

Blue Cat's Protector User Manual

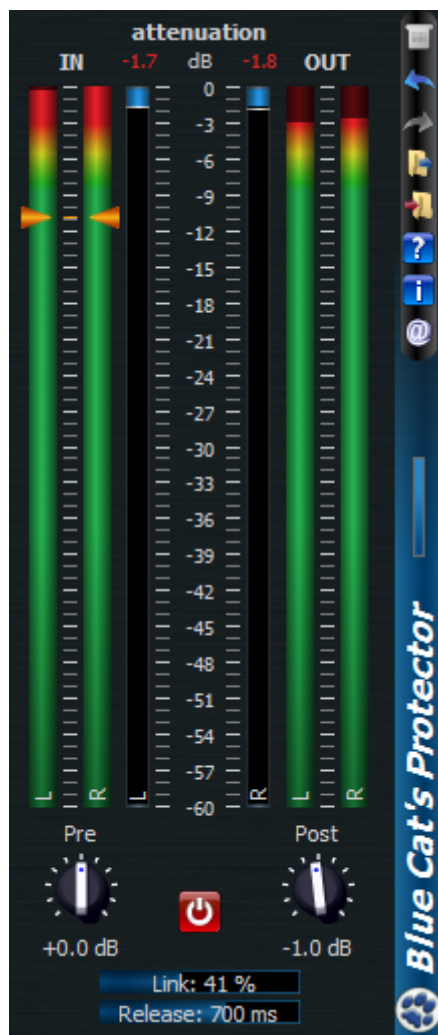


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The Protector Effect

Description

Blue Cat's Protector is a 0dB stereo brickwall limiter with adjustable dynamics response. It will typically find its place on the master bus of your DAW to protect your audio output from overshoot, limit the general volume and improve the perceived loudness, thanks to a very transparent frequency response.

Despite its very simple set of controls, it offers a wide range of sounds and it is also suitable as a track limiter for more creative effects such as distortion, pumping or heavy limiting.

Beyond its powerful dynamics processing features, and like most of our plugins, Blue Cat's Protector also offers a powerful side chain capability thanks to its MIDI CC output. This unique technique not only lets you do side chain limiting but also parameters modulation: control any parameter of any plugin to create powerful side chain effects in real time.

Parameters

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

Param id	Name	Unit	Description
dsp.input0	Bypass		Bypass the effect.
dsp.input1	Pre	dB	Input gain, before the limiting stage.
dsp.input2	Release	ms	Release time for the limiter. Controls how fast the limiter reacts to volume drops. Set the release parameter to 0 for distortion.
dsp.input3	Knee	dB	Controls the softness of the limiting: the higher the value, the softer the limiting. Limiting starts at 0dB minus the knee value. See the usage section for more details.
dsp.input4	Link	%	Link the left and right channels gain. At 0% both channels work independently, and a 100% the same gain reduction is applied to both channels. This lets you control how the stereo balance is affected by the limiter.
dsp.input5	Max Reset		Reset the max compression values (see output parameters).
dsp.input6	Post		Output gain, after the limiting stage

For visual feedback, this plugin also offers output parameters:

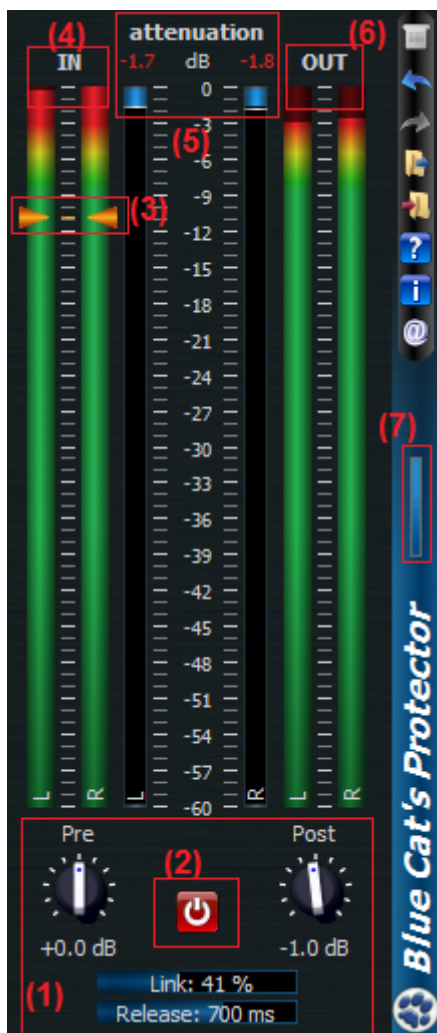
Param id	Name	Unit	Description
dsp.output0	Pre Peak (L)	dB	Audio input level for the left channel.
dsp.output1	Post Peak (L)	dB	Audio output level for the left channel.
dsp.output2	Comp(L)	dB	Amount of compression (instant) for the left channel.
dsp.output3	Max Comp(L)	dB	Maximum amount of compression for the left channel. Can be reset by changing the "Reset Max"

Param id	Name	Unit	Description
			parameter.
dsp.output4	Pre Peak (R)	dB	Audio input level for the right channel.
dsp.output5	Post Peak (R)	dB	Audio output level for the right channel.
dsp.output6	Comp(R)	dB	Amount of compression (instant) for the right channel.
dsp.output7	Max Comp(R)	dB	Maximum amount of compression for the right channel. Can be reset by changing the "Reset Max" parameter.

