjustable filter bands are: L (low frequency band); LM (low-mid frequency band); HM (high-mid frequency band); and H (high frequency band). They can be selected with the tab buttons above the controls.
    The available controls are: Freq (adjusts the center frequency of the frequency band, at which the boost or cut will occur); Bell button (toggles the bell shape of the frequency band — only available for L and H bands); Q (as it were, a bandwidth control — only available for LM and HM); Gain (adjusts the amount of boost or cut at the frequency band); Output (adjusts the module's output level).

  - 3-band EQ: This is a classic 3-band EQ. Each of the three bands has three parameter knobs: Freq (adjusts the center frequency of the frequency band, at which the boost or cut will occur), BW (adjusts the range of frequencies over which boosting or cutting occurs, from narrow to broad), and the Gain (controls the amplitude increase after the filter, which can be used to compensate for amplitude reduction due to the filter, or to increase the soft saturation of the effect).

  - Lowpass: This mode contains filters which attenuate signals above the cutoff frequency, allowing low frequency signals to pass through; hence, the name lowpass.
    The available filters are: Ldr 1P (1-pole lowpass which attenuates frequencies above

the cutoff at a rate of -6 dB/octave); AR 2P (a 2-pole lowpass which attenuates frequencies above the cutoff at a rate of -12 dB/octave.); AR 4P (a 4-pole lowpass which attenuates frequencies above the cutoff at a rate of -24 dB/octave); and Daft (a more aggressive 2-pole lowpass filter which attenuates frequencies above the cutoff at a rate of -12 dB/octave). They can be selected with the tab buttons above the controls.
The following controls are available per filter: Cutoff (adjusts the frequency above which signals will be attenuated.); Reso (with a value greater than 0, this control will boost a small frequency range around the cutoff frequency); and Gain (controls the amplitude increase after the filter, which can be used to compensate for amplitude reduction due to the filter, or to increase the soft saturation of the effect; not available for the AR filters).

○ Highpass: This mode contains filters which attenuate signals below the cutoff frequency, allowing high frequency signals to pass through, hence, the name highpass.
The available filters are: Ldr 1P (1-pole highpass which attenuates frequencies below the cutoff at a rate of -6 dB/octave); AR 2P (2-pole highpass which attenuates frequencies below the cutoff at a rate of -12 dB/octave); AR 4P (4-pole highpass which attenuates frequencies below the cutoff at a rate of -24 dB/octave); and Daft (a more aggressive 2-pole highpass filter which attenuates frequencies below the cutoff at a rate of -12 dB/octave). They can be selected with the tab buttons above the controls.
The following controls are available per filter: Cutoff (adjusts the frequency below which signals will be attenuated); Reso (with a value greater than 0, this control will boost a small frequency range around the cutoff frequency); and Gain (controls the amplitude increase after the filter, which can be used to compensate for amplitude reduction due to the filter, or to increase the soft saturation of the effect; not available for the AR filters).

○ Bandpass: This mode attenuates signals above and below the cutoff frequency (or more correctly, the resonant frequency).
The available filters are: Ldr 2P (ladder circuit 2-pole bandpass which attenuates frequencies above and below the cutoff at a rate of -12 dB/octave); Ldr 4P (ladder circuit 4-pole bandpass which attenuates frequencies above and below the cutoff at a rate of -24 dB/octave); AR 2P (2-pole bandpass which attenuates frequencies above and below the cutoff at a rate of -12 dB/octave); and AR 4P (4-pole bandpass which attenuates frequencies above and below the cutoff at a rate of -24 dB/octave). They can be selected with the tab buttons above the filter controls.
The following controls are available per filter: Cutoff (adjusts the frequency below

which signals will be attenuated); Reso (with a value greater than 0, this control will boost a small frequency range around the cutoff frequency); and Gain (controls the amplitude increase after the filter, which can be used to compensate for amplitude reduction due to the filter, or to increase the soft saturation of the effect; not available for the AR filters).

◦ Peak/Notch: A notch filter removes a specific frequency band from the signal. It can be thought of as the inverse of a bandpass filter — in fact, it is sometimes referred to as a "band reject" filter. A peak filter, on the other hand, is quite different - it simply adds a resonant peak to the signal, without doing much attenuation to the signal.
The available filters are: Ldr Peak (unique filter that accents frequencies at the cutoff); Ldr Notch (cuts two narrow bands of frequencies at either side of the cutoff); SV Notch (clean 4-pole notch filter which attenuates frequencies at the cutoff); and SV BR (band reject filter, which attenuates frequencies at the cutoff). They can be selected with the tab buttons above the filter controls.
The following controls are available per filter: Cutoff (adjusts the frequency below which signals will be attenuated); Reso (with a value greater than 0, this control will boost a small frequency range around the cutoff frequency); and Gain (controls the amplitude increase after the filter, which can be used to compensate for amplitude reduction due to the filter, or to increase the soft saturation of the effect — this one is only available for Ldr Peak and Ldr Notch).

◦ Effect: Filters in this category don't match any of the traditional filter characteristics, and are suited for special effects.
The available filters are: Frm 1 (a formant filter, designed to mimic the frequency response of the human vocal tract, which can be used to emulate the talk box effect); Frm 2 (a formant filter, also designed to mimic the frequency response of the human vocal tract, and can be used to emulate the talk box effect); Vow A (vowel filter that simulates the resonant frequencies of the human vocal tract); Vow B (vowel filter that simulates the resonant frequencies of the human vocal tract, like Vow A but with slightly different characteristics); and Phaser (creates a distinct comb filter effect by using an allpass filter design that radically alters the phase relations in your signal). They can be selected with the tab buttons above the filter controls.
The following controls are available for the vowel filters and the phaser: Cutoff (adjusts the frequency below which signals will be attenuated); and Reso (with a value greater than 0, this control will boost a small frequency range around the cutoff frequency).

The formant filters have the following controls: Talk (controls the frequency response of the filter, which can be used to morph between vowel sounds); and Sharp (increases and decreases the peaks and notches in the response, analogous to the resonance control of the other filters); Size (controls the center of the frequency response, analogous to the cutoff control of the other filters).

Compressor Module

Add punch and control dynamics with the compressor module. Compression is a signal processing technique that is commonly used in recording. It reduces peaks and raises low-level signals to produce a higher average signal level.

The Compressor module.

- Power button: Activates/deactivates the module.

- Preset menu (arrow button): Opens the Preset menu. The Compressor module comes with the following factory presets:

  ◦ *Pro*: *Slammed*

  ◦ *Solid Bus*: *Drum Bus*, *Master Setting*, *Nice and Punchy*, *Parallel Compression*

- Compressor mode selection menu: Lets you select from one of the three available compressor modes Solid Bus Comp, Classic, Pro, and SC Bus Comp.

- Thresh knob: Sets the level above which compression kicks in. E.g., with a threshold of -10dB, signals below that level will be relatively unaffected, but signals above that level will be attenuated. The degree of attenuation is set by the Ratio knob.

- Ratio knob: Indicates the ratio of input signal to output signal once a signal exceeds the threshold. E.g., a ratio of 3:1 means that if a signal is above the threshold, a 3dB increase in input level yields only a 1dB increase in output level.

- Attack knob: Determines how long it takes for the compression effect to kick in once the input signal exceeds the threshold. The higher the value, the more percussive the effect, with the tradeoff being higher peak levels. Lower values give a more "squashed" sound, but keep peaks to a minimum.

- Release knob: Sets how long it takes for the compressor gain to return to normal after the input signal has gone below the threshold.

- Makeup knob: The Makeup knob is only available in Solid Bus Comp mode. It lets you compensate for the gain reduction during compression. This only affects the processed signal, so if you turn the Mix knob all the way left (see below), you will hear no difference.

- Mix knob: The Mix knob is only available in Solid Bus Comp mode. It lets you adjust the ratio between mixed and original signal; that is, if you turn the knob all the way to the left, you will hear the signal as if the compressor was being bypassed; however, the Output knob (see below) will still affect the overall output level of the signal. Setting the knob all the way right, you will hear only the processed signal.

