Blue Cat's PatchWork User Manual

"The virtual patchbay for audio plug- ins"

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Note: *An online version of this user manual is available* *here*.

Description

Blue Cat's PatchWork is a universal plug- ins patchbay that can host up to 64 VST or Audio Unit plug- ins into any Digital Audio Workstation (DAW) in one instance.

It is possible to chain effects in series or create up to 8 parallel chains that can be activated independently. This lets you create your favorite effects or instruments configurations within the plug- in, without the need for multiple busses. These configurations can be saved as presets and recalled instantly, or shared with multiple DAWs, using any plug- in format (full list below).

Despite the name, you can forget about wires or cables: configuring plug- ins routing is as simple as adding or removing a row or a column in the rack's matrix. All plug- ins can also communicate with each other or with the host application using the virtual MIDI ports offered by the plug- in.

For each plug- in slot, latency compensation, presets management, undo/ redo integration, and individual plug- in bypass are included for optimal operation. The plug- in also stores the position of the window for each plug- in so that the layout is restored with your session or saved with presets.

Also, sub plug- ins can be automated or controlled with external control surfaces using Blue Cat's PatchWork parameters mapping capabilities.

The plug- in is available as an audio effect or a virtual instrument so that it can be inserted on any type of track, with up to 8 audio channels.

Input and output level meters are also included to monitor the signal that is dispatched to inserted plug- ins.

If you are looking for a multiband plug- ins host for multiband processing, check out the Blue Cat's [MB-7 Mixer plug- in](). Also, any [Blue Cat Audio plug- in]() is compatible and can be hosted by this plug- in.

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Typical applications: *Plug- ins host, custom channel strip, parallel processing, effects chainer, virtual bussing, virtual instrument, share bus and plug- ins configurations between DAWs, VST or Audio Unit to AAX, Audio Unit, RTAS or DirectX plug- in adapter, effect chains A/ B comparison.*

Features

Main Features:

- Configurable VST or Audio Unit plug- ins rack: host up to 64 third party plug- ins or instruments in series or parallel.
- Available as an effect or virtual instrument.
- Build your own effects chains: up to 8 "pre" and "post" plug- ins slots to chain plug- ins in series.
- Parallel processing made easy: up to 8 parallel plug- ins chains, with phase flip, solo and gain controls.
- Host up to 8 virtual instruments in parallel and mix them within the plug- in.
- Global Dry/ Wet control ("Mix").
- Parameters Mapping: map sub plug- ins parameters to automate them or use a control surface.
- Flexible MIDI routing: connect sub plug- ins together or with the host application.
- Link pre and post gains for automatic gain compensation.
- Cut, Copy and paste plug- ins with their settings between slots.
- Recall complex processing setups and plug- ins layouts with one click and share them between your DAWs.
- Input and output levels monitoring.
- Plug- ins Latency compensation.
- Supports VST Shell plug- ins.
- Integrated undo/ redo.
- Fully customizable user interface, with multiple sizes.

Blue Cat Audio Standards:

- Available as: Mac- AAX, Mac- AU, Mac- RTAS, Mac- VST, Win- AAX, Win- DX, Win- RTAS, Win- VST, Win x64- AAX, Win x64- DX, Win x64- VST.
- Native DSP code for optimal performance.
- Full MIDI control and automation support with silent, zipper- free parameters update, advanced response control and MIDI Learn.
- No CPU load on idle: when the plug- in is fed with silence, the processing smoothly shuts down, to optimize the CPU usage of your Digital Audio Workstation.
- Skinnable and customizable user interface with transparency management.
- Smooth Bypass: activate/ deactivate the plug- in with absolutely no noise.
- Undo/ Redo.
- Full featured integrated presets manager.
- Copy/ paste the plug- in's state between instances using the system clipboard.
- Any sample rate supported.

System Requirements

Windows

- An SSE2- enabled processor (Pentium 4 or later).
- Microsoft Windows XP, Vista, Windows 7 or 8.
- Any DirectX / VST / RTAS / AAX compatible host software (32 or 64 bit).

Mac OS X

- An Intel processor.
- Mac OS X Mavericks (10.9), Moutain Lion (10.8), Lion (10.7), Snow Leopard (10.6), or Leopard (10.5).
- Any VST / Audio Unit (32/64- bit) / RTAS / AAX compatible application.

For more information about supported platforms, see our FAQ.

Installation

Blue Cat Audio plug- ins cannot be run standalone, they require a host application (see the System Requirements chapter for more information). Depending on which host application you use, you might need to install the plug- ins in different locations.

Windows

Install

All versions of the plug- in provide an installation program. Follow the steps of the wizard to install the plug- in on your machine. During the installation you will be asked where you want the plug- in(s) to be installed. For the VST version you should install the plug- in inside the VST plug- ins folder used by your host application(s). The default path set in the installer should work for most applications, but you should check your host software documentation to know where it looks for VST plug- ins.

Some applications will not automatically rescan the new plug- ins, so you might have to force a refresh of the plug- ins list.

Upgrade

When a new version of the plug- in is released, just launch the new installer: it will update the current installation.

Uninstall

To uninstall the plug- in, simply launch the "Uninstall" program that is available in the start menu or in the configuration panel. It will take care of removing all files from your computer.

Mac

Install

On Mac the plug- ins are available as drive images. After download, double click on the file to open it. You can then drag and drop the plug- in file(s) to the shortcut that is provided within the image. It will install the plug- in(s) for all users on the machine.

In case you do not have admin rights on your Mac or if you want to install the plug- in(s) to another directory, just copy the files to the appropriate location. If required, more information is available in the README.txt file that is included in the package.

Upgrade

When a new version of the plug- in is released, open the new image and copy the files over the previous ones. The new version will replace the older one.

Uninstall

To uninstall the plug- in, simply remove the plug- in components from the folder where you have copied them during install (move them to the trash).

If you want to completely remove all settings and configuration files, you can also remove these additional directories that may have been created on your computer:

- ~/ Library/ Preferences/ Blue Cat Audio/ [Plug- in name and TYPE], where TYPE is VST, AU, RTAS or AAX: global preferences.
- ~/ Library/ Preferences/ Blue Cat Audio/ [Plug- in name]: license information
- ~/ Documents/ Blue Cat Audio/ [Plug- in name]: user data, such as presets, additional skins and user- created plug- in data.

Just beware that these directories may contain user data that you have created. Remove these directories only if you wo not want to reuse this data later.

Introduction

Blue Cat's PatchWork is a simple yet powerful plug- ins rack: the main purpose of the plug- in is to host VST or Audio Unit (AU) plug- ins, with a fixed but flexible routing scheme.

Effect or Instrument

Two versions of the plug- in are included: audio effect or virtual instrument. They both offer the same capabilities (you can host instruments in the effect version for example), but they will be considered differently by your host application.

Simply use the synth version if your main purpose is to host virtual instruments, and the effect version if you want to process the signal as an effect.

Signal Flow

The signal flow is the following:

- At the input of the plug- in, the signal is split so that the original input signal can be mixed back with the processed signal, using the mix control.
- It is then processed by the input gain stage and the active "PRE" plug- ins, in series.
- It is then dispatched to the active parallel chains (each chain offers its own pre and post gain knobs).
- After the parallel chains, the signals are summed (and compensated if "average" summing mode is selected) before going into the "POST" chain that processes the plug- ins in series.
- The output gain is then applied before going into the mix stage that mixes the original input with the processed signal.

Note about the included level meters: the input levels are measured right after the "PRE" gain control, and the output levels right after the mix control.

Summing Mode

Starting with version 1.4, you can select the summing mode for parallel chains. With "average", the parallel chains are averaged, which compensates for potential gain increases. This is particluaray useful when using the plug- in as an audio effect, to avoid gain increases when adding new parallel chains. However, when using the plug- in to mix multiple synths, you may want to choose "sum" instead, so that muting one of the chains does not impact the volume of other chains.

Multiple Channels Support

The plug- in supports audio streams in mono, stereo or multichannel (surround) formats (up to 8 channels). If you insert a plug- in that can process less channels, only the first channels will be processed, and others will be forwarded to the next plug- in, until it reaches the output of the PatchWork plug- in.

Latency Compensation

If a plug- in inserted in a parallel chain reports latency (signal delay), the PatchWork plug- in will compensate the delay so that other parallel chains are in sync. Latency is also reported to the host application so that it can be compensated. However, some hosts

may require that the plug- in is deactivated and re- activated before the new latency is taken into account (Cubase, Sonar and Studio One for example). Restarting transport may also be required (Pro Tools 10 and earlier for example).

Parameters Mapping

With Blue Cat's PatchWork, it is possible to map sub plug- ins parameters in order to control them with host automation, an external control surface, or simply within Blue Cat's PatchWork's user interface. Thanks to the included "learn mode", simply touching the knobs of your favorite plug- ins will let you assign parameters for external control (up to 40 parameters can be mapped).

Phase Flip?

The plug- in includes a phase flip (also called phase reversal) button for each parallel processing chain. This lets you change the polarity of the signal if some plug- ins are causing phase reversal problems, or to simply compute the difference with other parallel signals.

The User Interface

Note: The main toolbar, menus and basic features available with all our plug- ins are detailed in the Blue Cat Audio Plug- ins Basics section.

