



MBSI

User's Guide

Make Believe Studios MBSI Users Guide

Metric Halo

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1. Introduction

I want to tell you about one of the best parties I ever attended in Los Angeles.

Sometime, pre-pandemic, I had moved in for a couple of months, with a guy named Nolan Neal, and we became close friends. Nolan was famous for being a contestant on America's Got Talent and The Voice, where he performed an Elton John song that people loved. We remained in touch after I moved out, and one day he invited me to a party at his house. After a couple of hours, Nolan got up on a chair and announced to the whole room that he was moving to Nashville, and leaving Los Angeles. Among the boos of the crowd, someone asked him when he was leaving. "Tonight", he said, "and you're all going to help me move." Outside of his home, there were a couple of portable storage pods, and he asked that everyone grab something on their way out. Nothing was even packed, so as people left the party, they did as he asked, tossing everything into the modular storage units.

As this was occurring around me, Nolan ran up, tapped me on the shoulder, and said "Rick, this is Michael. Michael, this is Rick. You guys should know each other." Holding out my hand, I said "Rick Carson, nice to meet you", to which he replied, in turn, "Michael Szymczyk, nice to meet you." I looked at him and said "Szymczyk... that's interesting. Are you related to a guy named Bill?"

"Yeah, my dad's name is Bill."

"No shit... did your dad make Hotel California?"

His eyes got really big, and he looked at me, excitedly telling me that in his years in Los Angeles, no one had ever made that connection. Yes, his father did indeed make Hotel California.

We spent the night talking about Bill, and the work he had done. Being an engineer from Michigan, like myself, his father had always been a huge inspiration. We talked, at length, about Bill's moves to New York his work with B.B. King, Los Angeles, to the Rocky Mountain Way of Colorado to work with Joe Walsh, and, ultimately, his time in Miami working with The Eagles.

It was one hell of a party; Michael and I exchanged numbers, and remained friends after that meeting. Sadly, Nolan passed away in 2022, prompting a phone call with Michael to catch up and see how the other was doing, as it had been a while since we spoke. As we were ending the call, I casually mentioned that we were now making software, and that if there was anything his dad encountered in his career that he'd like to use again, "in the box", to let me know.

About a half hour later, Michael texted me a photo of a console, telling me that it was the console that Bill had used to make Hotel California for roughly the better part of a year during the lockout session he had at Criteria Recording Studios in Miami. Surprisingly, after that stint at Criteria, Bill never saw the console again.

My journey had begun, leading me to the wonderful Lij Shaw in Nashville, who owned the console. I've made so many wonderful friends on my journey to bring this console to life, from Michael, Bill, Lij and Mark and I am incredibly excited for people to hear it.

The console was the third custom console originally built for Criteria, and was quite unique in its design. While this one of a kind console might seem very primitive now, at the time it was incredibly progressive, with hot-swappable inductor based EQ modules, a dynamics section on every tape return, and touch-sensitive routing to the multi-track outputs (Bill would use these extensively in his pioneering of multi-track comping). We can now see that many of the features on this console would evolve into the MCI JH-416, and would inspire many more designs over the decades. Completely discrete, with Pantion resistor ladder faders (rather than Penny & Giles faders, or the API faders used on early 416s), this new MCI would start its life as a 16 track console in a 16 track room. While there were 20 input modules (the same input modules that exist on the desk today), the return side had only 16 modules. To accommodate Bill for his lockout of the room at Criteria, however, he required a 24 track facility, and the desk was subsequently modified to meet his requirements. Photos can even be seen of the desk before and after this modification.

The console lived its life in Studio C for over a decade, where it was utilized on many hit records of the time: records by the Bee Gees, Eric Clapton, Grand Funk Railroad, and Elvin Bishop (Fooled Around And Fell In Love is another wonderful Bill Szymczyk Production). Producers and engineers loved the studio and it seems this desk played a big part in that!! I can understand the appeal, The console is incredibly musical and forces you to make decisions you may not come to without the pushing the technical limits of the time. It is no surprise to me that this console left a lasting impression on Bill and all the wonderful music created with it!!

Thank you so much Bill for all of the help bringing this one of kind piece of history into the box for everyone to enjoy!!!

Rick Carson



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.

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.

- 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 MBSI containing all formats that allows you to decide which formats you would like to use.

Mac

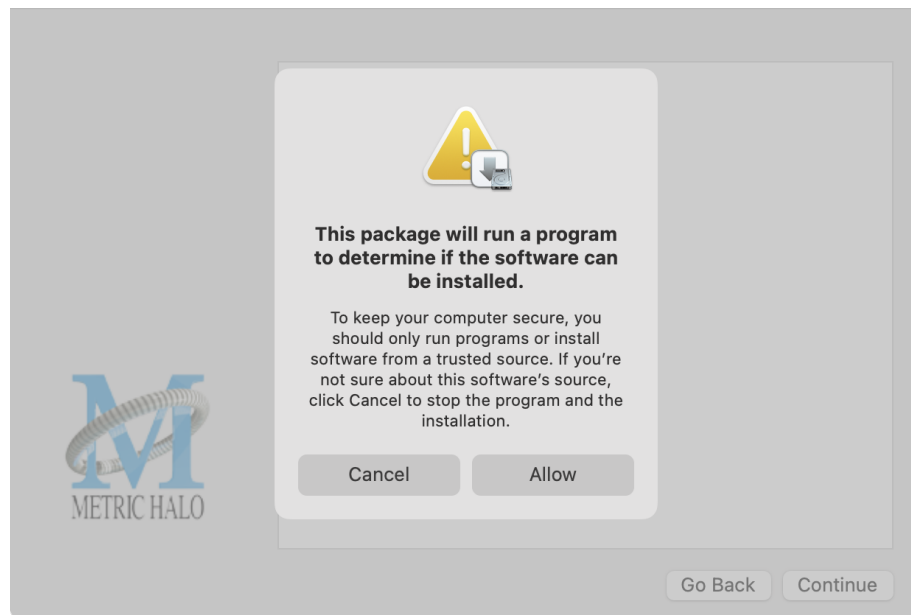
Please note– The following graphics show installation on a macOS 12 system; the process may be slightly different in other versions of the OS, but the basic concepts are the same. Small details such as file sizes shown may vary with subsequent releases.

- Double-click the “MBSI.pkg” application



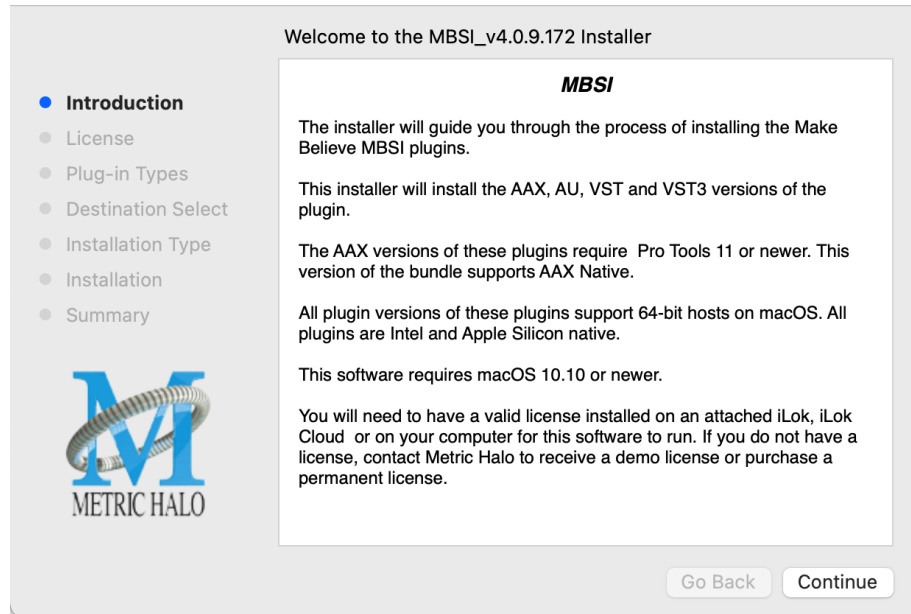
MBSI.pkg

- 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:



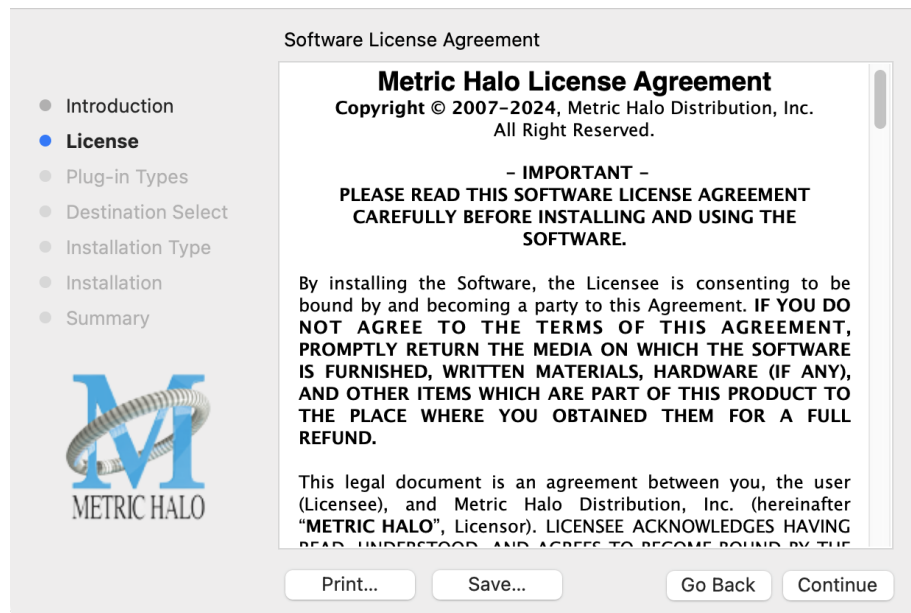
Click “Allow” to proceed...

