

Multiverse Designer Users Guide



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v1.1 - (May 17, 2023) - Add info on new import/export of presets and patches.

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V1.3 - (Mar. 15, 2024) - Add impulse response (IR) loading and update effect connections

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Overview

The **Multiverse Designer Users Guide** provides detailed documentation on how to use the **Designer Application**. For simple step-by-step instructions to get up and running, please see the **Multiverse Designer Quick Start** guide.

Bold and Italics Text

Throughout this User Guide, **bold** text is used to draw your attention to an important element and *italic* text is used to indicate a word or phrase that is covered in the [Glossary](#) section. Some words are both bold and italic. Bold and italics will only be used the first time the word appears in a paragraph or section since they are often repeated.

How Do Multiverse Audio Effects Work?

Multiverse uses audio effect files (file extension is *.efx*) that are imported into the **Designer** software application. This application allows you to arrange your effects into *virtual pedalboards* (referred to as *presets*). Each pedalboard stores not only the arrangement of effects in the signal chain, but also the individual settings for each effect (i.e. the settings of the knobs, switches, etc.)

Once completed, the virtual pedalboards go through a *build* process, then are *programmed* to the Multiverse pedal via USB.

Once programmed, the audio effects on the pedal can be controlled using the hardware knobs and switches or by the *Designer* application itself.

Device Keys and EFX Product Keys

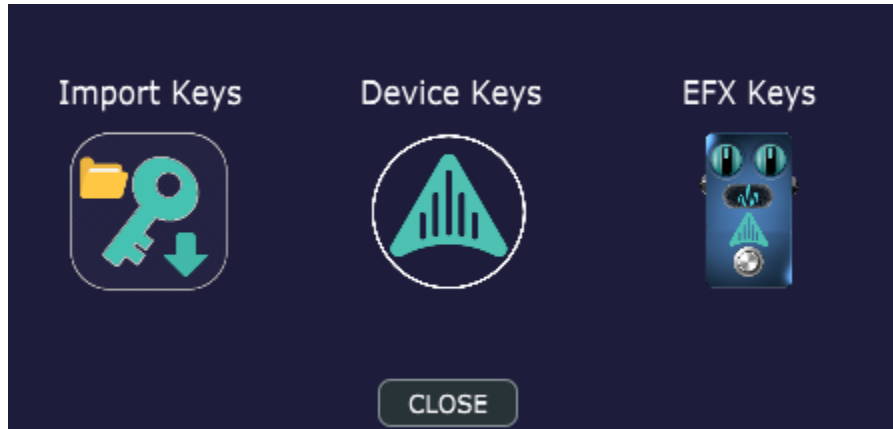
In order to use your *Multiverse* pedal, you will need two types of keys.

- Device Key - this key is provided to you by Aviate Audio when you register your device.
 - Retrieve your hardware unique ID by connecting your pedal to the Designer software via USB and selecting the 'About' button in the Designer tool.
 - Register your hardware UID by creating a user account at aviateaudio.com/account and filling out the Multiverse Registration form.
- EFX keys - each effect will have a unique key for your hardware.

Multiverse uses keys to ensure that effects (both free and premium) are properly authenticated before running on the hardware. This allows the user to know the audio effect has been validated by Aviate Audio and passed its QA testing process before publication to users.

Keys are added by clicking the **KEYS** button in the lower-left corner of the application: Clicking the **KEYS** button brings up a window to select from:

- Importing keys (of any type)
- Viewing the Device Key Table
- Viewing the EFX Keys Table



Your **Device Key** file is provided to you when you first register your Multiverse Pedal at www.aviateaudio.com. Add your key to your copy of the Multiverse Designer by clicking the **KEYS** button in the lower-left corner of the application, then click the **Import Keys** button on the left of the window. This will open a file browser to select your key files.

Your **EFX Keys** are provided when you obtain new audio effects from the Multiverse Store. EFX

To import your **EFX Keys**, use the same method. Select the 'Import Keys' button and load any Effects Key files you received from Aviate Audio.

Application Overview

The application GUI consists of six primary sections. Each of these is covered in detail in the following sections.

1. *Preset Control* - these buttons are used to create, edit and navigate effect presets.
2. *Build & Program* - these buttons are used for building and programming *virtual pedalboards* to the hardware pedal.
3. *Effect Library* - the effects you download from the *Multiverse Web Store* are organized here.
4. *Virtual Pedalboard* - this is where you arrange, connect and configure your presets.

5. *Virtual Hardware* - this virtual representation of the physical pedal lets you assign and manipulate the mapped controls without having to touch the hardware controls.
6. *Hardware / Software Info* - these buttons provide information about your hardware pedal and software version.



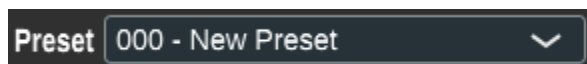
Section 1 - Preset Control



A **preset** is a snapshot of a *virtual pedalboard*, including

- The arrangement of effects in the *signal chain*
- The setting for each individual *effect control* (knobs, buttons, switches, etc.)
- The optional mapping of effect controls to the hardware controls (buttons, encoders and LEDs on the hardware pedal).

Preset Selection



The **Preset Selection** pulldown menu lets you change which preset is active on the hardware when connected via USB. You can select different presets for editing even when not connected to the hardware.

A preset consists of a **Sorting ID**, and a **Preset Name**. The sorting ID is a three-digit number used to control the ordering of presets and can be freely edited to any number you wish. The preset name is a brief name used to label the preset.

PRO TIP: *Sorting IDs* do not need to be unique, they are only used to determine preset order. If two presets have the same ID, they will be sorted alphabetically by *Preset Name*.


PRO TIP: using shorter names (approximately 16 chars or less) allows the entire name to be displayed on the hardware without truncation.

Preset Edit Button

Click the **Edit** button to change the **Sorting ID** or **Preset Name**.

Preset Add Button

Click the **Add** button to add a new preset. A default *Sorting ID* and *Preset Name* are generated for you. Default Sorting IDs are generated in incremental order. Default preset names are always “New Preset”. It is recommended you give meaningful names to your presets when you create them.

Creating a new preset will start with a blank pedalboard. Any changes to a preset must be saved by clicking the  button in the *Virtual Pedalboard* area.

Duplicate Preset Button

Click the **Duplicate** button to create a new preset, starting with identical settings as the current preset. This is a helpful shortcut to have a slight variation to an existing preset, or have a baseline effect configuration you tend to use often, then make modifications and save as new presets.

Save Presets Button

One or more of your pedalboard presets can be saved to a *.pre* file that can be loaded to restore settings at a later time. This is handy for backing up your favorite presets, or sharing them with other Multiverse users.

