Analog Sound
Digital Recall

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WESAUDIO

ngSumBox

User manual

EN

Thank You for the purchase of ngSumBox

Next Generation 16-channel analog summing system

With kind regards

Radoslaw Wesolowski and Michal Weglicki

Next Generation Analog Summing System

For decades, analog summing has defined the depth, width, and musical richness of professional mixes. The WesAudio ngSumBox takes this legendary sound into the modern hybrid studio, blending **true analog summing** with **full digital recall, automation, and seamless control-surface integration**.

Built as a premium **18×2 summing system**, ngSumBox delivers the warmth, clarity, and stereo depth that only analog can provide—while giving you the **speed, precision, and flexibility** demanded by today's production workflows. With full support for **MC and HUI controllers**, it brings back the **hands-on, console-like mixing experience**, letting you shape your mixes intuitively without ever sacrificing the convenience of modern DAW recall.

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1 Overview

The ngSumBox is a 16-channel analog summing mixer designed for hybrid studio workflows. It combines a fully analog signal path with digital recall and controller integration, delivering classic analog depth and cohesion with modern precision and flexibility. Features such as per-channel control, stereo bus inserts, Width adjustment, and selectable output stage (Clean or Iron) provide versatile tonal shaping and seamless DAW integration.

2 Main Features

ngSumBox offers a sophisticated blend of analog audio excellence with digital precision, designed for professionals seeking uncompromising sound quality and versatile control:

- **True Analog Summing**: 16 channels plus 2 stereo inputs summed through a high-headroom analog signal path for rich, musical depth and stereo width.
- **18×2 Summing Architecture**: High-end summing system designed for professional mixes, providing flexible routing and exceptional tonal clarity.
- **Digital Recall & Automation:** Save and recall all settings, including levels, routing, inserts, and tonal adjustments, directly from your DAW.
- **MC & HUI Controller Support:** Integrates with external control surfaces for a tactile, console-like mixing experience.
- **LCR & Stereo Routing:** Easily position tracks across the stereo field with Left-Center-Right routing options for precise spatial control.
- **Dual Analog Insert Points:** Integrate external processors into the summing chain with recallable, DAW-controlled inserts.
- **Selectable Output Stages:** Choose between electronically balanced or transformer-balanced outputs for modern clarity or classic analog warmth.
- **Advanced Metering:** LED metering for all channels plus dual VU meters on the main output for clear visual feedback.
- **Width Control (M/S Processing + Saturation):** Stereo image adjustment based on Mid/Side processing, allowing precise control from narrow to wide soundstage, with additional subtle analog saturation when driven.
- **Variable THD per Channel:** Independent THD control on each channel enables per-track harmonic shaping, from clean signal to enhanced analog coloration before the summing stage.
- **Direct Outputs & Flexible Routing:** Post- or pre-fader direct outs for stems, parallel processing, or external effect returns.

3 Hardware

This chapter will go through all analog features and explain all hardware aspects of ngSumBox.

3.1 Specification

THD+N(20Hz-20kHz)	At +4dBu = 0.006% per channel
Freq response	20Hz-20Khz (+/- 0.15dB)
Input Impedance	45 kohm
Output Impedance	100ohm
Crosstalk	90dB (1kHz)
Max input level	+26dBu
Max output level	+28dBu
THD max	4% (1kHz, +4dBu) per channel
Power consumption (MAX)	23W
Unit dimensions	44x483x267 mm
Box dimensions	550x360x170 mm
Unit weight	4,5 kgs
Box weight	5,4 kgs
Warranty	2 years

3.2 Front Panel and Main Functions

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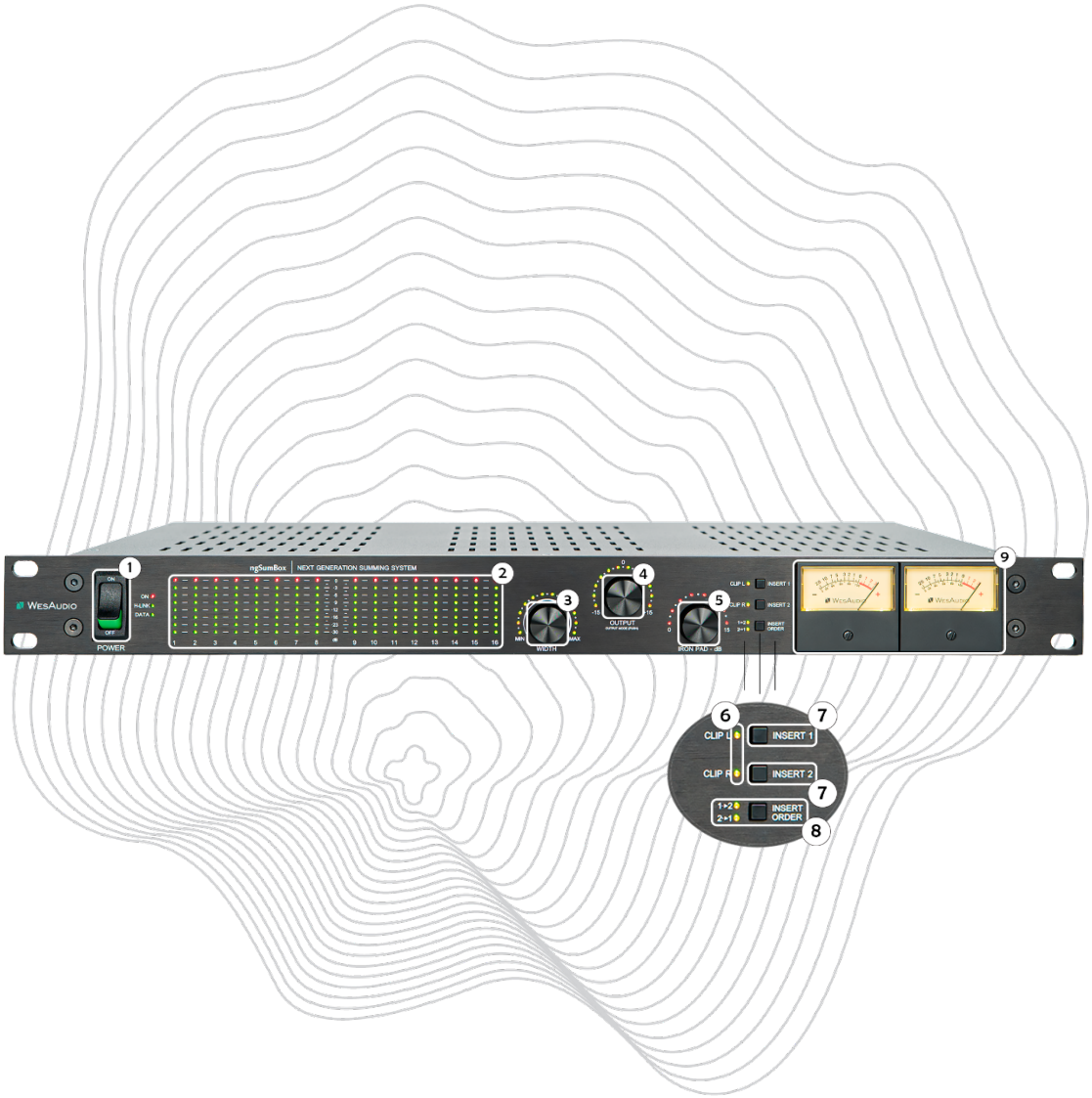

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1. **Power Toggle (POWER):** This switch toggles power to the unit.
2. **LED IN Meters:** High-resolution LED meters for each input channel display signal levels in **dBu**, calibrated so that **0 on the front panel corresponds to +24 dBu**, and **–30 on the front panel corresponds to –6 dBu**. This metering provides precise visual feedback for proper analog gain staging before the summing stage.
3. **Width:** Controls the stereo image of the summed mix, allowing adjustment from a focused, narrow presentation to a wider and more spacious soundstage. In addition to spatial enhancement, the Width circuit introduces subtle analog coloration as it is driven, adding harmonic density and character while preserving natural phase relationships.
4. **Output:** Controls the level of the summed stereo signal. Pressing the control enables or disables **Iron Mode**, allowing the user to switch between a clean, electronically balanced output path and a transformer-coupled output stage for enhanced analog character. Pressing and holding the control activates **Fader Mode**, enabling an alternative adjustment behavior for output level control.
5. **Iron Pad:** When Iron Mode is enabled, this control adjusts the drive level of the transformer output stage. It allows precise management of output level while introducing controlled saturation, enabling tonal shaping without overloading downstream equipment.
6. **6. Clip / Insert Indicators (L/R):**
   Two dual-color LED indicators provide combined visual feedback for output clipping and insert status on the left and right channels.
   - **Red (CLIP L / CLIP R)**: Indicates output signal clipping at the final stage of the signal path. Due to the unit's high-headroom design, clipping occurs at approximately +28 dBu.
   - **Green (INSERT 1 / INSERT 2)**: Indicates that the corresponding insert is active.
   - **Orange (Red + Green)**: Both clipping and insert active simultaneously.
   - These indicators allow quick monitoring of both signal overload and insert engagement.
7. **Insert 1 / Insert 2:**
   These controls enable or disable the corresponding analog insert points on the main summing bus. When engaged, external processors such as compressors or equalizers can be integrated directly into the signal path. The status of each insert is reflected by the Clip / Insert LEDs (see point 6).
8. **Insert Order:**
   This control determines the processing order of the two insert points in the signal path.
   - **1 → 2:** Insert 1 is processed before Insert 2
   - **2 → 1:** Insert 2 is processed before Insert 1

   This allows flexible routing of external processors for optimal signal shaping within the hybrid workflow.
9. **VU OUT Meters:** Dual VU meters monitor the summed stereo output, providing smooth, analog-style visual feedback of overall level.

   As true VU meters, they reflect the average signal level in a more musical and perceptual way, rather than instantaneous peaks. This makes them ideal for judging loudness and balance, but they do not capture fast transients or peak dynamics.

The meters are calibrated as follows:

- **+3 VU = +24 dBu**
- **0 VU = +21 dBu**
- **–20 VU = +1 dBu**

3.3 Front Panel Fader Mode

Front Panel Fader Mode provides direct access to channel level control using the unit's front panel controls. This mode is designed for quick adjustments and hands-on operation without the need for a DAW, plug-in interface, or external controller.

When enabled, selected front panel controls are temporarily reassigned to manage channel faders, allowing both level adjustment and channel navigation directly from the hardware.

Activating Fader Mode:

To enable Front Panel Fader Mode, **press and hold the Output knob for 2 seconds**.
Once activated, the unit enters a dedicated control state in which the Output and Width controls no longer perform their default functions.

When Fader Mode is active:

- **Output knob (Level Control):**
  Rotating the Output knob will **increase or decrease the fader value of the currently selected channel**, allowing precise adjustment of its level.
- **Width knob (Channel Selection):**
  Rotating the Width knob will **change the selected channel**, enabling fast navigation across all available channels.

This combination allows the user to quickly move between channels and adjust levels using a minimal set of controls, providing an efficient workflow for balancing and fine-tuning the mix.

Front Panel Fader Mode is particularly useful in situations where:

- quick level adjustments are required without opening the plug-in,
- external controllers are not in use,
- tactile control over channel levels is preferred.

Because control is limited to one channel at a time, this mode is best suited for **fine adjustments and balancing**, rather than large-scale balance changes or multi-channel editing.

3.4 Rear Panel

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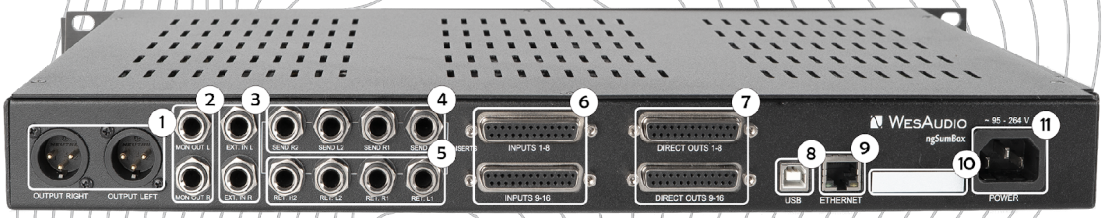


1. **Main Outputs (XLR):** Balanced XLR connectors carrying the summed **Left and Right main outputs**, intended for connection to converters, monitoring systems, or external processing chains.
2. **Monitors Outputs:** Dedicated balanced stereo outputs (Left/Right) for control room monitoring, allowing direct connection to monitor controllers or powered speakers.
3. **External Inputs:** Balanced stereo connectors used to feed external stereo signals directly into the ngSumBox summing bus, such as effect returns, submixes, or additional sources.
4. **Insert Sends:** Two pairs of balanced stereo send outputs (Left/Right) used to route the summed mix to external processors when using the Dual Insert functionality.
5. **Insert Returns:** Two pairs of balanced stereo return inputs (Left/Right) for bringing signals back from external processors into the main summing bus.
6. **Inputs:** Multi-channel analog inputs provided via **DB25 connectors (TASCAM standard pinout)**, used to feed individual channels into the ngSumBox summing engine from audio interfaces or patch bays.
7. **Direct Outputs:** Multi-channel direct outputs available via **DB25 connectors (TASCAM standard pinout)**, allowing individual channels to be routed out of the unit for stem recording, parallel processing, or external summing.
8. **USB:** Features a USB2+ compatible port for GCon management.
9. **Ethernet:** Offers an Ethernet port for GCon management using the UDP protocol (LAN within a single subnet).
10. **Serial Number**.
11. **AC Power Socket:** This is the designated point on the unit where the power cable is connected, linking the device to the main electrical supply. It's through this connection that the device draws alternating current (AC) power, essential for its operation. The socket is designed to accommodate the specific type of power cord that corresponds with the electrical standards of the region, ensuring the unit is powered safely and efficiently.

3.5 Audio Signal Connectivity

The ngSumBox is a state-of-the-art device that combines the warmth and musicality of **analog signal processing** with the precision and flexibility of **digital control**. While all audio signal paths inside the unit remain **purely analog**, the full range of functions and parameters can be precisely adjusted and recalled via a digital management protocol.

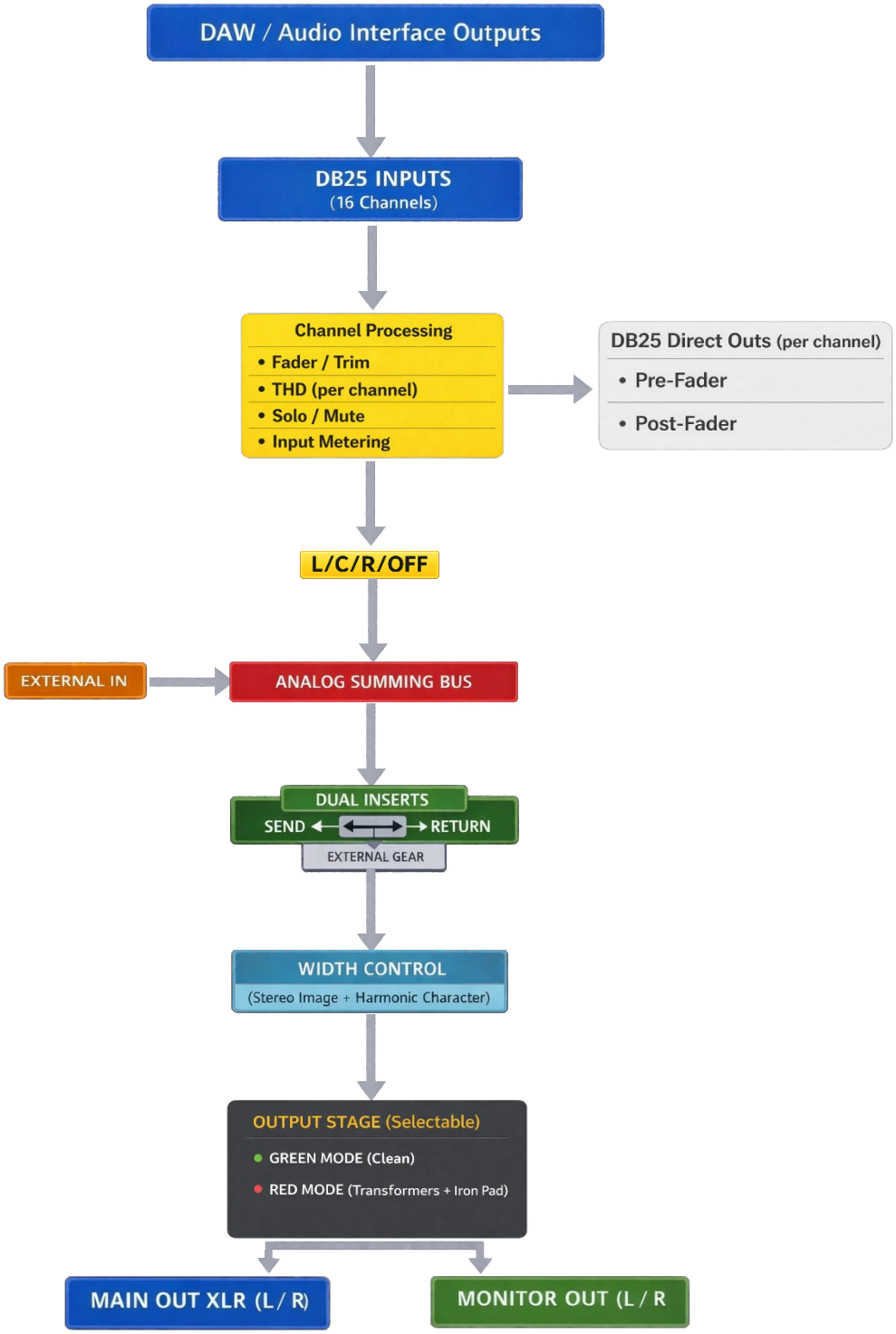
Audio signals enter the ngSumBox primarily through **DB25 multi-channel inputs**, which route individual channels into the analog summing engine with high signal integrity and efficient cabling. In addition, **External IN (Left/Right)** connectors allow stereo sources such as effect returns, submixes, or auxiliary signals to be introduced directly into the summing bus.

The summed stereo signal is delivered through **balanced XLR main outputs**, ensuring pristine, low-noise transmission to converters, monitoring systems, or external processors. Dedicated **Monitor outputs** provide an independent stereo feed for control room monitoring without affecting the main output path.

4 Analog Processing

This chapter in depth describes the analog nature of ngSumBox.

4.1 Analog Signal Flow



4.2 THD – Total Harmonic Distortion

The Total Harmonic Distortion (THD) feature represents a pivotal first analog block within the signal chain of the ngSumBox, renowned for delivering rich, controllable saturation through a proprietary circuit by WesAudio, a design highly esteemed within the audio industry.

Key Characteristics of THD:

- **Fully Variable Control:** The THD knob allows for seamless adjustments from 0% to 100%, offering a wide range of saturation effects.
- **Harmonic Content Enrichment:** As the THD setting is increased, it incrementally adds more harmonic content to the signal. This capacity for enrichment helps in giving tracks a noticeable presence boost, a quality frequently sought after by engineers for making elements stand out in a mix.
- **Compensation for Unity Gain:** Despite the significant volume boost provided by the THD, the ngSumBox intelligently compensates for this increase through output volume adjustments. This automatic compensation ensures that the unity gain is maintained, allowing for the saturation effect to be enjoyed without altering the overall level of the track.

The THD feature in the ngSumBox thus stands out as a versatile tool for engineers looking to imbue their tracks with warmth, character, and presence. With its fully variable control and sophisticated design, it provides a level of saturation that can significantly enhance the sonic quality of music productions, backed by the reassurance of maintaining unity gain throughout the process.

4.2.1 Output Modes

The ngSumBox is designed with two distinct output stages, each offering a unique character and signal path to suit different audio engineering needs and preferences. These stages are color-coded for ease of reference and operation: GREEN for an electronically balanced output and RED for transformer-based output stage combined with a passive attenuation circuit (IRON PAD). Here's a more detailed look at each:

1) GREEN Output Stage: Electronically Balanced

The GREEN output stage provides an electronically balanced signal path. This stage is characterized by its clean, transparent sound. It maintains the integrity of the audio signal with minimal coloration, ensuring a pure, unaltered output. This setting is ideal for applications requiring pristine sound quality and accuracy, making it suitable for critical listening environments and scenarios where the natural sound of the source material needs to be preserved.

2) RED Output Stage: Transformer-Based Output with IRON PAD

The RED output stage introduces a more complex and character-rich signal path:

- **Transformer Symmetrization:** Following the tube stage, the signal passes through a transformer symmetrization circuit. Transformers are known for their ability to add weight and warmth to the signal,

further enhancing the output's sonic character. This stage also contributes to the overall tonal balance and can induce subtle nonlinearities that enrich the sound.

- **Passive Attenuation Circuit (IRON PAD):** The final stage in the RED output path involves a passive attenuation circuit, known as the IRON PAD. This circuit consists of a set of resistors controlled via a relay cascade, allowing for attenuation ranging from 0 to 15dB. The IRON PAD enables the user to aggressively drive the tube and transformer stages for increased saturation and character while still having the ability to dial back the output level. This ensures that the subsequent stages in the signal chain are not overloaded, providing control over the signal's dynamic range without compromising on the desired tonal character.

Together, these stages offer the ngSumBox user a flexible and creative toolkit for shaping audio signals, whether the aim is to maintain the utmost fidelity to the source or to imbue the signal with the distinctive warmth and richness that only tubes and transformers can provide.

