



MOBRIDGE DSP

— USER GUIDE —



BRIDGING MEDIA, COMMUNICATION & LIFESTYLE WITH YOUR VEHICLE



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WELCOME

Congratulations on your purchase of a mObridge product. mObridge prides itself on striving to develop and manufacture products to the highest engineering quality standards and seamlessly integrating these products with your audio system.

The mObridge DSP graphical user interface (GUI) allows you to take complete control of your listening experience. Easily adjust your speaker mappings, tune the digital signal processing, and update your firmware with ease thanks to our automated online updater.

This manual will explain how to use this GUI to maximize your listening experience. The GUI is available on both Windows & macOS desktop operating systems, and can be downloaded from our website.

We hope you enjoy your new enhanced listening experience!



OVERVIEW

OVERVIEW

mObridge DSP is a complete Digital Signal Processor (DSP) graphical user interface for advanced in-vehicle audio tuning. It can be used to harness the full DSP capabilities of your mObridge device (where applicable), and to perform firmware updates easily thanks to automated online updates.

Some of mObridge DSP's features include:

- / Input/output channel mapping

- / 1024-point master and channel parametric equalizer

- / Time alignment

- / Crossover link emulation

- / Direct passthrough

- / Phase inversion

- / Mono input channel gain and delay adjustment

- / Channel muting

- / Advanced channel filtering algorithms, including:
 - / Butterworth, Bessel, Chebychev, and Linkwitz-Riley filter designs
 - / Low-pass, high-pass, and band-pass filters

- / Centre channel upmixing

- / Automatic online firmware updater

Please note, not all features explained in this manual are available to every mObridge device. Full feature compatibility per-product can be found in the "Feature Compatibility" section of this manual.



FEATURE COMPATIBILITY

MOBRIDGE DA SERIES

| FEATURE | DA1 | DA2 | DA3 |
|-------------------------------------|-----|-----|-----|
| Channel Mapping | ✓ | ✓ | ✓ |
| Master Gain | | | ✓ |
| Channel EQ (Filtering + Crossovers) | | | ✓ |
| Master EQ | | | ✓ |
| Time Alignment | | | ✓ |
| Mono Gains/Delays | ✓ | ✓ | ✓ |
| Direct Pass Through | | | ✓ |
| Centre Channel Upmixing | | | |
| Online Updates | ✓ | ✓ | ✓ |

MOBRIDGE DA-G2 SERIES

| FEATURE | DA-G2.ENTRY | DA-G2.STANDARD | DA-G2.PRO |
|-------------------------------------|-------------|----------------|-----------|
| Channel Mapping | ✓ | ✓ | ✓ |
| Master Gain | | | ✓ |
| Channel EQ (Filtering + Crossovers) | | | ✓ |
| Master EQ | | | ✓ |
| Time Alignment | | | ✓ |
| Mono Gains/Delays | ✓ | ✓ | ✓ |
| Direct Pass Through | | | ✓ |
| Centre Channel Upmixing | | | ✓ |
| Online Updates | ✓ | ✓ | ✓ |



MOBRIDGE HUR SERIES

| FEATURE | HUR | HUR MERCEDES |
|-------------------------------------|-----|--------------|
| Channel Mapping | ✓ | ✓ |
| Master Gain | ✓ | ✓ |
| Channel EQ (Filtering + Crossovers) | | |
| Master EQ | | |
| Time Alignment | | |
| Mono Gains/Delays | | |
| Direct Pass Through | | |
| Centre Channel Upmixing | | |
| Online Updates | ✓ | ✓ |

MOBRIDGE DSP AMPLIFIERS

| FEATURE | MOST25 AMP | MOST150 AMP | A2B AMP |
|-------------------------------------|------------|-------------|---------|
| Channel Mapping | ✓ | ✓ | ✓ |
| Master Gain | ✓ | ✓ | ✓ |
| Channel EQ (Filtering + Crossovers) | ✓ | ✓ | ✓ |
| Master EQ | ✓ | ✓ | ✓ |
| Time Alignment | ✓ | ✓ | ✓ |
| Mono Gains/Delays | ✓ | ✓ | ✓ |
| Direct Pass Through | ✓ | ✓ | ✓ |
| Centre Channel Upmixing | ✓ | ✓ | ✓ |
| Online Updates | ✓ | ✓ | ✓ |

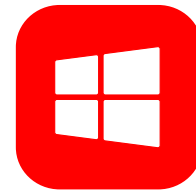




INSTALLATION GUIDE



INSTALLATION GUIDE



WINDOWS

SUPPORTED: Windows XP/7/8/8.1/10

- 01 Download the latest release of mObridge DSP for Windows here: [mObridge DSP Application](#)
- 02 Run the installer and follow the installation wizard, ensuring you install the drivers when prompted.
- 03 To run the application, open the “Start Menu” and select the following:
 - a Windows XP/7: All Programs → mObridge → mObridge DSP
 - b Windows 8/10: mObridge → mObridge DSP



MACOS

SUPPORTED: macOS 10.9+

- 01 Download the latest release of mObridge DSP for macOS here: [mObridge DSP Application](#)
- 02 Open the file and install “D2xxHelper_v2.0.0.pkg”.
- 03 Drag “mObridge DSP” into your Applications folder.
- 04 To run the application, select mObridge DSP from your Applications folder.





TUNING INTERFACE



TUNING INTERFACE

OFFLINE TUNING

The mObridge DSP tuning interface can be used in both 'Live' and 'Offline' modes. Offline mode allows you to configure various settings with your mObridge device disconnected, and then store them for later fine-tuning in the car if desired.

Offline mode allows you to adjust the following parameters:

/ Master Graphic EQ and Gain

/ Channel Graphic EQ and Gain

/ Crossover and filter settings

/ Time alignment

In order to configure other settings such as input and output channel mapping, you will need to be connected to your mObridge device via USB, ensuring that the device is also powered.

We recommend that all tuning be done with a 'Live' system because this way you can hear all changes being made in real-time. Graphic EQ, crossover, and time alignment changes can all be heard as you make the changes when 'Live'.



CONNECTING TO YOUR MOBRIDGE DEVICE

You can connect to your mObridge device via a mini USB cable. If power is connected to the mObridge device and it is turned on, you will see the screen shown in Figure 1 below.

