
morel

# Performance Installation Guide

## MDSP SOFTWARE

MDSP10/8A
MDSP8/6A
MDSP8/4A

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# Connection to PC and Software

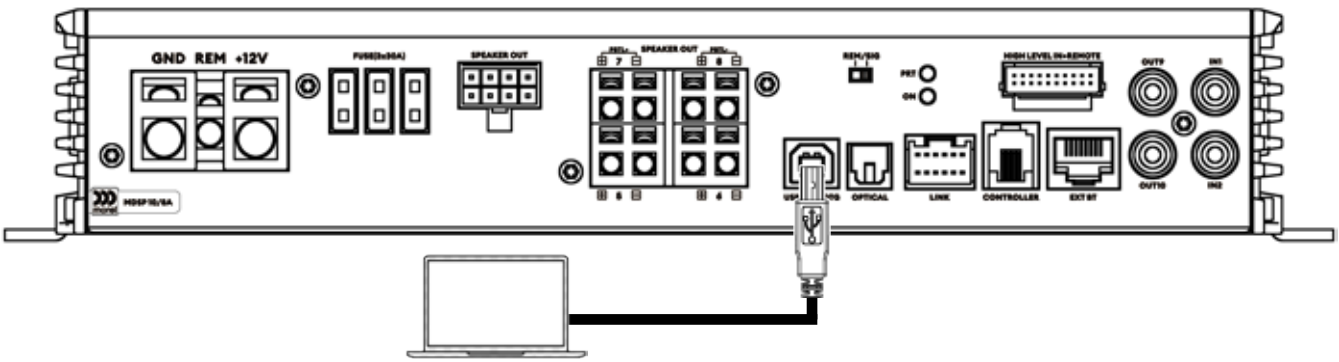
The MDSP amplifier can be customized with the Morel DSP Software, giving you full control over each of its 10 DSP channels. The software is intuitive and designed to make tuning your system straightforward.

## Before You Begin

- Download and install the latest version of Morel DSP Software from www.morelhifi.com
- Regularly check the website for software and firmware updates to ensure your MDSP runs with the latest features and improvements.
- Read the knowledge base for helpful tips and best practices.
- **Important:** Do not connect the amplifier to your computer until the software and USB driver are fully installed.

## Connecting Your MDSP

1. Connect your computer to the internet and visit www.MorelHiFi.com
2. Locate and download the latest version of the MDSP software.
3. Save the downloaded file to an easily accessible location on your computer.
4. Unzip the MDSP software folder.
5. Open the MDSP software to begin installation.
6. Launch the Morel DSP Software on your computer.
7. Connect the MDSP amplifier using the USB cable included in the package.
8. Power on the amplifier. The software will detect it automatically.




## Safety Notes

1. Keep the car radio volume at minimum during initial setup.
2. Avoid connecting any devices to the Line Out until your general settings are configured.
3. Incorrect setup, especially in fully active systems, can damage your speakers.

# Software Layout

The software interface is designed to provide a clear and efficient workflow, with all primary navigation functions located along the top of the screen. This layout allows quick and intuitive access to the main tuning, routing, and system configuration tools. By keeping essential controls readily accessible, the interface helps streamline the tuning process, reduces the need to switch between screens, and ensures that adjustments can be made efficiently while reviewing their impact on the system settings.

## Functionality Bar

The **Functionality Bar** contains system-level functions and status indicators that are visible regardless of which operation window is active. It provides a centralized area for accessing key controls, ensuring that essential tools are always within reach. This consistent visibility helps the user maintain a smooth workflow without needing to navigate away from the current operation window.


1. **Menu Bar** - Contains system-level functions including File, Option, Link, Reset, and Encrypt. These functions provide access to essential system settings and tools. More detailed information about each menu function can be found on page 26.

2. **Temperature** - Display shows the current operating temperature of the amplifier, allowing the user to monitor the device's thermal status during use.

3. **Preset** - Presets save all system settings, including EQ, levels, crossovers, and delay. The MDSP supports six presets for quick recall of different tuning profiles or system setups. More information on Presets on page 24.

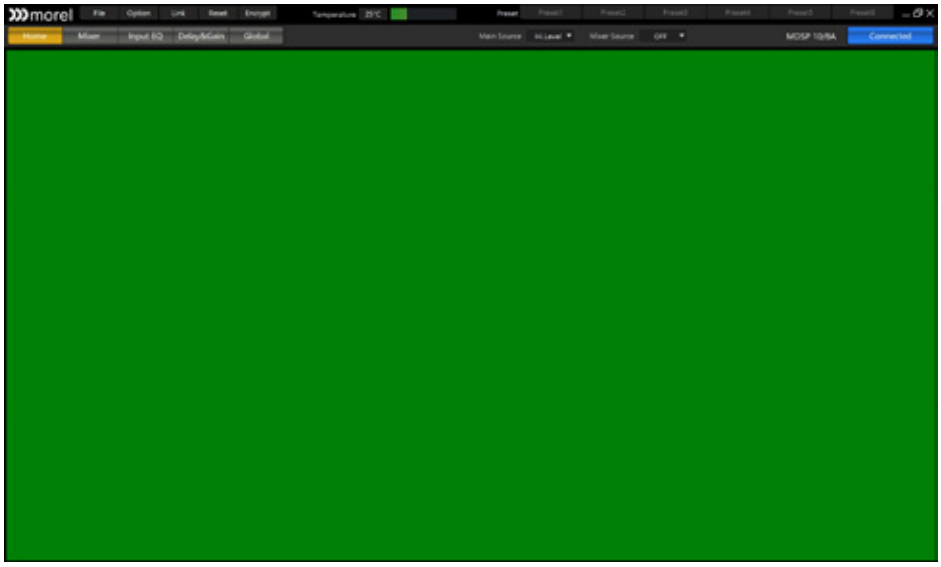
4. Device Status - This area displays the connection status and the currently connected device. A red Not Connected indicator means the device is disconnected, while a green Connected indicator shows an active connection. To disconnect, click the green Connected button. To connect, click the red Not Connected button.

5. Source Settings - The Source Selection setting allows the user to choose the Main Source, which serves as the default audio input. The Mixer Source lets the user assign a secondary source that temporarily overrides the Main Source when an audio signal is detected. After the Mixer Source stops sending audio for more than 5 seconds, the system automatically switches back to the Main Source. Additional options, including controlling the attenuation of the Main Source when the Mixer Source is active, can be found in the Option menu. See page 27 and 29 for more details.

6. Main Operational Window Navigation Bar - Navigation between the various processing and system pages is managed through the Navigation Bar, which provides direct access to each function. Selecting an item from the Navigation Bar updates the Main Operational Window to show the corresponding tools, controls, and adjustment options.

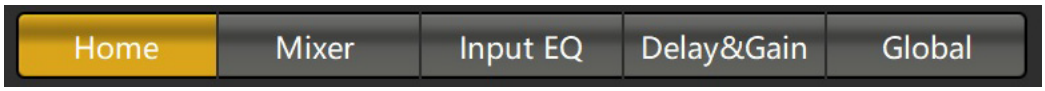
## Main Operational Window

The Main Operational Window occupies the primary portion of the screen and displays controls and parameters for a selected function. Navigation between processing and system pages is done using the Navigation Bar at the top of the screen (see next section). Selecting a function updates the window to show the corresponding tools, controls, and adjustment options. This layout allows the user to quickly move between system views while maintaining access to menu functions, system status, and device information.



The middle section of the screen, highlighted in green, shows the area that changes when using the Main Operational Window Navigation Bar (see next page). This section updates to display all the tools and controls related to the operation selected in the bar.

## Main Operational Window Navigation Bar




### HOME

The **Home** screen serves as the main output control center of the amplifier. From this view, each output channel can be individually adjusted, including level, polarity, equalization (EQ), crossover settings, and delay. This page is typically where the majority of output-side tuning and system configuration is performed.