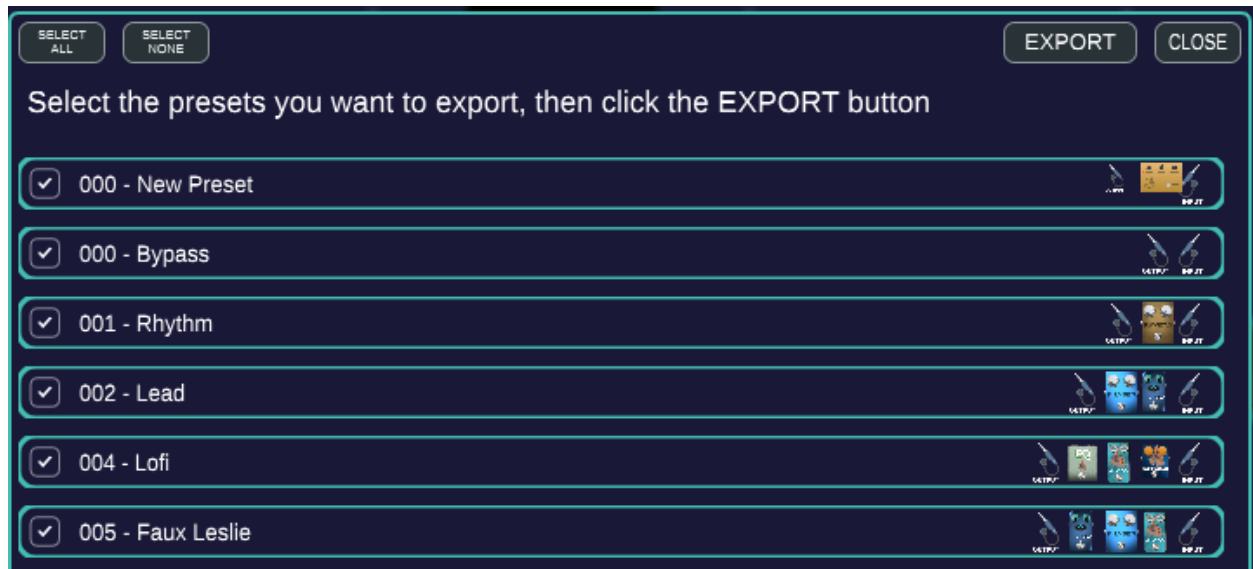
Click the **Save** button to call up the **Preset Export Window**.

When saving, you will be prompted to choose which presets to include in the export. A list of all your current presets are shown. You can select (via the checkboxes on the left) which presets to

include. For convenience, you can use the **SELECT ALL** or **SELECT NONE** buttons to quickly change all the checkboxes together.

In addition to the preset names, the EFXs used in the presets are shown using their pedal icons.

NOTE: the order of the icons does not necessarily represent the order they appear in the signal chain as signal chains can also have multiple channels and paths.

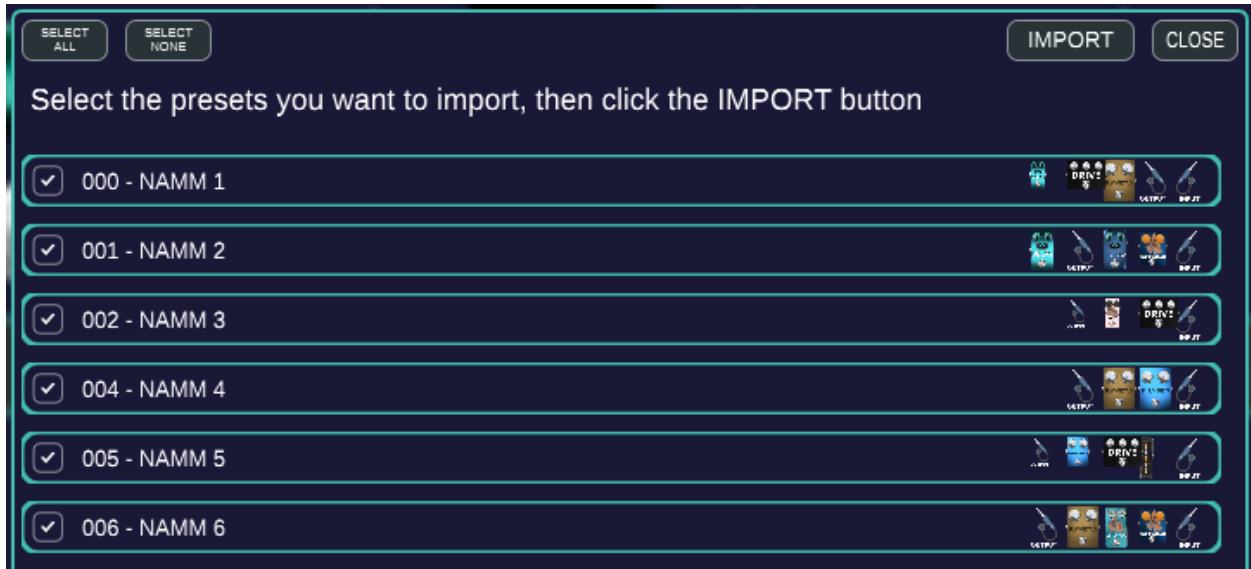


Once you have selected or deselected the appropriate presets, you can click the **EXPORT** button to choose a filename and location to store the .pre file. You can close the window and return to the main Designer window using the **CLOSE** button.

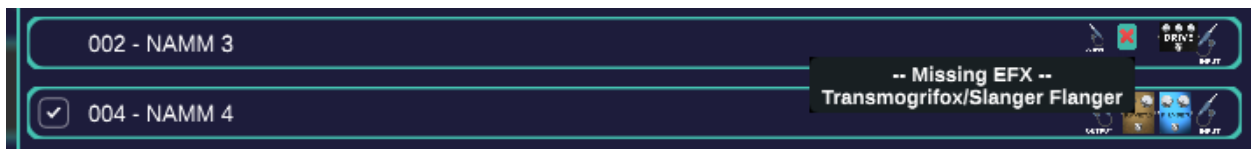
Load Presets Button

Click the **Load** button to load a *Preset File* (file extension is .pre) that was saved previously. Using the file browser, navigate to and select the .pre file containing the presets you wish to import. Once selected and opened, you will see the **Preset Import Window**.

Use the checkboxes on the left to select which presets from the .pre file you wish to import. You will not be able to import presets that contain EFXs that you do not currently own in your *Effect Library*. For these effects, no checkbox will be shown, and in the EFX list, an 'X' icon will appear for each missing EFX. Hover your mouse over the icons to see a popup list of which EFX are missing.



In the image below, hovering the mouse over the pedal icons for the 'NAMM 3' presets shows the Transmogrifox Slinger Flanger is missing from the *Effects Library*.



Once you have selected all your presets, click the **IMPORT** button to merge these pedalboard presets in with the rest of your presets in *Designer*.

Clear Presets Button

Click the **Clear** button to erase all currently saved presets in the *Designer* program. **NOTE:** this doesn't remove any existing *Preset Files* (.pre extension) you have saved on your computer.

Section 2 - Build & Program




In order to use the pedalboards you have created in *Designer* on your *Multiverse* pedal, you must first **build** them, and **program** them to the hardware. Building a pedalboard and programming it takes only a few seconds each, so the process is quick and easy.

Multiverse does not use an operating system. Instead, the Designer application analyzes the *virtual pedalboards (presets)* you've created and builds a custom program implementing that design.

In general, when changing the following you need to rebuild and program:

- Adding a new preset, removing one, or changing a preset's *Sorting ID* or Name
- Changing the *signal chain* in a preset, including adding or removing effects

In general, you do NOT have to re-build and program when:

- Changing the settings of individual effect parameters. When finished adjusting the effect settings, you can save the changes on both the Designer application and the hardware by clicking the  button.

MSYNC Status Button

The **MSYNC** button shows the master synchronization status with the hardware when connected via USB cable. This button changes color to indicate different statuses:

- **Grey** - Disconnected, or unable to connect to hardware
- **Green** - Connected and synchronized. You can control your hardware in real-time using the *Designer* software.
- **Orange** - Connected but not synchronized. This means the presets on the hardware are different from the ones currently loaded in the Designer application. Typically this indicates you have edited your presets but not rebuilt/reprogrammed them to the hardware.
- **Red** - Connection disabled. Sometimes you want to temporarily disable a connection while making changes you do not want reflected on the hardware. Clicking the **MSYNC** button toggles between the disabled state, and its automatic state.

Sync-To Menu

The **Sync-To** selection menu lets you choose what happens when the app and the pedal re-sync after being disconnected. Either the pedal can try to sync to the App (all settings current settings are sent from the app to the pedal), or the App can try to sync to the Pedal (all current settings sent from the pedal to the app).

Build Button

Click the **Build** button to build a custom program for your current list of *virtual pedalboards (presets)*. After building you must program them to the hardware before you can use them.