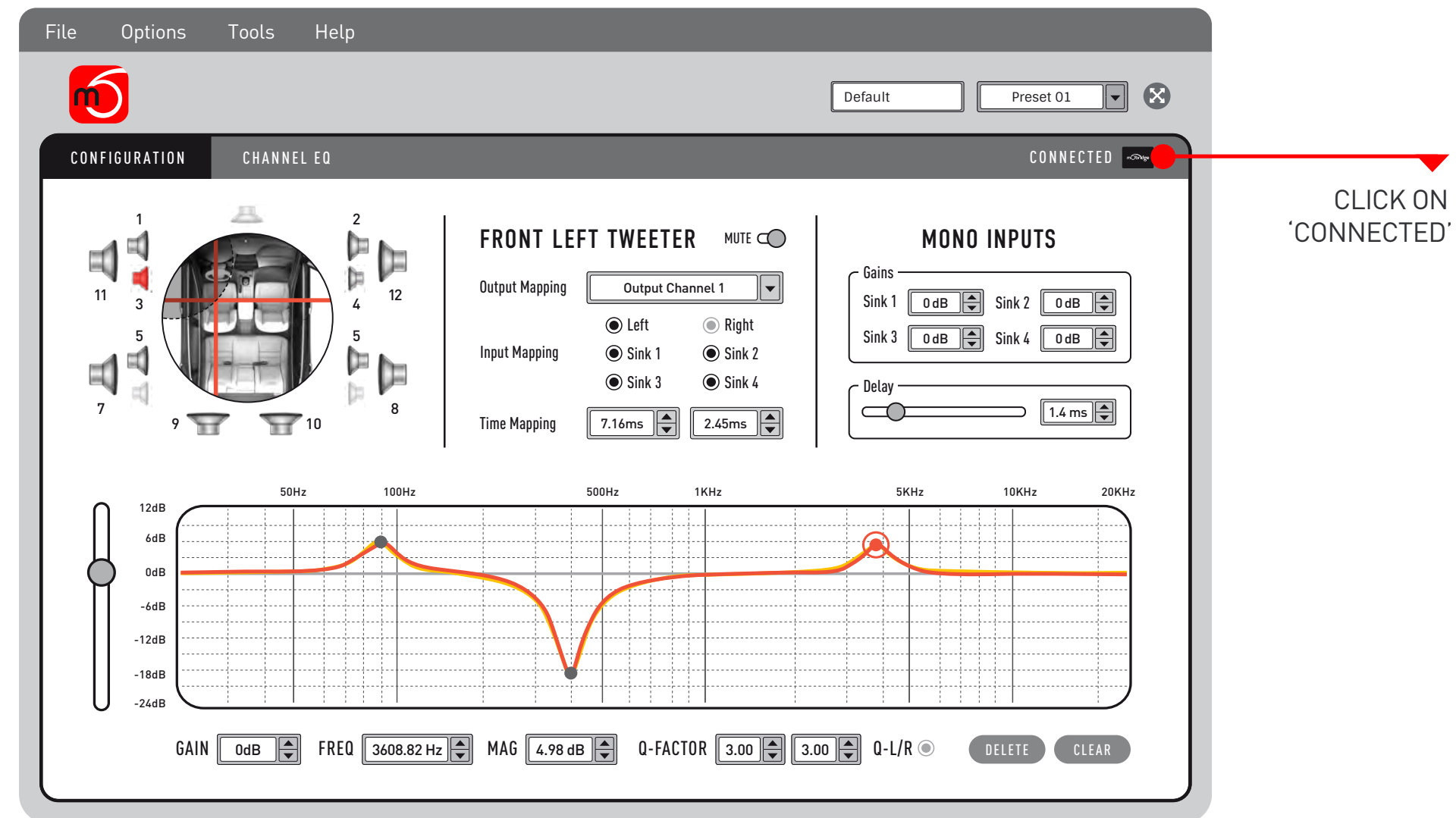


FIG 01

Connected to your mObridge device



MENU OPTIONS

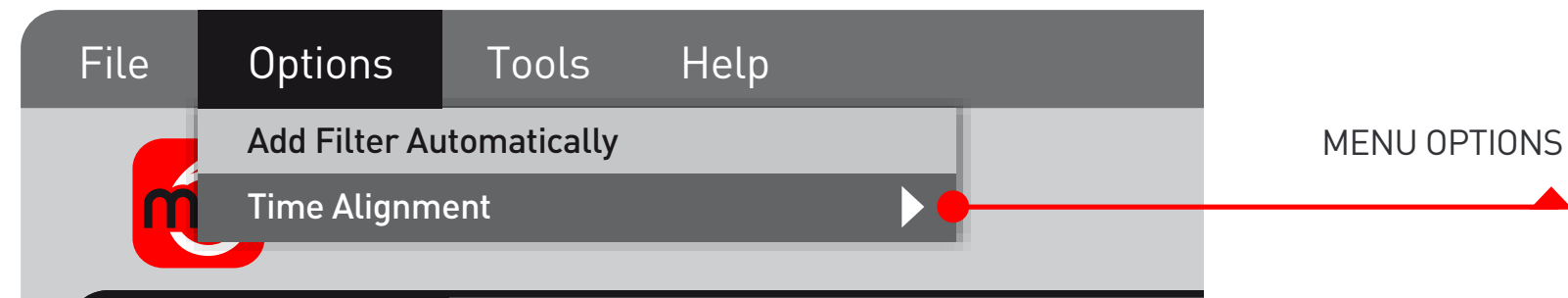


FIG 02 Menu Options

The top menu bar provides extra settings for mObridge DSP. Under the “Options” menu, you can toggle the “Show Time Align as Popup” setting to change where the time alignment controls are located in the GUI - either as a popup when hovering over the vehicle interface in the top left corner of the configuration and channel EQ tabs, or, as controls underneath the “Input Mapping” options on the Configuration tab, and under the filter settings on the Channel EQ tab. See the “Time Alignment” section of this manual for more information on the time alignment controls.

The “Tools” menu contains a handy tool to mute all speakers on your connected device. More options and tools may be added in future mObridge DSP software updates. The top menu bars also show the keyboard shortcuts for various actions. For a complete list of keyboard shortcuts, see the “Keyboard Shortcuts” section of this manual.

CONFIGURATION TAB

CHANNEL MAPPING

You can configure the channels for the correct mapping of your particular system using the tools on the Configuration tab. First, select a speaker from the speaker selector in the top left corner, then select the output channel for that speaker using the “Output Mapping” dropdown menu in the centre of the screen. Repeat this process for each speaker and its corresponding output channel.