Overview

The generic controls that can be found in all our plug- ins are not described in this chapter. More details for these are available in the next section.
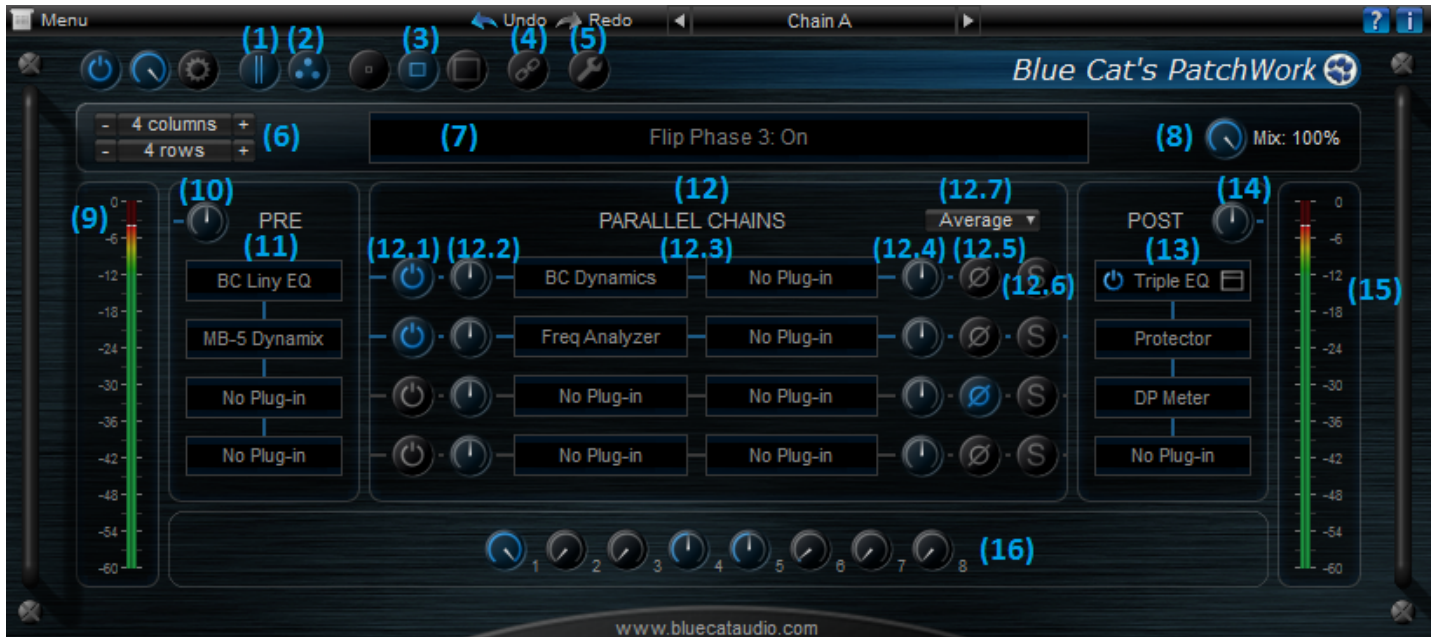

1. Show/ hide the level meters.
2. Show/ hide the assignable controls (for sub plug- ins automation).
3. Select the appropriate size for the plug- ins slots (small, medium, large).
4. Link pre and post gains (global and for each chain), so that pre- gain changes are compensated by the post gain (to drive level- dependent plug- ins without increasing the volume).
5. Display the preferences pane.
6. Select the number of rows and columns for the plug- ins matrix. With 2 columns or less, parallel processing slots are disabled. With one row, no parallel processing is available either.
7. Parameter display: shows the name and value of the parameter that is currently being modified.
8. Mix knob: select the amount of wet vs dry signal (mix the original input signal with the processed signal).
9. Input (peak) level meter.
10. Input gain knob (pre- meter).
11. PRE plug- ins slots: processed in series.
12. PARALLEL plug- ins slots: parallel processing chains.

    - 12.1 - activate the effects chain.
    - 12.2 - pre- gain for the effects chain.
    - 12.3 - plug- ins slots for the chain (processed in series).
    - 12.4 - post- gain for the effects chain.
    - 12.5 - phase flip for the chain (reverse the phase of the signal - 90 degrees phase shift).
    - 12.6 - solo the chain: deactivates all other non- soloed parallel chains.
    - 12.7 - summing mode for parallel chains chain: "average" splits the signal and compensates the gain based on the number of active chains. "Sum" simply sums all active parrallel chains like busses on a console, with no gain compensation.

13. POST plug- ins slots: processed in series.
14. Output gain knob (pre- meter).
15. Output (peak) level meter.
16. Knobs for assigned parameters are displayed here (when mapping sub plug- ins parameters for automation).

Using VST or Audio Unit Plug- Ins

Note: before inserting VST plug-ins, it is strongly recommended that you setup your main VST plug-ins directory in the preferences pane, as detailed later in this manual.

Each plug-in slot lets you insert a plug-in. When clicking on an empty slot, the following menu appears:
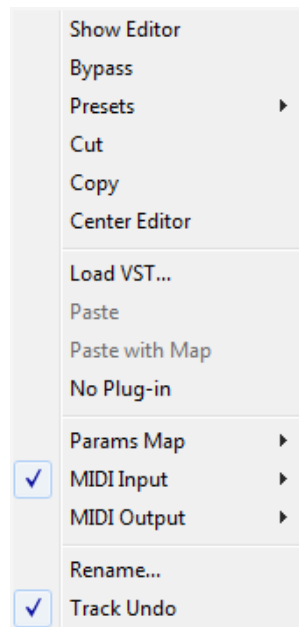
```
Load VST...
Paste
Paste with Map
✓ Track Undo
```
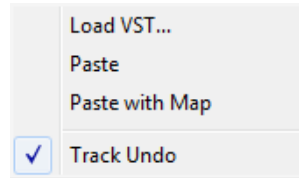
Selecting "Load VST" will open a standard system window where you can select the VST plug-in you want to load. If the preferences have been properly set, the window should open the appropriate location where you can find the VST plug-ins.

On Mac, an additional "Load AU" menu item is available to load Audio Units. It opens a file open dialog in the standard location for Audio Units on your system. **Note:** if you want to load the system Audio Units provided by Apple, you will need to open the CoreAudio component located in the / System/ Library directory.

You can also choose to paste an existing VST or AU plug-in if previously copied into the system clipboard from another slot. When using the "Paste with Map" command, if the plug-in in the source slot had mapped parameters, these parameters will be added to the map until no more assignable parameters are available.

Once a plug-in has been loaded into a slot, a mouse click will display the following plug-in menu that offers various controls over the plug-in:

```
Show Editor
Bypass
Presets            ▶
Cut
Copy
Center Editor

Load VST...
Paste
Paste with Map
No Plug-in

Params Map         ▶
✓ MIDI Input       ▶
MIDI Output        ▶

Rename...
✓ Track Undo
```

- Show (Hide) Editor: display or hide the plug-in's user interface.
- Bypass: toggle bypass for the plug-in.
- Presets: access the plug-in's factory presets if any.
- Cut: copy the plug-in and its settings into the system clipboard and remove it from the slot.
- Copy: copy the plug-in and its settings into the system clipboard. Onced copied, it can be pasted to any other slot, in any instance of the PatchWork plug-in (even in a different application).
- Center Editor: bring back the editor of the plug-in to the center of the screen, in case you cannot find it.
- Load VST: load another VST plug-in in the slot (will replace the existing plug-in if any).
- Load AU (Mac only): load another Audio Unit plug-in in the slot (will replace the existing plug-in if any).
- Paste: paste a plug-in and its settings from the system clipboard into the slot.
- Paste with Map: paste a plug-in, its settings and mapped parameters from the system clipboard into the slot. Parameters are re-mapped in order, until no more assignable parameter is available.
- Params Map: lists the plug-in's parameters that can be mapped for automation, and lets you assign them to external controls (see the next paragraph).
- MIDI In: select the MIDI port(s) this plug-in is receiving data from (see below).
- MIDI Out: select the MIDI port(s) this plug-in is sending MIDI data to (see below).
- No Plug-in: remove the plug-in.
- Rename: rename the instance of the plug-in. Setting an empty name reverts back to the plug-in's default name.

- Track Undo: toggle undo tracking for the slot. If enabled, inserted plug-ins changes will be inspected and added to the PatchWork plug-in undo history when possible. Please note that some plug-ins may not work properly when this feature is enabled. It is also recommended to disable this feature when controlling a plug-in with MIDI events generators such as Blue Cat's DP Meter Pro or Remote Control.

When the mouse is over a plug-in slot, the following buttons appear:
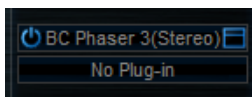
Clicking on the power button on the left will bypass/ unbypass the plug-in in the slot. The button on the right can be used to show/ hide the plug-in's editor.