### MIXER

The **Mixer** is used to assign input channels to output channels and to determine how much signal from each input is routed to each output. Signals can also be summed within this screen as needed. This section additionally functions as the primary gain-setting tool, allowing the amplifier to be properly matched to the incoming signal voltage for optimal signal-to-noise ratio and headroom.

### INPUT EQ

**Input EQ** is used to correct the incoming audio signal before it is routed to the outputs. This section is primarily intended for high-level (speaker-level) input sources, where factory equalization, filtering, or timing may need to be corrected. Per-channel adjustments for level, EQ, delay, and polarity can be made to properly condition the signal prior to further processing.

### DELAY & GAIN

The **Delay & Gain** window provides a streamlined method for adjusting delay and level for individual channels or for multiple channels simultaneously. Grouping channels in this view allows for faster system alignment and level balancing during the tuning process.

### GLOBAL

The **Global** window is intended for final system tuning. It allows adjustments to be applied to the entire system at once rather than to individual channels. After each channel has been properly corrected and the full system is playing, this section is often used to make fine, overall adjustments that improve system balance, cohesion, and tonal consistency, helping to complete the tuning process efficiently.

# Home Screen

The **Home Screen** serves as the main output control hub for the DSP. From this window, the user can adjust key audio parameters such as crossovers, delay, output levels, polarity, and EQ settings. It provides a centralized location for managing the overall system sound, making it easy to optimize the performance of each channel. In addition to these core functions, many other system features are accessible from the Home Screen, ensuring that all adjustments affecting the amplifier's output can be made quickly and efficiently in one place.

## Channel Selector and Control

The Channel Selector and Control section allows the user to select the output channel they wish to adjust. This section includes channel labeling, level control, polarity, delay, mute, solo, and a clipping indicator, providing all essential controls for managing each channel's output.


1. **Channel Selector** - Displays a list of all output channels across the top of the section. Selecting a channel makes it active for adjustment, illuminates the channel indicator in gold, and updates the associated controls, graph, EQ, and crossover settings for that channel.

2. **PBTL** - The PBTL button configures amplifier channels for bridged operation, combining paired channels to deliver increased power to a single load. Activating PBTL applies the necessary internal routing and channel configuration. This mode is typically used for higher-power speakers or subwoofers. Refer to the hardware manual for proper wiring when using PBTL mode.

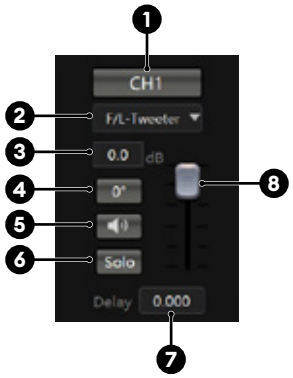
3. Clipping Indicator - Displays the output status of the selected channel. A green light indicates a clean signal, yellow indicates minor clipping, and red indicates heavy clipping. If heavy clipping is not addressed, it may cause the amplifier to enter protect mode. Monitoring the clipping indicator helps ensure the amplifier is operating within safe limits and prevents potential damage to speakers.

4. Scroll Bar - Allows the user to view additional channels that are not immediately visible on the screen. By clicking and dragging the scroll, the user can bring any channel into view. This ensures there is enough space to comfortably work on each channel while accessing all available channels in the system.

## Channel Selector and Control

The Channel Selector and Control section allows the user to select the output channel they wish to adjust. This section includes channel labeling, level control, polarity, delay, mute, solo, and a clipping indicator, providing all essential controls for managing each channel's output.

When a channel is selected, it illuminates and turns gold, clearly indicating the active channel. Selecting a channel also updates the graph and EQ areas of the window to reflect the settings for that specific output channel, ensuring that all adjustments are applied to and displayed for the selected channel.




1. Channel Selector - Allows the user to select the output channel to be adjusted. When a channel is selected, it illuminates gold to clearly indicate the active channel. Selecting a channel also updates the graph and EQ sections of the window to reflect that channel's settings.

2. Channel Labeling - Displays the assigned name for each output channel, making it easier to identify speaker locations or functions within the system.

3. Level - Displays the current output level setting for the selected channel, providing a precise numerical reference for gain adjustment. Output level can be adjusted from +12 dB through –59.5 dB, down to Off.

4. Polarity - Allows the user to invert the polarity of the selected output channel. This is useful for correcting phase relationships between speakers.

5. Mute - Temporarily silences the selected output channel without changing its level or settings.

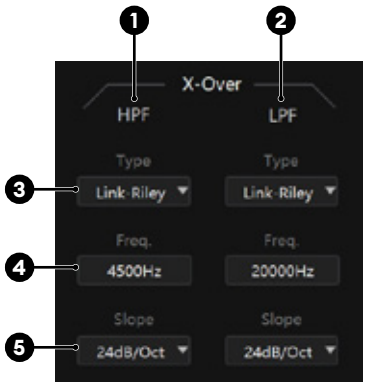
6. Solo - Plays only the selected output channel while muting all others, allowing the user to isolate and evaluate a single channel during tuning.

7. Delay - Adjusts the time delay applied to the selected output channel. This is used for time alignment, ensuring sound from different speakers reaches the listener at the correct time.

8. Level Slider - Allows the user to adjust the output level of the selected channel. Changes made with the slider are reflected in the Level readout and affect the channel's output volume.

## Crossovers

The Crossovers section allows the user to apply crossovers to each output channel. High-pass, Low-pass, or Band-pass crossovers can be assigned per output channel. The user can set the crossover frequency, select the crossover type—Butterworth, Linkwitz-Riley, or Bessel—and choose a slope from 6dB to 48dB per octave. This provides precise control over the range of frequencies sent to each speaker.




1. High-Pass - The High-Pass filter allows frequencies above the selected crossover frequency to pass while reducing frequencies below it. This is commonly used to protect speakers from low-frequency content they are not designed to reproduce.

2. Low-Pass - The Low-Pass filter allows frequencies below the selected crossover frequency to pass while reducing frequencies above it. This is typically used for subwoofers or speakers intended to reproduce lower frequency ranges.

3. Type - The crossover Type determines the filter alignment used for the selected crossover. Available types include Butterworth, Linkwitz-Riley, and Bessel, each offering different phase and roll-off characteristics that affect how frequencies transition between speakers.

4. Frequency - The Frequency setting determines the point at which the crossover begins filtering the signal. This value defines where the High-Pass or Low-Pass filter engages and should be selected based on the speaker's capabilities and system design.

5. Slope - The Slope setting controls how steeply the signal is attenuated beyond the crossover frequency. Slopes range from 6 dB to 48 dB per octave, allowing the user to choose a gradual or aggressive frequency roll-off depending on the application.

## System Volume Control


### MASTER VOLUME

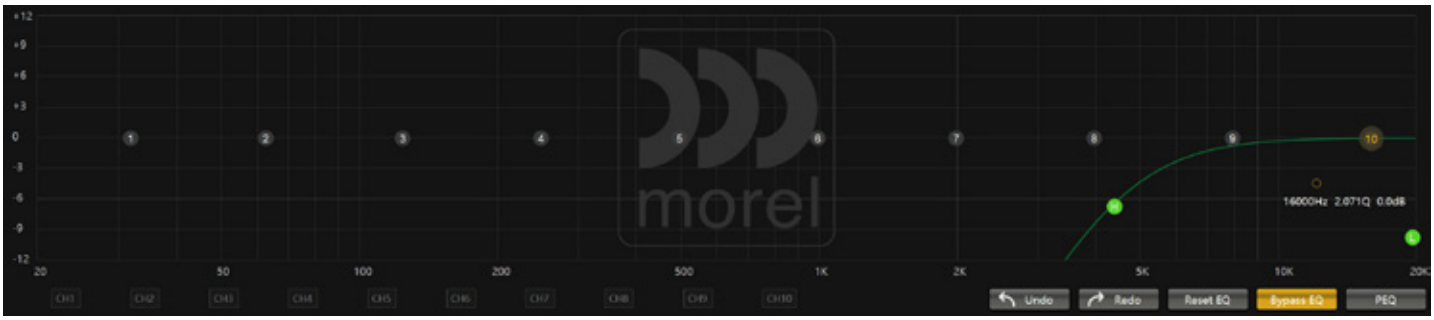
The **Master Volume** allows the user to control the overall output volume of the system directly from the screen, without needing to adjust the source device. This is especially useful when tuning outside the vehicle or when the source volume is not easily accessible. Adjusting the Master Volume will change the output level for all channels, including the subwoofer.