5 Software Setup

The WesAudio software package is accessible for download to all purchasers of the corresponding hardware unit at https://www.wesaudio.com/download.

For information on supported plugin types and platforms, please refer to the provided link.

5.1 Installation Process

To initiate the installation of the WesAudio software package, navigate to https://www.wesaudio.com/download and download the latest version of the software.

5.1.1 For Windows Users

- **Initial Installation**: Before beginning the installation, ensure that all WesAudio devices are disconnected from your computer.
- **USB Driver Installation**: Upon installing the USB driver, a notification will prompt you to connect all WesAudio devices. Please connect the devices as instructed.
- **Computer Restart Request**: Installation of the USB driver may necessitate restarting your computer. Although restarting is generally inconvenient, it is a crucial step to ensure successful installation of the USB driver.
- **Post-Restart**: After restarting, the installer should automatically resume. If the installer does not restart on its own, please manually reopen the same installer to continue the process.

5.1.2 For OSX Users

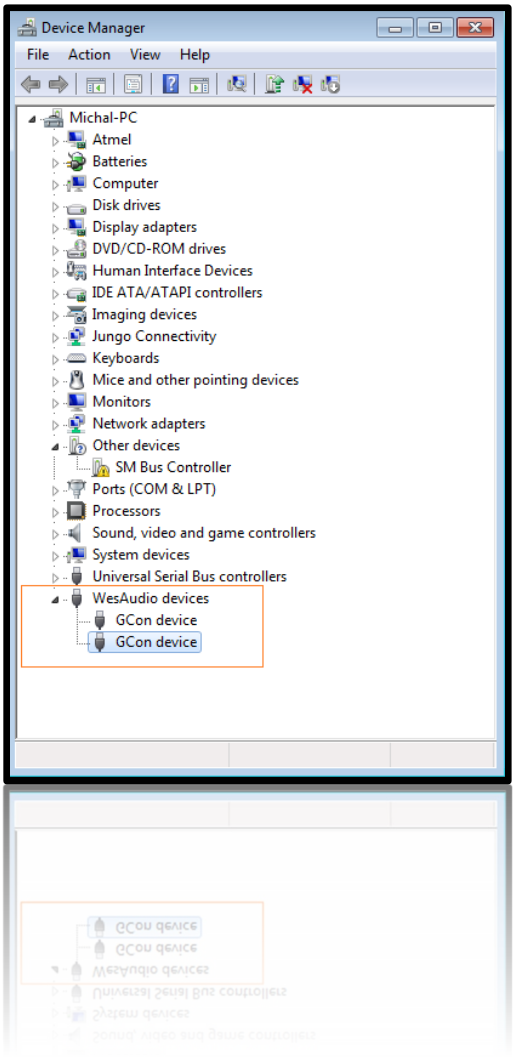
Due to the simpler nature of OSX architecture and its handling of USB devices, the primary consideration is to ensure all devices are connected before beginning the installation process. Once you initiate the installer application, you might encounter system warnings regarding the installer. In such cases, please disregard these warnings*. If necessary, you can bypass these warnings by accessing the context menu through an 'Option' click (or right mouse click) and initiating the installation process again.

5.1.3 Setup Troubleshooting

If you encounter any issues during the installation process, please reach out to our support team at support@wesaudio.com, and we will respond promptly to assist you.

Below is a common issue along with suggestions that might help in diagnosing the problem:

- Issue: "Can't find my device in the plugin dropdown menu"
    - This problem can stem from multiple causes. On Windows, a critical step is to verify that the USB device is successfully recognized at the system level. You can check this in the "Control Panel -> System -> Device Manager."
    - **Important for Windows Users:** Installing the USB driver is essential for the hardware units to communicate with the software. This step is mandatory only during the initial installation. The driver installation option will be automatically disabled for any subsequent software updates.



5.2 GCon Manager

The GCon Manager is a versatile application designed for configuration management across compatible devices. It is located within the Application folder data:

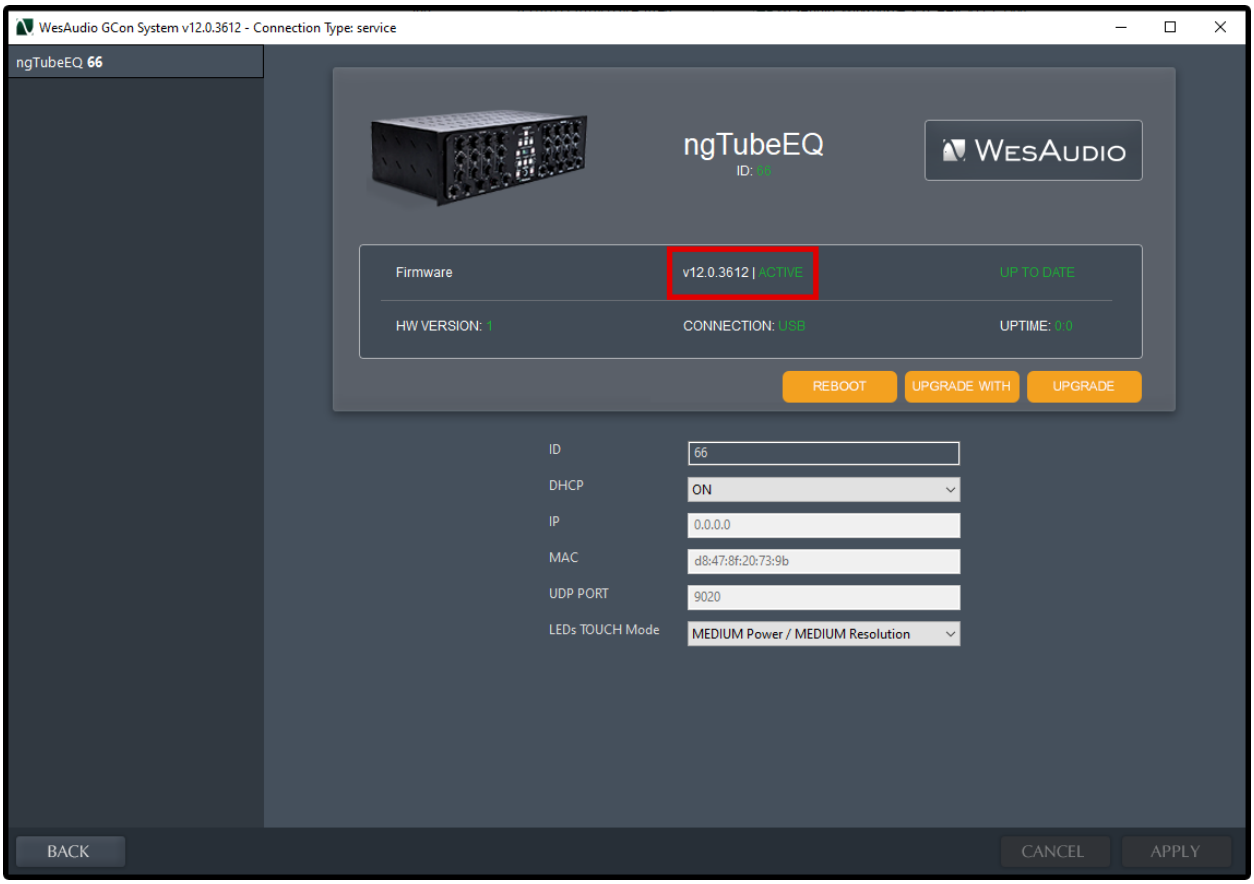
- **For OSX:** Access it at "/Applications/WesAudio/GConManager."
- **For WINDOWS:** Find it in the folder chosen during the installation phase, typically "c:/Program Files x86/WesAudio/GConManager.exe" by default.

Main Features:

- **Firmware Updates:** Easily upgrade your device's firmware to the latest version.
- **Configuration Settings:** Modify unit settings, such as IP address configuration, to suit your needs.
- **Diagnostics:** Run diagnostic tests to ensure your unit is functioning correctly.
- **External Controller Setup:** Configure external controllers, for instance, for the ngLeveler or ngSumBox.
- **Standalone Operation:** Control units directly without the need for a DAW (Digital Audio Workstation).

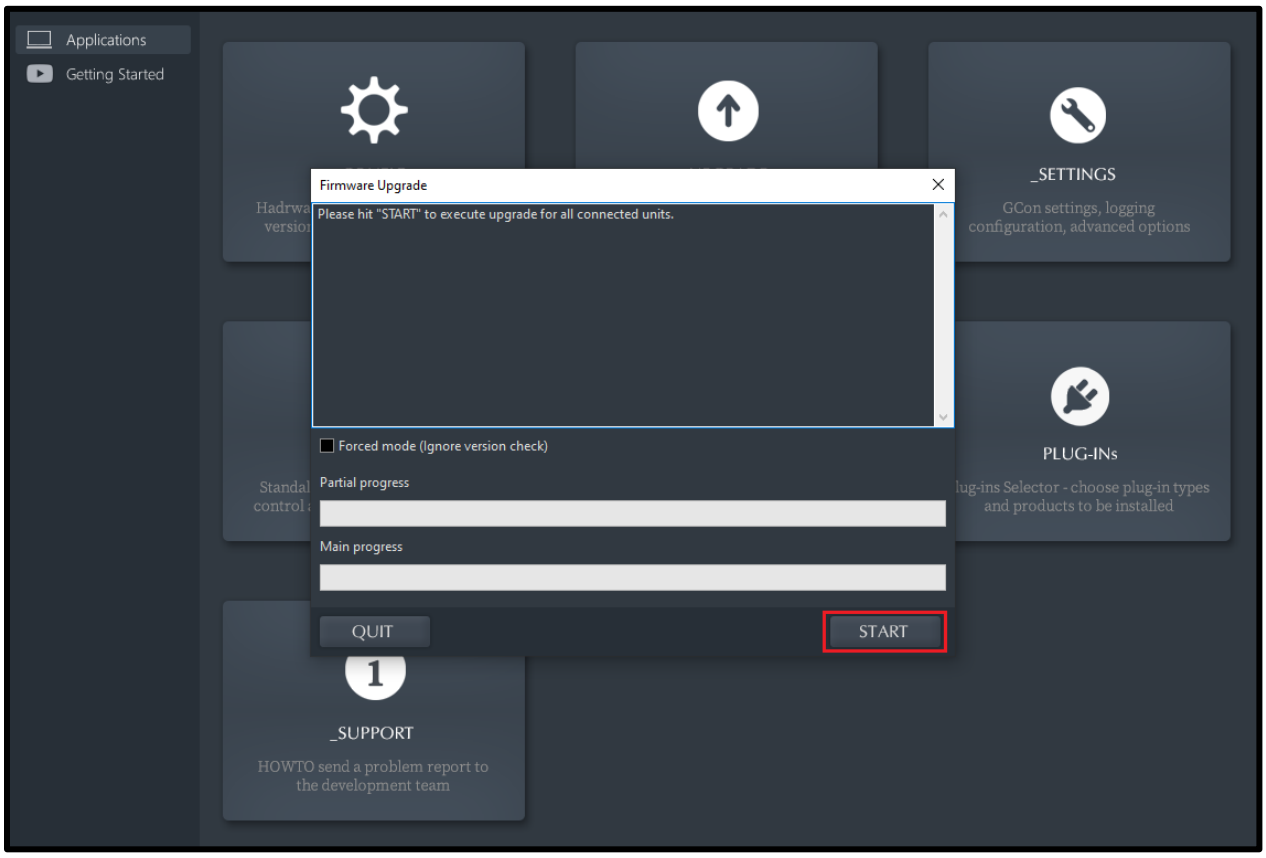
5.3 How To Check Firmware Version

Each device communicates its firmware version to your workstation, establishing compatibility between your host application and the connected device. To verify the firmware version or perform an upgrade, please use the GConManager _CONFIG application.



5.4 How To Perform Firmware Upgrade

To update the firmware, navigate to the GConManager UPGRADE section and press the “Start” button. This starts the update process for any modules that do not have the latest firmware version.



5.5 Set Up GCon Connection

This chapter outlines potential setup configurations and details the primary steps for configuration.

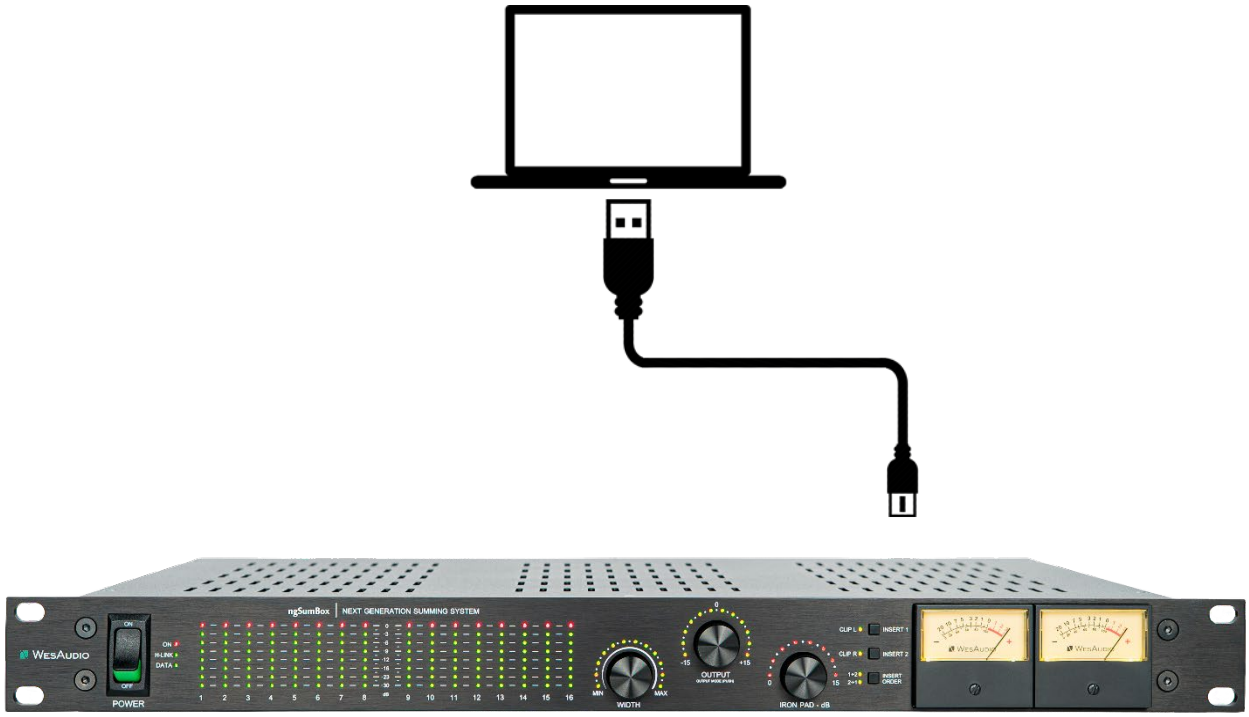
It's important to recognize that audio signals should be transmitted through XLR connectors. The USB and Ethernet ports are designed solely for managing unit configurations using the GCon Protocol.

Broadly speaking, the ngSumBox supports two types of connections:

- **USB 2.0** or higher.
- **Ethernet 10/100**, utilizing the UDP protocol for LAN within a single subnet.

5.5.1 USB

To directly link your ngSumBox unit to your workstation, simply use a USB cable to connect it to any available USB 2.0+ port on your computer.

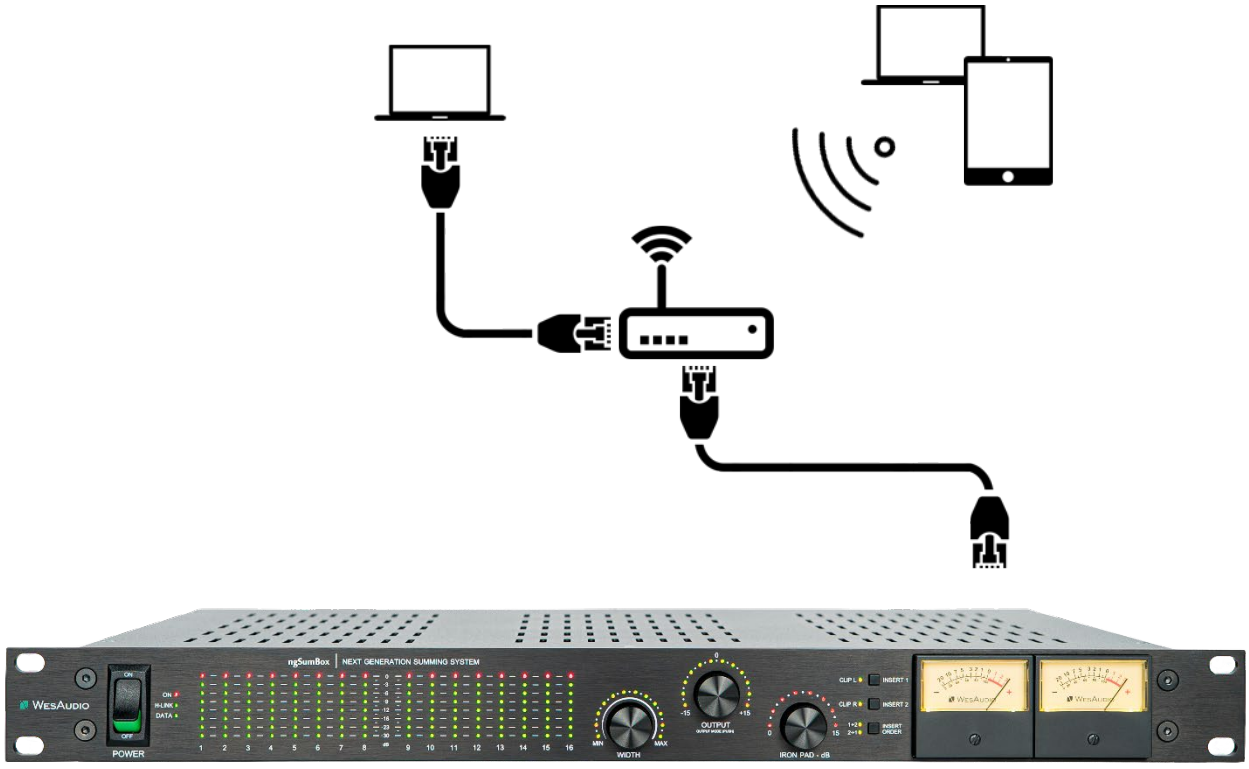


5.5.2 Ethernet

The ngSumBox, like any network-enabled device, offers flexibility in connectivity to your workstation through the following methods:

- **Local Area Network (LAN) Connection:** By integrating the ngSumBox into your LAN, it becomes accessible from various devices within the network, allowing for versatile placement and usage within your studio environment.
- **Direct Workstation Connection:** For a straightforward setup, the ngSumBox can be directly connected to your workstation. This method is ideal for simple, one-to-one configurations without the complexity of a network.

In certain scenarios, it might be necessary to manually assign IP addresses to both your workstation and the ngSumBox to ensure proper communication and functionality. The following illustrates a typical setup within a local area network, showcasing how different devices can interact with and utilize the ngSumBox features:



(*) In case you would like ngSumBox to join already existing network, most probably your workstation has IP address already set up through static configuration entry, or through DHCP (by your router).

5.5.3 Default Network Configuration via DHCP

Each ngSumBox unit is set to utilize **DHCP by default**, making it straightforward to connect your ngSumBox to your router—simply plug it in, and you're good to go! If you're interested in altering this setup, the following next chapters will guide you through changing the configuration. To establish static IP addresses for your devices, you must undertake two key steps:

Disable DHCP: This ensures that your device does not automatically obtain an IP address from the network, allowing for manual configuration of a static IP address.