The param id field is used when designing a new skin. See the [Skins](#) section for more information.

Included Skins and Controls

Blue Cat's Protector is bundled with a single skin, but you may create your own and download new ones from <http://www.bluecataudio.com>.



- (1) Main parameters control: pre and post gain, stereo link and release time. See the parameters and usage sections for more information.
- (2) Bypass: activate or deactivate the effect
- (3) Knee: controls how soft the limiting is, starting to compress before the 0dB threshold. As soon as the input signal is above the arrows the plug-in progressively starts limiting.
- (4) Input Level: these meters show the audio input level, after the pre-gain and before the limiting stage.
- (5) Attenuation: These meters show the attenuation of the limiting stage for each channel.
- (6) Output Level: these meters show the audio levels after the post gain stage.
- (7) Window Opacity: change the opacity of the plug-in window to make it transparent (the behavior may change depending on your host application).

Usage

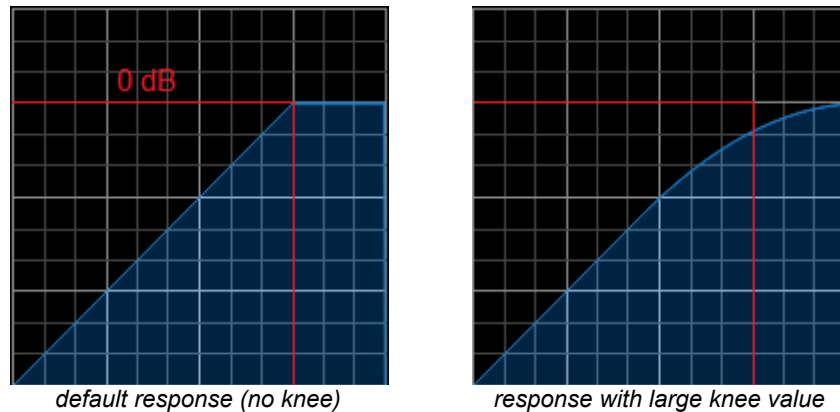
The limiter has very few parameters but they let you precisely control the dynamics response if you

understand them well. Short descriptions of these parameters are available in the parameters section. We will give you here more details about their influence on the sound and the way it is processed.

Controlling the Limiting Effect

By default, the limiter has a fixed input threshold of 0dB. You can control the input level with the Pre-Gain knob to adjust the input if it is too loud or quiet. Every peak above 0dB will trigger a gain reduction to reach the 0 dB peak level. You can then adjust the output gain to the desired level: the the output peak level is guaranteed to be maintained below the chosen output level.

The "knee" parameter offers a way to obtain a smoother limiting effect: it adjusts the shape of the gain reduction curve. The limiter will start its gain reduction before the signal reaches 0dB (precisely at 0dB minus the knee value), with a smooth and continuous curve:



(the graphs above show the output level as a function of the input level, both in dB scales)

When the knee is set to its maximum value (30 dB), the limiter offers an extra 6dB overhead to the input level. This means that the input signal can reach +6dB before it actually hits the final brick wall. On the other hand, limiting will occur before the audio level reaches 0dB, as you can see on the graph above.

Reaching Distortion

When the release time reaches very low values (less than 10 ms), a great amount of distortion will occur. At 0 ms Blue Cat's Protector acts as a wave shaper and clips the audio signal.

Again, with the knee parameter you can adjust the shape of the wave shaper from digital hard -clipping (knee=0dB) to soft analog-like saturation (knee=30 dB).

True distortion can be achieved by increasing the input level to force continuous clipping of the audio signal over time (instead of only clipping the peaks). The larger the input gain, the larger the distortion. It is possible to cascade several instances of the plugin in order to achieve a very large amount of distortion.

Level Maximizing

A common task for a brickwall limiter is level maximizing: you can increase the perceived loudness of an audio recording without changing its peak level.

Depending on the type of media your recording is targeted to (mp3, CD, ...) and your host application, you might need to adjust the output level to less than 0dB (typically -0.1 dB) in order to avoid peak distortion.

Once the output level has been set, start with a 0dB knee value. Increase the input gain until you can hear artifacts on the output (typically a few clicks on heavy transients). Increase the knee value until

you cannot hear the artifacts anymore: you have reached the optimum settings!

Another important setting for this task is the release time: you will typically keep it quite high to avoid too fast volume variations.

