DSi SERIES

Power Amplifiers
Operation Manual

TABLE OF CONTENTS

WELCOME

Thank you for purchasing a JBL DSi 2 Cinema amplifier, one in a complete line of high-performance amplifiers based on exclusive DriveCore technology powered by Crown. The DSi 2 Series amplifiers are designed, engineered, and manufactured to the industry's highest quality standards and offer cinema system integrators with the advanced features and flexibility required for challenging 21st-century Cinema-sound applications.

FEATURES

- Exclusive multi-patented DriveCore™ Technology – The patented DriveCore integrated circuit combines hundreds of discrete circuits into one chip for better performance, lower power consumption, and improved reliability

- AES67 Digital Audio transport for easy interface with Cinema processors in immersive playback environments

- Supports configuration and control using HiQnet® Audio Architect™

- Monitoring and control over TCP/IP including SNMP communication for remote NOC based monitoring and API commands for TMS integration

- Color LCD and front panel user interface for amplifier configuration, control, and monitoring

- Programmable GPIO (general purpose input/output) control port

- 96kHz/32-bit floating-point Digital signal processing (Input/output EQ filters, crossover, input/output delay, LevelMAX™ limiters)

- Support for importing of FIR filter coefficients

- 20 device presets – 1 factory and 19 user

- Universal power supply with PFC for reduced current draw and industry-leading efficiency

- Power saving modes

- Remote power off – Sleep mode activated via AUX port, Idle mode activated via Network on API commands

- Advanced protection circuits – Amplifier and loads are protected against shorted outputs, DC, mismatched loads, overheating, over/under-voltage, and high-frequency overload

- Three year, no-fault transferable warranty – Your investment is fully protected

- Complies with GreenEdge™ by HARMAN – Environmentally friendly practices in design, manufacturing, and packaging complement energy-efficient operationThree year, no-fault transferable warranty – Your investment is fully protected

- Support for BSS Audio® Soundweb™ Contrio™ Ethernet wall controllers

- Included speaker tunings for various JBL® Cinema speaker models

HOW TO USE THIS MANUAL

This manual provides the necessary information to safely and correctly setup and operate your JBL product. It does not cover every aspect of installation, setup, or operation that might occur under every condition. For additional information, please contact technical support, your system installer, or retailer.

We strongly recommend you read all instructions, warnings, and cautions contained in this manual. If viewing this manual from a computer or mobile device that supports interactive PDFs, the Table of Contents, page references, figure references, and URLs are all interactive and can be clicked on or pressed to navigate to the corresponding page or web URL.

INSTALLING THE AMP

UNPACKING

Unpack your amplifier and inspect for any damage that may have occurred during transit. If damage is found, notify the shipping company immediately. Only you can initiate a claim for shipping damage, though JBL will be happy to help as needed. If the product arrived showing signs of damage, save the shipping carton for the shipper's inspection.

We also recommend that you save all packing materials for use if you ever need to transport the unit. Never ship the unit without the factory carton and packing materials.

ADDITIONAL MATERIALS

For installation, you will need the following (not supplied):

- Input wiring cables
- Output wiring cables
- Flathead screwdriver
- Phillips screwdriver
- Rack for mounting amplifier (or a stable surface for stacking)
- Category 5e or higher cabling

⚠️ *WARNING: : Before you start to set up your amplifier, read and observe the Important Safety Instructions included in the box. These instructions can also be downloaded from the product page at **www.JBLPRO.com**.*

INSTALLING THE AMPLIFIER

⚠️ *CAUTION*: Before you begin, make sure your amplifier is disconnected from the power source.

Mount the unit in a standard 19-inch (48.3 cm) equipment rack (EIA RS-310B). You can also place a single amp on a solid, stable surface or stack multiple amps.

NOTE: Amplifiers should be supported at both the front and rear of the rack.

See **"Dimensions" on page 75** *for information on amplifier dimensions.*

PROPER COOLING

When using an equipment rack, mount units directly on top of each other. Close any open spaces in the rack with blank panels. (Open spaces will reduce cooling efficiency.) DO NOT block front or rear air vents.

The rack should be a minimum of 2 inches (5.1 cm) away from the amplifier, and the back of the rack should be a minimum of 4 inches (10.2 cm) from the amplifier back panel.

Air flow is front to back as illustrated in **Figure 1.**
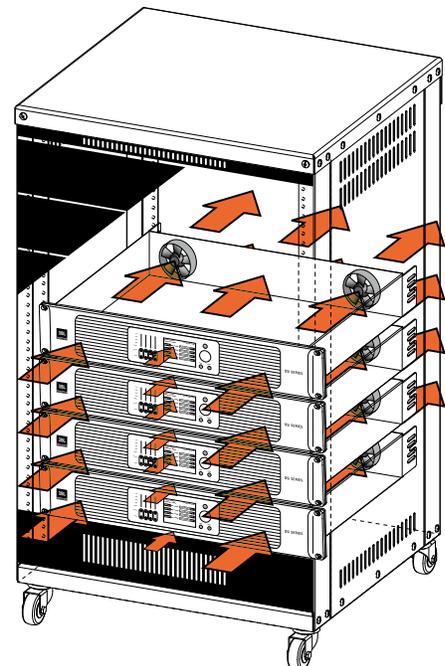
Figure 1: Proper rack venting

