Sonic EQ
User's Guide

MH Sonic EQ Users Guide

Metric Halo

Revision: 4.0.2

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1. MH Sonic EQ Overview

Metric Halo Sonic EQ has six independent minimum-phase filter bands plus 5 function-specific equalization topologies. Each band offers your choice of 8 filter types and four filter orders, with in-band and out-of-band Ripple control for the higher orders.

Processing functions include:

- Original Sonic Solutions SonicSystem™ filter coefficients, personally blessed by the creator, Dr. James A. Moorer
- Per-band adjustable filter slope order
- Passband Ripple and Stopband Ripple resonant filter controls (2nd through 4th order)
- Updated and improved SpectraFoo™ spectrum analysis
- EQ Transfer Function *Live Readout* displays the precise filter curve gain at the mouse cursor frequency
- multifunction Spectrafoo™ level meters display realtime Peak, RMS and VU of source input and post-EQ output levels

History

MH Sonic EQ is an modern version of the original Sonic EQ developed by Dr. James A. Moorer for Lucasfilm's SoundDroid project, and then expanded for the Sonic Solutions SonicSystem mastering DAWs in the '90's and early 2000's.

In 2007 Sonic EQ was re-created and enhanced for the Metric Halo-designed Sonic Studio 30x Interfaces. The Sonic Studio 30x version of Sonic EQ went back to first principals, updating the UI and engine.

MH Sonic EQ today is a 6-band fully parametric equalizer in which every band in the EQ supports 2nd to 8th order filters using an updated, low-noise 64-bit state-space EQ structure with the core Sonic EQ coefficients.

In every generation of Sonic EQ, three primary characteristics have remained consistent:
1. the *SOUND* - a full, sweet yet powerful musicality which brings a presence and clarity to anything you pass through it,

2. its *precision* - with high-order slopes and a high degree of control over filter ripple, both in-band and out, Sonic EQ makes it easy to manage very specific frequency content with minimal effect on surrounding program,

3. and its unrivaled *versatility*. Whether working in forensic restoration, sound design, high-end mastering, post-production, recording, re-recording, multi-tracking or live sound, the power and simplicity of this EQ will get you the sound you are looking for faster and sounding better than you may be willing to believe.

You will find you can make EQ curves with Sonic EQ that look completely broken, yet still sound perfectly clean and natural (refer to the screenshot on the preceding page).

Sonic EQ also provides a special set of laboratory-grade filters for vinyl (RIAA encode and decode) and early generation digital formats transfer (DC removal and digital de-emphasis).

It is no understatement to say the Sonic EQ has been and still is one of the most highly respected and coveted digital equalizer packages on the planet.

This version of Sonic EQ, originally incorporated exclusively in the hardware DSP of Sonic Studio branded Model 30x audio interfaces is now reborn as an AAX, VST and AU plug-in for Mac and Windows DAW users with a cleaner layout, SpectraFoo™ spectrum analysis and level metering and an even higher order of musicality, precision and power.

2. System Requirements

Hosts:

- *Pro Tools™ (Mac)*: Pro Tools 11 or higher running on a Macintosh computer. The v4 software currently supports Native AAX operation only.

- *Pro Tools™ (Windows)*: Pro Tools 10 or higher running on a Windows computer. The v4 software currently supports Native AAX operation only.

- *Native (Mac)*: Any Intel or Apple Silicon-native Mac DAW (64-bit) that supports AU, VST2, VST3 or AAX plug-ins.

- *Native (Windows)*: Any Intel Windows (64-bit) DAW that supports VST2, VST3 or AAX plug-ins.

Please Note: All v4 plug-ins are 64-bit (as were v3). If you have a need to work with an old 32-bit host, please contact MH Support and ask for the 32-bit Production Bundle v2 installer.

Operating System:

- *Mac*: Any Apple Silicon (ARM) or Intel-based Mac running Mac OS X 10.9 or newer

- *Windows*: Any Intel-based Windows PC running Windows 10 or newer.

Licensing:

- A PACE iLok.com account. You can authorize your v4 license to your computer, iLok Cloud or any 2nd or 3rd generation iLok USB key.

  The first generation blue-green iLok USB keys are no longer supported by PACE for new product authorizations.

  Please note that prior v2 and v3 licenses are separate and remain valid: you do not have to trade in your old iLok license. Production Bundle v3 and earlier plug-ins will continue to serve on older systems in addition to the v4 installations on newer platforms, with full preset compatibility between v3 and v4.

- One license authorizes the software on any platform.

- The most recent iLok License Manager installer can be found here: iLok License Manager application and driver installers.

  Older operating systems may require a specific version of the iLok driver, which can be found here: Legacy iLok application and driver installers.

3. Installation

For both Mac and Windows, there is a single standard installer for the Production Bundle that allows you to decide which plug-ins to install to your computer, depending on what individual plug-in licenses you own and what formats you use.

IMPORTANT: Please make sure you have your license installed and available *before* you first launch your host after running the installer. Otherwise, you will receive a message on launch that the software is not licensed, asking you to "Buy" or "Quit". There are some hosts that will not rescan for your plug-ins on the next launch after the license is installed, and some hosts do not provide a user menu preference to rescan.

Mac

Please note– The following graphics show installation on a macOS 12 system; the process may be slightly different in other versions of the OS, but the basic concepts are the same. Small details such as file sizes shown may vary with subsequent releases.

- Double-click the "MH Production Bundle.pkg" application
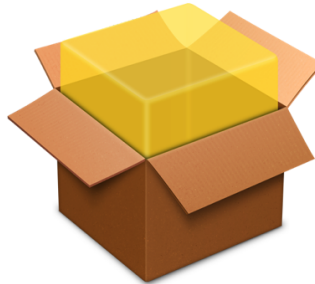
MHProductionBundleInstaller_
v4.0.2.157.pkg

- The first window requests permission for the installer program to scan for the presence of earlier versions of Metric Halo plug-ins. Clicking "Cancel" will quit the installer. Click "Allow" to proceed:
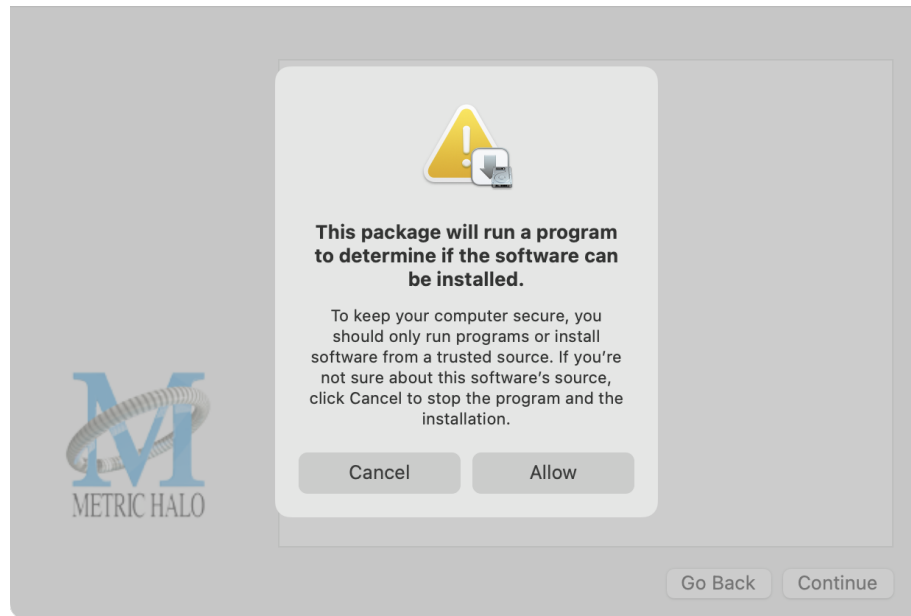
Click "Allow" to proceed…

- The installer dialog will appear, detailing the plug-in formats and system requirements to be installed:
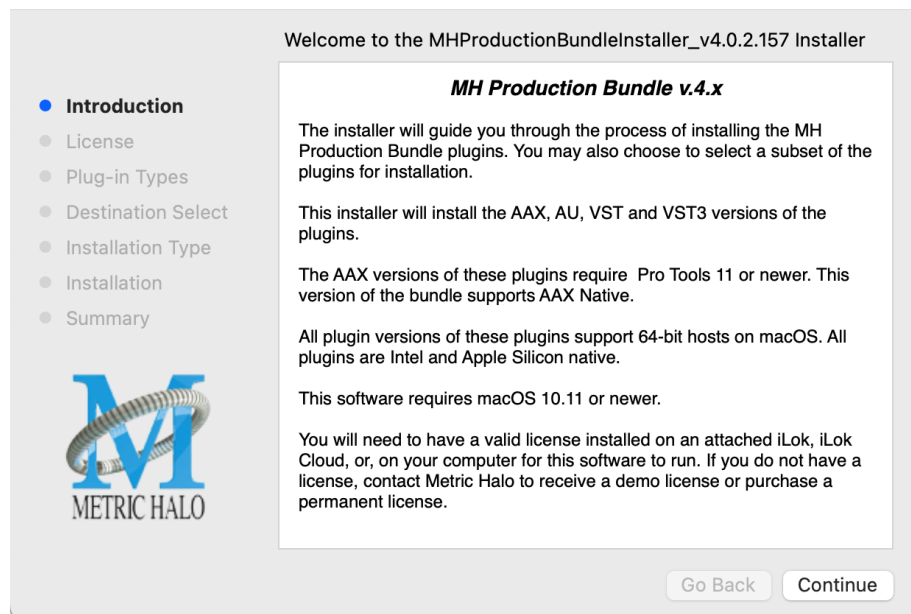
Click "Continue"…

- Now you will see the Metric Halo License Agreement:
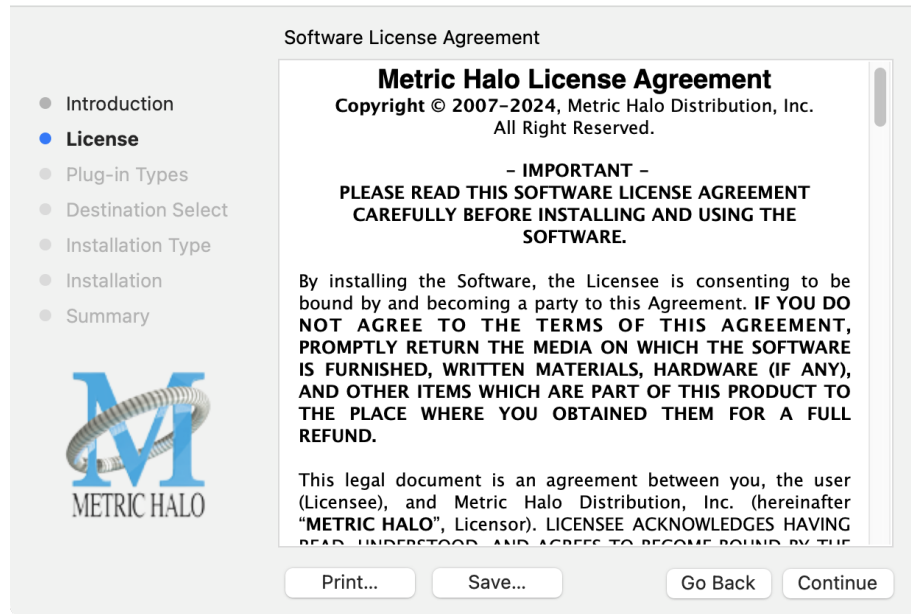
After you have read it, click "Continue"…

- Next, click "Agree" to accept the License Agreement:
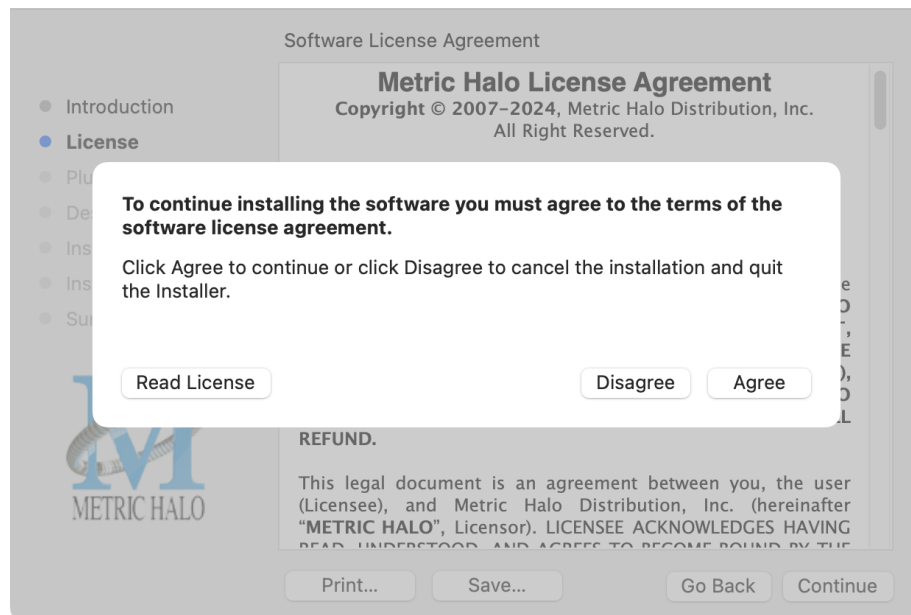
- The Choose Plug-in Types selector window defaults to no plug-ins selected, so that you may choose just the plug-in formats you wish to install. Checking *All Plug-In Types* will install Audio Unit, VST2, VST3 and AAX plug-ins to their respective folders in the root Library directory:
  - AU to **/Library/Audio/Plug-Ins/Components**
  - VST 2 to **/Library/Audio/Plug-Ins/VST**
  - VST 3 to **/Library/Audio/Plug-Ins/VST3**
  - AAX to **/Library/Application Support/Avid/Audio/Plug-Ins**
  Selecting any one or more specific plug-in types will install or upgrade only those formats, leaving older plug-ins in unselected format types untouched.