Note that you can also cascade several instances of the plugin in order to increase further the perceived loudness.

Side Chain Capabilities

Thanks to its MIDI CC output, Blue Cat's Protector will let you perform side chain limiting and create your own volume controlled effects in a few mouse clicks. For side chain limiting, you will also need to download Blue Cat's freeware Gain plug-ins at the following address:

http://www.bluecataudio.com/Products/Product_GainSuite/

In order to use the real time side chaining functionality of Blue Cat's Protector, do the following:

- Create a new bus in your project and send the audio source track (the audio track used as control signal for the side chain) on it.
- Insert Blue Cat's Protector on this bus.
- Insert Blue Cat's Gain on the destination track (mono or stereo).
- Assign the Comp (Comp(L) and/or Comp(R)) output parameter to a given MIDI channel and CC number.
- Assign the Gain parameter of the Gain plug-in to the same MIDI channel & CC number as the Total Gain.
- Route Blue Cat's Protector MIDI output to Blue Cat's Gain MIDI Input.

Blue Cat's Protector will now control the Blue Cat's Gain plugin depending on the audio source input level.

If you have issues performing the above tasks in your host application, please visit our website and check our step by step tutorials that explain how to use the MIDI CC i/o features in various host applications:

<http://www.bluecataudio.com/Tutorials>






Controls

Blue Cat's Protector plug-in uses a skinnable user interface. The appearance and behavior of the user interface can thus change a lot depending on the chosen skin. This section will expose you the different controls you may encounter in these skins and the way they can behave. A well designed skin should be easy to use anyway.

You can control the plug-in via MIDI Control Change messages as well and customize the way you interact with MIDI messages. See the [main menu](#) section for more information.

Controls examples

Here are a few examples of possibles controls you may encounter in the user interface:

				
fader	slider	knob	button	Text control

General Behavior

Setting the keyboard focus on a control (so that it receives key events) 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).


It is usually made obvious to you to know the active surfaces of the skin (the places where you can click): 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 to tell you when your mouse is over an active control.

Keys

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):

Common behavior

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


Key	Action
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.

Button specific behavior

Key	Action
Space Bar	Pushes the button
Enter	Pushes the button

Mouse

You can change the value of the parameter with the mouse:

Mouse Event	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)

Main Menu & Settings

The Main Menu And Toolbar

Menu

If you right click on the background of the plug-in, the following pop-up menu appears:



The commands descriptions are available below.

Toolbar

In some skins an optional toolbar gives you access to the some of the functionalities of the main menu.

Icon	Name	Function
	Menu	Open the main menu
	Undo	Undo
	Redo	Redo
	Load	Load Preset
	Save	Save Preset
	Manual	User Manual
	About	About
	Visit www.bluecataudio.com	Opens our website

Commands

The Commands available from the main menu or the toolbar are the following:

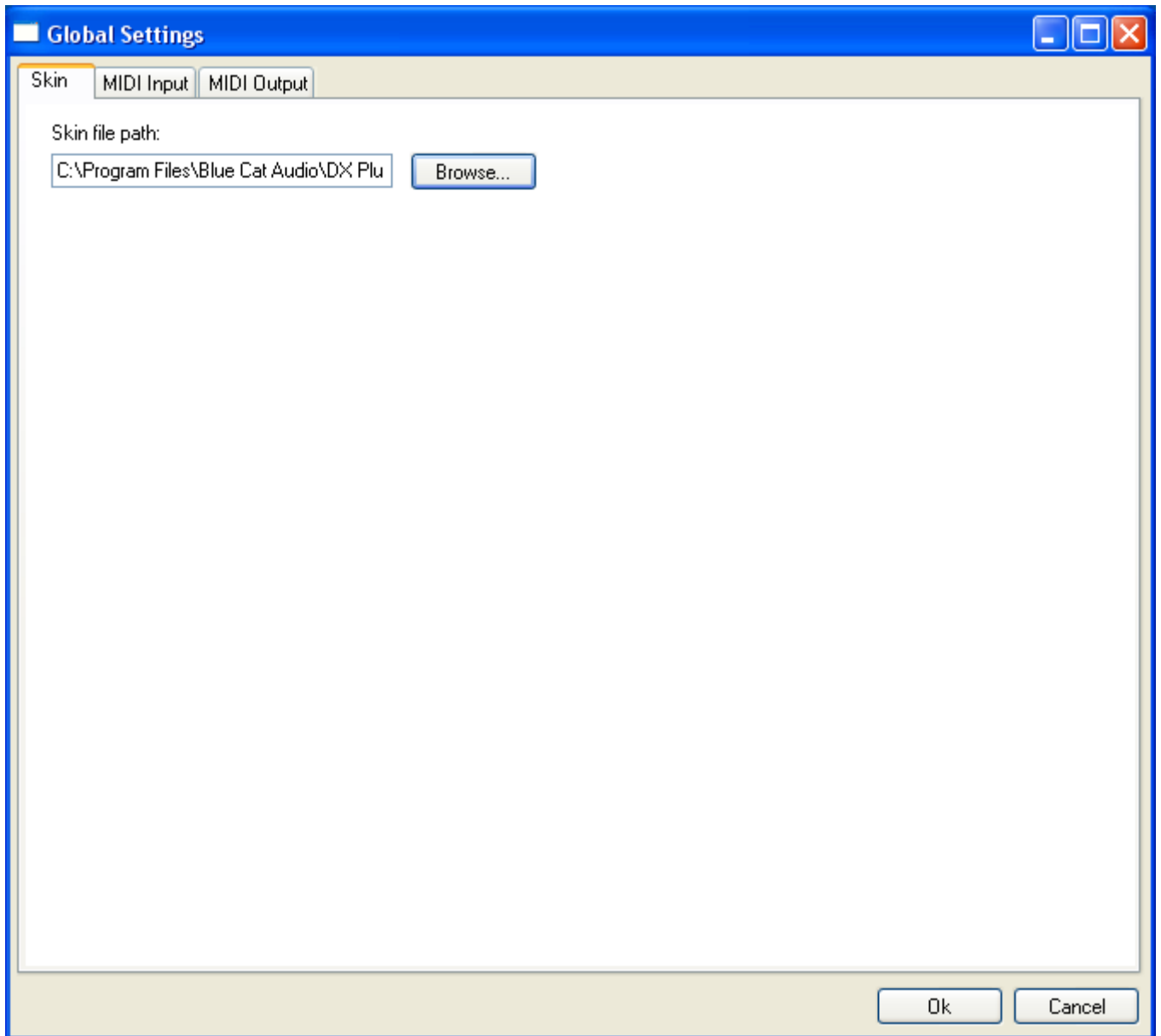
- Set Preset Skin: change the skin for the current preset.
- Use Global Skin: use the skin defined in the global settings for the current preset. This item is enabled only if a skin has been defined for the current preset.