- The installer dialog will appear:



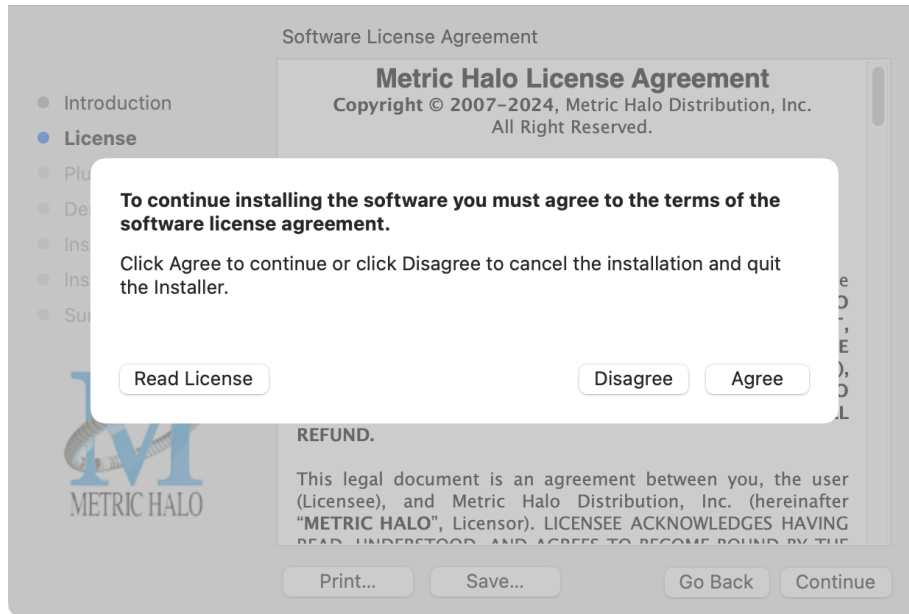
Click "Continue"...

- Now you will see the Metric Halo License Agreement:



After you have read it, click "Continue"...

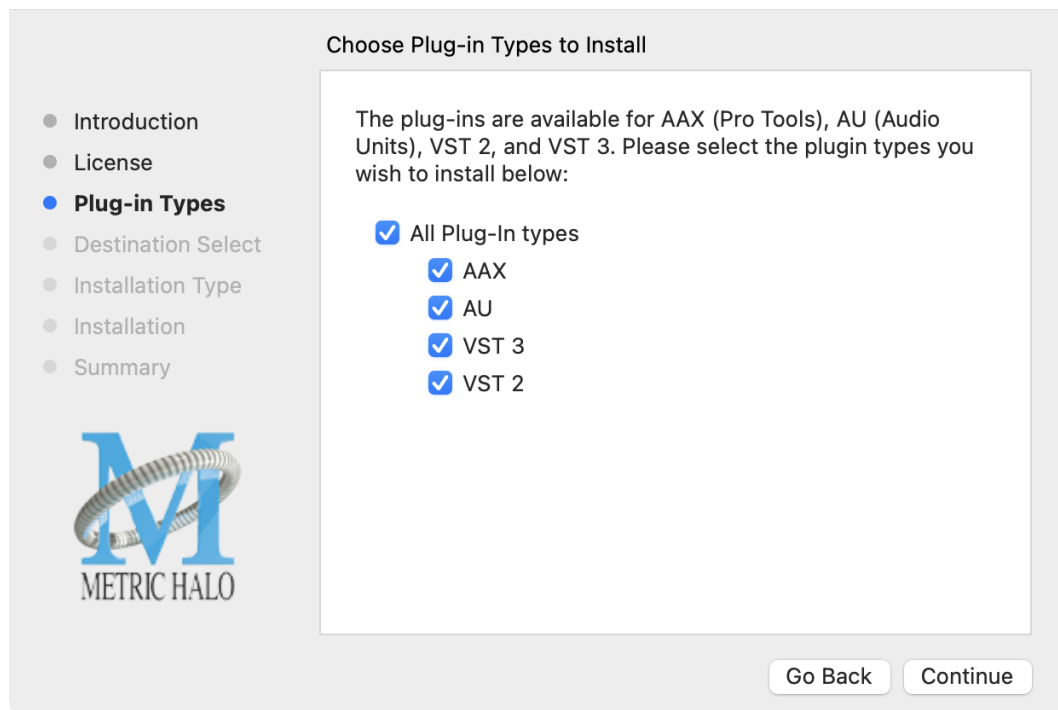
- Next, click "Agree" to accept the License Agreement:



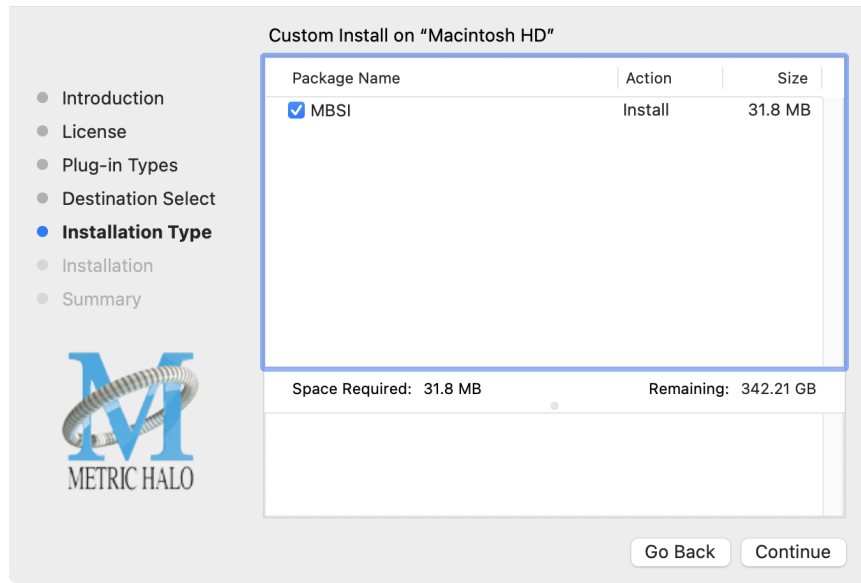
- The default installation will install Audio Unit, VST2, VST3 and AAX plug-ins to their respective folders in the root Library directory:
 - AU to **/Library/Audio/Plug-Ins/Components**
 - VST2 to **/Library/Audio/Plug-Ins/VST**
 - VST3 to **/Library/Audio/Plug-Ins/VST3**
 - AAX to **/Library/Application 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.

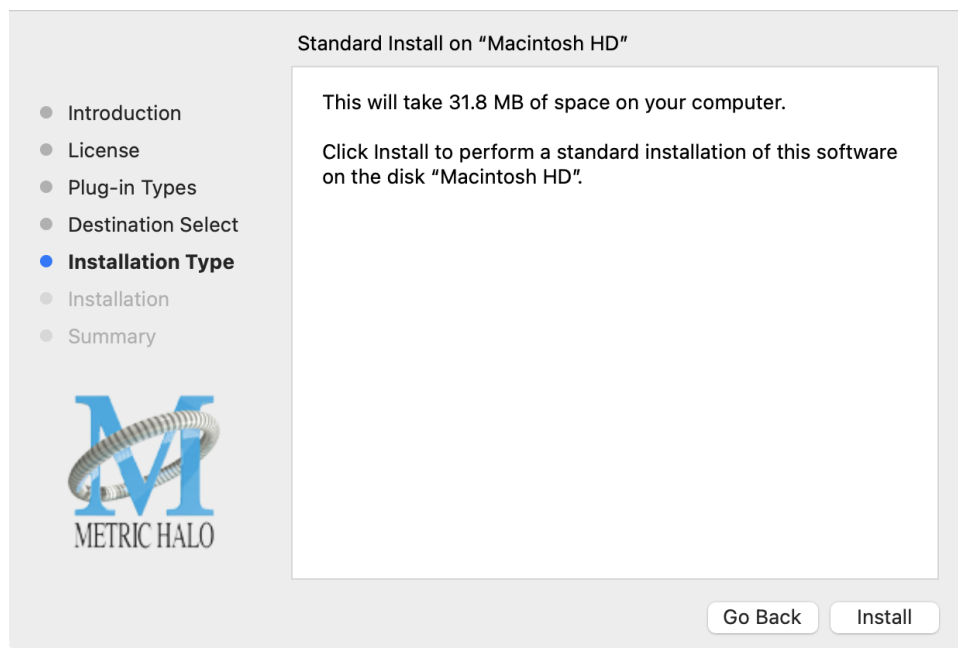


- Since there is only one plug-in to be installed, the “Custom Install” page really only serves to verify whether you are installing or updating MBSI.



Click “Install” to proceed.

- The final confirmation window displays the total size of the selected installation. Hit “Install” to proceed.