- Source selection rectangle: Only available in SC Bus Comp mode. Lets you select a source cell to trigger compression. Drag and drop a cell into the rectangle labeled SC to use it as the compression trigger. For a tutorial on side-chain compression, refer to ↑4.3, Side-chain Compression.

- Gain knob: Use the Gain knob to make up for the reduced peak level during compression. A good rule of thumb is to set the gain so that peaks with the compressor on reach the same level as peaks with the compressor off.

- Output knob: Adjusts the output level of the module.

⚠ Compression requires a fair amount of CPU power, so make sure they are turned off when not needed.

TM (Transient Master) Module

The Transient Master is an easy to use compressor designed to control the attack and sustain of a sound. Instead of following the amplitude of the sound like a traditional compressor, it follows the general envelope and is not as susceptible to changes of input gain. It is best used on sounds with fast attacks, like percussion, pianos or guitars. The Transient Master can also be quite extreme in some cases, so use it with caution.
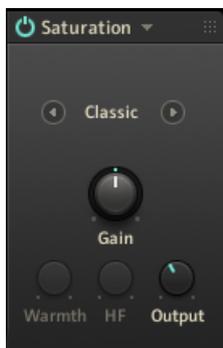

The TM module.

The controls are:

- Power button: Activates/deactivates the module.

- Preset menu (arrow button): Opens the Preset menu. The TM module comes with the following factory presets:

  ◦ *British Setting*

  ◦ *No Attack*

  ◦ *Room Remover*

  ◦ *Snare Enhancer*

  ◦ *Tight Kick*

- Attack knob: Controls the scaling of the attack portion of the input signal's volume envelope. Increasing this parameter will add more punch, and decreasing it will reduce sharp attacks.

- Sustain knob: Controls the scaling of the sustain portion of the input signal's volume envelope. Increasing this parameter will add more body to the sound, and decreasing it will reduce the sound's tail.

- Input knob: Controls the input gain to the effect.

- Output knob: Controls the output gain after the effect. For dynamic effects like compressors, this is very important.

Saturation Module

The Saturation module provides expansion/compression/saturation effects. Unlike a standard audio compressor/expander, saturation works on individual sample bits, not the overall sound. Therefore it can greatly alter the sound of even the shortest samples.

The Saturation module.

The controls are:

- Power button: Activates/deactivates the module.

- Preset menu (arrow button): Opens the Preset menu. The Saturation module comes with the following factory presets:

  ◦ *Classic*: *Classic Distortion*

  ◦ *Drums*: *Cranked*, *Dirty Kick*

  ◦ *Tape*: *Aggressive Tape*, *Warm Tape*

- Saturation type selection menu: Provides you with three basic types of saturation: Classic, Drums, and Tape.

- Gain knob: Controls the input gain of the effect. This will increase the amount of tape distortion and compression.

- Warmth knob: Controls the low frequency boost/cut of the effect. (Only available in Tape saturation mode.)

- HF knob: Controls the high frequency roll-off starting frequency. Frequencies above this point will be attenuated. (Only available in Tape saturation mode.)

- Output knob: Controls the output gain of the effect.

Limiter Module

A Limiter is a mastering tool that restricts dynamics to an absolute level. It is an extreme form of compression, useful for making quiet components in a mix louder while restricting loud components to an optimum level. It can change a relatively meek drum mix into a confident, polished sound.

The Limiter module.

The controls are:

- Power button: Activates/deactivates the module.

- Preset menu (arrow button): Opens the Preset menu. The Limiter module comes with the following factory presets:
  - *Basic Limiter*
  - *No Overs*
  - *The Pump*

- In Gain knob: The input level of the limiter.

- Release knob: The time required by the limiter to release the effect.

- GR meter: The gain reduction meter displays how much compression is currently going on.

- Output knob: Adjusts the output level of the module.

3.8   Preferences

The Preferences panel lets you specify various default settings for BATTERY. To open the Preferences panel:

► Click on the application menu button in BATTERY's Header, and select the *Preferences...* entry from the *File* menu.

The following pages are available in the Preferences panel:

- **General**: see ↑3.8.1, General Page.

- **Library**: see ↑3.8.2, Library Page.

- **Engine**: see ↑3.8.3, Engine Page.

- **Loading**: see ↑3.8.4, Loading Page.

- **Cell Rendering**: see ↑3.8.5, Cell Rendering Page.

3.8.1 General Page
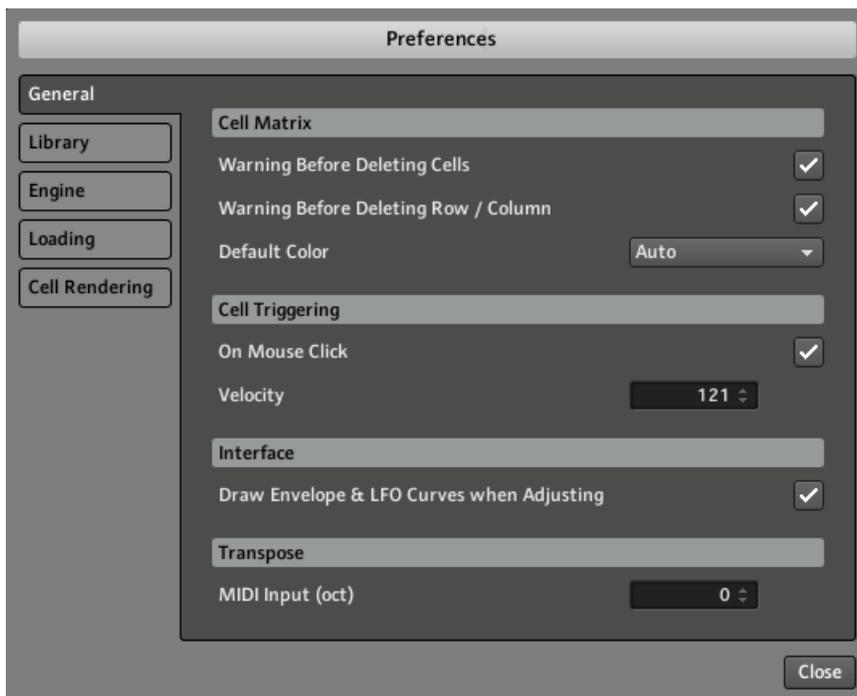
The General page in the Preferences panel.

- Cell Matrix section:

  - Warning Before Deleting Cells: Check this option to have a warning displayed before deleting a cell(s) from the Cell Matrix.

  - Warning Before Deleting Row / Column: Check this option to have a warning displayed before deleting a row or column of cells from the Cell Matrix.

  - Default Color: Select the default color to be used for cells in the Cell Matrix. All cells set to *Use Default Color* in their context menu will use the color specified in this menu.

- Cell Triggering section:

- ◦ On Mouse Click: Check this option to trigger cells via mouse click.

- ◦ Velocity: Set the velocity trigger level for cells when triggered via mouse click.

- ▪ Interface section:

  - ◦ Draw Envelope & LFO Curves when Adjusting: When checked, this enables drawing envelope and LFO curves in the Waveform Control (see also ↑3.6, Quick Access Area).

- ▪ Transpose section:

  - ◦ MIDI Input (oct): Transposes the MIDI input by octaves. This can be helpful when working with MIDI keyboards of a smaller key range.