### SUBWOOFER VOLUME

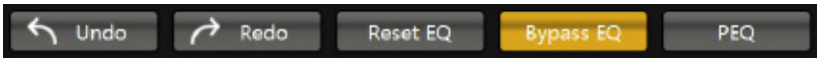
The **Subwoofer Volume** control allows the user to adjust the subwoofer level independently of the main channels, giving extra flexibility during tuning or playback. The subwoofer volume can be increased up to the current Master Volume setting, ensuring it remains balanced with the overall system output. This allows precise control over bass levels without affecting the other channels.

## Main Graph Screen

The Main Graph Screen visually represents the EQ adjustments and crossover effects applied to the signal. EQ adjustments can be made using the on-screen control points, and dragging the points allows for faster, more intuitive changes, making it easier to fine-tune the system efficiently.




It is important to note that this display provides an approximation of the signal and does not reflect the exact acoustic response inside the vehicle. Factors such as speaker placement, vehicle acoustics, and listening environment can affect how the adjustments translate to actual sound, so the graph should be used as a guide rather than a precise measurement of the in-vehicle audio performance.




### UNDO

The **Undo** function allows the user to reverse the most recent change or adjustment. Up to 10 previous changes can be stepped back sequentially. **Undo** history is only retained while remaining on the current window; navigating to another window will clear the undo memory.

### RESTORE

The **Restore** function allows the user to reapply the most recently undone change or adjustment. Up to 10 changes can be stepped forward sequentially. **Restore** history is only retained while remaining on the current window; navigating to another window will clear the redo memory.

### RESET EQ

The **Reset EQ** function returns all EQ bands to 0 dB and restores the Q value to its default setting. This allows the user to quickly clear any EQ adjustments and return to a neutral baseline, making it easier to start fresh when tuning or troubleshooting the system.

### BYPASS EQ

The **Bypass EQ** function toggles all applied EQ adjustments on and off. This allows the user to instantly compare the natural, unprocessed sound to the EQ-adjusted signal, helping to clearly hear the impact of any changes made during tuning and to identify potential issues.

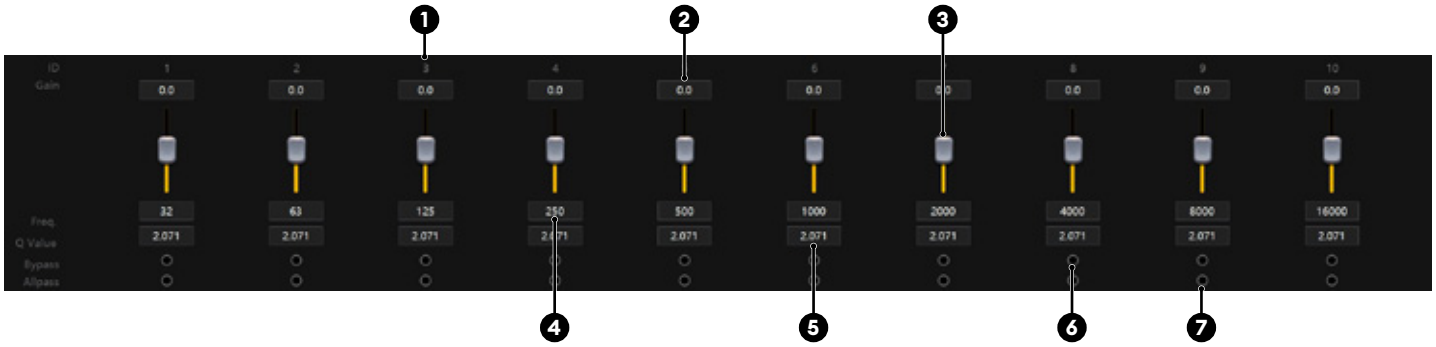
When the **Bypass EQ** button is active, it will illuminate gold, indicating that all EQ processing is bypassed. Note: If no adjustments have been made to any EQ band, the Bypass EQ button will remain illuminated by default, as there are no active EQ changes being applied to the signal.

### PEQ

The PEQ button toggles the EQ bands between parametric and graphic modes. Parametric EQ (PEQ) is the default mode, allowing precise adjustment of each band's frequency, amplitude, and Q. Pressing the button switches the bands to graphic mode, providing a simplified interface with fixed-frequency and Q adjustments.

## Filters

The Filters Bar contains 10 bands of parametric EQ that allow the user to shape the tonal balance of the system and correct acoustic issues within the vehicle, such as peaks, dips, and resonances caused by speaker placement and cabin acoustics. It works in tandem with the Main Graph Screen to visually display the effects of each EQ band. Adjustments to amplitude, focus frequency, and Q value can be made either directly within the Filters Bar or by manipulating the corresponding control points in the Main Graph Screen, providing flexible and intuitive control over the system's EQ settings.



1. Band Number - Identifies each EQ band and corresponds to the numbered dot in the Main Graph Screen. This dot represents the center point of the EQ band and shows how the band is affecting the output signal. The dot can be clicked and dragged directly in the Main Graph Screen to adjust the EQ band, just like in previous graph screens.

2. Band Amplitude - The Band Amplitude controls the amount of gain or cut applied to each EQ band. The user can adjust each band within a range of −12dB to +12dB. This box also serves as the manual entry field and provides a level readout for the selected EQ band.

3. Band Amplitude Slider - Provides a visual and interactive way to adjust the gain or cut of each EQ band. It works in conjunction with the Band Amplitude box above, so changes made in the slider are reflected in the box, and vice versa. This allows precise control over each band's output level, making it easier to fine-tune the system's sound.

4. Band Focus Frequency - Determines the specific Hertz where the center point of the EQ band is applied. This value can be adjusted by manually entering a frequency in the box or by dragging the corresponding dot in the Main Graph Screen.

5. Q Value - Sets the bandwidth of the EQ band. Lower Q values create a wider affected frequency range, while higher Q values create a narrower, more targeted range. Adjusting the Q value allows precise control over how broadly or narrowly each band influences the audio signal.

6. Bypass - Turns the selected EQ band on and off, allowing the user to quickly compare the processed and unprocessed signal. This makes it easier to evaluate changes or identify potential issues during tuning.

7. All-Pass - The All-Pass filter applies a 180-degree phase shift at the selected focus frequency without affecting the amplitude of the signal. This allows the user to adjust phase alignment between speakers or channels while maintaining the original signal level.

## Drag Adjust EQ Bands

Drag-adjust EQ bands allow the user to directly manipulate each EQ band using the corresponding dot in the Main Graph Screen. Dragging the dot upward increases boost, while dragging it downward applies cut to the selected frequency range. Moving the dot left decreases the center frequency, and moving it right increases the center frequency.

This drag-and-drop control method provides a fast and intuitive way to make EQ adjustments without manually entering values. Changes made in the Main Graph Screen are reflected in the corresponding EQ controls, allowing the user to visually shape the frequency response while maintaining precise numerical control when needed.