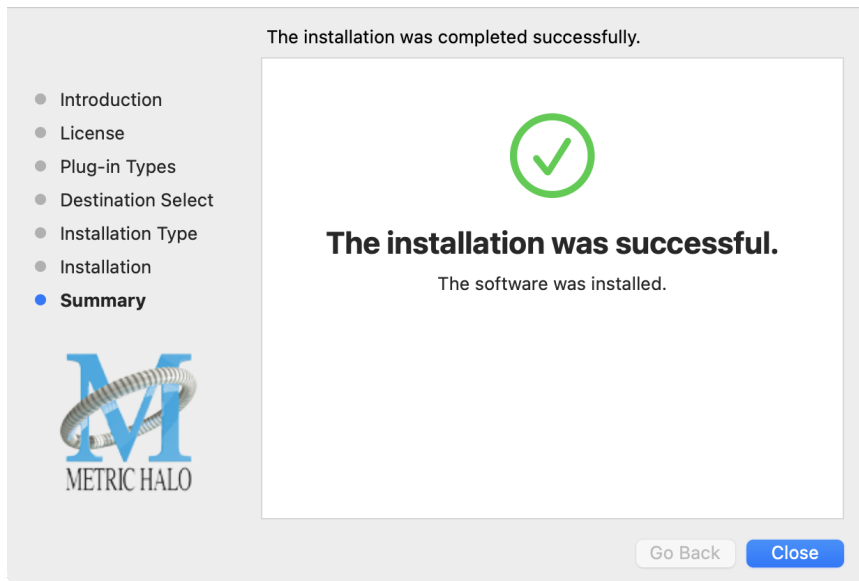


- If present, Touch ID/Face ID will execute the installation once it recognizes your biometrics:



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

- Once the installer has finished, you'll see this dialog:



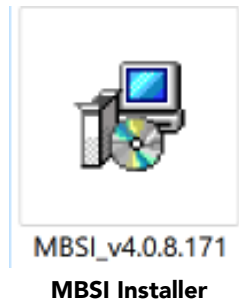
If you do *not* see the "Installation Successful" message, contact [MH Support](#).

That's it! Enjoy using MBSI!

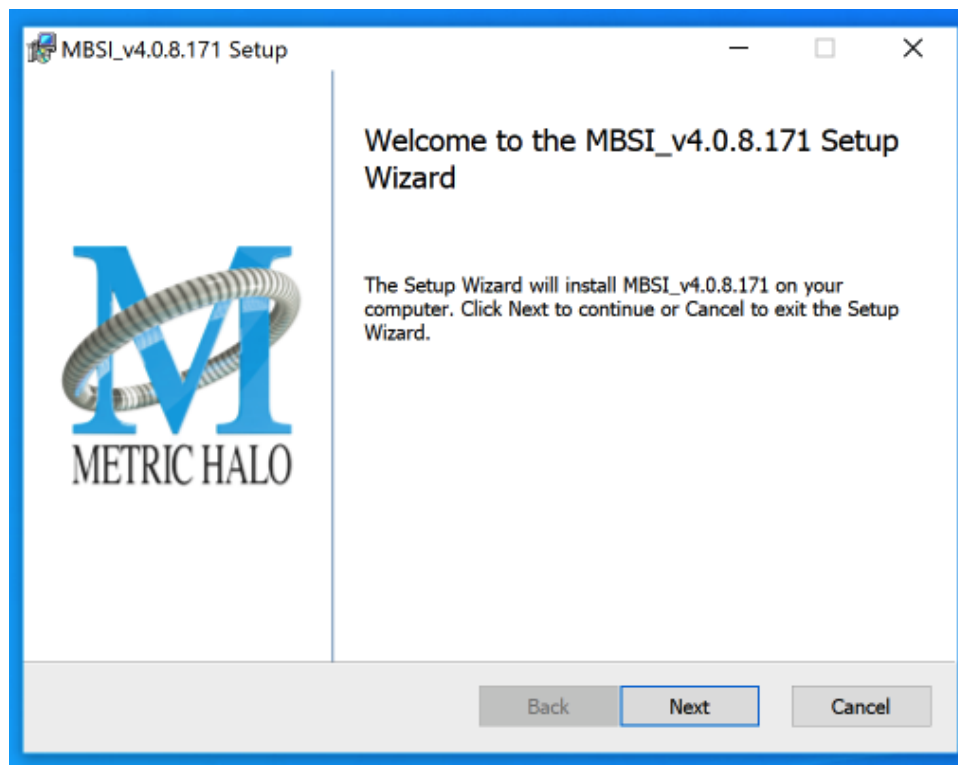
Windows

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 “MBSI” installer application.



- The installer dialog will appear:



Click “Next” to proceed.

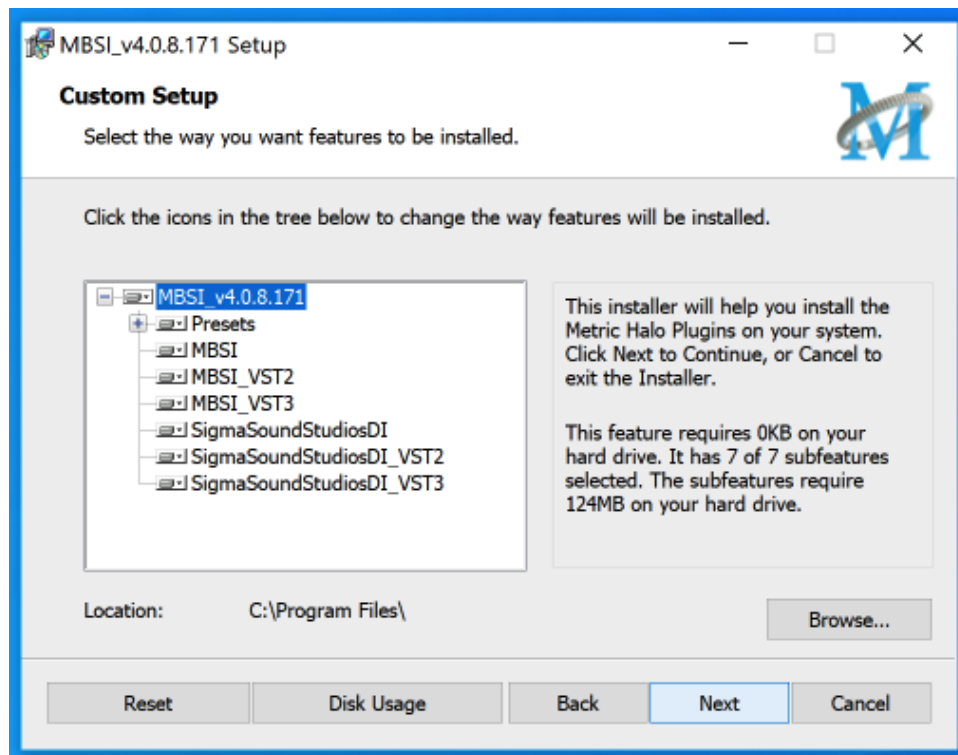
- Read the Metric Halo License Agreement:



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, VST2, VST3 and AAX will be selected for installation to the C:\Program Files\ folder. Specifically:

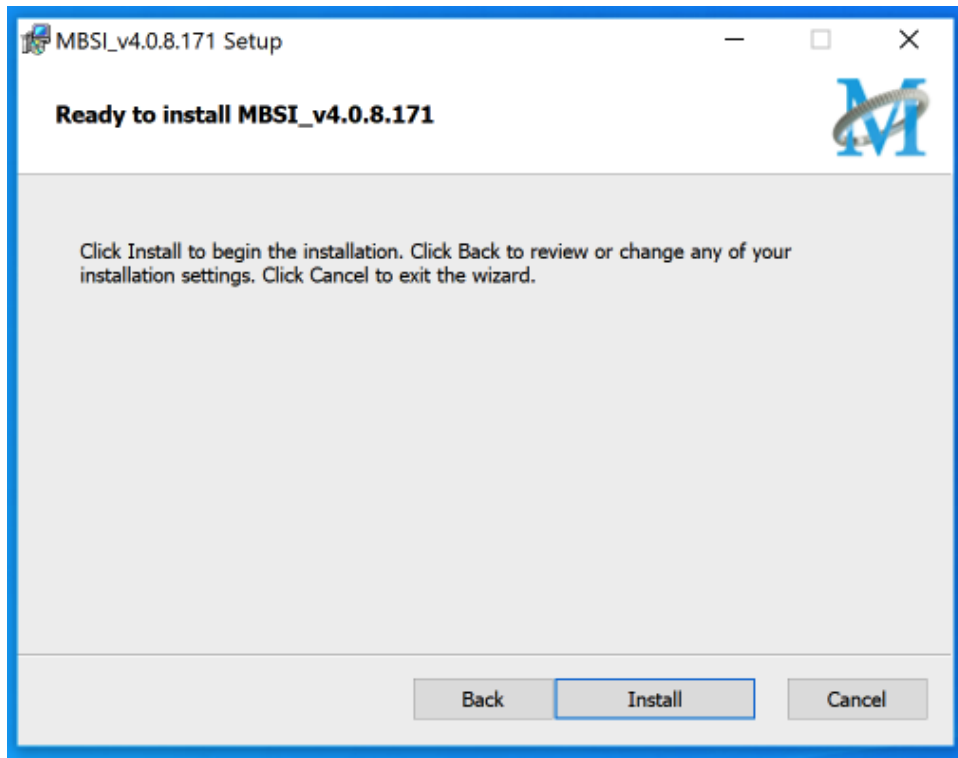
- VST2 to C:\Program Files\Common Files\Steinberg\VST2
- VST3 to C:\Program Files\Common Files\VST3
- AAX to C:\Program Files\Common Files\Avid\Audio\Plug-ins

These default locations are the most commonly used and should be recognized automatically by most DAWs. See your host DAW software Plug-Ins Location Preferences to verify the above directories are in your DAWs Plug-In Locations list.