- Undo/Redo: undo or redo the latest modifications. This includes all changes made to the current preset settings.
- Load Preset: load preset from file.
- Save Preset: save current preset to file.
- Presets Settings: open the presets settings window. It enables you to change the skin and MIDI settings for the current preset.
- Global Settings:
- User Manual: open this user manual.
- Check Updates: check the updates for this software on our website.
- Get More Skins: get more skins for this software.
- About: displays the "about" dialog box.

The Global Settings Window

The settings you change in this window apply to all instances of the plug-in, for all presets. Consider these settings as "default" settings.

Global Skin



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.

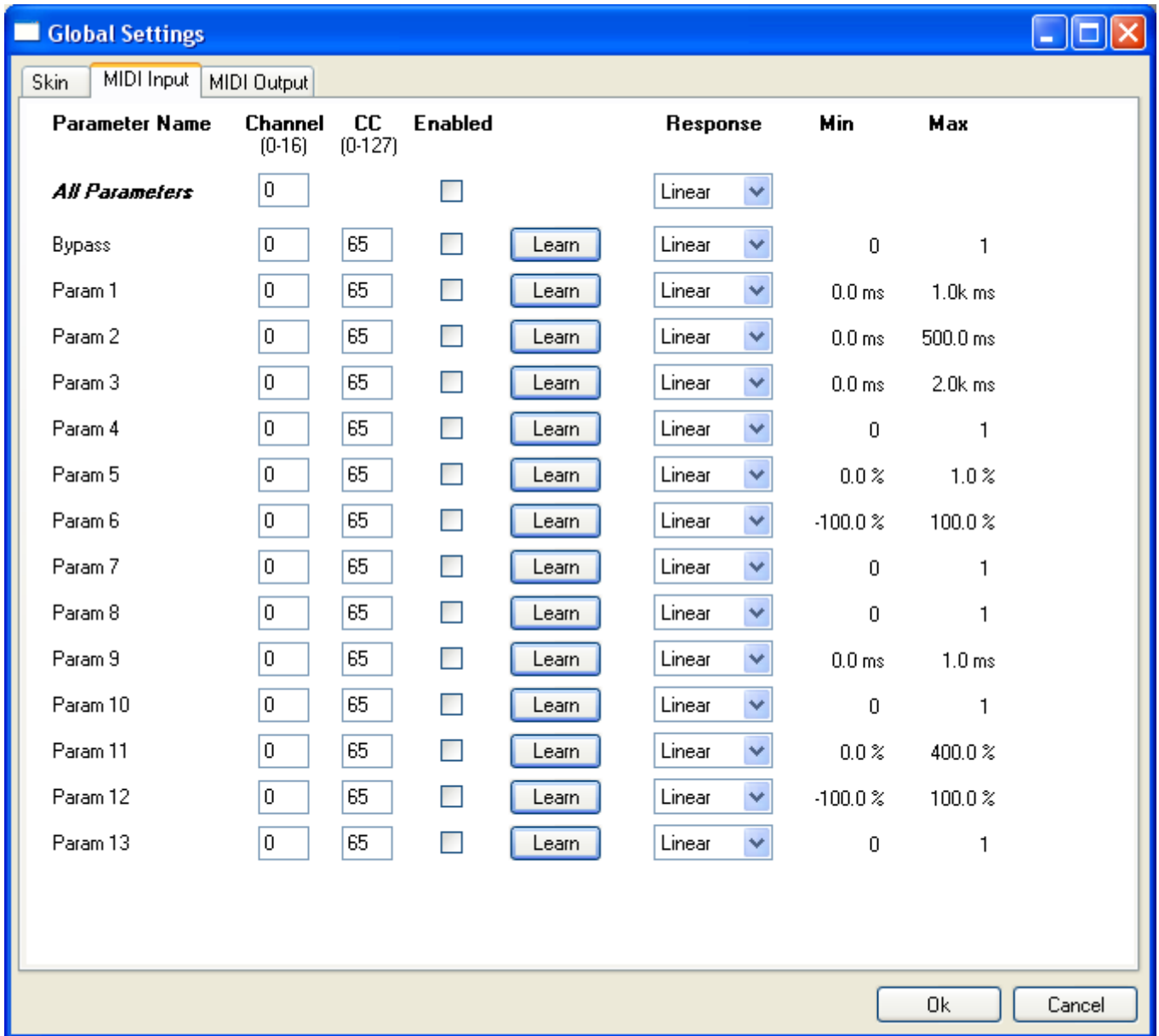