3.8.2 Library Page
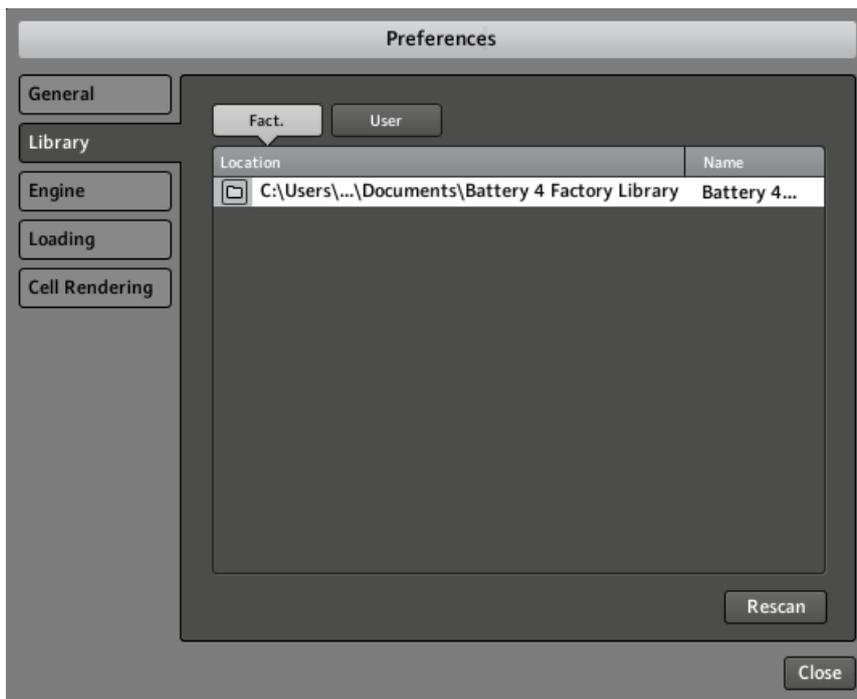
The Library page in the Preferences panel.

- Fact. button: Specify the location of BATTERY's Factory Library from here.

- User button: Specify the location of your additional user libraries from here. Use the Add and Remove buttons to add and remove entries.

- Rescan button: Rescans the currently highlighted library folder in the list.

3.8.3 Engine Page
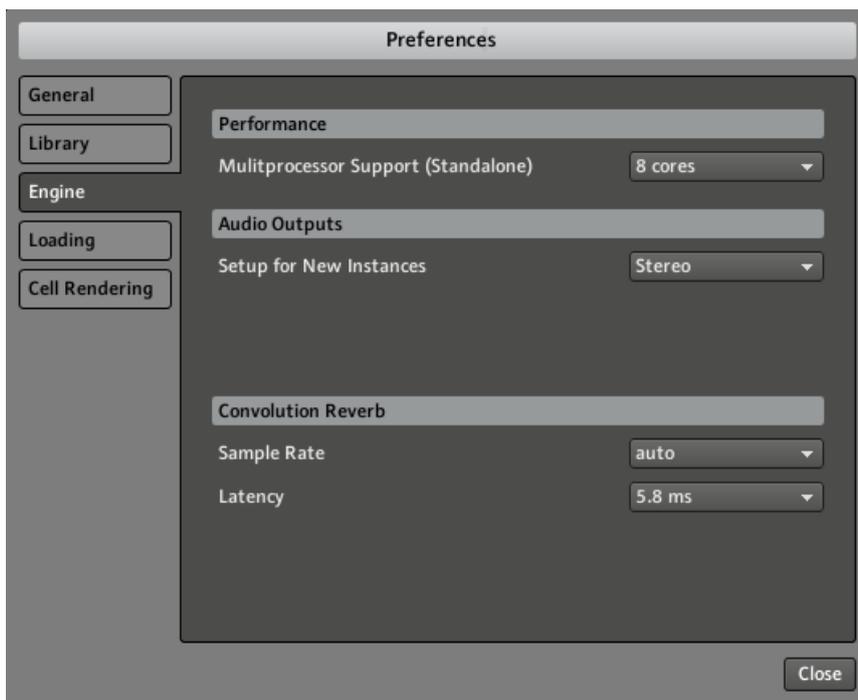
The Engine page in the Preferences panel.

- Performance section:

  ○ Multiprocessor Support (Standalone): Select the number of CPUs to be utilized by BATTERY in stand-alone mode. When using BATTERY as a plug-in, multiprocessor support will be handled by your host software.

- Audio Outputs section:

◦ Setup for New Instances: Select the kind and amount of outputs each new instance of BATTERY should be started with. The default setting is a 16 channel stereo output configuration.

▪ Convolution Reverb section:

◦ Sample Rate: Select the sample rate for the convolution reverb mode of the Reverb module in the Master page. Experiment with the settings to see which ones provide the best results for you.

◦ Latency: Sets the latency for the convolution reverb mode of the Reverb module in the Master page. Experiment with the settings to see which ones provide the best results for you.

3.8.4 Loading Page

The Loading page in the Preferences panel.

▪ Kits section:

  ◦ Template Kit: Choose a Kit for BATTERY to start each new instance with. You can se-
  lect the *Factory Default* Kit, or the Kit currently loaded to be used as BATTERY's de-
  fault Kit.

▪ Samples section:

  ◦ When Loading Multiple Samples: Select whether loading multiple samples at once re-
  sults in all samples becoming sample layers of one cell (see also ↑3.7.5, Editor Page),
  or if they are being spread out across multiple cells in the Cell Matrix.

  ◦ Expand Loop Slices to Individual Cells: Certain file types (such as REX files, ACID wav
  files, and Apple Loop files) contain information about individual loop slices in the file.
  Check this option to import each slice to an individual cell when loading a loop file.

  ◦ Load Files Ignoring Original Loop Points: Certain file types (such as REX files, ACID
  wav files, and Apple Loop files) contain information about individual loop slices in the
  file. Check this option to ignore the loop points upon loading loop files. The files will
  then behave like an ordinary audio file, and will not be influenced by BATTERY's or
  the host application's tempo.

3.8.5   Cell Rendering Page
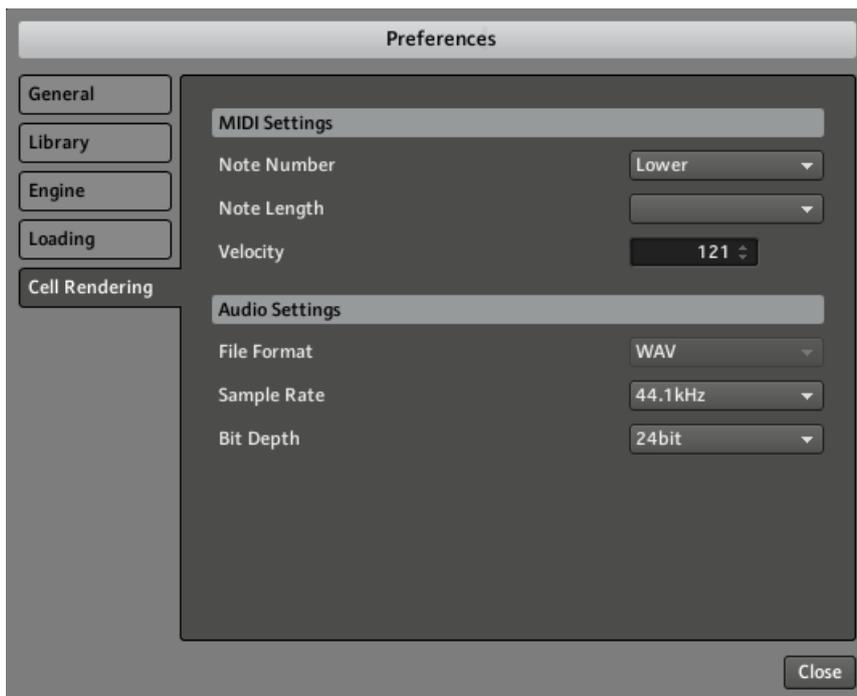
The Cell Rendering page in the Preferences panel.

- **MIDI Settings** section: This section determines characteristics of the rendered cell based on the settings of the cell to be rendered during conversion.

   - **Note Number**: If the Key Range for a given cell is wider than one note (see ↑3.6, Quick Access Area), and Key Track is activated in the Setup page's MIDI Input module (see ↑3.7.4, Setup Page), the rendered cell will be tuned according to this setting; e.g., when you have a bass sample playing in half note steps from C1 to C2, and the Note Number is set to *Upper*, the rendered cell will be tuned according to the tuning of the bass sample on C2.

   - **Note Length**: Determines the length of the rendered cell, which happens based on BATTERY's tempo set during conversion.

- ◦ Velocity: Determines the level of the rendered cell based on the velocity of the cell to be rendered during conversion.

- ▪ Audio Settings section:

  - ◦ File Format: Select the file format for rendered cells from here.

  - ◦ Sample Rate: Select the sample rate for rendered cells from here.