If not, then you can either click **Browse** to change the installation target folder (the Browse button is in the lower right of the installer Custom Setup window), or add the locations listed above to the DAW Plug-Ins Location Preferences.

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

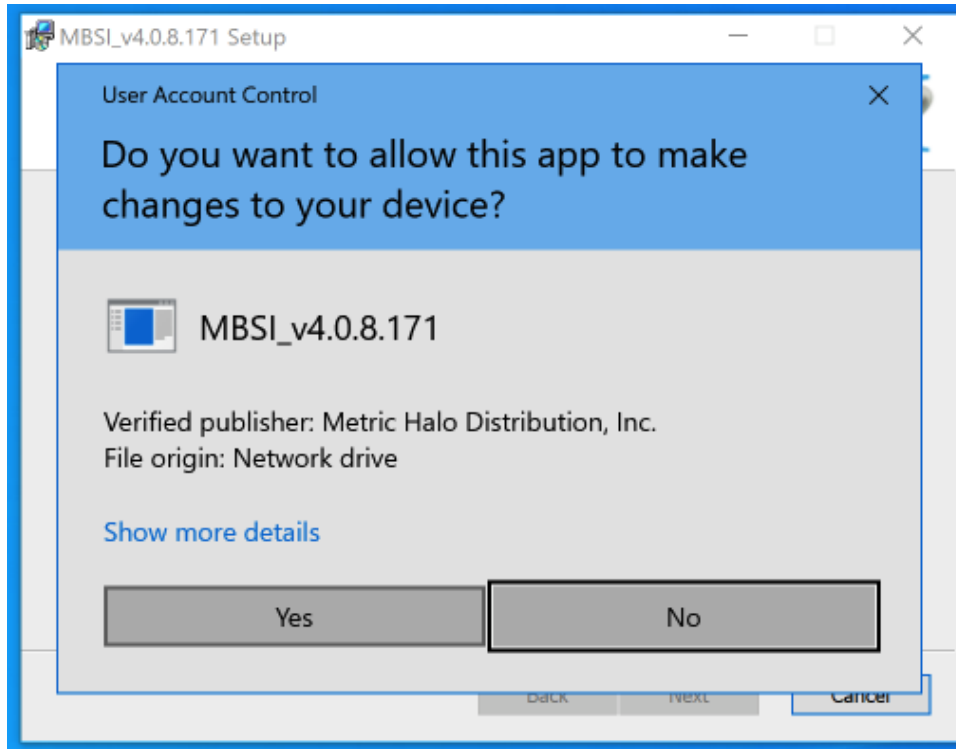
- The next page is a confirmation to continue, offering a last chance to go back and review your selections from the previous window:



Ready to Install

Click "Back" to return to the Setup page, "Cancel" to cancel the installation, or click "Install" 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:

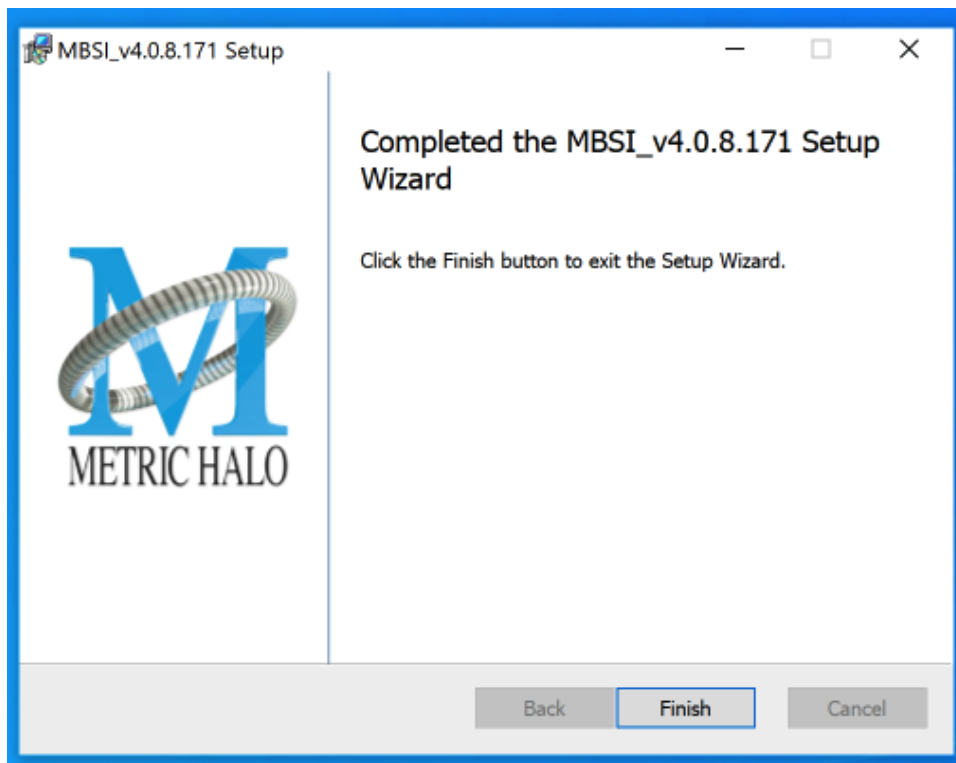


Final installer verification and permission to execute

Clicking "Show more 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 install and register the files.

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



Installation Complete

If you do *not* see this installation “Completed” dialog, contact [MH Support](#).

That’s it! Enjoy using MBSI!

Suggested practices and troubleshooting tips

For best results, make sure your DAW is set to scan your audio plug-ins at every launch. This may add a bit of time at launch, but it helps make sure that new and updated plug-ins will be properly registered.

When making changes to DAW Preferences Plug-in Locations, make sure to quit the DAW, finish your installations and restart the DAW so the plug-ins will be properly scanned and ready for you to use.

If new plug-ins do not register, open your Plug-Ins Preferences and clear or reset any plug-in caches, ‘ignore’ or ‘block’ lists, then quit and relaunch the DAW to scan and re-register all your current plug-ins. Periodically clearing the plug-in caches is a common studio maintenance practice, especially after installing or removing audio software.

The easiest way to check that your plug-ins have been properly installed is to open C:\Program Files\ and type **vst** in the search field. This will show a list of all your installed VSTs and their locations within nested Program Files sub-directories for comparison against your DAW preferences.

Update Notification (all platforms)

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

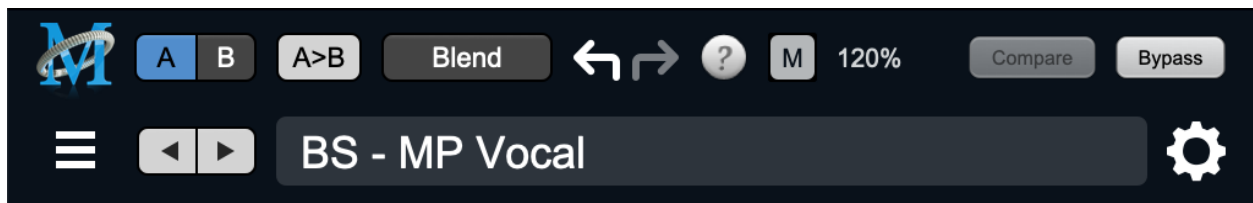
With the constant evolution of computer capabilities opening the door to new production techniques and music delivery formats, the differences between DAW software workflows have become ever more diverse. Many of the major DAWs provide their own plug-in headers within every plug-in instance window, providing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

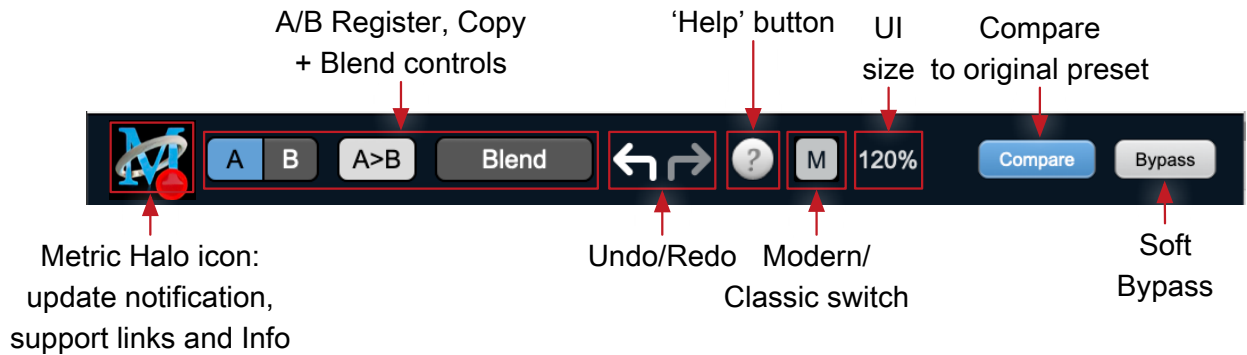
The top row handles plug-in operations, including update notification and download, access to MH online resources, GUI preferences, tooltip help, A/B parameter snapshots, snapshot Blend, plug-in Undo/Redo, Compare and soft Bypass.



