



NATIVE INSTRUMENTS
SOFTWARE SYNTHESIS

BATTERY

Operation Manual

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About Native Instruments' BATTERY

Introduction



The BATTERY panel

Congratulations on your purchase of Native Instruments' BATTERY percussion sampler. BATTERY provides an unparalleled programming and playback environment for drum samples – it can literally “release your sample’s energy”! Some of the advanced features of BATTERY include:

- Internal 32-bit resolution and sample-accurate timing
- A high-quality sample library, with 20 sound sets.
- The ability to run stand-alone with MME, Direct Sound, Sound Manager, MAS, DirectConnect and ASIO; and as a VST2- and DXi-compatible instrument.
- Dynamic resource allocation for optimal performance.

BATTERY can be used as a simple sample playback machine. However, the advanced program editing functions provided can literally take your kit sounds over the top. Some of the advanced BATTERY functions include:

- The ability to read and manipulate samples from Akai, SF2, LM4, AIFF, WAV and MAP sources, with any bit resolution from 8 to 32 bits.
- Up to 54 cells per bank, with a maximum of 128 velocity layers.
- Individual tuning, volume envelope, pitch envelope, bit reduction and waveshaper for each cell in a bank.
- A modulation matrix with drum-oriented presets.
- An FX Loop section that allows for weird loop creation.

BATTERY is not simply another drum playback machine – it is the perfect combination of sampling and synthesis. BATTERY can provide a sound that is unmatched by any drum machine – hardware or software!

Note: Software synthesis and sample manipulation is a CPU-intensive process. The number of sounds that can be played, and the effects applied to those sounds, are based on the power of your computer.

Installation under Windows

System Requirements and Recommendations

In order to use all of the realtime audio capabilities of BATTERY you need a computer with at least the following specifications:

Hardware

- Intel Pentium 300Mhz or faster, Intel Celeron 300 Mhz or faster, AMD Athlon or AMD Duron
- 64 MB RAM
- Soundcard compatible with Windows 98
- MIDI-Interface for connecting a MIDI controller or external MIDI sequencer. It is possible to use the interface that is part of many common soundcards.
- At least 20 MB free hard disk space for the installation

Software

- Windows 98

Software Installation

Insert the installation CD into the CD drive. Use the Windows Explorer to open the CD and start the setup program by double clicking on **Setup.exe**.

Click **Continue** after the startup picture to choose the setup type and installation directory. You will be prompted to choose a directory to install the software into. If you do not choose another installation location, the installer will create a new folder called **Battery** in the directory **Program Files\Native Instruments** on drive C.

Copy protection with the Installation CD

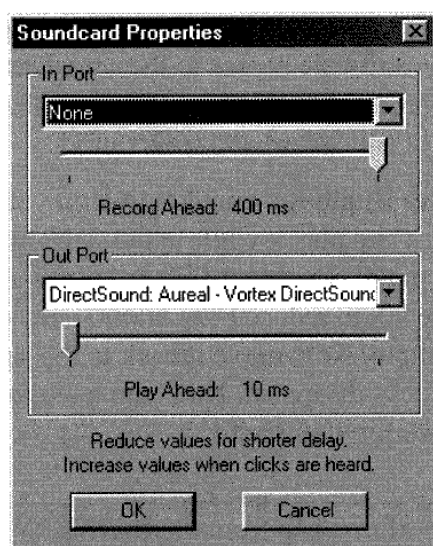
To facilitate copy protection, the Installation CD will be requested upon first program start. Reconfiguration of your system may also cause a copy protection request.

Settings for Audio Hardware

Soundcard Settings

The BATTERY software needs a soundcard for playing the sounds it produces. To use a standard soundcard as the audio interface for the software no extra drivers are needed. The BATTERY software makes use of the standard WaveAudio or DirectX drivers installed with the cards.

However, some adjustment of BATTERY's parameters is necessary to tune it to the hardware and achieve optimum performance. Choose **Soundcard** in the **System Audio Port** menu and open the appropriate settings dialog window by selecting **System Audio Settings...**



Soundcard Properties dialog

Devices

If more than one soundcard (or driver port) is installed, the selection box **Out Port** allows the choice of which soundcard (or which driver port) is to be used by BATTERY.

In the list of available ports for **Out Port** the available devices are marked **MME** or **DirectSound**. The latest DirectSound drivers for your soundcard are probably better optimized with regard to latency (delay) in the audio output than the earlier MME (WaveOut) drivers and normally perform better. We recommend that you try out all the available drivers, see what latency can be achieved with each and then use the one that performs best.

Do not use emulated DirectSound drivers (which are usually marked “emulated”) because these are actually MME drivers made to look like DirectSound and will perform worse than all other options.

A requirement for using DirectSound is that the Windows extension DirectX 5.0 (or later) is installed on your PC.

Latency

The delay (latency) that occurs during audio output depends on the size of the audio buffer the software passes to the soundcard. For smooth operation this buffer must have a minimum length which depends mainly on the type of soundcard and driver used.

You can optimize the buffer length for sound output on your system like this: Select any drumkit and play it while at the same time moving the slider for **Play ahead** in the **Soundcard Properties** dialog window. Move the slider to the left to reduce **Play ahead** until you start to hear clicks in the sound output. Now move it back to the right a bit to find the point where the clicks disappear. Now you have found the minimum output buffer size for your card.

Important: To get good performance from the BATTERY software you must optimize the **Play Ahead** by hand every time you change your soundcard or update the soundcard driver.

When using MME drivers, the sound will break up when Play Ahead is too small, with DirectSound drivers on the other hand, there will only be one glitch after which the effective latency suddenly becomes very large (about 1 second).

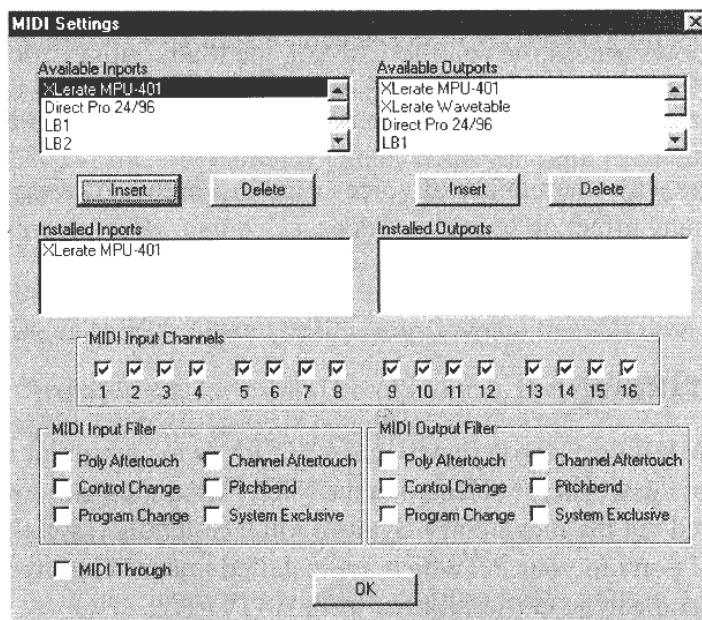
Please note that the output level of the soundcard depends on the settings of the mixer on the card. You can control this device using the Windows accessory **Volume Control**, the **Multimedia Properties** of the **Control Panel** or a mixer program delivered with the soundcard.

By the way, the number of voices used inside the software doesn't have any affect on latency. It does, of course, affect overall performance through the CPU load caused.

MIDI Interfaces

The MIDI Ports through which BATTERY is to communicate with the rest of the world are selected in the MIDI Port dialog window, which is opened via the menu entry **System MIDI Settings...** All the existing MIDI ports in your PC which are installed under Windows appear here and can be chosen for use with BATTERY.

If a MIDI input port has already been opened by another program, the software will not be able to use it and it will not appear under **Available Inputs**. In this case free up the port in the other program or make sure that BATTERY starts up first. Conversely, an in-port has to be removed from the list of **Installed Inputs** before another program has access to it.



MIDI Settings dialog

MIDI Input Channels

You can select MIDI channels for BATTERY. The program receives MIDI only on channels you have activated here. MIDI data received on other channels will be ignored.

MIDI Input and Output Filters

You can set MIDI filters for the MIDI input and output separately. If you wish that BATTERY ignores specific MIDI controllers, select the appropriate checkboxes.

MIDI thru

Activate this checkbox if you wish BATTERY to pass on incoming MIDI data directly to the MIDI output. MIDI thru can be used if you want to set your MIDI interface as MIDI input for BATTERY but record the MIDI data in another program. If you control BATTERY from a sequencer, you should not activate MIDI thru for BATTERY, since in certain configurations you might get a MIDI loop.

Using BATTERY with a Software Sequencer

You can control BATTERY with another piece of MIDI software, such as a sequencer, running on the same computer. The BATTERY CD contains a MIDI loopback driver called Hubis for use under Windows 95/98. This driver does not work with Windows NT and 2000, however, where you will need a special MIDI loop-back device designed for those operating systems (such as MIDI Yoke).