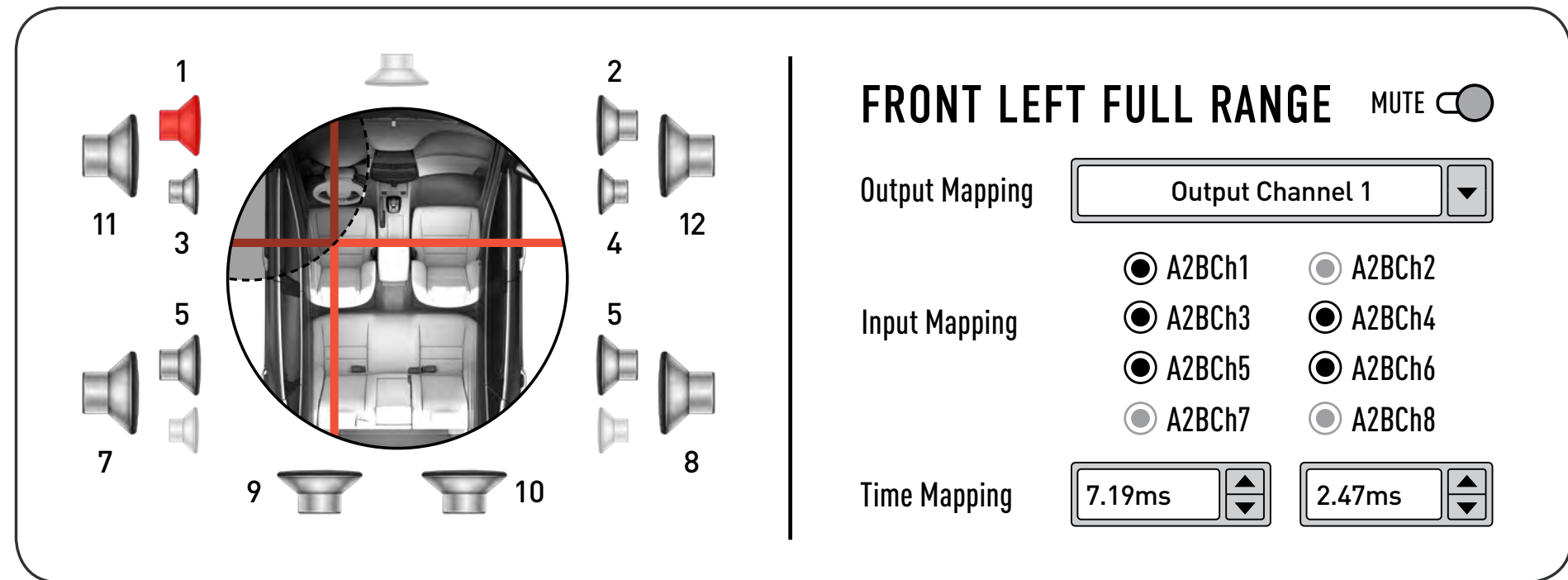


FIG 03 Mapping speakers and inputs

When running a component speaker system with a passive crossover, only select one of the speakers in the cluster. It is not important which speaker is chosen, as this is only the mapping stage. Crossover settings will allow for correct settings for this type of speaker system.

Next, you will need to assign the appropriate inputs for each speaker. This can be done by selecting the desired sources from the “Input Mapping” checkboxes. For subwoofer and centre speaker channels, you can map both the left and right input channels in order to create a ‘summed’ output channel. Channels that are mapped as a subwoofer or centre channel will not be affected by balance and fade controls in your vehicle.

CENTRE CHANNEL UPMIXING

If your mObridge device supports the centre channel upmixing feature, mapping both the left and right inputs to the centre speaker will enable this upmixing feature. The upmixing feature analyses the left and right audio signals and ‘extracts’ the centre content in real-time, creating a surround sound effect to further enhance your listening experience.



You can also change upmixing algorithms using the drop down selection menu:

- / Summing - Bypasses the upmixing algorithms and sums the left and right input channels.

- / LMS - Analyzes the left and right audio channels to extract the common “centre” content

- / PSD - Extracts the “side” content from the left and right audio channels to play through the centre channel to widen the stereo field.

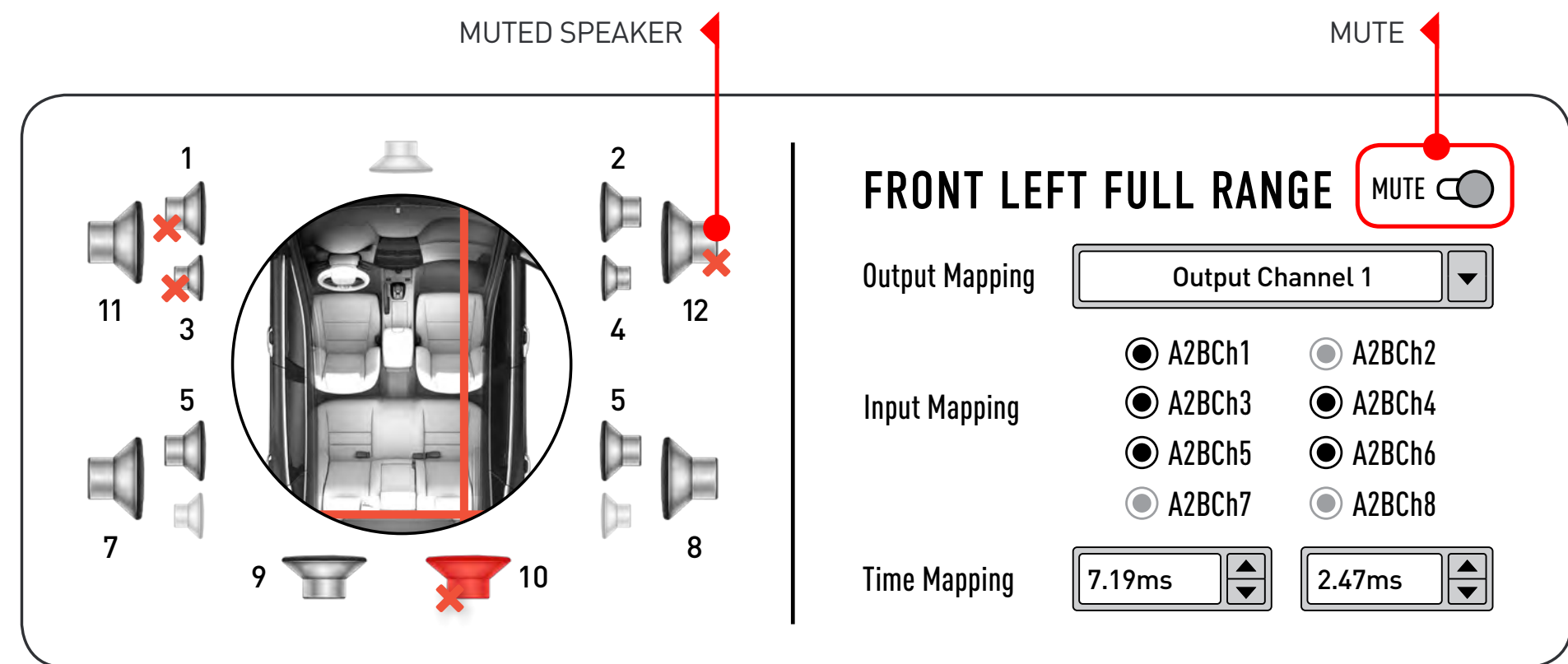


FIG 04 Muting channels

MUTE

If you wish to mute specific speakers, you can do so by selecting the speaker and then clicking the checkbox next to the speaker name. You can quickly check which speakers are muted by referring to the speaker selector in the top left corner of the screen. Speakers that are muted will display a red 'X' overlay on the speaker icon.