MBSI Plug-in header

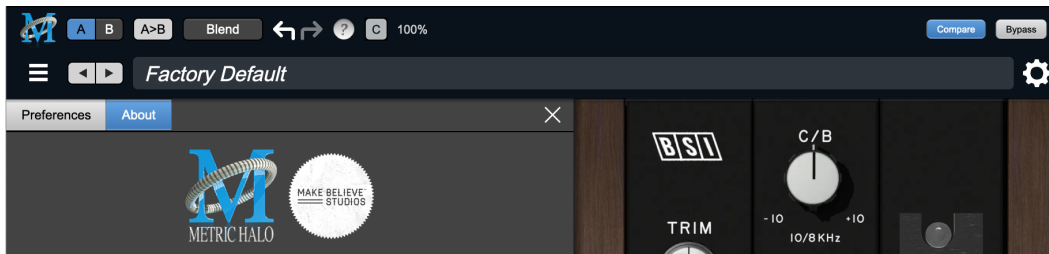
The lower row (with the 'hamburger' menu icon at the left) is all about preset management.

Plug-In Header: Top Row



Metric Halo Header Icon

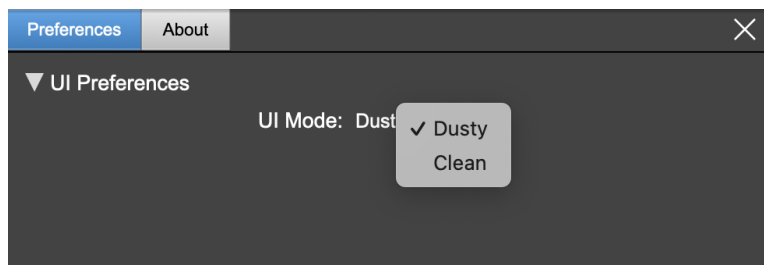
Clicking the MH icon expands the entire plug-in window to the right and opens a multi-function control sidebar with the About tab in focus:



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



MBSI UI Preference

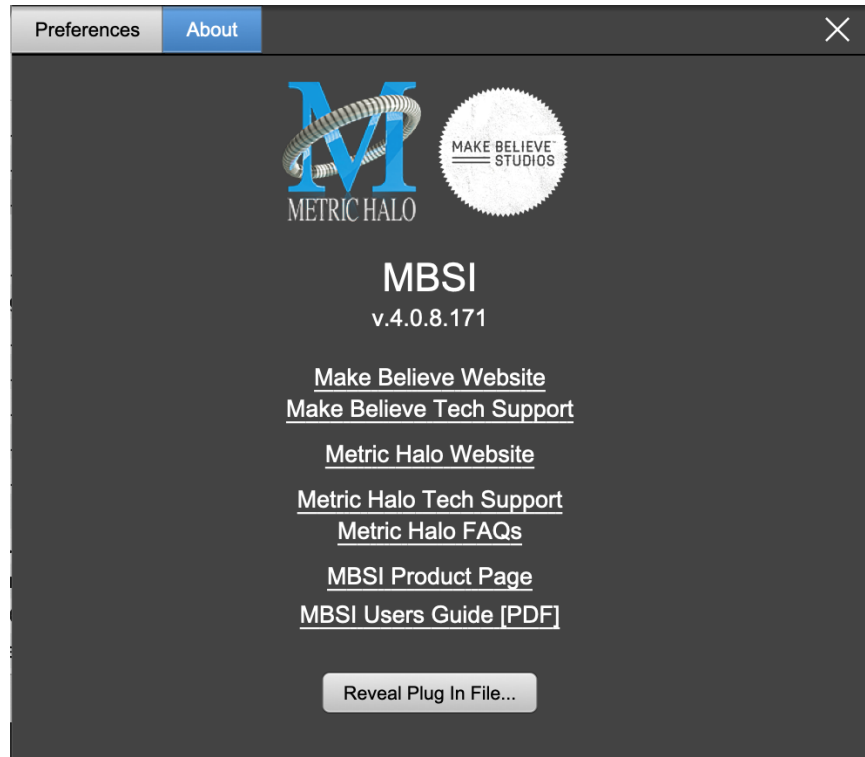
Currently there is only one preference for the MBSI plug-in: Dusty or Clean.

It is interesting to note that very few people so far are on the fence about which they prefer. Rather the reverse. Let's all get along, shall we?

Note: UI preferences will be saved to the computer and automatically applied to the next instance of MBSI of whatever native format, even on another DAW or MIOConsole3d.

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.

About tab



About tab

The **About** tab reveals the current plug-in version information and provides convenient Make Believe and Metric Halo web links to product info and support pages.

Clicking the “MBSI Users Guide [PDF]” link will open and display the latest MBSI manual 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.

Update notification tab



Update tab (only appears when an update is available)

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 will be release notes detailing the major changes included in the update, with bugfix revisions for the most recent software releases listed further below. 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

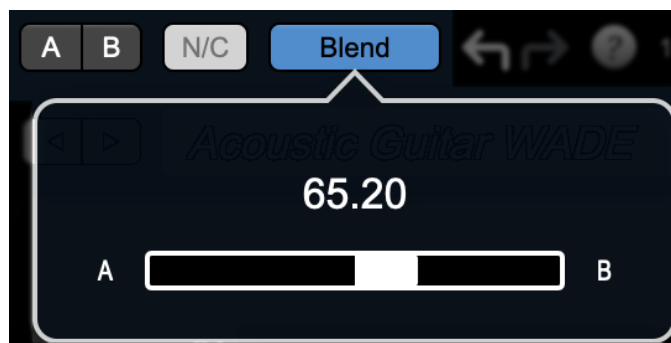
You can perform the following actions:

- 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.
- The Copy button will show **N/C** and remain inactive until one or both of the registers is in use. The Copy button will alternate between **A>B** (copy A to B) or **B>A** (copy B to A) depending on which register is selected. Clicking the Copy button then copies the settings from the selected register to the target register, overwriting the prior contents (if any).
- <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.

Modern / Classic switch



"C" for Classic, "M" for Modern

This button toggles between the **Classic** and **Modern** modes of the MBSI processor.

UI Size Selector

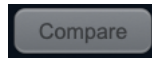


UI Size Selector

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 MBSI and set it to 80%, the next instance of MBSI you create will also open at 80%.

Compare Button



Compare Button (inactive)



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



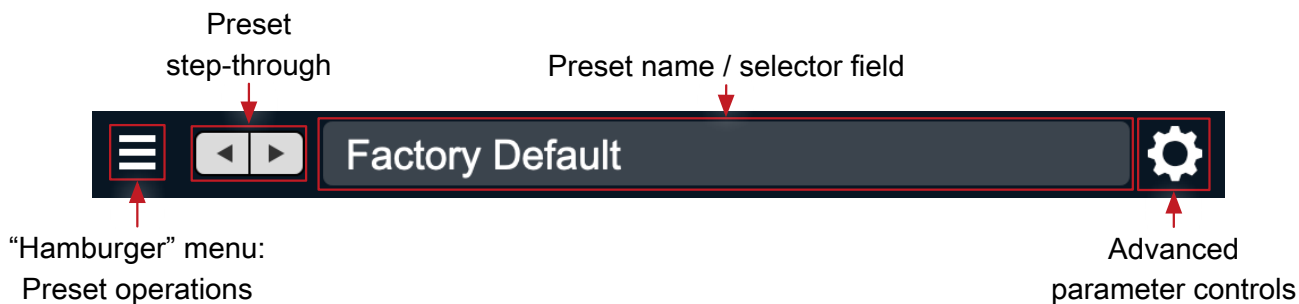
Soft Bypass Button (not bypassed - plug-in is processing)



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

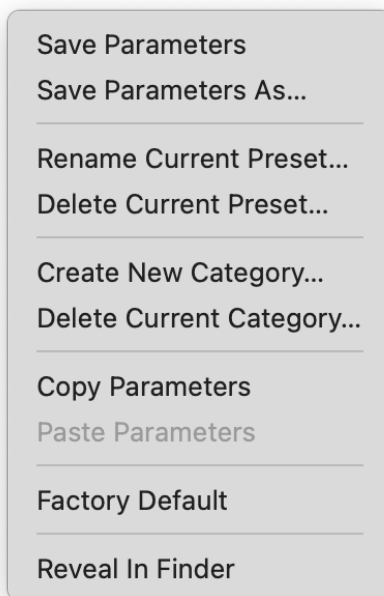
When glowing yellow, this button will maintain the time delay through the channel and will continue to show metering, but will cleanly disable the processing.

Plug-In Header: Preset Row



Plug-in Hamburger menu

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



- **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.