  Your plug-in format selection will be saved as a preference and pre-set automatically for future Metric Halo family plug-in installations on this computer. Of course you may change your selections at that time.
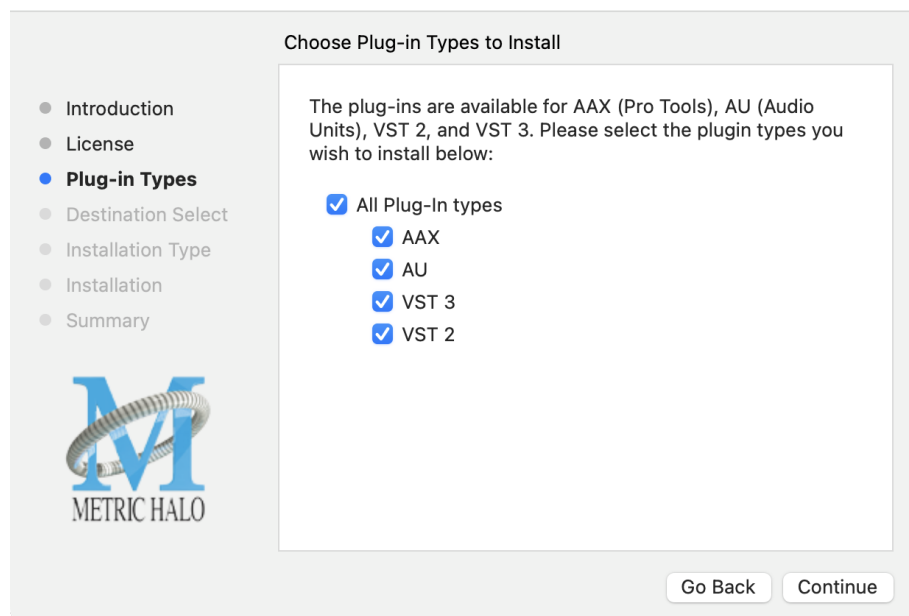
- **Important note for Pro Tools users**

  Version 4 of the AAX plugins will install alongside v3, so both will remain available in your system. There are two reasons for this:

  1. The v4 plug-ins are currently Native only and do not provide DSP executables for HDX/Carbon DSP chips.
  2. At the request of many Pro Tools users, we have made changes to the AAX v4 plug-ins to provide finer and more consistent behavior of EQ parameters when controlled by EuCon control surfaces and Pro Tools automation.

     In some specific workflow cases, these changes have the potential to affect automation playback of older sessions, so the safe route would be to keep older automated sessions running on v3, and using v4 for new sessions.

     For specifics on these changes, please see the latest release notes within the v4 plug-in UI by clicking on the Metric Halo logo in the upper left corner of the plug-in window.

  Existing sessions will recall with the v3 instances for both Native/DSP, and you can continue to add new instances of the v3 plugins (for example, if you want to be able to use DSP versions for tracking).

  You can add v4 instances as you wish to take advantage of the new features and new plug-ins.

  You can switch v3 instances to v4, and your settings will be preserved.

  If you load sessions with v3 instances, but only have v4 installed, Pro Tools will automatically migrate the instances to v4 Native with the parameter settings intact.

- "Select a Destination" lets you install the plugs for *all users* (if you are logged in as an admin), *only your user*, or to another volume entirely.
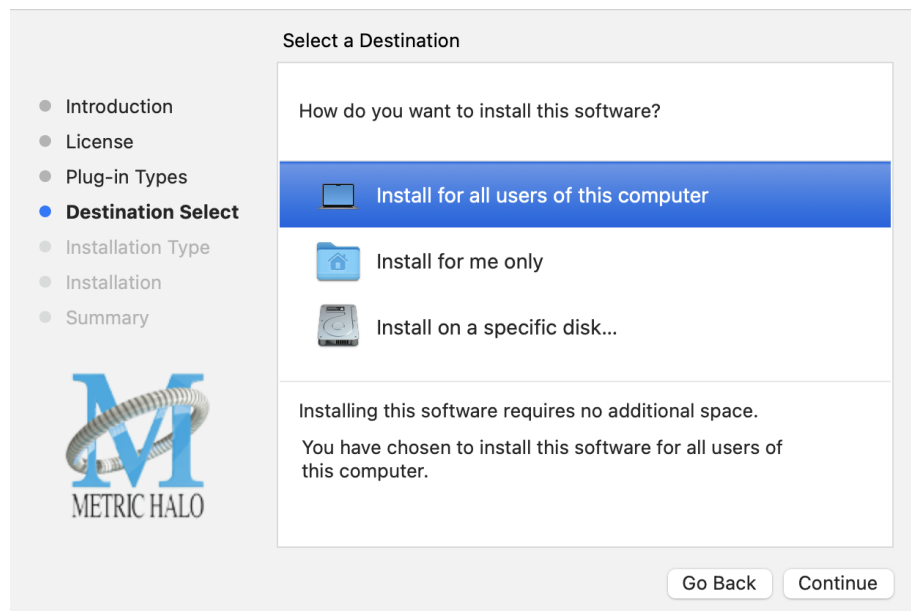
We recommend that you use the standard installation location unless you have a specific reason not to.

- The "Custom Install" selector window defaults to no plug-ins selected, so that you may choose exactly the plug-ins you wish to install.

Custom Install on "Macintosh HD"

| Package Name	Action	Size
> ☐ All Plug-Ins		237 MB

- Introduction
- License
- Plug-in Types
- Destination Select
- **Installation Type**
- Installation
- Summary

Space Required: Zero KB   Remaining: 342.38 GB

Go Back   Continue

Custom Install on "Macintosh HD"

Package Name	Action	Size
✓ All Plug-Ins		237 MB
☑ MHChannelStrip	Install	24.6 MB
☑ MHCharacter	Install	23.8 MB
☑ MHDirtyDelay	Install	24.2 MB
☑ MHHaloVerb	Install	24.2 MB
☑ MHMultibandExpander	Install	24 MB
☑ MHMultibandDynamics	Install	24.1 MB
☑ MHPrecisionDeesser	Install	24 MB
☑ MHTransientControl	Install	20 MB
☑ MHSonicEQ	Install	24.2 MB
☑ MHSuperGate	Install	24 MB

- Introduction
- License
- Plug-in Types
- Destination Select
- **Installation Type**
- Installation
- Summary

Space Required: 237 MB   Remaining: 342.14 GB

Install all flavors of all Plug-Ins in the package.

Go Back   Continue

Clicking the disclosure triangle opens the selection list of the individual plug-ins. Make your selections and click "Continue" to proceed.

- The final confirmation window displays the total size of the selected installation. Hit "Install" to proceed.
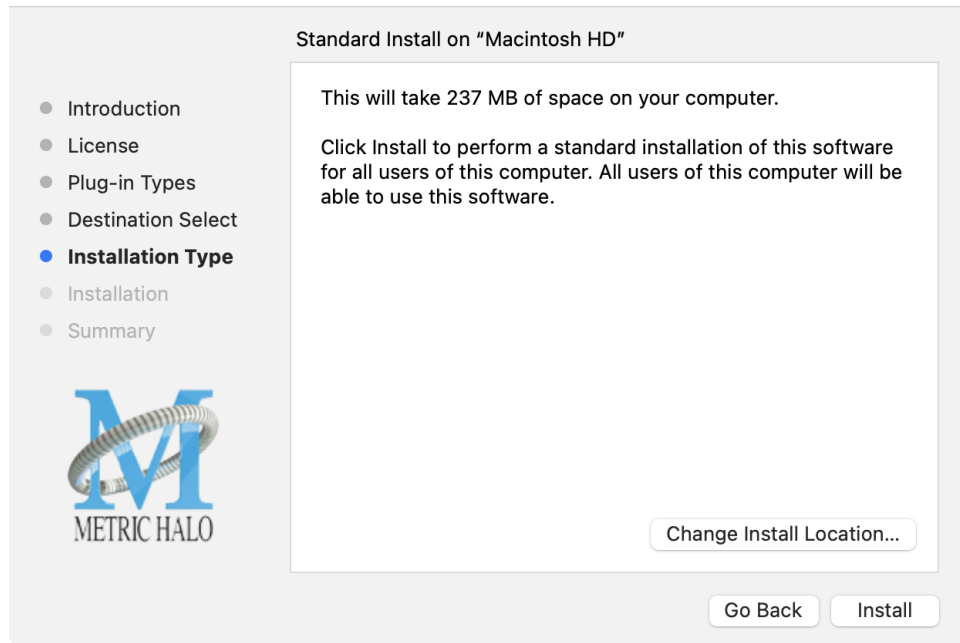
- If present, Touch ID/Face ID will execute the installation once it recognizes your biometrics:

Otherwise, enter your login password as usual and click "Install Software".

- Once the installer has finished, you'll see this dialog:
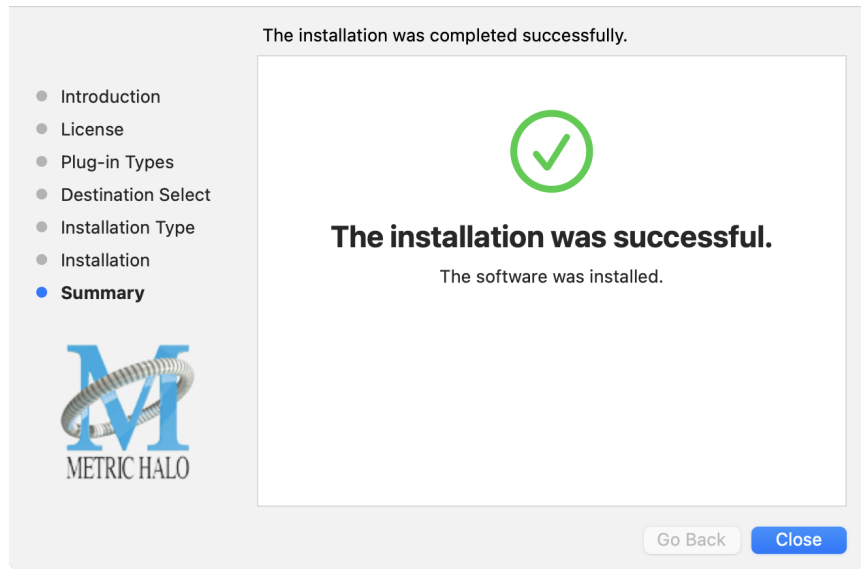
If you do *not* see the "Installation Successful" message, contact MH Support.

- The final step is to go to https://www.ilok.com/ and ensure you are up to date with the latest version of the iLok License Manager. Use the iLok License Manager to install the software license to your iLok key or directly to your computer.

That's it! Enjoy using Metric Halo plug-ins!

Windows

Please note – The following graphics show installation on an Windows 10 system; the process may be slightly different in other versions of the OS, but the basic concepts are the same. Small details such as file sizes shown may vary with subsequent releases.

- Double-click the "MHProductionBundleInstaller_v4.x.x.xxx" application

MH Production Bundle Installer

- The installer dialog will appear:
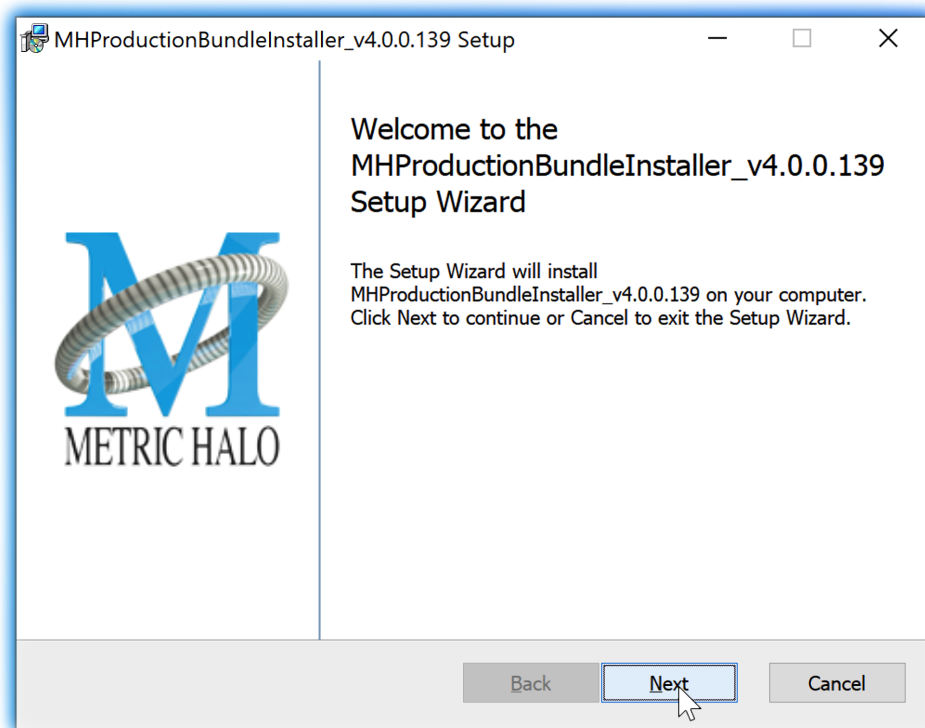
Welcome Dialog

Click "Next" to proceed.

- Read the Metric Halo License Agreement:

License Agreement

After you have read it, click next to "I accept the terms of the License Agreement" and click "Next".

• Custom Setup Options
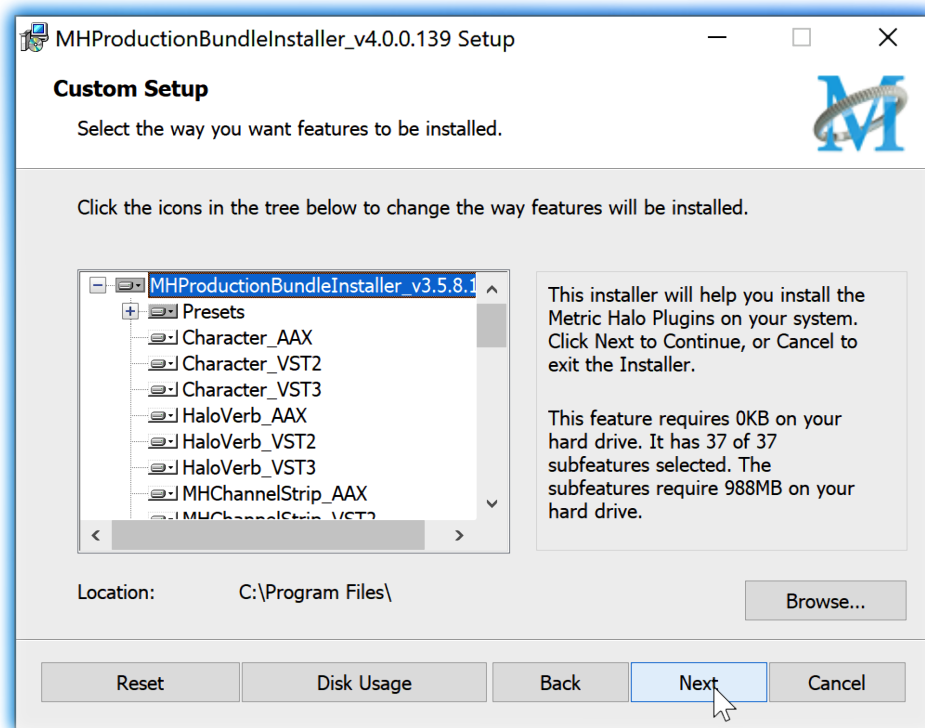
Custom Setup

The Windows installer **Custom Setup** page allows you to refine the features to be installed and their location.