Program Button

WARNING: During programming, the Multiverse pedal will automatically power cycle, potentially causing a loud pop through any speakers. Before pressing the programming button on the side of the Multiverse, you must first turn down the **LEVEL** knob. You can raise the **LEVEL** after the pedal has booted.

Click the **Program** button to program your pedalboard presets to the hardware. After clicking this button, you must also press the programming button on the *Multiverse Pedal*. The button is located on the side of the pedal, next to the DC power jack.

Section 3 - Effect Library

The **Effect Library** is located on the right hand side of the *Designer* application window and contains all your Multiverse audio effects, as well as icons for your inputs and outputs.



By default, the *Effect Library* contains four components. Stereo **TRS Input** and **TRS Output** for the 1/4" TRS connections on the Multiverse pedal, as well as stereo **USB Input** and **USB Output** for acting as a USB audio device. **Note: USB audio is currently an experimental feature.**

Audio effects are added to the Effect Library by downloading them from the Multiverse **Web Store** and loading their *EFX Product Key*.

Virtual pedalboards are created by dragging the various icons in the Effect Library onto the *Virtual Pedalboard* and making connections between them. For details on arranging and connecting pedalboards, please refer to the section titled [Virtual Pedalboard](#).

Category



The **Category** pulldown menu allows you to filter the effects in your personal library. Several categories are available. Examples include, Input & Output, Delay, Modulation, etc.

IMPORT Button

The **IMPORT** button is used to select .efx files to import into your personal *Effect Library*. Clicking the button will open a file browser to select one or more .efx files.

RELOAD Button

The **RELOAD** button is used to rescan effect files stored on the computer. If an EFX file is updated outside of the *Designer* application (e.g. when compiled with the *Multiverse Effect Creator* application), clicking this button will ensure the effect in the Designer application is updated.

KEYS Button

The **KEYS** button is used to open the **EFX Product Key Table** window, which is used to add the necessary product keys for your individual effects.

Product Key Table

The *Product Key Table* is a table of product keys you have installed. Each key is tied to one particular effect for a given Multiverse pedal. **All Multiverse audio effects require a valid key in order to function, however many Multiverse effects are available or free via the Multiverse Web Store.**

If you do not have a valid key for your hardware entered in the table, the *Designer* software will not be able to build your pedalboard.

UID	Company	Name	Key	Delete
KMLS9-UK4T4-AADJU-8NJ3V-QCJAC-A	Blackaddr Audio	Tremolo	c4645ce2f03c85098e2b...	
KMLS9-UK4T4-AADJU-8NJ3V-QCJAC-A	HexeFX	Plate Reverb	ee55e2770b10ebabeb3...	
KMLS9-UK4T4-AADJU-8NJ3V-QCJAC-A	HexeFX	Super Phaser	8b97bb369eb9ef8d363...	
KMLS9-UK4T4-AADJU-8NJ3V-QCJAC-A	Transmogrifox	Choir Chorus	2b596a28f0ee0f6da4ecf...	
KMLS9-UK4T4-AADJU-8NJ3V-QCJAC-A	Transmogrifox	Double Trouble	0329e94e342056a63b9...	
KMLS9-UK4T4-AADJU-8NJ3V-QCJAC-A	Transmogrifox	Endure Sustainer	49425f45614a805e33e...	
KMLS9-UK4T4-AADJU-8NJ3V-QCJAC-A	Transmogrifox	Slinger Flanger	5f921e9f16de1ffc08d91...	
KMLS9-UK4T4-AADJU-8NJ3V-QCJAC-A	Transmogrifox	Tensor Compr...	f1c4fc98df381eb11235b...	
KMLS9-UK4T4-AADJU-8NJ3V-QCJAC-A	Transmogrifox	Wah	1c02c550c208d8fe5f67...	
KMLS9-UK4T4-AADJU-8NJ3V-QCJAC-A	Blackaddr Audio	Analog Delay	9cb25c7fdd08d49596fe...	
KMLS9-UK4T4-AADJU-8NJ3V-QCJAC-A	Blackaddr Audio	Analog Delay	9cb25c7fdd08d49596fe...	

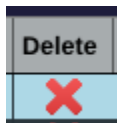
Product Key Manager - CLEAR Button

Click this button if you wish to remove all *EFX Product Keys* from the table. Normally, this button is not needed.

Product Key Manager - ADD Button

Click this button to add a new EFX Product Key to the table. Multiverse audio effects require a product key for each effect.

Product Key Manager - Delete Button



The individual delete buttons can be used to remove a single key entry from the table.

Product Key Table - Column Descriptions

The table consists of several columns including:

- **UID** - this is the *Hardware Unique Identifier* that the key is valid for. Keys are encoded specifically for your hardware unit.
- **Company** - the company, developer or author of the audio effect.

- **Name** - the name of the audio effect itself.
- **Key** - the alpha-numeric product key.
- **Delete** - contains an individual delete button for each key so it can be removed from the table if desired.

WIPE Button

The **WIPE** button is used to remove all effects from your library and reset back to the factory default inputs and outputs. Typically after wiping, you then re-import the effects you wish to have available.


Effect Info Window

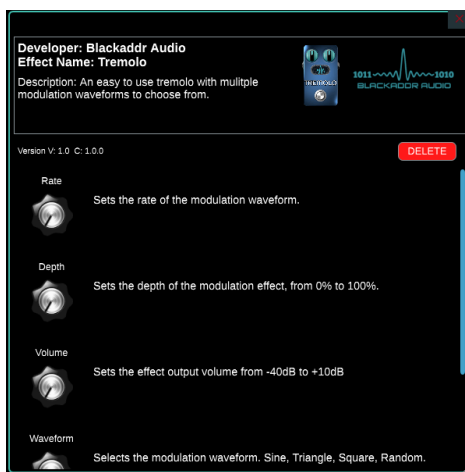
You can right-click on the icon for any effect in the Effect Library to bring up the **Effect Info Window**. This window provides all the information about the effect and its controls.

As an example, the Effect info Window for the Blackaddr Audio Tremolo is shown below.

The upper area of the Effect Info Window shows the developer (or company) name, and the Effect name. Also included here is the general description of the effect, along with the pedal icon and company logo.

The effect version information is shown next, followed by a description of each control in the effect and associated control graphic. If the number of controls do not fit in the window, a scrollbar is added on the right.

The red **DELETE Button**  is used to remove an effect from the *Effect Library*. A removed effect cannot be used on pedalboards, if an instance remains in a preset an error may occur when building. If you wish to use an effect previously deleted, it must be imported again.



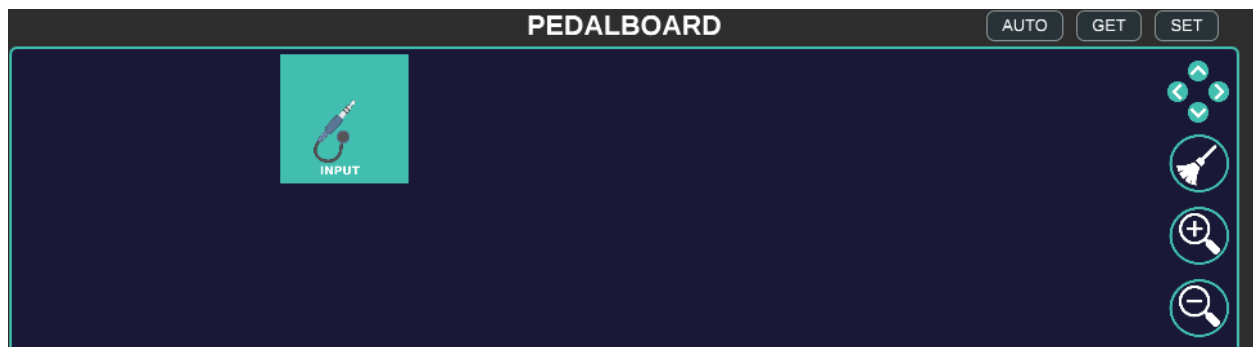
Section 4 - Virtual Pedalboard

The *Virtual Pedalboard* is where you will drag-and-drop your effects to create signal chains. Each patch has one pedalboard arrangement associated with it. This section will go through working with the Virtual Pedalboard in detail.