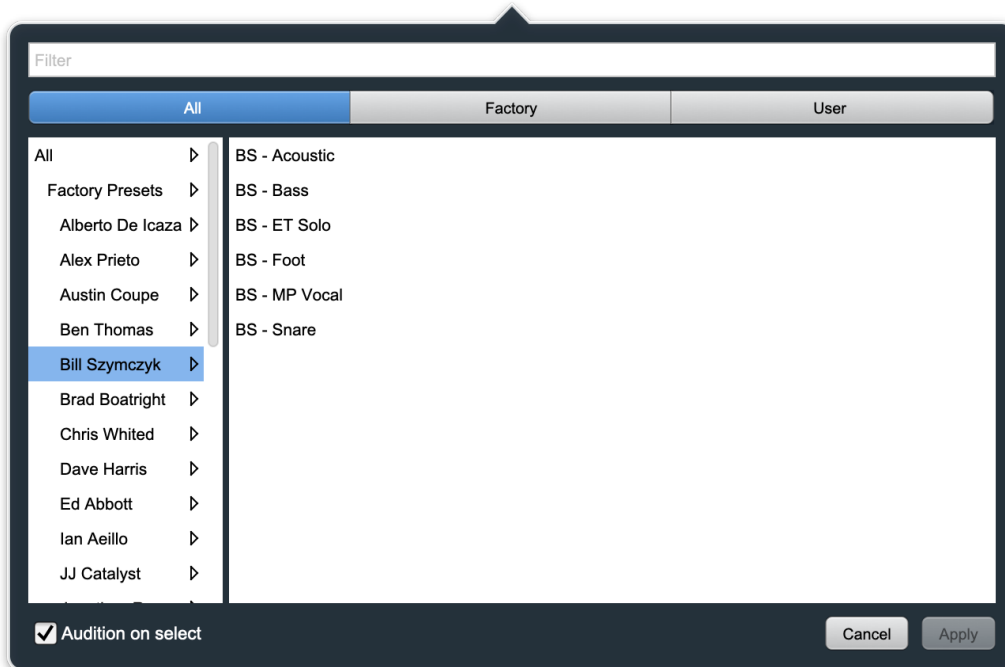
Preset Step-Through Buttons



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

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.

Advanced Parameters



Advanced Parameters button

The gear icon at the far right of the Presets bar opens a window with Advanced Parameter settings for MBSI including Compressor Dual-Mono mode enable/disable, and Parameter Variation and Randomization controls.

See the [Advanced Parameters](#) section for details.

5. Operation

First, a word of warning.

MBSI is a relentlessly faithful reproduction of the beloved 1960's MCI mixing console custom-built for Studio C of the legendary Criteria Recording Studios in Miami, Florida.

"Relentlessly", in this case meaning: if you have a digital background, this plug-in is going to seem completely broken and wrong, *but* if you grew up doing music in studios fifty-plus years ago, listening and working with MBSI you may shed a tear of fond remembrance of how things worked back then. It was an era where "broken and wrong" equated to an opportunity for even greater creativity and beauty. Screw convention, screw what everyone else is doing, just feel it and float in the moment.

Tech heads and digital perfectionists are going to analyze the output of MBSI and swear it's broken. We did too at first to be perfectly honest, but when the engineers that used the console back in the day confirm that this is actually how it worked and most importantly how it sounded, and comparing our measurements with a 192kHz/24bit flac of Hotel California confirmed the oddities, like, *exactly*, we're feeling pretty good about it and are ecstatic we can bring MBSI to all of you.

Be aware, though, that since this is a hand-built old school analog console, built over 50 years ago having lived a life making history all that time, by the time we captured its soul it was very much showing its age. Thankfully, the major controls were all stepped resistor circuits which (mostly) responded well to electrical tender loving care, but when you see values in this plug-in referring to steps of 1dB or 2dB, like any mixing console of this vintage, that's an approximation rather than a mathematically assured value. MBSI's controls accurately reflect the actual values output by the best-performing processor stages in the console exactly as the console circuitry delivered it.

That said, we need to honor the fact that no channel was identical, so we've included a **Parameter Variation and Randomization** feature that allows you to tweak some of the parameter values for the various stages based on the vast library of measurements we made of the console. And to make it more productive, we've devised a way to [direct the tweaks](#) rather than having them totally random... so less searching for just the right variant.

Box Tone / Hardware Input Circuit

Hardware Signal Flow: Mic Pre → Line In → Suppressor → EQ → Insert (Compressor) → Fader → Bus Out

As you first pass audio through MBSI, it is immediately apparent that the board has a **sound**, even with EQ and dynamics sections turned off. This is a characteristic of the input circuit design, and will be present until you bypass the plug-in.

Beyond the expected rich analog distortion signature and the overall linear frequency response, the board output is filtered at the extreme high and low extents of the frequency range. These are filters are mildly resonant, and add a distinct flavor to the console.

- At the low end, there is about a 1dB resonant dip at 35Hz and little bump at 20Hz before rolling off from there to the noise floor.

In MBSI, this response is reproduced for all operating sample rates.

- Up top, the board response again has a bit of resonance with a little dip at 20k and bump at 26k, and rolls off to -3 at around 36kHz and down into noise around 85k to 90kHz. This filter response is reproduced exactly to the hardware in MBSI running at sample rates of 192kHz and above.

At lower sample rates the resonant characteristics of the high frequency response curve are maintained, but the knee frequency is pulled back to fit in the available audio band, so at 2x sample rates the high frequency rolloff -3dB point is about 30kHz, and at 1x rates it's -3dB at 21kHz or so.

The same box tone model is used for both Classic and Modern modes.

Operational modes: Classic vs. Modern

Being a child of the 60's as it is, it's not really surprising to find that some aspects of the original console design don't translate well to modern production methods and needs.

For example, the original console in question did not have a compressor (not unusual for consoles of that vintage), but it did have a Suppressor stage in each channel of the tape returns section, most likely as a kind of semi-automatic tape noise reduction. The Suppressor stage is included in MBSI for the sake of completeness, but the fact remains that modern channel strips are really expected to include some more sophisticated form of dynamics processing.

For this reason, MBSI offers **Classic** and **Modern** modes of operation:

Classic mode *IS* the original console hardware path, funky and weird, warts and all, purely analog in all it's glory.

Modern mode retains all the sonic characteristics of Classic Mode, with a few loving tweaks in consultation with Bill Szymczyk and others to bring it into the DAW / NLE age and make it completely indispensable.

In the MBSI header bar, next to the UI size selector is a button marked with with a **C** or an **M**. Clicking this button toggles between Classic and Modern modes.



"C" for Classic, "M" for Modern

The primary differences between Classic and Modern modes are as follows (per-control details to follow):

1. **Suppressor (Classic) vs. Compressor (Modern):** The Suppressor is essentially a dynamic expander with Threshold, Release and Depth controls. It is interesting and worth experimenting with because it is quite unique, but is more of a special-case tool rather than a modern-day music production workhorse.

In Modern mode, the Suppressor is replaced by a newly created Compressor stage, designed specially by Make Believe and Metric Halo for the MBSI, informed by deep analysis of the signal path characteristics and after many long conversations with those most familiar with the console in it's heyday.

The Compressor incorporates the distortion characteristics of the Suppressor and support circuits, re-purposes the Threshold, Release and Depth controls, and adds a selection of Fast, Medium and Slow attack/release modes for the compressor response rates.

The compressor attack/release mode switch is located between the Depth and Release knobs, and serves as a visual indicator that you are in Modern mode. If you do not see this switch, you are in Classic mode.

2. **EQ knob controls:** In Classic mode, the EQ section gain controls operate in 2dB steps, and the Mid Frequency selector is stepped values as well. The hardware controls were all fixed resistor rotary switches.

In Modern mode, these controls are all continuous, interpolated at 0.01dB resolution from the individual steps as captured from the hardware circuits. Hold the Shift key while in Modern mode to use Classic mode stepped control values.

3. **CUT switch:** In Classic mode, the Mid band gain control is Boost only, and increments in 2dB steps.

In Modern mode, a CUT switch has been added to the right of the Mid-Boost knob. When the switch is up, the Mid-Boost boosts gain as usual. When the switch is down, the same control cuts the gain value. Mid-Boost is continuous gain in Modern mode. Hold the Shift key while in Modern mode to use Classic mode stepped control values.

The Cut switch serves as another visual indicator that you are in Modern mode. If you do not see this switch, you are in Classic mode.

4. **BOTH switch for 40Hz/10kHz Cut Filters:** In Classic mode, only the 40Hz low cut or the 10kHz high cut filter can be engaged at a time.

In Modern mode, a BOTH switch has been added to the right of the 40Hz/10kHz Cut Filter switch. When the switch is up, selecting either cut filter will engage both the 40Hz and the 10kHz cut filters.

Again, the BOTH switch serves as another visual indicator that you are in Modern mode. If you do not see this switch, you are in Classic mode.

5. **Fader:** In Classic mode, the output Fader operates in 1dB steps. As with the EQ gain controls, the Fader was a stepped resistor circuit, switching between fixed resistor circuit paths as the fader was moved.

In Modern mode, the Fader control is continuous, interpolated at 0.01dB resolution from the individual steps as captured from the hardware circuits.

MBSI Controls

The primary processing controls are the same between Classic and Modern mode. Both mode functions will be covered here, including the secondary switches added in Modern mode.

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.
- **Rapid parameter entry**
 - **Right** 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. **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.

Classic / Modern mode selector

Click the **Classic / Modern** button to toggle MBSI between Classic and Modern modes.



Select between Classic (HW Constrained) and Modern (Updated in the Spirit of the original HW) mode.