Hubis loopback driver provides four MIDI out- and in-ports named LB1-LB4 for use by other MIDI programs such as your sequencer. MIDI events routed to these ports are passed to the BATTERY software inside the computer.

If you want to disable this internal connection to other MIDI programs, simply remove the entry (LB1 for instance) for the list of Installed Inports in the MIDI Port dialog window (System MIDI Settings...) by selecting it and pressing the Delete button.

If you want to connect BATTERY's MIDI output to the input of your sequencer you have to insert a port (LB2 for instance) into the list of installed out-ports.

MacOS Installation

System Requirements

In order to use all of the realtime audio capabilities of BATTERY you need a computer with at least the following specifications:

Hardware

- Processor: PowerPC 300 MHz or faster
- 64 MB RAM
- Sound Manager-compatible audio interface
- OMS-compatible MIDI-Interface for connecting a MIDI controller or external MIDI sequencer
- 20 MB free hard drive space for the installation

Software

- MacOS 8.6 or higher
- Opcode OMS

Software Installation

Installation of the BATTERY

Insert the Installation CD into your drive and double click on the CD icon. Double click on the setup program to install BATTERY.

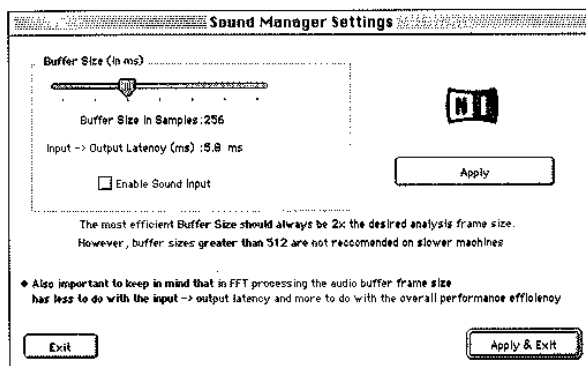
Click **Continue** after the startup picture to choose the setup type and installation directory. You will be prompted to choose a directory to install the software into. If you do not choose another installation location, the installer will create a new folder called **Battery** on the main hard drive.

Copy protection with the Installation CD

To facilitate copy protection, the Installation CD will be requested upon first program start. Reconfiguration of your system may also cause a copy protection request.

Settings for Audio Output

The window with the settings for the Sound Manager can be found in **Apple ⇨ Control Panels ⇨ Sound** (or **Monitors and Sound** depending on your system version).



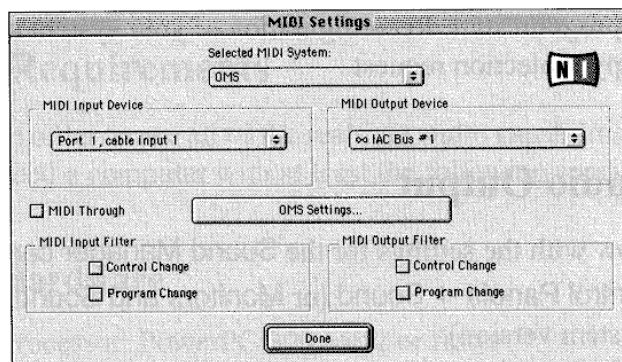
Soundmanager

Important: OMS (Open MIDI System) delays MIDI data noticeably when MacOS Virtual Memory is enabled. Therefore you must make sure that Virtual Memory is disabled by opening **Apple ⇨ Control Panels ⇨ Memory** and turning Virtual Memory off.

MIDI Input (Stand-alone only)

The BATTERY software uses OMS (Open MIDI System) to receive MIDI data. Alternatively, you can use FreeMIDI from Mark of the Unicorn which is available at <http://www.motu.com>.

You can then utilize the MIDI input by opening the window MIDI Settings, in the System ⇒ MIDI Settings... menu.



MIDI Settings dialog

BATTERY Plug-in Installation

Windows VST 2.0 Plug-in

System Requirements

Please observe the system requirements of the VST hosting software.

Installation

Insert the Installation CD into the CD drive. Use the Windows Explorer to open the CD and start the setup program by double clicking on **Setup.exe**. Select **VST Plug-in** as the installation type when requested.

The setup program will place the plug-in onto your hard drive. By default, it will place the plug-in within the first available directory named **Vstplugins**. This is the directory where a standard Cubase (or other VST compatible software) installation will expect to find its plug-ins.

If you have another program that supports the VST 2.0 standard, you can either move the **BATTERY.dll** plug-in file to the **Vstplugins** folder of this audio program, or change the directory chosen during installation. This will allow you to have other programs utilize the **BATTERY** plug-in instrument.

MacOS VST 2.0 Plug-in

System Requirements

Please observe the system requirements of the VST hosting software.

Installation

Insert the Installation CD into the CD drive and double-click on the CD icon.

You will find an application called **BATTERY Install**. Start this setup program by double clicking on it. By default, the installer will place the plug-in into the first folder named **Vstplugins** found on the startup volume. This is the typical location for VST plug-ins. If you have another program that supports the VST 2.0 standard, you should move the **BATTERY** plug-in file to the **Vstplugins** directory of that audio program. This will allow you to have other programs utilize the **BATTERY** plug-in instrument.

Copy Protection with the Installation CD

To facilitate copy protection, the Installation CD will be requested upon first program start. Reconfiguration of your system may also cause a copy protection request.

The BATTERY Standalone Application

Once you have installed BATTERY, you are ready to use the program for playback. Run the program by selecting the BATTERY application.

MIDI Note Playback

If you have a MIDI keyboard connected to your computer, and you have its MIDI port as an available MIDI inport, you should be able to play the keyboard and hear the output of BATTERY.

To make adjustments to the on-screen controls, you manipulate them with the mouse. For “knob-style” controls, you press your mouse button on the control, then move the mouse up to increase or down to decrease the control setting. For “push-button” controls, you simply click on the button to change its setting.

BATTERY Standalone Menus

File Menu

Open

By selecting Open... you can load a BATTERY kit file (file extension *.kit). The kit file saves all of the current settings, including the sample locations and all synthesis modifications.

Save

The menu item Save stores the current settings as kit file (file extension *.kit).

Save as...

The menu item **Save as...** also stores the current settings as a kit file. However, here you may specify a new filename.

Exit

The menu item **Exit** closes the program and all its windows, including those in the task bar. Before closing, the software checks if any changes have been made since last saving and asks if you would like to save those changes.

System Menu

The various items in the **System** menu are for controlling the audio and MIDI inputs and outputs of the BATTERY application.

Run/Stop Audio

With this menu item the audio computations can be started (**Run Audio**) and stopped (**Stop Audio**). This is, in essence, the main on/off switch for the BATTERY software.

Audio Port

This menu item is used to select the soundcard whose outputs are to be used to play the generated sounds. Cards that are not installed are shown in gray in the menu, while those that are installed are shown in black.

Audio Settings...

This menu item opens a dialog window in which settings for optimizing the performance of your soundcard are made.

MIDI Settings...

This menu item allows you to choose which of the MIDI inputs and outputs installed on your computer are to be used by the software.

To select one or more inputs from which the BATTERY software should receive data, choose the appropriate in-port from the list of **Available Ports** and insert it into the list of **Installed Ports** by pressing **Insert**. If more than one input is installed, they will be active in parallel. Use **Delete** to remove a selected port from the list. The changes become valid on clicking **OK**.

If you select the driver of a MIDI interface or a soundcard as an input to the BATTERY software, you can control the software from an external MIDI instrument (such as a master keyboard) connected to this input.

To select one or more outputs to which the software should send data, choose the appropriate out-port from the list of **Available Ports** and insert it into the list of **Installed Ports** by pressing **Insert**. If more than one output is installed, the same data will be sent to all. Use **Delete** to remove a selected port from the list. The changes become valid on clicking **OK**.

Help Menu

About

The menu item **About** opens BATTERY's info window. In its lower part you find the version number of the software and the serial number of your BATTERY license.

Interfaces

ASIO

What is ASIO ?

ASIO ("Audio Streaming Input Output") is an audio card driver architecture developed by Steinberg. ASIO is available for MacOS and Windows computers. It offers low latency and supports multi-channel audio cards.

ASIO drivers are usually offered by the audio card's manufacturer and allow working with every ASIO-compatible program. The main field of application is HD recording, but with the growing number of native software synthesizers ASIO also becomes more and more important for these programs because of its low latency.

Using ASIO with BATTERY

BATTERY supports ASIO under MacOS and Windows. The latency you get depends mainly on the quality of the audio card's ASIO drivers and their optimum configuration.

MacOS: For BATTERY to use the ASIO drivers, they have to be in a folder called ASIO Drivers, which must be in the same folder as BATTERY.