TIME ALIGNMENT

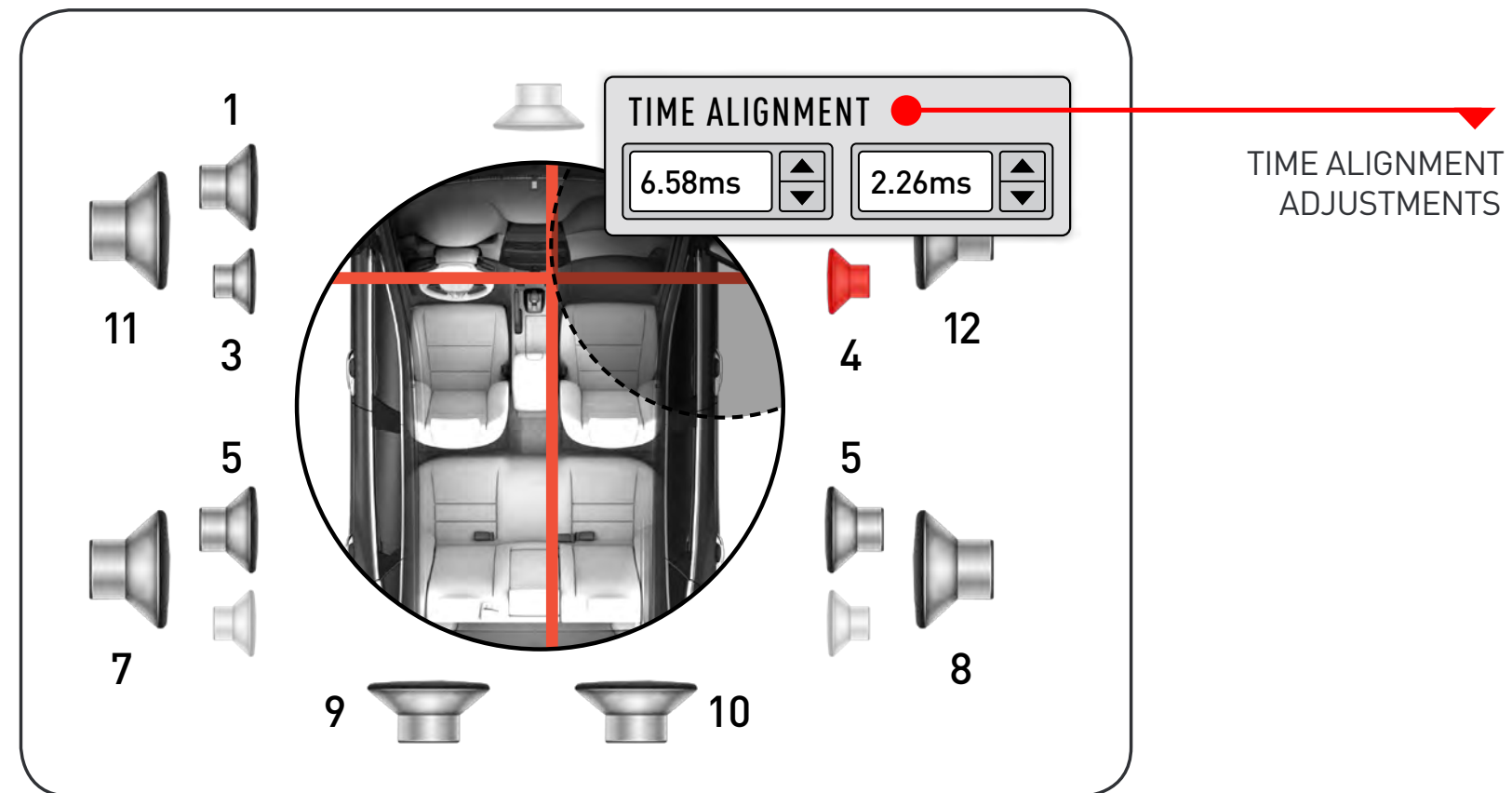


FIG 05 Time alignment adjustments

“Time alignment helps to make sure the sound from each speaker arrives at the desired listening position all at the same time. A Measuring tape is required for this task, to measure the distance between each speaker and the desired listening position, these distances then can be entered in for each speaker and mObridge DSP will convert that to a time delay automatically and apply it automatically.

You can also manually adjust the time or distance by selecting the speaker, hovering over the vehicle image and adjusting the values in the time alignment pop up window. Alternatively, you can disable the pop-up window in the top menu bar by selecting “Options” → “Show Time Align as Popup”, this puts the time alignment controls underneath the “Input Mapping” options on the Configuration tab, and under the filter settings on the Channel EQ tab.”



MONO INPUTS

When connected to mObridge devices that support mono inputs, the “Mono Inputs” panel will be displayed on the right-hand side of the configuration tab.

GAINS

This can be used to independently adjust the gains of the input sinks such as phone, navigation, PDC, and chimes. Please reference your product manual to confirm which sink corresponds to phone, navigation, PDC and chimes, as these are allocated differently between vehicle manufacturers.

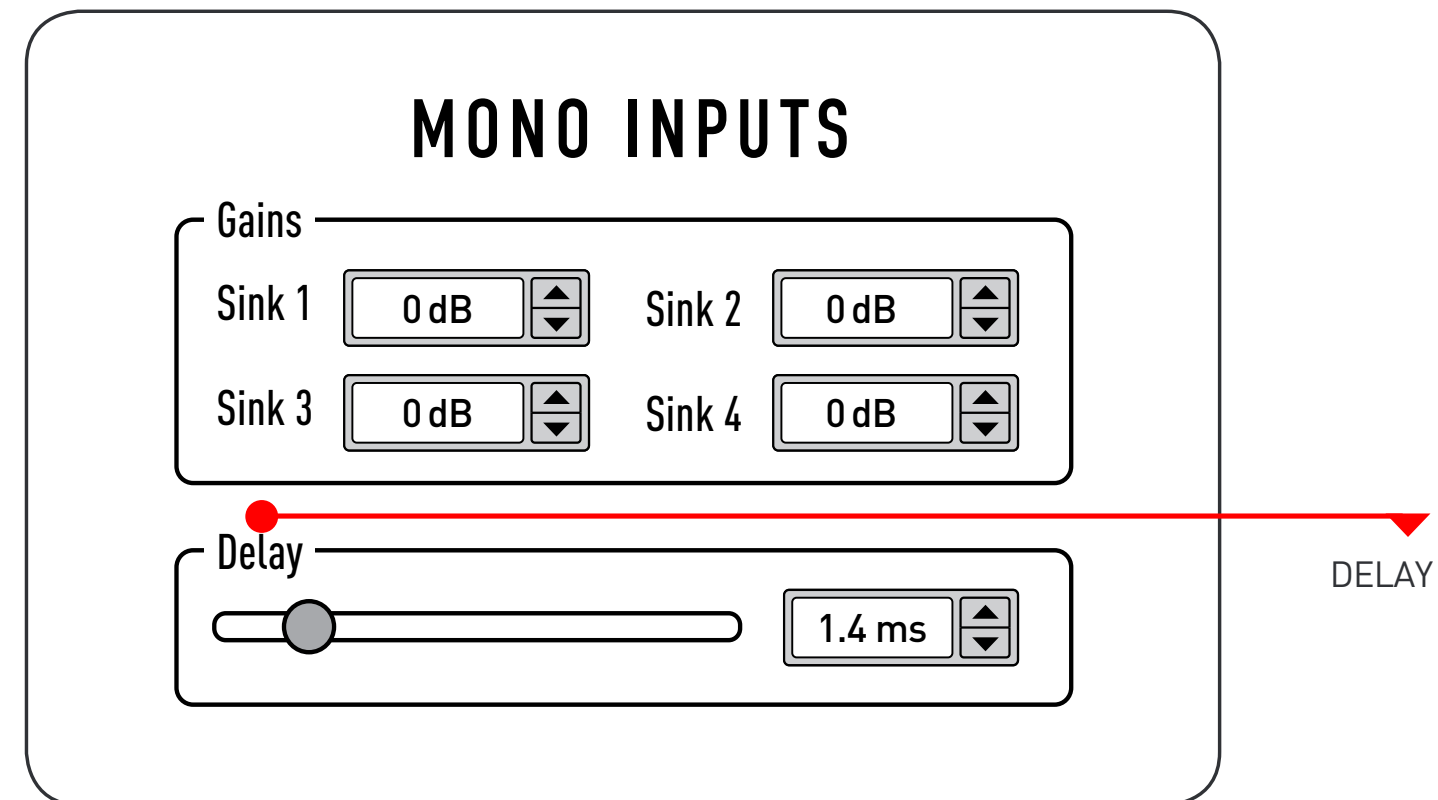


FIG 06 Mono Input adjustments

DELAY

The delay slider can be used to fine-tune the mono input processing delays in your mObridge device. This can help alleviate echo issues in certain vehicles while using your mObridge device to play audio on phone calls. The delay will be active on all mono inputs.