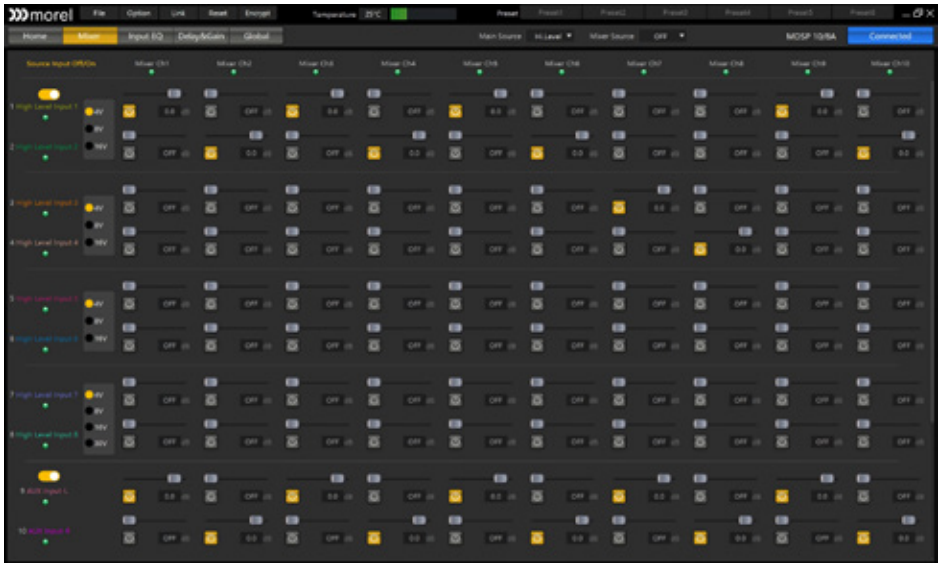

The gold rings located above or below the center line of the graph control the Q value of the EQ band. Dragging these rings left or right widens or narrows the affected frequency range, determining how much of the surrounding frequencies are influenced by the adjustment. A wider Q affects a broader range of frequencies and is useful for gentle tonal shaping, while a narrower Q targets a more specific frequency range, making it ideal for correcting localized peaks or resonances. This provides precise control over how broad or focused each EQ adjustment is.

Wide Q

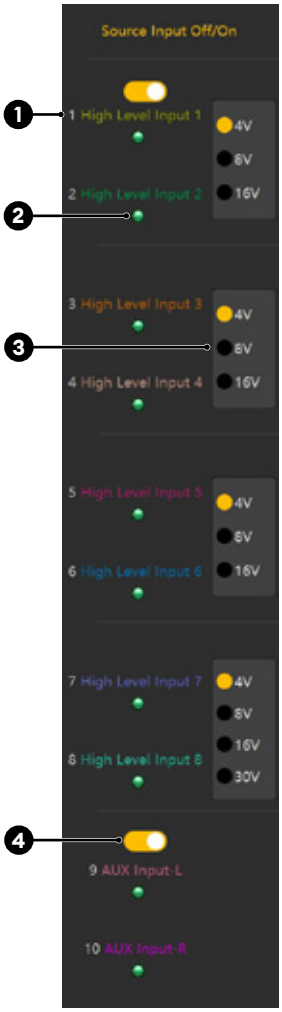
Narrow Q

# Mixer Screen

The Mixer handles input-to-output routing, signal level control, and input summing. It also serves as the primary gain-setting interface, allowing proper matching of the amplifier to the incoming signal voltage for optimal performance.



## Input Channels




1. Input Channel - This section shows all sources entering the DSP, giving the user control over every input. Supported sources include High-Level (Speaker), Low-Level (RCA), Optical, USB-OTG, and Bluetooth. Each source has its own input channel, making it easy to see which are connected and ready for use, manage multiple devices, and ensure correct signals for mixing.

2. Clipping Indicator - Directly below each input channel callout is a clipping indicator. Green means the signal is clean, yellow indicates some clipping, and red indicates heavy clipping. Heavy clipping on an input channel can potentially cause damage to products being powered by the amplifier, so it should be addressed immediately.

3. Input Sensitivity Selector - The Input Sensitivity Selector adjusts the input sensitivity to maximize the amplifier's output potential by matching the input signal to the gain setting. This feature is only available on the high-level inputs and is used to ensure that the incoming signal is properly aligned with the amplifier's input stage, allowing the system to achieve optimal performance without distortion.

   The sensitivity ranges are divided as follows:
   - 0–4 V RMS
   - 4–8 V RMS
   - 8–16 V RMS
   - Channels 7 and 8 only: 16–30 V RMS

Selecting the correct input sensitivity ensures that the amplifier receives the proper signal level, maximizing output while preventing overdriving or clipping at the input stage.

4. Each input channel can be toggled on or off by clicking the gold toggle switch located above the channel. This allows the user to manage which sources are active, customize the signal routing, streamline the mixing process, and ensure that only the desired inputs contribute to the system's output.

## Output Channels

The top of the Mixer window displays the output channels, which correspond to the channels on the Home screen and represent the signals sent to the aftermarket system's speakers.


Below each channel callout are clipping indicators that show the status of the amplifier's output. Green indicates a clean signal, yellow signals some clipping, and red indicates heavy clipping that needs to be addressed. If clipping is not corrected, the channel may enter protect mode to prevent damage to the system.

## Channel Mixing and Gain Sensitivity

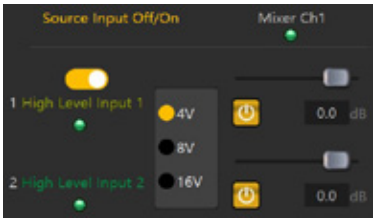
This section allows the user to adjust the sensitivity of each input signal relative to the amplifier's output power. Multiple input channels can be enabled for a single output channel, allowing their signals to be summed together. This is useful when combining multiple inputs to create a full-range signal.

Input sensitivity is adjusted using the slider bars. The adjustment range is from +6 dB to −48 dB, and an input can be disabled entirely by clicking the power button next to the slider. This range allows the input signal voltage to be matched to the amplifier's output capability, even when the exact input voltage is unknown. Output clipping indicators can be used to confirm whether the selected dB setting is appropriate or set too high.


For high-level inputs, different input voltage ranges can be selected to better match the incoming signal level. Selecting the correct voltage range optimizes the effectiveness of the input sensitivity slider, providing finer adjustment control and helping to achieve maximum output without introducing distortion.

## How to Sum Signals

Summing allows multiple input signals to be combined and routed to a single output channel, or for a single input signal to be routed to multiple output channels. This provides flexibility when configuring the system's signal routing and is commonly used to create a full-range signal from multiple input channels.




To sum multiple inputs to one output, align the desired input channels vertically with the target output channel. The selected input signals are combined and sent to that output, where they can be further adjusted in the Home screen before being delivered to the connected speaker.


To route a single input signal to multiple outputs, align that input channel with each desired output channel. This is commonly used with RCA (AUX) inputs, such as assigning the left RCA channel to all left-side output channels of the amplifier. The same input signal is then distributed to each selected output, allowing consistent signal routing across multiple channels.

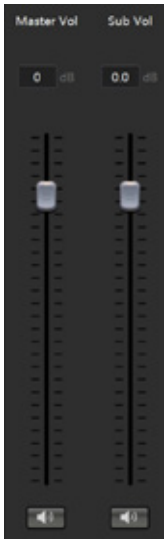
## Matching Input Signal Voltages

If the input signals have different voltages, the sensitivity sliders can be used to match them and maximize the output channel. For instance, Channels 1 and 3 may each have a 4 V RMS signal while Channel 5 has a 12 V RMS signal. By selecting the appropriate sensitivity range for each channel and adjusting the sliders, all signals can be balanced so the amplifier perceives them at the same level.

# Input EQ Window

The Input EQ is used to adjust signals from the High-Level (Speaker-Level) input of the DSP. OEM audio systems often apply their own EQ, delay, level, and filters, so these signals may require correction to achieve optimal performance in an aftermarket audio system. The specific adjustments needed will depend on the goals and configuration of the aftermarket system and can vary significantly. For additional guidance and a deeper understanding, visit www.MorelHiFi.com for videos and FAQs.

## System Volume Control




### MASTER VOLUME

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### SUBWOOFER VOLUME

The **Subwoofer Volume** control allows the user to adjust the subwoofer level independently of the main channels, giving extra flexibility during tuning or playback. The subwoofer volume can be increased up to the current Master Volume setting, ensuring it remains balanced with the overall system output. This allows precise control over bass levels without affecting the other channels.