FRONT PANEL OVERVIEW
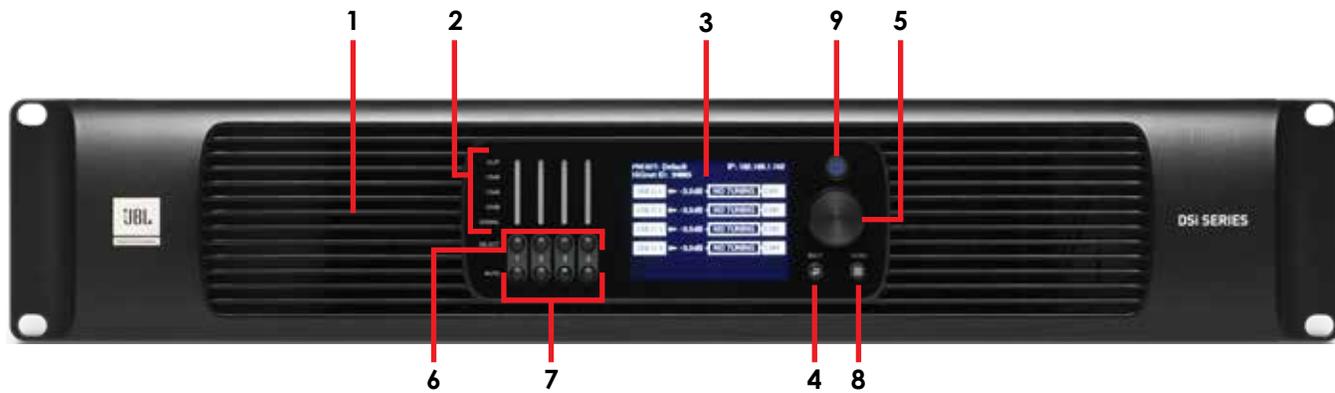
Figure 2: Front Panel

1. **Cooling Vents/Air Filters**
   Provides cooling air flow. Do not block or cover these vents. Air filters are removable.

2. **Signal Level LED Indicators**
   These LEDs indicate channel signal level as follows:

   • **Clip LED –** Lights yellow if the input clips or red if the output clips. Note that an output clip will always take priority over an input clip.

   • **-10dB LED –** Lights green when the output signal reaches a level that is 10dB below full scale output of the amp.

   • **-15dB LED –** Lights green when the output signal reaches a level that is 15dB below full scale output of the amp.

   • **-20dB LED –** Lights green when the output signal reaches a level that is 20dB below full scale output of the amp.

   • **Signal LED –** Lights green when signal is sensed at the input. The threshold for lighting this LED is -40dBu.

3. **LCD (Display)**
   This color LCD provides product information and visual feedback for operating the DSi 2 amplifier from the front panel.

4. **Back Button**
   Press this button to navigate back one level when navigating menus.

5. **Encoder**
   This encoder supports rotary and pushbutton operation. It is used to navigate the DSi 2's menus and select on-screen options. It is also used to adjust individual channel or overall system volume.

6. **Channel Select Buttons**
   Pressing one of these buttons will select the corresponding channel; turning the **ENCODER** will then control the volume of the selected channel.

   Pressing and holding a **CHANNEL SELECT** button for 2 seconds from the Home screen will display a Channel Details screen for that channel. The Channel Details screen shows additional details for the selected channel, including configured input source, output mode, status, channel temperature, and channel volume. Note that channel volume can also be controlled from this screen by turning the Encoder.

7. **Channel Mute Buttons**
   Pressing each of these buttons will mute/unmute the corresponding amplifier output channel. Note that when a channel is muted, the front panel SIGNAL LEDs will still light to indicate input signal level presence, the CLIP LEDs will still light to indicate input clipping, and the LCD will flash "Mute".

8. **Menu Button**
   Pressing this button will enter the Main menu, where amplifier settings can be edited.

9. **Power Button**
   Turns the amplifier power on or off. The Power button has an integrated power symbol that illuminates blue when the power is on and green when the power is off. To prevent the unit from accidentally being powered off, the Power button must be pressed and held for 2 seconds when powering off.

   NOTE: The Power button is disabled when using the AUX port Sleep circuit. See **"Using the AUX Port" on page 67** for more information.

REAR PANEL OVERVIEW
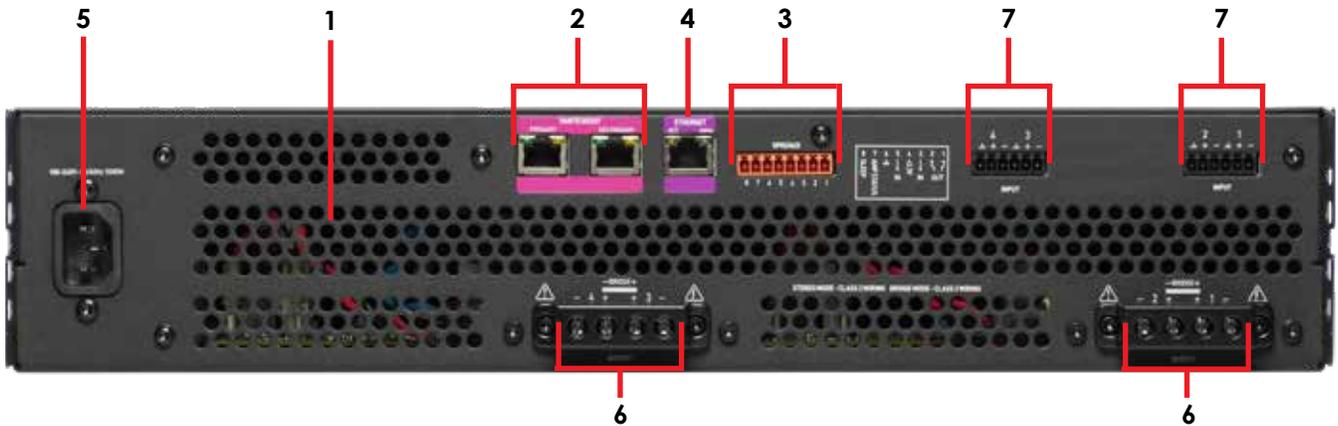
Figure 3: A4-D rear panel shown

1. **Cooling Vents**
   Do not block/cover these vents.