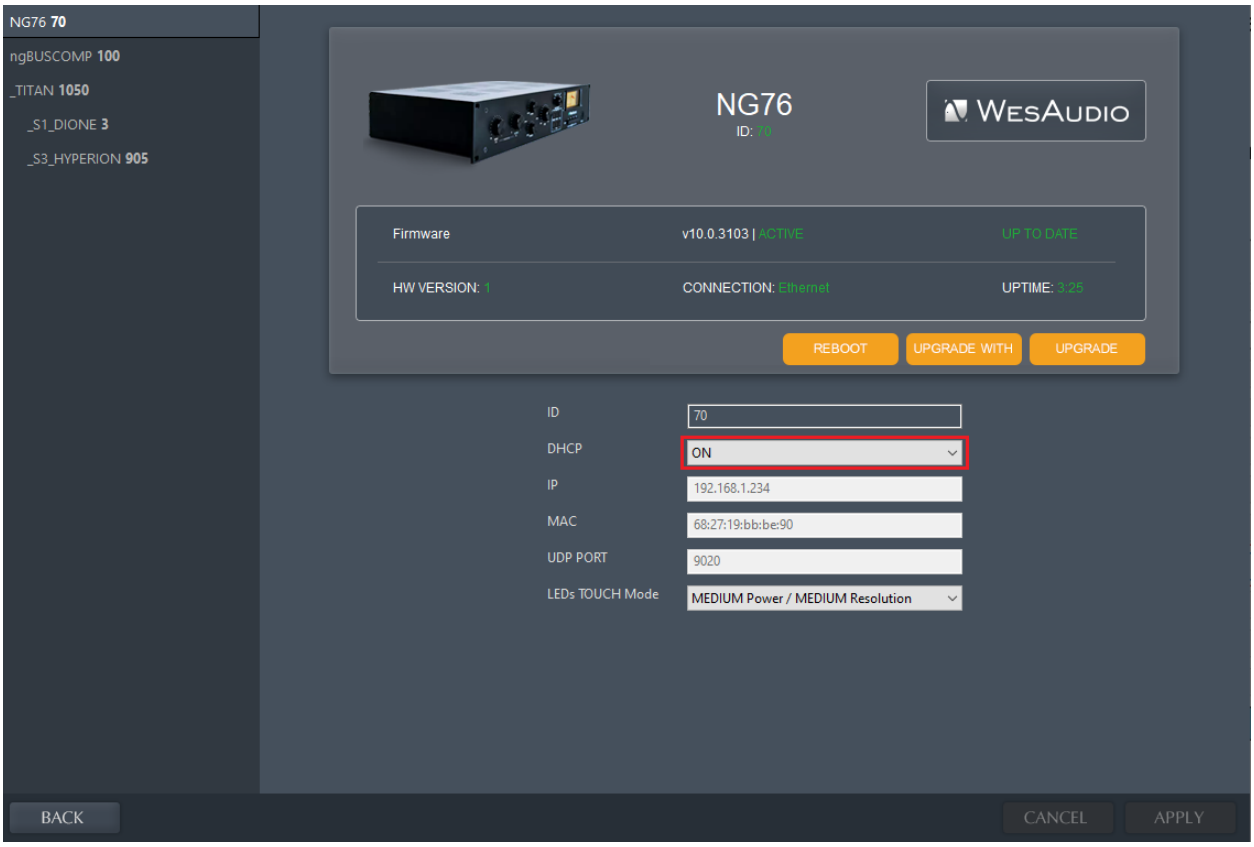
Configure a Static IP Address: Once DHCP is disabled, you can assign a specific, unchanging IP address to your device.

Detailed instructions for both procedures are provided in the subsequent chapters.

5.5.4 Enable/Disable DHCP

To toggle the DHCP setting on your ngSumBox unit to either enabled or disabled, follow these steps:

- **USB Connection:** Begin by connecting your ngSumBox directly to your workstation using a USB cable. This step is crucial because altering network configurations might result in a loss of connectivity with your device. A direct USB connection will remain as a fallback for reconfiguration.
- **Launch GConManager:** Open the GConManager software and proceed to the _CONFIG application.
- **Select Your Device:** Within GConManager, find and select your ngSumBox from the list displayed in the elements tree on the left side.
- **Adjust DHCP Setting:** Modify the DHCP option to match your requirements—either turning it "ON" for automatic IP address assignment or "OFF" for static IP configuration. Following this adjustment, the unit will undergo a restart, after which your connection to the ngSumBox should automatically re-establish.



Before transitioning from a USB connection to Ethernet, it's crucial to configure the appropriate IP address on your ngSumBox. This setup ensures seamless communication between the device and your network. The subsequent chapter will guide you through the process of establishing the correct IP settings.

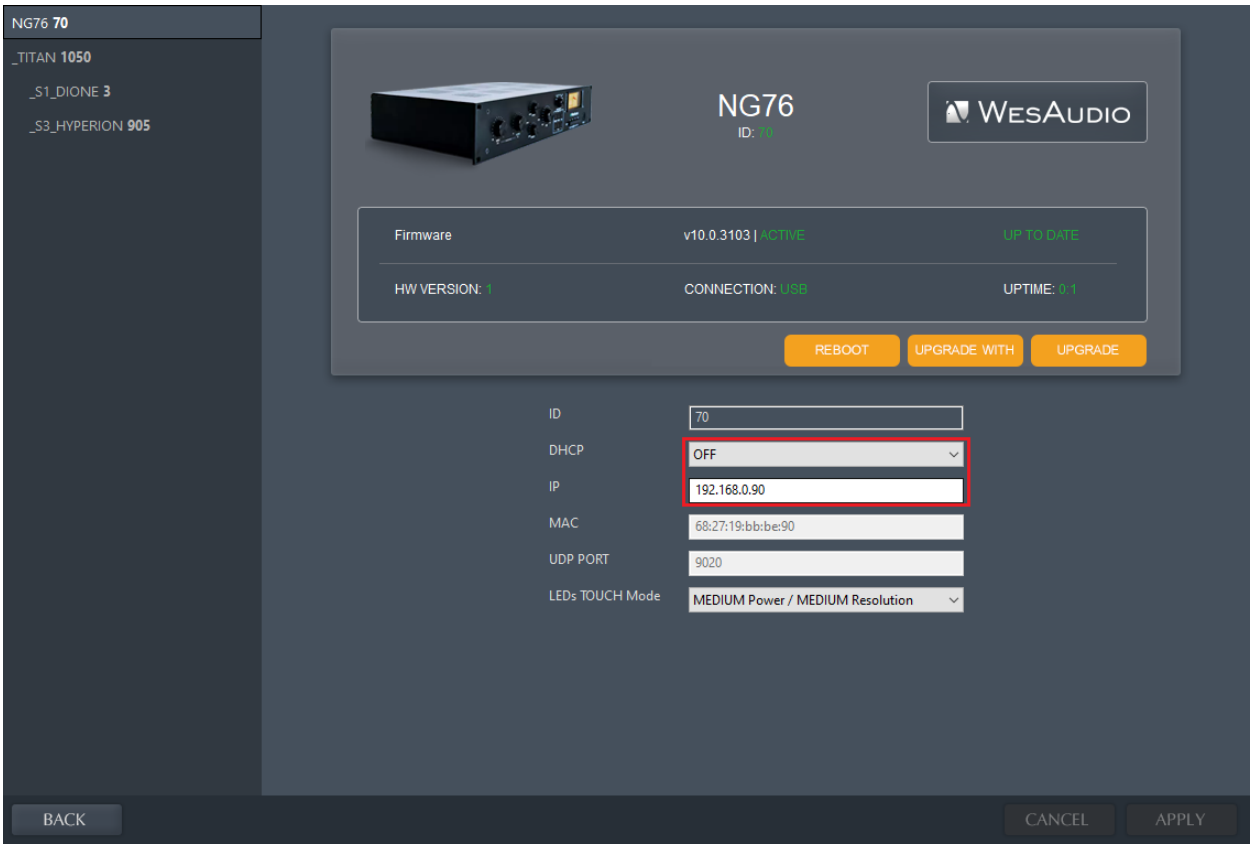
5.5.5 Set Up Static IP Address

There are a few situations where manually configuring the IP address for your ngSumBox might be necessary:

- **Non-DHCP Router:** If your router does not support DHCP, you will need to manually set the IP address to ensure the ngSumBox can connect to the network.
- **Manually Configured LAN:** For networks set up with manual configurations, such as through a hardware switch, your ngSumBox will require a manual IP setup to match the network's settings.
- **Direct Workstation Connection:** If you prefer to connect your ngSumBox directly to the Ethernet port on your workstation, a manual IP configuration is needed for the device to communicate effectively with your computer.

To configure the IP address for your ngSumBox, the process is similar to setting up other devices, with slight adjustments for device-specific steps. Here's how you do it:

- **USB Connection:** Initially, connect your ngSumBox directly to your workstation using a USB cable. (If you've already established a connection to the ngSumBox via an Ethernet cable and can access its settings, this step might not be necessary).
- **Launch GConManager:** Open the GConManager software on your computer and proceed to the "_CONFIG" application.
- **Select Your Device:** From the device list on the left side of the screen, select your ngSumBox unit.
- **Adjust DHCP Settings:** If the DHCP option is enabled ("ON"), change it to "OFF." This will necessitate a restart of the unit, after which the connection should automatically be re-established.
- **Set the IP Address:** Input the IP address you wish to assign to your ngSumBox in the provided field and press the 'Apply' button. The unit will undergo a restart to apply the new network settings. Once it powers back up, the connection with your ngSumBox will be re-established under the new IP configuration.
- After successfully configuring the IP address, you can now disconnect the USB cable from your ngSumBox and connect it to your network using an Ethernet cable. This will enable network-based communication and control according to the new settings you've applied.



5.5.6 Direct Connection – Setting IP Address on PC/MAC

Connecting your ngSumBox directly to a Mac or PC via Ethernet requires a few steps to ensure seamless communication. Here's a concise tutorial to guide you through the process:

For Both Mac and PC

Step 1: Prepare Your Equipment

- Ensure you have a standard Ethernet cable available.
- Your ngSumBox should be powered off before making any connections.

Step 2: Connect the Ethernet Cable

- Plug one end of the Ethernet cable into the Ethernet port on your ngSumBox.
- Connect the other end of the Ethernet cable to the Ethernet port on your Mac or PC.

For Mac

Step 3: Configure Network Settings

- Go to **System Preferences > Network**.
- Select the Ethernet connection from the list on the left. If it's not already configured, it may appear as a new connection with a green dot and say "Connected".
- Click on the "Advanced" button, then go to the TCP/IP tab.
- Configure the IPv4 setting to "Manually" or "Using DHCP with manual address", depending on your needs.
    - If selecting "Manually", enter the IP address that matches the network settings of your ngSumBox.
- Click "OK", then "Apply" to save your settings.

For PC (Windows 10/11)

Step 4: Configure Network Settings

- Go to **Settings > Network & Internet > Ethernet**.
- Click on your Ethernet connection.
- Scroll down and select **Edit** under IP assignment.
- In the Edit IP settings drop-down, choose "Manual".
- Enable "IPv4" by toggling it On, then fill in the IP address, Subnet mask, and Gateway based on your ng78 network settings.
- Click "Save" when done.

Final Step for both Mac and PC

- Power on your ngSumBox.
- Ensure any necessary software or drivers for ngSumBox operation over Ethernet are installed on your computer.
- If required, adjust the ngSumBox network settings to ensure they are compatible with your computer's network configuration. This might include setting a static IP address on the ngSumBox that is in the same subnet as your computer but outside your DHCP range to avoid IP conflicts.

You should now be able to communicate directly between your ngSumBox and computer via Ethernet, allowing for device management and control without a router or network switch.

6 Digital Control / Recall

This chapter delves into the comprehensive options available for managing ngSumBox and automating its settings. The cornerstone of ngSumBox's automation capabilities is its integration with Digital Audio Workstations (DAW) through a plugin, which is available in all common formats. This seamless convergence between hardware and digital software opens a wide array of creative possibilities and enhances workflow efficiency.

DAW Plugin Control:

DAW plugin control bridges the analog-digital divide, enabling users to manipulate hardware settings directly from their DAW. This fusion of the tactile and the virtual is not merely convenient but transformative, changing how producers and engineers interact with their gear.

Benefits of DAW Plugin Control:

- **Precision and Recall:** The ability to precisely recall settings for sessions is invaluable, ensuring mixes can be revisited or altered without the need to manually reconfigure the hardware. This feature is crucial for those working on multiple projects or needing to maintain consistency across sessions.
- **Automation Capabilities:** Integration with the DAW allows for the automation of every ngSumBox parameter within the digital environment. This feature provides dynamic changes in settings over time, infusing tracks with movement and vitality without manual intervention.
- **Workflow Efficiency:** Manually adjusting settings on hardware units can be cumbersome, particularly in complex setups. DAW plugin control simplifies this process, facilitating quick changes and A/B comparisons without physical interaction with the unit, thereby streamlining the production process.
- **Enhanced Creative Potential:** Merging the analog warmth with digital control flexibility broadens the creative spectrum, enabling real-time experimentation and the achievement of effects that might be challenging or impractical to accomplish on the hardware alone.
- **Accessibility:** DAW plugin control ensures full accessibility and adjustability of ngSumBox features from the workstation, a boon for those with spatial constraints or other limitations preventing direct access to their hardware.

In essence, ngSumBox DAW plugin integration marries the rich, analog sound quality with the precision and versatility of digital control. This not only amplifies the functionality of ngSumBox but also elevates the music production process, offering unprecedented control and flexibility in a traditionally analog setup.

6.1 DAW Plug-in

The ngSumBox plug-in extends comprehensive control over all parameters of the unit, ensuring seamless integration into any digital audio workstation (DAW) environment. Designed to be versatile and accessible, it supports all common plug-in standards, including VST2, VST3, AU (Audio Units), and AAX, making it compatible with a wide range of software platforms.

6.1.1 NGSumBox – Plugin Management Panel

Analog Sound Digital Recall

1. **Previous Preset:** Loads the previous preset from preset database.
2. **Next Preset:** Loads the next preset from preset database.
3. **Preset Name:** The name of the preset currently in use or being modified, which allows for easy recall or sharing of specific configurations.
4. **Preset Selector:** Allows for the selection, viewing, and deletion of presets.
5. **Preset Save:** Saves currently selected presets.
6. **Preset Save As:** Facilitates saving current settings as a preset providing name and preset details.
7. **Preset Info:** Displays details of the currently loaded preset.
8. **Menu:**
    - **Resize:** Adjusts the GUI size (75%/100%/125%/150%/175%/200%), catering to different screen sizes and user preferences.
    - **Reset Parameters to Default:** Resets all plugin parameters to their default states.
    - **Save GUI Preferences:** Allows to save current GUI settings, ensuring each new plugin instance opens with the same size and scaling settings.
    - **Clear GUI Preferences:** Clears the information about plugin size, FFT, and draw plot from the file. Please note that this function does not reset the plugin GUI to its default settings, it just clears saved configuration used by new plug-in instances.
    - Shows currently installed plug-in version.
9. **Master Fader:** Controls the level of all channel faders simultaneously, allowing global adjustment of channel levels.
10. **Width:** Adjusts the stereo image of the summed output, allowing the mix to be narrowed or widened while preserving natural spatial balance.
11. **Width Bypass:** Disables the Width processing only (does not bypass the entire signal path).
12. **Output:** Controls the final output level of the summed stereo signal before it is sent to the output stage.
13. **Dynamic Link:** Links the Output and Iron Pad controls when using the GUI Scroll in the plugin, allowing both parameters to be adjusted simultaneously. For more information read chapter "Auto Parameter Linking Feature."
14. **Iron Mode:** Selects the operating mode of the Iron output stage, defining how the Iron Pad circuit interacts with the summed signal.
15. **Iron Pad:** Engages a passive attenuation circuit, reducing the signal from 0dB to 15dB. This allows driving the input harder without overloading, ideal for working with hotter signals
16. **Dual Insert:** Enables two fully recallable analog insert points on the main summing bus for integrating external processors into the signal path.
    Each insert (**Insert 1** and **Insert 2**) can be enabled or disabled independently, allowing flexible routing of external gear. Additionally, the processing order of the inserts can be adjusted (1 → 2 or 2 → 1), enabling precise control over signal flow and processing behavior.
17. **VU Meters:** Dual VU meters display the level of the summed stereo output, providing smooth, analog-style visual feedback of overall signal level.
    As true VU meters, they represent the average signal level in a musical and perceptual way rather than instantaneous peaks, making them ideal for evaluating loudness and balance, but not fast transients.
    The meters are calibrated as follows:
        - **+3 VU = +24 dBu**
        - **0 VU = +21 dBu**

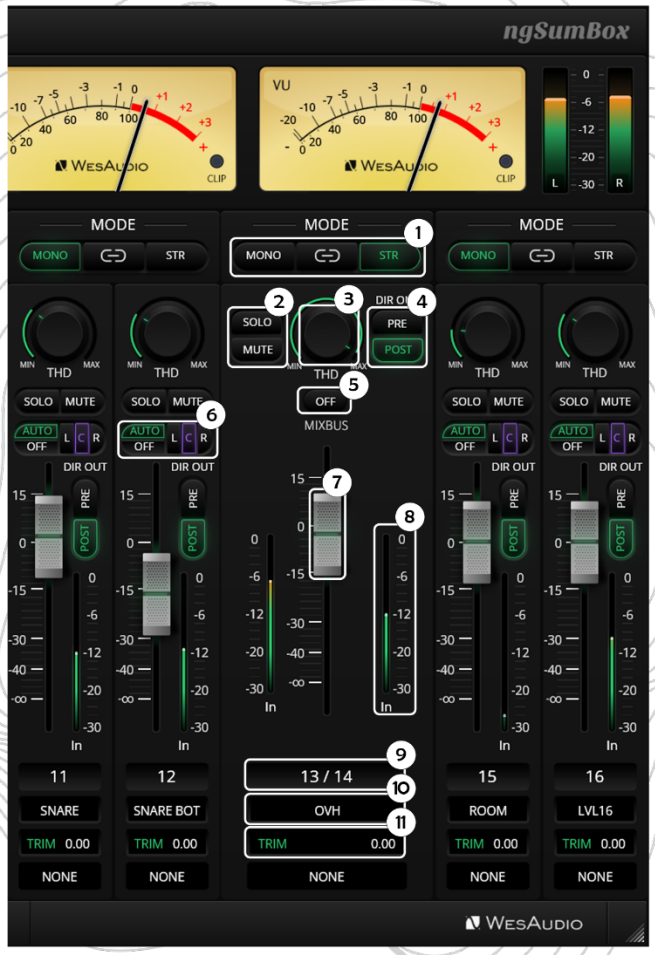
- **–20 VU = +1 dBu**

18. **Clip Indicator:** Provides visual feedback when the summed signal reaches the clipping threshold at the final stage of the signal path.
    Clipping occurs at approximately **+28 dBu**, reflecting the unit's high-headroom design. When illuminated, the indicator signals that the output level has exceeded the available headroom and may result in distortion.
19. **Peak Meter:** A high-speed peak meter that displays the instantaneous level of the summed stereo output. Unlike VU meters, this meter is highly responsive and captures fast transients and dynamic content, providing accurate insight into signal peaks. It is particularly useful for monitoring the exact level being sent to downstream equipment, such as audio interfaces or converters, helping to prevent digital clipping and ensure optimal gain staging.
20. **Toggle Connection Button:** This button toggles the connection status ON/OFF. It functions only when a connection ID has been selected using the "Select Connection Button."
21. **The Select Connection Button:** within the ngSumBox plug-in serves as a gateway to establishing and managing connections with devices that support the GCon protocol. This feature simplifies the process of identifying and selecting the hardware unit to be controlled, providing a user-friendly interface for seamless integration between the plug-in and physical devices.
    Upon Initiating Connection, It Visualizes the Connection State as Follows:
    - **USB:** This label signifies a connection established through USB, offering a direct link between the hardware unit and the workstation.
    - **ETH:** This label indicates an Ethernet connection, showcasing the ability to connect over a network for potentially more flexible setup options.
    - **Connection ID:** The unique identifier for the connected hardware unit is displayed, allowing for easy recognition and management of multiple devices. Accompanying this ID, the connection status is visually indicated to inform the user of the current state:
        - **ON:** A solid white font denotes a successful connection, indicating that communication between the plug-in and the hardware unit is active.
        - **OFF:** A solid gray font signifies that the connection is not established, alerting the user to a disconnect or other issue preventing communication.
        - **Connecting:** A gray italic font is used to represent the process of establishing a connection. If this state persists for an extended period (more than 5 seconds) without successful connection, it suggests a potential issue requiring troubleshooting or support consultation
22. **Copy:** Enables users to copy the current parameter state.
23. **Paste:** Enables users to paste the current parameter state, facilitating quick duplication of settings.
24. **Undo:** The Undo feature in the ngSumBox plug-in allows users to revert to the previous state before the most recent adjustment was made. This function is essential for quickly correcting mistakes or reassessing changes without permanent consequences to the settings.
25. **Redo:** Following an Undo action, the Redo function permits users to reapply the last change that was undone. This feature ensures that no adjustment is final until the user is satisfied, providing an additional layer of flexibility in tweaking the settings.
26. **Config Bank:** Selects between configuration banks, each containing three configurations. This feature supports automation for changing unit settings within a session or a song

27. **Fast Preset Change (A/B/C):** Quickly toggles between configs A/B/C without affecting connection-related parameters like the Connection ID.
28. **Fader/Trim Mode:** Displays the current parameter value depending on the selected mode:
    - **TRIM** – shown when Fader mode is active.
    - **LEVEL** – shown when Trim mode is active.
29. **Resize:** Adjusts the display size or layout of the interface.