## Main Graph Screen

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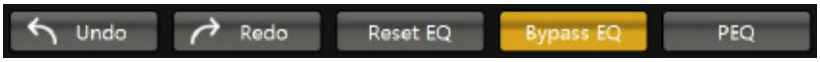


## UNDO

The **Undo** function allows the user to reverse the most recent change or adjustment. Up to 10 previous changes can be stepped back sequentially. **Undo** history is only retained while remaining on the current window; navigating to another window will clear the undo memory.

## RESTORE

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## RESET EQ

The **Reset EQ** function returns all EQ bands to 0 dB and restores the Q value to its default setting. This allows the user to quickly clear any EQ adjustments and return to a neutral baseline, making it easier to start fresh when tuning or troubleshooting the system.

## BYPASS EQ

The **Bypass EQ** function toggles all applied EQ adjustments on and off. This allows the user to instantly compare the natural, unprocessed sound to the EQ-adjusted signal, helping to clearly hear the impact of any changes made during tuning and to identify potential issues.

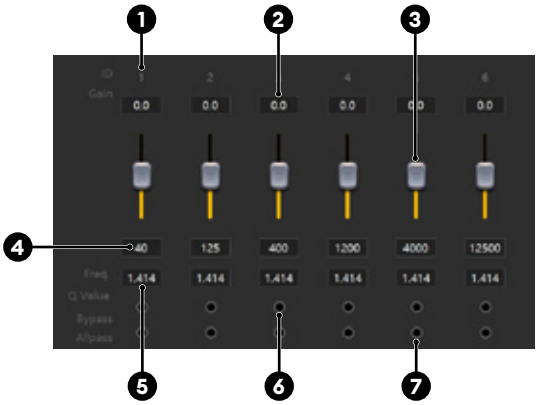
When the **Bypass EQ** button is active, it will illuminate gold, indicating that all EQ processing is bypassed. Note: If no adjustments have been made to any EQ band, the Bypass EQ button will remain illuminated by default, as there are no active EQ changes being applied to the signal.

## PEQ

The PEQ button toggles the EQ bands between parametric and graphic modes. Parametric EQ (PEQ) is the default mode, allowing precise adjustment of each band's frequency, amplitude, and Q. Pressing the button switches the bands to graphic mode, providing a simplified interface with fixed-frequency and Q adjustments.

## Filters

The lower left corner of the screen provides six fully parametric EQ bands for each input channel. These EQ bands are intended to correct or counteract the factory equalization applied by an OEM audio system before further signal processing. Each channel includes six independent bands, allowing adjustment of Q values from 0.404 to 28, gain from +12 dB to −12 dB, and center frequency selection across the full 20 Hz to 20 kHz range. The EQ bands can also be manipulated directly in the Main Graph Screen by moving the corresponding dots, providing an intuitive, visual method for adjusting frequency, gain, and bandwidth.




1. Band Number - Identifies each EQ band and corresponds to the numbered dot in the Main Graph Screen. This dot represents the center point of the EQ band and shows how the band is affecting the output signal. The dot can be clicked and dragged directly in the Main Graph Screen to adjust the EQ band, just like in previous graph screens.

2. Band Amplitude - The Band Amplitude controls the amount of gain or cut applied to each EQ band. The user can adjust each band within a range of −12dB to +12dB. This box also serves as the manual entry field and provides a level readout for the selected EQ band.

3. Band Amplitude Slider - Provides a visual and interactive way to adjust the gain or cut of each EQ band. It works in conjunction with the Band Amplitude box above, so changes made in the slider are reflected in the box, and vice versa. This allows precise control over each band's output level, making it easier to fine-tune the system's sound.

4. Band Focus Frequency - Determines the specific Hertz where the center point of the EQ band is applied. This value can be adjusted by manually entering a frequency in the box or by dragging the corresponding dot in the Main Graph Screen.

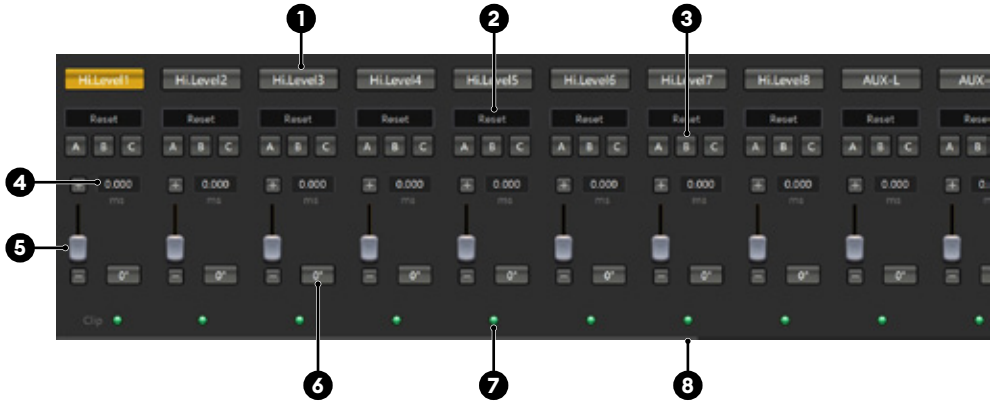
5. Q Value - Sets the bandwidth of the EQ band. Lower Q values create a wider affected frequency range, while higher Q values create a narrower, more targeted range. Adjusting the Q value allows precise control over how broadly or narrowly each band influences the audio signal.

6. Bypass - Turns the selected EQ band on and off, allowing the user to quickly compare the processed and unprocessed signal. This makes it easier to evaluate changes or identify potential issues during tuning.

7. All-Pass - The All-Pass filter applies a 180-degree phase shift at the selected focus frequency without affecting the amplitude of the signal. This allows the user to adjust phase alignment between speakers or channels while maintaining the original signal level.

## Channel Selection and Delay

This section serves as the input channel selector and also allows adjustment of channel delay for each input. When a channel is selected, the Main Graph Screen and EQ section update to reflect the settings for that specific input.




1. Channel Selector - Displays a list of all input channels across the top of the section. Selecting a channel makes it active for adjustment, illuminates the channel indicator in gold, and updates the associated controls, graph, EQ, and delay settings for that channel.

2. Reset - Returns the selected channel's delay value to 0. After Reset is pressed, the button changes to Restore, allowing the user to revert the delay setting back to its previous value, functioning as an undo for the last reset action.

3. Grouping - Channels can be grouped using the letters A, B, and C to adjust multiple channels simultaneously. Clicking a letter assigns the selected channel to that group. To adjust a group, any channel within it must be selected; adjustments will then apply to all grouped channels. Adjustments made outside the group affect only the selected channel. Likewise, if a grouped channel is adjusted while a different channel is selected, only the adjusted channel's delay is affected.

4. Delay - The delay box allows you to manually enter the exact delay value if known. When using the slider, the delay box displays the current delay setting. The default unit for delay is milliseconds, but it can also be changed to centimeters or inches.

5. Delay Slider - The delay slider allows you to adjust the input delay by dragging the slider to the desired value. For finer adjustments, the plus (+) and minus (−) buttons can be used.

6. Polarity - Reverses the polarity of the input signal, which can help correct phase issues, ensure proper speaker alignment, or resolve cancellation when combining multiple signals.

7. Clipping Indicator - Alerts the user when the input signal approaches or exceeds the maximum allowable level. The indicator shows Green for safe levels, Yellow for approaching clipping, and Red for clipping, helping prevent signal overload and distortion.

8. Channel Scroll Slider - A horizontal slider located at the bottom of the input section. It allows you to scroll through and view additional input channels that may not be visible on the screen, making it easier to select and adjust any channel in the system.

# Delay & Gain Window

(NOT AVAILABLE ON MDSP6/4A)

The **Delay & Gain** window lets you quickly adjust per-channel delay and gain, providing full control from a single interface. You can make changes to all settings without selecting a specific channel. When fine-tuning the soundstage or emphasizing certain speakers, this window allows fast, precise adjustments to efficiently complete the system tuning.