Creating Effect Signal Chains

Signal chains are created by left-clicking on an icon in the **Effect Library**, then dragging and dropping it onto the pedalboard. The pedalboard is divided up into an invisible grid of squares. Effects must be dropped onto one of these valid squares. Valid locations are **highlighted in blue** as you drag an effect around the pedalboard. In the example below, a **TRS Input** is being dragged onto the board with the mouse, the valid location is highlighted in blue while still being dragged. Once you drop the icon, if the location is valid, the effect has been placed. If you drop an icon over an invalid location (not highlighted in blue), the action is canceled.

NOTE: you cannot drop an effect on an already occupied square. You must first remove the existing icon.



Adding an Effect


Add an effect by dragging and dropping an icon from the *Effect Library* onto the *Virtual Pedalboard*.

Removing an Effect

Remove an effect by *left-clicking* on it on the *Virtual Pedalboard*, then dragging the icon off the *Virtual Pedalboard* area. The icon will disappear from the screen once it has been successfully removed.

Making Connections

In order for audio to flow through your effects, they must be connected together. For simple single-channel signal chains, it is convenient to use the **Auto Connection Mode**. This is

indicated by the **AUTO** button being highlighted as bright green . Clicking on the button toggles the mode on and off.

Connections can be shown either as thin, angled lines or as a thick, horizontal bar. When all output channels of an effect are connected 1:1 with all input channels of the next effect in the chain, a special thick horizontal bar is used. This helps to provide a cleaner presentation for multichannel effects that are directly connected together.

In the example below, the three EFX are all single channel in, single-channel out effects. Hence the connection between them is a horizontal bar. However, if these effects were all stereo (two channel) effects, it would look the same, as long as the connections are 1:1 without any channel crossover/swapping. The *INPUT* and *OUTPUT* blocks are stereo, so they use regular thin connection lines when connected to a mono effect.

The starting point and ending point of regular connection lines spatially approximates which channel it is connected to. The first channel is closer to the top and the last channel closer to the bottom. Since the *Fuzz Machine* effect in the example below is single channel in, the connection line from the stereo *INPUT* intercepts the *Fuzz Machine* effect in the middle.



As another example below, we show a two-channel stereo effects chain (CabIR and Reverb are stereo effects) connected between the *INPUT* and *OUTPUT* blocks which are also two channels. In this case, a thick horizontal bar is used throughout as all input/output channels are connected 1:1 with each other.



Automatic Connections


Button when in auto mode: .

Auto mode will make connections between effects that are horizontally adjacent on the grid.



Connections will automatically be made between each output channel of the effect on the left to the corresponding input channel of the effect on the right when an EFX is dropped onto an adjacent grid location.

It is common to first start with automatic connections for adjacent effects, then switch to manual for more advanced connection routing.

Manual Connections

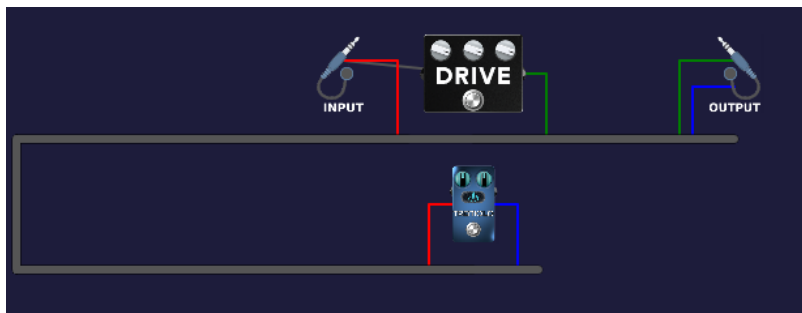
Buton when in manual mode (not green): .

When in manual mode, no connections will be automatically made for you when you drop or move effects on the pedalboard. Instead, we make use of two additional icons on the right-hand side of the *Virtual Pedalboard* area in order to make connections.

Add Connection  and, **Remove Connections:** .

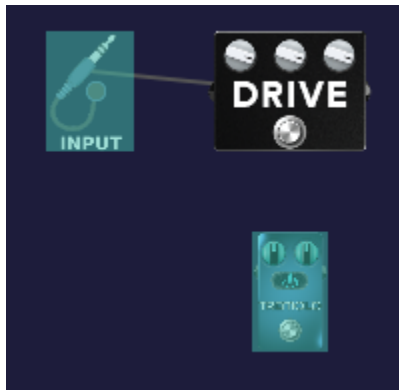
While automatic connections are only made between horizontally adjacent effects, manual connections can be made between any two effects anywhere on the pedalboard.


If they happen to be adjacent, lines are drawn directly between them. Otherwise, a **routing snake** will be drawn along the pedalboard row or down the first column as needed with color coded cables at the ends to help distinguish what is connected. In the example below, we see both adjacent and non-adjacent connections. In the signal chain below, the **INPUT** is split between **Drive** and **Tremolo**, and those two are then routed to the channels 0 and 1 on the **OUTPUT**.



In order to add or remove a connection, you must first select the two effects involved. An effect is selected by double-clicking on it. This will highlight the effect in **blue** to indicate it is selected. In the example below, we will make a connection between the **Input** and the **Tremolo**. To deselect an already highlighted effect, left-click it once.

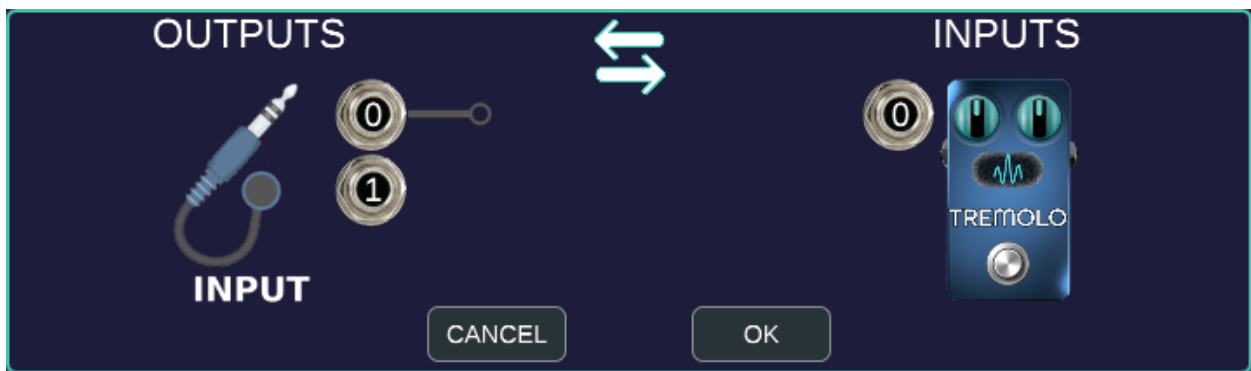
Remember, in manual routing mode double-click to select an effect icon and single-click it to deselect it. Only two effects can be selected at any time.



If you wish to remove all the connections between two selected effects, click the  button. Only connections that are between the selected ones are removed. Connections that go elsewhere on the pedalboard to other (non-selected) effects will not be removed.

To add new connections in manual mode, after selecting two effects, click the **Add Connection** button to bring up the **Connection Window**.

Manual Connection Window



The **Connection Window** will show the two effects with their available output jacks, and input jacks. Which effect is the output is based on which one was selected first, so if they are

backwards, click the **Reverse** button  to swap which effect is the output.