  - ◦ Bit Depth: Select the bit depth for rendered cells from here.

For a tutorial on rendering cells, refer to ↑2.2, Basic Operation.
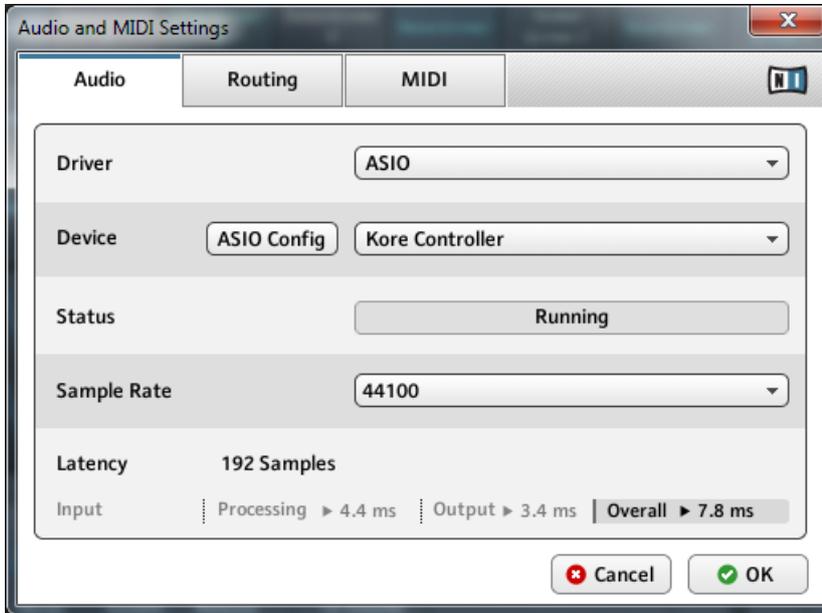
3.9 Audio and MIDI Settings

The Audio and MIDI Settings panel allows you to configure the audio and MIDI hardware device(s) to use with BATTERY, along with the audio routing between your audio device and BATTERY.

► To open the Audio and MIDI Settings panel, select the *Audio and MIDI Settings…* entry from the File menu (in the application menu bar or via the application menu button in the header).

The Audio and MIDI Settings panel contains three pages. Each page can be displayed by clicking on the corresponding tab at the top of the window.

3.9.1 Audio Page

The Audio page holds settings related to your audio interface.

The Audio page of the Audio and MIDI Settings panel.

Setting	Description
Driver	Select your audio driver here.
Device	This allows you to choose from the available devices if you have connected more than one audio interface.
Status	This shows you whether your audio interface is currently running.

Setting	Description
Sample Rate	The currently selected sample rate of your audio interface. Please restart BATTERY after changing the sample rate.
Latency	**Mac OS X:** This slider allows you to adjust the latency of your audio interface in samples. Lower values result in a more immediate playing response but are heavier on both the CPU and the audio driver, and may result in audible clicks and pops. Larger values are easier on the CPU, but introduce a larger latency (i.e., there may be a very small delay between when you hit a pad and when you actually hear it). You should therefore experiment with this setting so that it is as low as possible without overloading your CPU or introducing any audio artifacts. **Windows:** When using an ASIO driver, the Audio and MIDI Settings window shows an ASIO Config button instead of the Latency slider. Click this button to open the settings window of the selected ASIO driver.

3.9.2 Routing Page

The Routing page allows you to configure the connections between the virtual outputs of BATTERY and the physical outputs of your audio interface.
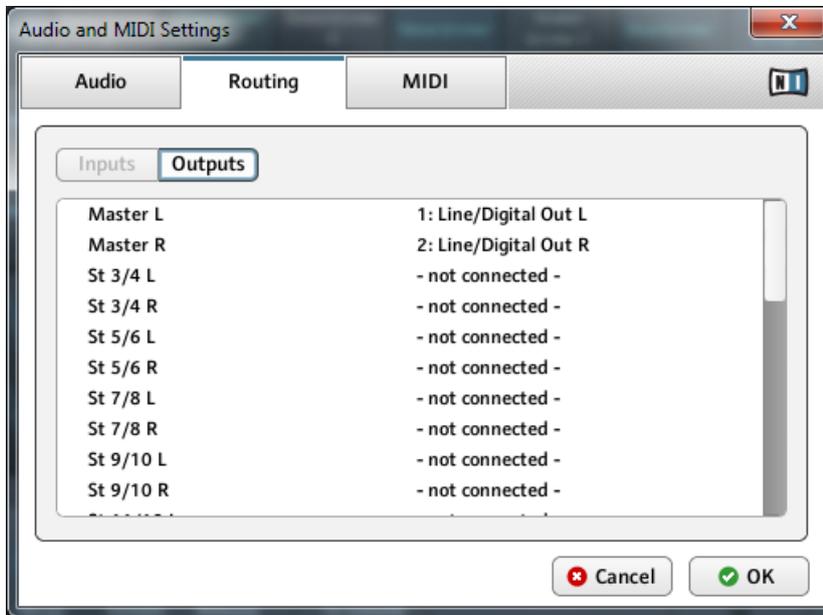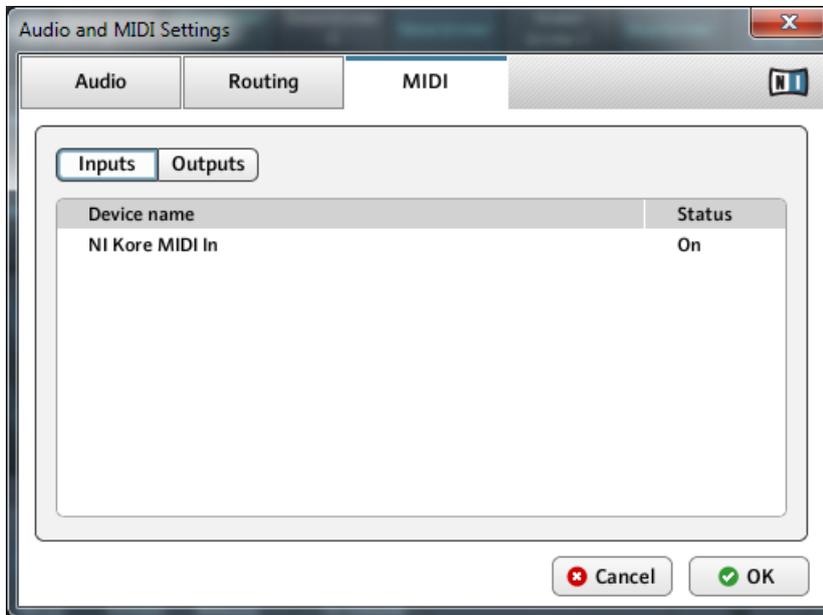
The Routing page of the Audio and MIDI Settings panel.

Element	Description
Outputs	In the right column, you can assign BATTERY's outputs to the physical outs of your audio interface. Click the fields in the right column to select the desired outputs via a drop-down menu.

3.9.3 MIDI Page

The MIDI page allows you to set up the MIDI input and ouput ports that you want to use with BATTERY.

The MIDI page of the Audio and MIDI Settings panel (entries may vary on your computer).

Element	Description
Inputs	Clicking Inputs displays a list of all the available MIDI inputs of your system. You can activate/deactivate each input by clicking the fields in the Status column, which displays the current status of the corresponding port.
Outputs	Clicking Outputs displays a list of all the available MIDI outputs of your system. You can activate/deactivate each output by clicking the fields in the Status column, which displays the current status of the corresponding port.