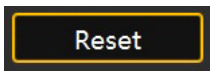
## Channel Selector


The **Channel Selector** is used to choose which channel is currently active for adjustment. While many settings in this window can be changed without selecting a specific channel, the Channel Selector becomes essential when working with individual channels or channel groups.

When a single channel is selected, any delay or gain adjustments apply only to that channel. When a channel that belongs to a group is selected and the group is active, adjustments will apply to all channels within that group. Active grouped channels are visually indicated by illuminating in gold, providing clear feedback on which channels are being adjusted.

This combination of channel selection and grouping allows for precise individual tuning as well as efficient multi-channel adjustments when shaping the soundstage or balancing speaker output.

## Reset




The **Reset** button returns all adjustments on the selected channel to 0. This includes both delay and gain, regardless of any changes made in this window or others. Pressing this button will set the channel's delay and level back to their default zero values.

## Grouping


Channels can be grouped using the letters A, B, C, and D, allowing multiple channels to be adjusted simultaneously. Clicking a letter assigns the selected channel to that group. When other channels are assigned to the same group, any adjustments made while the group is selected will apply to all grouped channels.

To make adjustments within a group, the user must first select a channel in the group using the Channel Selection buttons. All grouped channels will then illuminate in gold to indicate they are active.

If adjustments are made to a channel outside the currently selected group, only that channel will be affected, even if it belongs to a group.

Example:


1. Assign the left and right front channels to Group A by clicking the A group letter on each channel.


2. Use the Channel Selector to select one of the front channels assigned to Group A.
3. All channels assigned to Group A will illuminate in gold, indicating they are linked.
4. Adjust delay or gain. The changes will be applied simultaneously to both front channels.

# Global Window

The **Global** mode is used to tune the entire system as a whole. After all individual channel adjustments and corrections have been made and the system is playing together, certain frequency areas may become emphasized or reduced in overall output.

**Global** allows EQ to be applied across all channels simultaneously, enabling final refinement of the system's overall tonal balance without altering any individual channel settings.

## Main Graph Screen

The **Main Graph Screen** provides a visual representation of the EQ adjustments applied to the signal. This display is an approximation and does not reflect the exact signal changes. As with other graph screens, EQ adjustments can be made using the on-screen control points and drag controls.


### UNDO

The **Undo** function allows the user to reverse the most recent change or adjustment. Up to 10 previous changes can be stepped back sequentially. **Undo** history is only retained while remaining on the current window; navigating to another window will clear the undo memory.

### RESTORE

The **Restore** function allows the user to reapply the most recently undone change or adjustment. Up to 10 changes can be stepped forward sequentially. **Restore** history is only retained while remaining on the current window; navigating to another window will clear the redo memory.

### RESET EQ

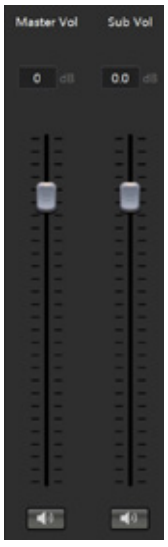
The **Reset EQ** function returns all EQ bands to 0 dB and restores the Q value to its default setting. This allows the user to quickly clear any EQ adjustments and return to a neutral baseline, making it easier to start fresh when tuning or troubleshooting the system.

### BYPASS EQ

The **Bypass EQ** function toggles all applied EQ adjustments on and off. This allows the user to instantly compare the natural, unprocessed sound to the EQ-adjusted signal, helping to clearly hear the impact of any changes made during tuning and to identify potential issues.

When the **Bypass EQ** button is active, it will illuminate gold, indicating that all EQ processing is bypassed. Note: If no adjustments have been made to any EQ band, the Bypass EQ button will remain illuminated by default, as there are no active EQ changes being applied to the signal.

## System Volume Control




### MASTER VOLUME

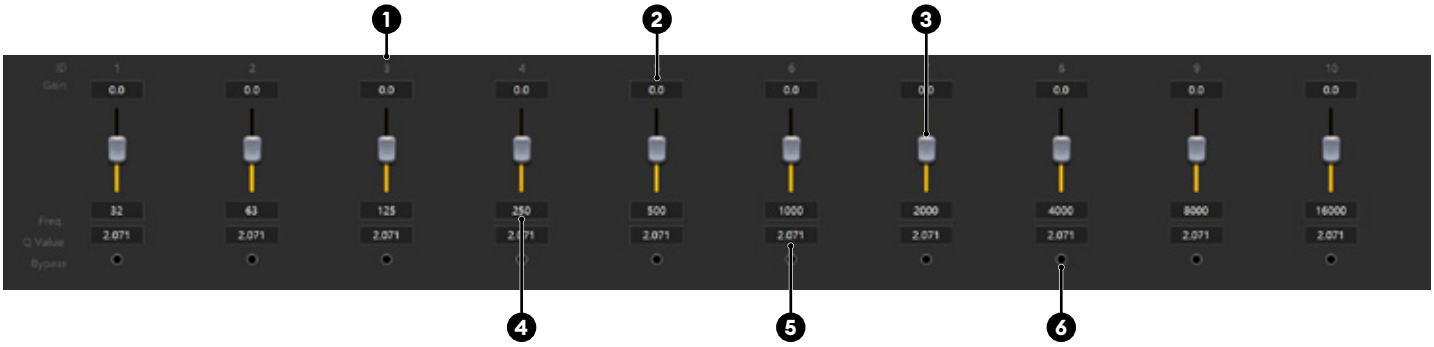
The **Master Volume** allows the user to control the overall output volume of the system directly from the screen, without needing to adjust the source device. This is especially useful when tuning outside the vehicle or when the source volume is not easily accessible. Adjusting the Master Volume will change the output level for all channels, including the subwoofer.

### SUBWOOFER VOLUME

The **Subwoofer Volume** control allows the user to adjust the subwoofer level independently of the main channels, giving extra flexibility during tuning or playback. The subwoofer volume can be increased up to the current Master Volume setting, ensuring it remains balanced with the overall system output. This allows precise control over bass levels without affecting the other channels.

## Filters Bar

The Filters Bar in the Global window contains 10 bands of parametric EQ. It works in tandem with the Main Graph Screen to display the effects of each EQ band visually. Adjustments to each band's amplitude, focus frequency, and Q value can be made either directly in the Filters Bar or by manipulating the corresponding dots in the Main Graph Screen, providing multiple ways to control and visualize the EQ settings.




1. Band Number - Identifies each EQ band and corresponds to the numbered dot in the Main Graph Screen. This dot represents the center point of the EQ band and shows how the band is affecting the output signal. The dot can be clicked and dragged directly in the Main Graph Screen to adjust the EQ band, just like in previous graph screens.

2. Band Amplitude - The Band Amplitude controls the amount of gain or cut applied to each EQ band. The user can adjust each band within a range of −12dB to +12dB. This box also serves as the manual entry field and provides a level readout for the selected EQ band.

3. Band Amplitude Slider - Provides a visual and interactive way to adjust the gain or cut of each EQ band. It works in conjunction with the Band Amplitude box above, so changes made in the slider are reflected in the box, and vice versa. This allows precise control over each band's output level, making it easier to fine-tune the system's sound.

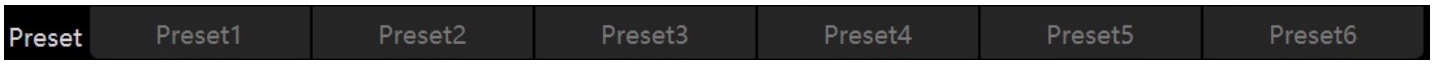
4. Band Focus Frequency - Determines the specific Hertz where the center point of the EQ band is applied. This value can be adjusted by manually entering a frequency in the box or by dragging the corresponding dot in the Main Graph Screen.

5. Q Value - Sets the bandwidth of the EQ band. Lower Q values create a wider affected frequency range, while higher Q values create a narrower, more targeted range. Adjusting the Q value allows precise control over how broadly or narrowly each band influences the audio signal.