By default, the full bundle with VST2, VST3 and AAX will be selected for installation to the C:\Program Files\ folder. Click **Browse** to change the installation target folder.

We recommend that you use the file path that will allow your host software to recognize the plug-ins. See your host software documentation.

When you have made your selections, click "Next" to continue.

- The next page is a confirmation to continue, offering a last chance to go back and review your selections from the previous window:
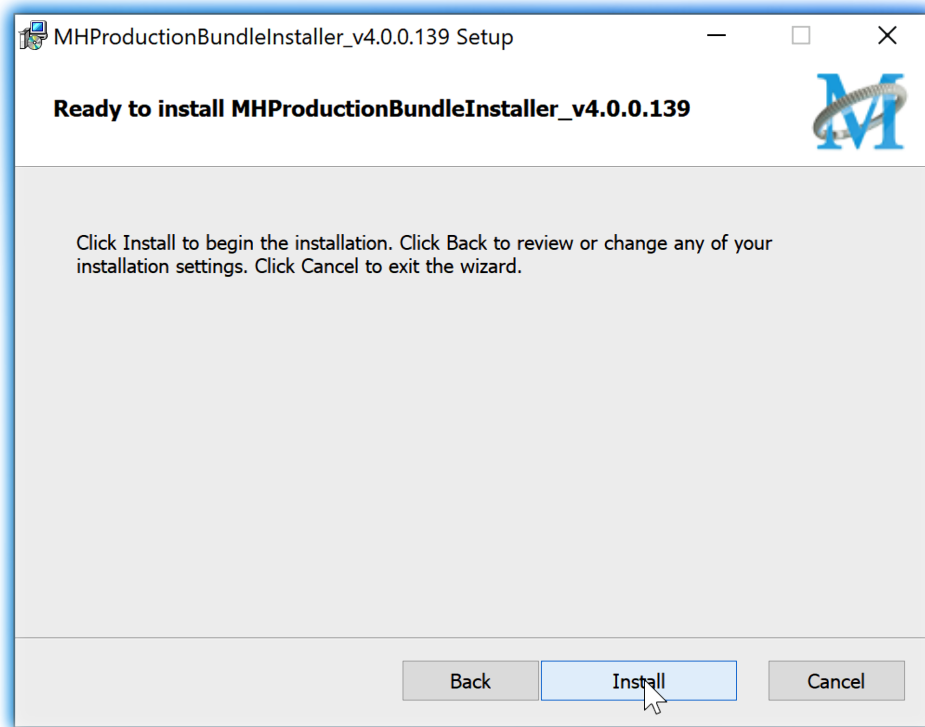
Ready to Install

Click "Back" to return to the Setup page, "Cancel" to cancel the installation, or click "Next" to continue.

- A final dialog before executing the installation process is a security confirmation, providing a verification of the location of the installer executable and information regarding the publisher of the installer package and its contents:
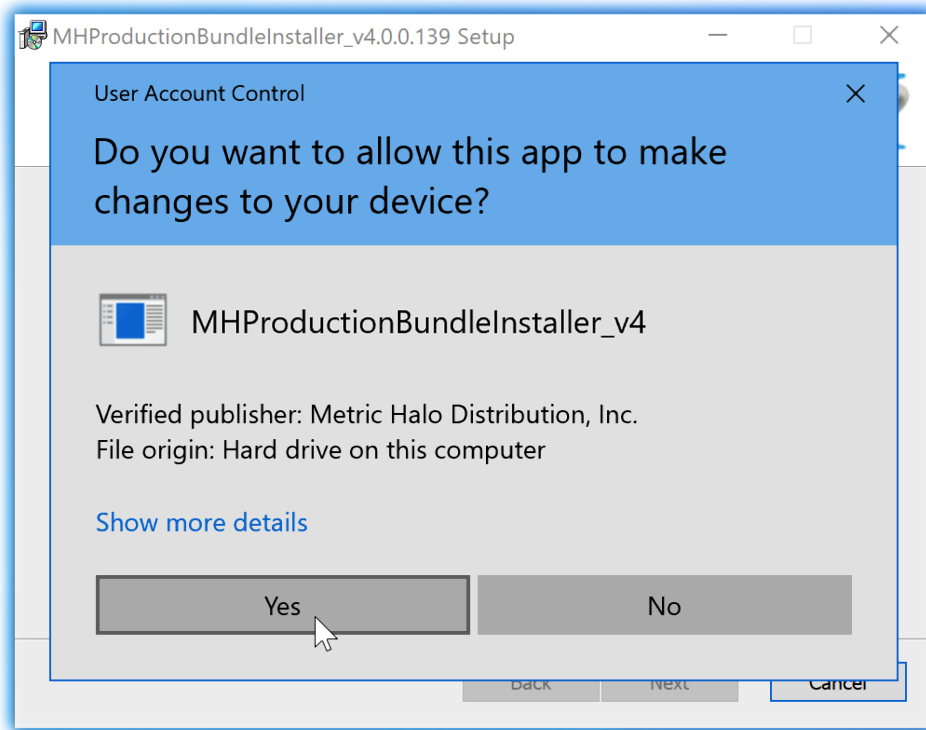
Final installer verification and permission to execute

Clicking "Show Details" and digging through the ensuing submenus will reveal signing credentials and other data for confirming the legitimacy of the installer executable.

Click "Yes" to proceed with the installation.

- The Setup Wizard will install and register the files:
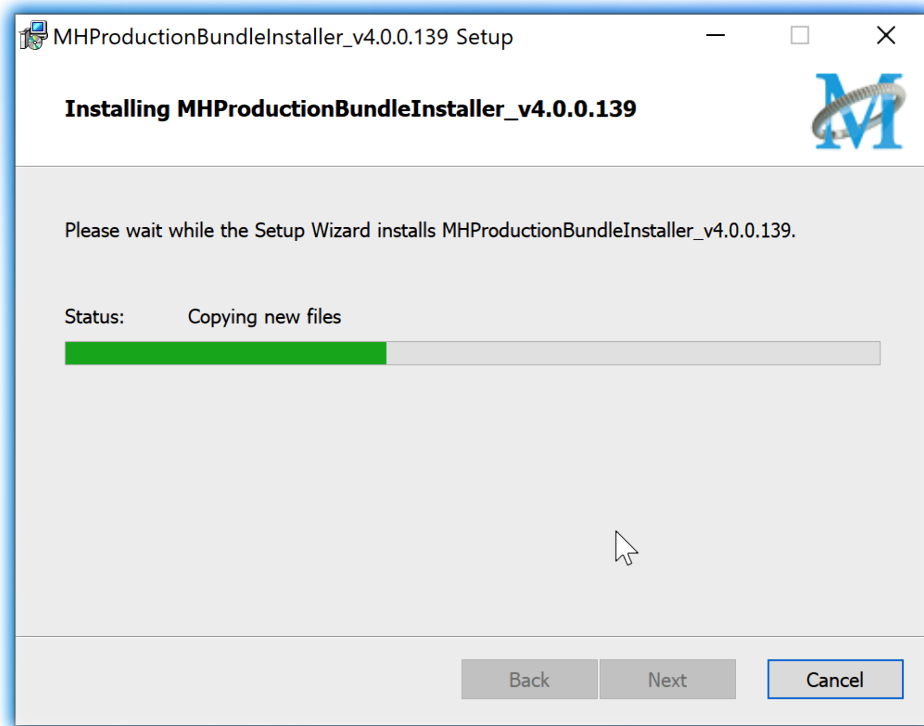
Installation in Progress

- Once the installer has finished, you will see this dialog:
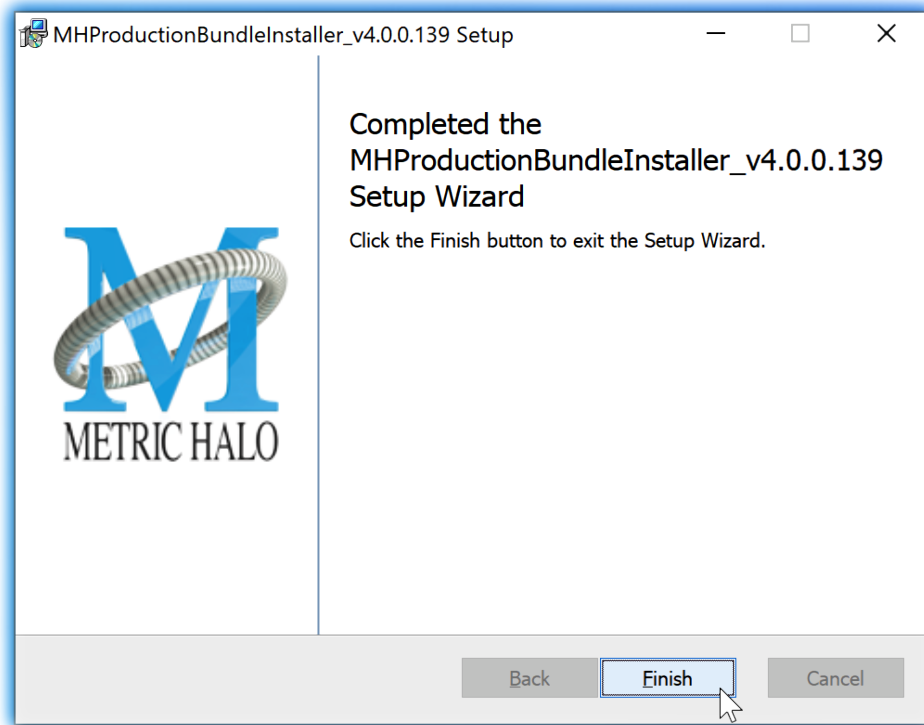
Installation Complete

If you do *not* see this installation "Completed" dialog, contact MH Support.

- The final step is to go to https://www.ilok.com/ and ensure you are up to date with the latest version of the iLok License Manager. Use the iLok License Manager to install the software license to your iLok key or directly to your computer.

That's it! Enjoy using the Metric Halo Production Bundle!

Update Notification (all platforms)

All Metric Halo Production Bundle plug-ins will automatically check for newer version availability (if your computer is connected to the internet).

Plug-in Update Alert

If a new version is found, the Metric Halo icon in the plug-in header bar will sport a lovely red dot. Click on the dotted icon and check the Update Notification tab for release notes and download instructions.

4. Plug-In Header Bars

All Metric Halo family plug-ins display the MH control bar directly above the processor control UI. This control bar is very helpful for organizing your MH presets, as it allows you to organize and access all your presets across all supported plug-in formats on Mac, Windows and our hardware DSP via MIOConsole3d.

It is especially useful in that, regardless of platform, it provides a straightforward, powerful and consistent processing workflow wherever you might be working.

With the constant evolution of computer capabilities opening the door to new production techniques and music delivery formats, the differences between DAW software workflows have become ever more diverse. Many of the major DAWs provide their own plug-in headers within every plug-in instance window, providing their own feature set catering specifically to their internal workflow.

Conversely, other equally popular DAWs provide no added feature support for plug-ins (such as plug-in parameter Undo/Redo), opting instead to insert plugs as a straight processing block.

The MH family plug-in header bar bridges that gap by offering the most asked for plug-in functions in a simple GUI, making all of our plug-ins functions and their presets available to every user on every platform.

The plug-in header bar has two rows of controls, with the Metric Halo logo icon at the top row left.

The top row handles plug-in operations, including update notification and download, access to MH online resources, GUI preferences, tooltip help, A/B parameter snapshots, snapshot Blend, plug-in Undo/Redo, Compare and soft Bypass.
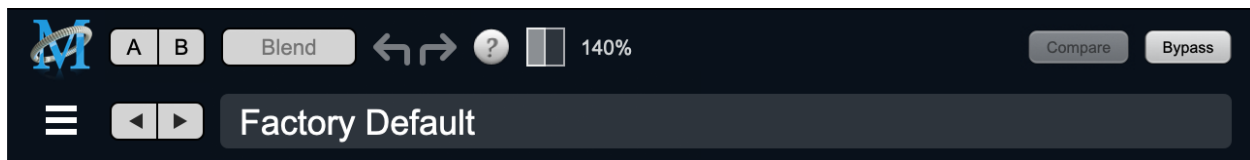
MH Plug-in header (default setting: eq and dynamics graph display closed)

The lower row (with the 'hamburger' menu icon at the left) is all about preset management.

The menu includes organizational and preset import/export features for sharing saved preset files with the outside world, and restoring presets from early days MIO and MH plug-in versions.