3.10 The Missing Samples Dialog

The Missing Samples dialog allows you to resolve issues regarding samples that are missing upon loading Kits. This can happen when you have moved files or folders outside of BATTERY. In case of missing samples, you will be presented with the following dialog:
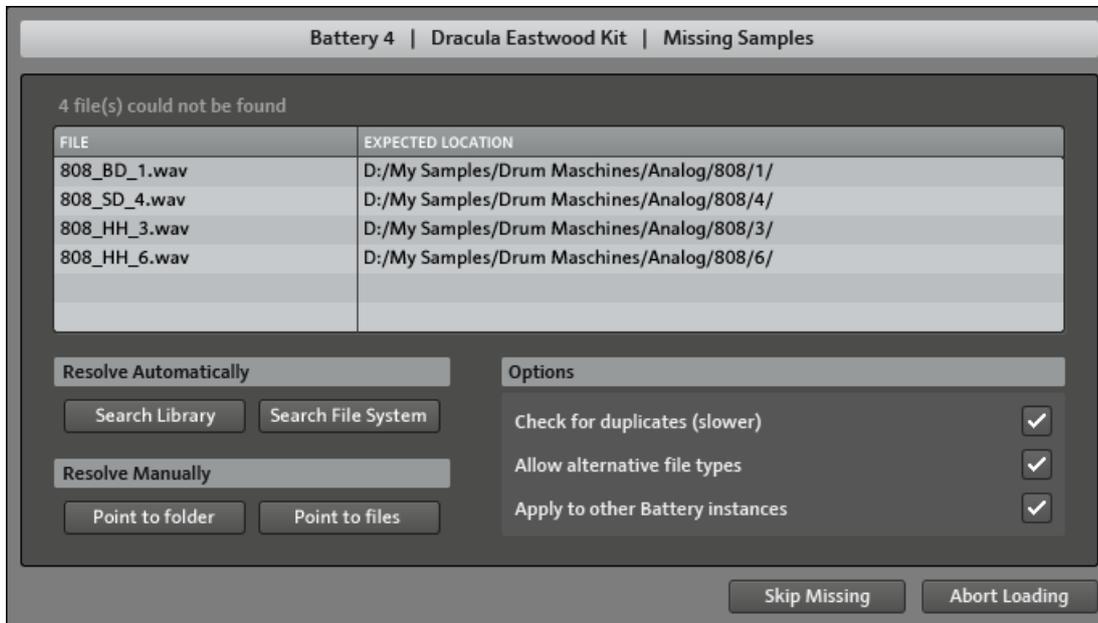
The Missing Samples dialog, informing you about the samples missing, and where BATTERY expected to find them.

You have the following options:

- Resolve Automatically section:
    - Search Library button: Scans BATTERY's Library for the missing samples.
    - Search File System button: Scans your entire file system for the missing samples.
- Resolve Manually section:
    - Point to Folder button: Lets you point to a specific folder on your computer to scan for the missing samples.
    - Point to Files button: Lets you point directly to the new location of a sample.
- Options section:

◦ Check for Duplicates checkbox: With this option disabled, BATTERY will automatically load the first file that matches the file name of a missing sample. When you enable this option, duplicates will be collected, and another dialog will guide you through selecting the right missing sample for your Kit.

◦ Allow Alternative File Types checkbox: Allows to use alternative file types with the same name (e.g., if you converted a sample to another file type).

◦ Apply to other Battery Instances checkbox: Forwards resolved conflicts to other instances of BATTERY, so you don't have to resolve missing samples issues more than once.

4 Additional Tutorials

Find additional step-by-step instructions for some of the less self-explanatory tasks in this chapter.

4.1 Importing Files to the Library

In this section, you'll learn how to import your own samples to BATTERY's Library, and how to use the categorization system to prepare them for convenient use. Here's how you do it:

1. Open the Files Browser in the Sidebar.
2. Navigate to a folder containing the samples you'd like to import. For this tutorial, we've prepared a drums folder with our go-to kicks, snares, and hi-hats already presorted in sub-folders.
3. Right-click ([Ctrl]-click) on the folder you'd like to import, and select *Import to Library* from the context menu.
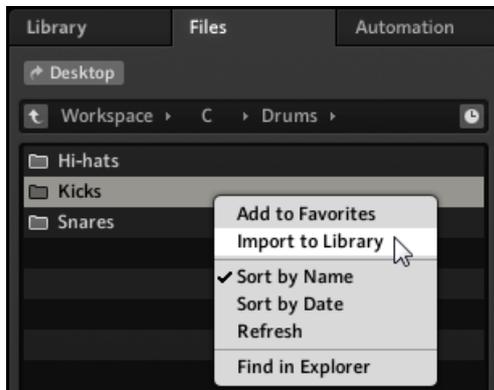
4.   The categorization window below now allows you to assign tags to the samples. We'll cre-
     ate two new tags called Kicks and Punchy on tag levels one and two, using the + Add New
     button.

5.   Click OK to import your samples to BATTERY's Library using the created tags.
6.   Open the Library Browser in the Sidebar.
7.   Click on Samples and User to navigate to the non-factory samples section of the Library.

8. You'll see the first level tag, Kicks, at the top of the category window, and after clicking on it, the second level category tags (Punchy) will appear right beneath the first level. Clicking on either one will result in the previously imported samples being listed in the Selection/Results window below.
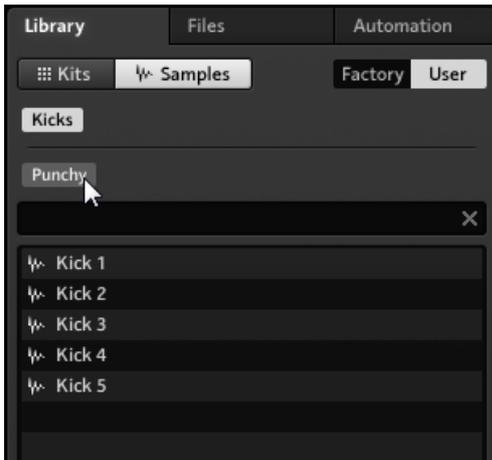
→ The new samples were successfully imported to the Library.

4.2 Automation

Automating BATTERY's parameter controls allows you to record modulation of BATTERY's parameters throughout the course of a track in a host application; e.g., applying a filter sweep to a snare track, or changing the volume of an entire drum track over time. This is a feature you don't want to miss out on! To give you a rough idea of what's possible when using automation, here's a tutorial on automating BATTERY in Steinberg Cubase 6. With a little research, you should be able to apply the instructions to your host software of choice.

To begin with, there are two ways in which BATTERY can be automated in Cubase 6:

▪ **Automation via MIDI CC**: In this case, you assign one of BATTERY's parameter controls (e.g., the High Cut control of the Filter module) to a MIDI controller (e.g., to a slider on your MIDI keyboard), and record automation via MIDI.

- **Automation via host automation ID**: In this scenario, you assign one of BATTERY's parameter controls (e.g., the High Cut control of the Filter module) to a host automation ID in Cubase 6, and then address BATTERY from the automation lane of the relevant instrument track in Cubase.

Automation via MIDI CC

To automate a BATTERY parameter control via MIDI CC in Cubase 6:

1. Open Cubase.
2. Open a new session.
3. Load BATTERY from the VST Instruments Rack ([F11]), and create a MIDI track for it.
4. Duplicate the MIDI track you have just created.
5. Load the Bouncin Kit to BATTERY (as explained in ↑2.2, Basic Operation).
6. Record a simple four-bar drum loop using the Bouncin Kit's cells C2 (Kick Bouncin 6) and C3 (Snare Bouncin 5).
7. You should now have a MIDI track containing your drum loop, and another empty MIDI track in Cubase.

8. Back in BATTERY, select cell C3 (Snare Bouncin 5) for editing.

9. Activate the Filter module in BATTERY's Main page using its power button. This will activate the Filter module for cell C3 solely.

10. Right-click/[Ctrl]-click on the High Cut control in the Filter module, and select *Learn MIDI CC*.

11. Move a control element on your MIDI controller (such as a slider).

12. The High Cut control in BATTERY should instantly pick up the input from the MIDI controller, and you should be able to lower/raise the high-cut filter operating the control element now. There also should be a new entry in the MIDI tab of the Sidebar's Automation page:
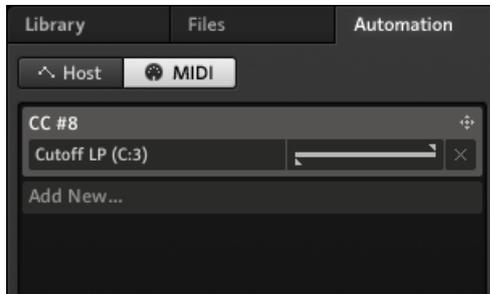
As you can see, the control in BATTERY (Cutoff LP), part of the Filter module earlier activated for snare cell C3 (C:3), was assigned to MIDI CC #8 (CC #8), which in our case was a slider on a MIDI keyboard.