MASTER EQ AND GAIN

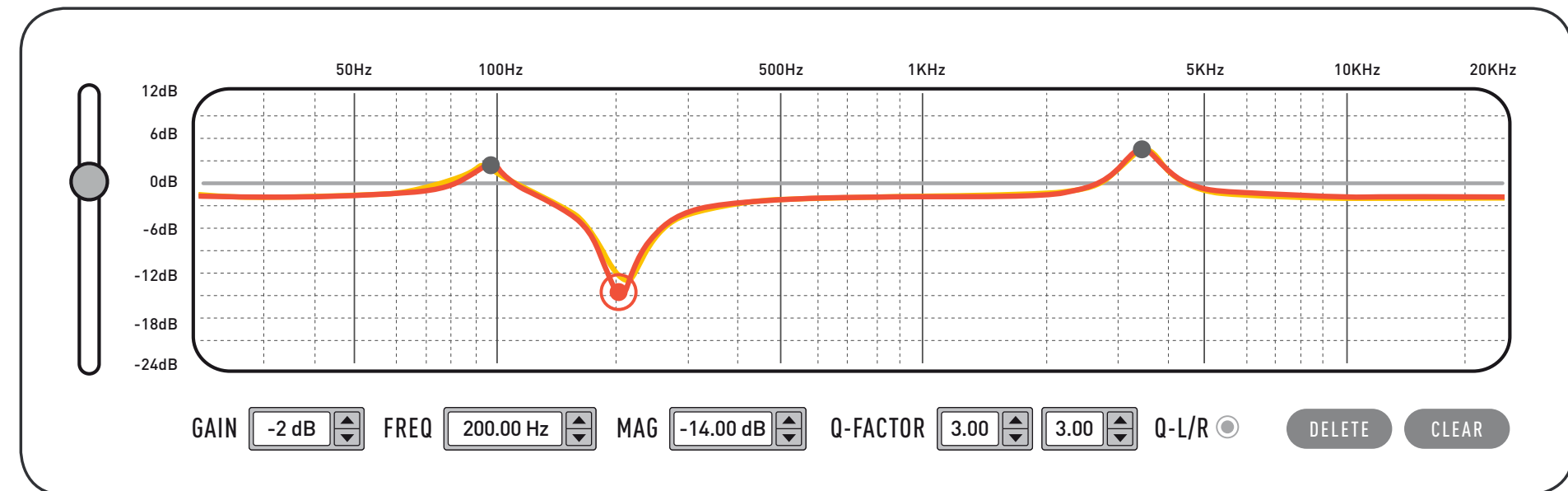


FIG 7 Master EQ

Below the channel mapping controls is the Master EQ spectrum graph. This is a user-intuitive, fully interactable 1024-point parametric graphic equalizer. To add an EQ point, simply click anywhere on the graph. You can then adjust the frequency and magnitude by dragging the EQ point around the graph or fine-tune it using the controls below the EQ spectrum graph.

The Q-factor has independent left-hand and right-hand adjustments for complete control of the EQ points. The Q-factor can also be linked to be symmetrical by using the Q-L/R button next to the Q-factor adjustments.

To delete an EQ point, simply select the point on the graph, and then press the “DELETE” button in the bottom right-hand corner of the screen. If you wish to clear all of the points on the Master EQ, simply press the “CLEAR” button.

The orange line displays the Master EQ, and the yellow line displays the resultant frequency “bins”.

MASTER GAIN

To the left of the spectrum graph is the master gain slider, which allows you to adjust the master gain on all output channels in dB. Fine-tuning of the master gain is possible by using the controls underneath the master gain slider.



CHANNEL EQ TAB

The “Channel EQ” tab can be used to adjust and fine-tune each speaker output on your mObridge device. Clicking the “Channel EQ” tab will bring up the following screen:

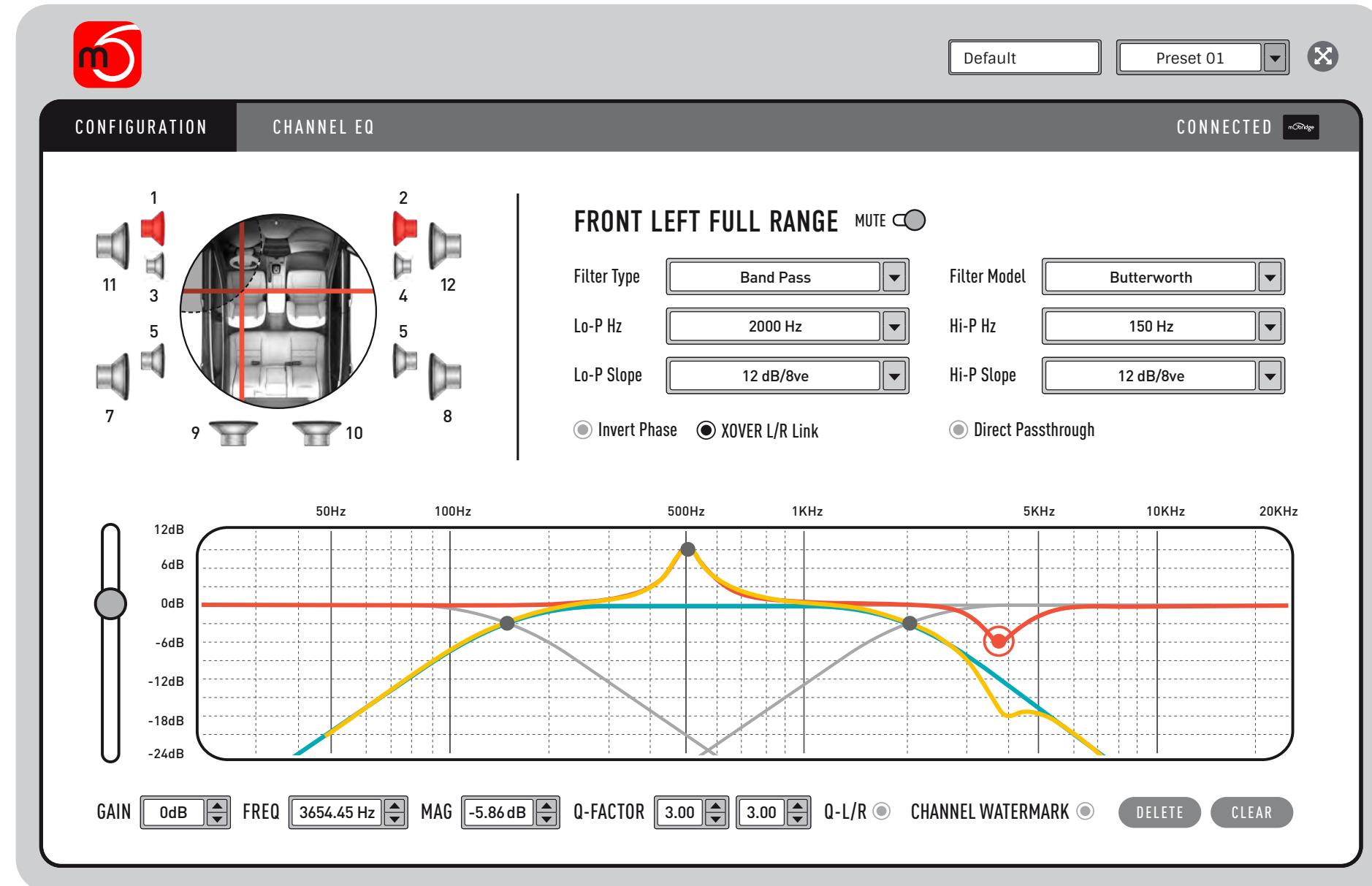


FIG 08 Channel EQ tab

Before adjusting the parameters on the Channel EQ tab, you will need to map the speakers on the Configuration tab first. Begin by selecting the output channel by using the speaker selector in the top left corner of the channel EQ tab. The Channel EQ tab will then display the channel filter and EQ settings for that speaker output.