Mapping Parameters

The "Params Map" item in the plug-in menu lets you map sub plug-in parameters so that they can be automated or controlled with an external control surface. It also lets you view existing mapping for this plug-in if any:
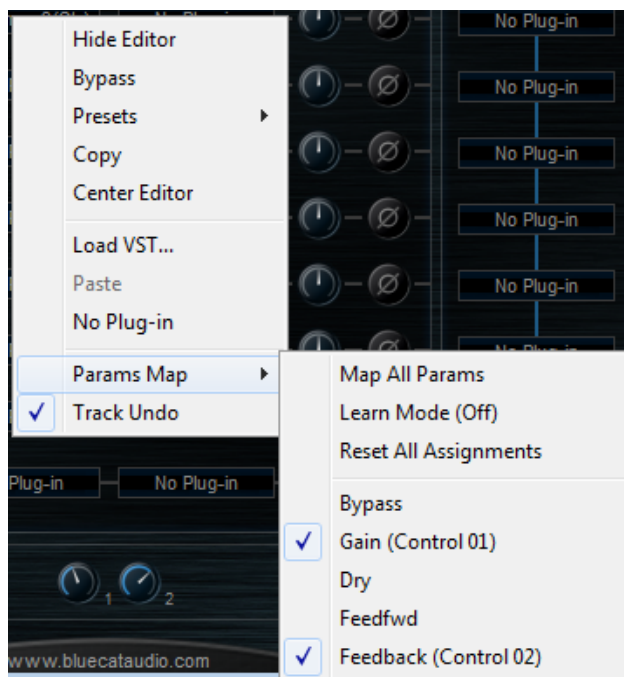
- Map All Params: assign all parameters of this plug-in to remaining controls (in the same order as exposed by the plug-in). The maximum number of parameters that can be mapped is 40.
- Learn Mode (on/ off): when learn mode is on, touching a control in your plug-in's user interface will automatically add it to the parameters map (if the plug-in supports it). Once you are done with parameters assignment, you may want to disable learn mode to avoid mapping unwanted parameters.
- Reset All Assignments: removes all assigned parameters from the params map, for this plug-in. This frees all controls used by previously assigned parameters (for this plug-in only).
- All parameters available for assignment are then displayed in the menu. Clicking on a parameter toggles mapping on or off. When a parameter is mapped, the name of the external control (as displayed in the host application) appears next to it, inside parentheses.

Parameters Mapping works the following way: 40 parameters are available for mapping in Blue Cat's PatchWork. They are named "Control 01" to "Control 40". When a sub plug-in parameter is selected for mapping, the first control available within Blue Cat's PatchWork is used. Once mapped, the sub plug-in parameter and this control are linked together, so that any change to either of them is reported to the other.

This enables the sub-plug-in to expose its parameters to the outside of the PatchWork plug-in. You can for example use these external controls for automation, MIDI control , control surface assignment etc.

If assigned controls are shown in Blue Cat's PatchWork ("Show Assigned Controls" button), new knobs will appear when new parameters are mapped, until the maximum number of 40 controls is reached. You can use these knobs to control the parameters or check their names (the name of the mapped parameter is displayed when the mouse is over the knob).

MIDI Routing

Blue Cat's PatchWork lets you build your own MIDI connections between inserted plug-ins and the host application. Each slot can be connected to multiple ports to receive and send MIDI events:
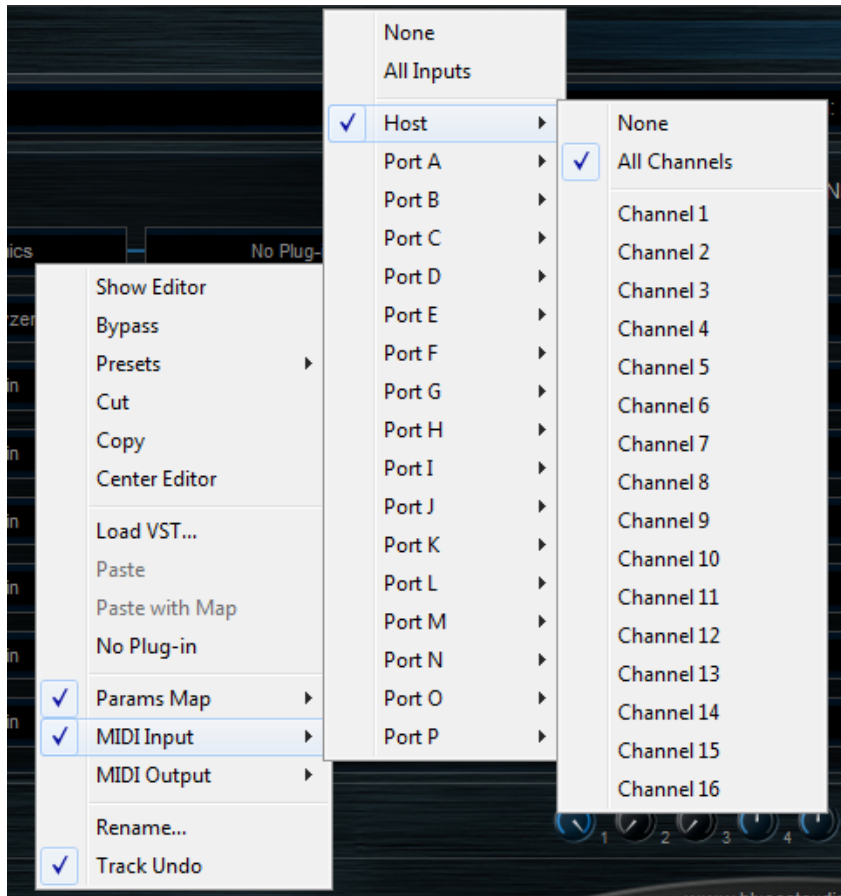
- Host: this port connects to the host application to send (MIDI Out) and receive (MIDI In) events. By default, all slots have their MIDI input connected to the Host.
- Port A to Port P: these are virtual ports that can be used to connect sub plug-ins together.

For the MIDI input of a plug-in you can additionnaly choose to filter events by channel so that it receives all events for one or several selected channels only. If you just want the plug-in to receive all events without any filter, choose "All Channels" for the selected port.

Using virtual internal ports is simple: connect the output of a plug-in to a port, and the input of another plug-in to the same port. The two plug-ins will then be able to exchange MIDI data (from sender to receiver). Multiple plug-ins can be connected to the same port (as input or output). MIDI events will be gathered from MIDI Outs and redistributed to to all connected MIDI Ins.

However, there is a limitation in which plug-ins can be connected together:

- it is not possible to create feedback loops.
- only a plug-in that processes audio data before another can send MIDI data to this plug-in. It means that a plug-in can receive MIDI data from plug-ins that are located earlier in the audio processing chain only (see the signal flow above). If the plug-in is located in a parallel chain, it can also receive MIDI data from plug-ins that are located in parallel chains above it.

These limitations ensure causality and perfect synchronization of MIDI data exchanged between plug-ins, without latency.

Note: when connecting a plug-in to control its parameters via MIDI, you may want to disable undo tracking on this plug-in, to avoid that to many undo steps are recorded by Blue Cat's PatchWork and reduce CPU usage.

The Preferences Pane
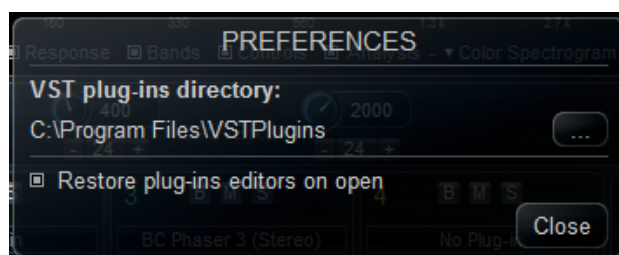
In the preferences pane, you can set the default VST plug-ins path by clicking on it or on the button labelled "...". This VST plug-ins directory is used for several purposes:

- It is the default directory that is opened when you want to load a VST plug-in.
- It is used as the root path when saving/ loading presets that include VST effects: the path of VST plug-ins is saved relatively to this root path, so that you can reopen your sessions on different machines that may have different VST paths (typically on a Mac and a PC).

If you happen to have your VST plug-ins installed in several paths, we advise you to choose the closest common directory path, or the VST path that contains most of your plug-ins.

If the "Restore plug-ins editors on open" option is checked (default), when the PatchWork plug-in is opened, inserted plug-ins user interfaces will be restored at the same position as when the PatchWork plug-in was last closed. If the option is unchecked, all plug-ins user interfaces will be kept closed when re-opening the PatchWork plug-in, and their position on screen will not be saved.

The various elements of the user interface (knobs, sliders, buttons...) are simple and intuitive to operate, but more information about how to interact with them is available in the "Plug-ins Basics" chapter of this manual.

Operation

This section decribes several common use cases for the plug-in. A complete list of the parameters exposed by the plug-in is available in the next section.

Custom Channel Strip

When configured with a single column, the plug-in can be used as a simple custom channel strip, chaining plug-ins together:

That's the preferred configuration to use the plug-in as a simple chainer.

Mixing Multiple Synths

If you want to mix the sounds of multiple synths and control them as if it were a single synthesizer, you can use several parallel chains and insert a synth on the first slot of each chain. No need for multiple tracks: all synths can be stacked together on a single track and controlled with a single keyboard with no additional MIDI routing required.

For this scenario you probably want to use the "sum" parallel chain mode so that the volume of each synth is not altered when soloing or muting one of the chains.