6.1.2 NGSumBox – Channel Description

Analog Sound Digital Recall



1. **Channel Mode:** Defines how two neighboring channels are linked:
    - **Mono:** No linking; channels operate independently in dual-mono
    - **Linked:** Channels are linked relatively, allowing compensation for level differences when using dual-mono analog devices as a stereo pair.
    - **Stereo:** Channels share identical settings through absolute linking for true stereo operation.
2. **Solo/Mute/Solo Safe:** These controls manage channel monitoring and signal audibility without affecting the underlying signal processing or routing.
    - **Mute:** Silences the channel output
    - **Solo:** Allows the channel to pass signal with full processing applied while muting all other channels, unless they are also soloed or set to Solo Safe.
    - **Solo Safe:** When enabled by clicking the solo icon while holding CTRL/CMD, the channel continues to pass signal with full processing even when other channels are soloed, unless it is explicitly muted.
3. **THD:** Adjusts the amount of total harmonic distortion applied to the channel, allowing anything from subtle coloration to more pronounced analog saturation.
4. **Pre/Post:** Selects whether the **Direct Out** signal is taken **before (pre-fader)** or **after (post-fader)** the channel fader, allowing flexible routing depending on workflow requirements.
5. **MIXBUS OFF:** When engaged, the stereo channel is removed from the stereo bus, preventing it from being included in the summing path.
6. This provides the same result as disabling (OFF) a mono channel, but applies specifically to stereo tracks.
7. **Off/Auto/L/C/R:** Determines automatic or manual channel placement within the stereo field:
    - **Off:** Disables channel assignment to the stereo bus, effectively removing the channel from the summing path.
    - **Auto:** The channel is automatically positioned within the stereo bus based on the current configuration.
        i. **MONO:** The signal is routed equally to both left and right buses (centered).
        ii. **DUAL / STR:** The left channel is routed to the left bus, and the right channel is routed to the right bus (stereo).
    - **L/C/R:** Manually assigns the channel to the **Left**, **Center**, or **Right** position in the stereo image.
8. **Fader:** Main level control for the channel, used for overall gain adjustment during mixing and analog summing.
9. **IN Metering:** Displays the signal level of each channel before the main ngSumBox processing stage (Leveling, THD, Solo, Mute), providing accurate visual feedback for proper input gain staging.
   The meters operate on a scale from 0 to –30, where:
    - 0 corresponds to +24 dBu ,
    - –30 corresponds to –6 dBu.
10. **Channel Name:** Fully assignable channel names for clear identification; names are also transmitted to external controllers when connected.
11. **Trim/Level Value:** Depending on the active mode (Fader or Trim), this field displays the current channel value:
    - **Trim:** Displayed when Trim mode is selected.
    - **Level:** Displayed when Fader mode is selected.
12. **Group Assignment:** Indicates the group to which the channel is assigned, enabling synchronized control, automation, and processing of multiple channels simultaneously.
    - Each channel can be assigned to one of **four groups**, which link all channel parameters within the selected group.

- Selected parameters can be excluded from group linking, including:
    i. **Level (Fader mode)**
    ii. **Trim (Trim mode)**
    iii. **THD**
- A group can be disabled at any time, allowing full, independent adjustment of all parameters on individual channels.
    i. **Example:** This allows automation of the **LEVEL** parameter (main fader) across the entire group while preserving the relative balance between channels. At the same time, other parameters such as **Trim** and **THD** can remain independent for each channel when their group linking is disabled.

6.1.3 NGSumBox – Plugin Structure (Trim Mode)

Analog Sound Digital Recall

Trim Mode provides an additional layer of level control and automation for the analog circuit, similar to trim functions found in many DAWs.

It allows you to adjust the level of each channel **on top of the existing main fader settings**. The Trim fader operates within a focused range of **–10 dB to +5 dB**, offering very high resolution for precise level adjustments.

This approach provides several key advantages:

- Even if the main faders are already automated or grouped, you can still fine-tune the balance of individual channels. For example, you can subtly adjust the level of a kick drum within an already automated drum group.
- You can use group automation on the main faders while applying Trim Mode to:
    - Automate individual channels within the group differently, or
    - Make small level adjustments between tracks in the same group.
- Trim Mode is especially convenient for automation, as the reduced 15 dB control range allows for more precise and detailed adjustments compared to the full main fader range.

6.1.4 Channel Groups

The ngSumBox allows channels to be assigned to up to **four independent groups**, enabling linked control of selected parameters across multiple channels. This function is particularly useful when managing stereo pairs, stems, or multi-channel elements that require coherent adjustments within the summing environment.

Each channel can be assigned to **Group 1–4** or remain ungrouped. When channels are assigned to the same group, selected parameters are controlled simultaneously across all grouped channels.
The following parameters can be independently enabled or disabled for group linking:

- **LEVEL**
- **TRIM**
- **THD**

This flexible grouping structure allows precise control over how channels interact.

Example: If only the **LEVEL** parameter is enabled for a group, moving the fader on one channel proportionally adjusts the LEVEL of all grouped channels while preserving their relative balance. At the same time, **TRIM** and **THD** can remain unlinked, allowing independent tonal or gain adjustments per channel.

Any group can be disabled at any time. When disabled, all channels revert to fully independent operation, allowing unrestricted per-channel parameter adjustments.

6.1.5 Monitoring – Solo/Solo Safe/Mute

Analog Sound Digital Recall

ngSumBox supports following monitoring features:

1. **MUTE** – Silences the selected channel, removing it from the analog summing bus.
2. **SOLO** – When activated, the selected channel is routed to the summing output while all non-soloed channels are automatically muted (unless set to Solo Safe). The channel continues to pass signal through the full analog summing path.
3. **SOLO SAFE** – The channel remains active in the summing bus even when other channels are soloed. This function is typically used for grouped signals, effect returns, or stem buses that must remain audible while soloing individual channels.

6.1.6 Automation when Linked Mode is Enabled

When linked mode is enabled, two adjacent channels operate as a single pair, and all parameter changes are mirrored between them. Any adjustment made to one channel is automatically applied to the linked channel, ensuring identical behavior across both tracks.

For automation, it is recommended to control only **one channel within the linked pair**, as both channels always share the same parameter values. Writing automation on both channels simultaneously may lead to conflicts or redundant data, as each channel attempts to control the same parameters.

In Linked mode, all parameters—including level, trim, and processing settings—are synchronized, providing consistent control and predictable automation behavior for stereo or paired track operation.

7 MIDI Controllers with ngSumBox

The ngSumBox supports integration with external MIDI and DAW control surfaces, allowing hands-on control of analog summing parameters while retaining full digital recall and automation. This enables a console-like workflow where physical controllers and the plug-in operate together as a single system.

Control surface integration is handled entirely through the ngSumBox plug-in, which translates controller actions into precise commands for the analog hardware via the GCon protocol. The audio signal path always remains fully analog.

7.1 Supported Control Protocols

The ngSumBox supports industry-standard control surface protocols, allowing compatibility with a wide range of professional controllers:

- **MC (Mackie Control)**
- **HUI**

These protocols enable control of key parameters such as channel levels, stereo positioning, grouping, and automation directly from supported hardware controllers.

7.2 Integration with MIDI Controllers

This chapter describes the basic configuration and integration of ngSumBox with third-party MIDI and control surfaces. The unit supports industry-standard control surface protocols, including **HUI** and **Mackie Control**, allowing flexible and scalable controller-based workflows.

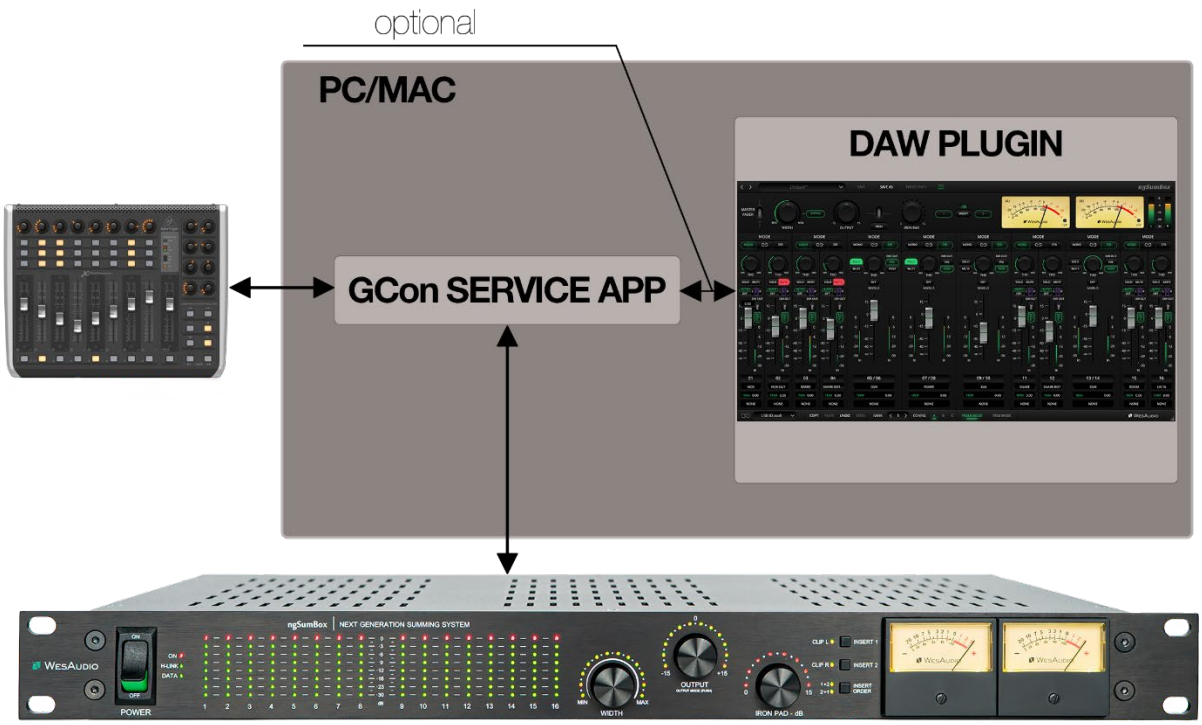
Controller integration can operate in two modes:

- **Server Mode** – The controller manages ngSumBox exclusively, with all control surface input directed to the hardware through the ngSumBox plug-in.
- **Server Mediation Mode** – The controller manages both ngSumBox and the DAW simultaneously, enabling combined control of hardware parameters and DAW functions. Further details are provided in the following chapters.

Neither mode imposes limitations on system configuration. Multiple controllers can be used simultaneously, and any number of controllers may control one or more ngSumBox units within the same setup, depending on the DAW configuration.

7.2.1 GCon Server Mode

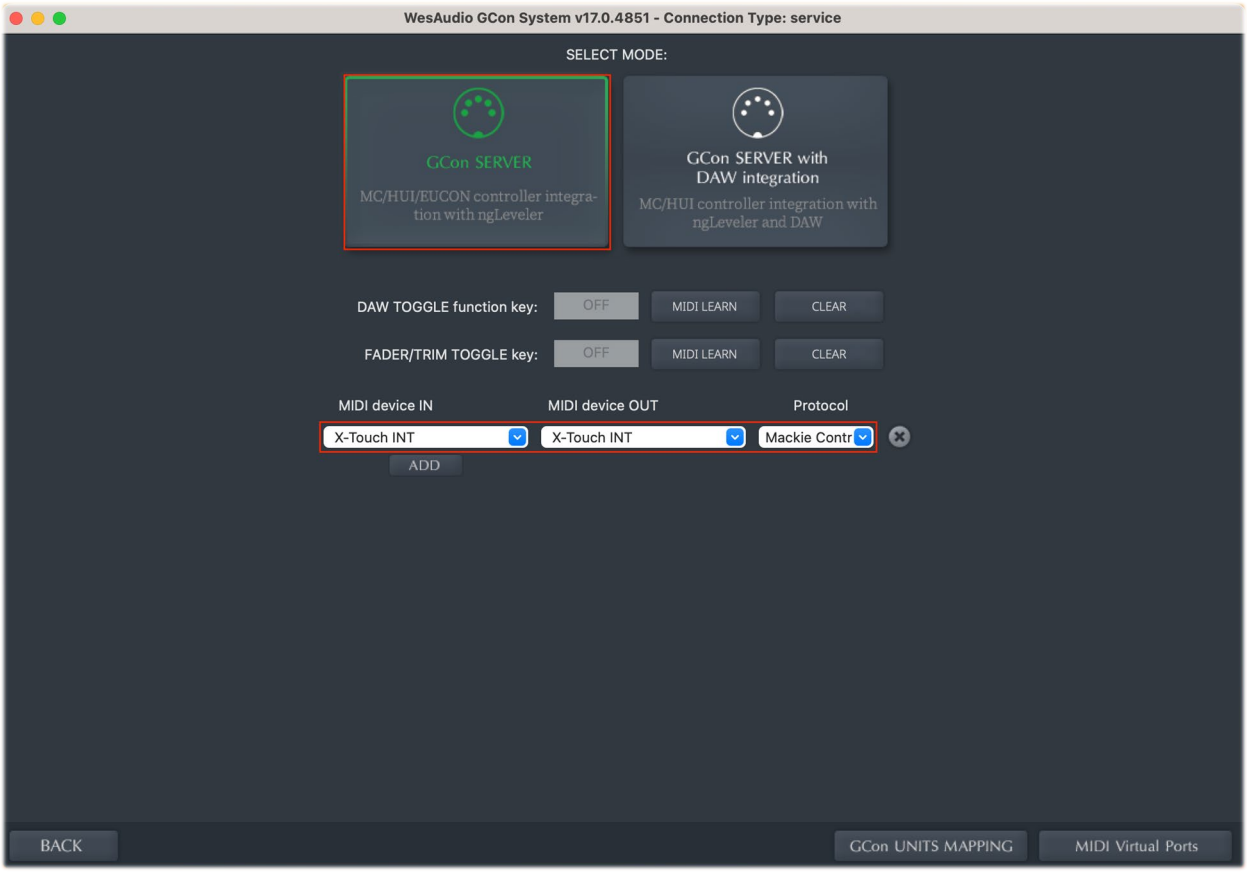
In this mode, a **HUI or Mackie Control–compatible controller** manages **ngSumBox** exclusively. This operating mode is referred to as **GCon Server Mode**. All control surface input is directed to ngSumBox through the plug-in, allowing dedicated, hardware-focused control without interference from DAW channel assignments. This mode is particularly useful when the controller is intended to function as a standalone hardware control surface for one or multiple ngSumBox units.



As illustrated in the diagram above, the controller connects directly to the **GCon Service** via MIDI. This background application manages all communication between the controller and the ngSumBox hardware. In this configuration, the DAW plug-in does not need to be launched—once **GCon Server Mode** is configured, the controller can operate ngSumBox parameters independently, providing direct and dedicated hardware control.

7.2.1.1 Configuration of GCon Server Mode

To enable this mode, it is sufficient to configure the controller's **MIDI input and output ports** in the **GConManager _CONTROL** application. Once the correct MIDI ports are assigned, the controller becomes immediately available for controlling ngSumBox parameters, without requiring any additional DAW configuration. This approach allows fast setup and makes it easy to repurpose a controller for dedicated hardware control.

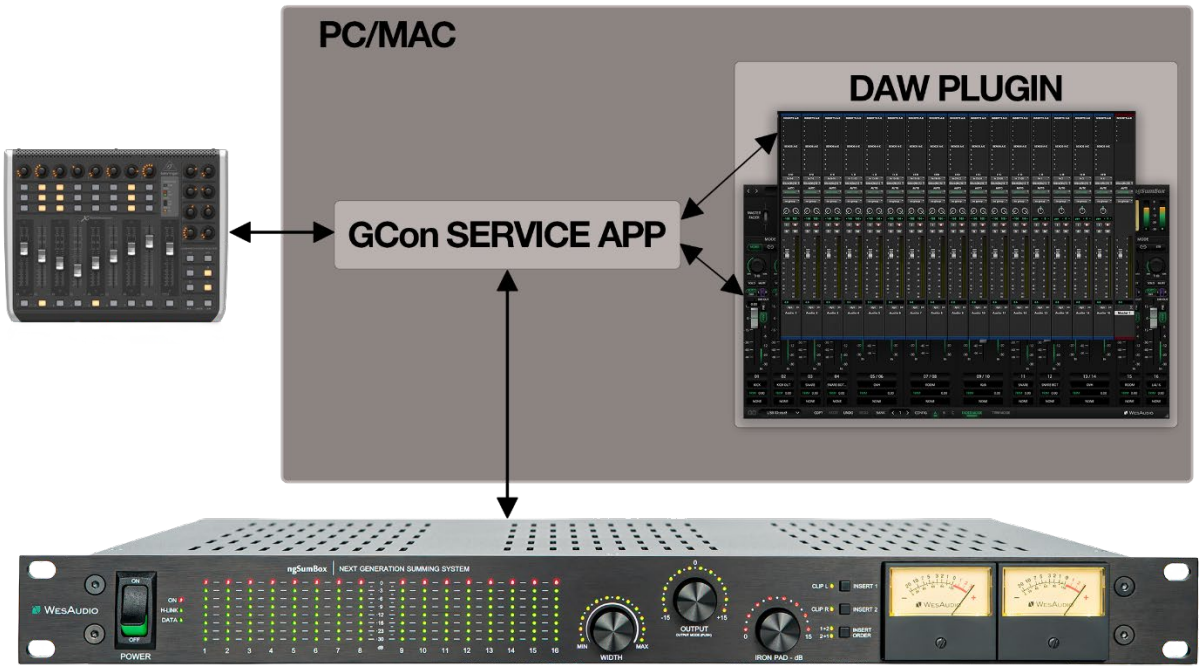


If additional controllers are used, simply assign the corresponding **MIDI ports** to include them in the setup. If adding MIDI ports does not result in proper synchronization with the ngSumBox state, please refer to the Troubleshooting section for further guidance.

7.2.2 GCon Server with DAW Integration

This mode extends GCon Server Mode by introducing mediation with the DAW for controls that are not used to manage ngSumBox directly. In this configuration, controller elements unrelated to the fader section are routed to and from the DAW, while faders and assigned controls continue to operate ngSumBox parameters.

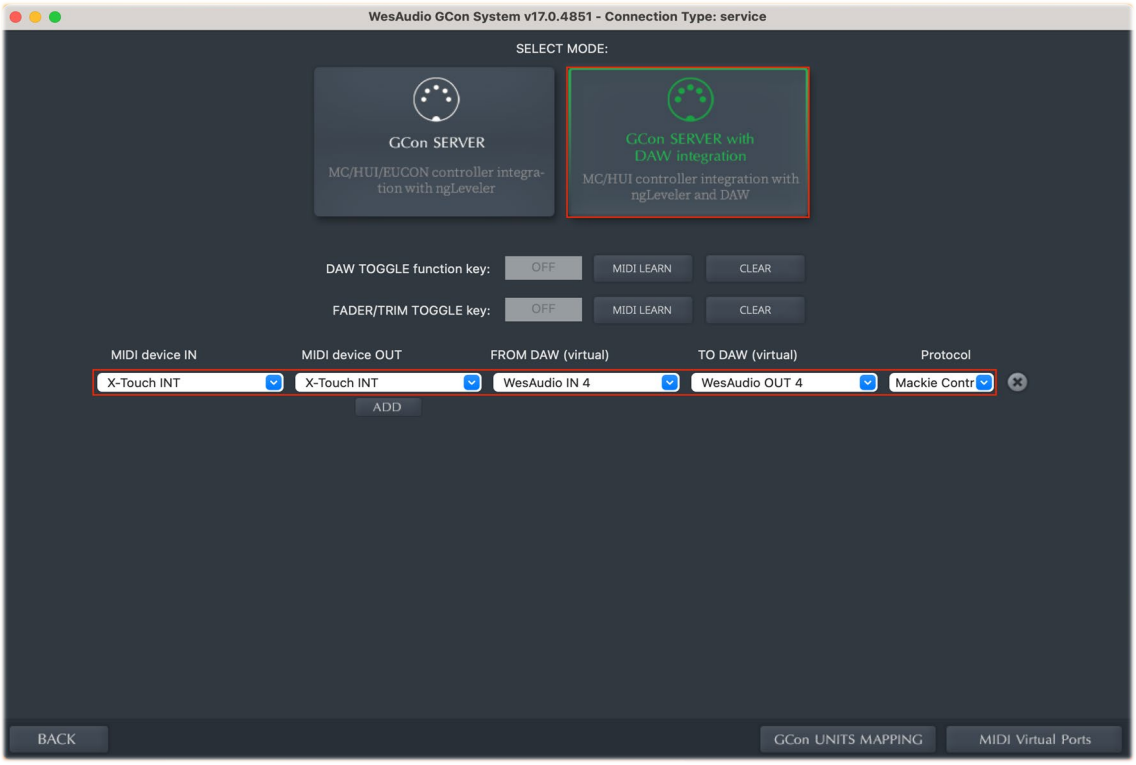
This allows full access to DAW functions such as transport control while maintaining direct, hands-on control of all ngSumBox parameters from the same controller. Switching between DAW control and ngSumBox control can be customized by the user—most controller buttons can be assigned using the MIDI Learn function, providing flexible workflow integration without being limited to predefined function keys. Controls already mapped by the control protocol (such as faders or dedicated functions) cannot be **reassigned.**



7.2.2.1 Configuration of GCon Server with DAW Integration

In this mode, the configuration process is slightly more advanced, as it requires the creation of **virtual MIDI ports**. Detailed instructions for creating virtual MIDI ports can be found in the chapter **"How to Create Virtual MIDI Ports."**

Once the virtual MIDI ports are created—one set for each controller in use—the setup must be completed in **GConManager**. To proceed, launch **GConManager** and open the **_CONTROL** application:



If additional controllers are used, simply assign the corresponding **virtual MIDI ports** to include them in the setup. If adding ports does not result in proper synchronization with the ngSumBox state, please refer to the Troubleshooting section for further guidance.

The next step is to configure the **DAW** so it can communicate with the **GCon Service** and correctly exchange mediated control data. Each DAW uses its own method for configuring external controllers. This manual provides configuration examples for **Pro Tools** and **Studio One**. For other DAWs, please refer to their respective documentation or online tutorials. When configuring the controller, select the **virtual MIDI ports** created and assigned in the **GConManager _CONTROL** application instead of the controller's physical MIDI ports.