Global MIDI Input Settings

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 following settings are available for each plug-in 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.

- Enabled: enable/disable the MIDI control of the parameter.
- Response: response curve of the MIDI control: from very fast to slow control.
- Min: minimal value of the parameter when MIDI controlled.
- Max: Maximum value of the parameter when MIDI controlled.



(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 MIDI controller value will decrease the parameter value.

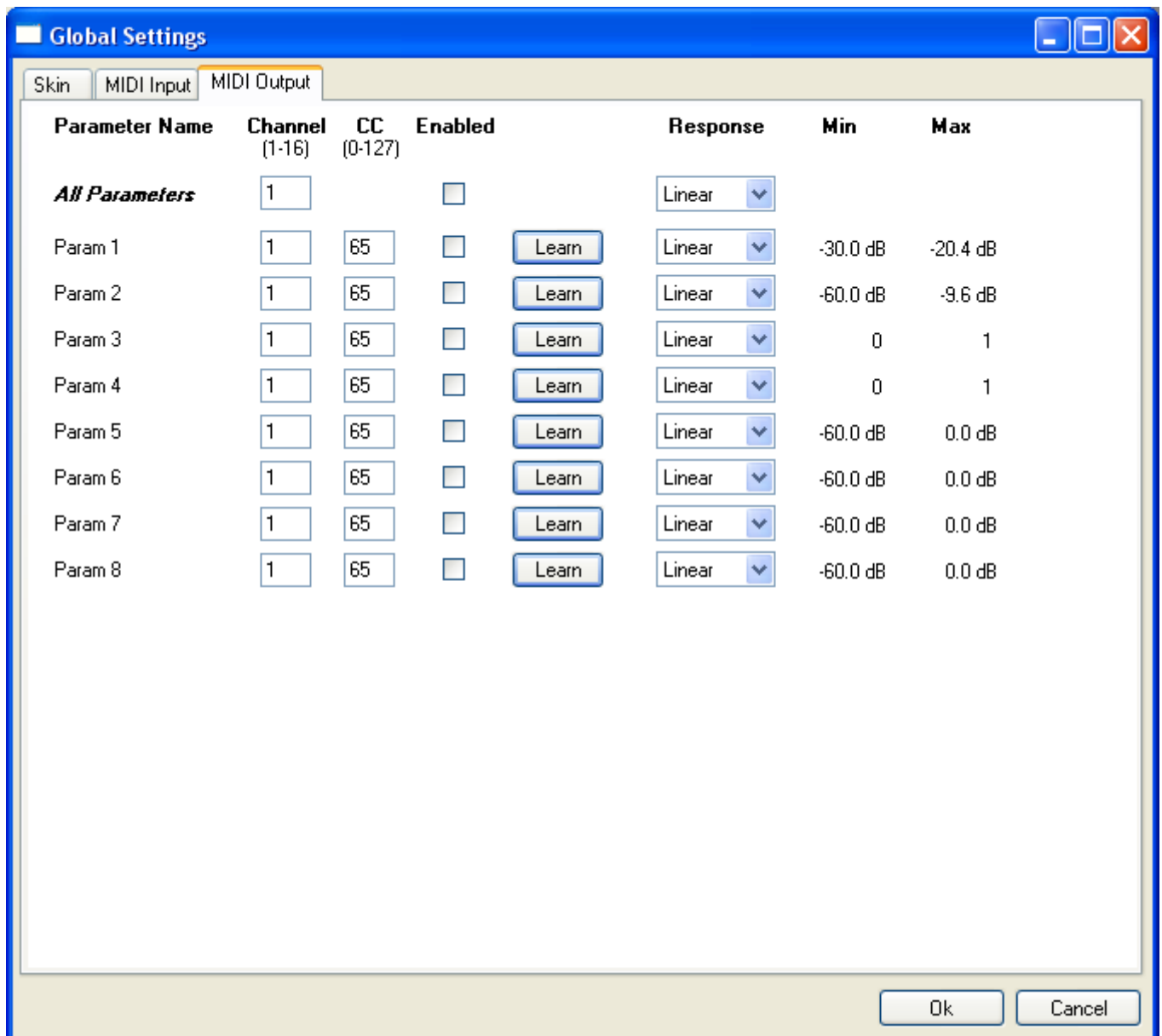
Note: if you double click on the parameter text control boxes for the max and min values, a “fine tuning” edit box will appear and let you change the min and max values with more precision:



Global MIDI Output Settings

You can set the same properties for the output parameters: they may trigger MIDI CC messages

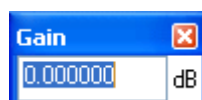
when modified. Since it's output, you cannot set the channel to MIDI Omni, you must choose a channel:



(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 MIDI controller 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:

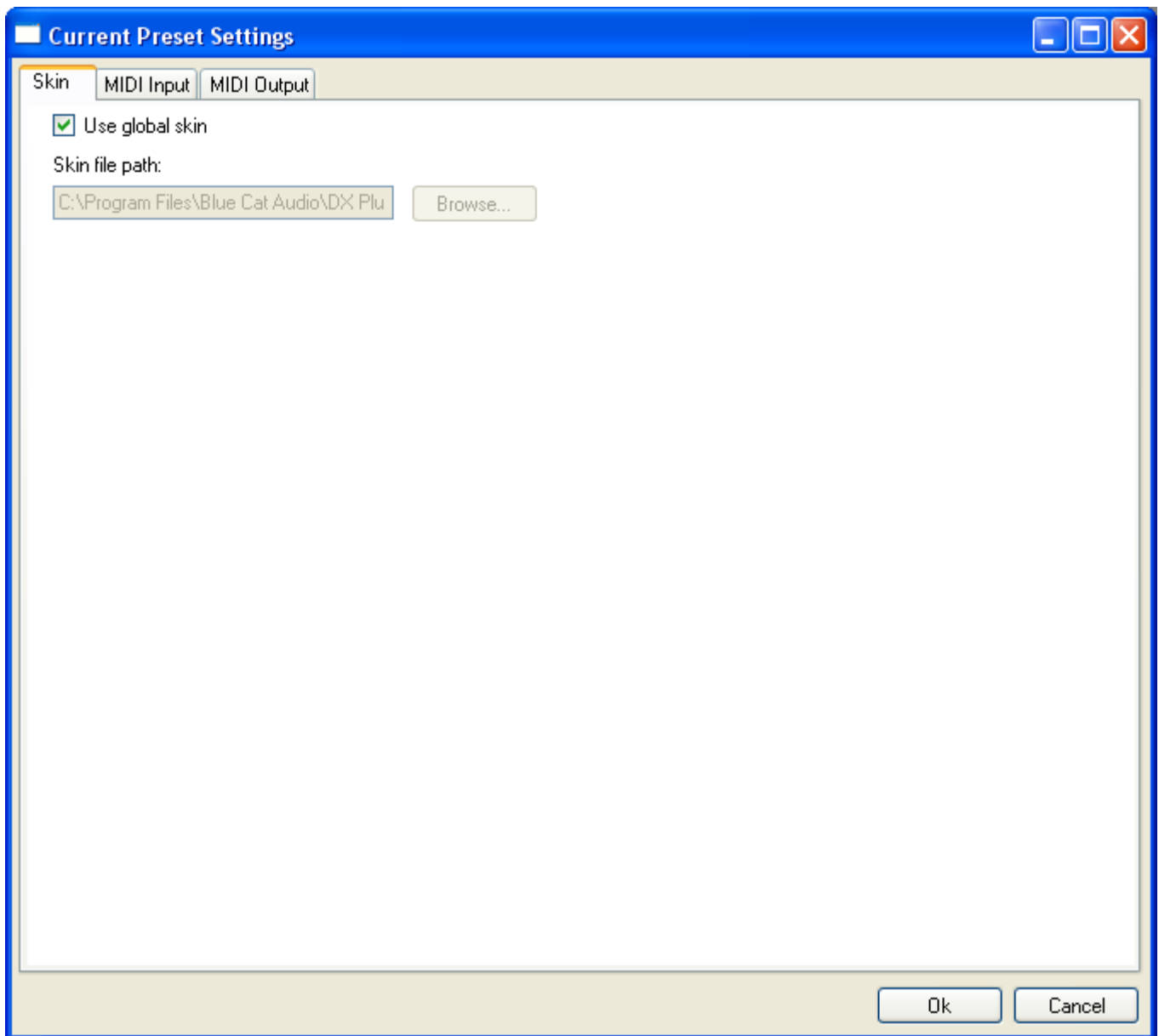


Current Preset Settings Window

This window lets you change the settings for the current preset of the current plug-in only.