You can also improve your multi- synth presets using MIDI effects (arpeggiator, MIDI delay...) and connecting the MIDI input of some of the synths to the MIDI output of these MIDI effects. This lets you create a single preset with multiple synths playing different arpeggios, all triggered by a single keyboard (See "MIDI Routing" below).

Comparing Effects Chains

It is often useful to try several effects chains before choosing the one that fits best on a track. Blue Cat's PatchWork makes it very easy to do A/ B comparisons: it is possible to use two or more parallel chains and activate one after another to compare them. They can include different plug- ins or the same plug- ins with different settings.

Instant Configuration Recall

You can save your favorite effect chains and settings as presets, including full windows layouts. They can be recalled later with a single click in the presets menu.

This is of course applicable to audio effects, but it can also be useful to store complete synthesizer plus additional effects configurations as presets, so that the complete chain can be restored easily (instead of having separate presets for synths and post effects).

Custom Parameters Mapping

It can be interesting to combine Blue Cat's PatchWork's parameters mapping feature with its advanced automation and MIDI control capabilities in order to wrap an existing plug- in that does not provide the same flexibility. For example, if you have a plug- in that does not support MIDI control, you can just map its parameters within the PatchWork plug- in and then use the mapped parameters for MIDI control.

All mapped parameters have the same control options as all Blue Cat Audio plug- ins parameters: you can choose the response curve, modify the range or choose MIDI control messages. MIDI learn is also available. And it is now possible to apply these capabilities to all other existing plug- ins!
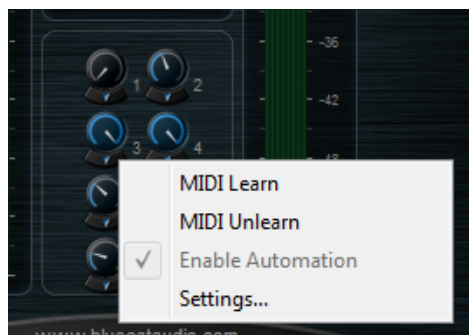
MIDI Routing

You can easily create your own synth using multiple plug- ins connected via internal MIDI ports: for example, why wouldn't you trigger several MIDI arpegiators with a single keyboard, each one controlling different synths? And all within a single plug- in: Blue Cat's PatchWork!
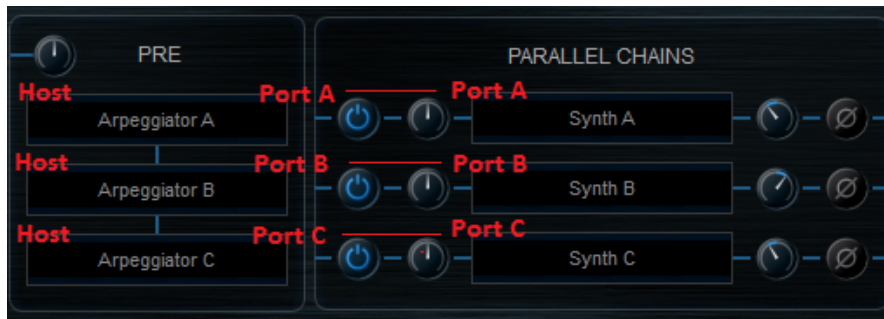
It is also possible to use these MIDI routing capabilities together with our plug- ins that can generate MIDI CC in order to create side chain effects quickly, all within Blue Cat's Patchwork: for example, detect the envelope of the incoming sound in a parallel chain and control the cutoff of a filter on a synth from another chain!

What may be tricky in your DAW and require multiple MIDI tracks to create MIDI connections is much simpler using Blue Cat's PatchWork instead.

Computing Differences Using Phase Flip

Flipping phase on a parallel chain is the same as multiplying the sound by -1. So it is possible to compute the difference between two effect chains easily. A typical application is to use an empty effect chain with flipped phase in parallel with an effect chain you are tweaking:
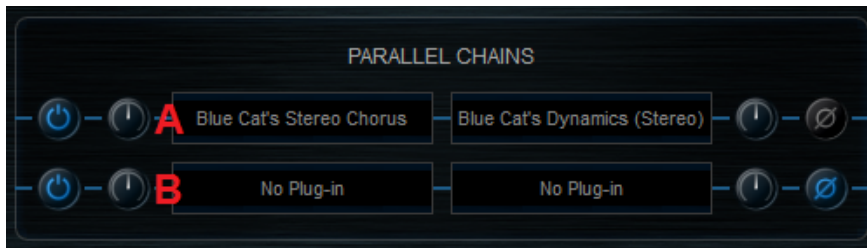
The above setup performs A- B. And since the B chain carries the dry signal, as a result you can hear what the A chain actually adds to the original signal. This is particularly useful for dynamics processing or distortion: you can hear what the effect adds to the original sound (and you can easily switch to the full processed signal by disabling chain B).

Note: you may have to adjust the gain of the B chain, if the A chain does not preserve the average volume.

Patchwork of Patchworks

When using complex routings and many plug- ins, you may want to reuse parts of your effects configurations as modules. In this case, using several instances of the Patchwork plug- in into another one and using presets for predefined configurations will do the trick!

Blue Cat Audio Plug- ins Basics

This chapter describes the basic features that are common to all our plug- ins. If you are already familiar with our products, you can skip this part.

User Interface Basics

About Skins

Like all Blue Cat Audio plug- ins, Blue Cat's PatchWork uses a skinnable user interface. It means that the appearance and behavior of the user interface can be entirely customized.

Especially with third party skins, the experience may be quite different from the one offered by the default skins that we provide. However, our plug- ins and our skinning engine have several standard features that will be available whatever your favorite skin.

More information about custom skins can be found in the skins section.

The Main Toolbar

In most skins, an optional toolbar at the top of the user interface gives you access to the main options and settings of the plug- in:

Presets Area

At the center of the toolbar, you can see the current preset area (the "Default Settings" box). It displays the name of the current preset, with a "*" at the end if it has been modified since loaded.

The arrows on the left and right let you navigate thru the (factory and user) presets available for the plug- in.

Clicking on the preset name opens the presets menu which lets you manage the presets of the plug- in.

Commands

The icons in the toolbar give you access the to the following commands that are detailed in the next paragraph:

Icon	Name	Function
	Menu	Open the main menu
	Undo	Undo
	Redo	Redo
	Manual	User Manual
	About	About

The Main Menu

The main menu is available from the main toolbar, or if you right click anywhere on the background of the plug- in:
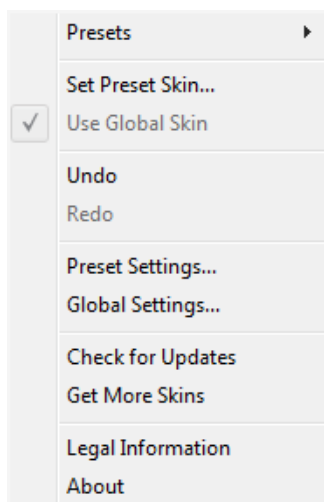
- **Presets**: opens the presets menu to manage presets.
- **Set Preset Skin**: change the skin for the current preset.

- **Use Global Skin:** use the skin defined in the global settings for the current preset. This item is enabled only if a skin has been defined for the current preset.
- **Undo/ Redo:** undo or redo the latest modifications. This includes all changes made to the current preset settings such as MIDI or automation preferences.
- **Presets Settings:** open the presets settings window. It lets you change the skin, MIDI and automation settings for the current preset.
- **Global Settings:** open the global settingswindow. It lets you change the skin, MIDI and automation settings that are used by default in all instances of the plug- in (if not overriden by the current preset).
- **User Manual:** open this user manual.
- **Check for Updates:** opens up our website to let you check if any update for this software is available.
- **Get More Skins:** get more skins for this software.
- **Legal Information**: browse licensing and misc legal documents.
- **About:** displays the "about" dialog box.

The Title Bar

In most skins, an icon bar is located below the main toolbar. The first commands are the same for all plug- ins:

From left to right:

- **Smooth Bypass:** smoothly bypass the plug- in (just like a power button).
- **Window Opacity:** reduce the opacity value by turning the knob, and make the the plug- in window transparent. (the result may depend on the host application).
- **Show/ Hide MIDI and Automation Control Settings:** show/ hide the buttons that give access to direct MIDI/ Automation setup for each parameter in the user interface. This button will show or hide dropdown menu buttons that popup a MIDI/ Automation setup menu described here.

Controls

Examples

Here are a few examples of typical controls you will encounter in the user interface of our plug- ins:
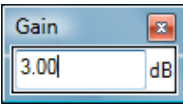
slider	slider	knob	button	Text control
				90 %
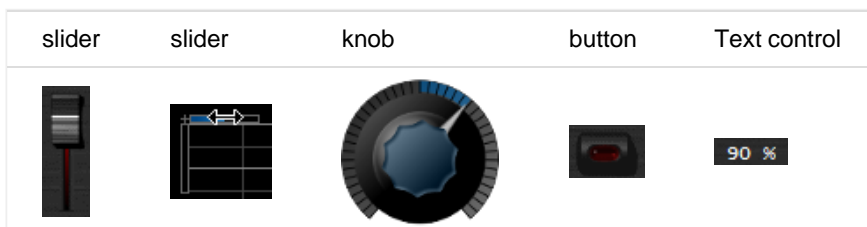
Interacting with Controls

You can interact with the controls of the plug- in interface either with the mouse or the keyboard.