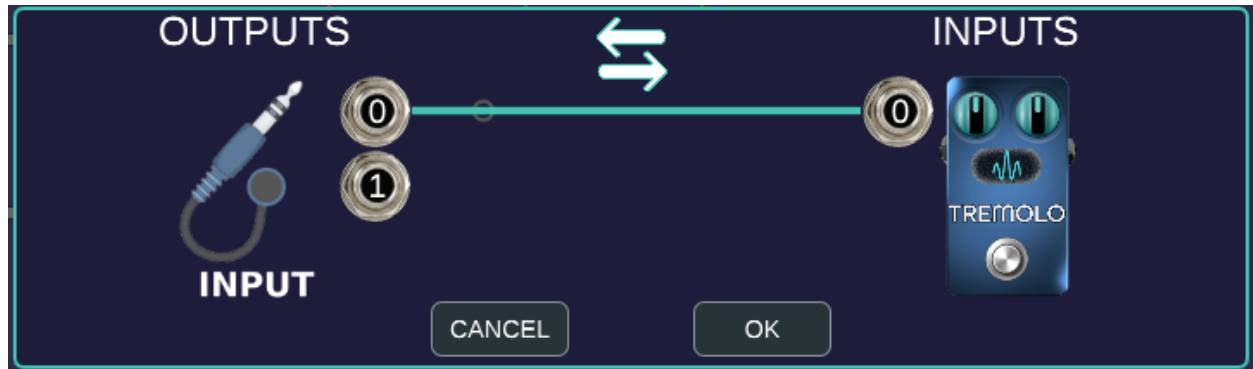
To make a new connection, left-click and drag to draw a line from the output jack on the left to the input jack on the right, then release the mouse button over the desired input.

NOTE: existing connections between one of the effects shown in the Connection Window and other effects on the pedal-board will be shown with an **off-page indicator** consisting of a short

gray line terminated by a circle. In the example above, the **Input** was already connected to the **Drive** effect, so we see an off-page indicator representing this

A single output can drive multiple inputs (splitting), but an input can only be driven by one output.

Completed connections are shown as a solid blue line. In the example below, the 'output jack 0' on the TRS Input is now connected to the Tremolo 'input jack 0'.



PRO TIP: you can also remove connections in the *Connection Window* by right-clicking on one of the 'input jacks' on the right. This will remove the blue line driving it.

When finished, you can confirm your changes or cancel them with the **OK** and **CANCEL** buttons, respectively.

Navigating the Pedalboard

The Multiverse has enough memory and processing power to support complex multi-channel signal chains. Some additional controls are provided to help pan and zoom.



Pan Up / Down / Left Right - click these controls to pan the pedalboard view in the desired direction by one grid unit.



Clear Effects - when clicked, all effects are removed from the pedalboard on the current preset.



Zoom In / Out - when clicked the pedalboard is scaled to zoom in to make selection easier, or zoom out to see more of the pedalboard at once.

Effect Control Window

The **Effect Control Window** allows you to interact directly with your virtual effects in realtime. Opening this window is the equivalent of reaching down and adjusting the knobs and switches on a physical pedal.

The Effect Control Window is accessed by right-clicking on an effect icon on the *Virtual Pedalboard*.

Note: this is different from right-clicking on the icons in the *Effect Library* which opens the information window. Right-clicking pedalboard icons is how you access the virtual pedal itself.

The Effect Control Window is its own program window, meaning you can open multiple effects at the same time, and arrange their windows on your desktop as you like.

PRO TIP: Open multiple effect windows side-by-side when tweaking related effects to avoid having to keep clicking to open and close them.



The Effect Control Window has three sections:

- Effect Info (top)
- Miscellaneous Controls and Status
- Virtual Pedal

Effect Info

This area at the top of the *Effect Control Window* summarizes some information about the effect, including Developer/Company name, effect name, and description of the effect.

Miscellaneous Controls and Status

This area sits just below the **Effect Info** and includes:

- Input/Output peak meters (first channel only)
- Control value editor - this box shows the current effect control you are changing. Once you start changing an effect (i.e. rotating a knob), you can also click in this box to directly edit the value.
- **GFX / ALL** Mode button - clicking this button switches between the graphics view of the pedal (GFX) and showing simple rows of ALL the controls. If the EFX does not provide a graphical pedal, the control rows will be the only option available. Some EFX do not put all the controls on the *virtual pedal* view, so extra options are often available with ALL.
- **SYNC** - this button shows the status of whether the virtual pedal is synced with the effect running on the Multiverse. When SYNC is green, you can use the virtual pedal to control the effect in real-time.
- **DEFAULT / SET / GET Buttons** - These buttons will restore the effect defaults, save the current settings to the preset, or load the last saved settings.
- **LOAD / SAVE Buttons** - these buttons are for loading and saving .patch files. A patch is the settings for just one effect. This makes it convenient to easily save favorite settings for a given effect, load them into other presets, or share them with other *Multiverse* users.

Virtual Pedal

The *Virtual Pedal* is the area where you interact with the effect controls using knobs and switches provided by the effect developer.

The Virtual Pedal has two viewing modes, **GFX** and **ALL**. You can toggle between them by clicking the GFX / ALL button.

The GFX view will show a representation of a real pedal. The ALL view will show all controls as simple arrays of knobs and switches. Some effect developers may not provide a graphics view of the pedal so the array control view is all that's available. Also, some effect developers may provide more optional controls that appear in the ALL viewing mode that do not appear in the graphics mode.

Assigning Virtual Pedal Controls

You can assign most controls on a *Virtual Pedal* to the assignable encoders and switches on the Multiverse hardware. See the [Section 5 - Virtual Hardware](#) in this guide for details on how to assign controls.

Saving Pedalboard Presets

One preset is exactly one pedalboard and the associated settings for the effects it contains. Pedalboards are saved as part of a preset, along with any controls mapped in the *Virtual Hardware* area.

To save a preset, click the **SET Button** . If you wish to discard your changes and reload from your last save point, click the **GET Button** .

Section 5 - Virtual Hardware

The *Virtual Hardware* section is located at the top half of the *Multiverse Designer* application.



This section of the application provides a virtual representation of the hardware pedal. The Multiverse pedal provides four rotary encoders, four encoder push-buttons, two stomp switches, and two LEDs, all of which are assignable to control your audio effects.

Any knob, slider or encoder from any audio effect in your *Effect Library* can be assigned to the rotary encoder. Any effect on-off switch can be assigned to a stomp button, or encoder push-button for control, while assigning to an LED can show the controls status.

Once an effect control has been assigned, the effect short name, and the control name will appear as text on the Virtual Hardware control, separated by a dash. E.g. “TREM-Rate” indicates the ‘Rate’ control for the ‘Tremolo’ effect is mapped.

In addition to mapping effects controls to the hardware pedal knobs and switches, the Virtual Hardware also acts as a synchronized *digital double*. This means that when connected via USB

and the **MSYNC** button is green (synchronized), adjusting an assigned control in any of the following locations will automatically update the setting in the other two locations.

- Changing a mapped control using the physical knobs and switches on the physical hardware pedal.
- Changing a mapped control on the Virtual Hardware.
- Changing a mapped control on the Pedalboard **Effect Control Window** (if open).




Assigning an Effect Control

To assign an audio effect control to one of the physical hardware buttons, switches or LEDs, use the following steps.

1. Open the **Effect Control Window** for the effect you wish to map by right-clicking on it on the *Virtual Pedalboard* area.
2. Once the Effect Control window is open, right-click on the particular effect control you wish to map in order to select it. The Effect Control Window can be in either **GFX** viewing mode or **ALL** (controls shown as simple arrays). After right-clicking, the control will have a **cyan box** around it to indicate it is selected for dragging.
3. Left-click and drag the selected control over to the *Virtual Hardware* and drop it on the control you wish to map.