If this did not work, please check your MIDI connections and/or refer to the documentation of your host software.

13. Back in Cubase, select the second — empty — MIDI track, and start recording.

14. Use the MIDI controller to adjust the high-cut filter while recording.

→ The automation data should now be recorded to the second MIDI track, and you should hear the filter sweep on the snare.


Cubase also allows you to record certain MIDI CC's to a track's automation lane as automation data instead of writing the automation as MIDI data. This can be configured via the "MIDI Controller Automation Setup" panel in Cubase. The advantage of automation data is that it's easier to edit compared to automation as MIDI data.
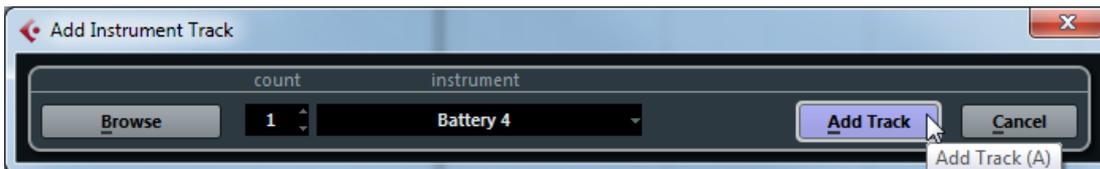
Automation via Host Automation ID

To automate a BATTERY parameter control via host automation ID in Cubase 6:

1. Open Cubase.
2. Open a new session.
3. Create a new Instrument track in Cubase.
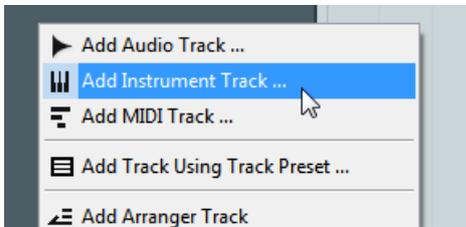
4. Select BATTERY as VST instrument for the Instrument track.

5. Load the Bouncin Kit to BATTERY (as explained in ↑2.2, Basic Operation).
6. Record a simple four-bar drum loop using the Bouncin Kit's cells C2 (Kick Bouncin 6) and C3 (Snare Bouncin 5).
7. You should now have a MIDI track containing your drum loop.

8. Back in BATTERY, select cell C3 (Snare Bouncin 5) for editing.

9. Activate the Filter module in BATTERY's Main page using its power button. This will acti-
   vate the Filter module for cell C3 solely.

10. Right-click/[Ctrl]-click on the High Cut control in the Filter module, and select *Enable
    Host Automation (ID: 0)*.

11. There should now be a new entry in the Host tab of the Sidebar's Automation page:
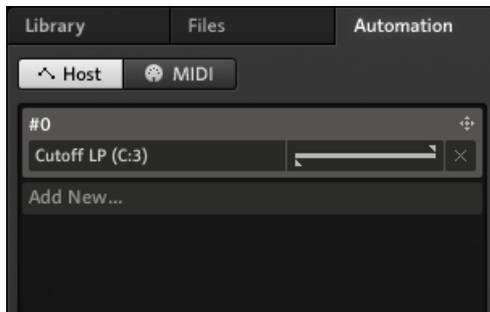
As you can see, the control in BATTERY (Cutoff LP), part of the Filter module earlier activated for snare cell C3 (C:3), was assigned to host automation ID 0 (#0).
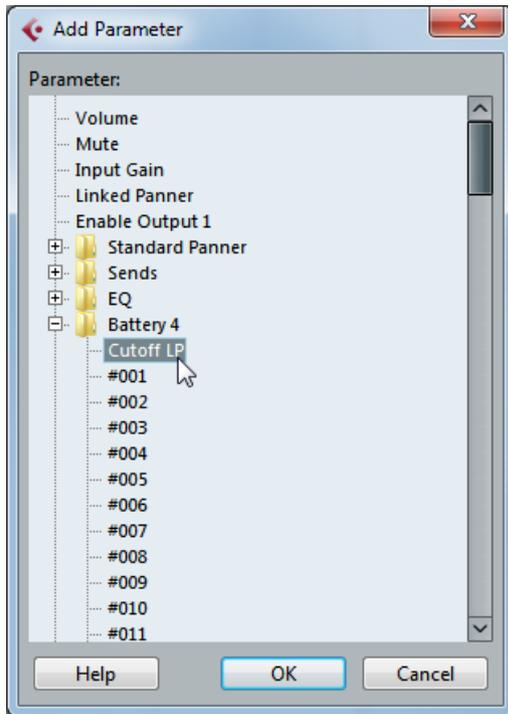
12. Back in Cubase, open the MIDI track's automation lane using the Show/Hide Automation button.

13. Within the automation lane, click on the button right to the R and W buttons, and select *More...* from the subsequent menu.
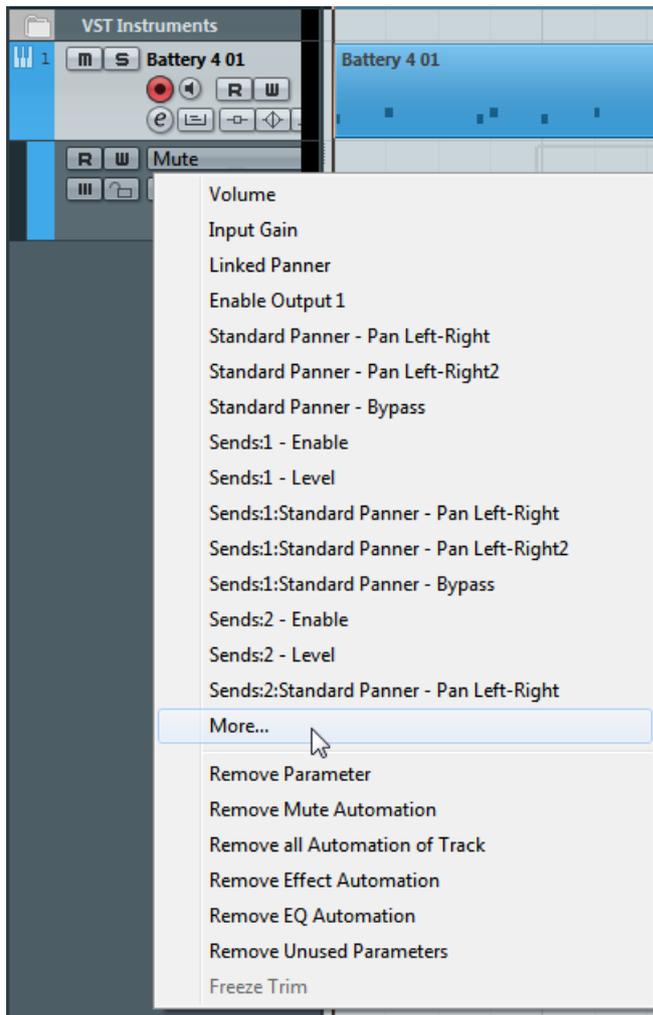
14. A new window opens. There should be a folder labeled Battery 4 in there now. Expand it, select Cutoff LP from the list, and click OK.

15. The automation lane now controls the High Cut filter in BATTERY. Click the R button in the automation lane, and use the cursor to draw in automation data within the automation lane's track.

16. Start playback.

→   You should now hear the filter sweep on the snare.

4.3   Side-chain Compression

Side-chain compression is a popular technique used in contemporary electronic music, and it can help you achieve a quite polished sound without even touching the EQs. E.g., bass samples and kick drums share frequencies in the same frequency range, which can quickly lead to a muddy mix as both elements interfere with each other. Using side-chain compression, you can use one sound (e.g., the kick) as a trigger for lowering the volume of another sound (e.g., the bass). Let's try this out using our tutorial Kit:

1. Load the Bouncin Kit to BATTERY as explained in the introduction in ↑2.2, Basic Operation.

2. Select cell D1 (Kick Bouncin 7) for editing, and open the Master page in the Edit area.

3. Drag and drop cell D1 onto Bus 1 in the Buses module.

The cell is now routed to effect/submix bus 1.