Setting the keyboard focus on a control (so that it responds to key strokes) may be automatic (when you pass the mouse over it it gets focus) or manual (you have to click on the control to set the focus on it). Note that all host applications behave differently regarding keyboard handling. In some applications you may not be able to use all keys described later in this manual to interact with our plug- ins. It is usually made obvious to you to know the active surfaces of the skin (the places where you can click with the mouse): the mouse cursor usually changes when you can do something on a control. In the default skins delivered with the plug- in, the cursor changes to a small hand or an arrow to tell you when your mouse is over an active control.
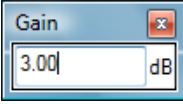
Mouse

Various mouse movements will let you interact with the controls:

Mouse Interaction	Action
Left Click	Acquire focus and start dragging or push (button)
Left Click + Alt Key	Set the value to default
Left Double Click	Acquire focus and launch the "fine tuning" edit box (except button):
Right Click	Set the value to default
Mouse Wheel	Increment or decrement the position (focus required)
Mouse Drag	Change the control position depending on mouse movement (except button)

Keyboard

All control widgets support the following keys (note that some of them are caught by the host and thus never forwarded to the control. For example in Steinberg Cubase SX you cannot use the arrow keys to control the plug- in):

Keys Common to All Controls

| Key	Action
Up Arrow	Small increment of the position (up or right)
Down Arrow	Small increment of the position (down or left)
Left Arrow	Same as Down Arrow
Right Arrow	Same as Up Arrow
Page Up	Large increment of the position (up or right)
Page Down	Large decrement of the position (down or left)
+	Small increment of the value of the control
-	Small decrement of the value of the control
d	Set to default value (same as mouse right click)
e	Opens the 'fine tuning' window to precisely set the parameter:
SHIFT	When the key is down, the fine tuning mode is on, and you can modify the value with better precision when moving the mouse, the mouse wheel or using the keyboard. Just release the key to get back to the normal mode.

Keys Specific to Buttons

Key	Action
Enter	Pushes the button

Presets

To get started with the plug- in and discover its capabilities, a couple of factory presets are provided. You can also save your own presets and recall them later for other projects. Our plug- ins propose a full- featured preset manager to let you save, browse, organize and recall its presets.

The Presets Menu

The presets menu can be opened from the main menu or the main toolbar. It displays the list of presets available for the plug- in as well as commands to load, save or organize presets:
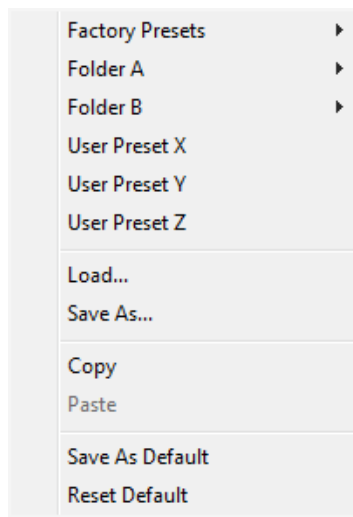
- **Factory Presets:** shows the list of factory presets delivered with the plug- in.
- **"Folder A" to "User Preset Z":** user presets and categories.
- **Load:** load preset from file.
- **Save As:** save current preset to a file.
- **Copy** copy preset to the system clipboard.
- **Paste** paste preset from the system clipboard, if available.
- **Save As Default:** save the current state as the default preset. This preset is used every time a new instance of the plug- in is created.
- **Reset Default:** reset the default preset to its factory state: this makes the plug- in forgets the custom settings you might have saved as a default preset.

More about Presets

There are two types of presets: factory presets (read only) that are provided with the plug- in, and user presets that can be created and stored by the user.

The user presets are stored in a subdirectory of the documents folders of your profile ("Documents" on Mac, and "My Documents" on Windows): Blue Cat Audio/ [Plug- in Name]/ Presets. Each preset is stored as an individual file. You can create folders and subfolders in the Presets directory to classify your presets, as shown in the example below:
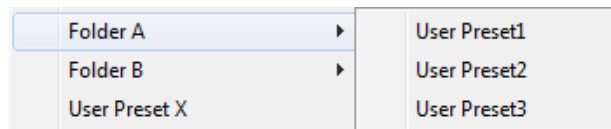

If you save a preset named "Default" in the root Presets directory, it will override the factory default preset (that's what "Save As Default" does). To restore the factory default preset, you can just remove this file or use the "Reset Default" command.

MIDI and Automation Control

Blue Cat's PatchWork can also be remotely controlled via MIDI using MIDI CC ("Control Change") messages or automation curves, if your host application supports it. It is possible to customize the channel, control numbers, range and response curve used for each parameter in the settings panel available from the main menu (see the Plug- in Settings chapter for more details).

MIDI and Automation Settings Menu

Most skins also provide the ability to change MIDI and automation settings for each parameter directly in the main user interface. When this feature is activated using the corresponding title bar button, dropdown menu buttons appears next to main controls:
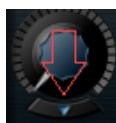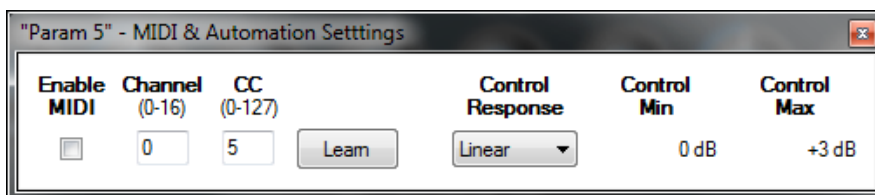

Clicking on this button shows the MIDI/ Automation settings menu:
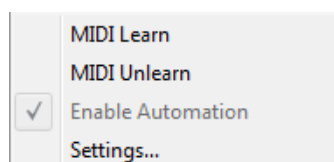
- **MIDI Learn:** launches MIDI learn mode for the control: touch your MIDI controller and the control will learn from it the MIDI channel and CC number. To end the learn mode, reopen this menu and deselect the option.
- **MIDI Unlearn:** deactivates MIDI control for this parameter.
- **Settings:** launches the advanced settings panel described below. This controls the settings for the current preset.

Andvanced MIDI and Automation Settings

You can completely customize the way the plug- in is controlled by automation and MIDI. For a global view of all parameters at a time, you can use the Plug- in Settings window for the current preset which is available from the main menu.


MIDI Settings:

- **Enable MIDI**: enable/ disable the MIDI control of the parameter.
- **Channel**: MIDI Channel for the parameter control. If set to 0, the plug- ins will accept Control Change Messages from all MIDI Channels (MIDI Omni mode).
- **CC**: Control Change Number.
- **Learn**: click on this button to activate the MIDI learn functionality. When it is activated, you can move your MIDI controller, and the plug- in will automatically set the MIDI Channel and CC Number.

MIDI and automation settings:

- **Response**: response curve of the MIDI or automation control: from very fast to slow control.
- **Min**: minimal value of the parameter when MIDI controlled or automated.
- **Max**: Maximum value of the parameter when MIDI controlled or automated.

Note: if the Min value is higher than the Max value, the response curve will be reversed: increasing the control value will decrease the parameter value.

Note: if you double click on the parameter text control boxes for the max and min values, a "fine tuning" edit box will appear and let you change the min and max values with more precision:
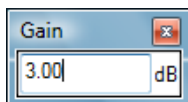
More

Check our online tutorial for more screenshots and more examples of our plug- ins user interfaces.

Blue Cat's PatchWork Parameters

All parameters described below can be automated and controlled via MIDI if your host application supports it. You can precisely define this behavior in the settings panels described later in this manual.

Input

The input parameters of this plug- in are the following:

| Name	Unit	Description	Comment
General			
Bypass		Bypass the effect.	
Columns		Number of columns for the rack.	
Rows		Number of rows for the rack.	
Mix		Amount of wet signal compared to dry input signal (0% is fully dry or unprocessed, 100% is processed signal only).	
In Gain	dB	Input Gain.	
Out Gain	dB	Output Gain.	
Level Meters		Enable or disable level meters.	
Summing		Summing mode for parallel chains.	
For each parallel effect chain (index: i)			
Power i		Activate parallel chain number i.	
Pre Gain i	dB	Pre gain for parallel chain i	
Post Gain i	dB	Post gain for parallel chain i	
Phase Flip i	dB	Invert phase for parallel chain i	
Solo i		Solo parallel chain number i. Solo will deactivate all other non- soloed parallel chains.	
Assignable Controls			
Control 01 to Control 40	dB	Assignable parameters for sub plug- ins automation.	

Plug- in Settings

In addition to the controls offered in the main user interface, Blue Cat's PatchWork has various settings that let you fine tune the behavior of the plug- in. You can choose to change these settings either for the current preset or globally for all instances of the plug- in.

The Global Settings Window

The settings available in this window **apply to all instances of the plug- in, for all presets**, if not overriden in the presets settings. Consider these settings as "default" settings.