To activate the ASIO drivers in the BATTERY software you have to select ASIO in BATTERY's System/Audio Port menu. If you have installed more than one ASIO driver (under Windows for instance the Steinberg ASIO MME and ASIO DirectX drivers, which you may want to avoid due to poor performance) you can subsequently choose the right ASIO driver in the System/Audio Settings dialog.

The options available under **System/Audio Settings** depend on the ASIO card you are using. Some cards can be configured only in their own control panel, though usually you can adjust the buffer size and clock rate directly in BATTERY's audio settings dialog. If your audio card is able to receive external clock signals but doesn't automatically adapt to the right clock rate you can usually choose a sync source here.

Buffer size and audio routing

You should pay attention to one peculiarity in regard to buffer sizes: ASIO cards normally specify a range of buffer sizes in which they work on every system without problems. Since most ASIO drivers are designed for HD-recording applications and not for realtime synthesis, sometimes this range is unnecessarily high to avoid crackles in problematic systems. BATTERY allows you to set of smaller buffer-sizes than the audiocard's default settings. With some badly programmed drivers this can lead to a program crash. Therefore, the default setting in BATTERY is always the manufacturer's recommended value. Just try if smaller values are possible.

Under **System/Audio Routing** you can route the 16 audio outputs of BATTERY to the various ASIO channels of the audio card.

DirectConnect

This interface is only available on Macintosh systems.

What is DirectConnect ?

DirectConnect provides an easy way for applications to stream audio directly into Pro Tools or other Digidesign DAE hosts. DirectConnect allows up to 32 separate audio channel outputs from any host-based application, such as software-based synthesizers or samplers, to be independently routed, recorded, processed and mixed within the Pro Tools TDM mixing environment. Currently, only Digidesign "Mix" systems are supported due to the dependency on an SRAM DSPs which is only available on these systems.

Using DirectConnect with BATTERY

BATTERY supports 16 DirectConnect audio channels. BATTERY software calculates 32 Bit floating point audio internally, and DirectConnect is communicating with BATTERY with 32 Bit resolution. DirectConnect automatically calculates the output for DAE Hosts, including bit conversion if necessary.

Additionally to a working BATTERY environment, you need:

- DAE 5.x
- A DAE Host, e.g. Pro Tools 5, Digital Performer... Pro Tools 4.x works also, using DAE 5.x.
- The DirectConnect plug-in must be installed
- BATTERYPI file within the System/DAE/Plug-ins-Folder

Running BATTERY as a client with Pro Tools as host:

- 1. Start Pro Tools.
- 2. Start the BATTERY software
- 3. Choose System/AudioPort and select "DAE/TDM DirectConnect". This option will be only selectable if you have installed DirectConnect correctly and if you have placed BATTERYPI file within the System/DAE/Plug-ins-Folder. The Audio Settings... menu entry will become greyed out and is not needed using DirectConnect.
- 4. Load a Pro Tools Session. If you activate the "BATTERY" DirectConnect plug-in, you can finally hear the sound output of BATTERY.

Now you have 16 outputs from BATTERY to the Pro Tools Mixer. You can record, mix and tweak the streams with plug-in effects within Pro Tools.

Recording BATTERY in Pro Tools

Since recording any plug-ins in Pro Tools is only possible via busses, a Session able to record BATTERY signal is a bit more complex. The idea is to route BATTERY into AUX channels and send the AUX's outputs to busses. Audio tracks should get these busses as source input. Monitoring the bus input (instead of monitoring the audio files/tracks in the Pro Tools Arrange window) is only possible when setting

the audio track to record ("r"). If you are in **auto-input** mode (in the **Operations** menu), BATTERY cannot be heard until you record something. You should switch ProTools to **input-only** mode, to avoid this problem.

Important: If you encounter crackles and pops in the audio signal, please choose a greater buffer in the Pro Tools **Setup** menu -> **Audio Playback Engine**.

You need to set ProTools on **Active in Background** (in the **Operations** menu) if you want to hear the sound of BATTERY when ProTools is not the front application. If this option is not set and you switch to the BATTERY window, ProTools deactivates itself and will not exchange any data with BATTERY anymore.

MAS and FreeMIDI

The use of FreeMIDI and MAS allows you to sequence MIDI tracks for BATTERY in Digital Performer and route the audio output of BATTERY directly back into Digital Performer's virtual mixing environment, just like a real hardware synthesizer would go into a hardware mixer.

You can mix the audio output of BATTERY in real time, together with hard disk tracks and MIDI tracks in Digital Performer's virtual on-screen mixer. You are even able to apply plug-ins to the incoming BATTERY audio stream in Digital Performer. So you can use effects to process the incoming signal in realtime. You can use one stereo input or two mono inputs for BATTERY in Digital Performer.

Note: MAS and FreeMIDI are independent from each other, you can use one of them without using the other.

Requirements

- MOTU Digital Performer 2.7

- MAS Extension 2.1
- FreeMIDI 1.44

Important: Since Digital Performer needs a huge amount of RAM you should have 128 MB RAM at least. If you get a message about not enough free memory, you can try to start BATTERY program first and Digital Performer thereafter or you can reduce the allocated RAM size for Digital Performer.

MAS

The NI MAS support allows you to stream digital audio signals directly into Digital Performer. This means you can route the audio outputs of BATTERY directly to any Digital Performer audio track without the need to leave the computer and therefore you can stay in the digital domain all the time. The audio channels for BATTERY appear in Digital Performer's audio track input menus, when you activate the MAS audio port in the system menu of BATTERY software.

Setting up MAS:

- Make sure that you have the latest version of Digital Performer, MAS Extension and BATTERY.
- Make sure that the Native Instruments MAS Input Plug-in ("BATTERY Input") is located in the System extensions/MOTU/Plug-ins folder of your Digital Performer installation. The NI Installer will ask you to do this automatically. If a file is missing, you can run the installer again, choose custom install - MOTU MAS support packet. The NiMAS extension is used for all MAS-compatible NI applications and should be located in the System Extensions/Native Instruments folder.
- Start BATTERY application.
- Choose Digital Performer / MAS as Audio-Port from the System Menu.
- Restart BATTERY application when a dialog message appears asking for a restart.

- Now start Digital Performer. The order in which you launch applications shouldn't matter. There may only be a difference if you have to deal with limited RAM (see the "Important" note under Requirements in this section). If you start BATTERY first, then you will get an alert message in BATTERY application that you have to start Digital Performer (see also the FAQ at the end of this section about more info). This message is just a reminder - not an error.
- In Digital Performer, choose BATTERY's audioport (e.g. "BATTERY 1-2") as input source in the input column of your Digital Performer audio track. Depending if you are working on a stereo or mono track, you can choose pairs or single audio channels. After this you are able to set BATTERY to MAS in the Audio Port dialog in the system menu of BATTERY application. Now you have a direct audio connection between BATTERY and Digital Performer. If you are using a voice track and not an AUX track, you have to set the REC flag of the track in order to hear the output of BATTERY.

FreeMIDI

With the NI FreeMIDI support you are able to use FreeMIDI compatible MIDI interfaces as well as BATTERY application as MIDI destination in Digital Performer, which is achieved by using Free-MIDI's Inter-application MIDI.

When running BATTERY and Digital Performer at the same time and BATTERY is using the FreeMIDI System (System menu/MidiSettings), BATTERY MIDI channels automatically appear in Digital Performer's MIDI track output menus. Therefore you don't have to restart any of the two applications.

All Native Instruments products support realtime parameter automation via standard MIDI controllers, which can be recorded, programmed or inserted as points or curves by the user in a standard fashion using Digital Performer's wide range of MIDI controller handling features.

Setting up Free MIDI:

- Make sure that you have the latest version of Digital Performer, FreeMIDI and BATTERY.
- Start BATTERY and Digital Performer. The order doesn't matter.

- Select FreeMIDI in the MIDI settings dialog of BATTERY application.
- Launch the FreeMIDI Setup, e.g. from the MIDI Settings dialog of BATTERY application. Make sure that in File menu/FreeMIDIPreferences..., you have activated Inter-application MIDI. We also recommend to activate the FreeMIDI applications only entry. This allows you to run Digital Performer Midi engine in the background, so you can switch BATTERY application while Digital Performer is running.
- Now you can receive MIDI signals from Digital Performer via FreeMIDI Inter-application MIDI. You should not set any FreeMIDI input device in BATTERY application when you use MIDI thru in Digital Performer. Otherwise, you may get double midi signals or accidentally set up a MIDI loop.

At this time, you cannot transmit any MIDI data from NI products via Inter-Application MIDI. The MIDI output can be sent only to "physical" FreeMIDI devices. If you want to record the Midi output of a NI application, you have to use an external cable connection into Digital Performer. Be careful to avoid MIDI loopbacks.

Troubleshooting F.A.Q.

Q: When I attempt to boot up Digital Performer after BATTERY, Digital Performer complains that it doesn't have enough RAM to start the MOTU Audio System and when I enter the Studio Setup window I see that according to DP, I have 0.0 RAM available and I am unable to start DP with MAS enabled.