2. **AES67 Primary / Secondary Ports***
   These two RJ45 connectors are used for AES67 Audio transport and are available only on the '-D' DSi 2 amplifier models. This implementation of AES67 allows for up to 64 channels of digital audio over Category 5e wiring.

3. **General Purpose Input/Output (GPIO)**
   This 8-pin block connector combines the 2-in, 2-out GPIO with the SLEEP and AMP STATUS pins from the AUX circuit. See *"Using the GPIO Control Port" on page 66* and *"Using the AUX Port" on page 67* for further information on configuring and using these ports.

4. **Ethernet (Network Control) Port***
   Connect this RJ45 port to a computer or network for monitoring and controlling the amplifier over Category 5e wiring via the Audio Architect software. The integrated LEDs in this Ethernet port will light as follows:

   • **Yellow LED**
     This LED lights when a network connection is established with the computer or network, and will flash to indicate network activity.

   • **Green LED**
     This LED indicates network speed and will light when connected to a 100 Mb network or not light when connected to a 10 Mb network.

   NOTE: : The Ethernet port is for network control only and will not transmit or receive AES67 Audio.

5. **AC Power Inlet**
   Connect the included AC power cord to this standard 15A, IEC type 320 inlet. Supported mains voltage range is 100-240V~.

6. **Output Terminal (Barrier Block) Connectors**
   Two four-pole, touch-proof terminal strip per channel pair. Accepts up to 10 AWG wire or terminal forks. See **"Wiring Output Connectors" on page 10** for information on wiring these connectors.

7. **Analog Audio Input Connectors**
   Connect your audio source outputs to these inputs using the provided plug-in connectors. One 6-pin plug-in connector can be used per input pair. These inputs are high impedance, balanced connections. See *"Wiring Input Connectors" on page 10* for information on wiring these connectors.

***WARNING:** Only connect to networks that remain inside the building.

HARDWARE SETUP

CONNECTING THE AC POWER CORD

Connect your amplifier to the AC mains power outlet using the supplied AC power cord. First, connect the IEC end of the cord to the IEC connector on the amplifier. Then plug the other end of the cord to the AC mains.

WARNING: The third prong of the power connector (ground) is an important safety feature. Do not attempt to disable this ground connection by using an adapter or other methods.

Make certain the AC mains voltage and current ratings are sufficient to deliver full power to all amplifiers. DSi 2 Series amplifiers use a universal power supply. The AC voltage requirements are 100V-240V~, 50/60Hz (±10%). If the AC line voltage varies outside of this acceptable range, the amplifier's power supply will turn off and the blue Power LED will flash. The amplifier will turn back on when the AC line voltage returns to safe operating levels.

POWER UP PROCEDURE

When turning on the amplifier for the first time:

1. Ensure all connections are disconnected with the exception of the power cord.
2. Press the amplifier's **POWER** button. The Power indicator will light blue and the amplifier will boot as long as sufficient mains power is provided.
3. Once boot up is complete, turn the **ENCODER** counter-clockwise until all amp levels are set to -80dB in the front panel LCD. **(The Encoders affect the OUTPUT level of the Amplifier.)**
4. Configure the amplifier as described in.
5. Once the amplifier has been properly configured for the application, turn off the power — by pressing and holding the Power button for 2 seconds — then disconnect the power cord.
6. Turn down the level of your audio source.
7. Make all connections as described in **"Wiring Input Connectors"** and **"Wiring Output Connectors" on page 10**.
8. Once all connections have been made, reconnect the power cord and turn on the amplifier power.
9. Turn your audio source up to an optimum level. Refer to all device meters and ensure that at no point in the signal chain is the signal being clipped in any way. If any of the amplifier's Clip indicators light yellow, reduce the source level until the Clip LEDs no longer light.
10. Turn the amplifier's **ENCODER** clockwise until the desired loudness or power level is achieved, while making sure the amplifier's clip LEDs do not light.

IMPORTANT: Always turn off the amplifier — by pressing and holding the Power button for 2 seconds — and disconnect the power cord before making any wiring or installation changes.

IMPORTANT: When powering a fully configured Cinema system, always turn the amplifiers ON last and OFF first.

HARDWARE SETUP

PRECAUTIONS

Your amplifier is protected from internal and external faults, but you should still take the following precautions for optimum performance and safety:

1. Configure the amplifier for proper operation, including input and output wiring hookup. Improper wiring can result in serious operating difficulties. For information on wiring and configuration, please consult **"Wiring Input Connectors"** and **"Wiring Output Connectors" on page 10**. For advanced setup techniques, consult Crown's Amplifier Application Guide available online at www.crownaudio.com.

2. Use care when making connections, selecting signal sources, and controlling the output level.

3. Do not short the ground lead of an output cable to the input signal ground. This may form a ground loop and cause oscillations.

4. **Never connect the output to a power supply, battery, or power main Electrical shock may result.**

5. Tampering with the circuitry or making unauthorized circuit changes may be hazardous and invalidate all agency listings.

6. Do not operate the amplifier with the Clip LEDs constantly flashing.

7. Do not overdrive the processor, which will cause clipped signal to be sent to the amplifier. Such signals will be reproduced with extreme accuracy, and loudspeaker damage may result.

8. Do not operate the amplifier with less than the rated load impedance. Due to the amplifier's output protection, such a configuration may result in premature clipping and speaker damage.

REMEMBER: JBL/ HARMAN is not liable for damage that results from overdriving other system components.