General

You can change the default skin for all instances of the plug- in: write the skin file path in the text edit box or click on the button to open a file chooser dialog. If you have several instances of the plug- in opened in your session, you will have to re- open the user interfaces of these plug- ins to see the skin change.
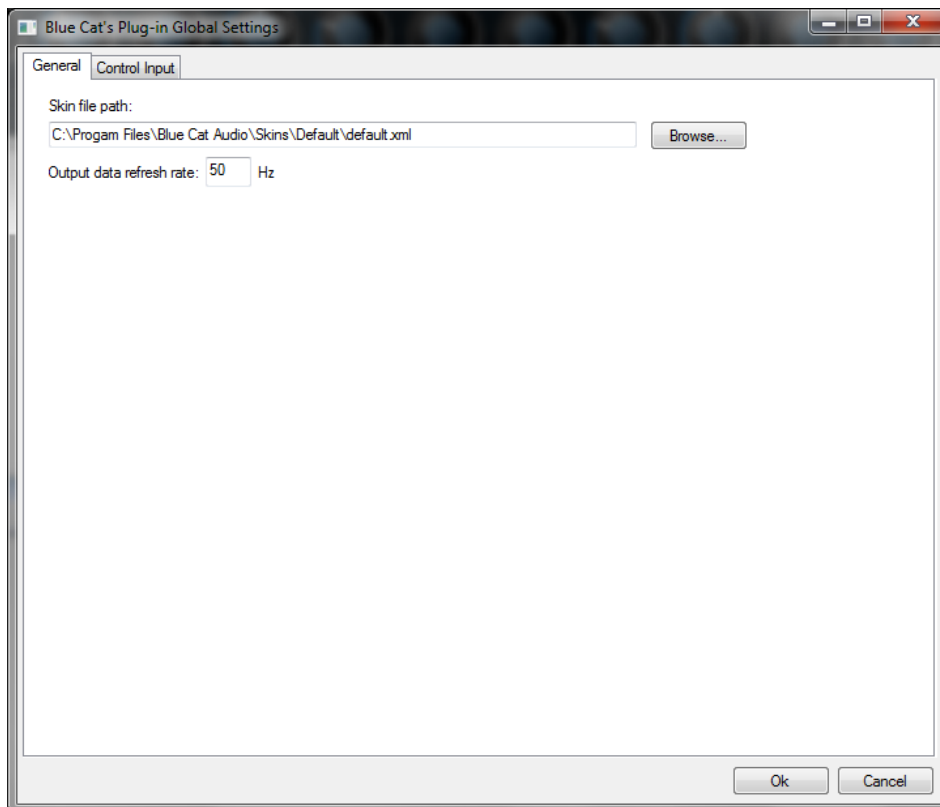
The output data refresh rate can also be customized for all instances of the plug- in. It controls the refresh rate of non- audio data produced by the plug- in (parameters, curves...). It also controls the refresh rate of output MIDI CC messages or output automation data. The higher the refresh rate, the better precision, but also the higher cpu usage (some host applications may also have trouble recording MIDI data at high refresh rates). The default value is 50 Hz.

Global Control Input Settings (MIDI and Automation)

The plug- in offers a couple of settings that affect the way it is controlled by MIDI messages or automation. While the first settings only apply to MIDI control, the "Control Response", "Min" and "Max" settings apply to **both automation and MIDI control**.

For each parameter you can define a default MIDI channel and CC number. You can then control the plug- in with an external MIDI controller or one of our plug- ins that generate MIDI messages.

The settings below are available for each plug- in parameter.
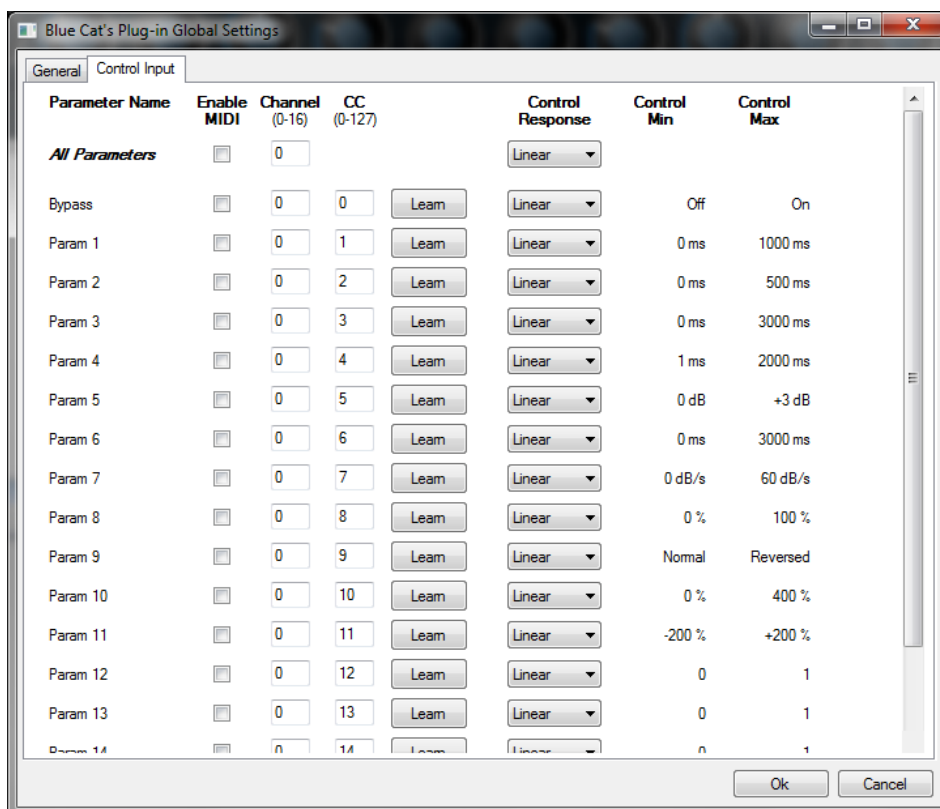
MIDI Settings:

- **Enable MIDI**: enable/ disable the MIDI control of the parameter.
- **Channel**: MIDI Channel for the parameter control. If set to 0, the plug- ins will accept Control Change Messages from all MIDI Channels (MIDI Omni mode).
- **CC**: Control Change Number.

- **Learn**: click on this button to activate the MIDI learn functionality. When it is activated, you can move your MIDI controller, and the plug- in will automatically set the MIDI Channel and CC Number.

MIDI and automation settings:

- **Response**: response curve of the MIDI or automation control: from very fast to slow control.
- **Min**: minimal value of the parameter when MIDI controlled or automated.
- **Max**: Maximum value of the parameter when MIDI controlled or automated.

(generic screen shot, does not correspond to the actual plug- in parameters)

Note: if the Min value is higher than the Max value, the response curve will be reversed: increasing the control value will decrease the parameter value.

Note: if you double click on the parameter text control boxes for the max and min values, a "fine tuning" edit box will appear and let you change the min and max values with more precision:
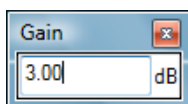
The Current Preset Settings Window

In this window you can change the settings *for the current preset of the current instance of the plug- in only*.

Preset Skin

You can choose to use the global skin setting or to change the skin for the current preset. This way you can have different skins for different instances of the plug- in in the same session in order to differentiate them.
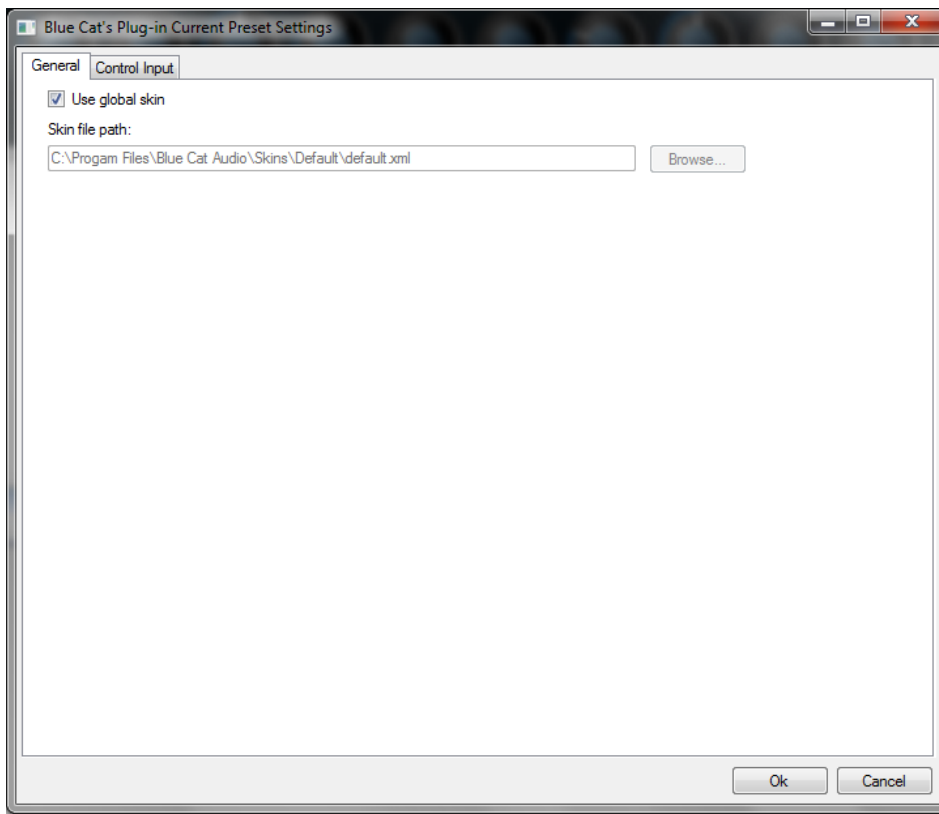
Preset Control Input Settings (MIDI and Automation)