Plug-In Header: Top Row
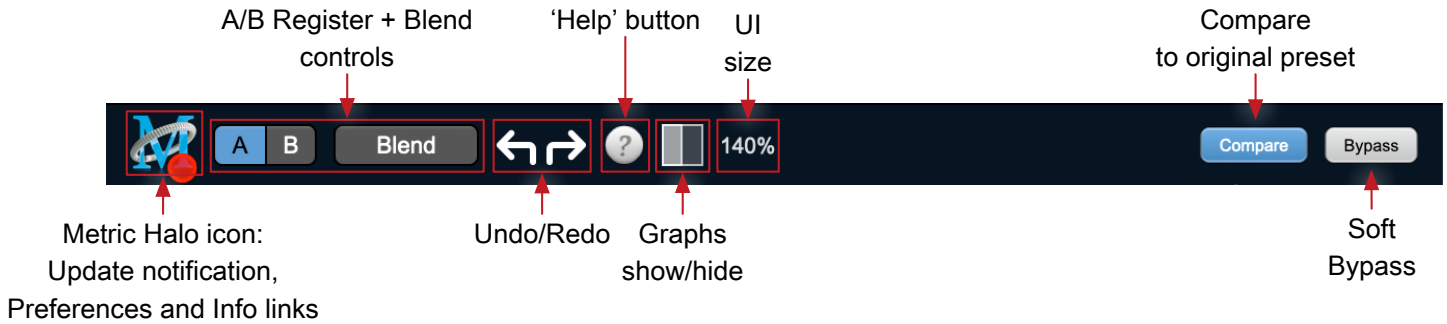
Metric Halo Header Icon

Clicking the MH icon expands the entire plug-in window to the right and opens a multi-function control sidebar with the Preferences tab in focus:
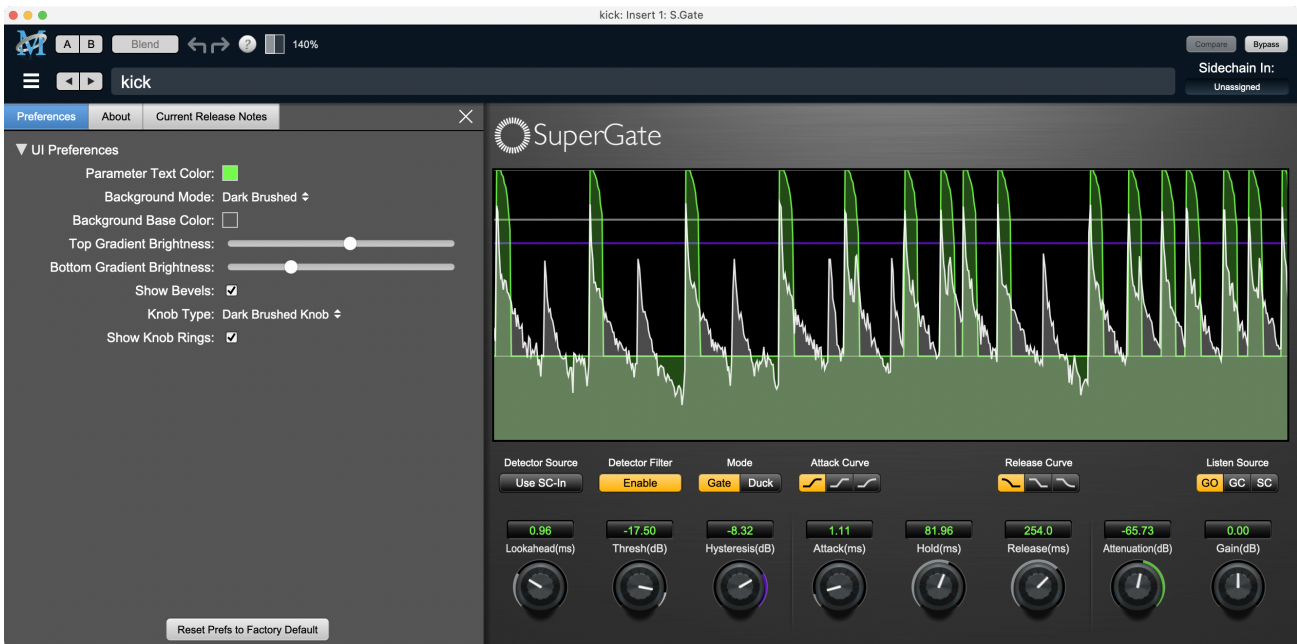
Preferences tab (example shown is SuperGate with sidechain filter graph closed)

This sidebar has context-sensitive tabs across the top for GUI **Preferences** (shown above), **About**, and **Current Release Notes**.
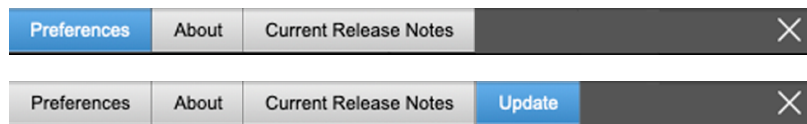
Plug-in control pane tabs

When updates are available for download from Metric Halo, the MH icon will sport a blatant red dot (shown in the header map at the top of this page) and an **Update** tab is added to the sidebar. These tabs are dynamic by design, and additional tabs may appear as new content becomes available.

To close the sidebar, click the MH icon again, or the "**X**" at the right edge of the tab bar.

Preferences tab
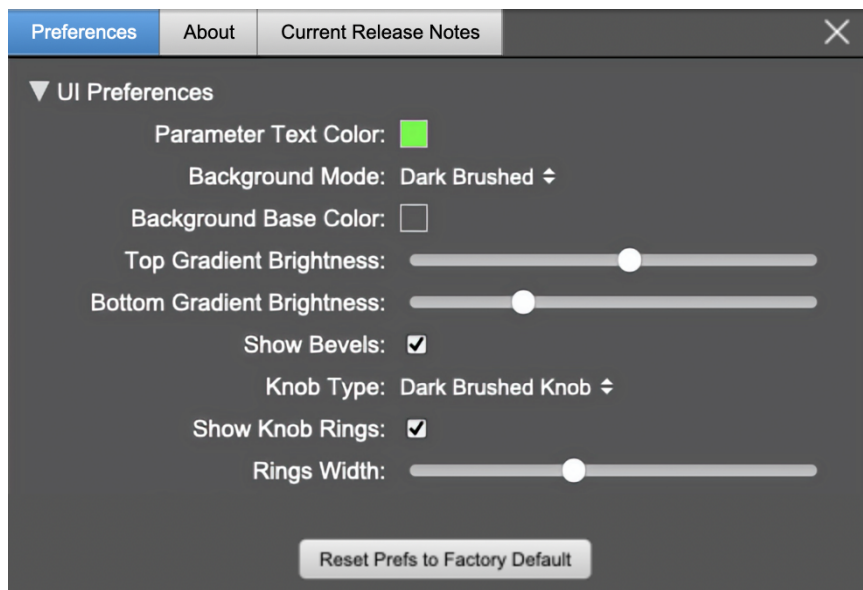
standard plug-in UI Preferences

The Preferences tab provides controls to modify the color scheme of text and graphical elements.

Initially added in response to requests from users with various visual impairments, in practice the ability to match the color of the plug-in to the mixer strip where it resides makes for a nice improvement in workflow.

Shown above are the basic parameter controls used by the majority of Production Bundle plug-ins.

More complex processors, such as ChannelStrip with multiband EQ and dynamics graph grids, will have additional preferences to further customize those UI elements. Processors with simpler graphics will have fewer UI preference controls.

UI parameter changes are live, so you can see changes to the plug-in graphics as you make them. This includes colors, gradients, graphic element show/hide, knob types and bevels.

Clicking color selection swatches opens the standard OS color pickers window with the eyedropper tool for sampling any color visible on your display.

UI Preferences functions are listed on the next page.

> **Note**: The color scheme you set will be saved to the computer and automatically applied to the next instance of that plug-in type of whatever native format, even on another DAW.
>
> You can always revert to the factory default settings by clicking the **Reset Prefs to Factory Default** button at the bottom of the Preferences pane.

Complete Plug-in Preferences List

The following is a list of all the preferences available across all of the plug-ins. They don't all apply to every plug-in, but you can refer here to find the documentation for the prefs that that are displayed in the actual plug-in.

- **UI Preferences**
  - **Parameter Text Color**: sets the text color of all click-to-enter numeric readouts.
  - **Background Mode**: selects the background type and texture.

    Brushed background modes place an uncolored textured metal graphic behind the control elements. Color and Gradient controls will not affect the Light and Dark Brushed backgrounds.
    1. **Light Brushed**: a light brushed metallic facing with mild gradient lighting (the "vintage" Production Bundle faceplate).
    2. **Dark Brushed**: a dark neutral brushed metal facing with a stronger gradient and lighting effect
    3. **Flat Color**: select the background color with the **Background Base Color** picker.
    4. **Gradient Color**: select the background color with the **Background Base Color** picker and adjust Top Gradient Brightness and Bottom Gradient Brightness to taste
    5. **Grad w/Hits**: same as **Gradient Color** with two mild rack light sources from above and one centered below
  - **Background Base Color**: when in color background modes, sets the background color
  - **Top Gradient Brightness**: when in gradient background modes, sets the top gradient brightness
  - **Bottom Gradient Brightness**: when in gradient background modes, sets the bottom gradient brightness
  - **Show Bevels**: show/hide shaded edge and processor section separator bevels
  - **Knob Type**: select from six "physical" knob types, or no knob at all
  - **Show Knob Rings**: show/hide the colored rings surrounding parameter knobs
  - **Rings Width**: widen/narrow the colored rings surrounding parameter knobs
  - **Show Band Swatches**: show/hide the color swatches above each EQ band enable switch (used to set the color of each EQ band)
  - **Swatch Alpha**: opacity control for the band color swatch buttons (does not affect Band Color selection)
  - **Show Graph Grids**: show/hide the numeric grids in dynamics and EQ graph displays
  - **Graph Grid Color**: set the color of the numeric grids in dynamics and EQ graph displays
  - **Graphs Background Color**: set the background color of the dynamics and EQ graph displays
  - **Fill EQ Curves**: shades the area of deviation of each eq band from 0dB reference (makes it easier to see the effect of each filter band amongst multiple active filters)

- **EQ Colors**
  - **Overall EQ Curve Color**: sets the color of the aggregate EQ energy curve (the total sum effect of all active bands)
  - **Band 1 Color**: sets the color of filter band 1 UI elements
  - **Band 2 Color**: sets the color of filter band 2
  - **Band 3 Color**: sets the color of filter band 3
  - **Band 4 Color**: sets the color of filter band 4
  - **Band 5 Color**: sets the color of filter band 5
  - **Band 6 Color**: sets the color of filter band 6

- **Sidechain EQ Colors**
  - **Gate EQ Color**: sets the color of Gate Sidechain filter band
  - **Comp EQ Color**: sets the color of Comp Sidechain filter band

About tab
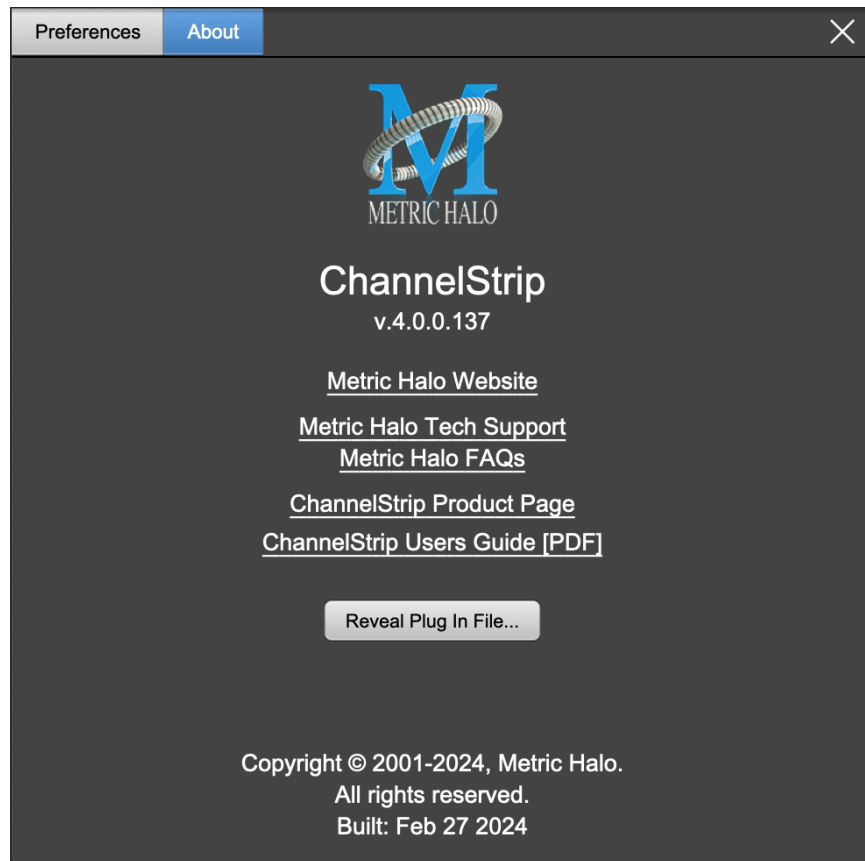
About tab (ChannelStrip shown)

The **About** tab reveals the current plug-in version information and provides convenient web links to product info, support pages and the current manual on the Metric Halo main website.

Clicking the "...Users Guide [PDF]" link will open and display the plug-in manual version in your default web browser.

Reveal Plug-In File... will open the folder containing the current plug-in file, with the plug-in file itself selected. Very handy for troubleshooting on the fly.

Current Release Notes

Important Notes

- This version of the AAX plugins are currently Native only and do not provide DSP executables for HDX/Carbon DSP chips. As a result, if you upgrade your AAX plugins to v4, you will not able able to use them on the HDX/Carbon DSP chips but they will continue working natively.
- The installer for this version will overwrite earlier versions of the plugins, and the versions installed by this installer require the updated v4 license.

This version of the plugins is a complete rewrite of the host-side components of the plugins, and is now based on Metric Halo's MHShell plugin technology. This provides a number of significant benefits to owners of the plugins:

- All plugins are now built under a unified shell so they all inherit the base functionality of the shell, including:
  - New look, including skin choice and preferences
  - MH Logo Details view
  - Software update tracking
  - Quick Links to product pages, manuals, and tech support
  - Undo/Redo
  - A/B snapshots, and snapshot blend
  - More flexible resizability
  - Common controls in the header bar (Help, Resize, Pane Disclosure)
- Unified build architecture, so all plugins on all platforms (MIO, Mac, Win) receive all updates and improvements simultaneously.
- Added support for VST3, so now all plugins support AU, AAX, VST2 and VST3 on macOS, and AAX, VST2, and VST3 on Windows.

Current Release Notes example

Current Release Notes lists a synopsis of major changes (a snippet of which is shown above), with feature and bugfix revisions for the most recent software releases listed below.

Please note that on Windows, the release notes will not be displayed in the pane, and a link to the release notes will be displayed instead. You can click the link to view the release notes using your current default web browser.

Update notification tab
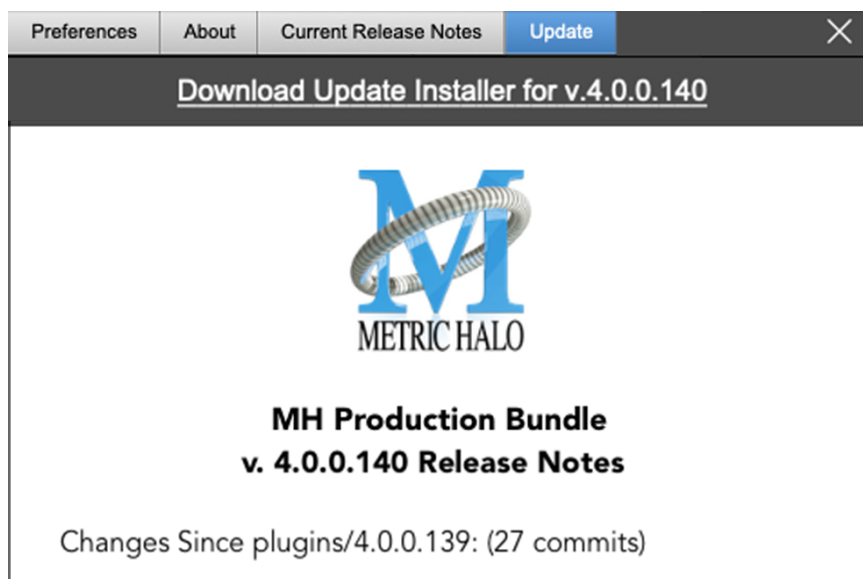
Update tab with new version release notes header
(text from update release notes omitted from above for brevity)

The **Update** tab will contain a link to download the new installer package in the header at the top of the pane.