HARDWARE SETUP

WIRING INPUT CONNECTORS

JBL recommends using pre-built or professionally wired balanced cables (two-conductor plus shield). Balanced wiring provides better rejection of unwanted noise and hum, however, unbalanced line may also be used.

Use 6-pin plug-in cable ends at the amp input connectors. A male connector is supplied for each input of your model of amplifier. Additional connectors are available from JBL (P/N 5024623).

Figure 4 shows connector pin assignments for balanced wiring and **Figure 5** shows connector pin assignments for unbalanced wiring. Note that for bridge mono operation, only the odd-numbered input channels (1,3) should be wired for each bridged pair.
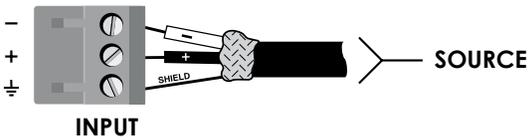
Figure 4: Balanced wiring
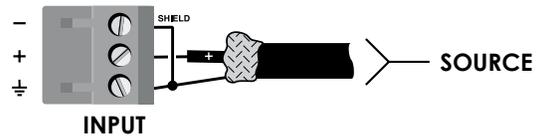
Figure 5: Unbalanced wiring

WIRING OUTPUT CONNECTORS

Before making any output connections, ensure the power cord is disconnected from the amplifier and carefully review the total impedance for loudspeakers connected to each amplifier output. If multiple loudspeakers are connected to an output (i.e., in series, parallel, or series-parallel), be certain the total system impedance is within allowed specification for the output. See **"Specifications" on page 74** for supported load specifications.

NOTE: The output cover does not need to be removed to connect the output wiring.

JBL recommends using the included terminal fork connectors and two-conductor or four-conductor, heavy gauge speaker wire. You may use terminal forks up to 10 AWG or bare wire for your output connectors (see Figure 6). For best results, JBL recommends Panduit part #PV10-6LF-L or equivalent terminal fork. For bare wire, it is highly recommended that output wiring is tinned. To reduce strain on input and output wiring, JBL recommends the use of horizontal lacer bars. For best results, JBL recommends Middle Atlantic® part# LBP-4R90 or equivalent horizontal lacer bar.

For low-impedance loads, refer to the table below and select the appropriate size of wire based on the distance from amplifier to speaker.

Distance	Wire Size
Up to 25 ft. (7.6m)	16 AWG
26-40 ft. (7.9-12.2m)	14 AWG
41-60 ft. (12.5-18.3m)	12 AWG
> 60 ft (18.3m)	10 AWG
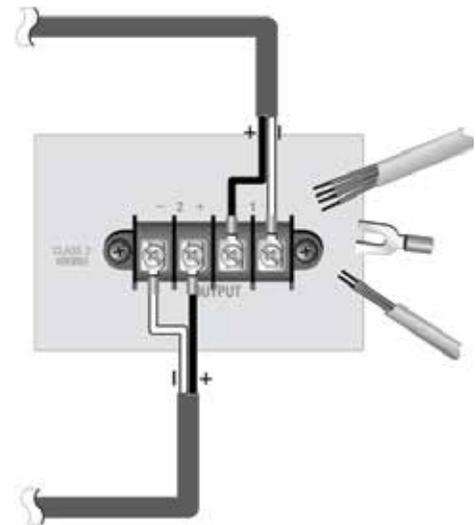
Figure 6: Wiring output connectors

CAUTION: Never use shielded cable for output wiring.

CAUTION: Never connect the speaker return to the chassis of the amplifier, or damage to the amplifier may result.

NOTE: Custom wiring should only be performed by qualified personnel. Class 2 output wiring is required.

For application-specific output connection diagrams, including how to wire outputs for bridge mono operation, see **"Application Examples" on page 58**.

FRONT PANEL MENUS & NAVIGATION OVERVIEW

MENU STRUCTURE

The below diagram shows the DSI 2's front panel menu structure, as well as how to navigate and control channel volume.

VOLUME

Home Screen

Turn ENCODER — Adjusts System Volume(all channels)

Press CH1 SELECT Button (hold button for CH1 Info) → CH1 Selected → Turn ENCODER → Adjusts Channel 1 Volume

Press CH2 SELECT Button (hold button for CH2 Info) → CH2 Selected → Turn ENCODER → Adjusts Channel 2 Volume

Press CH3 SELECT Button (hold button for CH3 Info) → CH3 Selected → Turn ENCODER → Adjusts Channel 3 Volume

Press CH4 SELECT Button (hold button for CH4 Info) → CH4 Selected → Turn ENCODER → Adjusts Channel 4 Volume

Press **MENU** Button

Press and hold **ENCODER**

SYSTEM MENU

Configure Amplifier | System Settings | Network | AES67

CONFIGURE AMPLIFIER	SYSTEM SETTINGS	NETWORK	AES67
Guided Setup	Lighting / Display Menu	Config (DHCP)	AES67 Status
Amp Wiring (Y, Bridge)	Security	IP Address	AES67 Settings
Input Source	Amp Sensitivity Mode	Subnet Mask	
Speaker Tunings / DSP	Power Modes	Gateway	
Output Fader Linking	Diagnostics	HiQnet Address	
Save Preset			
Load Preset			

*Turn ENCODER to Scroll through options and Press to Select

   AES67 Option available only on '-D' Models

Figure 7: Menu structure diagram

FRONT PANEL MENUS & NAVIGATION OVERVIEW

```
┌─────────────────┐
│   Home Screen   │
└─────────────────┘
        │
        │ Press MENU Button
        ▼
┌─────────────────┐
│ Configure Amplifier │
└─────────────────┘
        │
        │ Scroll and select Using ENCODER
        ▼
```