NOTES

- *Right-clicking* on a control will toggle the selection box on or off, as needed.
- You can right-click to select multiple controls, then *drag-and-drop* them one at a time over to the Virtual Hardware.
- Controls with a range such as knobs and sliders will appear **above** the control graphic on the Virtual Hardware. Controls with ON/OFF values (switch) will appear **below** the control graphic.
- **Encoders A, B, C, D** can have both a ranged control (rotary knob) and a switched control (pushbutton) mapped to them. **Stomps S1, S2** can only have switched controls mapped. **Expression jacks** can only have ranged controls mapped.




NOTE: In order for your mapping change to take effect on the hardware, you must set , build  and program  the updated pedalboard design.

Removing or Replacing an Assigned Effect Control

If you wish to re-assign a control, simply drag-and-drop the new effect control onto the *Virtual Hardware* using the same procedure as above. Any previous assignment will be cleared automatically.

If you wish to remove an existing assignment without replacing it, right-click on the assigned Virtual Hardware control. If an **Encoder A, B, C, D** has both a ranged and switched control

assigned, right-clicking *near the top* of the encoder knob will first remove the assigned **ranged** control. Right-clicking *near the bottom* of the encoder knob will remove the assigned *switched* control.

NOTE: In order for your mapping change to take effect on the hardware, you must set , build  and program  the updated pedalboard design.

Assigning MIDI Controls

The Multiverse pedal has a 1/8" (TRS) MIDI IN jack on the side of the pedal to support the following MIDI messages:

- Program Change
- Continuous Controller (CC)


NOTE: Multiverse uses the MIDI standard TRS cable, also known as “Type A”.

Program Change messages will change the active preset to the specified value, where the first preset is *Program 0*, the second preset is *Program 1*, etc.

Continuous Controller messages allow you to use MIDI to change any effect parameter in your preset. The mapping between CC value and effect parameter it controls is done through the **MIDI Assignment Window** (see below).

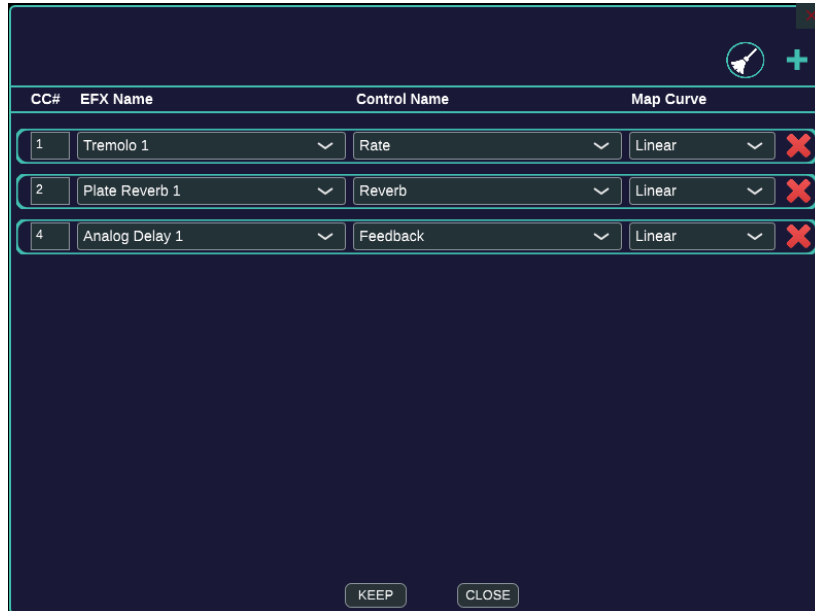
MIDI values range from 0 to 127. These values are converted to effect parameter values within the specified range for the effect parameter. The default mapping is linear however several mapping functions are available:

- **Linear** - linearly mapped from the parameter min to the parameter max.
- **Linear Reverse** - linearly mapped from the max to the min. E.g. MIDI input 0 maps to max value, and MIDI input 127 maps to min value.
- **Binary** - values < 64 are all mapped to min, values >= 64 are mapped to max.
- **Binary Reverse** - values < 64 are all mapped to max, values >= 64 are mapped to min.
- **Logarithmic** - a log scale is applied such that the upper output range is stretched down to lower input values within the min to max range. E.g. a volume log taper.
- **Logarithmic Reverse** - same as Logarithmic but polarity is reversed.
- **Exponential** - an exponential scale is applied such that the lower output range is stretched to up to high input values within the min to max range. E.g. ‘hockey-stick’ curve.
- **Exponential Reverse** - same as Exponential but the polarity is reversed.

The *MIDI Assignment Window* is accessed by clicking the MIDI  button in the *Virtual Hardware* area.

MIDI Assignment Window

Assignments are made on a per-preset basis to map incoming MIDI CC messages to specific effect control parameters.





CC# - the CC value to assign to the effect parameter. Must be in the range 0 to 127.

EFX Name - select the effect from the pulldown menu. The effect must be on the pedalboard.

Control Name - select the effect control parameter to assign to the CC.

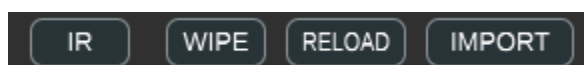
Map Curve - select the mapping function for converting MIDI values to parameter values.


Add a new entry to the list by clicking the *Add*  button. Remove an entry by clicking the *Delete*  button. Remove all entries by clicking the *Clear*  button.

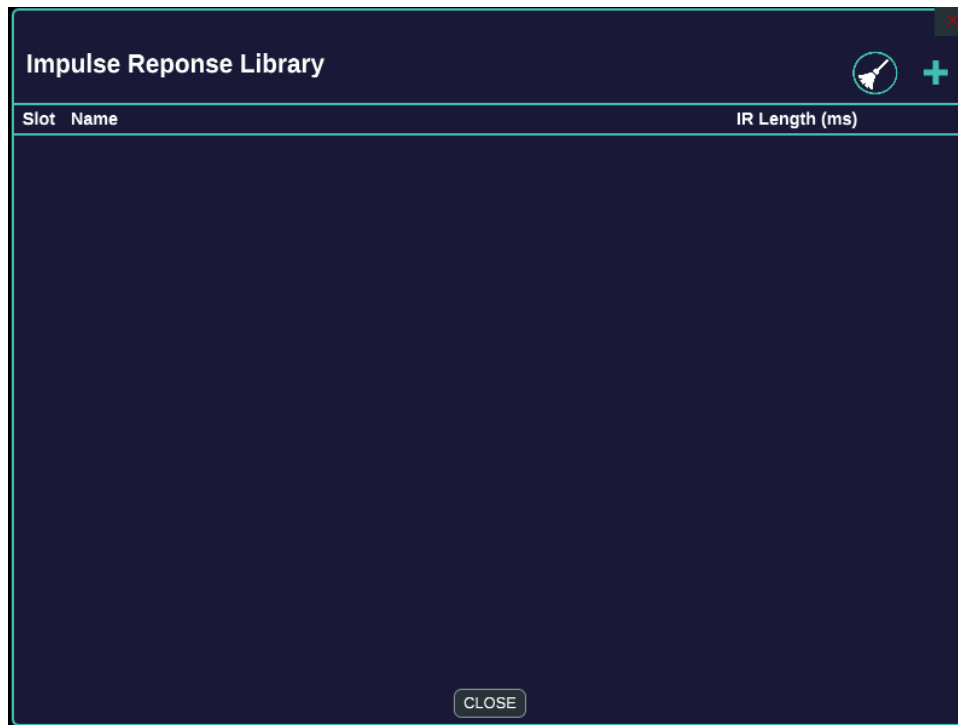
To keep any changes made, click the **KEEP** button. Click the **CLOSE** button to close the window and discard any unkept changes.