Below the download link header, you will see new version information with a synposis of the of major changes included in the update, and bugfix revisions for the most recent software releases listed further below. As with the Current Release Notes tab, Windows users will see a link to view the release notes using your current default web browser.

Click the Installer link to download, unzip and run the installer manually, preferably when your audio software is inactive so it can properly scan the new versions at launch.

Plug-in Snapshot Registers: A/B

Plug-in Header: Snapshot Registers: A/B

The A and B buttons control the A and B state registers. The A/B registers are used to store modified parameter snapshots in addition to the original saved preset called up by **Compare**.

The Blend function can be used to smoothly morph between the parameters set in the A and B registers, and Blend is a mappable parameter so it can be operated with external MIDI control. Details of the A/B Snapshot Blend feature follow on the next page.

For each of the A and B buttons the visual display tells you the state of the register:

- Light Grey means the register is empty

- Dark Grey means it has settings, but is unselected

- Blue means it has settings and is selected

You can perform the following actions:

- Clicking on an empty register takes a snapshot of the current settings and saves them to the register.

- Clicking on an unselected filled register copies the register parameters to the current active plug-in settings.

- Clicking on a **selected** register toggles to the other register; this lets you toggle between the register settings without having to move the mouse

- <Option> - clicking on a register snapshots the current settings and saves them to the register, overwriting the prior contents (if any).

- Changing settings when a register is selected will update the settings in the register to reflect the change.

Snapshot Blend

The Blend button allows you to interpolate (or morph) between the parameter snapshots stored in the A and B registers. It becomes active when both A and B have a parameter set stored.

Blend is a MIDI-mappable parameter so it can be operated in realtime with external MIDI control and/or automated in the DAW. This allows you to automate a transition from the A → B register, the B → A register or any setting between the two.

Plug-in Header: Snapshot Blend

The Blend button's visual display tells you the state of the register:

- Light Grey means it is empty

- Dark Grey means it has settings, but is unselected
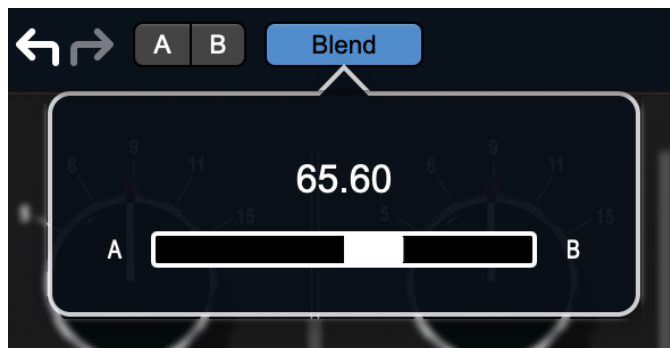
- Blue means it has settings and is selected

Click on Blend to popup the blend control. Slide all the way to the left to apply the settings in the A register. Slide all the way to the right to apply the settings in the B register. Intermediate settings for blend will give you intermediate settings for any parameter that is different in register A and B. The blend control does not change the state of Bypass.

Note that the Blend is not a parallel processing mode where two instances of the processor are running the A and B settings and the output is a parallel blend of the two settings. Rather, Blend interpolates the parameter settings of the two registers to one instance of the processor. You can see the parameter controls move between A and B settings as you slide the Blend control.

The A/B and Blend settings are stored and recalled as part of the plug-in state, but are not saved as individual presets in the preset bar.

While you can use the blend with arbitrary A and B settings we find it works best when you craft the settings in the two registers in such a way as they are related to each other. Specifically, if an indexed (stepped) parameter is different between the two settings, the interpolated value will snap to one of the indexes between the two settings, which can be jarring.

It is best if the parameters that you blend are smooth parameters (e.g. gains, frequencies) and make sure the indexed parameters (enables, modes, band types) are set the same for both registers.

The easiest way to do this is to load the same setting into both registers and then tweak the settings of one of the registers.

This works especially well if you make one of the registers be the basic settings with all the gains or thresholds flattened out so that you can smoothly interpolate between a setting and effectively bypassed - we have found that this allows you to zero in a perfect configuration between too much and too little.

Plug-in Undo/Redo

All the plug-ins provide support for undo/redo from the plug-in header bar.

Plug-in Header: Undo/Redo

The left and right curved arrows represent Undo (Left) and Redo (Right). These arrows are grey when there is nothing to Undo or Redo.

The arrows are white when it is possible to Undo (Left) or Redo (Right). Clicking the left arrow when it is white will undo the last action you made in the plug-in. When you undo something that change is placed on the redo stack, and the Redo button will turn white.

Clicking the Redo button (when it is white) will restore the state that the last Undo changed.

If the Redo button is white and you make a change in the plug-in, the Redo button will go grey as the redo buffer will be cleared.

Help Button

Help Button

This button toggles the tooltip display. When enabled, tooltips will be shown when the mouse hovers over a control. When the tooltip display is disabled, you may still see tooltips by holding down the **?** key and hovering over a control.

Graph Visible Selector

Graphs Closed

Graphs Open

This button toggles visibility of various response graphs. This button allows you to maximize screen real-estate while still providing details on the processing when they are needed. Not all MH family plug-ins will have this button, and on some plug-ins the button will have three panes. Clicking the button will step through the available views, with hidden panes shown darker in the button graphic.
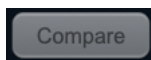
UI Size Selector

UI Size Selector

This pull-down menu lets you set the plug-in UI size to taste.

The last selected setting for a plug-in processor will be applied to the next new instance you create of that same plug-in. For example, if you open an instance of ChannelStrip and set it to 80%, the next instance of ChannelStrip you create will also open at 80%.

Compare Button

Compare

Compare Button (inactive)

Compare

Compare Button (active)

To use the compare button, a preset must first be loaded. The compare button will be lit up when the current settings differ from the selected preset. If you click this button while it is lit, the preset settings will be restored, but you can still return to the changes you made by clicking on the button again. It is important to note that any changes you make to activate the compare light are always for comparison to the last loaded preset.

Soft Bypass

Bypass

Soft Bypass Button (not bypassed - plug-in is processing)

Bypass

Soft Bypass Button (bypassed - plug-in is *not* processing)

When glowing yellow, this button will maintain the time delay through the channel and will continue to show metering, but will cleanly disable the processing.

For MH 3d hardware users: A note regarding plug-in Sidechains

In host-based DAWs, the mechanism for routing signals to plug-in sidechain inputs is handled within the DAW itself in a separate routing UI from the plug-in.

In MIOConsole3d, plug-ins which support external sidechain inputs are assigned from within the plug-in UI (as shown below).
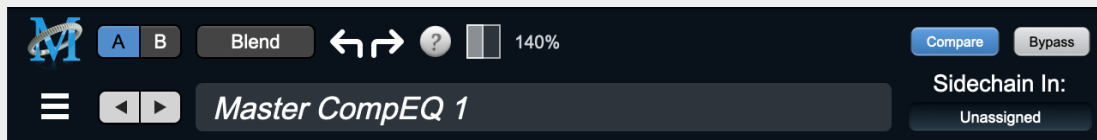
MIOConsole3d ChannelStrip header

In MIOConsole3d, sidechain inputs may be routed from any input or bus available in the system, except for the Main bus. These routes are naturally going to be different from what would be assigned in a DAW session.

For this reason, external sidechain assignments are the one parameter which can not translate between a host-based DAW preset and the same preset opened within MIOConsole3d.

Plug-In Header: Preset Row

Preset
step-through

Preset name / selector field

Master CompEQ 1

"Hamburger" menu:
 Preset operations

Plug-in Hamburger menu

The preset and parameter functions within the hamburger menu break down as follows:

Save Parameters
Save Parameters As...

Rename Current Preset...
Delete Current Preset...
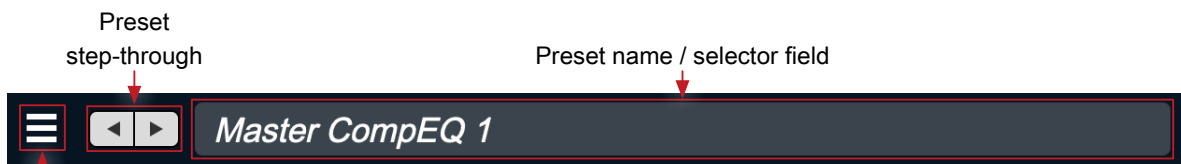
Create New Category...
Delete Current Category...

Copy Parameters
Paste Parameters

Factory Default

Reveal In Finder
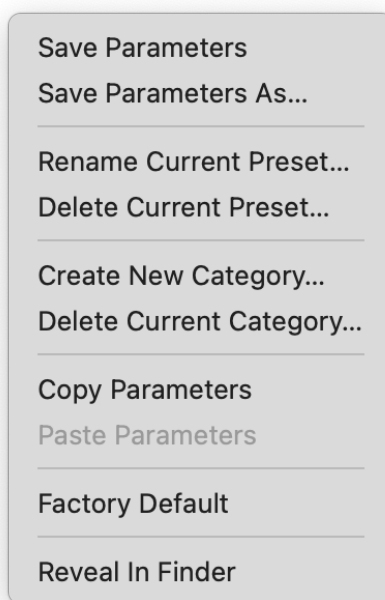
- **Save Parameters** saves the current plug-in parameters to the current preset.
- **Save Parameters As...** opens a dialog box where you can name and choose a category to save your current plug-in settings.
- **Rename Current Preset...** lets you rename the current preset.
- **Delete Current Preset...** deletes the current preset.
- **Create New Category...** lets you create a new preset category for the current plug-in type.
- **Delete Current Category...** deletes the current preset category.
- **Copy Parameters** copies the current parameter set so you can paste them to another instance of the same type plug-in.
- **Paste Parameters** pastes the copied parameters. Note that pasting a parameter set over an existing named preset will change the preset name field to: **[No Preset]**.
- **Factory Default** loads the factory default settings for this plug-in.
- **Reveal In Finder** opens the folder in which the current preset is saved.

Preset Step-Through Buttons

Preset Step-Through Buttons

These buttons step through Factory and User Presets in succession, as they are listed in the Preset Selector window. The left arrow chooses the previous preset. The right arrow chooses the next preset.

Preset Name/selector menu:
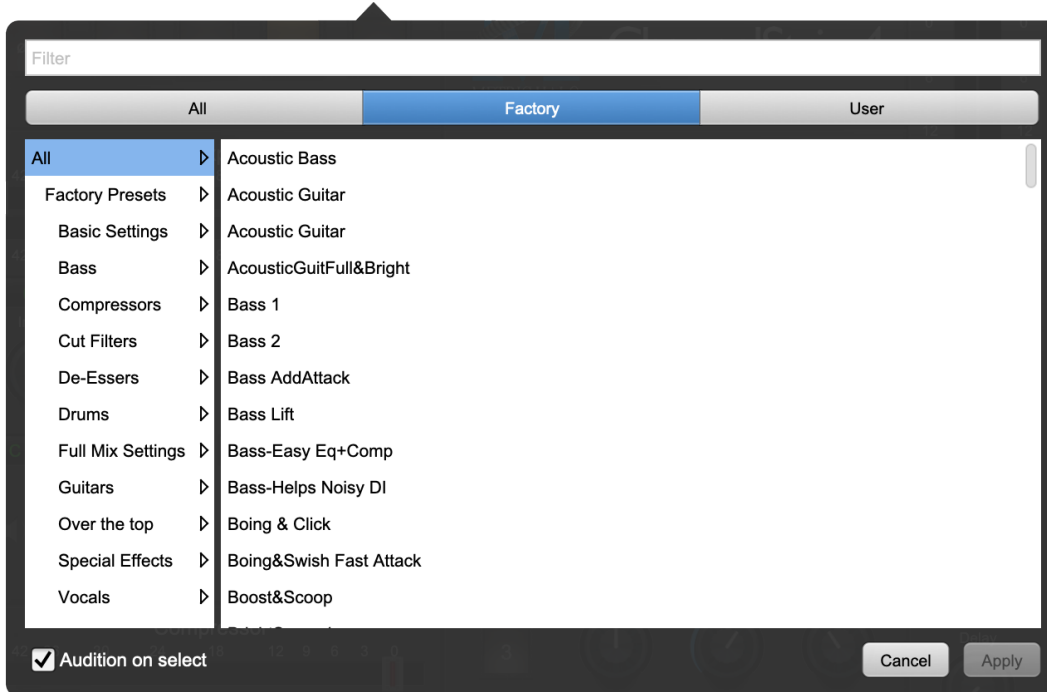
Plug-in Header: Preset selector menu (ChannelStrip shown)

The Preset selector will open to show all the available preset categories, and the presets within those categories.

Preset selector menu: Audition on select

With "**Audition on select**" enabled at the bottom of the window, selecting a preset will temporarily load those parameters so you can hear the effect on the audio you are playing, without actually committing to the preset.

Click **Cancel** to revert to your previous settings and close the selector window.

Hit **Apply** to commit the new preset parameters and close the preset selector window.

5. Operation

Sonic EQ's control interface employs the same "virtual knob" encoder elements seen throughout the MH Production Bundle environment.

Control Knobs

Control Knobs are used to control the value of various continuous parameters of a process. There are three styles of encoders used in Sonic EQ:

Swept Knob

Swept Knob: The rings around these encoders sweep from a minimum to maximum value, normally from left to right. Swept knobs are used for Frequency (Hz), Passband Ripple (dB) and Stopband Ripple (dB).
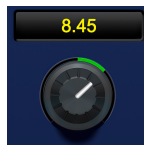
Plus/Minus Knob

Plus/Minus Knob: The rings around these encoders start at 12 o'clock and sweep to either side. These knobs are used for Gain (dB) control, where straight up is no gain change, turning to the left cuts the signal and turning to the right boosts it.

Spread Knob

Spread Knob: The rings around these encoders start at 12 o'clock and spread to both sides equally as the control is increased. These knobs are used for the "Q" controls.

Control tips

You can change the value of each knob in a number of different ways.
- Click and drag the knob to change the value continuously.
- Dragging up or to the right will increase the value, while dragging down or to the left will decrease the value.