A: Digital Performer tries to allocate a lot of memory by default. So you might encounter a memory Problem. If you have 128 MB physical RAM installed in your computer, there might not be enough memory left for Digital Performer when BATTERY is already running. If you start Digital Performer first, BATTERY has only about 30 MB available, which is fine for most BATTERY users.

Important: Generally we recommend a minimum of 192 MB physical RAM to avoid these error messages.

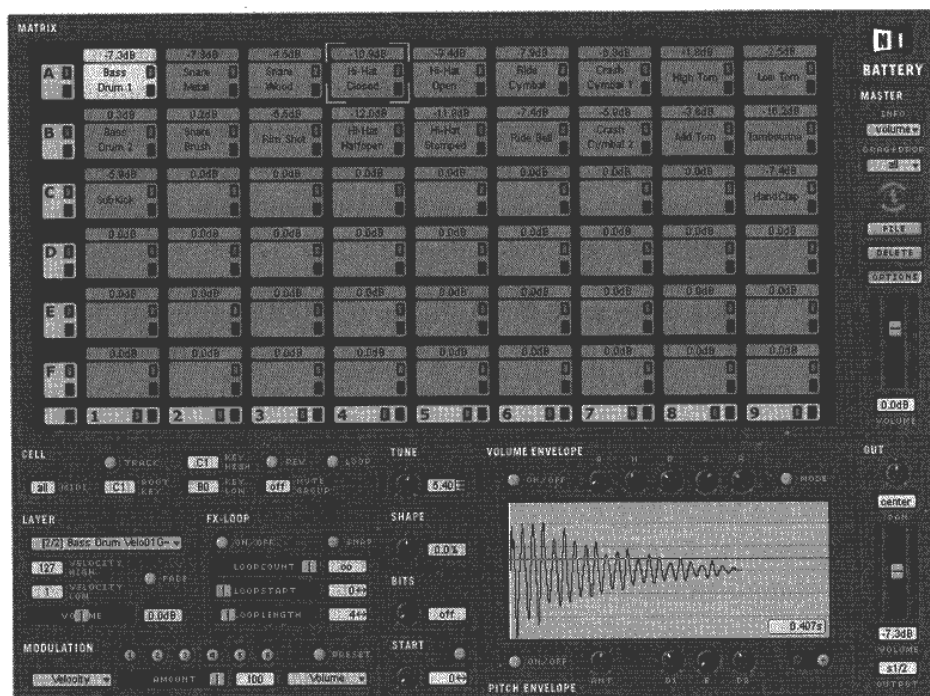
Q: If I boot up my Native Instruments application first with MAS selected as audio port , I receive an error message telling me that "No NI MAS Plug-in is active. Please start Digital Performer now...". This does not happen when I have SoundManager selected as audio output in the audio settings of the Native Instruments application. At this point I have no FreeMIDI support even though the Native Instruments application has been configured to use FreeMIDI, I get no response when trying to control the Native Instruments product from any of my FreeMIDI devices.

A: This is because the Audio and MIDI engines of the Native instruments application are driven by MAS. So if Digital Performer isn't running, the Native Instruments application is blocked (no triggers for the audio engine are coming in, so to speak). In this case, you cannot get any MIDI signal into the Native Instruments application (because the MIDI engine is driven by the audio engine). You have to start Digital Performer and restart the audio engine of your Native Instruments application.

Problems with Inter-application MIDI

FreeMIDI is able to stream MIDI signals from Digital Performer directly into your Native Instruments product via Inter-Application MIDI. If you are using Inter-application MIDI for passing midi signals into your Native Instruments application, please note that your Native Instruments product is receiving MIDI data from Digital Performer as soon as you select **FreeMIDI System** in the Native Instruments application's MIDI Settings dialog. You should not set any input device in this case.

The BATTERY VST 2.0 Plug-in



The BATTERY Plug-in's user interface

By taking advantage of the capabilities of Steinberg's VST 2.0™ format, Native Instruments is able to provide an incredible plug-in based performance instrument for users of a VST 2.0 capable sequencer (such as Cubase VST).

Running BATTERY from Cubase VST

Start Cubase, open the Audio menu and select the VST Instruments menu option. An "instrument rack" window appears. Click the area of a rack panel that says No VST Instr. and select Battery from the drop-down list. Switch it on by pressing the square red Power button, then press the Edit button to bring up the Edit View of the BATTERY plug-in.

You can adjust all of the front panel controls with your mouse. Additionally, you can audition any sound by clicking on the lower portion of any cell in the matrix - this will sound the primary sample assigned to the selected cell.

To test the MIDI throughput in Cubase, select the Arrangement panel. Choose a MIDI track, then select **BATTERY** as the MIDI Instrument selection. If you play a connected MIDI keyboard, you should hear the BATTERY instrument being played.

If you do not hear BATTERY audio playback, make sure that the Soft Thru option is set (it is found in the Options⇒MIDI Setup⇒System menu). Also, make sure that you have correctly set up the audio output for your sound card, and that the master output settings are appropriate for your sound cards.

Note: When the transport is running (play or record) in Cubase VST 3.7.0 (Windows), the response of VST instruments to real-time MIDI input is slow. Please update to Cubase VST 3.7.1 or higher, which will fix this problem.

The BATTERY VST Plug-in Menu

The Standard VST Plug-in Menu



The Standard VST Plug-in menu provides a “power button” and a bank/preset loader. As with any VST Plug-in, you can configure a group of BATTERY patches into a “Bank” file, and cycle between patches using the left and right arrow keys.

The “power button” will allow you to activate or deactivate the plug-in, and is a duplicate of the power button on the VST Instruments rack.

Playing BATTERY via MIDI

Load a BATTERY patch and play your MIDI keyboard - you should hear the sound of BATTERY through the outputs of the Cubase system. If you do not hear the BATTERY plug-in output, make sure of the following (in Cubase):

- MIDI Soft Thru setting is turned ON.

- You have selected a track (in the Cubase Arrangement page) that has the BATTERY plug-in selected for MIDI output. This is selected by clicking on the Output column, and selecting BATTERY (1). If there is another number, such as (2) or (3), you need not be concerned, this just displays the order that the VST instruments were loaded in the current song.
- You have “turned on” the plug-in by engaging the Power switch in the VST Instrument panel or on the BATTERY VST frame.
- MIDI is being properly routed to the plug-in. You can verify MIDI routing by viewing the matrix cells - when a sample is “hit” via MIDI, the cell will light up.
- Make sure the BATTERY Plug-in volume is not turned off.
- You have the BATTERY outputs turned on, unmuted and properly routed in the Cubase Channel Mixer.
- You have turned up the Cubase Master Section volume controls.
- You have properly connected the output of your sound card to your monitor system.

If you are using another VST host instead of Cubase, check its equivalent controls.

Using Battery

The BATTERY Master Section



The Master Section of BATTERY is the starting point for using presets with the plug-in. This section allows you to configure the Sample Matrix pads, configure Drag+Drop functionality, load and delete samples and change system options.

INFO Menu

The INFO button displays a popup menu of fields that can be displayed in the Info section of the Sample Matrix cells.

The Info section of the Matrix cells can display and edit most parameters found in the sample editing section of BATTERY.

The final option on the INFO menu is labeled [follow], and provides a particularly useful function. When [follow] is selected, the info section of each cell will switch to the currently selected edit function within the editing interface. For example, with INFO

set to [follow], selecting the TUNE function for editing will change all of the cells to display their current TUNE settings. This is very useful when fine-tuning a patch with many samples.

Drag+Drop Menu

The Drag+Drop button provides a menu that allows you to change the way drag-and-drop between cells operates. From this menu, you can cause the normal operation of Drag-and-Drop to move only a subset of each cell's contents. Options include:

- All (the default)
- Volume and Pan
- Volume Envelope

- Pitch Envelope
- Root Key and Key Range
- Shape and Bit Reduction
- FX Loop
- Modulation

FILE Menu

If you press the FILE button, a drop-down menu is displayed. The options are:

Add New Layer: This allows you to add a sample layer to the currently selected matrix cell.

Replace Cell: Replace the currently selected cell with a sample from your drive. A file selection dialog is displayed, allowing you to select any sample.

Load Cells: This option works like the Replace Cell option, except that it allows you to select more than one sample. Selected samples will be loaded in consecutive matrix cells, starting with the cell entered in the “Start Slot” entry of the file selection dialog.

Load Kit: The Load Kit option opens a file selection box. In addition to selecting a standard BATTERY patch file (with the *.kit extension), you can choose patches from LoopAZoid (*.lpz extension), LM4 (the *.txt files) and SoundFont sets (using the *.sf2 extension). The Load Kit option also allows you to determine the starting Column and Row to “lay in” the loaded kit.