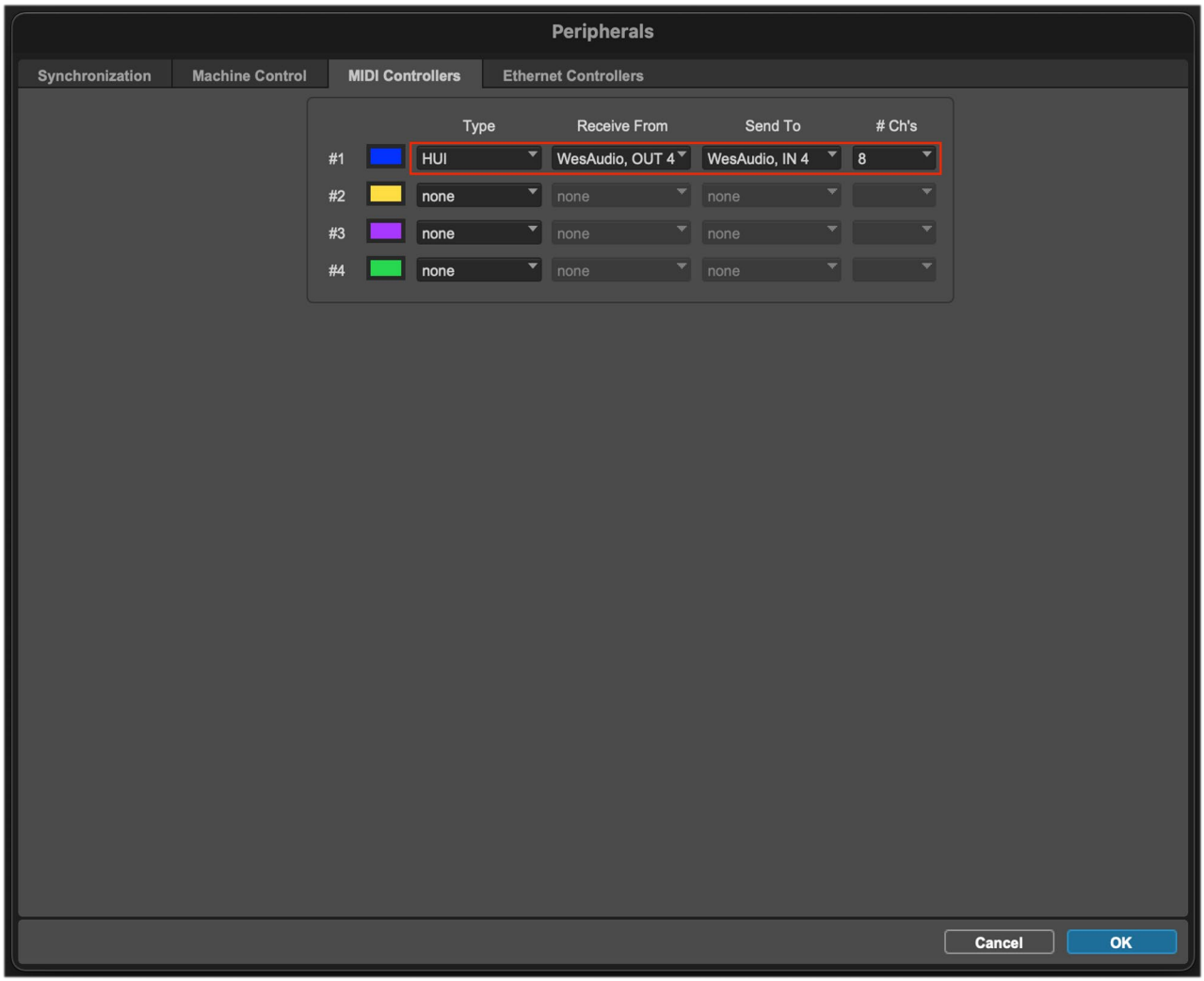
IMPORTANT: Separate virtual MIDI ports must be created and assigned for bidirectional communication:

- **DAW → GCon Service** (DAW sends control data)
- **GCon Service → DAW** (DAW receives mediated control data)

7.2.2.2 GCon Server with DAW Integration – Pro Tools Configuration

The example below corresponds to the previously configured settings in **GConManager**. To access and configure this in **Pro Tools**, follow these steps:

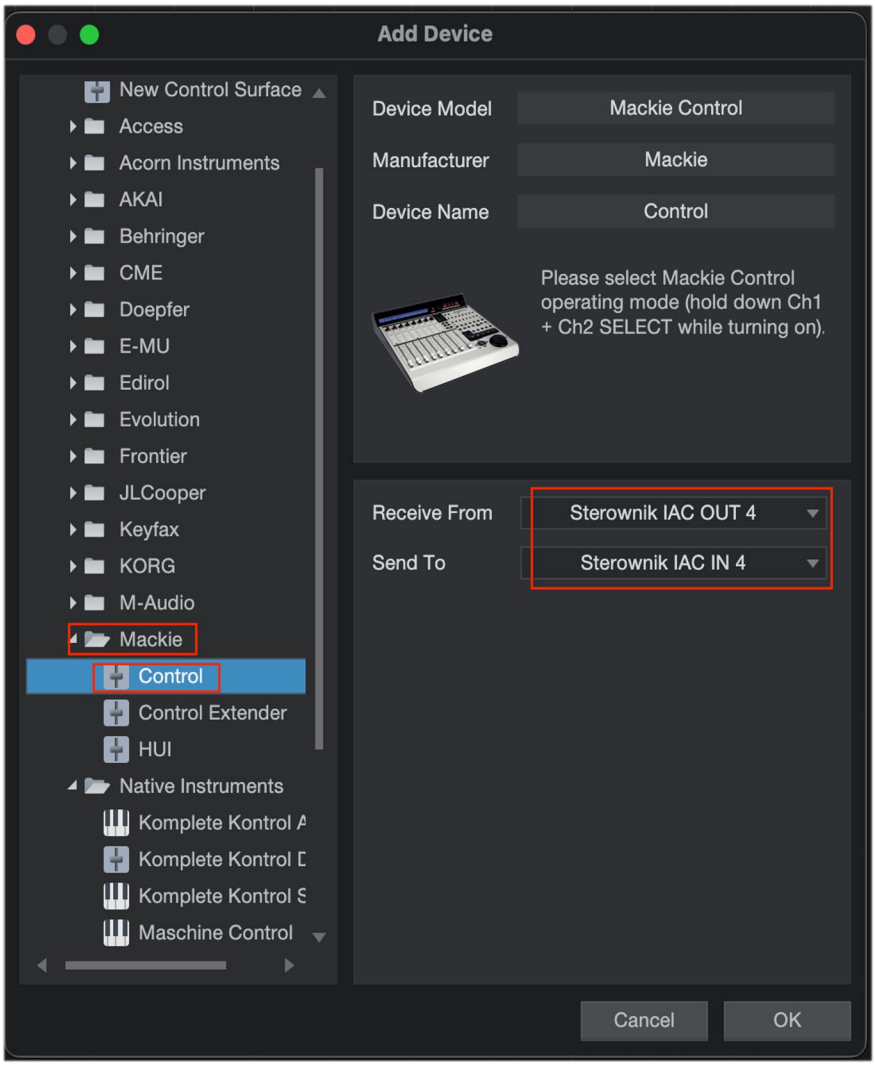
- Open **Pro Tools**.
- Navigate to the **Setup** menu.
- Select **Peripherals**.
- Open the **MIDI Controllers** tab.
- Assign the **virtual MIDI ports** created in GConManager to the appropriate **Receive From** and **Send To** fields.
- Confirm the configuration to enable communication between **Pro Tools**, the **GCon Service**, and **ngSumBox**.



7.2.2.3 GCon Server with DAW Integration – Studio One Configuration

The example below corresponds to the previously configured settings in **GConManager**. To access and configure this in **Studio One**, follow these steps:

- Open **Studio One**.
- Go to the **Studio One** menu.
- Select **Options**.
- Navigate to the **External Devices** tab.
- Click **Add** to create a new external controller device.
- Assign the **virtual MIDI ports** created in GConManager to the appropriate input and output fields.
- Confirm the configuration to enable communication between **Studio One**, the **GCon Service**, and **ngSumBox**.

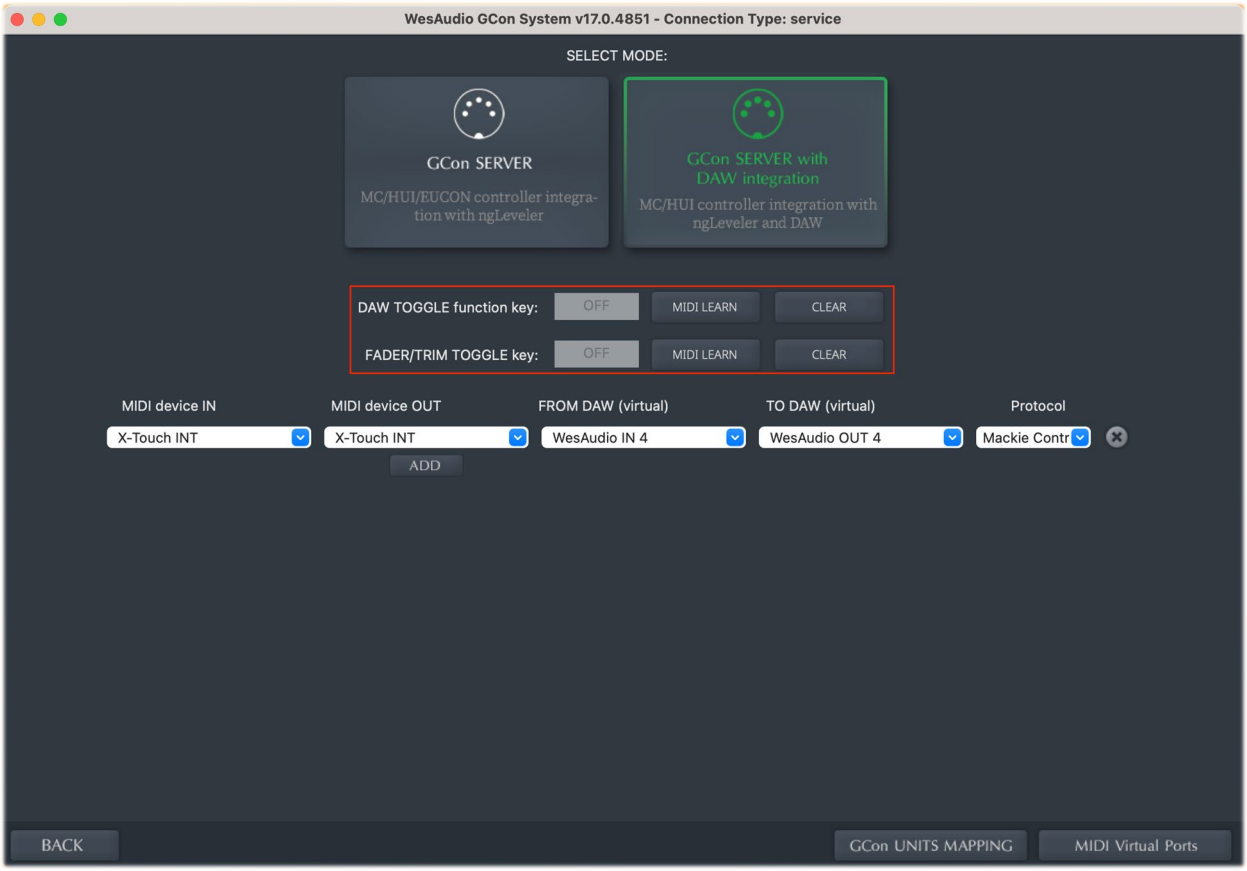


7.2.3 MIDI Learn Function – DAW and Fader/Trim Toggle

The **MIDI Learn** function in **GCon** is used to assign MIDI controller buttons to specific global functions. In the current implementation, MIDI Learn is available for the following actions:

- **DAW Toggle:** Allows a user-defined controller button to switch control focus between the DAW and GCon-managed hardware parameters.
- **Fader/Trim Toggle:** Allows a controller button to switch between **Fader mode** and **Trim mode**, enabling quick access to coarse or fine level control from the same physical fader.

To create an assignment, enable **MIDI Learn** for the desired function and press the chosen button on the MIDI controller. The assignment is stored in the configuration and recalled automatically, ensuring consistent behavior across sessions.



7.2.4 Menagement via EUCON Controller

This chapter describes integration with **EUCON-based controllers**. At the current stage, there are three supported approaches:

- **EUCON workstation configuration via Mackie Control (recommended):** The EUCON controller operates in Mackie Control mode, providing full access to channel faders and standard control functionality.
- **DAW channel fader control:** Parameters are controlled using the DAW's channel faders, allowing level adjustments through standard DAW mixing workflows.
- **Plug-in Control mode:** Control is performed directly through the plug-in interface. In this mode, only encoders and a limited number of buttons are available for parameter control; **faders are not supported**.

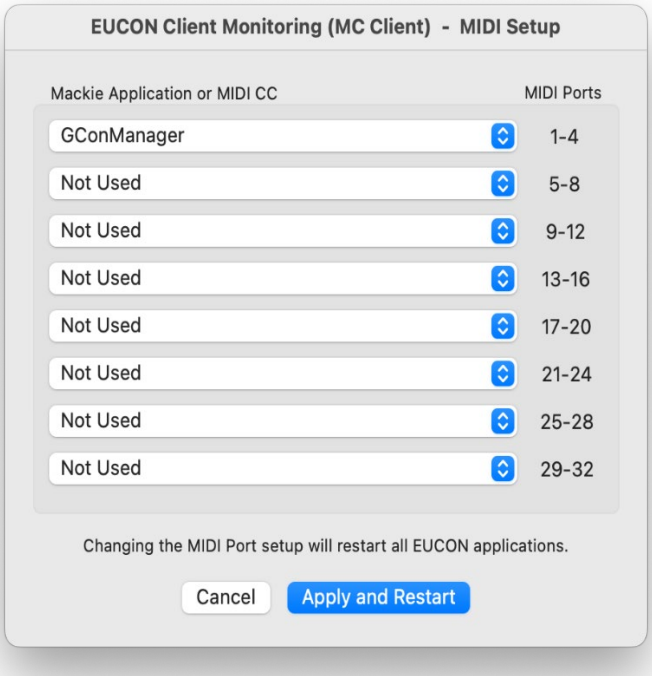
7.2.4.1 EUCON Controller in Mackie Control Mode

EUCON-based controllers (for example, Artist Mix) can control ngSumBox units using the controller mapping described in the section *Controller Functions Mapping to ngSumBox*. To use a EUCON controller with ngSumBox, the **EUCON application must be installed and running** on the system.

Once installed, the EUCON engine must be configured to operate in **Mackie Control mode**. To do so, follow these steps:

- Open **EUCON Preferences**:
  - On **macOS**, open the **EUCON** or **EUCON Client Monitoring (MC Client)** icon in the menu bar, then select **MIDI Setup**.
  - On **Windows**, open the **EUCON** or **EUCON Client Monitoring (MC Client)** icon in the **system tray (notification area)**, then select **MIDI Setup**.
- Add **GConManager** to the EUCON configuration by choosing from drop down menu "**Select Mackie Application**" into the EUCON control surface list.
  The GConManager application is located at:
  - **macOS:** /Applications/WesAudio/GConManager.app
  - **Windows:** C:\Program Files (x86)\WesAudio\GConManager.exe
- Assign GConManager Application to **MIDI ports 1–4**, as shown in the example below.

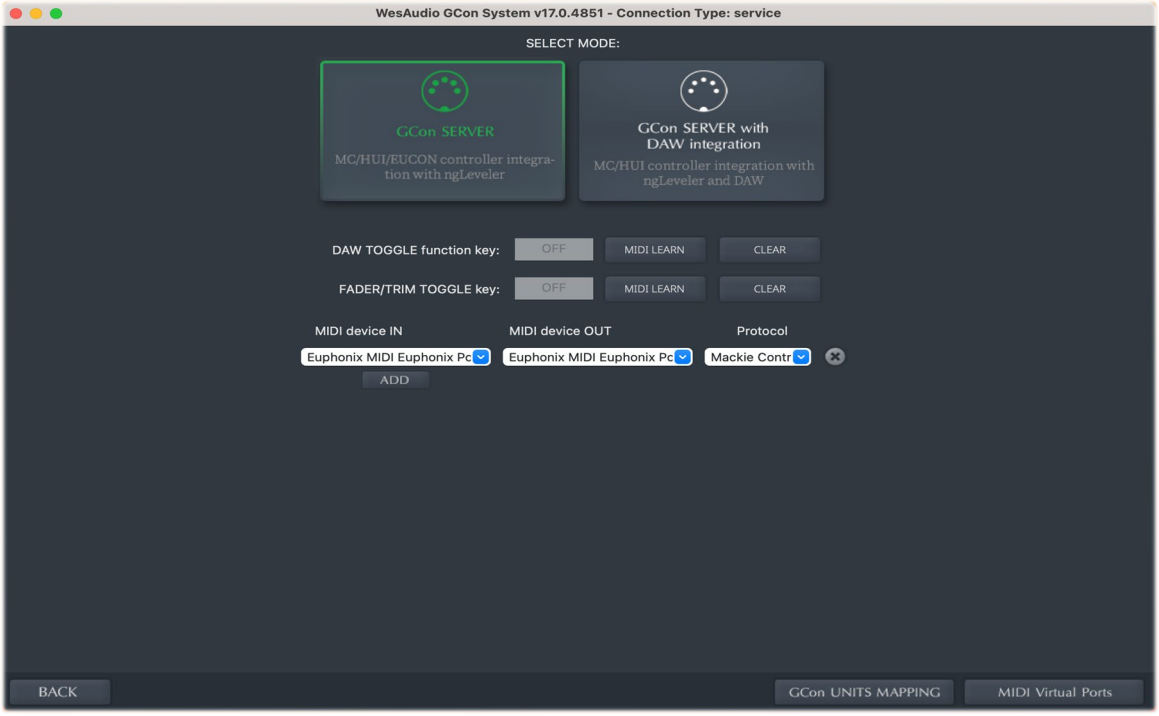
After completing these steps, the EUCON controller will operate in Mackie Control mode and can be used to control ngSumBox parameters reliably through GConManager.



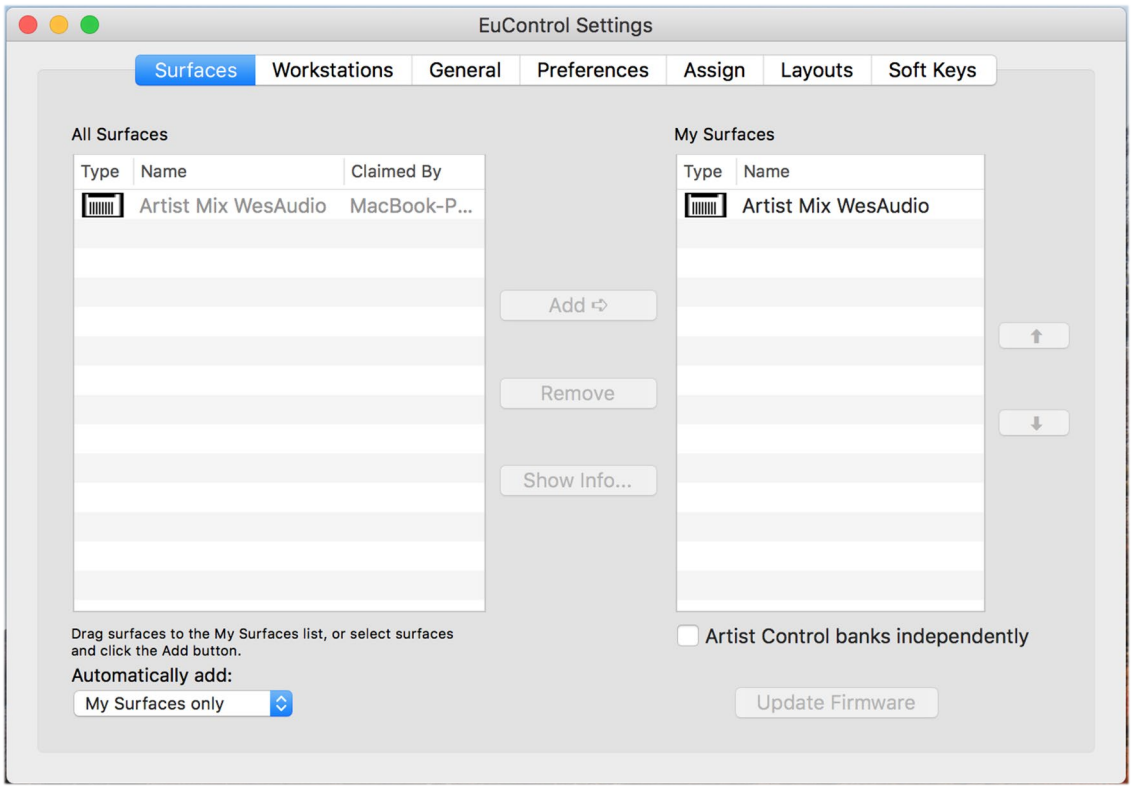
Once these steps are completed, a **system restart is typically required**. After restarting the workstation, the **GConManager** configuration must be finalized as follows:

- Open **GConManager** and navigate to the **_CONTROL** application.
- Configure the MIDI ports:
    - Set **MIDI Device IN** to **Euphonix MIDI Port 1**.
    - Set **MIDI Device OUT** to **Euphonix MIDI Port 1**.
- Select **GCon Server Mode** as the operating mode.

  Note: The EUCON service is responsible for switching control focus between applications. As a result, a EUCON controller can be used simultaneously with both the DAW and GCon by changing the active application (for example, from the DAW to GConManager). Because of this behavior, **GCon Server Mediation Mode is not required** in this scenario.
- Verify the configuration against the **GConManager setup shown below**.