    Hint: If you hold down the ⌘ (Command) key when you click, you will be able to adjust the value with finer precision.
- ⌥ (Option)-click to reset any knob to its default value. You may also double-click a knob to reset it.
- **Rapid parameter entry**
  - Double-click the numeric readout of the knob to type in a number directly. The text-entry field will remain active until you dismiss it by clicking somewhere else or hitting the **return**, **enter**, **tab**, or ⌘. (Command + .) keys.
  - Hit **return** or **enter** to confirm the value and dismiss the pop-up.
  - Hit the **tab** key to confirm the value and immediately activate the entry field for the next control. ⇧-**tab** (Shift + tab) will display the entry field for the previous control).
  - Hit ⌘. (Command + .) or **ESC** (Escape) to dismiss the pop-up and cancel the change.
  - When you enter a number into the pop-up entry, you can use a couple of abbreviations: "k" multiplies the number by 1000 and "m" divides the number by 1000. So if you want to enter 16,500 Hz you can just type 16.5k.

> **Note:** The variable filter types in Sonic EQ use differing sets of control elements. For example, HiPass and LoPass filters employ active Frequency, Passband and Stopband parameters but no Gain control. First-order parametric filters have Gain, Frequency, and Q, whereas higher-order parametrics add the Passband Ripple control.
>
> Inactive control elements are ghosted (visible, but mostly transparent and unresponsive to touch).
>
> The De-emphasis, DC and RIAA filters are dedicated-purpose with no adjustable parameters.

Toggle Button

Filter Enable (On)

Filter Enable (Off)

Toggle buttons are simple on/off switches. They light up (colored) when they are on and are dark (uncolored) when they are off. You toggle the state of the button by clicking on it. These buttons are used to enable and disable filter bands within Sonic EQ and engage "Compare" and "Bypass" in the plug-in header.

Filter Type selector
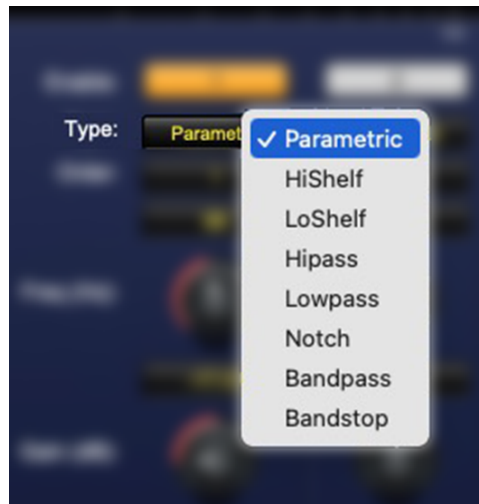
Filter Type selector (with submenu)

Below the band on/off toggle is the filter selector. Click this control to bring up the filter selection submenu.

Filter Order selector
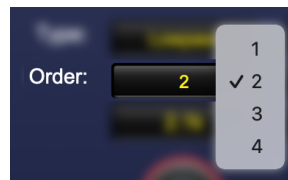
Filter Order selector (with submenu)

Click the Order selection menu to select your filter order (1 - 4). Note that 2nd order and higher filters will enable the *Pass Ripple* control.

Special Filters selector
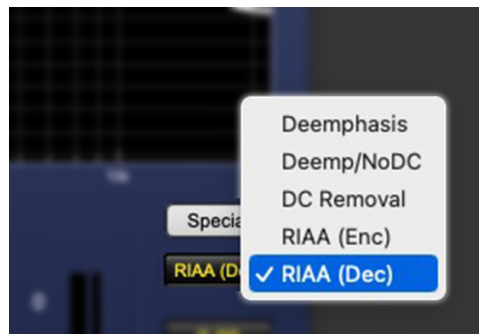
Special Filters selector (with submenu)

An additional set of equalization tools is available to the far right, above the master output fader. Special Filters includes RIAA encode/decode, DC Removal and digital Deemphasis.

Fader

The fader is used to control the master output gain of the plug-in. It works in much the same fashion as the control knobs, but instead of dragging up/right or down/left to change the value, you directly drag the fader knob. The other tricks described for the knobs (option-click to reset, etc.) also work with the fader.

Input/Output Meters
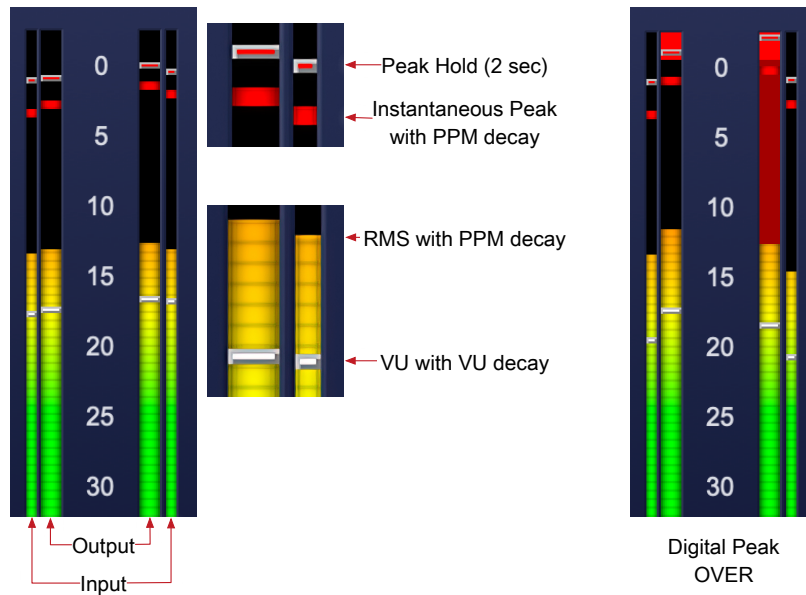
Sonic EQ's multifunction level meters simultaneously display instantaneous Peak, Peak Hold, RMS and VU levels for both the pre-EQ source input and post-EQ output levels.

Source Input levels are displayed on the thinner meters adjacent outside of the larger left and right Output meters, for a more immediate and accurate I/O gain reference.

Digital OVER is indicated when the meter above the RMS level bar flashes red with a peak hold pip above 0dBFS. In the graphic above right, the right output channel clipped a bit harder than the left, so the OVER indication on the right output meter is taking longer to fade.

Note that the clip lights do not mean that the plug-in is clipping; it means that the audio level in the DSP is currently over 0 dBFS. You should lower the output level to ensure you do not actually clip the input of another processor or D/A convertor.

EQ Transfer Function

EQ Transfer Function

The EQ transfer function is a combination of a visual representation of how the EQ is processing the signal and an intuitive controller for the associated filter bands. This display is sometimes called a "Cartesian Graph" by other EQ manufacturers.

The horizontal axis provides frequency calibration in Hertz (Hz). The vertical axis provides level calibration in decibels (dBr). The heavy line (white by default) indicates the relative change in level at each frequency that is created by the combined effects of all of the active filter bands in the equalizer.

Each EQ band is represented by a colored dot in the transfer function. The color of the dot matches the color of the knob rings for the corresponding EQ band.

The dot represents the center frequency or knee of the filter band, and acts as a control handle for the band within the transfer function field.

The band that is currently being edited will be highlighted and displayed along with the overall response curve. If the associated band is a symmetrical filter (parametric) there will also be two smaller colored dots that can be used to control the Q of the filter.

Clicking on a band handle dot and dragging will allow you to adjust the frequency and gain of the associated band.

- ⌘ (Command)–click or double-click the dot to toggle the band enable (single-click to disable a band when Auto Enable Bands is turned on).

- Click and drag the smaller dots associated with a larger dot to adjust the filter Q. You can also ⌥ (Option)–click the dot to adjust the Q (dragging left increases the Q, right decreases the Q).

- ⌘⌥ (Command + Option)–click the dot to switch the band filter type.

In the transfer function field, multiple filter bands may be temporarily grouped by shift-click or click-drag selection of the filter control handles.

To dismiss the filter curve, click anywhere in the black area of the transfer function. This will deselect the filter, and the only trace displayed will be the master eq curve.

Transfer Function options

Right-clicking the EQ transfer function background brings up an EQ functions control menu.

```
    ±3 dB
    ±6 dB
✓  ±12 dB
    ±24 dB
    ±36 dB
─────────────────────────────────────────
✓ Auto Enable Filter when Filter Parameter Changes

✓ Show Live Readout
✓ Require Option for scrollwheel change of BW
```
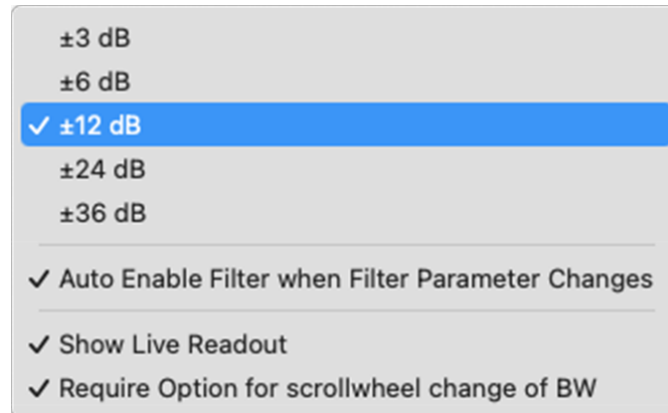
- EQ display scale: Sets the EQ curve dB scale from ±3 to ±36 dB.

- **Auto Enable Bands when band parameter changes**: Automatically enables a filter band when one of its parameters is adjusted within the EQ Transfer Function. This preference will apply to all instances of Sonic EQ.

  Note that the Auto-Enable applies only to the filter band enables, and does not affect the master plug-in Bypass state. Auto Enable does not apply to the 6-Band EQ control knobs or the Special filters.

- **Show Live Readout** (shown above): Enables an overlay in the lower left corner of the transfer function which displays the relative amplitude of the master EQ curve at the frequency indicated by your mouse cursor. Moving the cursor off the EQ display hides the readout. Live Readout control is enabled per instance.

- **Require Option for scrollwheel change of BW**: Enabled by default, this control requires the Option modifier key to change the Q parameter using a mouse scrollwheel. Scrollwheel filter width control works for filter band knobs (one at a time) and selected filters in the transfer function display (multiple selections supported).

Spectragraph Analyzer

Clicking the SpectraFoo™ logo in the upper right hand corner of the transfer function will activate the spectragraph, showing the realtime frequency analysis of your signal overlaid on the Transfer Function EQ curve:
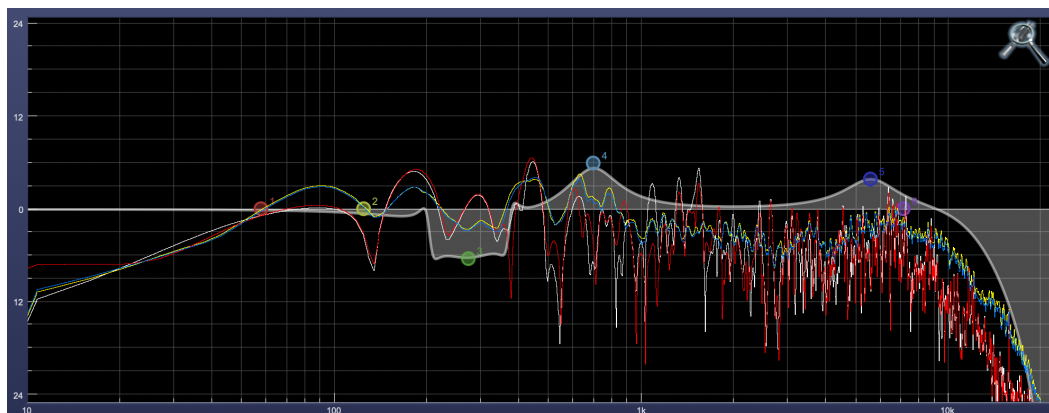
Spectragraph Display

The traces are:

- White: Left channel instantaneous display
- Red: Right channel instantaneous display
- Yellow: Left channel average display
- Blue: Right channel average display

The *instantaneous* trace updates in real-time, allowing you to see the immediate peak level of your audio. The *average* trace displays the level as averaged over a short period, giving you a more general view.

The spectragraph analyses the signal post-filter, allowing you to see the effect of your EQ filters.

To disable the spectragraph entirely, click the active Spectrafoo icon.

If you right-click or ^ (Control) click on the Spectrafoo icon, you will see a menu to set options for the spectragraph:

- Show Instantaneous Trace: Toggles the instant response traces for both channels.
- Show Average Trace: Toggles the averaged response traces for both channels.
- Show Left Channel: Toggles the left channel spectragraph display.
- Show Right Channel: Toggles the right channel spectragraph display.

These settings are stored independently for each instance of Sonic EQ.

Note that just the Left channel display is shown by default.

Controls for Left and Right channel will only be available in stereo instances of Sonic EQ.

6. Processing

Sonic EQ filter nomenclature

Sonic EQ filters are described and controlled in terms of Resonant Frequency, Gain, Q (for *Quality Factor*) and filter Order (filter slope). Secondary controls of Passband Ripple and Stopband Ripple are available where appropriate on the 2nd-order and higher filter settings.

Expressing the width of a filter as a 'Quality Factor', rather than bandwidth, provides a more intuitive sense of the filter's subjective "sound", since the same value of Q will produce different bandwidths at different frequencies. The higher the frequency, the wider the bandwidth will be for a given Q value, which roughly corresponds to our auditory mechanism's ability to perceive a filter's action. As an example, a parametric filter with a Q of 1 has a bandwidth of 100 Hz when its center frequency is set to 100 Hz but, it has a bandwidth of 1000 Hz when the center frequency is set to 1000 Hz.

- Filter **Order** menu items 1 - 4 are used to select a 6, 12, 18 or 24dB per octave slope, respectively, for each filter band. Filter orders 2 - 4 activate the Pass Ripple control parameter (detailed below).

- Resonant **Frequency (Hz)** is the 'knee' of a single-stage pass or shelf filter, or the center frequency of a symmetrical filter such as a notch, parametric "bell", band-pass or band-stop. Sonic EQ adjustable Frequency range is 1Hz to 20.1kHz.

- **Gain** is the gain of the filter at the center frequency, expressed in dB. If the value is negative, the filter attenuates (cuts) frequencies within its band; if the value is positive, it boosts them. Sonic EQ Gain range is ±24dB.

- **Q** factor is a numerical value that describes the filter bandwidth as a function of its center frequency. Bandwidth is defined as the frequency span between the upper and lower -3dB points in the filter pass band (i.e. the part of the frequency spectrum being processed by the filter and passed on to the output). The equation relating Q to bandwidth is:

$$BW = \frac{f}{Q}$$

where BW is bandwidth and f is the center frequency. Sonic EQ Q range is 0.10 (super wide) to 100 (super narrow).

- The **Pass Ripple** (short for Passband Ripple) controls the ripple amplitude inside the filter pass band.