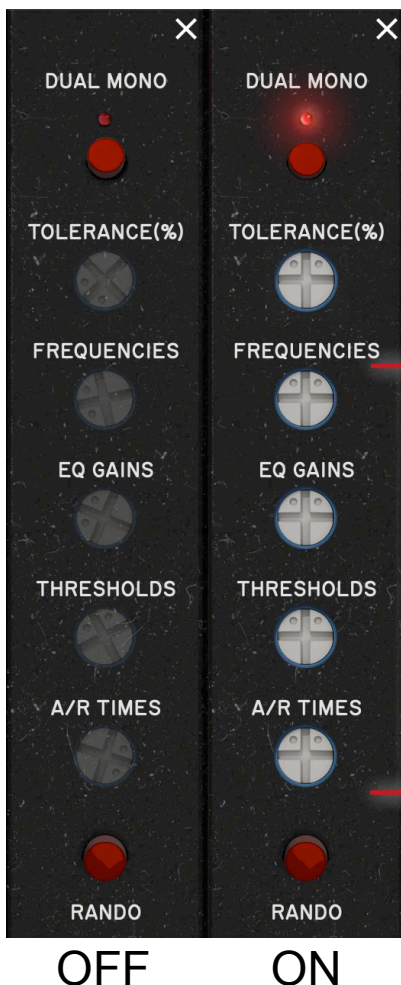
Parameter settings are not affected when switching between modes. Modern mode functions will engage and disengage cleanly when switching modes. The mode setting is stored with saved presets.

Advanced Parameters UI



Show Advanced Parameters UI

The **Advanced Parameters** button to the right of the Presets bar replaces the fader section with a control panel for operating two important features of MBSI: **Compressor Dual-Mono mode** and **Parameter Variation and Randomization**:



Enable Dual Mono Mode; splits stereo into two mono channels with separate compressors, and varies channel response independently.

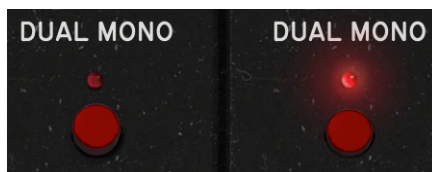
Sets tolerance (maximum percentage shift of variations). Double click to toggle variation enable.

Set Offsets for category in range of +/- 100% of tolerance. Double click to toggle variation enable for category.

Randomize Offsets in range of +/- 100% of tolerance

Compressor Dual-Mono Mode

In a stereo compressor instance, the **Dual Mono Mode** push button will become available in the Advanced Parameters UI. The *Up* position (LED OFF) is standard stereo mode and pushed *Down* (LED ON) engages dual-mono. You can see the compressor switch change shape as you press it.



In stereo mode, the detector sidechain is shared between the two compressor processor channels, with the loudest amplitude of the left and right inputs triggering both comp stages. This is the standard mode for stereo compression, maintaining a solid center image and consistent left/right balance with most stereo program across a wide range of compression settings.

In dual-mono mode, the left and right detectors are split, allowing the left and right channel comp stages to react independently to the dynamics of each channel. On well-balanced stereo program this can result in a more open and wider soundstage, taking advantage of minute variations between the two channels to expose details that might otherwise be masked in standard stereo compression mode.

Parameter Variation and Randomization

No analog console channel strip performs exactly like the one next to it. There is always some variance in noise, frequency, dynamics and distortion response for any given process settings even if it is not always obvious. The personality of a mixing console is due every bit as much to the differences between channels as it is the sound character of each channel component. This section of MBSI has been added to allow controlled emulation of that behavior in a way that is predictable and useful to every music production scenario, based on the real-world performance of the hardware.

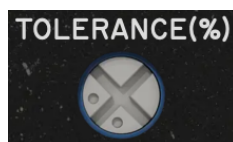
Parameter Variation takes your current MBSI parameter settings as a starting point, and tweaks them a bit, per your instructions. Double-click a control to turn variance off for any parameters you want to keep unaltered.

In dual-mono mode, EQ and Compressor variations are applied differently to the two channels. So even if the Comp is turned off, if the EQ is engaged and gain applied you will get divergence between the two channels in a stereo strip.

Note: Core hardware console characteristics such as box tone and the distortion signatures of each stage are not altered. Only the user-controlled parameters listed below are subject to variation.

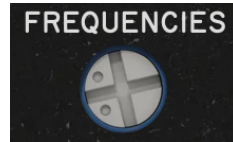
The variations controls below the dual-mono button operate as follows:

- **Enable Tolerance:** Disabled by default. Double-click to enable parameter variance between stereo channels.



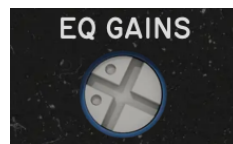
The Tolerance control determines the amount of variation allowed for each of the parameter categories below, from 0% to 20%. 20% is a lot of swing, depending how the controls below are set up. For a $\pm 10\text{dB}$ gain control, that's up to $\pm 2\text{dB}$ variance, so, non-trivial.

- **Enable Frequencies:**



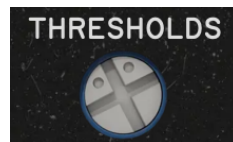
Sets the amount of variation for the 8kHz/10kHz Shelves and Mid-band Frequency. Values can be positive (for variation trending towards higher frequencies) or negative (trending towards lower frequencies).

- **Enable EQ Gains:**



Sets the amount of variation for EQ gain controls, including the Hi and Lo Shelf gains and Mid-Boost/Cut. Values can be positive (for variation trending towards increased gain level) or negative (trending towards decreased gain).

- **Enable Thresholds:**



Sets the amount of variation for Compressor threshold level. Values can be positive or negative to trend the variation towards higher or lower threshold levels.

- **Enable A/R Times:**



Sets the amount of variation of Compressor attack and release times. Compressor attack times will vary from the preset values. Values can be positive or negative to trend the variation towards slower (positive adding attack/release time) or faster (negative subtracting attack/release time).

- **Rando:**



Clicking **Rando** randomly scrambles active Frequencies, EQ Gains, Thresholds, and A/R Times parameters to values within the set Tolerance range.

Note: Parameter values on the processor controls do not change with Parameter Variation and Randomization. These are under-the-hood variances just like the behavior of the hardware console. The only functional difference is in MBSI you have creative control of the variances.

Saved MBSI user presets will include the Dual Mono Mode and Parameter Variation/Randomization settings.

The primary MBSI processor controls are detailed in the pages to follow, listed per section from left top to bottom right, including the tooltips for each control as shown in MBSI when the Help button in the header bar is enabled.

Input section

The Input section on MBSI consists of the **Trim** and **Input Selector** controls at the upper left of the MBSI UI. Input section controls are the same for both Classic and Modern modes.

Trim knob



Input Trim Gain (-12 to +12dB).

Trim is a straight non-stepped linear gain control placed prior to the MBSI Line and Mic Input circuits. Gain range is from -12dB to +12dB.

Use the Trim to reduce the level going into MBSI before it hits the Input circuit distortion models.

Input Selector switch



Selects between Line, Mic Pre, and O/D (Mic Pre Overdrive) models. This is a zoned control. Click Left, Center, or Right to select the mode:

Line is the path from Line In through the strip.

Mic cascades the Mic Pre Module with the Line path.

O/D is the Mic Pre module with overdriven input, cascaded with the line input path.

NOTE: O/D is distorted; you will need to adjust the input trim (or the signal level before the plugin) to hit the sweet spot.

- **LINE:** selects the Line input model for the least colored and most linear response.
- **MIC:** Selects the Mic Pre input model. This is a Mic Pre analog stage feeding a Line input stage, as wired on the original hardware. The Mic Pre adds has a richer transformer distortion element with slight high frequency bump up to about 12kHz.
- **O/D:** OverDrive. Two hard-driven mic pre circuits in series feeding a Line input stage. By OverDrive, we mean it. You should probably (definitely) turn your monitors down before engaging...

Inputs are all gain-compensated such that the MIC and O/D input selection outputs the same level as the LINE, so you can switch between input distortion models without the actual gain structure changing.

Dynamics section

The Dynamics section is below the Input section at the lower left of MBSI. The four primary controls are the Threshold, Release and Depth knobs and the Enable push-button, which also acts as a gain reduction indicator based on the brightness of the button lamp. These controls do not change when switching between modes.

Both Modern and Classic modes for each control are listed below. Modern mode controls are listed first since that is the MBSI default mode.

Threshold



Modern Mode: Threshold of Compressor. Classic Mode: Threshold of Suppressor.

- **Modern: Compressor mode:** Controls the level at which the compressor begins to reduce the gain applied to the signal. Compressor response characteristics are determined by Release, Depth and Compressor Attack/Release Mode controls.
- **Classic: Suppressor mode:** Controls the level below which the suppressor reduces the signal gain. Think of the suppressor as a very slow gate or a level-triggered autofade.

Release



Modern Mode: Release Time of Compressor (range controlled by Attack/Release mode switch).
Classic Mode: Release time of Suppressor (SL = 3 seconds to FA = 1.25 seconds).

Important Note! The Release control operates backwards: turn *clockwise for faster* release rates and *counter-clockwise for slower* release rates. The knob is labeled **SL** for Slow on the left, and **FA** for Fast on the right, but it still feels weird.

- **Modern: Compressor mode:** Controls the release rate of the compressor gain stage. Release time range is set by the Compressor Attack/Release Mode control.
- **Classic: Suppressor mode:** Sets the release time of the Suppressor. **SL** (slow) = 3 seconds, **FA** (fast) = 1.25 seconds.

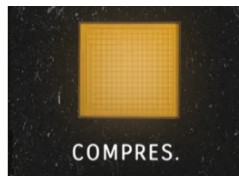
Depth



Modern Mode: Gain Reduction Limit of Compressor.
Classic Mode: Gain Reduction Limit of Suppressor.
0 dB effectively disables Dynamics for both modes.