Load Akai: Using this option, you can import instruments from an Akai S-1000 series CD-ROM. Place the Akai disk in your CD-ROM drive prior to selecting this option. When the option is selected, it will scan the CD-ROM and present a list of the partitions, banks, programs and samples found on the disk. You can select a program, and the starting Column and Row to “lay in” the Akai kit.

Add Cells, Add Kit Add AKAI: These options work like the “Load” options, except that they allow you to add the selected samples/files to the current Kit. Using these functions, you can create a complete kit from a number of different sample sources.

Save Kit: This Save option allows you to save the current patch contents in a BATTERY kit file (*.kit extension) on your hard drive. This file contains the synthesis settings, matrix layout and pointers to all the samples used in the current kit.

Save Modulation Preset: This option allows you to save your current modulation setting as a disk-based preset. In this way, when you find a useful modulation function, you can save it for use with other cells and kits.

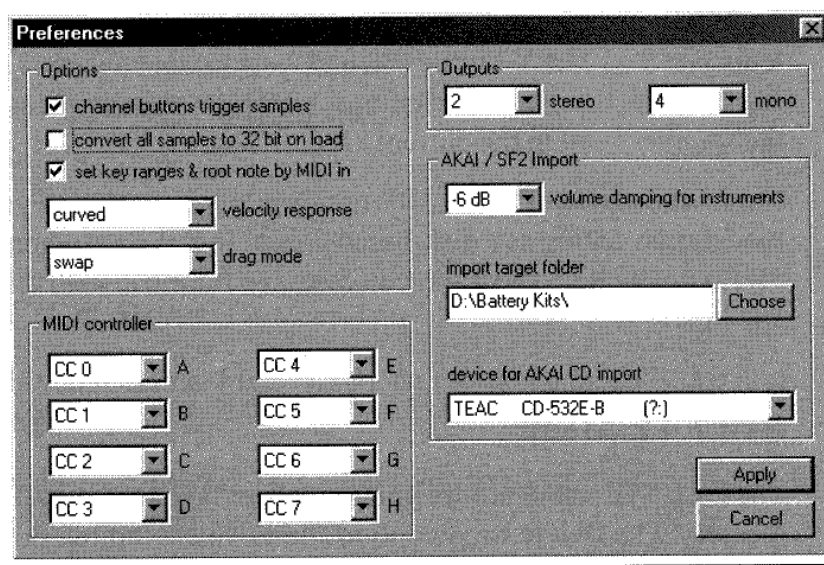
DELETE Menu

The DELETE menu allows you to remove items from BATTERY's memory. The **Delete Layer** option allows you to remove the displayed layer from any selected cell. The **Delete All Layers** will clear out all of the sample layers from the currently selected cell(s).

Delete Cell will erase the content of all selected cell(s) - preparing it for a new sample and/or patch. Finally, the **Delete Kit** option will completely clear the current patch from memory.

OPTIONS Menu

The options menu allows you to tweak the operation of BATTERY's editing operation. A dialog box is displayed that allows you to control velocity response, drag mode, MIDI controllers, output selection and other operational characteristics.



Options:

channel buttons trigger samples

If this option is enabled, you can trigger the selected sample of a cell by clicking with the (left) mouse button on it.

convert all samples to 32 bit on load

Tick this checkbox, if you wish that your samples become converted to 32 bit during import. Be aware that a 32 bit sample will need twice as much RAM as a 16 bit sample.

set key ranges and root note by MIDI in

Parameters which need an entry of a MIDI note (KEY HIGH, KEY LOW and ROOT NOTE) can be edited using a MIDI keyboard. Double click on the value display to open a virtual MIDI keyboard. You can either enter the note on the virtual or on your physical MIDI-Keyboard then.

show frame around cells

This option enables the orange frame around the cells when you are navigating with the mouse in the cell matrix.

velocity response

You can choose between the two velocity response curves „linear“ and „curved“. If you select „linear“, the velocity of your MIDI-keyboard is applied to BATTERY without any modification. If you select „curved“, the original keyboard velocity will be slightly modified to an exponential curve. Using an exponential velocity curve the stronger velocity values are reached earlier, so that you don't have to hit the MIDI-keyboard very strong to get the highest velocity values in BATTERY.

drag mode

You can choose between the two drag modes „swap“ and „copy“. While „swap“ exchanges the content of the two cells during a drag+drop operation, „copy“ overwrites the content of the target cell.

MIDI Controller:

It is useful to pay special attention to the settings of the MIDI controllers. Use controllers that match the MIDI gear you have in your studio environment. The letters A-H, which represent the eight controllers you define in this section, correspond to the modulation sources in the modulation section.

Outputs:

You can define the number of outputs in this section. Up to eight stereo and 16 mono channels are possible if you use Battery as VST instrument. In the stand-alone version 16 outputs are available using ASIO, MAS or DirectConnect. The settings will not become active until you load BATTERY the next time. The outputs you define in the Options window can be assigned to the cells in the OUT-Section of the BATTERY panel.

Important: Under Emagic Logic (version 4.6) and some other VST-compatible hosts you cannot assign more than two channels to a VST plug-in. So in these hosts this function doesn't have an effect.

AKAI / SF2 Import:

volume damping for instruments

Many samplers automatically dampen the Volume at the import of an AKAI- or SF2-program file. Per default BATTERY uses an attenuation of -6 dB, but you can modify this value if you often make the experience that your sound library is imported with an inaccurate overall volume. If the overall volume is too high it may lead to a distorted output.

import target folder

If you import an AKAI- or SF2-program, BATTERY stores the included samples on your harddisk. The default directory is located in the installation directory of your BATTERY stand-alone program, but you can change the path in the Options dialog.

Important: Since per default the target folder is set to the directory in which you install BATTERY, you might want to modify the path in the options menu. Especially if you install the program on your system drive, it is recommended to change the directory. The samples will not be deleted automatically when you close BATTERY.

device for AKAI CD import

You can specify the CD drive which BATTERY uses for the CD import. Select the drive which you normally use for reading your CD-ROMs.

Master Volume control:

The volume control in the Master Section is an overall volume control for the entire bank. All cells, regardless of the output used, will be affected by this control. A display field is provided to show the current value of the slider.

The Sample Matrix



The Sample Matrix is the primary interface for assigning samples, muting and soloing sample layers and viewing the playback. When you load a patch, the sample layers will be inserted into cells on the matrix grid. You can audition any sample layer by clicking on the individual “cells”.

When BATTERY is receiving MIDI (from your sequencer or external MIDI device), cells that are sounding will be lit with a blue “back-light”.

Each cell contains samples and parameters. You can move the complete contents of a cell by selecting a source cell, and dragging it to a new destination cell. To copy only the samples, you use the Alt key to click and drag the cell. Settings alone can be copied by using the Ctrl key when clicking and dragging the cell.

By default, when moving a cell to an occupied cell, the source and destination cells are “swapped”. The Options menu provides a setting to overwrite the contents of the destination cell in these instances. You can also use the editing functions found in the DRAG+DROP menu to fine-tune the drag-and-drop functionality.



Each sample cell is split into two parts - the sample cell and an info field. The Info field, the top section, displays a parameter selected from the INFO menu. This field allows for quick editing of a specified field for all selected cells. Values can be changed by Ctrl-Clicking (Mac: Command + Click) on the field and entering a value, or by clicking the field and dragging the mouse up or down (to increase or decrease the value, respectively). If the Info field is being used to display the key range or root key values, right-clicking (Mac: Ctrl + Click) on the field will display a miniature keyboard.

The sample cell (the lower section) displays the name of the cell. If a cell has not been assigned, the sample cell has no label. To change the name of a cell, Ctrl-Shift-Click on the cell.

There are two “LED” lights on each cell. The yellow LED, if clicked, will “solo” the selected cell (muting all other cells on the matrix). The red LED is the “mute” switch, and will prevent the sample cell from sounding.

The matrix has lettered rows and numbered columns. This is important when you are merging layers, but can also be used to mute or solo sub-sections of the matrix. Each row and column has a selector, which can be used to audition, solo or mute all of the cells in its respective row or column. This can be especially useful for creating and auditioning cells that share key ranges.

MIDI Response

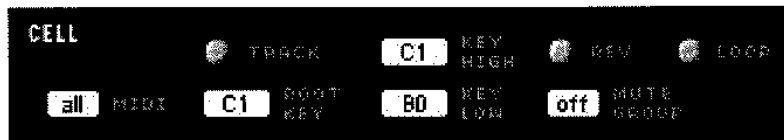
The MIDI response of BATTERY is similar to any standard MIDI instrument. Once you have MIDI reception set correctly, you will find that the BATTERY software will respond to the complete range of MIDI notes. Notes will be sounded if there are any samples assigned to the keys that you play.

Creating Your Own Sounds

Sample Layer Editing

Beneath the Matrix is a set of controls for manipulating the function of all selected Matrix cells. If you have selected multiple cells, these edit functions will alter all selected cells. The editing system is split into a number of sections, each with several related controls.