NOTE: In order for your assignment changes to take effect on the hardware, you must set **SET**, build **BUILD** and program **PROG** the updated pedalboard design.

Section 6 - Impulse Response (IR) Library





To access the **Impulse Response Library Window**, click the  button below the *Effect Library* area. *Multiverse Designer* supports most types of impulse response files as long as they are a .wav file. The file will be automatically converted to the sample rate needed by Multiverse before it is uploaded to the pedal.



Begin by adding your .wav files by clicking the  (add) button. If you wish to clear all the IR slots click the  (clear) button. After clicking the add button, a selection window will open. You can select one or multiple files at one time.



Above is an example of loading several IR files into Designer. The window shows the *Slot* the IR is stored in, the *Name* of the file, and the *length* of the IR in milliseconds.

You can also rearrange your IRs once they've been loaded by using the move   arrows.

To remove an IR from the Library, click its  delete button.

In order to use the IRs in your library, you must also have an IR Loader EFX in your preset. If you are looking for one to use, we recommend the *Blackadder Audio CabIR* which is a free EFX on the Aviate Audio webstore.

NOTE: it is popular among the IR community to make their length excessively long. The IRs in the example above are close-mic captures of guitar cabs. Ideal length for cabinet captures is commonly around 20 ms yet these are 300 to 500 ms in length. Captures greater than 20 ms capture room reflections which are not good for cab IRs. Longer lengths are necessary for reverbs however. The programming time of the Multiverse is impacted by the total amount of IR data in your Library as this must all be sent to the pedal. An IR loader EFX designed for guitar cabs (as opposed to reverbs) is likely only going to use the first 20-30 ms you may wish to reduce the length of any unnecessarily long IRs before loading them into Designer (there are tools on the web for this). Shorter IRs reduce the programming time. For reverb IRs, this does not apply as long IR captures are useful, however the programming time will still be directly proportional to how much IR data you have in total.

The length of an IR file in the IR Library does not impact CPU utilization on the Multiverse pedal, only the amount used actually by the IR Loader EFX does which is deterred by the EFX developer.

One final note: Designer only programs IR data into the Multiverse pedal if you have an EFX in one of your presets that is an IR loader. The IR data programming is skipped automatically in this case.

Section 7 - Hardware / Software Info



No Mouse Button

This button when enabled (blue) will change click behavior to better suit a laptop. The following behaviors are modified by this control.

- **Disabled (Normal)** - clicking on an encoder in the *Virtual Hardware* will trigger the encoder push-button behavior. Rotating the encoder is done with the mouse scroll wheel.

Enabled - clicking on an encoder will not trigger an assigned push-button. Instead it will enable *click-and-drag* behavior to turn the knob without needing a mouse wheel.

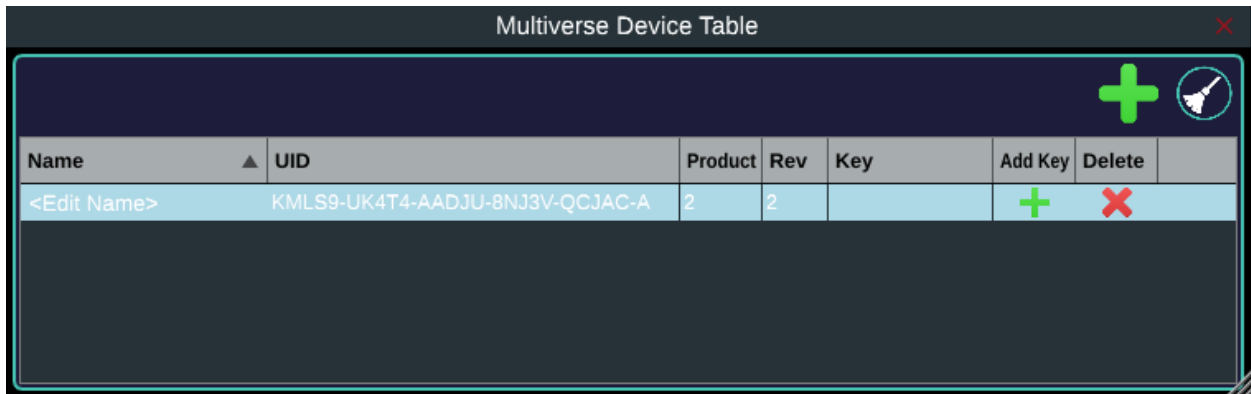
Devices Button

The **DEVICES** button is used to open the **Device Key Table** window, which is used to add the *device key* for any registered Multiverse pedals. If you own more than one Multiverse pedal, each pedal will have its own device key.

Device Key Table

All Multiverse pedals have an associated **Device Key**. This key is used to authenticate effects to run on your unit. A Device Key is provided to you when you first register your Multiverse pedal at aviateaudio.com.

The key is a computer file with your hardware UID as the file name, and *.devkey* as the file extension. This file must be added to your Device Key table before you will be able to build and upload pedalboards to the Multiverse. This process only needs to be done once per registered device. The table will retain key information once it is added. Note: if you wish to install and use the Designer software on multiple computers, you need to add the Device Key on each one.



Multiverse Device Table						
Name	UID	Product	Rev	Key	Add Key	Delete
<Edit Name>	KMLS9-UK4T4-AADJU-8NJ3V-QCJAC-A	2	2		+	X

Using Multiple Devices

If you own multiple Multiverse pedals, you will have multiple entries in the *Device Key Table*. When you build a pedalboard, you must select which Multiverse unit you are building for, since each build is keyed specifically for that unit.

The currently selected unit has its row highlighted. If you only have one Multiverse unit, you do not need to worry about selecting one, it is done automatically for you.

Different Multiverse units are identified based on their alphanumeric UID. Since it can be hard to keep track of which unit is which using the UID alone, you can also give them your own unique names to make it easier to select the correct one. You can edit the name by clicking on the

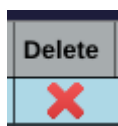
device row in the **Name** column. Type a new name and press the enter key. In the example below, the unit has been named 'Studio'.

Name ▲	UID	Product	Rev	Key	Add Key	Delete
Studio	KMLS9-UK4T4-AADJU-8NJ3V-QCJAC-A	2	2		+	×

Adding a Device Key

NOTE: a table entry is automatically added once a new Multiverse is connected via USB, however the **Key** field will be empty. In order to add your *Device Key* file, click either the **Add** button (green plus sign) at top-right, or add button on the row of the corresponding device itself. After clicking add, a pop-up window will allow you to navigate to the *Device Key* file and click OK.

Deleting a Device



If you wish to remove a device (including its key) you can click the **Delete** button located on the row for the device you wish to remove.

Delete all Devices

If you wish to remove all devices, click the **Clear** button.

About Button

The **ABOUT** button shows a pop up window containing the software build date, application version, the core software version used for the Multiverse firmware, and the hardware UID for the last connected device.

The *About Window* also contains a **HW Test** button. Clicking this button will prompt to program the factory hardware test program. This program can be useful to ensure all your hardware is working correctly. **WARNING:** this program will erase any saved preset settings on the hardware pedal but doesn't impact anything saved in the *Designer* application.

CPU & RAM Usage

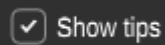
CPU: --%	RAM0: --%	RAM1: --%
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CPU Usage - this shows the approximate amount of CPU being utilized by the current pedalboard and effect configuration. The preset may not work correctly if it gets too close to 100%.

RAM0: shows the approximate amount of memory consumed by program code, the stack and global variables. If this gets too close to 100% the preset will not work correctly.

RAM1: shows the approximate amount of memory consumed by DMA memory and the program heap. If this gets too close to 100%, the preset will not work correctly.