CONFIGURE AMPLIFIER

- Guided Setup
- Amp Wiring (Y, Bridge)
- Input Source
- Speaker Tunings / DSP
- Output Fader Linking
- Save Preset
- Load Preset

EDIT DSP

- Input Delay
- Input PEQ
- Xover
- Output PEQ
- Output Delay
- Limiter
- Speaker Tuning
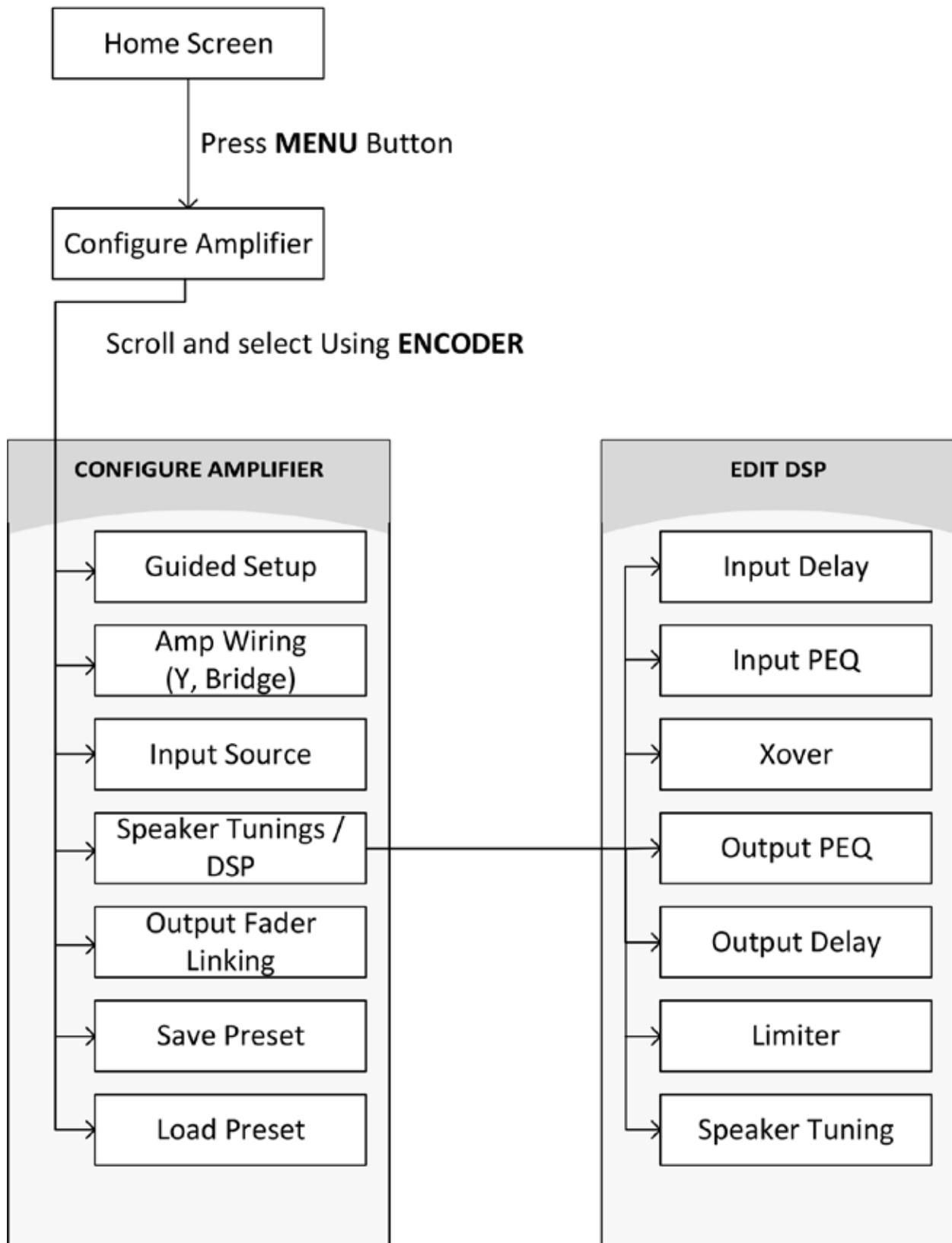
FRONT PANEL MENUS & NAVIGATION OVERVIEW

THE HOME SCREEN

The Home screen (shown in **Figure 8**) is the first screen displayed in the DSi 2's front panel display once the amplifier has completed the boot sequence.

From the Home screen, the **ENCODER** can be turned to adjust system volume or pressed and held to access the Diagnostics screen, the **CHANNEL SELECT** buttons can be pressed (or held) to adjust individual channel volume using the **ENCODER**, or the **MENU** button can be pressed to enter the Main menu to configure and view information about the amplifier.