Cell Section



The cell control section is used to define the basic MIDI and sample functions of the current cell. The settings on this panel affect all sample layers on the currently selected cell, and provide for complete control of pitch, MIDI channelling/grouping and basic sample playback parameters. Let's examine the controls from left-to-right:

MIDI Channel Selection (MIDI)

The MIDI channel selector field allows you to have a cell limit its response to a single MIDI channel. The selection range is from 0 - 16, where the default MIDI channel is 10.

Keytrack Enable (KEYTRACK)

If the Keytrack Enable button is selected (lit) and the KEY RANGE is greater than one note, all samples in the current cell will be pitched higher or lower based on the input MIDI key. If it is disabled, the pitch will not be affected by incoming MIDI notes. If you want to prevent "accidental" pitch changes, you can disable the KEYTRACK function.

Root Key Selection (ROOT KEY)

The Root Key entry field determines the “note center” of the current sample cell. This is the basis for pitch shifting (when Keytrack is enabled) - for each semitone (note) that you deviate from the selected Root Key, BATTERY will pitch-shift the samples in the current cell by one semitone. For example, if you have the Root Key of a cell set to C1, and play a D1 note, the sample will be pitched 2 semitones higher. The range of this field is the entire MIDI note range: C-2 through G8

Key Range Selection (KEY HIGH and KEY LOW)

These two entry fields determine the MIDI note range that will trigger the current cell. For example, if KEY HIGH is set to C2 and KEY LOW is set to C1, playing a D1 will play the sample - but D2 will be ignored by this matrix cell.

Sample Reverse (REV)

The Sample Reverse button allows you to reverse the sound of a cell with a single button click. When enabled (lit), the button will completely reverse all samples attached to the current cell. When this is selected, you will notice that the waveform display (in the lower-right corner) properly displays the sample orientation.

Mute Grouping (MUTE GROUP)

Mute Grouping is a way to force samples to “turn off” all related samples when sounded. The most common use for this is the implementation of hi-hat samples: when a closed hi-hat is hit, you normally want any open hi-hat samples to be “choked off”. The Mute Group selector provides this functionality.

If you wish a number of cells to be “mutually exclusive”, simply assign them to the same Mute Group. When any one of the cells is sounded, it will automatically mute all currently sounding samples from that Mute Group. In the above example, you might assign both the open and closed hi-hat sounds to Mute Group 1. Now, whenever a hi-hat is sounded, it will close off any other sounding hi-hat cells.

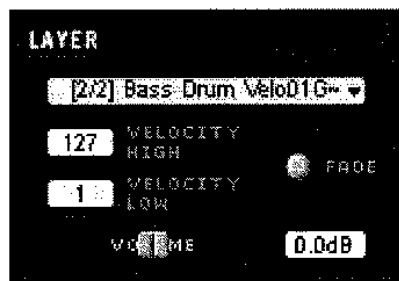
When using sample loops, it is often wise to assign them all to the same Mute Group - this will allow only one loop to sound at any time. It can also be useful to assign a “silent” sample in one of the Mute Group cells, so that you can turn loops by firing this “damping” sample.

Sample Loop (LOOP)

The Sample Loop button enables the use of “internal loops” contained in the sample files. Both .WAV and AIFF files can contain defined loops that provide sustained tones - and enabling the Sample Loop button will allow those loops to be utilized by BATTERY.

If there is no defined loop in the sample file, the Sustain Loop will use the start and end points of the file as loop points.

Layer section



The Layer Editing section allows you to define velocity layers for the samples contained in the current cell, to set individual volumes for each layer and provide cross-fading between layers. The controls (left-to-right, top-to-bottom) are:

Layer Selector

This displays all of the layers (samples) available on the current cell, and allows you to select one for editing. Layers are added to a cell using the Add New Layer(s) option on the File menu.

Velocity Range (VELOCITY HIGH AND VELOCITY LOW)

The velocity range settings allow you to determine the lowest and highest velocities to be sounded by the currently selected layer. If you want the current layer to sound at any velocity level, you can set Velocity Low=0 and Velocity High=127 (the entire MIDI range).

When you have a number of layers on a single cell, you will often want to use velocity “switching” to create a more realistic drum sound. In this case, you might have a sample of a softly hit drum covering from 0-40, a medium hit drum sample from 41-80 and a hard hit sample from 81 to 127.

Layer Volume (VOLUME)

This slider allows you to adjust the volume of each layer attached to a cell. Choose a layer with the selector, and adjust the volume for the selected layer.

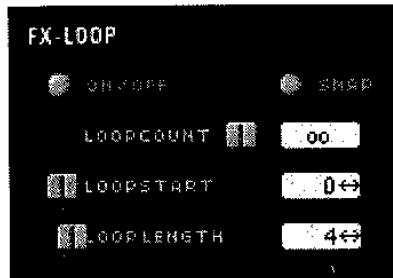
Layer Crossfade (FADE)

If the Layer Crossfade button is enabled, any “overlap” of sample layers will have a crossfade applied to both sounds. This is especially useful for creating a realistic percussion sound, where the difference between a soft and hard drum hit can be “blurred” by crossfading between them over a small velocity range.

The operation of the crossfade depends on the overlap of layer zones. When two layers overlap, they will x-fade across the overlapping zone. When only two samples are loaded and both are using the complete velocity range (from 0 to 127), the sounds crossfade completely as velocity increases.

If one layer's velocity range is fully included in another layer, no crossfade will take place - both layers will sound.

FX-Loop section



The FX-Loop section add an important effect to your percussion samples - the ability to loop a section of the sample. You can choose the section of the sample to loop, and the number of time you want it to loop (from 1 to infinity). This allows BATTERY to extend percussion sampling beyond mere “one-shot” sample playback. The controls in this section are:

Loop Enable (ON/OFF)

This button allows you to enable or disable the loop. Note that when the loop is enabled, the waveform display (at the lower-right) displays the loop's effect on the sample.

Zero Crossover Snap (SNAP)

The Snap push button is an “assistant” for the loop controls - it determines if the Loop Start and Loop Length controls should “Snap” to the nearest zero-point in the sample.

Generally, the best (i.e., least noticable) loops are performed by having the loop occur at zero-points. However, many sound designers are using non-zero-point loops to create buzzy (and therefore more jarring) loops. Use this function to help create better “standard” loops.

Loop Count Control (LOOPCOUNT)

The Loop Count control determines the number of times the loop will be repeated. This can range from 1 repetition to an infinite repeat. The display field to the right of the control shows the current value.

Loop Start Position (LOOPSTART)

This slider sets the starting position of the looped area. The display field to the right of the control shows the current value, with the “unit of measure” selectable (between samples, percentage or notes) by clicking on the right side of the field. This control ranges through the number of samples available in the current matrix cell.

Loop Length (LOOPLENGTH)

The loop length parameter determines the length of the loop. As this parameter is adjusted, the waveform display will be adjusted to match (if looping is enabled). The display field to the right of the control shows the current value, and also sets the “unit of measure” by clicking on the right side of the field.

Modulation section



The Modulation Edit section allows you to map MIDI controllers to specific functions within the BATTERY patch. This can be used to greatly enhance the functionality of any patch, and can be used (in conjunction with a software sequencer) to automate functions that will widely vary the sound of the patch. The functions of the Modulation Edit section are:

Modulation Set Selection

Each cell within the BATTERY Matrix can have up to six modulations. Each of these modulations can be accessed by pressing the pushbutton (labelled 1-6) corresponding to the desired modulation.

Modulation Source

The modulation source determines the MIDI Control (or, in some cases, internal source) to use for the current modulation. Available sources are:

- [none] (No modulation)
- Velocity
- Modulation Wheel
- Pitchbend
- Aftertouch
- Key Position
- controller A-H (as defined in the Options menu)
- constant
- random unipolar (A random number between 0 and 127)
- random bipolar (A random number between -127 and 127)
- Loop count
- [Lock to Mod 1] (The same source as the first Modulator)

Modulation Amount

This determines the “depth” of the effect on the Modulation Destination. This ranges from -100% to +100%, with 0% (no effect) in the center of the fader. The display field to the right of the fader displays the current setting value.

If any combination of modulations exceed an effect level of 100%, the value will be “clipped”, or limited, to the maximum value.

Modulation Destination

The Modulation Destination is the BATTERY Control that will be “adjusted” by the Modulation Source. The available Destinations are:

- [none] (no modulation)
- volume
- pan
- Volume envelope attack
- Volume envelope hold
- volume envelope decay
- volume envelope sustain
- volume envelope release
- pitch
- pitch envelope amount
- pitch envelope decay 1
- pitch envelope break
- pitch envelope decay 2
- waveshaper amount
- bit reduction
- sample start point
- FX Loop count
- FX Loop start
- FX Loop length

Modulation Presets

Modulation presets allow you to create and use standard functions for modulating BATTERY parameters, and to create complex tools for sample manipulation. Once a preset is created, it can be used again and again.