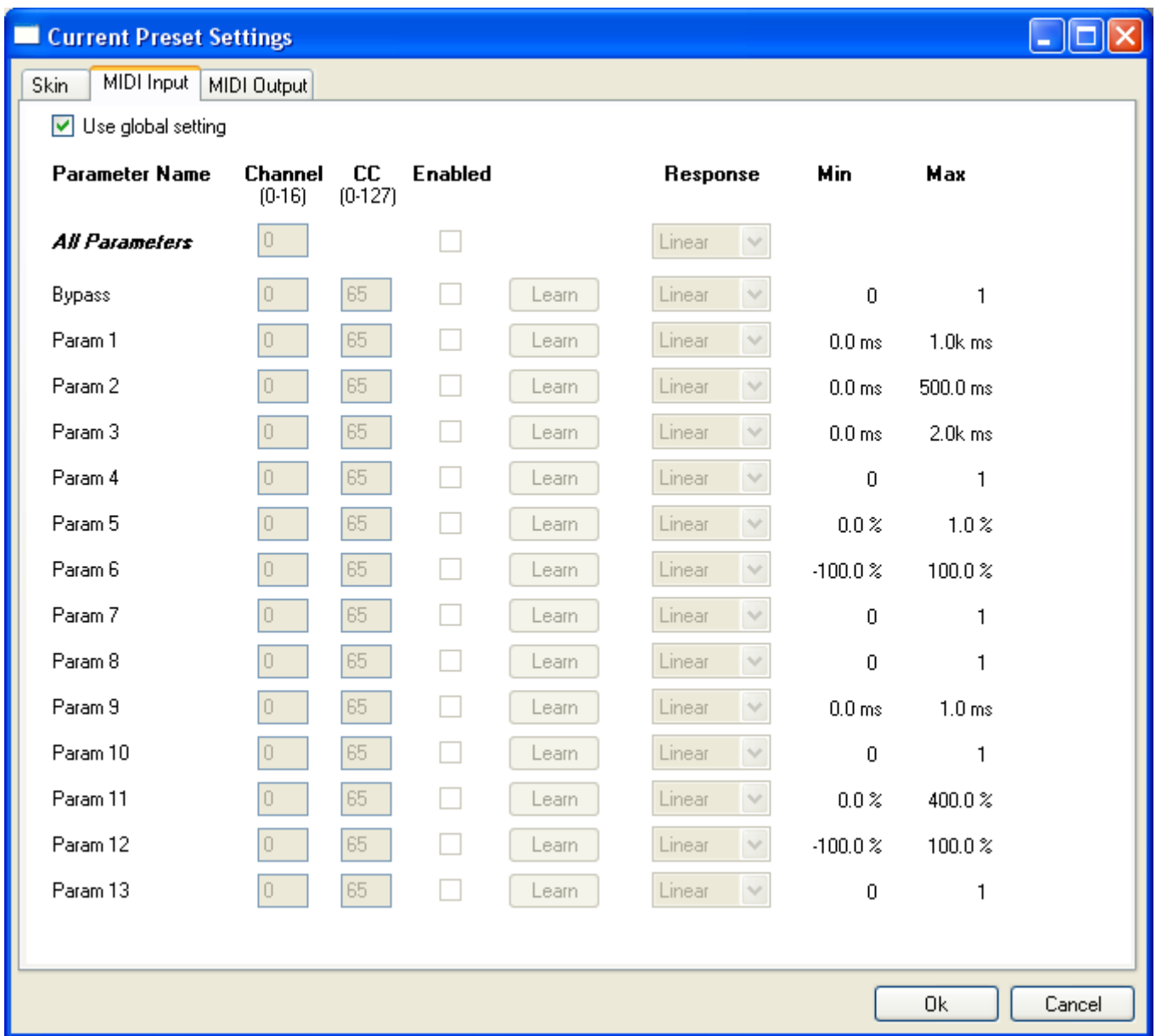
Skin

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.