6. Bypass - Turns the selected EQ band on and off, allowing the user to quickly compare the processed and unprocessed signal. This makes it easier to evaluate changes or identify potential issues during tuning.

# Presets

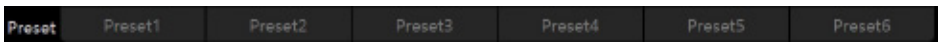
Presets are used to store all system settings and tuning adjustments into a saved profile, including routing, EQ, levels, crossovers, delay, and other configuration parameters. The MDSP supports up to six presets, allowing multiple configurations and tunings to be saved and quickly recalled. This gives the tuner the flexibility to create different listening profiles, system layouts, or tuning options to accommodate various listening preferences, source types, or vehicle conditions.



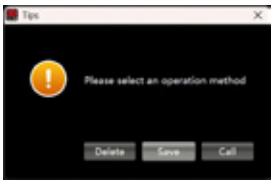

## Saving a Preset

Saving a preset is accomplished using the following procedure:

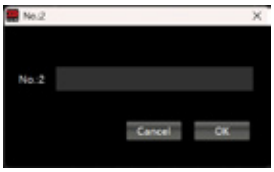
1. Click the desired preset location in the Preset Bar where you wish to save the current configuration.




2. A pop-up window will appear giving the user options to Save, Delete, or Call a preset. Click the **Save** button to store the preset.




3. A pop-up window will appear prompting you to enter a name for the preset. Enter a name (up to the character limit) and press **Enter**.

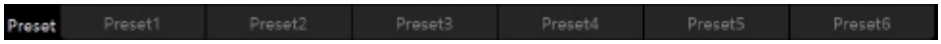



3. The preset will be saved and the entered name will be displayed in the Preset Bar.

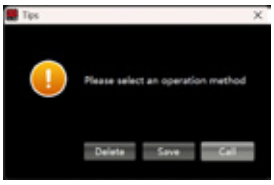
## Calling a Preset

Calling a preset is accomplished using the following procedure:

1. Click the desired preset in the Preset Bar that you wish to load to the DSP.




2. Click **CALL** to recall and apply the selected preset.

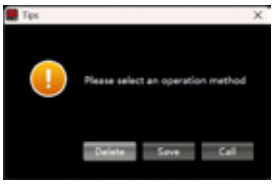



3. A loading bar will appear on the screen while the preset is being loaded. Once complete, the preset will be fully applied.

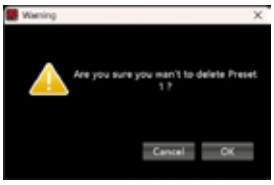
## Deleting a Preset

Saving a preset is accomplished using the following procedure:

1. Click the desired preset location in the Preset Bar where you wish to save the current configuration.




2. A pop-up window will appear giving the user options to Save, Delete, or Call a preset. Click the **Delete** button to store the preset.




3. a pop-up will warn that this action will permanently remove the preset. Click **OK** to proceed.

3. The preset will be removed and returned to a default Preset name.

# Menu Bar


## FILE

The File menu is used to load and save presets. Individual presets or all presets can be stored, recalled, or exported from this menu, allowing users to quickly manage system configurations and save preferred tuning settings.

## OPTION

The Option menu contains advanced functions and settings that control the DSP's operation. These settings allow fine-tuning of system behavior, including signal processing parameters and operational preferences that affect how the DSP functions across all channels. Detailed explanations of all functions in this menu are provided in the following pages of this manual.

## LINK

The Link menu allows changes made on one channel to be mirrored to a second channel. Linked channels are determined based on the labeling of each channel—for example, changes made to "Left Front Full" will be reflected in "Right Front Full" when Link is active. For Link to function correctly, all channels must be accurately labeled. The specific operations that are mirrored when Link is active can be configured in the Option menu under Link Settings.

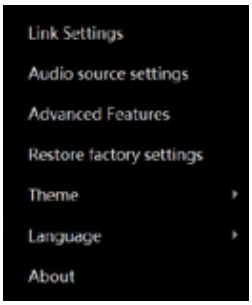
## RESET

The Reset menu clears all channel mapping, returning the system to its default state. This function is useful when starting a new configuration or correcting any errors in channel assignments.

## ENCRYPT

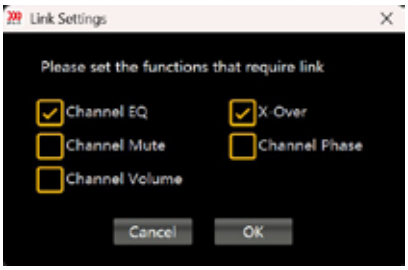
The Encrypt menu allows a password to be set on the device to prevent unauthorized changes to the tuning. Once a password is entered, the device remains locked until the correct password is provided to unlock it, ensuring that settings cannot be altered without proper authorization.

# Option Menu



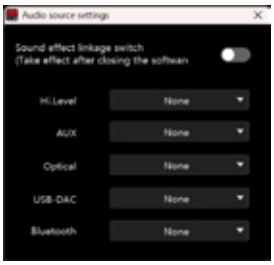

## LINK SETTINGS

The **Link Settings** menu allows the user to select which functions of each output channel are mirrored when Link is active. Available options include Polarity, Level, Mute, Crossover, and EQ. A check mark in the box indicates that the function is enabled and will apply adjustments to both channels with the same channel labeling.




## AUDIO SOURCE SETTING

The **Audio Source** feature must be turned on for this function to work. The **Audio Source Setting** allows the user to assign a specific source to a preset. When the listener selects that source, either from the Remote (DRC) or the mobile app, the associated preset will automatically load, ensuring the correct settings are applied for that input. After the feature is turned on and all settings are assigned, a power cycle is required for the function to operate properly.




## ADVANCED FEATURES

Within the **Advanced Features** menu, several options are available that can modify how the MDSP operates. These settings provide additional control over signal processing, system behavior, and operational preferences, allowing the user to tailor the DSP to specific system requirements Detailed explanations of each option in this menu are provided in the following section of this manual.

## RESTORE FACTORY SETTINGS

This option completely resets the DSP to its original factory settings and clears all stored memory. It is strongly recommended to back up any presets or custom settings before using this function, as all data will be permanently lost.

## THEME

The **Theme** option allows the user to invert the background and font colors, making the display easier to see in different lighting conditions. This feature can also help reduce eye fatigue and improve visibility for users with certain vision sensitivities.

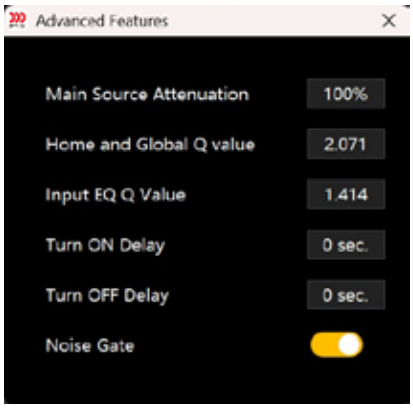
## LANGUAGE

The **Language** option allows the user to switch the display between English and Chinese.

## ABOUT

The **About** menu opens a pop-up window displaying all pertinent information about the connected device and software. This includes the software version, the firmware running on the device, and the device's serial number. The About window is also used to manually load firmware onto the DSP. For more details on this process, refer to the "Manually Updating Firmware" section of this manual.

# Advanced Features




## MAIN SOURCE ATTENUATION

Main Source Attenuation works in conjunction with your selected Mixer Source to control how much the Main Source is reduced while the Mixer Source is playing. The Mixer Source always plays at 100% of its level, while the Main Source is turned down according to the attenuation setting. This function provides the tuner with flexible options to optimize the listening experience.

Example: If Main Source Attenuation is set to 50% and the Mixer Source is sending navigation prompts, the Main Source will play at 50% of its current volume while the Mixer Source remains at 100%. This allows music to continue in the background while navigation prompts are clearly heard.