The modulation preset is somewhat easier to use than the normal modulation, but has some limitations. A modulation preset can only employ a single MIDI modulation source.

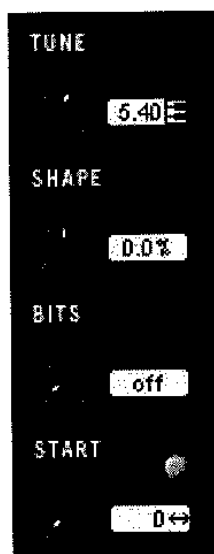
Use the following steps to build a modulation preset:

- Start as if one were creating a normal modulation. Select a modulation source and a destination for modulator one (1). Adjust the Modulation Amount to the setting you'd like.
- Assign Modulator Source two (2) to either an internal value (Constant, Random Unipolar 0 - 127, Random Bipolar -127 - 127 or Loopcount) or lock it to Modulation Source 1. Do not use any MIDI controllers - since a Preset should only use on Controller Source.
- Repeat the above for modulator 3-6.
- When all 6 modulators are set, hit the Preset switch.

In preset mode, the visible Modulation Amount is the master amount for all modulations in the preset. This allows you to easily change the "single source" and adjust the "single amount" for the selected preset.

You are not limited to using only one MIDI source in a preset, but it is much easier to use single source presets without confusion. Some people like to create "animated sounds" using velocity while others prefer the Mod Wheel. You can always turn off the preset and assign multiple MIDI sources to the modulators provided by the preset.

Tune/Shape section



The Tuning and Shape Edit section provides four "broad effect" functions - cell tuning, wave shaping, bit reduction and sample start offset. When any of these parameters are changed, you get immediate feedback in the waveform display to the right of this section. The functions work as follows:

Cell Tuning (TUNE)

The cell tuning function provides for tuning of all of the layers on the currently selected matrix cell. The range is +/- three octaves, but the range can be selected in a number of ways.

To the right of the TUNE display field is an icon that displays either a pitch adjustment, percent sign or a note value (from quarter notes to sixteenth note triplets). Depending on the type of pitch manipulation you are trying to perform, you can select the tuning display that best suits your needs.

While the pitch and percentage adjustments are easily understood, the note value tuning deserves special attention. This unique BATTERY function allows you to precisely match a loop to a specific duration by altering its pitch. For example, if you have a sample that represents 4 beats, adjusting the TUNE setting to 4 quarter notes will adjust the pitch to force the loop to fit a measure.

An important note about this function - some software systems are unable to transmit tempo changes to software like BATTERY. In these packages, if you change the tempo of your song the BATTERY TUNE setting will not automatically be adjusted. If you change the song tempo after setting this value, you may need to “touch” this function to reset it to the new tempo.

Wave Shaping (SHAPE)

The Waveshaping control provides waveshaping functionality (simulating both expansion and compression) for the current sample cell. A negative parameter causes expansion in the sound - quiet sounds are quieter, and loud sounds are made louder. Positive settings provide a compression-like effect, where loud sounds are made quieter, and quiet sounds are made louder.

Unlike a standard audio compressor/expander, the SHAPE function works on individual sample bits - not the overall sound. Therefore, you will find that the SHAPE function can greatly alter the sound of even the shortest samples.

Bit Reduction (BITS)

The Bit Reduction control allows you to “shave off” some of the sample bits to create a rougher, more “in your face” sound. Many of the early sample-based drum machines used fewer than the 16-32 bits that are now common (for example, the classic E-mu Sp-12 used 12 bit samples). As you increase this control, the number of bits used for each sample is reduced, and a grittier sound is created.

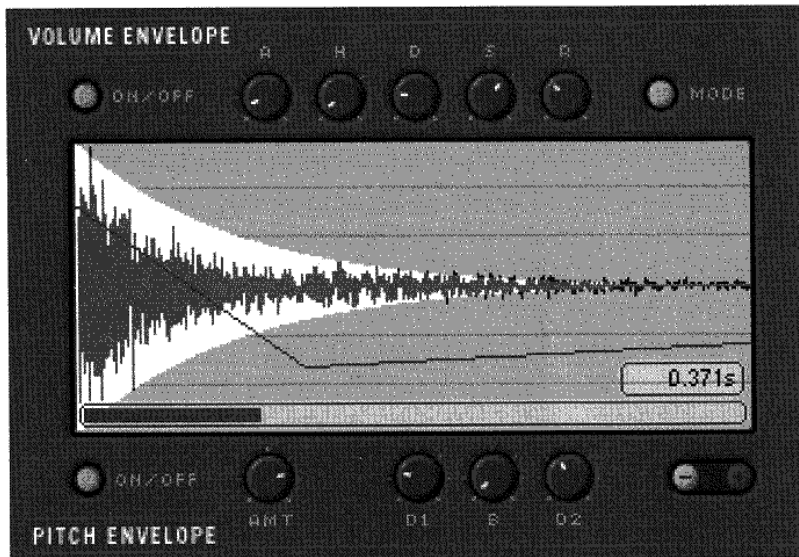
You should note that the BITS function can be set to fractional bit levels - such as 12.4 bits! This has the result of adding a considerable amount of “grit” to the sample sound.

Start Position Offset (START)

One of the sounds that is becoming increasingly popular is the use of drums with the leading attack removed. By using the start Position Offset control, you can move the beginning of sample playback to any point in the waveform.

A common use for the START setting is to set the start point in the middle of the sample. If you then apply a negative velocity modulation to the sample, it will use more of the “impact” sound of a drum hit as the key is hit harder. This can add great realism to your percussion sounds.

Envelope and Waveform Display Section



The Envelope Edit and Waveform Display section of the BATTERY user interface provides two editable envelopes (one for volume changes, and one for pitch manipulation) as well as a waveform display that gives visual feedback on the editing that has occurred. The functions in the section are:

Volume Envelope Editing (VOLUME ENVELOPE)

The Volume Envelope allows you to add dynamics to a static or looped sample. The controls are:

ON/OFF: This enables the volume envelope, and displays (in a light green shade) the volume envelope applied to the waveform.

Attack (A): The attack time of the envelope.

Hold (H): The amount of time that the envelope will be held at its maximum level.

Decay (D): The decay time (after the Hold is completed) until the sustain point is reached.

Sustain (S): The sustain level that will be maintained as long as the MIDI Note is held.

Release (R): The Release time, which begins once the MIDI Note is released.

Mode: This pushbutton toggles between AHDSR (Attack-Hold-Decay-Sustain-Release) and AHD (Attack-Hold-Decay) envelope functionality. Typically, and AHDSR envelope would be used for samples that have a significant sustain time (especially when played from a MIDI keyboard), while a AHD envelope is better for “one-shot” sample playback. When AHD mode is selected, the Sustain and Release controls are disabled.

Pitch Envelope Editing (PITCH ENVELOPE)

The Pitch Envelope works much differently than the Volume Envelope. First, you can control the amount of envelope effect on the sample pitch. Secondly, the envelope is a dual-section DBD envelope with a center breakpoint. This type of envelope is especially conducive to pitch manipulation, and is the basis for many classic electronic drum sounds. The parameters available are:

On/Off: This enables (or disables) the pitch envelope. When enabled, the pitch envelope is displayed (on the waveform display) with a bright red line.

Amount (AMT): The Amount parameter determines the amount of pitch bending effect the envelope will have on the samples. The range is +/- 3 octaves.

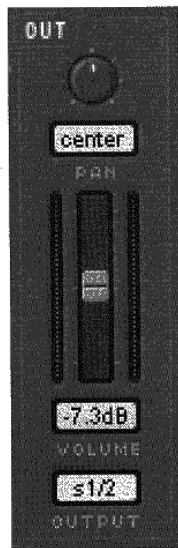
Decay Time 1 (D1): The first decay time is the amount of time it takes for the pitch to bend from the initial “Amount setting” to the breakpoint.

Breakpoint (B): A setting, with range from -100% to +100%, that determines the level of the mid-point break between the two decay settings.

Decay Time 2 (D2): The second decay time, which is the amount of time required to bend from the breakpoint to a nominal (0) setting.

In addition to the two envelope editors, there is a set of zoom buttons at the bottom right-hand side of the waveform display area. As you zoom in on the waveform (using the + key), a scroll bar is displayed along the bottom of the waveform. You can move forward and backward through the wave to see the results of your edits.

Output section



The Output Edit Section provides control over the pan position, volume and audio output of each sample cell. The functions are:

Pan Position (PAN)

The Pan Position control determines the left/right location within the selected output pair. The display field below the knob shows the current pan position value.

Volume

The volume control determine the output volume of the current sample cell *prior to being sent to the output stage (and the overall output volume slider on in the Master section)*. This is used to set the relative volumes of the various cells in your BATTERY patch.