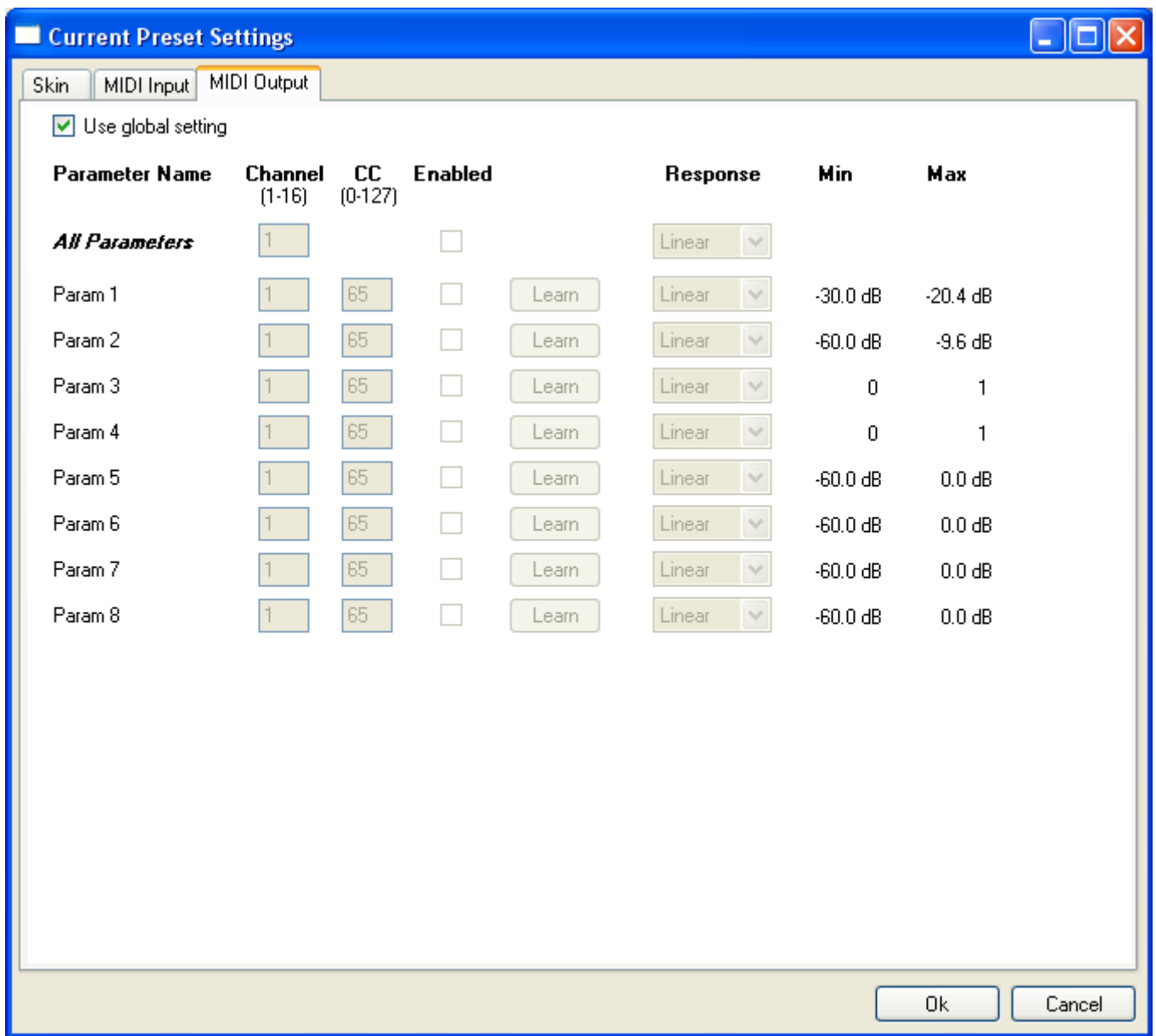
Preset MIDI Input Settings

Use the global settings or override them for the current preset. The parameters are the same as for the [global MIDI input settings](#).



Preset MIDI Output Settings

Use the global settings or override them for the current preset. The parameters are the same as for the [global MIDI output settings](#).



About Skins

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

<http://www.bluecataudio.com/Skins>

If you don't find a skin that you like or if you want to use your graphic skills, 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. 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](#) to see how to access these options.

On some hosts the plug-in window won't resize automatically. 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. Change its look and make it integrated in your virtual studio!

Just read the Blue Cat's Skinning Language user 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. Show your talent and share your knowledge with the users community!

Installation

I have installed my plug-in and it does not show up in my host application

First check that your application supports Direct X or VST plug-ins.

If you are using the Direct X version, check that your host application supports DXi plug-ins (MIDI-enabled Direct X plug-ins). If it does not, it may remove it from the Direct X plug-ins list (some applications such as Sony Vegas 5 and Cool Edit Pro are known to do this). In this case, use our freeware [DXi Manager](#) 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.

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.

More

This manual only covers the very basics of the Protector plug-in. For more information and tips about how to use the Protector effect, please check our website for the latest tutorials.

Upgrades, tutorials, more skins and plug-ins are available on our website:



BLUE CAT AUDIO
www.bluecataudio.com