Pass Ripple examples
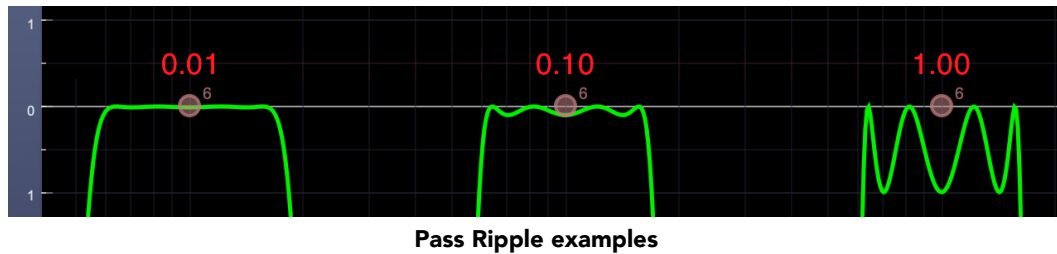
This figure shows the passband ripple of a Bandpass filter at the minimum 0.01dB setting, 0.10db (the default) and 1.00dB (EQ curve colored green in the UI Prefs for visibility).

As you can see, the minimum setting results in barely perceptible ripple, the default setting of 0.10dB equates to a passband ripple amplitude of 0.1dB below unity gain, and 1.00dB of Pass Ripple gives you exactly 1dB of passband ripple. Note, however, that even zoomed in this closely you can still see differences in the filter slope introduced by these relatively small Pass Ripple adjustments. A tiny variation to the passband of the filter means a progressively increasing difference at -10, -30 and on downwards.

The maximum Pass Ripple is 5.98dB, which is pretty much sound design/effects territory for audio filters.

- **Stop Ripple** (short for Stopband Ripple) describes the amount of amplitude variation or ripple in a filter's out of band response. Indirectly, it describes two more important parameters. One is out of band suppression or, how much "leakage" of unwanted signal you receive, and the other is phase shift and group delay.

Stopband ripple is a negative parameter, instructing the filter how much signal is to be removed. The control provides a range of -40dB to -120dB. So if the Stop Ripple is 40dB, that would mean that the attenuation in the stop band will be -40dB *minimum*; it might be more attenuation at some frequencies. However, because the stopband ripple value is so low, the phase response and resultant temporal response of the filter will be less audibly apparent. At the other extreme of its range, stopband ripple will be 120 dB down from the (unity) passband gain but, the phase response will suffer, the group delay will be severe and the resulting temporal smearing may be unacceptable. As with any filter, careful listening will determine the tradeoff between stopband suppression and side effects.

Please note that, since the EQ Transfer Function is focused to within ±36dB of unity gain, the majority of the stopband activity is outside (below) the range of the graph. Changes to the filter slope as you adjust the Stop Ripple provide a clue as to what is going on, but even more than Pass Ripple, this is very much a "feel" type of parameter.

Filter Types and Parameters

Parametric Filters

Parametric Filter Response Curves
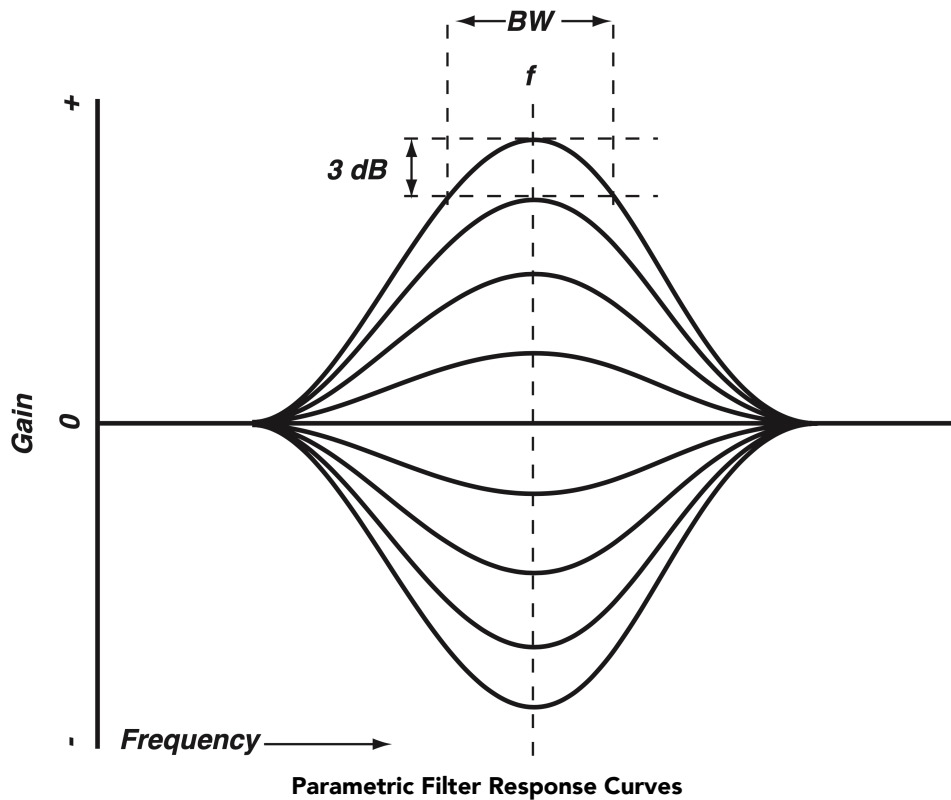
A parametric filter affects a defined region of the audio spectrum.

- **Order** - Selects the filter order. Higher order equals a steeper filter slope:
  1. 6dB/oct (default)
  2. 12dB/oct
  3. 18dB/oct
  4. 24dB/oct

- **Freq (Hz)** - Sets the center frequency of the pass band.

- **Gain (dB)** - Adjusts the gain of the filter at the center frequency.

- **Q** - Adjusts the Q value and, inversely, the filter's bandwidth.

- **Pass Ripple** - Adjusts the ripple amplitude within the passband. Available to 2nd, 3rd & 4th order filters.

Shelving Filters

Shelving filters affect all frequencies above (high shelf) or below (low shelf) a given frequency (called the cutoff frequency).
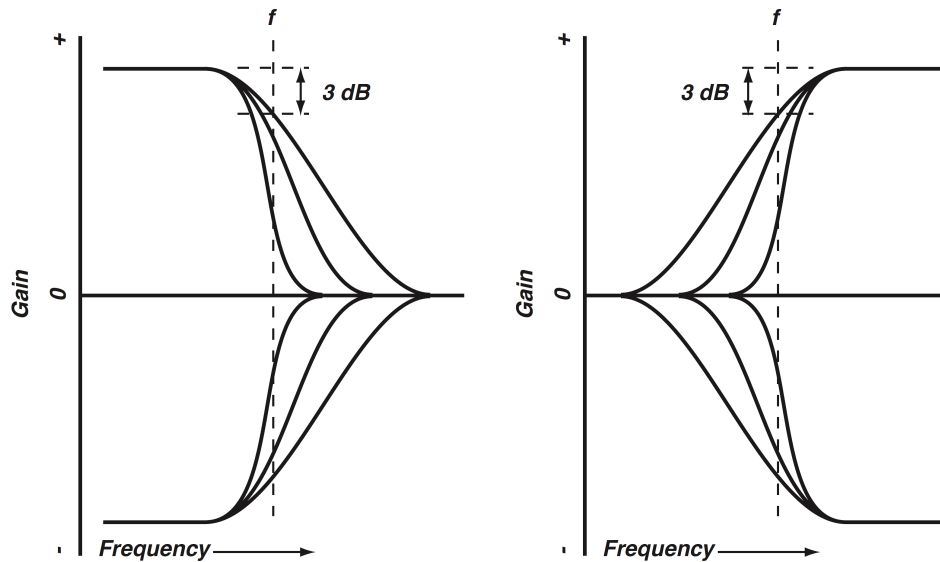
LoShelf (left) and HiShelf (right) Filter Response Curves

The above shows the response characteristics of low and high shelving filters at three different orders. The dotted lines indicate the cutoff frequency for the lowest-order (least steep) filter.

- **Order** - Selects the filter order. Higher order equals a steeper filter slope:
  1. 6dB/oct (default)
  2. 12dB/oct
  3. 18dB/oct
  4. 24dB/oct

- **Freq (Hz)** - Sets the cutoff frequency of the filter. Cutoff frequency is defined as the -3 dB point in the filter's response

- **Gain (dB)** - Adjusts is the gain of the filter above (high shelf) or below (low shelf) the cutoff frequency, expressed in dB. If the value is negative, the filter attenuates (cuts) frequencies within the range that it affects; if the value is positive, it boosts them.

- **Pass Ripple** - Adjusts the ripple amplitude within the passband. Available to 2nd, 3rd & 4th order filters.

Low Pass and High Pass Filters

Low and high pass filters affect all frequencies above (low pass) or below (high pass) a given frequency (called the cutoff frequency). Low and high pass filters are cut only: their purpose is to attenuate (or eliminate) spectral energy above or below a given frequency.

LowPass (left) and HiPass (right) Filter Response Curves
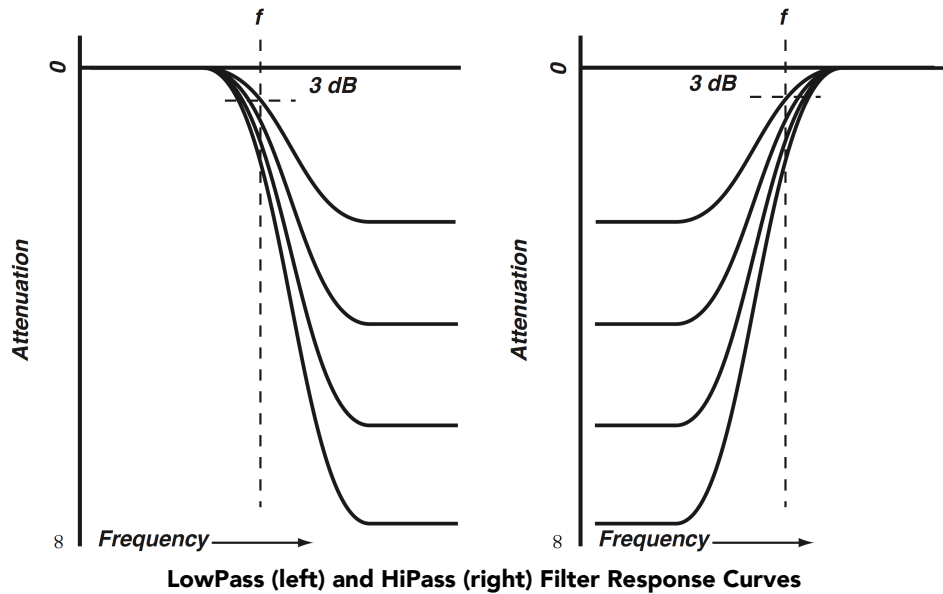
The graphic shows low and high pass filter responses for various settings of cut. The effect of the Order parameter on these filters is similar to that shown for shelving filters. Up to four parameters define the characteristic of a Lowpass or Hipass filter:

- **Order** - Selects the filter order. Higher order equals a steeper filter slope:
  1. 6dB/oct (default)
  2. 12dB/oct
  3. 18dB/oct
  4. 24dB/oct

- **Freq (Hz)** - Sets the cutoff frequency of the filter. Cutoff frequency is defined as the -3 dB point in the filter's response

- **Pass Ripple** - Adjusts the ripple amplitude within the passband. Available to 2nd, 3rd & 4th order filters.

- **Stop Ripple** - Adjusts the ripple amplitude in the stopband. Available to 2nd, 3rd & 4th order filters.

Bandpass Filters

A bandpass filter passes only frequencies within a defined region of the audio spectrum, and rejects frequencies outside of that range.

Bandpass Filter Response Curve
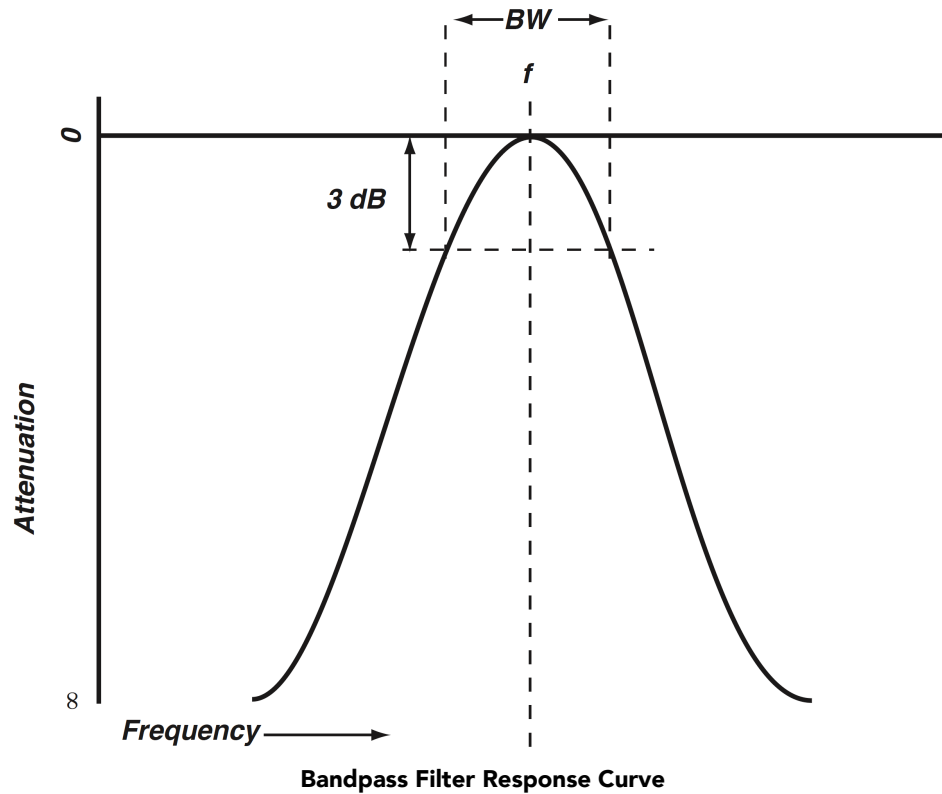
The graphic shows a typical bandpass filter response curve. The dotted lines indicate the -3 dB frequencies of the filter, which define its bandwidth. Up to five parameters define the characteristic of a Bandpass filter:

- **Order** - Selects the filter order. Higher order equals a steeper filter slope:
  1. 6dB/oct (default)
  2. 12dB/oct
  3. 18dB/oct
  4. 24dB/oct

- **Freq (Hz)** - Sets the the center frequency of the band affected by the filter, expressed in Hertz (Hz).

- **Q** - Adjusts the Q value and, inversely, the filter's bandwidth.