Output Selection (OUTPUT)

This list allows you to select the physical output pair (in the stand alone application) or “logical output pair” (in the VST, MAS and DirectConnect plug-ins). You can use this to distribute the sample output across several outputs, and to provide more control during mixdown. You may want to refer to the Drum Mix notes in the Tips and Techniques section for insights on using multiple outputs appropriately.

Percussion Sampling Tips and Techniques

As with any sample-based system, BATTERY will work best if you use high-quality samples, and if you spend time gaining expertise with patch programming.

Beyond this most simple advice, however, there are a few tricks to percussion sampling and patch setup that may be new to you. Go through these tips, experiment with the results and you may find a secret formula that allows you to create The Perfect Kit...

Alter the Drum Pitch

The Root Key setting, in combination with the Key Range, determines the “baseline” pitch of the sample. However, many modern drum sounds (especially in dance and experimental music) use wildly pitch-shifted sounds. You can use the TUNE setting to alter the individual tuning.

Beyond this simple setting, you can also use pitch modulation to adjust the pitch based on either the MIDI note number, or using key velocity.

Select the “Example_1” patch (found in the „Examples“ directory), and examine the first sample “cell”. You can audition it by clicking on the large segment of the cell area. When you select it, the programming section of the BATTERY interface changes to show the setting for this cell.

You can either use down-shifting (typical in down-tempo and industrial music) or up-shifting (typical in D’n’B and house), based on your sound design needs. Adding a pitch envelope can also add interesting movement to the drum sound.

An important part of drum kit tuning is making the drum tuning match the key of your song. 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 the TUNE settings of your kit to make your kit sound perfect for the song.

Create Interesting Mute Groups

The mute group function is typically used for mutually exclusive sounds of the same type. For example, having an open and closed hi-hat sound on the same mute group will prevent an open hi-hat from ringing on a closed hi-hat hit (a very unnatural sound). However, mute grouping will allow you to do some very creative sound design functions as well.

In the Examples patch, the second and third cells (cells A2 and A3) are in Mute Group 1. The first cell is a sustained cymbal hit, while the second cell is a “whirling” sound. To hear a unique effect, hit and hold the MIDI key 37 (D#2, which will sound the sustained cymbal). Now, hit MIDI key 38 (D2, the whirling sound). This will cut off the cymbal and replace it with the whirl. Since the sounds are similar, the whirls sound as if they are a controlled ending to the sound.

Since the cymbal will sustain until you hit key D2, you have complete control of the sound’s length - a type of dynamic control that is rare in many synth engines.

Using Reversed Percussion

Combining the Mute Group ideas with a reversed sample, cells A4 and A5 have the same sample, but with cell A5 reversed. Playing a combination of cells A4 and A5 (using MIDI notes E2 and F2) can give you an interesting cymbal sound with much more control than a “normal” drum sample.

Creative Layering

Layering is generally used to create level-specific sample sets - sounds of the same instrument at different “hit levels”. However, this doesn’t have to be the case. Check out the sound of cell A6 (played with MIDI note G2). This sound combines a number of different “electronic” drum sounds of varying timber. As you hit G2 at different velocities, you get different drum sounds - but not different volumes.

In addition to creating a layer of non-similar sounds, the modulation function that maps velocity to volume was changed to have no effect (0% AMOUNT). This provides a bizarre, and particularly “retro” sound.

Stretching out the FX-LOOP Function

Play the sound in cell A7 (using MIDI note A3) - it is a metallic buzz that slowly fades out. The basic sound was a simple electronic cymbal, but the FX-LOOP parameters have been manipulated to provide a buzzing loop.

You can adjust the loop count, loop start and loop length to hear their effects. Once you have had an opportunity to experiment with the sound, move to cell A8 (using MIDI key B3) - it is a similar sound, but one that changes based on the velocity of the key hit. The programming of the sound is the same as A7 was, but the modulation system now alters the FX-LOOP start, length and count based on velocity. Using modulation along with interesting sources and destinations can provide an infinite number of interesting sounds.

Creative Loop Handling

In addition to providing excellent sample triggering, BATTERY can be a great tool for working with sample loops. The most important part of loop production is creating great loops. When you are working with a loop creation tool, make sure that the sound does not feel rushed or hesitant as you monitor the result.

Once you have a great loop, add it to an unused cell in your patch. Now, using the “note length” TUNE adjustment, you can force the loop to exactly fit a specific duration through pitch alteration. This provides unequalled flexibility in loop-tempo matching.

An interesting loop setup, which we call “The Jolly Loop Jumper”, can be heard in the “Example_2” kit (found in the „Examples“ directory). The loops in this kit were created using the following steps:

- A loop was selected from the hard drive, and loaded into a matrix cell.

- The loop was sync'd to the song tempo using the tune knob (in note value mode).
- The cell was assigned to a unique mute group, so it will mute itself.
- The “Snap to Zero” button (in the FX-Loop section) was activated.
- The quantization of the sample start is set to 16th notes.
- Modulation Source 1 was set to velocity, with the modulation amount set to 100%.
- Modulation Destination 1 was set to Sample Start point.

With this setup, you can run your sequencer in a loop, and alter the velocity of the notes. You will hear the start point hop about, giving you everything from D’n’B rapid-fire loops to crazed hiccup-rhythms.

As an added function, you could change the Modulation Source 1 to random - which will cause the start point to randomly fly about. You may want to use caution, since this may force the sample start point to the “end” of the sample (leaving you with no playback).

Tweaking the Drum Mix

Creating a great drum and percussion mix is as much art as science. Drum mixes are the measure of greatness in engineers, and a poorly mixed percussion mix will kill an otherwise great song.

While it would be impossible to list all of the “great ideas” that have been written about creating drum mixes, a few points should be noted. Luckily, when using the BATTERY software, we don’t have to worry about microphone location!

Try these tips on for size - but realize that in electronic music, there are no rules!

- Use individual drum outputs. When using BATTERY as a VST instrument, you can have multiple outputs using unique EQ and effects settings. A typical output setup would include a stereo output mix, individual snare and hi-hat outputs and a loop output. In this way, you can add a unique reverb to the snare, EQ the hi-hats cleanly and effect sample loops without affecting the “main” mix.

- Watch your hi-hat volume! Most beginning drum programmers create kits with hi-hats that are too loud. Make sure that the hi-hats slide into the mix, and don't dominate it.
- Try not to have the kick be only sub-bass tones. 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 boombox will not hear a kick - at all! It would be better to have your kick include some high-end, using a second layer with some higher harmonics or a bit of distortion to add high frequency content.
- Use caution when combining sounds into a kit - you generally want to keep each drum within a specific pitch/EQ range. If you find that your basic samples are too wide-ranging, you can route the samples to individual outputs and adjust them with external EQ's and effects.
- While it may sound appealing to have a wide stereo drum kit, it can also prevent you from creating a good mix. To get a great mix, you might want to monitor in mono (you can use the "MONO" button on the Cubase master Mix Panel, for example). It is often easier to get a good blend (even of a stereo mix) when you do some of your mixing in mono.
- You can never compress enough! Well, that's not really true, but much of the sound we are used to hearing (whether from the radio, in clubs or on CD) is heavily compressed - often multiple times. Using a good compressor (especially a multi-band compressor, if you can get one), whether in hardware or software, will help you get an excellent sounding percussion mix.

Hopefully these tips will help you get some great sounds from the BATTERY system, and will help you get some excellent music made!

Appendix A: Keyboard and Drag Control

Important: Non VST 2.1 compatible host applications do not pass any computer keyboard strokes to the VST plugin.

PC Mouse and Drag Control

Mouse Control

Key	+ Mouse button	Function
-	LEFT	Value adjustment
CTRL	LEFT	Reset to a default value. In value fields CTRL-Click allows a keyboard entry.
-	RIGHT	Smoother value adjustment or value change on text displays. If the selected parameter is keyboard-based, the RIGHT mouse button displays a mini-keyboard for editing.
SHIFT on cells	LEFT	Select multiple Cells
SHIFT	LEFT	Smoother value adjustment
SHIFT+CTRL	LEFT	Edit a cell label field.
ALT	LEFT/RIGHT	Swap linear/circular movement

Drag-and-Drop Control

Key	+ Operation	Function
CTRL	DRAG	Drag a sample from one cell to a new cell.
ALT	DRAG	Drag the settings from one cell to a new cell.

	DRAG	Drag both the sample and settings from one cell to another.
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MacOS Mouse and Drag Control

Mouse Control

Key	Function
COMMAND	Undo stored value. In value fields CTRL-Click allows a keyboard entry.
CTRL	Smoother value adjustment or value change on text displays. If the selected parameter is keyboard-based, a double click with the mouse displays a mini-keyboard for editing.
SHIFT	Smoother value adjustment
SHIFT+COMMAND	Edit a cell label field.

Drag-and-Drop Control

Key	+ Operation	Function
COMMAND	DRAG	Drag a sample from one cell to a new cell.
ALT	DRAG	Drag the settings from one cell to a new cell.
	DRAG	Drag both the sample and settings from one cell to another.