The Home screen shows at-a-glance amplifier configuration information, as shown in **Figure 9**. Here you can see the currently loaded device preset, device IP address, device hiQnet ID, DSi2 configuration, channel volume settings, and more.
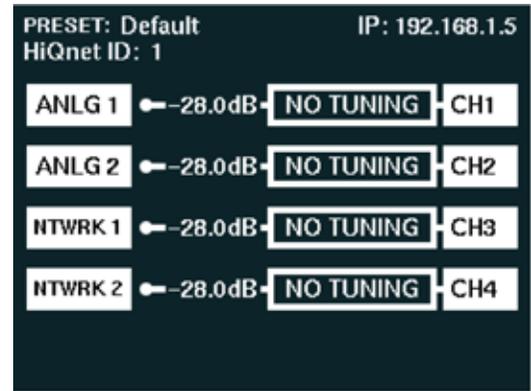
Figure 8: Home screen
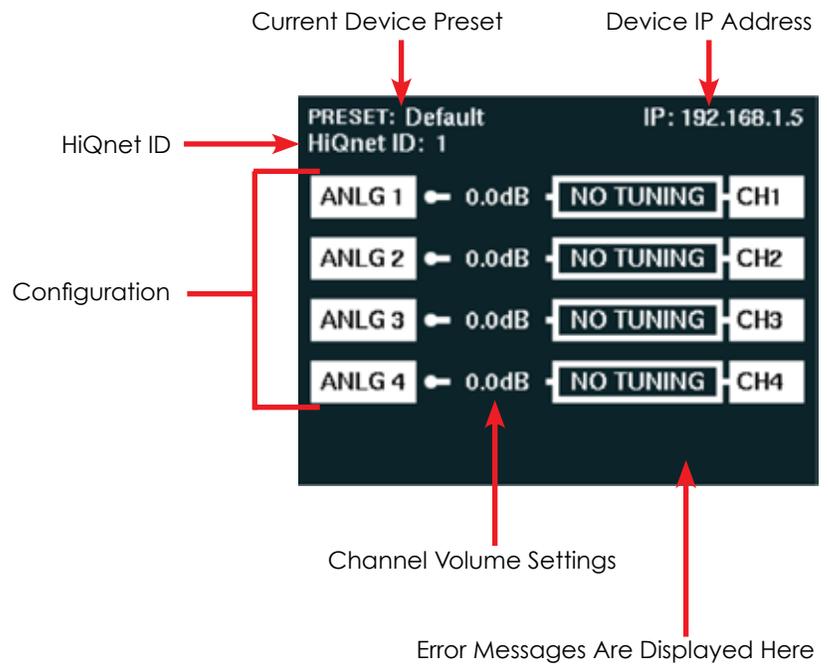
Figure 9: Home screen layout

ADJUSTING CHANNEL VOLUME

Channel volume can either be controlled globally or independently per channel. The volume range is from -80dB to 0dB. For gain structure purposes, it is important to note that volume adjustment occurs at the end of the DSP signal chain and before output limiting.

To adjust system (global) volume:

1. From the Home screen, turn the **ENCODER**. The volumes for all channels will be adjusted respectively.

> **NOTE:** When adjusting system volume, all independent channel volume settings are adjusted relative to each other. This means that the minimum/maximum global volume limits are governed by the channel with the highest or lowest volume setting.

To adjust the volume of a particular channel:

1. Select one of the channels using the corresponding **SELECT** button — the selected channel will now be highlighted in the display.

> **TIP:** An alternative method for adjusting channel volume is to press and hold one of the channel SELECT buttons to bring up the Channel screen.

2. Turn the **ENCODER** to adjust the selected channel's volume

3. When done, press the **BACK** button to deselect the channel.

CONFIGURING THE AMP

This section of the manual describes how to configure the DSi 2 amplifier for your application using the front panel user interface. This includes assigning input channels, editing internal routing and DSP settings, and configuring output mode settings. DSi 2 Series amplifiers can be configured using the built-in Guided Setup or manually using the individual menu options in the Configure Amplifier menu. Configuration can also be performed from a PC using HiQnet Audio Architect. For information on configuring the DSi 2 amplifiers using Audio Architect, see **"Installing Audio Architect & Configuring the Network" on page 27**.

ABOUT INPUT & OUTPUT CONFIGURATION

The DSi 2 amplifiers ship from the factory with each output channel sourced from its respective analog input (e.g., analog input 1 goes to output 1, etc.), as shown in **Figure 10**.

When viewing the Home screen, signal flow is represented by lines that traverse from the input source (leftmost box) to the channel output (rightmost box).

Additional amplifier configuration information can be seen at-a-glance on the Home screen, as shown in **Figure 11**.
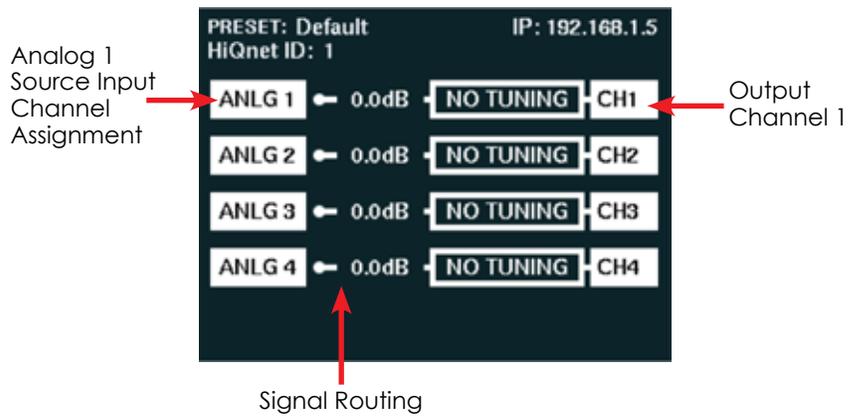
Figure 10: Default DSi 2 configuration
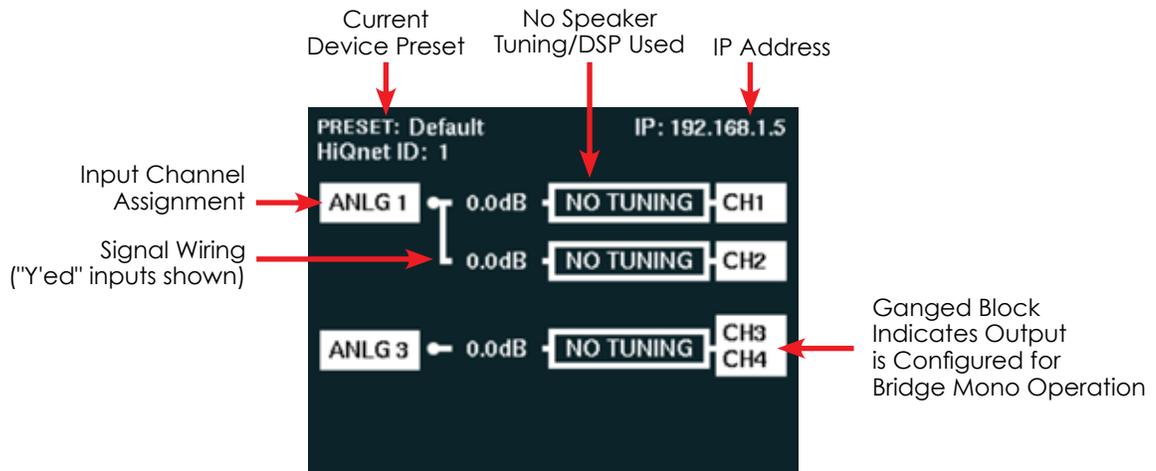
Figure 11: DSi 2 configuration example viewed from the front panel Home screen