- **Final Step:** Connect the EUCON controller to the workstation using the **EuControl** settings application. In most cases, this connection is established automatically once the controller and workstation are on the same network and the EuControl service is running.



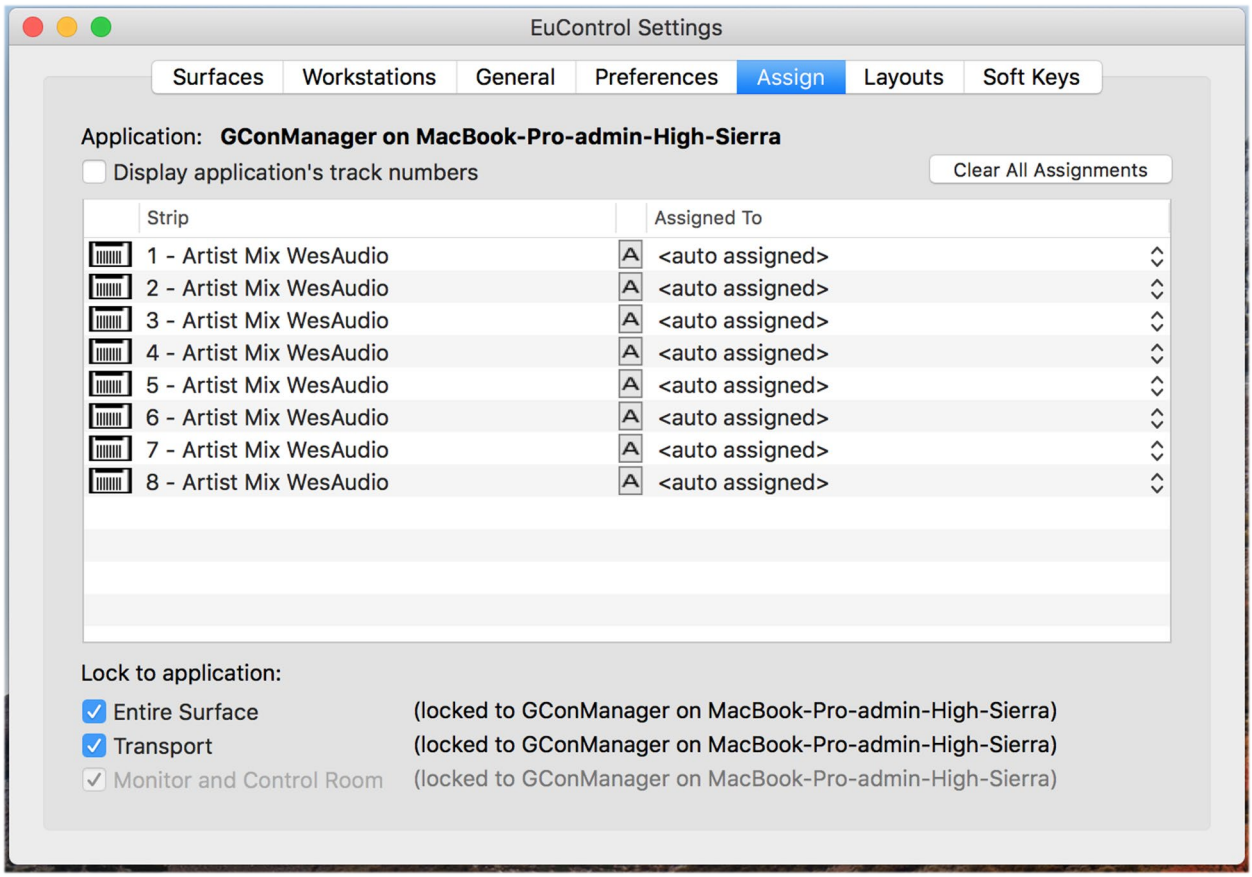
After completing this step, selecting the **GConManager** application (by bringing it into focus) will transmit the current configuration to the EUCON controller, displaying the actual state of the connected ngSumBox unit(s). If this does not occur, please refer to the Troubleshooting chapter.

When the DAW window becomes the active application, the EUCON controller will automatically switch to controlling the DAW's channel faders. This behavior allows easy and seamless toggling between **GConManager (hardware control)** and **DAW control** simply by changing the active application.

If this automatic switching is not the preferred workflow, the EUCON controller can be **locked to a specific application**. To do so:

- Open the **EuControl Settings** application.
- Go to the **ASSIGN** tab.
- Select **GConManager** from the list of available applications.
- Enable **Entire Surface**.

Once configured, the EUCON controller will remain dedicated to controlling ngSumBox, regardless of which application is currently in focus.



7.2.4.2 EUCON Plug-in Control

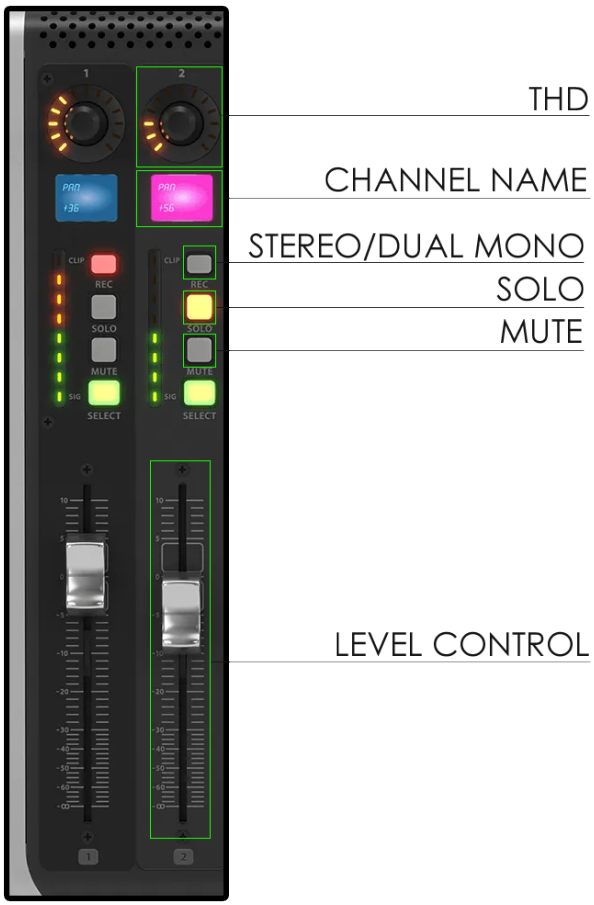
EUCON controllers are designed to provide direct control over plug-ins within a DAW session. This functionality can be used to control the ngSumBox plug-in, with all parameter changes translated in real time to the connected hardware unit. Depending on the type of EUCON controller, the available parameters are organized across multiple control pages. For example, when controlling **16 mono channels** of ngSumBox, an **Avid Artist Mix** uses **two pages** to access all channel parameters.

Below is an example based on the **Artist Mix** controller, illustrating how ngSumBox parameters are mapped across the available control pages.

7.2.5 Controller Functions Mapping

Because most controllers are primarily designed for DAW operation, not all physical controls directly correspond to the functional requirements of ngSumBox. However, when the fader section is dedicated exclusively to controlling ngSumBox, the GCon software intelligently remaps selected controls to better match the unit's capabilities and workflow.

Below is an example illustrating how controls on **HUI, Mackie Control, or EUCON–compatible controllers** are mapped to ngSumBox parameters to provide efficient and intuitive hardware control.



- **THD:** Adjusts the amount of total harmonic distortion using the encoder. On supported controllers, pressing the encoder may be assigned to enable or disable THD interaction, depending on the controller's capabilities and configuration.
- **Channel Name:** Channel names are editable directly from the plug-in interface and are reflected on compatible controllers for easier channel identification.
- **STEREO/DUAL MONO:** Enables **absolute linking** between two neighboring channels (Stereo mode) or fully unlinks them for independent **dual-mono** operation. Please note that changing this mode affects the number of channels accessible via controller faders. For more information, refer to *External Control vs. Number of Channels*.
- **SOLO/MUTE:** Engages or disengages Solo or Mute for the selected channel.
- **FADER (Level/Trim Control):** Controls either the **main level** or **trim level** of the selected analog channel, depending on the currently active mode. In Stereo mode, the fader controls both linked channels simultaneously.

7.2.6 How to Create Virtual MIDI Ports

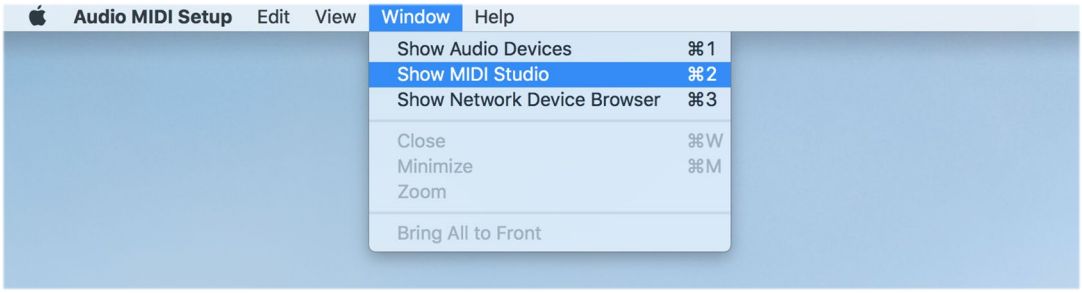
This chapter explains how to create and configure **virtual MIDI ports** on your platform. Virtual MIDI ports are required when using **GCon Server Mediation Mode**, as they enable bidirectional communication between the DAW and the GCon Service.

Please note that **virtual MIDI ports are not required in GCon Server Mode**. In that configuration, only the controller's physical MIDI ports are used, allowing for a simpler setup with direct controller-to-GCon communication.

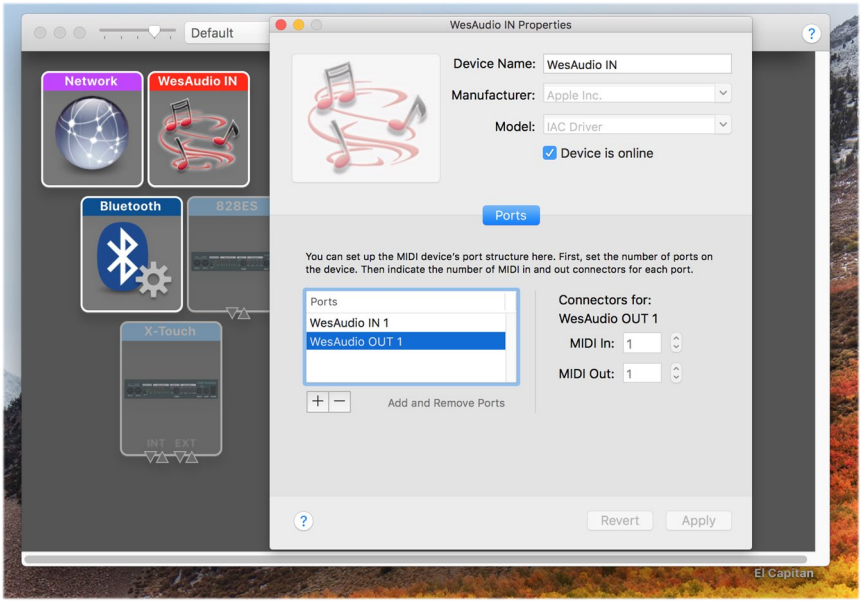
7.2.6.1 Virtual MIDI Ports on MacOS

The macOS operating system provides native support for creating **virtual MIDI ports**, which can be configured quickly using the built-in system tools. Follow the steps below to create and manage virtual MIDI ports:

1. Navigate to **/Applications/Utilities** and launch **Audio MIDI Setup**.
2. In **Audio MIDI Setup**, open the **Window** menu and select **Show MIDI Studio** to display the MIDI configuration panel.



3. Open the **IAC Driver** and enable it by selecting **Device is online**.
   In this section, you can create, rename, and manage your virtual MIDI ports as needed.



7.2.6.2 Virtual MIDI Ports on Windows

The Windows operating system does not provide native support for creating **virtual MIDI ports**. To create virtual MIDI ports on Windows, a third-party application must be used. Several solutions are available, including:

- **loopMIDI**, developed by Tobias Erichsen
- **MIDI Yoke**, included as part of the **MIDI-OX** utility

Because configuration of third-party tools is outside the scope of this manual, please refer to the respective online documentation or tutorials for instructions on creating virtual MIDI ports on Windows.

7.3 External Controller and ngSumBox(s) Number of Channels

As a 16-channel analog summing mixer with automation support, ngSumBox typically requires up to 16 DAW or controller channels (faders) for full access. Third-party control surfaces can switch between fader banks or channel layers, allowing efficient control of all available channels. Channel names shown on the controller follow the plug-in configuration, ensuring clear identification of the currently addressed channels.

The number of controller channels mapped to ngSumBox depends on the selected channel mode. Each adjacent channel pair can operate as **Stereo (absolute link)**, **Dual Mono**, or as **separate Mono channels**, which directly affects how channels are assigned to controller faders.

Below are examples illustrating how controller channels correspond to different ngSumBox channel configurations:

16 Controller channels

8 Controller channels

12 Controller channels

7.4 Configuring MIDI Controllers with GCon – Examples

This chapter provides practical examples of configuring third-party MIDI controllers for use with **GCon**. The examples demonstrate typical setup workflows using **SSL UF8** and **Behringer X-Touch** controllers, covering operation in both **GCon Server Mode** and **GCon Server Mediation Mode**.

The configurations shown are intended as reference examples and can be adapted to other MIDI controllers that support compatible control protocols.

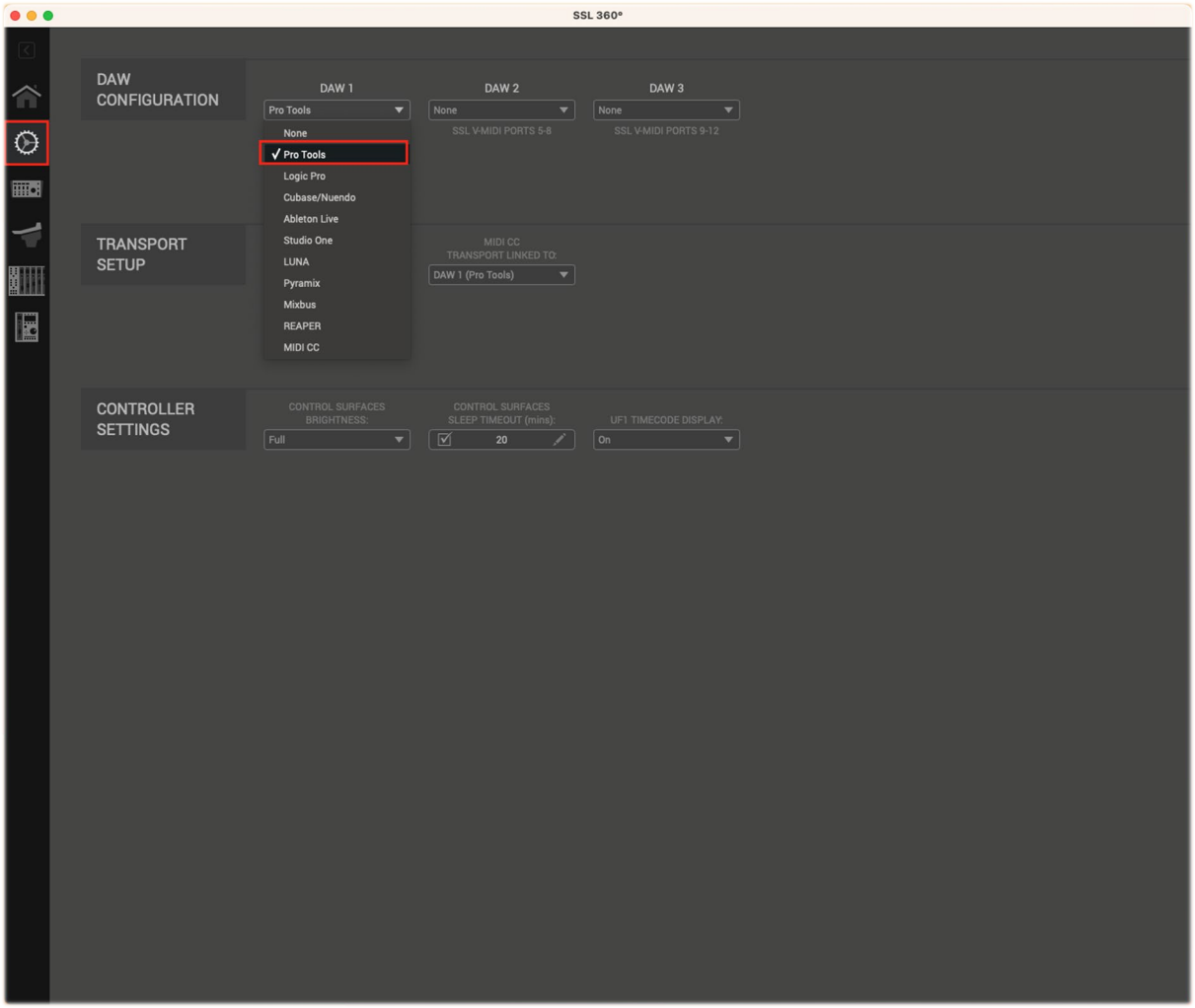
7.4.1 SSL UF8 Integration

The SSL UF8 controller provides three configurable layers, each capable of controlling either the DAW or the ngSumBox. These layers allow you to easily switch between DAW and ngSumBox control without needing the GCon Server with DAW automation mode. This flexible setup lets you customize your control surface to suit different tasks and workflows.

7.4.1.1 Connecting SSL UF8 to Control ngSumBox Plug-in

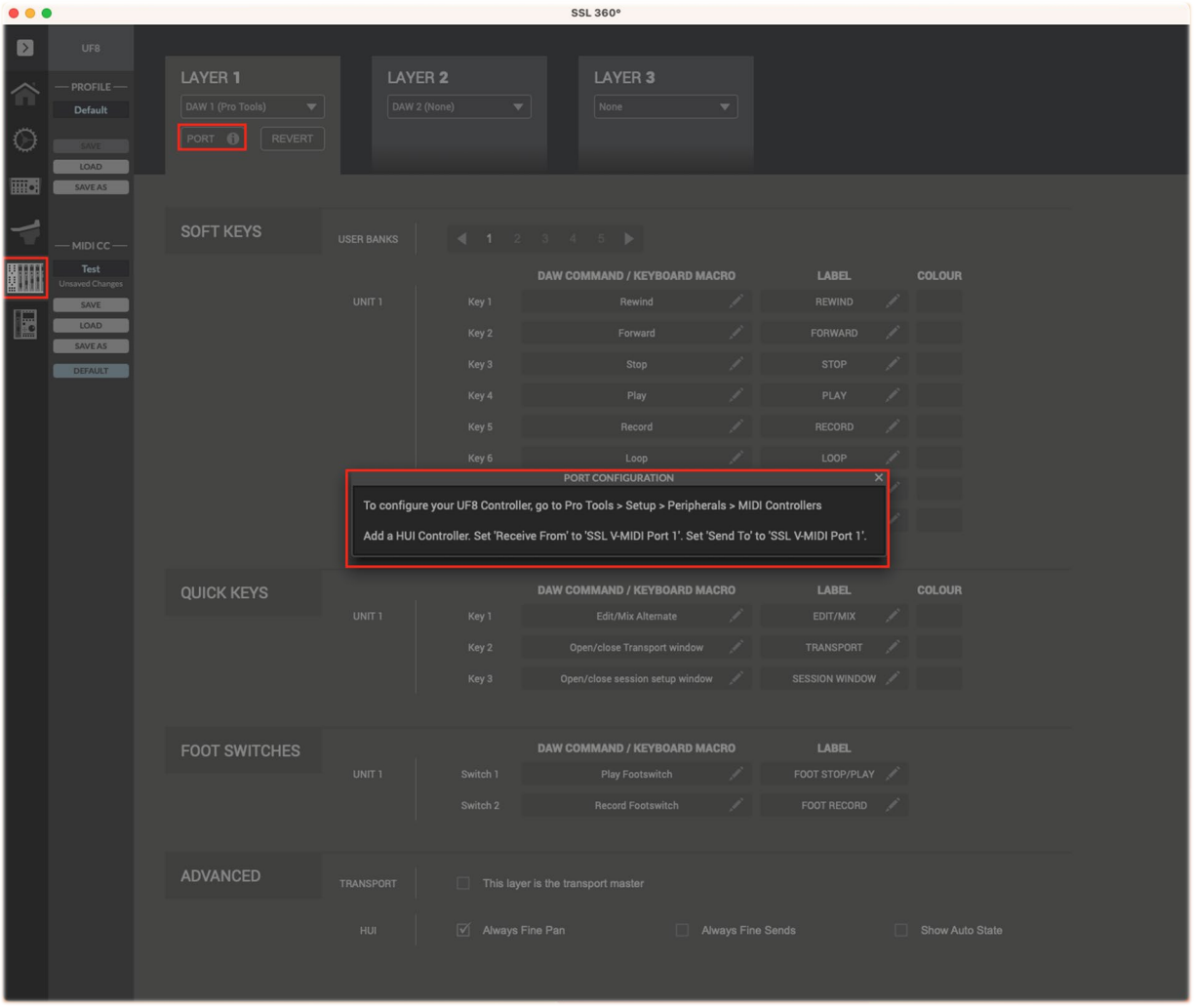
To get started, download and install the SSL 360 application from the Solid State Logic website.
Once the application is open:

1. Navigate to “CONTROL SETUP.”
2. In the “DAW CONFIGURATION” section, expand the dropdown menu labeled “DAW 1.”
3. Select your DAW from the list. For this guide, we’ll demonstrate how to connect the SSL UF8 to control ngSumBox in Pro Tools.