## HOME AND GLOBAL Q VALUE

This setting adjusts the default Q value for each EQ band on the Home and Global work windows. The default value is 2.071. Increasing the Q value may create gaps between bands if individual band frequencies are not adjusted accordingly, while decreasing the Q value may cause significant overlap between EQ bands. Changing this value will update all bands, overriding any previous adjustments, so it is recommended to set the desired Q value before beginning the tuning process.

## INPUT EQ Q VALUE

This setting adjusts the default Q value for each EQ band in the Input EQ window. The default value is 1.414. Increasing the Q value may create gaps between bands if individual band frequencies are not adjusted accordingly, while decreasing the Q value may cause significant overlap between EQ bands. Changing this value will update all bands, overriding any previous adjustments, so it is recommended to set the desired Q value before beginning the tuning process.

## TURN ON DELAY

This setting delays the activation of the internal amplifier and the Remote Out for a specified period of time, from 0 to 255 seconds. It can be used to limit excessive current draw during startup or to introduce a controlled delay before the system powers on, which may be useful in certain vehicle installations.

## TURN OFF DELAY

This setting delays the shutdown of the DSP and the Remote Out for a specified period of time, from 0 to 255 seconds. It can help prevent turn-off pops and avoid unexpected issues in the vehicle's audio system while shutting down.

## NOISE GATE

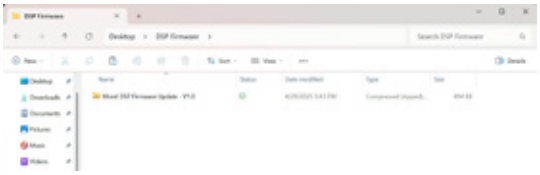
The Noise Gate setting helps reduce or eliminate unwanted hiss, hum, or low-level noise in the audio playback. When enabled, it attenuates audio signals that fall below a certain threshold, effectively removing the quietest portions of the signal where noise typically resides. This results in a cleaner, more focused sound, especially at lower listening levels, without affecting the main content of the audio.

# Manually Updating Firmware

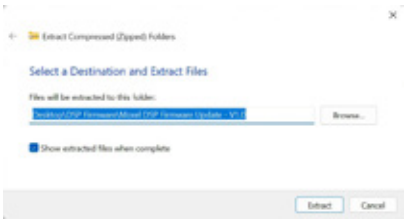
Although the software automatically checks to ensure both the MDSP software and device firmware are up to date, there may be instances where a manual firmware update is required.

Follow the steps below to manually update the firmware:

1. Connect the MDSP to the computer using the appropriate connection cable.
2. Power on the MDSP, ensuring the Remote In trigger is supplied with a proper power source and the REM/SIG switch is set to REM (see the "Turning On The MDSP" section of the harware manual for the MDSP for further guidance).
3. On the computer, download the appropriate firmware file from www.MorelHiFi.com in the Support area and save it in an easily accessible location.



4. Unzip the downloaded firmware file.

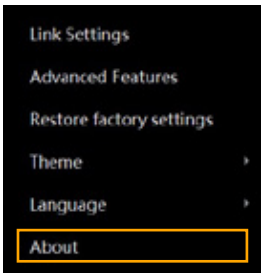



5. Launch the Morel MDSP software.


6. Allow the software to check for updates (an active internet connection is required).

7. Navigate to the Option menu.

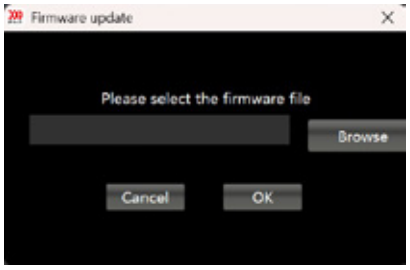

8. Select About.




9. In the pop-up window, verify that the firmware version currently listed is older than the downloaded firmware version.


10. Click the Local Firmware button.

11. In the pop-up window, click Browse and locate the downloaded firmware file. The file extension must end in .bin.




12. Click OK to begin the firmware update process.

****DO NOIT INTERRUPT THE UPDATE PROCESS****

Wait for the unit to reach 100% completion and for the window to close automatically. Closing the software, disconnecting power, or turning off the amplifier during this process may permanently damage (brick) the unit and is not field-repairable.

Once the update is complete and the window closes automatically, the About window will display the updated firmware version and the device will be ready for use.

**Example:** If Main Source Attenuation is set to 50% and the Mixer Source is sending navigation prompts, the Main Source will play at 50% of its current volume while the Mixer Source remains at 100%. This allows music to continue in the background while navigation prompts are clearly heard.

# How to Use Offline Mode for Software

The MDSP software can be used in offline mode, allowing users to explore and navigate the interface without the amplifier being connected to the computer. In this mode, users can familiarize themselves with the software features, adjust settings, and review presets, providing a hands-on tour of the system without requiring a live amplifier connection.

Follow the steps below to use the MDSP software offline:

1. Launch the MDSP software.


2. Wait for the connected device search to end.


2. Click on the device you wish to use in offline mode from the device list at the bottom of the window, and click **Enter**.

# Troubleshooting

| | Symptom | Possible Cause | Remedy |
|---|---|---|---|
| 1 | No device detected in software launch window. | USB not connected to the MDSP | Ensure the USB cable is plugged into the MDSP and the MDSP is powered on. |
| | | Connection timed out before device was seen. | Click the RETRY button in the software launch window. |
| | | Faulty USB Cable | Use a different data certified USB cable to ensure proper connection with MDSP |
| | | Communication being blocked | Temporarily turn off malware or security settings to allow connection. |
| 2 | There is no output audio. | Make Master Volume is turned up. | On the DRC, in the App, or in the Morel DSP Software, turn up the Master Volume until at desired output. Warning: It is suggested to turn down the source unit to a comfortable level before adjusting Master volume to in case output is set to loud. |
| | | All channels muted. | In the Morel DSP Software, unmute the individual channels or unmute the Master Volume Control. |
| | | The correct source is not selected. | Change the source in the DRC, the Bluetooth App, or in the Morel DSP Software. |
| | | Mixer settings are incorrect. | Make sure that the proper source is being sent to the proper output. If settings are for High-Level and using Low-Level, output will never be able to happen. |
| | | Amplifier is in protect. | Check for illuminated PROTECT light on amplifier. Power cycle the amplifier. If sound continues to shut off, an impedance check should be done on the connected speakers to ensure no shorts are present. Wrong turn on option is selected. |
| 3 | Not getting full range sound. | Crossovers are not correctly applied | Make sure that the high-pass and low-pass are not reversed in the settings. |
| | | OEM audio system has crossovers applied to the input signal for the amplifier. | The outputs should be verified using an oscilloscope and RTA to confirm the frequencies being produced. |
| | | | If the outputs are crossed over, they must be combined with other channels to achieve a full-range signal. Check the MDSP outputs to determine which channels require additional mixing. |

| | Symptom | Possible Cause | Remedy |
|---|---|---|---|
| 4 | Power LED stays on after vehicle turns off | The MDSP stays on after REM IN or Accessory is turned off | A delay on turn off is normal. This ensures all components of the system are powered down in the proper order. This turn off delay time can be altered through the Morel DSP Software. If this time was set by an installation shop, the time should likely not be changed or issues may arise. |
| 5 | Distortion of sound in playback | EQ bands are too high | Go into the Home, Input, and Global pages to validate no EQ bands are boosted too high. EQ bands should be cut in practice and only boosted if needed and enough headroom is left in the amplifier. Verifying proper headroom can be checked with the CLIPPING INDICATOR on each channel to ensure no harmful signal are present. |
| 6 | Engine whine or engine speed dependent noise is present | RCAs are run next to the main power wire | Isolate the RCAs by moving them to the opposite side of the vehicle or as far away from the power wire as possible (more than 2 feet). |
| | | There is a ground loop issue | The ground may not have good contact with the chassis of the vehicle. Clean any paint or intrusion between the contact of the ground wire (ring terminal) and the actual metal of the vehicle. |
| | | | A ground reference wire needs to be run to connect the ground of the source unit to the amplifier. |
| | | | The ground is physically loose. Tighten and check audio. |