CHANNEL FILTERS

Using the filter controls on the right-hand side of the Channel EQ tab, you can adjust the filter type, model, and lowpass/highpass cutoff frequencies/slopes.

FILTER TYPE
Supported filter types:

- / Low-pass filter (LPF)
- / High-pass filter (HPF)
- / Band-pass filter (BPF)

FILTER MODEL
Supported filter models:

- / Butterworth / Bessel
- / Chebychev / Linkwitz-Riley

FRONT LEFT FULL RANGE
MUTE

| | | | | | |
|-------------|--|---|--------------|--|---|
| Filter Type | <input type="text" value="Band Pass"/> | ▼ | Filter Model | <input type="text" value="Butterworth"/> | ▼ |
| Lo-P Hz | <input type="text" value="2000 Hz"/> | ▼ | Hi-P Hz | <input type="text" value="150 Hz"/> | ▼ |
| Lo-P Slope | <input type="text" value="12 dB/8ve"/> | ▼ | Hi-P Slope | <input type="text" value="12 dB/8ve"/> | ▼ |

LO-P/HI-P HZ
This setting sets the low-pass/high-pass filter cutoff frequency in Hertz (Hz).

LO-P/HI-P SLOPE
This setting sets the low-pass/high-pass filter order, or slope, in decibels per octave (db/8ve). A filter with a slope of 6 dB/8ve is said to be of "first-order", a filter with a slope of 12 dB/8ve is said to be of "second-order", and so on.

FIG 09 Channel Filter Controls

The filter settings can be used to design an active crossover, by applying the various filter types to different speakers in your vehicle. A particularly useful feature for designing crossover filters is the "Channel Watermark" feature (see below: Channel Watermark).



CHANNEL SETTINGS

TIME ALIGNMENT

Please refer to the “Time Alignment” heading in the “Configuration Tab” section of this manual for more information about the time alignment controls.

MUTE

Please refer to the “Mute” heading in the “Configuration Tab” section of this manual for more information about the mute controls.

FRONT LEFT FULL RANGE MUTE

Filter Type:

Filter Model:

Lo-P Hz:

Hi-P Hz:

Lo-P Slope:

Hi-P Slope:

Invert Phase XOVER L/R Link Direct Passthrough

INVERT PHASE
This setting will invert the phase on the currently selected output channel.

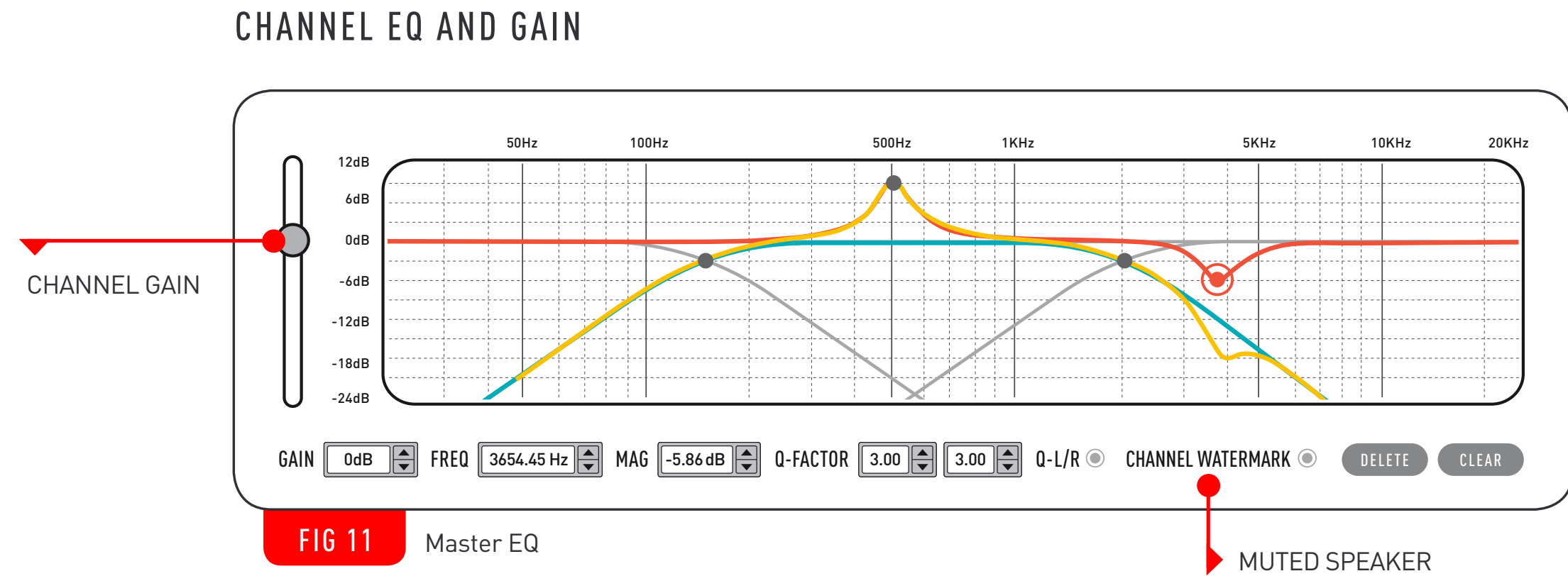
XOVER L/R LINK
When designing crossover filters, the “XOVER L/R Link” checkbox will allow you to link the selected corresponding left and right (i.e. Front Left Full Range, Front Right Full Range) speaker’s filters so that the filters are symmetrical on both sides of the vehicle.

DIRECT PASSTHROUGH
This setting allows you to bypass all DSP processing on the selected channel - disabling the channel EQ and filters, and passing the input signal directly to the output channel.

FIG 10

Channel Settings Controls





Below the channel filter controls is the Channel EQ spectrum graph (See Figure 11 above). These EQ controls are based on the same principles as the Master EQ spectrum graph in the Configuration tab, so please refer to that section of this manual for a more detailed explanation of the common EQ controls.

In addition to the common EQ controls, the Channel EQ spectrum graph will also show any active filters on the channel, and also allow you to add EQ adjustments to each individual output channel before being equalized by the Master EQ.

CHANNEL GAIN

To the left of the spectrum graph is the channel gain slider, which allows you to adjust the individual gains of each output channel in dB. Fine-tuning of the channel gain is possible by using the controls underneath the channel gain slider.

CHANNEL WATERMARK

This setting is a particularly useful feature for designing crossover filters and can be found underneath the spectrum window in the bottom right corner of the Channel EQ tab. This setting will overlay the filters of the associated speaker cluster (i.e. Front Right Tweeter, Front Right Full Range, and Front Right Woofer) to show how the signal is being filtered in each speaker within the cluster.