Next, navigate to the SSL UF8 tab.
Click on “Layer 1,” then select the “PORT” button. A popup window will appear, providing instructions on which MIDI channels to use for connecting to GCon Control.

IMPORTANT: This information is essential for configuring ngSumBox within GCon Manager.

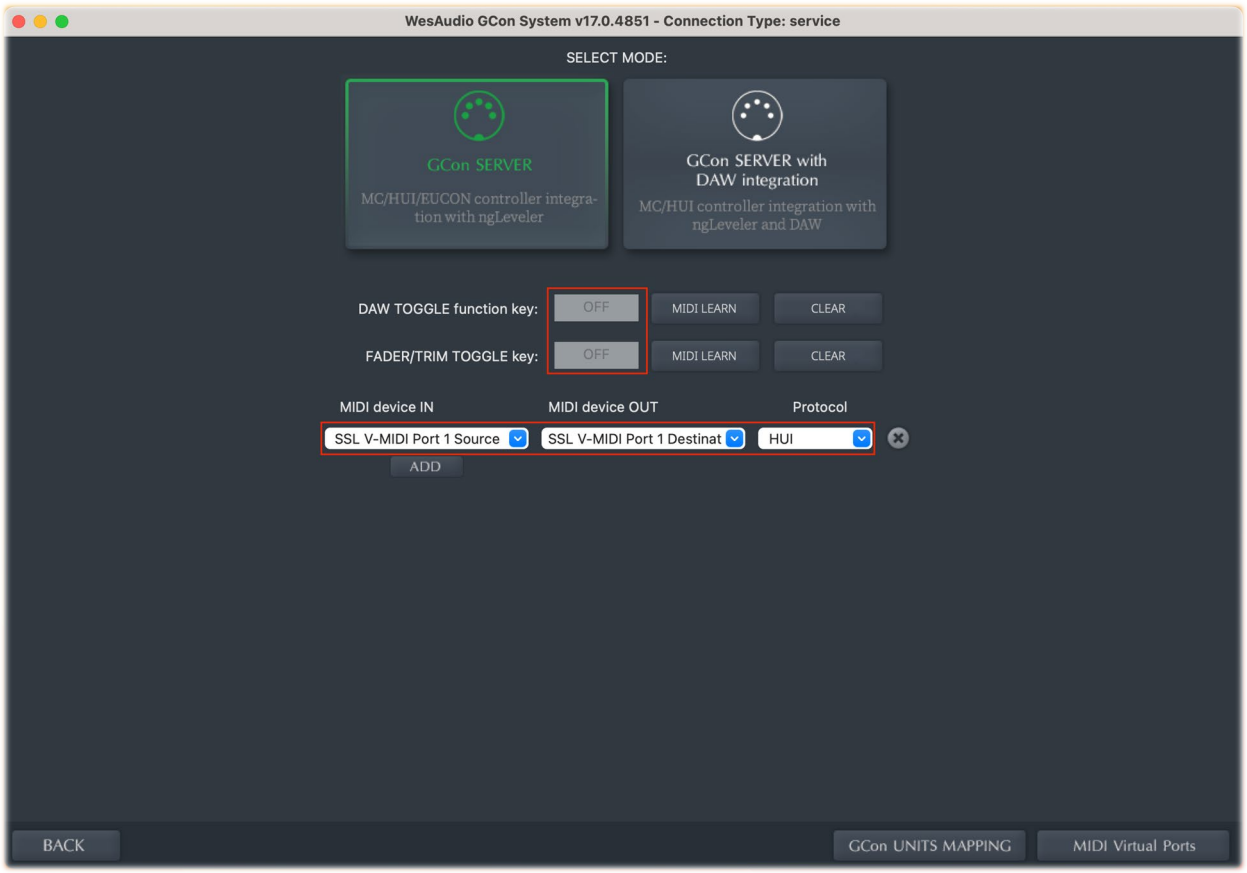


After completing the SSL UF8 configuration, proceed to set up ngSumBox:

1. **Open GCon Manager.**
2. **Navigate to the "_CONTROL" tab.**
3. **Choose "GCon SERVER."**
4. **Set DAW TOGGLE and FADER/TRIM to OFF.**
5. **Click "ADD" button.**

To assign ngSumBox control to the SSL UF8 layer, select the first MIDI channel as input and output (SSL V-MIDI Port 1).

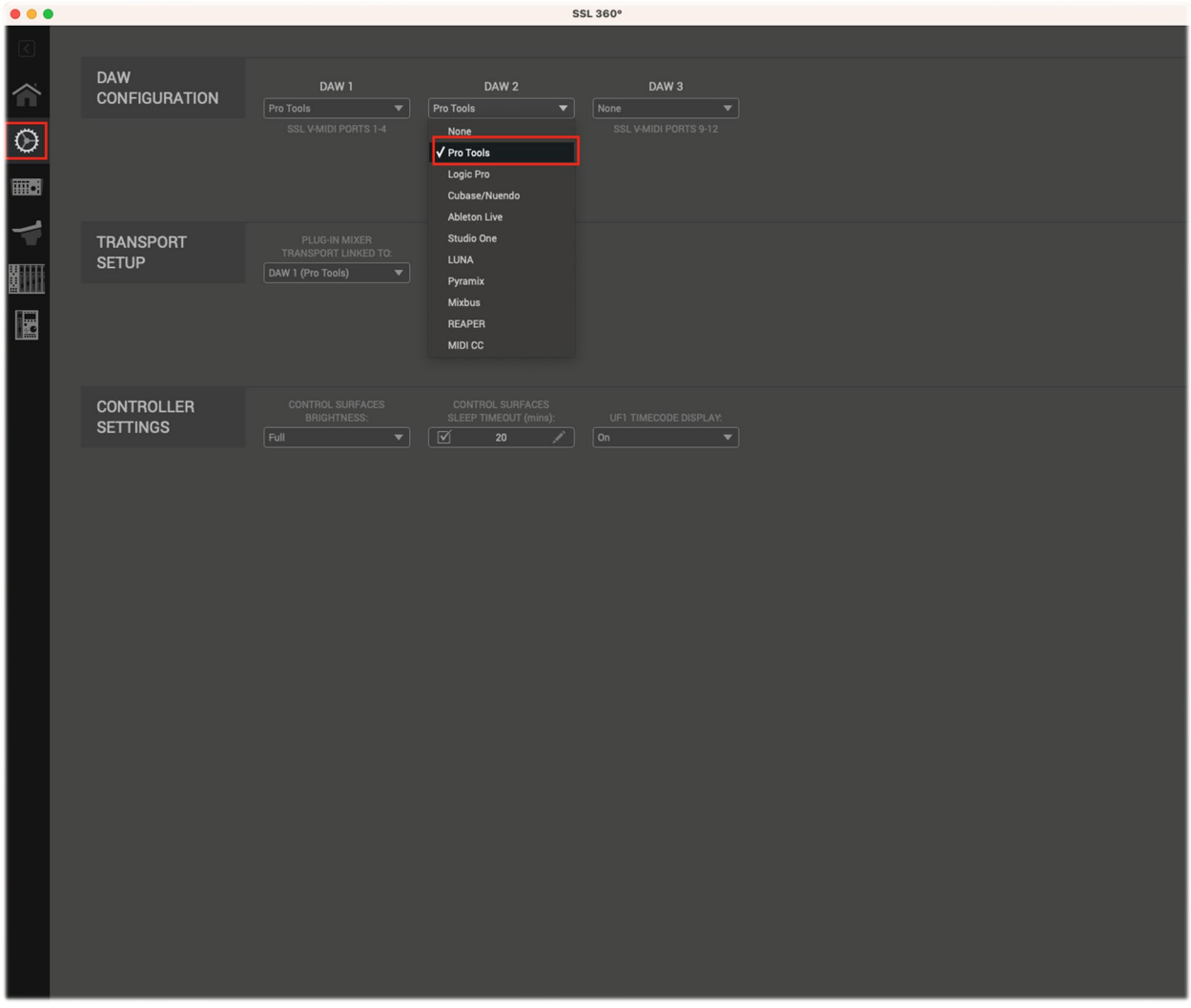
Important Note: The DAW TOGGLE function key has been replaced by LAYERS in SSL UF8. The FADER/TRIM key won't operate with the MIDI controller unless manually mapped.



When you select Layer 1, the faders should automatically sync with ngSumBox, reflecting the same states as displayed in the plugin.

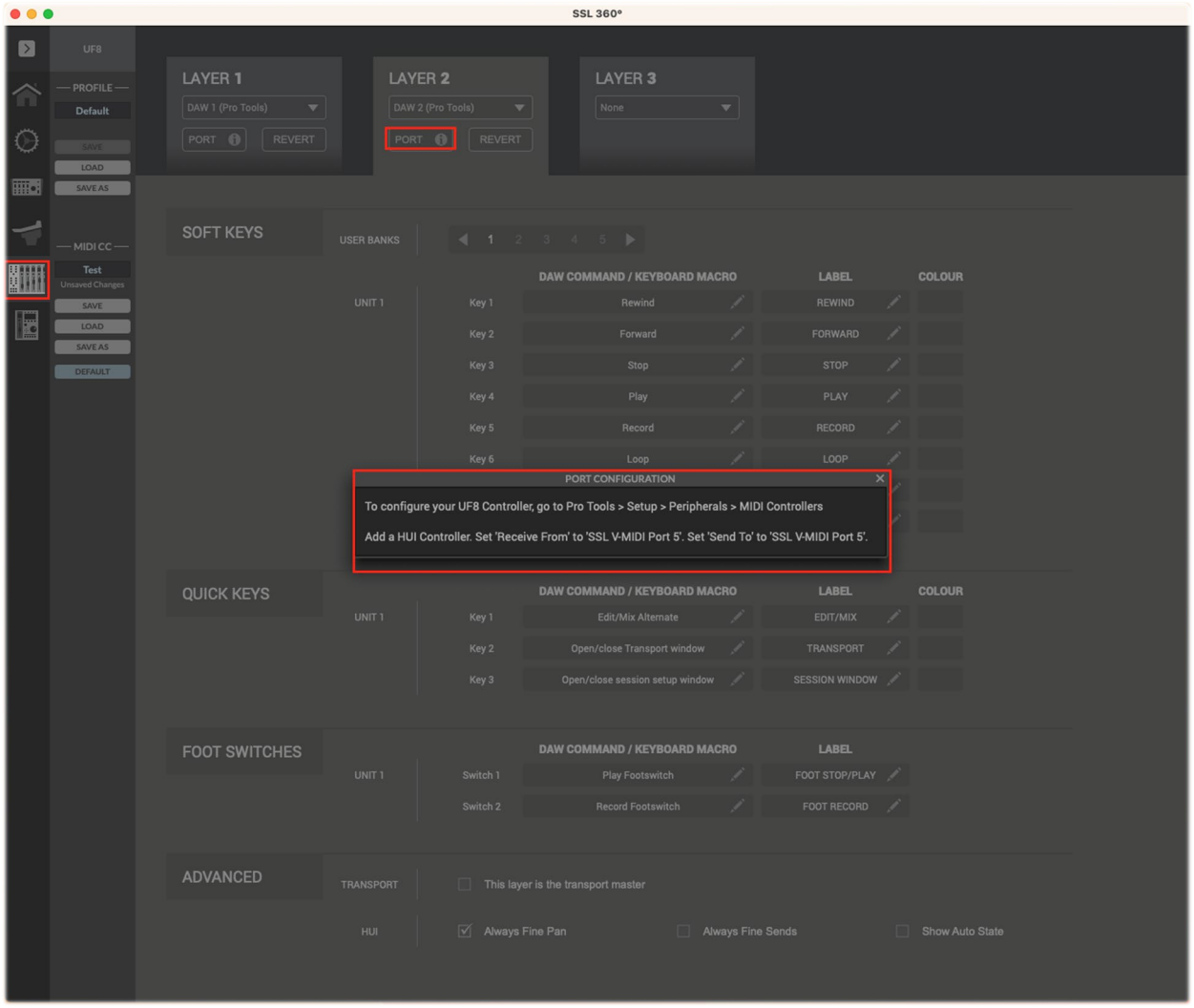
7.4.1.2 Creating a Second Layer to Control DAW Functions with SSL UF8

Important Notification on Layer Configuration!
The SSL UF8 provides 3 distinct layers, allowing you to control your DAW on one layer and manage your plugins on another.
Keep in mind that each layer requires its own input and output channels to independently control the DAW and plugins.



Next, navigate to the SSL UF8 tab.
Click on “Layer 2,” then select the “PORT” button. A popup window will appear with instructions on which MIDI channels to use for connecting to your DAW.

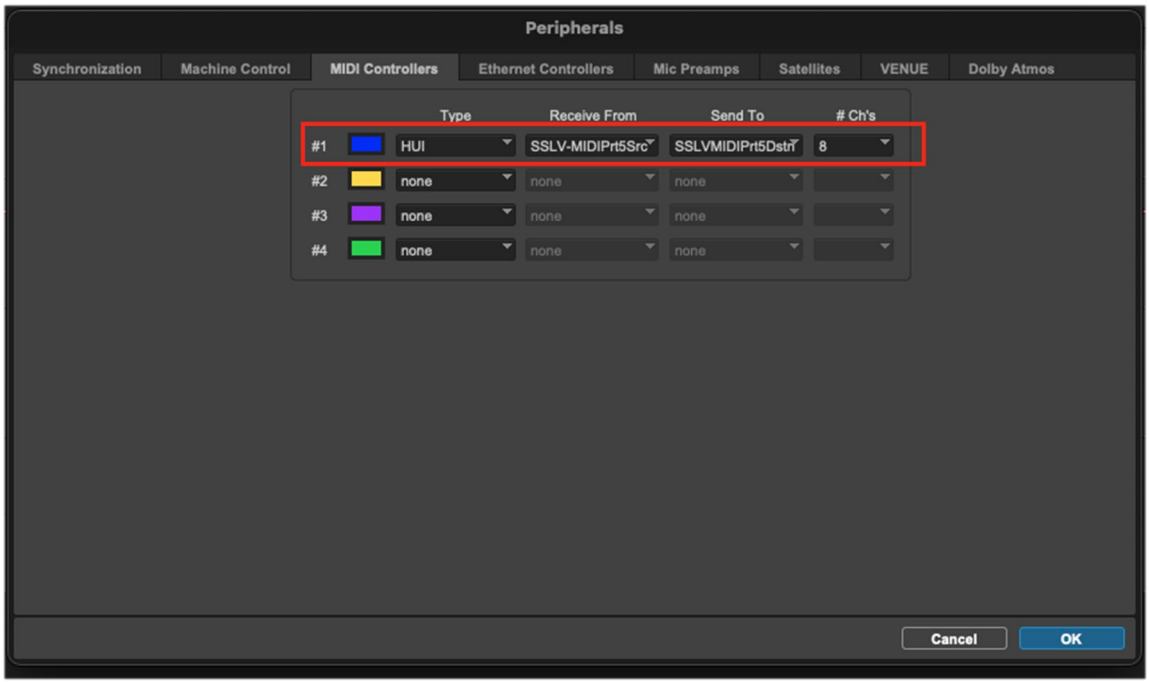
IMPORTANT: This information is essential for configuring SSL UF8 with your DAW.



Next, open your DAW settings and configure the UF8 following the instructions provided after clicking the "PORT" button in the SSL 360 application.

For Pro Tools (or refer to the specific manual for other DAWs):

1. Navigate to: **Setup** -> **Peripherals** -> **MIDI Controllers**.
2. Set both the input and output to SSL V-MIDI Port 5 (as previously indicated).



7.4.2 Behringer X-Touch Integration

The Behringer X-Touch, when paired with the ngSumBox, offers a powerful and intuitive control setup. By utilizing the Mackie Control or HUI protocol, this combination provides seamless integration, allowing for precise adjustments and efficient workflow management. This guide will walk you through the steps to set up and optimize your Behringer X-Touch with ngSumBox.

7.4.2.1 Connecting Behringer X-Touch to Control ngSumBox Plug-in

To set up your Behringer X-Touch for controlling ngSumBox, begin by connecting the X-Touch to your system and installing the necessary software from the manufacturer's website.
Next, press and hold the select button on the first channel while powering on the device. Keep holding the select button until the communication modes (Mackie or HUI) appear on the display.

Use the encoder near the screen to select your preferred communication mode.

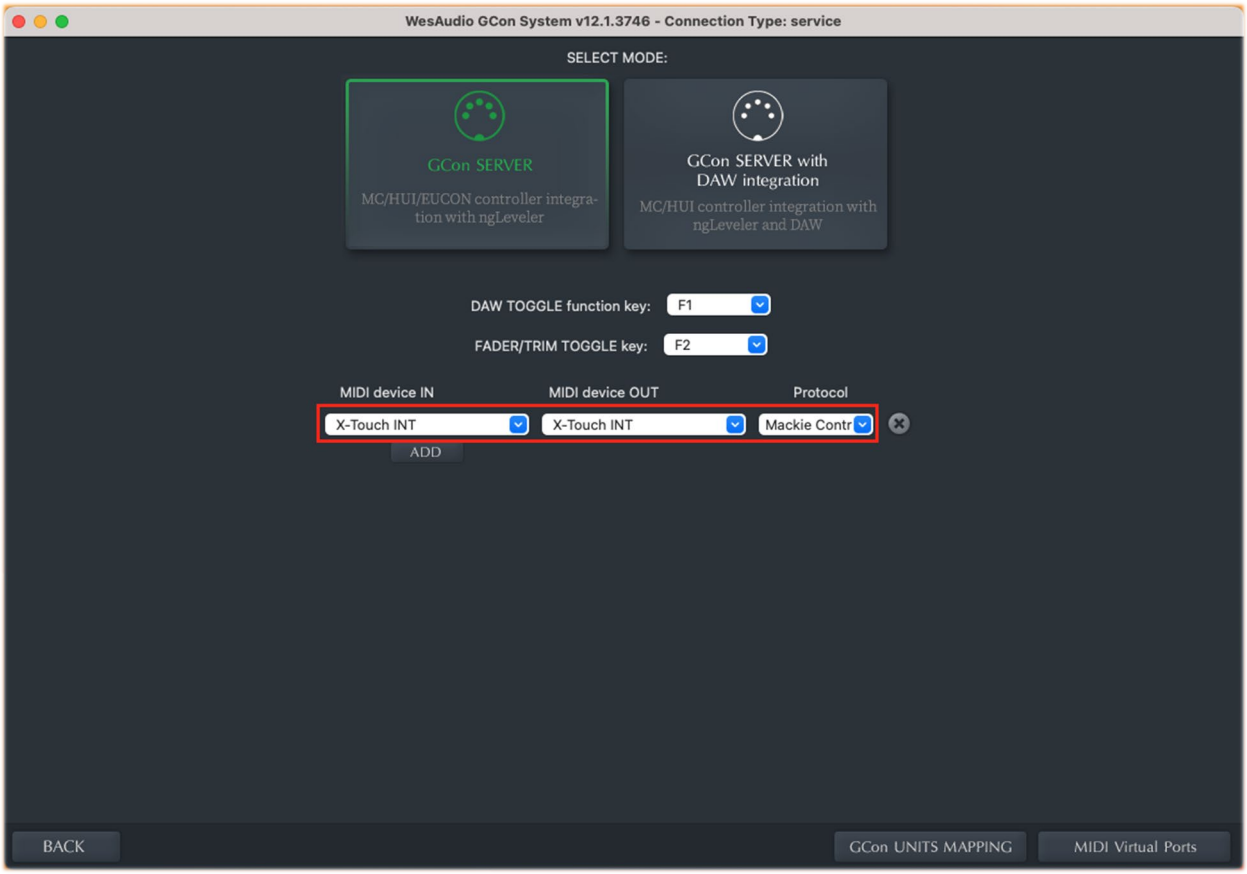
IMPORTANT: Ensure that the protocol configured for ngSumBox in GCon matches the mode set on the Behringer X-Touch. You can choose either HUI or Mackie Control (MC), but it's crucial that both devices are set to the same protocol for proper functionality.
In this guide, we'll show you how to connect the Behringer X-Touch to the ngSumBox using the Mackie Control protocol.

To set up ngSumBox:

1. **Open GCon Manager.**
2. **Go to the "_CONTROL" Tab.**
3. **Select "GCon SERVER".**
4. **Leave the DAW TOGGLE and FADER/TRIM settings as default.**

To assign control of ngSumBox to the Behringer X-Touch:

- **Set "MIDI Device IN" to "X-Touch INT."**
- **Set "MIDI Device OUT" to "X-Touch INT."**
- **Set "Protocol" to "Mackie Control."**



7.4.2.2 Behringer X-Touch Integration with ngSumBox and DAW

This section describes an example configuration of the **Behringer X-Touch** controller for use with ngSumBox in combination with a DAW. The setup demonstrates how the controller can be integrated to provide hands-on control of both hardware parameters and DAW functions.

The configuration requires the use of **virtual MIDI ports** to enable proper communication between the DAW and the GCon Service. Details on creating virtual MIDI ports are provided in the chapter **"**How to Create Virtual MIDI Ports**."**

The procedures outlined in this section are intended as a reference example and can be adapted to similar MIDI controllers that support compatible control protocols.