CONFIGURING THE AMP

USING THE GUIDED SETUP

The Guided Setup walks you through all the steps to configure the amplifier. This includes assigning input channels, configuring internal DSP wiring and settings, and configuring output operation.

To configure the amplifier using the Guided Setup:

1. From the Home screen, press the **MENU** button.

2. Select the "Configure Amplifier" option from the menu using the **ENCODER**.

3. Select the "Guided Setup" option from the menu.

4. Follow the on-screen steps, making selections with the **ENCODER**. If you wish to exit the Guided Setup at any time, press the **MENU** button.
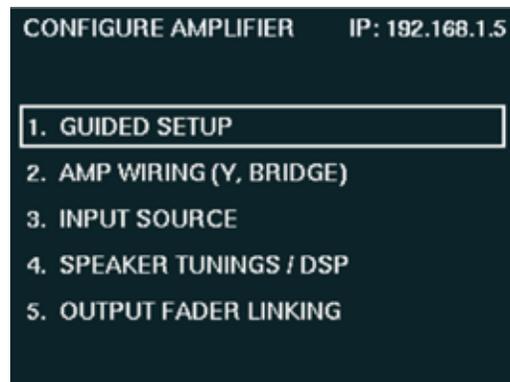
Figure 12: DSi Menu

NOTE: After completing the Guided Setup, configuration settings will be retained after power cycling the amp. However, it's a good idea to save the configuration. The configuration must be saved before loading another device preset or the settings will be lost. See **"Saving Device Presets" on page 60** for information on saving device presets.

CONFIGURING THE AMP

CONFIGURING AMP WIRING & BRIDGE MODE

From the Amp Wiring Setup screen (see **Figure 13**), input wiring can be configured. Here you can configure an input to feed multiple outputs (referred to as "Y'ing" the signal).

Bridge mono operation can also be configured from this screen. Bridging a pair of amplifier outputs will increase the power and voltage available at the output.

To configure input wiring and/or bridge mode manually:
1. From the Home screen, press the **MENU** button.
2. Select the "Configure Amplifier" option from the menu using the **ENCODER**.
3. Select the "Amp Wiring" option from the menu.
4. Select the desired options for your application, making selections with the **ENCODER**.
5. When done, select "Done" at the bottom of the screen.

Figure 13: Amp Wiring Setup Screen

Available input options:
- Y 1+2
- Y 2+3
- Y 3+4

Available output options:
- Bridge 1+2
- Bridge 3+4

For information on configuring signal routing and bridge mode settings in Audio Architect, see **"Configuring Amp Wiring & Output Modes in Audio Architect" on page 43**.

CONFIGURING THE AMP

ASSIGNING INPUT SOURCES

Input sources can be assigned from the Input Source screen (see **Figure 14**). The default preset (Preset 1) is configured with all analog inputs feeding their respective output channels.

To assign input sources manually:

1. From the Home screen, press the **MENU** button.
2. Select the "Configure Amplifier" option from the menu using the **ENCODER**.
3. Select the "Input Source" option.
4. Use the **ENCODER** to select each input channel block and edit the input channel source assignment.
5. When done, select "Done" at the bottom of the screen.

Figure 14: Input Source Screen

Available options:

- Analog 1
- Analog 2
- Analog 3
- Analog 4
- Network 1
- Network 2
- Network 3
- Network 4

For information on assigning input sources in Audio Architect, see **"Assigning Input Sources in Audio Architect" on page 41**.

**Network 1 -4 options available in '-D' DSi 2 models only.

CONFIGURING THE AMP

CONFIGURING DSP

From the Speaker Tunings/DSP menu (see Figure 15) crossover, delay, and limiter settings can be adjusted to optimize the loudspeakers. Speaker tunings can also be selected for all JBL Cinema Loudspeaker models to easily optimize DSP settings for a particular loudspeaker model. Note that this screen shows the status of each DSP module (block). When a module is darkened, it is bypassed. When a module is bright, it is enabled.

Figure 15: Speaker Tunings/DSP Screen

To edit speaker tuning/DSP settings manually:

1. From the Home screen, press the **MENU** button.
2. Select the "Configure Amplifier" option from the menu using the **ENCODER**.
3. Select the "Speaker Tunings/DSP" option from the menu.
4. Use the **ENCODER** to select the module you wish to edit.
5. Use the **ENCODER** to navigate, make selections, and edit settings.
6. When done, select "Done" at the bottom of the screen.