UPDATING VIA THE DSP GRAPHICAL INTERFACE

UPDATING VIA THE DSP GRAPHICAL INTERFACE

STATUS INDICATOR AND THE DEVICE TAB

In the top right-hand corner of the mObridge DSP software is a status indicator. Before connecting to your mObridge, this will display the message “Searching for Devices ...”, this will search continuously for a mObridge device to connect to. Once a device has been found, it will display a “Connecting” message with a spinning wheel while the connection is being established.

Once you are connected to your mObridge device, you can click on the “Connected” button to open the Device tab which will show the following screen:

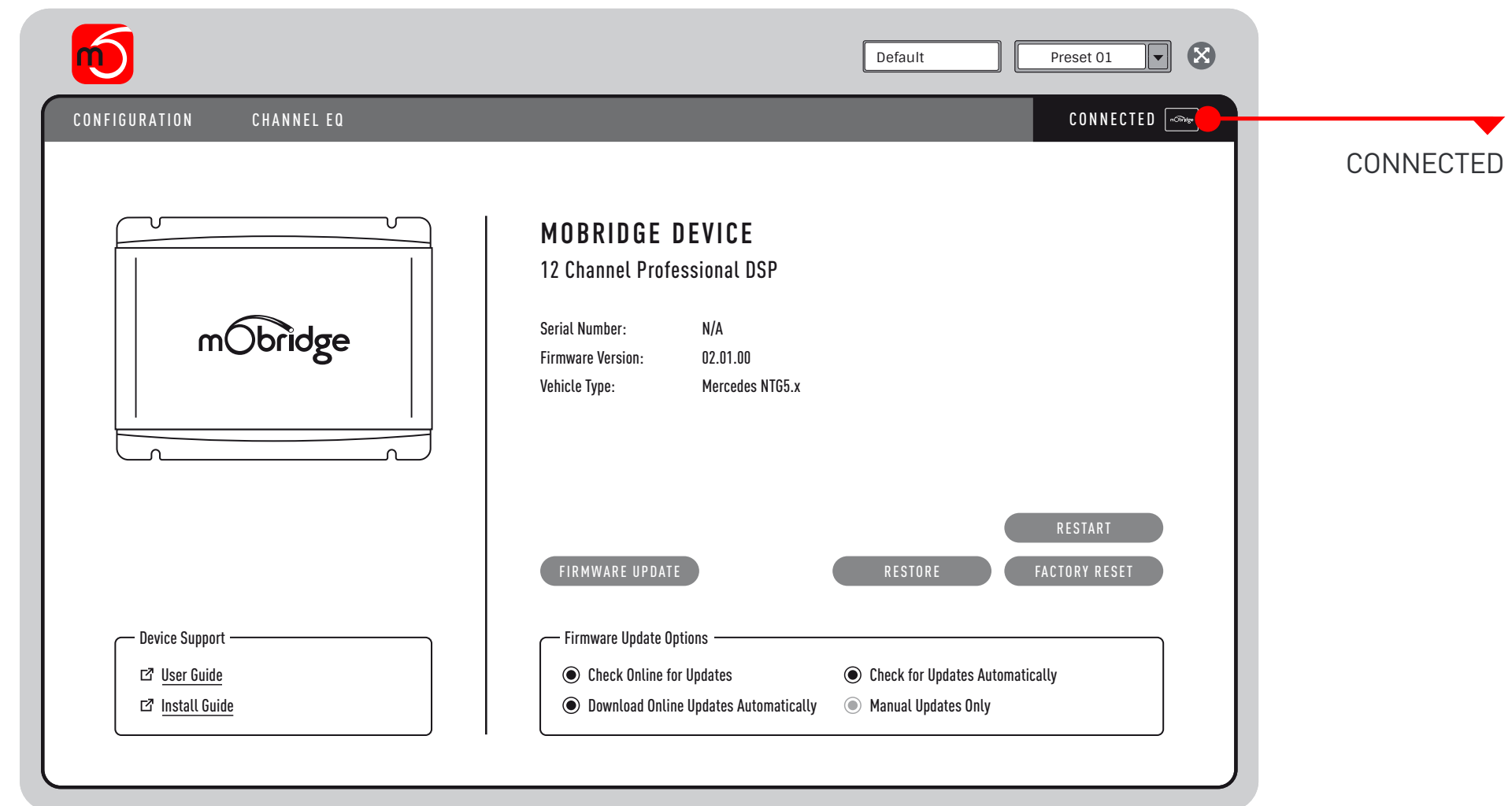


FIG 12 Device tab



On the Device tab, you can find various basic information about your mObridge device, including the product name, product description, firmware version, serial number, and vehicle type.

There are also web links to the user guide and install guide for the specific mObridge device.

FIRMWARE UPDATES

At the bottom of the Device tab is the “Firmware Update Options”. This can be used to configure the automated online updates for your mObridge device.

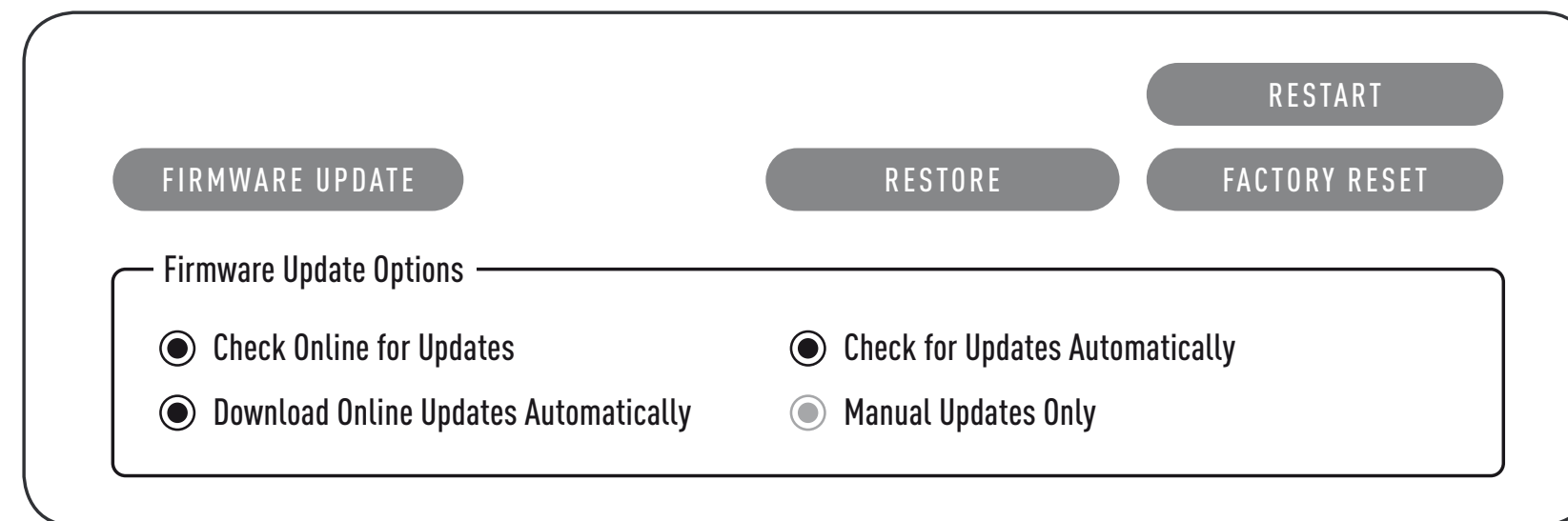


FIG 13 Firmware Update Controls

- / “Check Online for Updates” will allow mObridge DSP to check for online updates when you press the “Firmware Update” button. If this button is unchecked, it will allow you to manually select a firmware update from your computer.
- / “Check for Updates Automatically” will automatically check for updates when you connect to your mObridge device.
- / “Download Online Updates Automatically” will automatically download new firmware updates to your computer once they have been found online.
- / “Manual Update Only” will disable all automatic update checks and automatic downloads allowing you to manually download the latest firmware from the [mObridge website](#) and load the firmware update from your computer.