Use the global settings or override them for the current preset. The parameters are the same as for the global input settings.
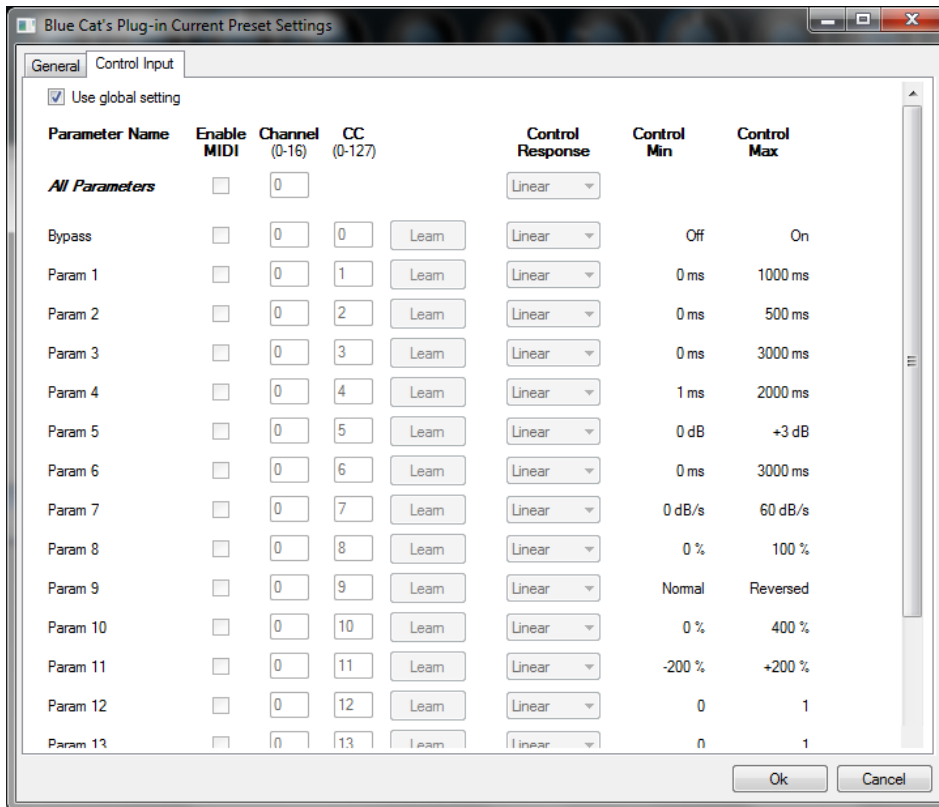
(generic screen shot, does not correspond to the actual plug- in parameters)

About Skins

Blue Cat's PatchWork integrates Blue Cat's skinning engine that allows you to customize the user interface. You can download new skins for your plug- in at the following address:

http:// www.bluecataudio.com/ Skins/ Product_PatchWork

If you don't find a skin that fits your need or if you want a really custom one, you can choose to create your own skin.

Changing the Skin

You have two ways to change the skin of your plug- in: you can change the default (or 'global') skin in the global settings, or change the skin for the current preset only (either in the preset settings page or from the main menu). The global skin applies to all plug- in instances, whereas the current preset skin only applies to the current preset of the current plug- in instance.

See the main menu for more information about how to access these options.

On some hosts the plug- in window won't resize automatically when you choose a skin with a different size. In this case, just close the window and re- open it: it will be displayed with the right size.

Create a Custom Skin

You can create custom skins for your plug- in in order to adapt it to your exact needs. You can change its look and feel and make it completely integrated in your virtual studio!

Just read the Blue Cat's Skinning Language manual and download the samples for the tutorial on http:// www.bluecataudio.com/ Skins. You can get ready to create your own skins in a few minutes.

You can then share your skins on our website.

Plug- ins Formats

What are DirectX (DX), Audio Unit (AU), RTAS, AAX and VST plug- ins?

VST, Audio Unit, RTAS, AAX and DirectX plug- ins are software components than can be used in "Host" Software (such as Cakewalk Sonar, Steinberg Cubase or Wavelab, Sony Vegas, Logic Pro, Garage Band, Ableton Live, Pro Tools...) in order to perform some MIDI and/ Or Audio real- time Processing tasks. To be more precise what we usually call directX plug- ins is actually a "DirectShow Filter". VST is owned by Steinberg, DirectX by Microsoft while Audio Units is the property of Apple Computers and RTAS and AAX are owned by AVID.

How can I use your plug- ins?

Download and install a host software, then download and install the plug- ins from our page. They will appear in the host "effects" menu. If you are using a DirectX host with our MIDI controllable plug- ins and they do not show up in you host list, you might need to use our freeware DXi Manager. Note that our plug- ins are sometimes shown in the "MIDI controllable audio effects" or "soft synths" sections in some host applications.

Where can I find a host?

There are many commercial or freeware hosts that will suit your needs. You can find a long list of applications here. You can also use demos of Cubase, Wavelab, Ableton Live, Tracktion, or Sonar software, which are usually available on the companies websites. On the Mac, Garage Band is part of the system and can be also used to host our Audio Unit plug- ins.

What are the main differences between DX, VST, RTAS, AAX and Audio Units?

VST is a protocol that works on several platforms (Mainly Windows, MacOS, BeOS, and some Linux platforms use it as well) whereas DirectX is Microsoft Windows only, and Audio Units are available only on the Mac. RTAS and AAX are available on Mac and PC, but only for Pro Tools products (AVID). AAX plug- ins are compatible with Pro Tools 10 and higher, whereas RTAS versions are compatible for Pro Tools 10 and lower versions.

What is the difference between DXi and DX effects?

DXi effects are MIDI controllable DirectX plug- ins. It's the same as DX effects plus MIDI control.

Which version (VST, Audio Unit, RTAS or DX) should I use in my host application?

Here is a list of host software and the version we recommend you to use. Many other applications are supported, check your application user manual to choose the best version (AU stands for "Audio Unit" and DX for "DirectX"):

Host Application	Plug- in Version
Cakewalk Products (Sonar, Project5...)	DX
Sony Products (Vegas, ACID, Soundforge)	DX for old versions, VST for new
Steinberg Products (Cubase, Nuendo, Wavelab)	VST (Mac or PC)
Ableton Live	VST (Mac or PC)
Adobe Audition	any
EnergyXT	VST
Magix Samplitude	VST
Avid (Digidesign) Pro Tools	RTAS
Apple applications (Logic Pro, Logic Express, Garage Band...)	AU
Cockos Reaper	VST (Mac or PC)
...	

In general, we recommend using VST over Audio Unit on Mac (when both are supported), particularly for the plug- ins that can output automation or MIDI CC messages.

Where can I find more information about this topic?

- www.steinberg.net
- www.microsoft.com
- www.kvraudio.com
- www.apple.com
- www.digidesign.com

Installation

I have installed my software and it is not listed as an application. Why? What can I do? How can I launch it?

Most software you can purchase on this website is plug- ins for host applications. It means you need another application to use it. See the "Plug- ins Formats" section in this FAQ for more information.

I have installed my plug- in and it does not show up in my host application. What can I do?

First check that you application supports DirectX, Audio Unit or VST plug- ins.

If you are using the DirectX version, check that your host application supports DXi plug- ins (MIDI enabled DirectX plug- ins). If it does not, it may remove it from the DirectX plug- ins list (some applications such as Sony Vegas 5 and Cool Edit Pro are known to do this). In this case, use our DXi Manager free utility and disable the MIDI capabilities of the plug- in. You may need to reinstall the software again before it shows up into your host application. For more information about this topic please read our DXi in Sony Vegas tutorial (it is applicable to other applications than Sony Vegas).

If you are using the Direct X version and your host application supports DXi, check that the plug- in does not appear in the 'virtual synth' or 'synthesizers' category. If you wish not to use the MIDI capabilities of the plug- in and use it as a regular Direct X plug- in, you can download the freeware DXi Manager and disable the MIDI capabilities of the plug- in.

I have installed my plug- in on windows 64- bit, checked the items above, and it still does not show up in my host application. What can I do?

You are probably running a 32- bit application. If that's the case, you need to install the 32- bit version of the plug- in: the choice for 32 or 64- bit is not determined by the operating system (64- bit windows can run both 32 and 64- bit applications), but by the host application that you are using.

Why are there two plug- ins called xxxx(Mono) and xxxx(Stereo) installed ?

"Mono effects" (which are effects that do not make any difference between left and right channels) are bundled this way for performance reasons. Some developers just deliver a stereo Version which also processes (twice) mono streams. The "(Mono)" plug- in is to be used with mono streams, and the (Stereo) one with stereo streams. The effect itself is the same in both cases but the number of processed channels is different: this may drastically improve performance for CPU intensive plug- ins.

How do I uninstall my plug- ins?