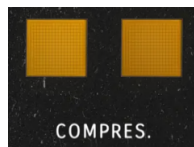
In both Compressor and Suppressor modes, **Depth** sets the maximum gain reduction to be applied by the processor.

Dynamics processor Enable / Gain Reduction Indicator



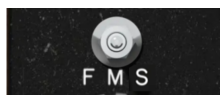
Enables the Dynamics block (Compressor in Modern Mode / Suppressor in Classic mode), and indicates Gain Reduction based on brightness.

In both Compressor and Suppressor modes, this push-button lamp switch enables/disables dynamics processing. When enabled, gain reduction is displayed by lamp brightness; the brighter the lamp, the more gain reduction is being applied.



In Dual-Mono mode, the Compressor Enable/Gain Reduction switch splits into two, with the two lamps showing independent left/right gain reduction. Clicking toggles the comp stage in/out as usual.

Compressor Attack / Release mode (Modern mode only)



Selects attack/release mode for the compressor. This is a zoned control. Click Left, Center, or Right to select the mode:

- F = Fast (0 Attack, Release 50-120ms)
- M = Medium (400 μ s Attack, Release 50-120ms)
- S = Slow (33ms Attack, Release 17-300ms)

Sets the Compressor Attack/Release mode. Attack times of each mode are fixed. Release times are set by the Release control.

- **Fast:** 0 Attack, 50 - 120ms Release range
- **Medium:** 400 μ s Attack, 50-120ms Release range
- **Slow:** 33ms Attack, 17-300ms Release range

EQ / Filter section

The EQ section of MBSI is a familiar vintage EQ layout consisting of a high frequency shelf, a sweepable midrange band, a low shelf, and cut filters at 40Hz and 10kHz.

In Classic mode, all knob controls are stepped, including the mid-band frequency sweep.

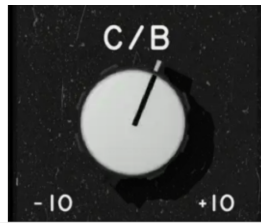
In Modern mode, aside from knob controls becoming continuous, the EQ functions are essentially the same with two important modifications:

1. a "Cut" toggle switch is added to turn Mid-Boost control into a Mid-Cut control, and
2. a "Both" switch allowing the 40Hz Lo-Cut and 10kHz Hi-Cut filters to be engaged at the same time

Keep in mind, aside from interacting with each other, each EQ section filter circuit also interacts with the inherent hardware [box tone characteristic](#), and with the HF energy bump of the **Mic** input model.

It *will* get crunchy when pushed, just like the hardware console.

Hi Shelf Gain



Selects the gain of the Hi Shelf. Stepped in Classic Mode. Hold <shift> to use stepped values in Modern Mode. Actual gain varies from calibration and readout, matching behavior of the hardware.

±10dB Hi Shelf gain control. Very wide slope. Frequency knee selected by the **Hi Shelf 8kHz or 10kHz switch** below.

Mid-band Boost



Selects the gain of the Mid Filter. Stepped in Classic Mode. Hold <shift> to use stepped values in Modern Mode. Actual gain varies from calibration and readout, matching behavior of the hardware.

- **Classic: Boost:** +14dB gain boost in 2dB steps for the mid-band bell filter.
- **Modern: Boost or Cut:**



Switches Mid Filter to 'Cut' Mode, gain is applied as cut rather than boost. Only available in Modern Mode.

Cut switch up = continuous gain boost up to +14dB for the mid-band bell filter.

Cut switch down = continuous gain reduction down to -14dB for the mid-band bell filter.

Mid-Band Frequency Select



Selects the center frequency for Mid Filter. Stepped in Classic Mode. Hold <shift> to use stepped values in Modern Mode. Filter frequency readout matches processing, but consistent with the hardware does not match the legend on the panel.

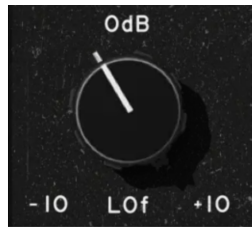
OK, bear with us through this, please.

The hardware mid-band filter is inductor based, so as you increase the selected frequency approaching 7-8kHz (the resonance of the inductor) the band Q gets narrower and gains amplitude, then opens up again as you go higher. At the highest frequency setting it interacts with the boards' inherent response characteristic, softening extreme boosts in that range.

Note: The silkscreen frequency labels on the console UI are just plain wrong, and apparently always have been. It's frankly a mystery. The actual frequency set by the control as measured on the hardware is shown by the numeric readout as you click and drag the control.

In reality, the lowest frequency setting is 140Hz, and the highest is 9.87kHz.

Low Shelf Gain



Selects the gain of the LF Shelf. Stepped in Classic Mode. Hold <shift> to use stepped values in Modern Mode. Actual gain varies from calibration and readout, matching behavior of the hardware.

±10dB Lo Shelf gain control. Very wide slope. Frequency knee selected by the Lo Shelf 60Hz or 100Hz switch below.

Hi Shelf 8kHz or 10kHz switch



Selects between 8k (On) and 10k (Off) for the HF Shelf.

Selects the knee frequency for the Hi Shelf. Lamp on = 8kHz knee. Lamp off = 10kHz knee.

Mid-band Filter Q Width switch

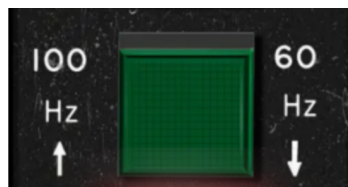


Selects between Narrow (On) and Wide (Off) Q for the Sweepable Mid Filter.

Sets the width (Q) of the Mid-band EQ stage. Lamp on = Narrow Q. Lamp off = Wide Q.

Note: Nearing 7-8kHz (the resonance of the mid-band inductor), narrow Q will have higher apparent amplitude at the center frequency than wide Q.

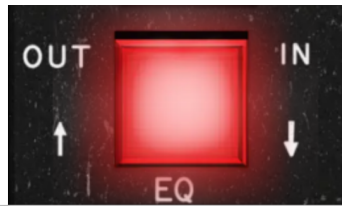
Low Shelf 60 Hz or 100Hz switch



Selects between 60 Hz (On) and 100 Hz (Off) for the LF Shelf.

Selects the knee frequency for the Lo Shelf. Lamp on = 60Hz. Lamp off = 100Hz.

EQ / Filter stage In/Out switch



Enables EQ when On.

Enable / disables the EQ section. Lamp on = EQ enabled. Lamp off = EQ disabled.

Low Cut and High Cut Filters switches



Selects between Low Cut, Off and High Cut Filter. This is a zoned control. Click Left, Center, or Right to select the mode.

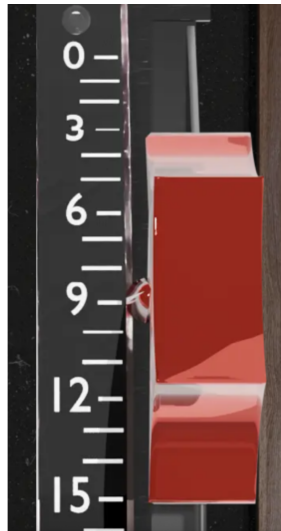
- **Classic: Filters OFF, 40Hz Cut or 10kHz Cut:**
OFF: No cut filter.
40Hz: Engages sharp cut filter below 40Hz.
10kHz: Engages sharp cut filter above 10kHz.
- **Modern: Filters OFF, 40Hz Cut, 10kHz Cut or BOTH:**



Enables both Low Cut and High Cut Filters if either is enabled.

Select either 40Hz or 10kHz and set **BOTH** switch UP to engage both 40Hz and 10kHz cut filters.

Output Fader



Selects the output gain of the strip. Stepped in Classic Mode. Hold <shift> to use stepped values in Modern Mode. The 9 mark on the fader corresponds to 0dB / unity gain.

The channel output fader on the original desk was a stepped resistor ladder attenuator with no active gain amplification circuit. At **0** on the fader it was unity: no gain change. Moving the fader down reduced the output level in 1dB steps: from 1dB to 30dB of attenuation.

The final click at the very bottom of the attenuator engaged a hardware relay which muted the signal entirely.

In console of the day, this was no big deal... actually preferred since ladder attenuators were cheaper, more reliable and sounded more transparent than active circuitry. In modern digital workflows, though, it might be a bit awkward.

For MBSI, fader operation has been modified in several ways.

1. **Fader Calibration:** The fader UI remains true to the original hardware and has not been altered, but DAW channelstrips generally have some make-up gain available at the output. This is especially necessary considering the Modern mode compressor stage.

In MBSI, unity gain is at the **9** mark on the fader. **9** is the default fader location when instantiating or resetting the plug-in.

This allows the fader to provide up to +9dB of output gain when set to **0**, and attenuation of -21dB when set to **30** on the fader control.

The true gain values are reported in the numeric pop-up below the fader as you move the control.

2. **Mute indicator light:** A small light has been added below the fader **30** mark. It is a dull yellow in normal operation but glows white when the fader is pulled all the way down to indicate the channel is muted.
3. **Fader transition from -21dB to Mute:** In Classic mode, rather than a hard relay switch type mute, the transition from 30 to Mute stop is interpolated to better hide the transition from -21 to digital zero.

In Modern mode, the fader attenuation range below **30** is interpolated and tapered down to about -60dB before engaging Mute. Hold the **Command** key while operating the Fader in this range for greater control.

6. Service and Support

Make Believe Studios 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: your_friends@makebelievestudio.com