RESTART, RESTORE, AND FACTORY RESET

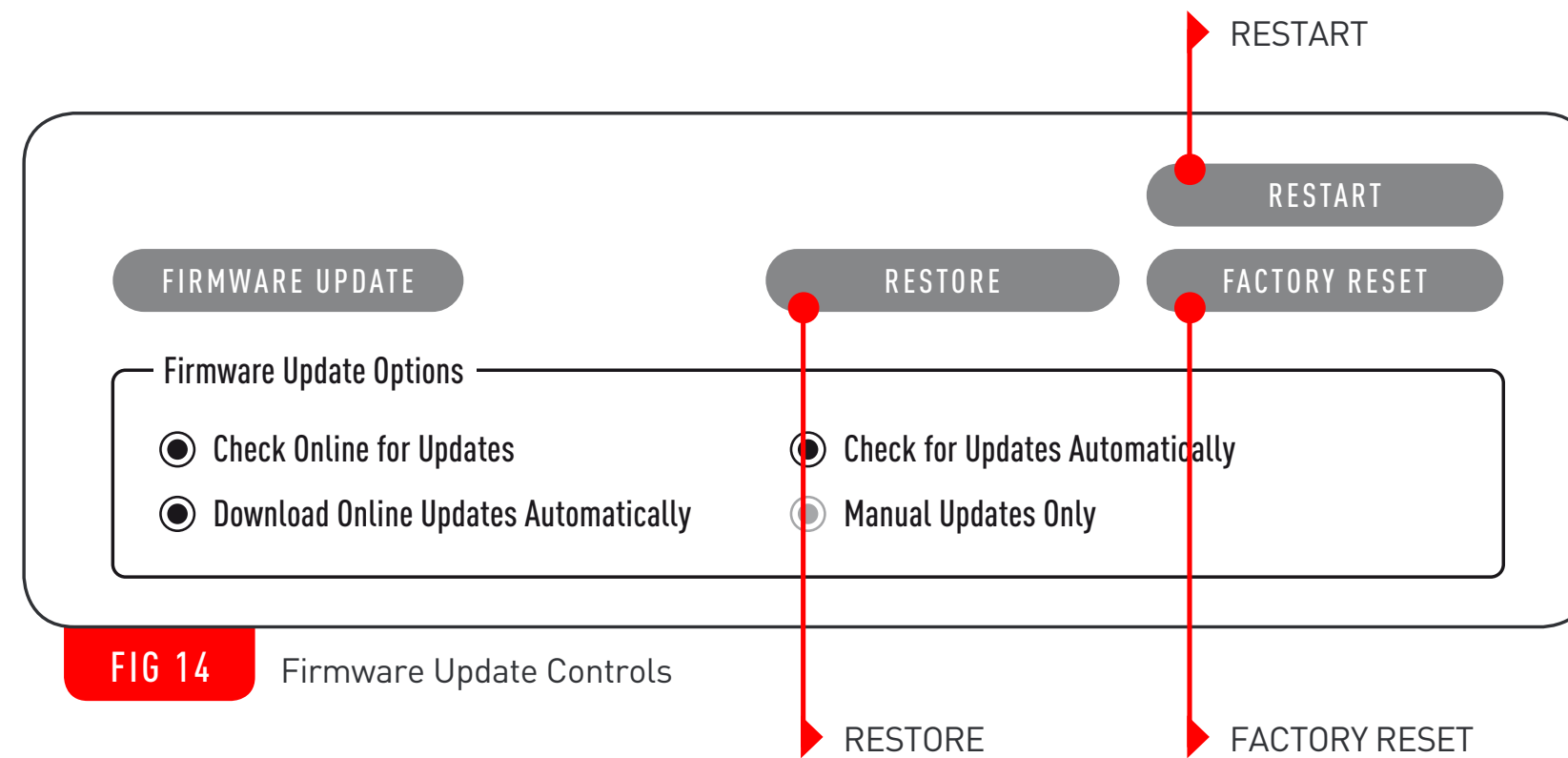


FIG 14 Firmware Update Controls

In the bottom right-hand corner of the Device tab is the restart, restore and reset controls. Pressing the “Restart” button will cause the mObridge device to safely shutdown and restart. This is sometimes useful to do after changing dip switch settings on your mObridge device (if applicable) or after performing a firmware update. Usually the device will restart itself after a firmware update, however if it doesn’t, then this may need to be manually done.

The “Restore” button will allow you to load a previous backup .rax file to return your mObridge device to a previous configuration.

The “Factory Reset” button will reset all the stored settings on the device. This will clear any custom configuration settings such as speaker mappings, time-alignment, EQ, filters etc, and return them to their factory default settings.





KEYBOARD SHORTCUTS

KEYBOARD SHORTCUTS

mObridge DSP has a number of keyboard shortcuts that can be used to quickly navigate and control various parameters of the mObridge software.

GENERAL

| KEYBOARD SHORTCUT | DESCRIPTION |
|-------------------|----------------------------|
| Ctrl + N | New DSP configuration |
| Ctrl + S | Save |
| Ctrl + Alt + S | Save As |
| Ctrl + O | Open configuration profile |
| Ctrl + Q | Exit Program |

DSP

| KEYBOARD SHORTCUT | DESCRIPTION |
|-------------------|-----------------------------------|
| Ctrl + M | Mute/unmute all speakers |
| Ctrl + Shift + T | Toggle "Show Time Align as Popup" |

DISPLAY

| KEYBOARD SHORTCUT | DESCRIPTION |
|-------------------|--------------------------|
| F11 | Mute/unmute all speakers |
| Ctrl + T Ctrl + C | Show Configuration tab |
| Ctrl + T Ctrl + E | Show Channel EQ tab |



SPEAKER SELECTION

| KEYBOARD SHORTCUT | DESCRIPTION |
|-------------------|-------------------|
| Ctrl + 1 | Select Speaker 1 |
| Ctrl + 2 | Select Speaker 2 |
| Ctrl + 3 | Select Speaker 3 |
| Ctrl + 4 | Select Speaker 4 |
| Ctrl + 5 | Select Speaker 5 |
| Ctrl + 6 | Select Speaker 6 |
| Ctrl + 7 | Select Speaker 7 |
| Ctrl + 8 | Select Speaker 8 |
| Ctrl + 9 | Select Speaker 9 |
| Ctrl + 0 | Select Speaker 10 |
| Ctrl + Alt + 1 | Select Speaker 11 |
| Ctrl + Alt + 2 | Select Speaker 12 |



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BRIDGING MEDIA, COMMUNICATION & LIFESTYLE WITH YOUR VEHICLE