- **Pass Ripple** - Adjusts the ripple amplitude within the passband. Available to 2nd, 3rd & 4th order filters.

- **Stop Ripple** - Adjusts the ripple amplitude in the stopbands below and above the passband. Available to 2nd, 3rd & 4th order filters.

Bandstop Filter

A band stop filter is the inverse of a bandpass: it eliminates frequencies within a defined region of the audio spectrum, and passes frequencies outside of that range.
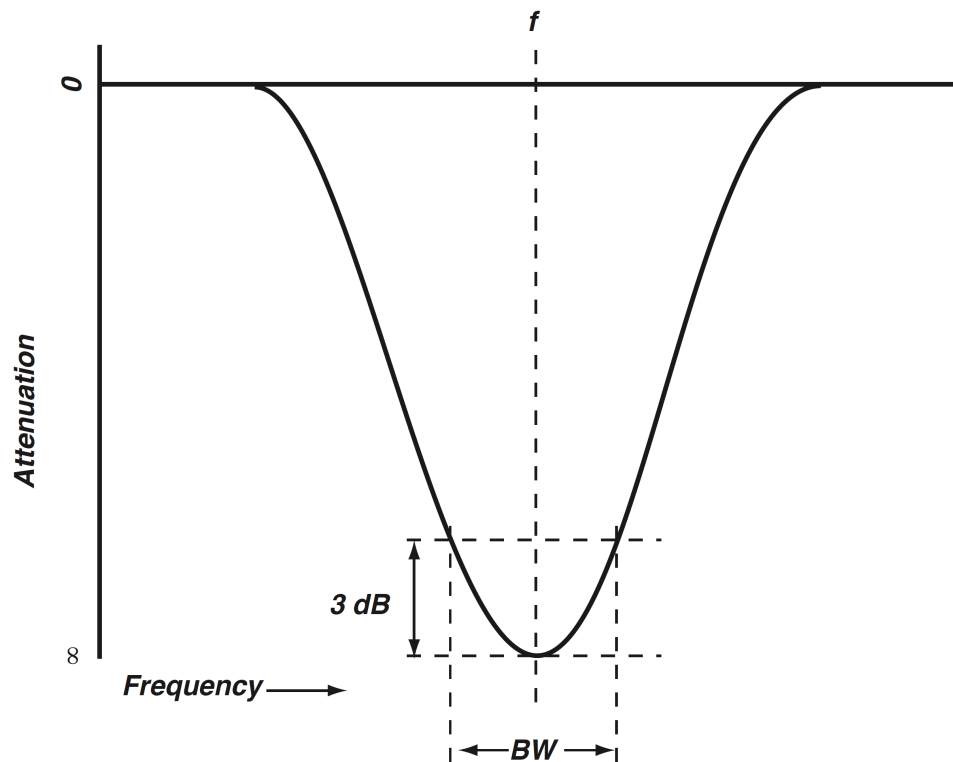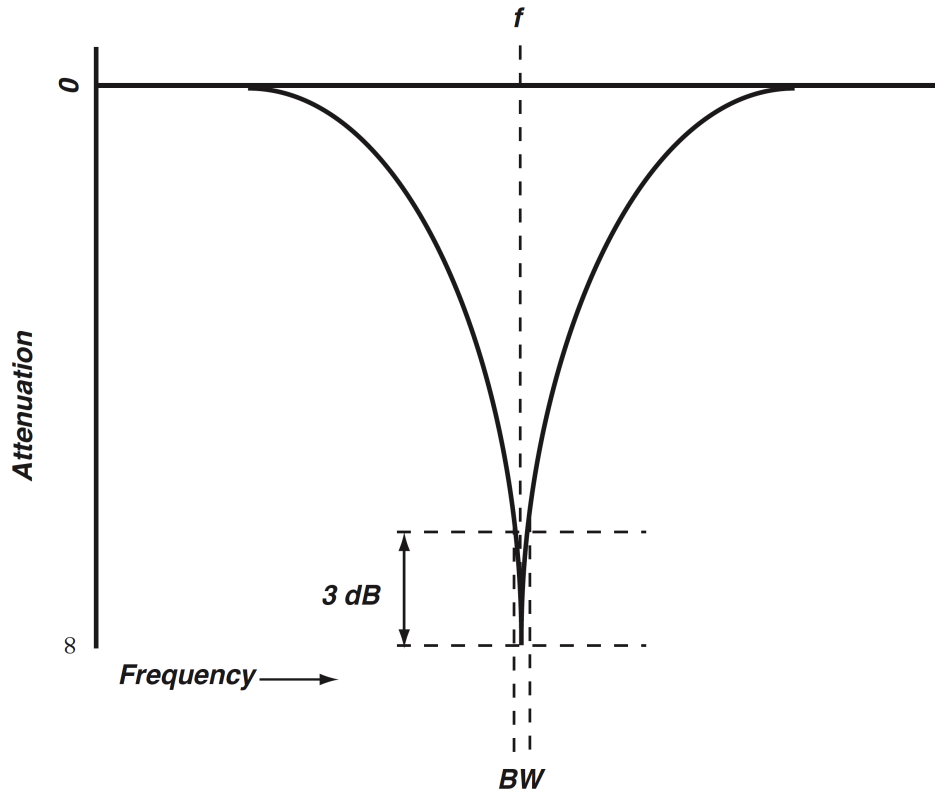

Bandstop Filter Response Curve

The graphic shows a typical band stop filter response curve. The dotted lines indicate the -3 dB frequencies of the filter, which define its bandwidth. Note that Bandstop is the only filter to employ Pass Ripple and Stop Ripple controls in the 1st-order filter slope setting. Five parameters define the characteristic of a Bandstop filter:

- **Order** - Selects the filter order. Higher order equals a steeper filter slope:
  1. 6dB/oct (default)
  2. 12dB/oct
  3. 18dB/oct
  4. 24dB/oct

- **Freq (Hz)** - Sets the the center frequency of the band affected by the filter, expressed in Hertz (Hz).

- **Q** - Adjusts the Q value and, inversely, the filter's bandwidth.

- **Pass Ripple** - Adjusts the ripple amplitude within the passbands below and above the stopband.

- **Stop Ripple** - Adjusts the ripple amplitude in the stopband.

Notch Filter

A notch filter eliminates frequencies within a very narrow region of the audio spectrum, and passes frequencies outside of that range. Notch filters are used to attenuate unwanted single-frequency signals such as AC line hum.

Notch Filter Response Curve

The graphic shows a typical notch filter response curve. The dotted lines indicate the -3 dB frequencies of the filter, which define its bandwidth. Two parameters define the characteristic of a Notch filter:

- **Freq (Hz)** - Sets the the center frequency of the band affected by the filter, expressed in Hertz (Hz).

- **Q** - Adjusts the Q value and, inversely, the filter's bandwidth.

Special Filters

Above the master output fader is a button labeled *Special*. This section houses an additional filter stage containing specialized filters included in the original Sonic Solutions SonicSystem filter suite for vinyl production and early digital formats transfers.

There are no adjustable parameters for the filters within the Specials section, rather they are applied as an additional filter band to the master Sonic EQ filter curve to be modified to taste by the six primary filter bands.

The Special filters section is inactive by default, with DC Removal as the default setting.

DeEmphasis and DeEmp/NoDC Filters

The Deemphasis and DeEmp/NoDC Filters are specifically for playing back legacy AES/EBU digital audio signals encoded with 75µs AES/EBU pre-emphasis.

The original intention of pre-emphasis/de-emphasis in digital recording was to enhance signal-to-noise and headroom at the highest frequencies. The quality of modern digital-to-analog conversion has long since evolved beyond the need for such trickery, so this filter will only be of interest in obsolete digital format preservation transfers.

Back in those days a/d conversion was often subject to DC offset contaminating the digital audio data. The DeEmp/NoDC variation adds a DC Removal filter to address cases of emphasized digital audio containing a DC component.

DC Removal

DC Removal is a high order, minimum phase high pass filter at 1Hz designed to transparently remove a DC component from a digital stream.

Due to the 1Hz knee and relative steepness of the filter slope, the DC Removal filter is barely visible in the EQ Transfer Function display when engaged at the default display scale, but you can see it by zooming in.

In most cases this filter will be inaudible, but engaging and disengaging the filter while playing program containing significant DC offset is likely to produce a digital click. This is normal, especially considering you may be correcting a digital offset of several dB.

This filter is an extremely handy tool for cases where DC offset reduces the digital headroom of either the positive or negative peaks, increasing the chances of clipping distortion during processing.

Note this is not intended to correct for naturally positive-centric recordings of brass and similar instruments, but in any other case where the waveforms look otherwise symmetrical but centered above or below the 0.0dB gain line, try it.

RIAA Filters

The RIAA filter set is a pre-emphasis/de-emphasis standard developed for cutting and playback of vinyl records. RIAA filters are used to decrease low frequency levels in order to control physical groove width and add high-frequency emphasis at lacquer cutting, while an inverse RIAA filter in the phonograph cartridge preamplifier restores flat frequency response when the record is played on a turntable.

In Sonic EQ, the emphasis (mastering/cutting) filter is named RIAA (Enc); the de-emphasis (playback) filter is named RIAA (Dec).
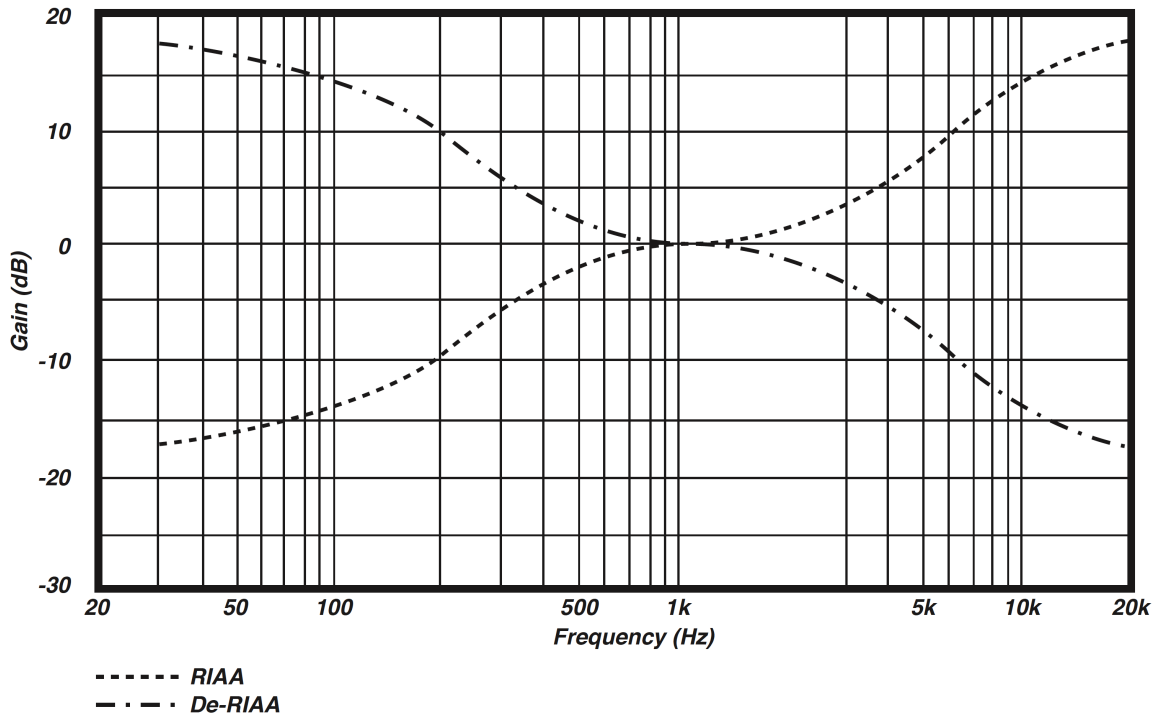
Notch Filter Response Curve

The graphic shows the response curves for the RIAA (Enc) and RIAA (Dec) filters (named RIAA and De-RIAA per the original Sonic HD manual from which this graphic was sourced).

WARNING: The RIAA filters should never be engaged while monitoring audio.

The RIAA (Dec) filter is +20dB at 20Hz, and the RIAA (Enc) is +20dB at 20kHz.

A. Key Commands

There are several key commands used as modifiers combined with mouse actions:

Command	Mac Key Sequence	Windows Key Sequence
Show tooltips	Hold **?** down	Hold **?** down

Table A.1. Tooltip Control

Command	Mac Key Sequence	Windows Key Sequence
Fine control	⌘ (Command)-click and drag	**Control**-click and drag
Reset to default value	⌥ (Option)-click or double-click	**Alt**-click or double-click

Table A.2. Control Knob Modifiers

Command	Mac Key Sequence	Windows Key Sequence
Confirm & dismiss numeric pop-up	**return**, **enter**	**return**, **enter**
Confirm & move to next entry	**tab**	**tab**
Confirm & move to previous entry	⇧-**tab** (Shift + tab)	⇧-**tab** (Shift + tab)
Dismiss numeric pop-up & cancel change	⌘. (Command + .), **ESC**	**Control.** (Control + .), **ESC**

Table A.3. Numeric Field Modifiers

Command	Mac Key Sequence	Windows Key Sequence
Reset Clip	⌥ (Option)–click the meter	**Alt**-click the meter

Table A.4. Meters

Command	Mac Key Sequence	Windows Key Sequence
Toggle band enable	⌘ (Command)–click or double-click frequency dot	**Control**-click or double-click frequency dot
Adjust bandwidth (click then drag)	⌥ (Option)–click frequency dot	**Alt**-click frequency dot
Change filter type	⌘⌥ (Command + Option)–click frequency dot	**Control**+**Alt**-click frequency dot
Access EQ TF settings	⌃ (Control) or right-click graph	Right-click graph

Table A.5. EQ Transfer Functions

Command	Mac Key Sequence	Windows Key Sequence
Popup Parameter Menu	⌃⌥⌘ (Control + Option + Command)–click	**Alt** + **Control**+**Windows**–click
Show Automation Breakpoint	⌃⌘ (Control + Command)–click	**Control** + **Windows**–click
Set Parameter to Default Value	⌥ (Option)–click or double–click	**Alt**-click or double-click
Set Parameter to Minimum Value	⌃⌥ (Control + Option)–click	**Control** + **Alt**-click

Table A.6. Pro Tools Key Commands

B. Service and Support

Metric Halo takes great pride in the reputation for customer service and support that we have built. If you have any problems, questions, or suggestions please get in touch with us at:

- https://mhsecure.com/support

- support@mhsecure.com

- (727) 725-9555

Please keep us informed about your successes and projects. We love to hear from you!