To set up ngSumBox:

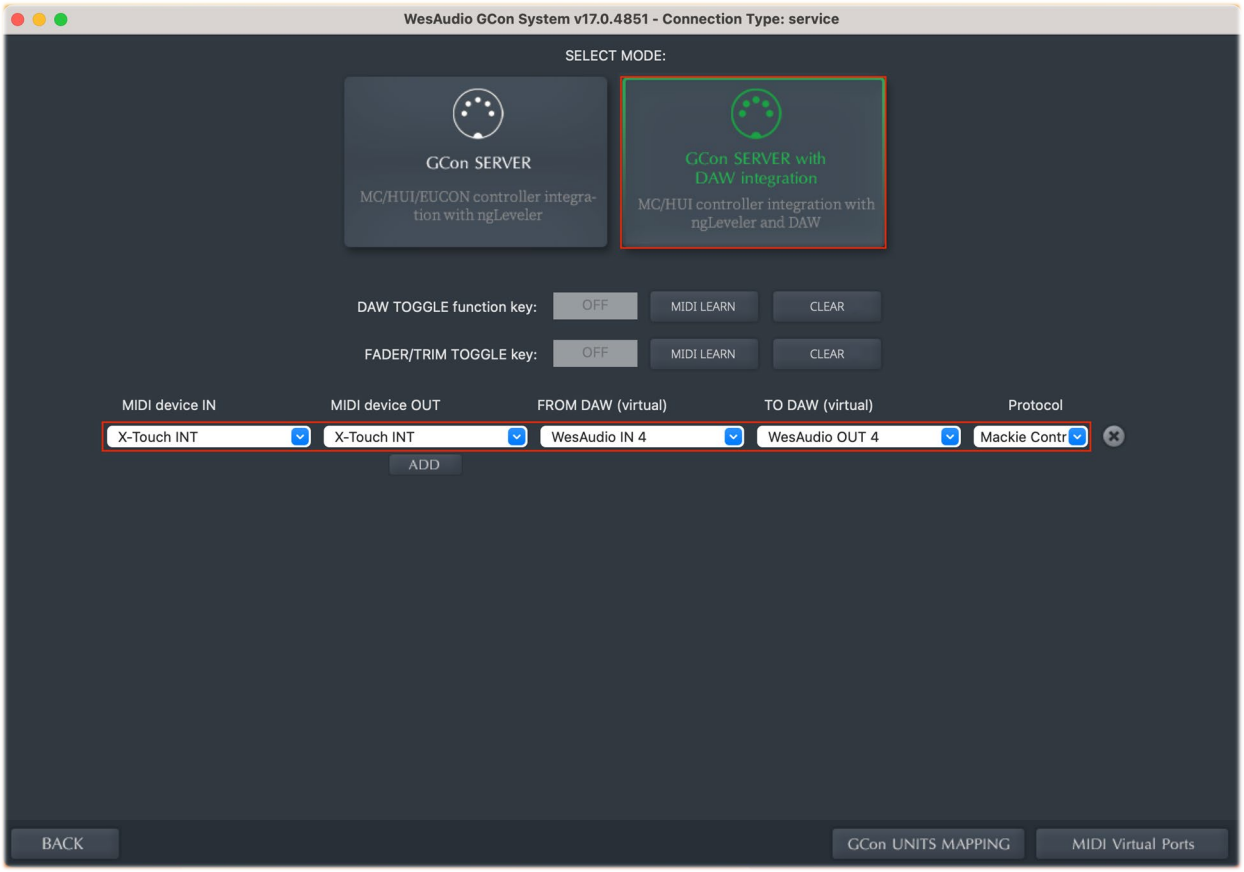
1. **Open GCon Manager.**
2. **Go to the "_CONTROL" Tab.**
3. **Select "GCon SERVER with DAW integration."**
4. **Leave the DAW TOGGLE and FADER/TRIM settings as default.**

To assign control of ngSumBox to the Behringer X-Touch:

- **Set “MIDI Device IN” to “X-Touch INT.”**
- **Set “MIDI Device OUT” to “X-Touch INT.”**
- **Set “Protocol” to “Mackie Control.”**

To assign control of DAW to the Behringer X-Touch:

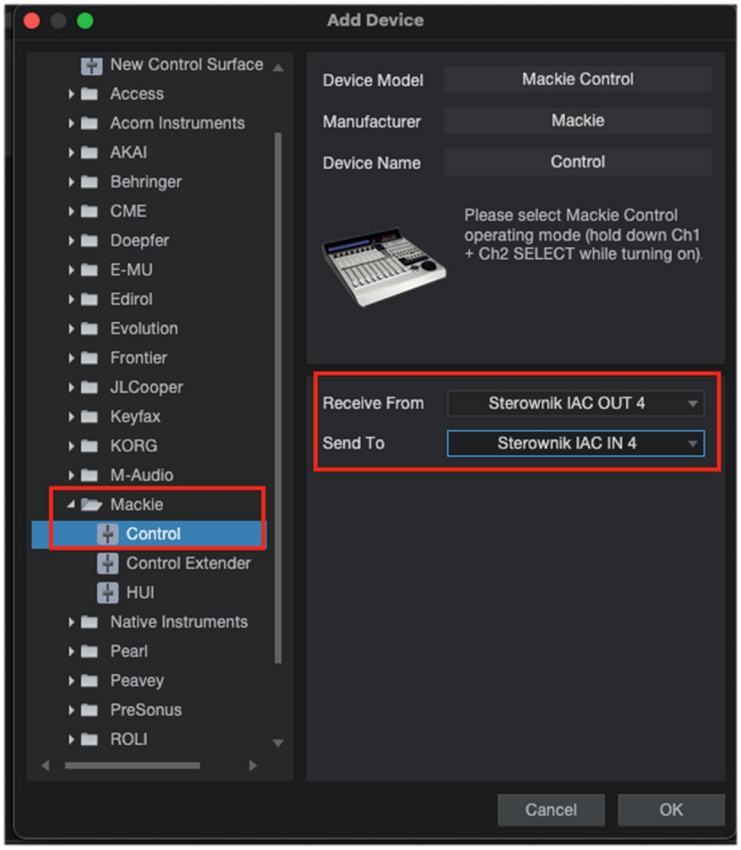
- **Set “FROM DAW” to “WesAudio IN 4.”**
- **Set “TO DAW” to “WesAudio OUT 4.”**



DAW configuration (Based on Studio One)

To configure Studio One in alignment with the previous GConManager setup:

1. Open Studio One and navigate to the “Studio One” menu.
2. Select “Preferences” and then go to the “External Devices” tab.
3. Click “Add” to open the configuration window.
4. Select “Mackie” and expand the list.
5. Choose “Control.”
6. Set “Receive From” to “IAC OUT 4.”
7. Set ”Send To” to “IAC IN 4.”



7.4.3 Additional Functions

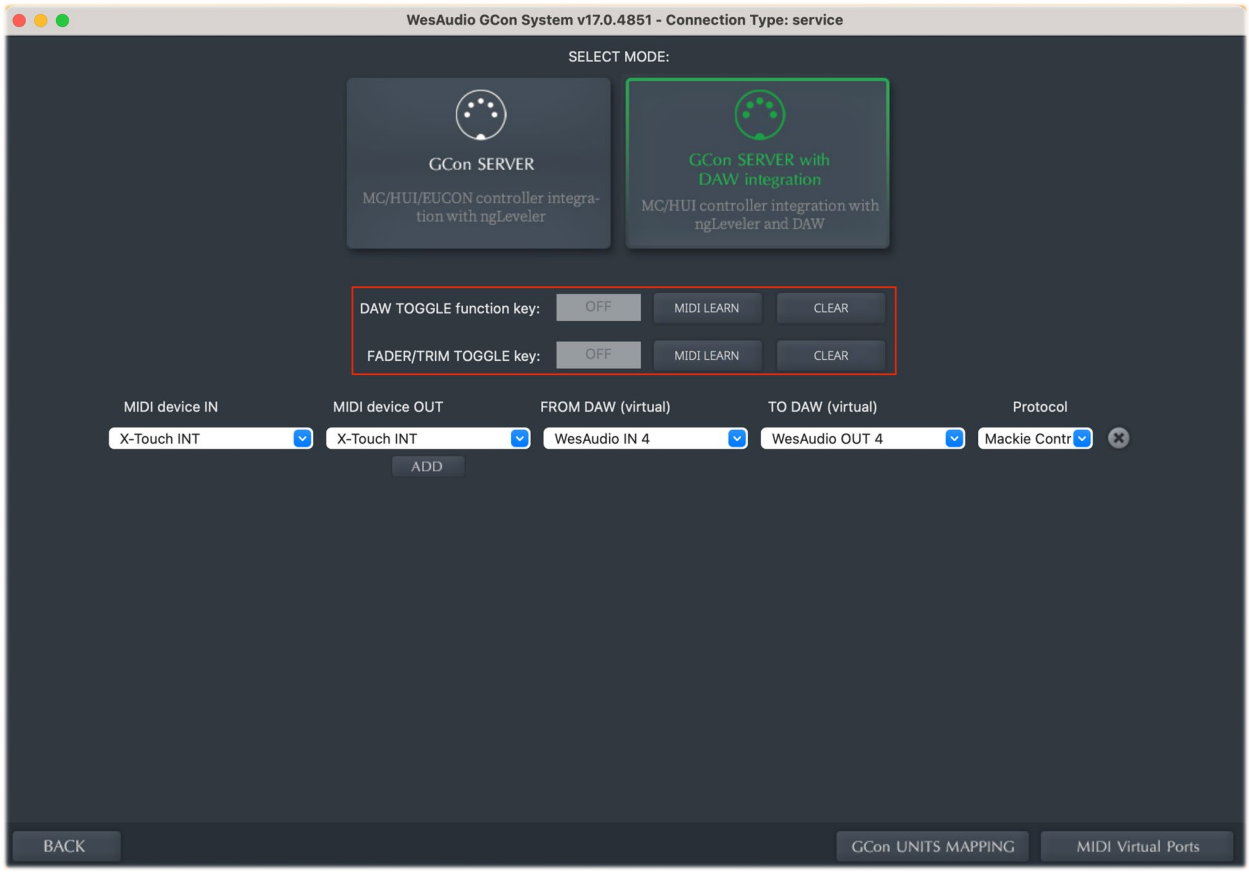
This section describes additional control functions that enhance workflow efficiency when working with external controllers. These functions include the **DAW Toggle**, which allows switching control focus between the DAW and hardware parameters, and the **Fader/Trim Toggle**, which enables quick switching between main level control and fine trim adjustment. Together, these features provide flexible control behavior and faster operation without affecting the underlying audio signal path.

7.4.3.1 DAW and Fader/Trim Toggle

In the **GConManager _CONTROL** application, selected control functions can be assigned to MIDI controller buttons using the **MIDI Learn** feature. This allows users to switch between different control modes directly from the controller, without relying on fixed function keys.

For more information on assigning controls using MIDI Learn, please refer to the chapter **"**MIDI Learn Function**."**

- **DAW Session:** When a function key is assigned to this mode, its LED will blink, signaling that control is focused on the Digital Audio Workstation (DAW) session.
- **ngSumBox(s):** When a function key is assigned to this mode, its LED will remain steady, indicating control over the ngSumBox(s).



8 Multiple ngSumBox Units

There is no strict physical limitation on how many ngSumBox units can operate within a single system. In practice, the number of units depends on the available system resources and overall performance capacity.

When using multiple ngSumBox devices, the following rules apply:

• **Each ngSumBox requires a dedicated plug-in instance** – every hardware unit is managed by its own plug-in counterpart for parameter control, automation, and total recall.

• **Controller channel mapping is based on GCon ID** – units are assigned to controller channels (e.g., HUI or Mackie Control surfaces) according to their unique GCon ID number.

For example, if two ngSumBox units are connected, one with ID = 1000 and the second with ID = 1002, the first 16 controller channels will correspond to ngSumBox ID = 1000, while channels 17–32 will control ngSumBox ID = 1002.

	ngSumBox Channels	Controller channels
ngSumBox ID=1000	1-16	1-16
ngSumBox ID=1001	1-16	17-32
ngSumBox ID=1002	1-16	33-48
…	…	…

This example does not take into account channels operating in **stereo mode**, as stereo linking affects the number of controller channels assigned, see chapter "External Controller and ngSumBox{s} Number of Channels" (depending on the stereo configuration, the number of mapped controller faders may change).

- **Solo operates globally across all connected units.**
  If multiple ngSumBox units are connected and a channel is soloed on one unit, all non-soloed channels on the other units will be muted accordingly (unless they are set to Solo or Solo Safe). This ensures consistent solo behavior across the entire summing system.

9 Other Functions

9.1 Memories

In terms of parameter storage:

- In contrast, the ngSumBox plugin supports saving an **UNLIMITED** number of configurations. Each preset within the plugin provides three rapid configuration changes, labeled A/B/C per bank ID.

9.1.1 Synchronization Upon Connection

When a new plugin instance is loaded into your DAW, it starts with default settings and no modified parameters. Upon establishing a connection to the hardware unit by setting the Connection ID, the plugin downloads the current parameter state from the hardware, including any available fast configuration presets. For example, if the connection between the ngSumBox plugin and the ngSumBox hardware is made while the plugin is in its default state, all parameter states, including A and B presets, will be downloaded to the plugin.

9.1.2 Preset Banks Feature

The Preset Bank feature allows you to configure different parameter states and enables additional parameter configurations (A/B/C) for flexible use. Having multiple memory banks can be particularly beneficial when mixing multiple songs within the same session. The Memory Bank parameter can be automated in the DAW, helping to maintain different settings across various sections of a session or between different songs within a single session. This feature is especially useful during the mastering phase, where multiple songs are often processed in one session.

9.2 Auto Parameter Linking Feature

Auto Parameter Linking is a **hardware-based function** that allows selected parameters to move together in a coordinated and predictable way. Its purpose is to simplify gain staging and preserve consistent output levels while shaping tone.

In ngSumBox, Auto Parameter Linking connects the **Output** and **Iron Pad** controls so that they move in the **same direction**. When the feature is active, increasing or decreasing one parameter causes the other to change by a corresponding amount.

This behavior enables intuitive control of analog coloration and headroom, allowing users to explore harmonic character and saturation without unintended jumps in loudness. Auto Parameter Linking is especially useful during creative tone shaping and fast mix adjustments, where consistent level management is essential.

9.2.1 How to Enable/Disable Auto Parameter Linking

Auto Parameter Linking is enabled by default. This hardware-based function can be configured in the **GCon Manager _CONFIG** application and operates entirely at the hardware level.

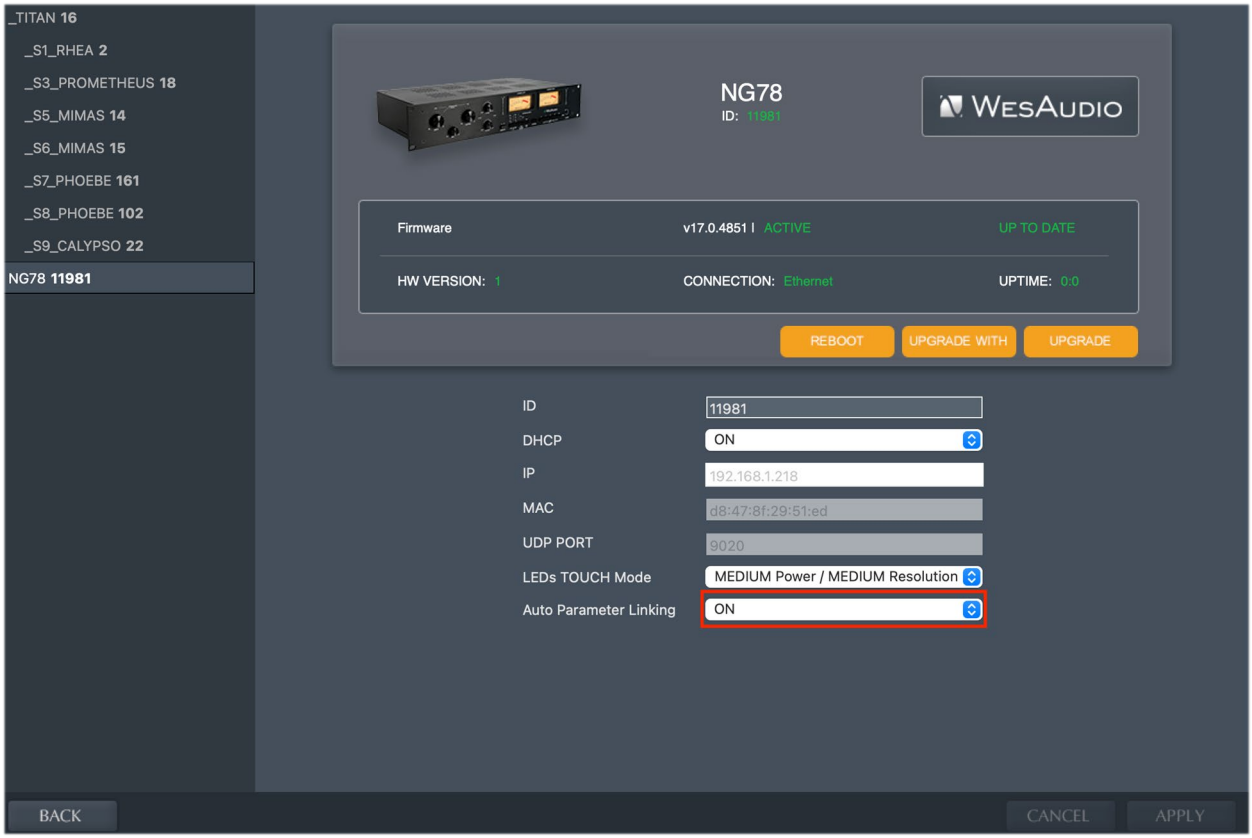
To enable or disable the feature:

1. Open **GCon Manager _CONFIG**.
2. Locate the **Auto Parameter Linking** option.
3. Set the option to **ON** to allow hardware-based parameter linking, or **OFF** to disable the feature.

When **Auto Parameter Linking** is enabled:

- Touching two encoders simultaneously on the hardware activates linking between the selected parameters.
- Once linked, adjusting either control causes both parameters to move in opposite directions, maintaining a consistent signal level relationship.

When the option is set to **OFF**, encoder-based linking on the hardware is disabled and automatic parameter linking cannot be performed.



10 Troubleshooting

MIDI Controller and GCon:

If the controller does not begin communicating with the **GCon Service** after configuration in the **GConManager _CONTROL** application, please verify the following steps:

- **Power-cycle the controller:** Turn the HUI, Mackie Control, or EUCON controller off and back on. This often resolves system-level MIDI port issues.
- **Restart the GCon Service:** Open the **WesAudio Tray** icon, navigate to **Service**, and select **Restart**. This refreshes communication between the controller and ngSumBox.
- **Restart the workstation:** If communication is still not established, restarting the computer ensures that all MIDI ports and system resources are properly reset.
- **Check DAW startup behavior (Server Mediation Mode):** In Server Mediation Mode, most DAWs must detect MIDI ports during startup. MIDI or virtual MIDI ports cannot always be created or reassigned while the DAW is already running. If issues occur, close the DAW and restart the workstation to release and reinitialize all system-level MIDI handles.
- **EUCON controllers:** If using a EUCON-based controller, restart the EUCON services by opening the **EuControl** tray icon and selecting **Restart EUCON Applications**.
- **Resolving protocol conflicts (EUCON / Mackie Control):** In rare cases, a EUCON controller may remain locked to GConManager while another application attempts to force a Mackie Control connection. To restore proper parameter synchronization, restart the ngSumBox plug-in or toggle the hardware connection state directly from the plug-in interface.

Please visit the WesAudio FAQ site https://wesaudio.com/faq/ for detailed troubleshooting steps and solutions.

11 Abbreviations and Terms

GCon is a high-speed communication protocol developed to enable complete management and recall of analog devices. It's important to note that GCon is solely focused on device control and management; it does not facilitate the transfer of audio signals. This protocol is instrumental in bridging the gap between analog warmth and digital convenience, allowing users to enjoy the best of both worlds without compromising on sound quality or control flexibility.

12 Warranty

WesAudio is committed to delivering products of the highest quality, designed for durable and reliable performance over many years, assuming proper care, usage, transport, and storage. Our products come with a two-year warranty covering defects in parts and workmanship from the original date of purchase. This warranty is extendable to any future owner within the warranty period, ensuring uninterrupted coverage.

Warranty Coverage:

- The warranty is valid for two years from the date of the original purchase.
- It is transferable to any subsequent owner within this period.

Exclusions:

- The warranty does not cover normal wear and tear.
- It excludes damages due to misuse, negligence by the customer, accidental impacts, unauthorized modifications or repairs, cosmetic issues, and damages from shipping.

Warranty Service:

- Should a product exhibit defect in parts or workmanship during the warranty period, WesAudio will, at its discretion, repair or replace the defective components at no charge, assuming the customer provides valid proof of purchase.
- The product must retain its original factory serial number to be eligible.
- Customers are responsible for shipping costs to WesAudio for warranty service. WesAudio will cover the return ground shipping costs.

This comprehensive warranty underscores our dedication to quality and customer satisfaction, ensuring your WesAudio products perform flawlessly for years to come.