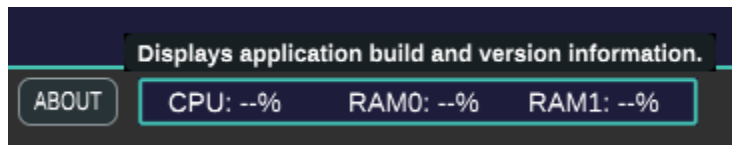
Show Tips Checkbox



When checked, this box will enable tooltips. Tooltips are popups which are helpful descriptions when you hover over a clickable control without moving the mouse for about one or two seconds.

An example below shows the tooltip pop-up when hovering the mouse over the **ABOUT** button.

Tooltip that appears below: *Displays application build and version information.*



Glossary

About Window - popup window accessed by clicking the ABOUT button located in the lower-left of the *Designer* application. Contains software build and version information.

Auto Connection Mode - when active, audio connections are automatically made between effects when they are dropped adjacent to each other on the *Virtual Pedalboard* area.

Assignment - when you want a physical knob or switch on the *Multiverse* pedal to control a specific audio effect setting, you assign it using the *Virtual Hardware* area.

Build - in order to use your collection of pedalboard patches on the hardware you must first build them. This creates a custom program for the Multiverse Pedal.

Category - all EFX are assigned a category so they can be easily filtered in the *Effect Library*.

CPU Usage - a percentage estimate of how much CPU is being consumed by the audio path. Does not include overhead like sampling physical controls or USB messages.

Designer Application - the primary software application used to build virtual pedalboards and program them to the *Multiverse* pedal.

Developer Key - every individual Developer Edition of the Multiverse pedal has a Developer Key in addition to a Device Key. The Developer Key is used with Effect Creator to compile EFX packages.

Device Key - every individual *Multiverse* pedal has a unique Device Key. This key is used for authentication and is required to build any pedalboards for the *Multiverse*.

Device Key Table - a table containing the device keys for all the Multiverse pedals you own.

Effect Control - knobs and switches on an effect are referred to as 'effect controls'.

Effect Control Window - a popup window that appears when right-clicking on an effect icon located on the Pedalboard. This window is used to change the audio settings for the effect.

Effect Creator - an application used to compile and package an audio effect into an EFX file.

Effect Info Window - a popup window that appears when right-clicking on an effect icon in the *Effect Library*. This shows information about the effect and a description of its controls.

Effects Library - a sub-panel located on the right-side of the Designer application. This is where the effects you have downloaded are located.

EFX - The name given to the effect packages you use with the Multiverse. Their file extension is *.efx*.

EFX Product Key Table - a.k.a. 'Product Table'. A table containing all the EFX keys for the audio effects.

EFX Key - a.k.a. 'Product' key. Each EFX downloaded from the Aviate Audio Web Store will require an EFX key to run on the Multiverse Pedal.

Import - before a downloaded *.efx* will appear in the *Effect Library*, it must first be imported by clicking the IMPORT button and selecting the file.

Encoder - the physical knobs on the Multiverse pedal are rotary encoders. There are four available on the Multiverse labeled A, B, C and D.

Expression jack / Expression Pedal - The Multiverse can support up to two expression pedals using the TRS EXP jack on the side of the hardware pedal.

Getting a preset - when clicking the GET button, any unsaved settings in the preset will be discarded and the last saved settings reloaded. See also 'Setting a preset'.

Hardware Unique Identifier - see *UID*.

HW Test - a special test program that allows basic hardware checks on the Multiverse Pedal. It is accessed via the *About Window*.

IR Loader Window - provides the ability to load Impulse Response .wav files into the Multiverse IR Loader slots.

Manual Connection Mode - when in manual mode, the user must manually create all audio connections between effects using the Manual Connection Window.

Manual Connection Window - a popup-window used for making audio connections between the output jacks to the input jacks in a signal chain.

MSYNC - The Master Sync button indicates the connection and synchronization status when the *Multiverse* pedal is connected via USB.

MIDI Assignment Window - a configuration window in the Designer application that lets you assign input MIDI CC messages to control effect control parameters.

Multiverse - a programmable effects pedal

No Mouse Mode - this mode lets you temporarily disable the click-for-pushbutton behavior of the encoders in the *Virtual Hardware* area. This allows you to use click-and-drag for rotating the encoders when you have a touchpad instead of a mouse wheel.

Off-page Indicator - in the *Connection Window*, connections to effects on the pedalboard that are not shown in the Connection window are indicated by a line with a circle on the end of it.

Patch - a patch is the particular settings for a single effect. Patches can be saved and loaded from .*patch* files.

Pedalboard Area - a subpanel on the *Designer* app where you build your *virtual pedalboards*. See also *Virtual Pedalboard*.

Preset Control - an area in the *Designer* application used for creating, editing and switching between presets.

Preset Name - a user-defined descriptive name given to a preset. This name is displayed on the *Multiverse* pedal when the preset is activated.

Pedalboard Designer - a.k.a just 'Designer'. This is the primary application used for building signal chains and programming them to the Multiverse.

Preset - A preset is a user-named collection of settings for the effects used, their arrangement, their control settings, and any mappings on the *Virtual Hardware*.

Preset Export Window - selection window to choose which of your pedalboard presets to export to a *.pre* file.

Preset Import Window - selection window to choose which pedalboard presets in a *.pre* file to import into the Designer software.

Preset file - a file that stores one or more presets.

Product Key - see *EFX Key*.

Program - in order to use your collection of pedalboard presets on the hardware, after building you must upload (program) them to the *Multiverse* pedal via USB.

RAM0 - the CPU uses this RAM region for program code, stack and global variables. See also 'RAM1'.

RAM 1 - the CPU uses this RAM region for DMA memory and program heap. See also 'RAM0'.

Reload - a button in the *Effect Library*. Clicking this will reload (refresh) the EFX files. This is useful if an updated effect has been installed directly from the *Effect Creator* app.

Routing Snake - manually routed connections between effects that are not horizontally adjacent will be illustrated as color cables going into and out of a dark gray cable snake on the pedalboard.

Setting a preset - clicking the SET button will save the current pedalboard arrangement, effect settings, and hardware mappings. See also 'Getting a preset'.

Signal chain - the arrangement of audio effects that allows audio to flow one of the pedal inputs to the pedal output.

Sorting ID - a three-digit identifier given to each preset in order to allow the user to sort them in any desired order, rather than alphabetically.

Stomp S1 / S2 - the programming (assignable) physical switches located on the pedal that are suitable to step on. **NOTE:** do not step on the pushbutton encoders.

TRS Input - refers to an effect in the *Effect Library* that takes audio from the ¼" TRS input jack on the Multiverse pedal.

TRS Output - refers to an effect in the *Effect Library* that sends audio to the ¼" TRS output jack on the Multiverse pedal.

UID - *Hardware Unique Identifier*. A long string of letters and numbers used to uniquely identify your Multiverse unit.

USB Input - refers to an effect in the *Effect Library* that takes audio from the connected PC input when *Multiverse* is acting as a USB audio interface.

USB Output - refers to an effect in the *Effect Library* that sends audio to the connected PC when *Multiverse* is acting as a USB audio interface.

Virtual Hardware - a representation of the physical *Multiverse* pedal. Used to assign effect controls to the various programmable knobs, switches and LEDs on the hardware.

Virtual Pedal - a graphical representation of the effect pedal shown in the *Effect Control Window*. Virtual pedals provide switches and knobs you can interact with, just like on a real physical effects pedal.

Virtual Pedalboard - a sub-panel in the *Designer* application. See also Pedalboard Area. The is used to organize and arrange signal chains. A given *preset* has exactly one virtual pedalboard associated with it.

Web Store - the online marketplace to download Multiverse effects.

Wipe - the WIPE button is used to remove all effects from the Effect Library. After wiping, all your EFX will need to be re-imported.