4. With Bus 1 highlighted, activate the Compressor module, and select the SC Bus Comp mode from the compressor mode selection menu.

5. Now drag and drop cell B2 (Kick Bouncin 4) into the Compressor module's Source selection rectangle (the one labeled SC). Make sure that Bus 1 stays highlighted while you do this.
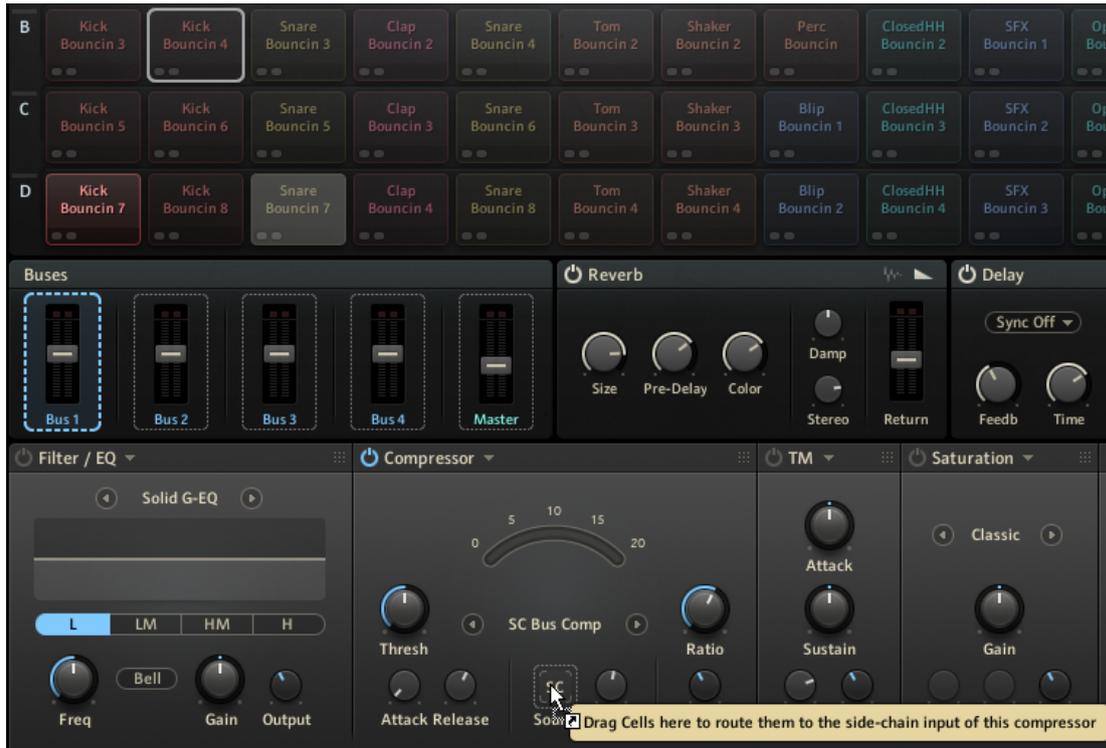
6. Set the Compressor module to the following settings: Thresh to 13.0; Ratio to 10; Attack to 0.1; Release to 200; and Gain to 12.0.

7. Trigger cell D1. When it is playing, trigger cell B2.

→ You should now see and hear the compressor kicking in each time you trigger cell B2, so that the bass sound is faded out each time the kick comes into play. The effect will be even more hearable if you sequence your drums in a host sequencer. Experiment with the settings to see what works best for the particular situation.

5   Tips and Tricks

A bunch of tips and tricks on using BATTERY, and programming drums in general (no particular order). A good deal of this section was written by author/musician (and BATTERY user) Craig Anderton, and is used with his permission.

- Most numeric fields in BATTERY can be edited in two ways: double-click on the parameter value and type in a new number, or click on the field and drag up to increment the value, or down to decrement it.

- For fine-tuning a parameter, hold [Shift] while dragging.

- Double-clicking on knobs resets them to default values.

- Most of the common editing shortcuts, such as copying, pasting, cutting, multi-selection etc., do also work in BATTERY, which can speed up your workflow substantially.

- You can use the Tune control in the Quick Access area (↑3.6, Quick Access Area) to alter the tuning of an entire Cell, or the Tune control in the Editor page (↑3.7.5, Editor Page) to tune individual sample layers within a cell.

- An important part of drum kit tuning is matching the tuning to your song's key. Although most percussion samples are unpitched, you will find that certain pitch adjustments allow your drum kits to sit better in your mix. This is particularly true with hi-hats and cymbals. Once you have completed a track, spend some time working with your kit's tune settings to optimize the sound for a particular piece of music.

- Use tuning to create multiple drum sounds from one. Want to play a two-hand shaker part, but have only one shaker sample? Copy it to another cell, then detune the copy to provide a slight sonic variation. Detuning can also create a family of cymbals or toms out of one cymbal or tom.

- Subtle changes in velocity make for a good groove more than any timing correction could. E.g., when playing hi-hats, it is a good idea to play the hi-hat at various fixed velocities, or to copy one hi-hat to multiple cells and to limit the cells' velocity ranges to various settings. Lowering the volume of ghost notes with kicks and snares can also help you a great deal.

- The best application of pitch modulation is a very subtle (almost unnoticeable) velocity control. A small pitch increase with high velocities emulates a drum's skin being stretched, hence, pitched higher, when it's first hit.

- Use individual drum outputs: a typical output setup would include a stereo output mix, individual snare and hi-hat outputs, and a loop output. This lets you add a unique reverb to the snare, EQ the hi-hats cleanly, and process sample loops without affecting the main mix.

- Many beginning drum programmers create kits with overly loud hi-hats. Make sure that the hi-hats slide into the mix, and don't dominate it.

- Using a sub-bass kick will sound great on your studio monitors and in a big club system. However, anyone listening to your mix with headphones or a boom box will probably not hear the kick at all. Make sure your kick includes some high end, perhaps by layering it with a second sample, or adding a bit of distortion to increase high-frequency content.

- For dynamic control beyond tying velocity to level and/or sample start point, assign velocity to the low-pass filter cutoff so that hitting the drum harder produces a slightly brighter sound. This gives extra emphasis to the hardest hits, making the drums feel more alive.

- In the Editor page's Loop Editor (↑3.7.5, Editor Page): Loop a single cycle in a drum's decay tail, and set the count to a higher number of repeats. Then, turn on the Volume Envelope for the sample in the Main page (↑3.7.1, Main Page), and edit the decay parameter to the desired length. Try different individual cycles for looping; they may appear almost identical, but some will usually loop better than others. This will give you a super-long decay, particularly with toms and kicks.

- For electronic music, try moving any double-time percussion parts (shaker, tambourine etc.) a little bit ahead of the beat to give a faster feel.

- If two percussion sounds often hit on the same beat in a rhythm pattern, try sliding one part ahead or behind the beat by a small amount (a few ms) to keep the parts from interfering with each other.

- If some drums fight with melodic parts (e.g., the kick drum and bass mosh together), slightly advance the part you want to emphasize in the mix. It will grab the ear's attention just before the beat, therefore bringing more attention to itself. Alternatively you could also use the side-chain compression technique as explained in ↑4.3, Side-chain Compression.

- Hitting a crash cymbal a bit ahead of the beat makes it really stand out. Moving it behind the beat meshes it more with the track.

- To boost a song's energy level, increase tempo slightly (by one or two beats per minute). This is the timing equivalent of modulating pitch upward by a semitone; both increase excitement. Decreasing tempo has the reverse effect. Tempo shifts are useful when transitioning between song sections (verse to chorus, chorus to instrumental etc.) as well as within a particular section (such as upping the tempo for the last two measures of a solo).

6 Troubleshooting / Support

A few common issues and possible solutions when working with BATTERY are listed in this section.