Open the Windows configuration panel/ Add Remove Programs, and choose 'Remove' on the corresponding plug- in. If you have installed the VST plug- in zip file version, just delete the corresponding dlls.

Why do your plug- ins need an installer on Windows? Do they modify the registry or system settings? Why not providing just a dll?

Our plug- ins require several additional files for default settings, skins and miscellaneous data. We provide an installer for our customers' convenience. Our installers do not modify the system settings or the Windows registry, except for the DirectX versions registration. Our installers won't harm your system.

Software Version

How do I know the version of the plug- in I am using?

You can see the version information in the about box: right click on the background of the plug- in user interface and select "About". The product version is also available in the Windows Add/ Remove Programs Window.

Why do newer versions of a plug- in override older ones (they have exact same name and IDs)?

Because newer versions improve previous ones. When a new version is released, older versions are not supported anymore. In some cases the new versions may be installed as new products (compatibility reasons, major changes...), but it is explicitly documented on the product page.

A new minor version of a product I purchased some time ago is available. Where can I download the update?

The new version can be downloaded from the same place where you downloaded the original version. All information is contained in the email you received when you purchased the product. Your registration number has not changed either.

Upgrade

A new minor version of my plug- in has been released. Where can I download it?

When you purchased the plug- in, an email containing the information to download and register your software has been sent to you. You can download the new version from the exact same location as the first time.

I have downloaded a new version, do I need to uninstall the previous version?

No, you don't, except if it's specified on the product page, in the "history" section. Just run the installer and it will upgrade your software.

Automation

What is "Parameters Automation"?

The parameters of an effect can be automated in most host software. It means that you can record the changes you do during playback or recording so that it's replayed when playing back again. It's a way of sequencing parameters changes the same way you do with Audio or MIDI data.

What is "Smooth Update"?

When changing parameter values in real time or replaying a song where parameters have been automated, our plug- ins compute intermediate values between parameter changes in order to avoid "clicks" and "pops" that may occur otherwise. It results in a non audible smooth parameters update and lets you freely use automation or MIDI control to change the effects in a song.

Do your plug- ins support MIDI Control?

Yes they do. They offer precise control over the mapping of MIDI Control Change (CC) messages to parameter values: you can adjust both the channel and CC number as well as the response curve of the control. Since some of our plug- ins are also capable of creating MIDI CC from the audio signal, they can all be connected for real time signal- dependent audio effects. See our MIDI Control in Sonar tutorial for an example.

More...

This manual only covers the basics of Blue Cat's PatchWork. Our website offers many additional resources for your Blue Cat's PatchWork plug- in and is constantly updated, so keep an eye on it! You will find below a few examples of available resources.

Extra Skins

We encourage our customers to propose their own skins for our products and we often propose alternative skins to let you choose the one that best suits your needs. You can check Blue Cat's PatchWork skins page to get the latest skins.

satYatunes Themes Pack

Product: PatchWork
Description: A pack of two wonderful skins (dark and silver) for Blue Cat's PatchWork. Please follow install instructions contained in the zip file.
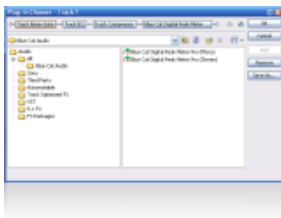**Author:** satYa Choudhury [satyatunes.com]
Download: Skin_SatYatunes.zip

Tutorials

Many Tutorials are available on our website. They cover a wide range of topics and host applications. You will find below a list of tutorials that are related to the Blue Cat's PatchWork plug- in. An updated list is also available online.
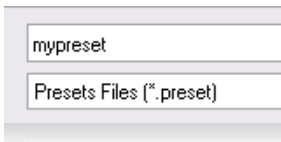
Tutorial - Using DXi plug- ins in Sony Vegas

This tutorial will teach you how to use any DXi plug- in in Sony Vegas: Sony Vegas does not support MIDI automation, so if your plug- in supports the MIDI Dxi protocol, it is removed from the plug- ins l...

[Read More...]

Tutorial - Export Plugin Presets to Share them with the Community

This tutorial shows you how to export your presets in order to share them with the community on the Blue Cat Audio website. This tutorial uses Blue Cat's Stereo Triple EQ for the demonstration bu...

[Read More...]

Tutorial - Getting Started with Plug- ins User Interface

Get used to the user interface features of Blue Cat Audio products! They have been designed for an optimal workflow, so here are the tips and tricks to save time. All these functionalities are explain...
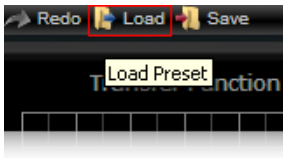
[Read More...]

Tutorial - Using MIDI Control in Sonar

This tutorial will help you understand how to use parameters MIDI control in Cakewalk Sonar. It is applicable to any DXi plug- in (MIDI enabled DirectX plug- in)....

[Read More...]

Tutorial - How to Use the Free Presets Available on this Website

This tutorial shows you how to get and load free presets for your favorite Blue Cat Audio plugin. This tutorial uses Blue Cat's Dynamics for the demonstration but is applicable to all our plugins...

[Read More...]

Updates

As you can see in the history log below, we care about constantly updating our products in order to give you the latest technology available. Please visit our website often to check if Blue Cat's PatchWork has been updated, or subscribe to our Newsletter to be informed of the latest news about our products.

You can also follow us on twitter and facebook for almost real time updates notification, and subscribe to our YouTube channel to see the latest videos about our software.

Versions History

V1.4 (2014/07/24)

New Features:
- Selectable parallel processing chains summing mode: sum or average.
- Solo button for parallel chains.
- MIDI Channel filtering for each plug- in input.

Fixes and compatibility improvements:
- Fixed undo/ redo incompatibilities with some plug- ins.
- (Mac) Fixed crash introduced in 1.3 when trying to load missing VST plug- ins.
- (Mac) Fixed wrong plug- in instantiated in some cases when selected from a VST shell package.
- (Mac) Fixed crash after closing the editor of an Audio Unit plug- in loaded with SoundRadix's 32Lives.

V1.3 (2014/06/17)

New Features:
- Audio Unit hosting support: Audio Units can now be loaded into the plug- in on Mac.
- Plug- ins can now be cut from a slot for cut/ paste operations.
- Plug- ins can now be pasted into a slot with their params map.

Improvements:
- User interface loading or resizing is now up to 50% faster.
- Reduced the size of windows installers.
- Minor layout changes.

Fixes and compatibility improvements:
- Fixed undo/ redo incompatibilities with some plug- ins.
- (Mac) Fixed random crashes when unloading some plug- ins on Mac (Waves plug- ins for example).
- (Win/ AAX) Fixed shortcut to user manual in start menu.
- (AAX) Fixed inaccurate transport information reported to sub plug- ins when stopping playback in Pro Tools.

V1.2 (2014/04/23)

New Features:
- MIDI Routing: custom MIDI routes can be created to connect plug- ins together and with the host application to send and receive MIDI.
- Plug- in instance Renaming: it is now possible to give a name to each instance of a plug- in.
- Mono to stereo processing: the plug- in can now be used as a mono to stereo plug- in and process mono tracks with stereo effects in hosts that support it.

Improvements:
- Improved performance of undo tracking when loading presets for plug- ins with many parameters.
- The "Parameters Map" menu item is now checked when a parameter is mapped.
- Improved performance when changing the size of the plug- in user interface.

Fixes and compatibility improvements:
- Fixed keyboard stealing issue in many host applications when sub plug- ins editors are opened (except 32- bit applications on Mac).
- Fixed compatibility issue with Pro Tools 9 on Mac (random crashes).
- Fixing crashes with some plug- ins requesting information while being opened.

V1.1 (2013/12/18)

New Features:
- New parameters mapping feature for sub plug-ins automation (includes a "learn" mode for easy mapping): Up to 40 parameters can be mapped to external controls. Our plug-in's advanced automation and MIDI control features can also be used to map controllers to sub-plug-ins parameters.
- New layout to display mapped automation controls in the main user interface.
- Added phase flip buttons for each parallel chain, so that you can easily compute differences between signals or correct phase problems introduced by some plug-ins.
- Link all pre and post gain knobs so that pre gain changes are automatically compensated by the post gain knobs. This can be used to easily push dynamics or distortion plug-ins without increasing the volume.

Fixes and compatibility improvements:
- when no plug-in is inserted, level meters remained frozen when stopping transport.
- fixing crashes with GRM Tools plug-ins that changed their audio I/O count dynamically ("Reson" for example).
- fixing sample rate initialization issue with Nebula when using copy/paste.
- The plug-in can now be used as a virtual instrument in Cubase and Studio One (it used to be silent).
- Some plug-ins that required the deprecated "effIdle" VST message should now work properly (Steinberg's Virtual Guitarist for example).

V1.01 (2013/11/22)

Fixes and compatibility improvements:
- Improved compatibility with plug-ins that do not support sample rate changes (Nebula).
- Improved compatibility with synths that internally use VST presets banks: the entire state was not properly restored with the session (Nexus or Korg Legacy series).
- Fixed output gain compensation issue: when using parallel chains, the global output gain stage was skipped.

V1.0 (2013/11/12)

First release.

Thanks again for choosing our solutions!

See you soon on www.bluecataudio.com!