6.1 Troubleshooting

6.1.1 The BATTERY Software Won't Start

- Check the system requirements for BATTERY. The minimum requirements are the very least you can get by with and are often not enough for advanced use. For latest system requirements, visit:
  http://www.native-instruments.com/battery4specs

- Make sure you have the most recent version of the BATTERY software installed. You can find the latest available version through the Service Center or by following this link:
  http://www.native-instruments.com/updates

- Make sure that you have not clicked an outdated application alias/shortcut.

- Try to restart your computer.

6.1.2 Latency Issues

- Please check if your computer is suited for handling real-time audio processing without dropouts. In general, it is not recommended to use laptops with shared-memory graphic cards. You will need all the memory and processing power available for your audio software.

- It is not recommended to run the laptop on battery, as built-in power management systems might slow the clock rate of the CPU in an effort to extend battery life.

- Disconnect all unused hardware (e.g., printer, scanner). This will increase the amount of processing power available for your music software.

▪ Laptops often are equipped with built-in devices that disturb audio processing, most commonly Bluetooth transceivers, an Ethernet network adapter, or a wireless LAN card. You might need to disable these devices while working with BATTERY.

6.1.3 The BATTERY Software Crashes

In case of a crash during runtime, please contact the Native Instruments technical support team as described in section ↑6.2.2, Technical Support and send them your crash log and a detailed description of what you were doing with the software just before the crash happened. You will find the crash log in the following folders:

▪ Windows: *My Documents\Native Instruments\Battery 4\Crashlogs*

▪ Mac OS X: *Users/~/Library/Logs/CrashReporter*

6.1.4 Updates

Whenever you encounter problems, it is recommended that you first download and install any available software updates. Updates are released regularly to fix known problems, maintain compatibility with operating system updates, and to continuously improve the software. The version number of your software is displayed in the About splash screen (see also ↑3.3, Header) for any Native Instruments application. Alternatively, you can find the version numbers of all installed Native Instruments applications when showing the details for an application within the Overview page of the Service Center. Updates are available on the Update page in Service Center or on our website under:

http://www.native-instruments.com/updates

6.2 Support

If you are experiencing problems related to your Native Instruments product that the supplied documentation does not cover, there are several ways of getting help!

> The links in the following sections can also be reached from the Service Center application: Open the Service Center application and click on the Support button in the upper-right corner.

6.2.1   Knowledge Base

The Online Knowledge Base gathers useful information about your Native Instruments product and can be of great help to solve possible issues you may encounter. You can reach the Knowledge Base via:

www.native-instruments.com/knowledge

6.2.2   Technical Support

If no Knowledge Base entry matches your problem, or if the matching entry does not solve the problem, you can use the Online Support Form to contact the Technical Support team of Native Instruments. The Online Support Form will ask you to enter information about your hardware and software setup. This information is essential for our Support team to be able to provide you with quality assistance. You can reach the Online Support via:

www.native-instruments.com/suppform

When communicating with the Native Instruments Support team, keep in mind that the more details you can provide about your hardware, your operating system, the version of the software you are running, and the problem you are experiencing, the better they will be able to help you.

In your description, you should mention:

- How to reproduce the problem
- What you have already tried to fix the problem
- A description of your setup, including all hardware and the version of your software
- The brand and specifications of your computer

When installing new software or software updates, a Readme file is included, which often contains late information that was not yet included in the documentation. Please open and read this Readme file before contacting Technical Support.

6.2.3   Registration Support

If problems occur during the product activation procedure, please contact our Registration Support team:

www.native-instruments.com/regsuppfrm

6.2.4   User Forum

In the Native Instruments User Forum, you can discuss product features directly with other users and with experts moderating the forum. Please be aware that the Technical Support team does not participate in the forum. If you're encountering an issue that can't be solved by other users, contact Native Instruments' Technical Support team via the online support as described above. You can reach the User Forum via:

www.native-instruments.com/forum

7 Appendix

7.1 Supported File Types

The following file types are supported by BATTERY 4:

Native BATTERY Files

File Type	Related Software	File Extension	Possible Drag-and-Drop Targets
Kit	BATTERY 4	.nbkt	Cell Matrix
Cell	BATTERY 4	.nbcl	cell
Kit	BATTERY 3	.kt3	Cell Matrix
Cell	BATTERY 3	.cl3	cell
Kit	BATTERY 2	.kt2	Cell Matrix
Cell	BATTERY 2	.cel	cell

Audio Files

File Type	Related Software/Hardware	File Extension	Possible Drag-and-Drop Targets
WAV, mono/stereo	-	.wav	Cell, Waveform Control, Mapping Grid, Convolution Reverb Display
WAV, multichannel	-	.wav	Cell, Waveform Control, Mapping Grid
Apple Loop	-	.aiff/.aif	Cell, Waveform Control, Mapping Grid
REX1	Recycle	.rex	Cell, Waveform Control, Mapping Grid
REX2	Recycle	.rx2	Cell, Waveform Control, Mapping Grid

| File Type	Related Software/Hardware	File Extension	Possible Drag-and-Drop Targets
Acidized Wave	ACID	.wav	Cell, Waveform Control, Mapping Grid
Sound Designer 2 File	Sound Designer2	.sd2	Cell, Waveform Control, Mapping Grid
MPC Sound file	Akai MPC	.snd	Cell, Waveform Control, Mapping Grid
BATTERY 1 Kit	BATTERY 1	.kit	Cell Matrix

3rd-Party Program Files

File Type	Related Software/Hardware	File Extension	Possible Drag-and-Drop Targets
MPC 1000 Program	Akai MPC 1000	.pgm	Cell Matrix
S1000 / S3000 / S5000 / S6000 Program	Akai	.akp	Cell Matrix
MPC5000 Drum File	Akai MPC 5000	.aiff/.aif	Cell Matrix
MPC5000 Keygroup	Akai MPC 5000	.rex	Cell Matrix
Halion Program	Halion	.rx2	Cell Matrix
Mark 1	LM4	.wav	Cell Matrix
Mark 2	LM4	.sd2	Cell Matrix
Beatcreator Program	Beatcreator	.zgr	Cell
Reaktor Map	REAKTOR	.map	Cell Matrix
EXS 24 Program	EXS24	.exs	Cell Matrix
Fusion Multisample	Alesis	.afi	Cell Matrix
Fusion Program	Alesis	.afp	Cell Matrix
Triton Program	KORG Triton	.ksc	Cell Matrix

3rd-Party Monolithic Files

File Type	Related Software/Hardware	File Extension	Possible Drag-and-Drop Targets
Soundfont Container File	E-mu	.sf2	Cell Matrix
Gigasampler Container File	Gigasampler	.gig	Cell Matrix
Map monolith	REAKTOR	.map	Cell Matrix
Drumagog Program	Drumagog	.gog	Cell Matrix
Triton Containe filer	KORG Triton	.pcg	Cell Matrix
Fantom G/S Container file	Roland Fantom	.svd	Cell Matrix
Motif Voice	Yamaha Motif	.xov	Cell Matrix

7.2 Cell Coloring Schemes

There is a systematic color code used for the Factory Kits so that you can recognize the cells' contents at a glance. See below for further explanations.
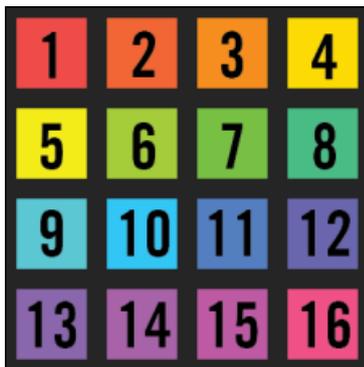
The color palette as you can find it in the context menu of a cell.

(**1**): Kicks

(**4**): Snares

(**2**): Toms and percussion

(**9**): Hi-hats

(**8**): Cymbals

(**16**): Claps

(**11**): Other

7.3   A Guide to the Library Kits

The Kits that are provided with BATTERY's Factory Library work well with various music gen-res; however, each Kit was designed with a specific genre in mind. For an overview of which Kit works best with which genre, refer to the **BATTERY 4 Library Manual**, which you can find under *Open Manual* in the Help menu of the application.

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