CONFIGURING THE AMP

DELAY

The DSi 2 amplifiers have an Input Delay (pre-crossover) and Output Delay (post- crossover) DSP module for each channel. Each is selectable when navigating the Speaker Tunings/DSP screen (see **Figure 15**). Once an Input or Output Delay module has been selected, delay settings can be edited from the Delay screen (see **Figure 16**).

The Output Delay can be used to time-align the various drivers in a multi-way speaker system or for close-proximity zone delay (to compensate for the slap-delay artifacts caused when bleed from an adjacent zone is audible). A total of up to 100ms of delay time is available in each Output Delay. The Input Delay can be used for delaying the system to the reference, or whenever more delay time is required than the Output Delay has to offer. The Input Delays provide an additional 1 second of delay time for each channel. Delay can be adjusted in milliseconds, feet, or meters.

Figure 16: Delay Screen

To edit delay settings manually:

1. From the Home screen, press the **MENU** button.

2. Select the "Configure Amplifier" option from the menu using the **ENCODER**.

3. Select the "Speaker Tunings/DSP" option from the menu.

4. Select the "Input Delay" or "Output Delay" icon for the channel you wish to edit.

5. Use the **ENCODER** to navigate, make selections, and edit settings.
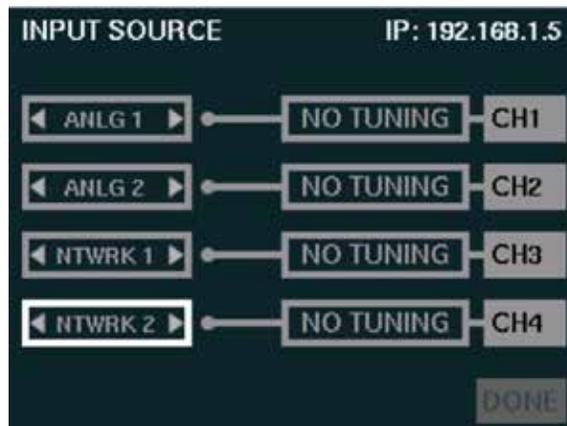
6. When done, select "Done" at the bottom of the screen.

Available options/parameters:

*   **Enable (Off, On)**
    Turns the Delay on or off.

*   **Seconds (Input Delay: 0 – 1000ms, Output Delay: 0 – 100ms)**
    Adjusts the delay time in 1000ms.

*   **Feet (Input Delay: 0 – 1127ft, Output Delay: 0 – 112.7ft)**
    Adjusts the delay time in feet.

*   **Meters (Input Delay: 0 – 343m, Output Delay: 0 – 34.3m)**
    Adjusts the delay time in meters.

For information on editing these settings in Audio Architect, see "**Input/Output Delay Panels" on page 48.**

CONFIGURING THE AMP

PEQ (PARAMETRIC EQ)

PEQ settings can be edited from the PEQ screen (see Figure 17). Input and Output PEQs are available. The Output (post-crossover) PEQs are typically used for speaker tuning settings, and the Input (pre-crossover) PEQs provide additional EQ filtering for the system if required.

To edit PEQ settings manually:
1. From the Home screen, press the **MENU** button.
2. Select the "Configure Amplifier" option from the menu using the **ENCODER**.
3. Select the "Speaker Tunings/DSP" option from the menu.
4. Select the pre or post-crossover "PEQ" icon for the channel you wish to edit.
5. Use the **ENCODER** to navigate, make selections, and edit settings.
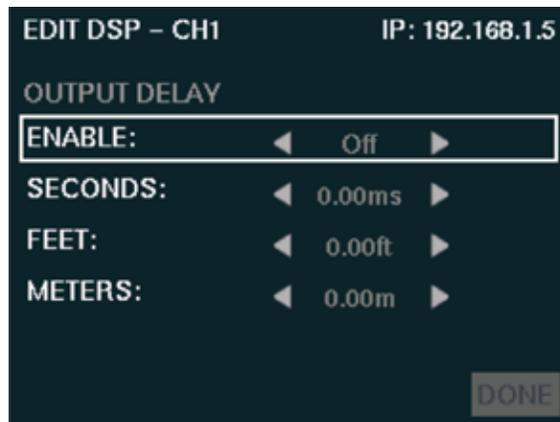6. When done, select "Done" at the bottom of the screen.

Figure 17: PEQ Screen

Available options/parameters:
* **Enable (Off, On)**
  Turns the PEQ on or off.
* **Band (Band 1 – Band 8)**
  Selects the filter band for editing.
* **Type**
  Selects the type of filter for the band. See available filter types listed below.
* **Frequency (20Hz – 22kHz)**
  Sets the center/corner frequency of the band.
* **Gain (±20dB)**
  Sets the amount of gain (boost/cut) applied to the band.
* **Slope (3 – 15 dB/Oct)**
  Sets the slope rate of the band for Shelf-type filters (only visible when a Shelf filter is selected).
* **Q (0.10 – 32)**
  Sets the Q of the band for Bell-type filters, or adjusts the resonant peak for 2nd Order Lowpass/ Highpass filters (only visible when one of the aforementioned filter types is selected).

Available filter types:
* Bell
* Low Shelf
* High Shelf
* LP BW1 (Butterworth 6dB/oct lowpass filter)
* HP BW1 (Butterworth 6dB/oct highpass filter)
* LP 2nd Order (6-12dB/oct lowpass filter with variable resonant peak using the Width parameter)
* HP 2nd Order (6-12dB/oct highpass filter with variable resonant peak using the Width parameter)
* Allpass 1 (90° phase shift)
* Allpass 2 (180° phase shift)

See **"Input/Output EQ Panels" on page 47** for information on editing the PEQs in Audio Architect.
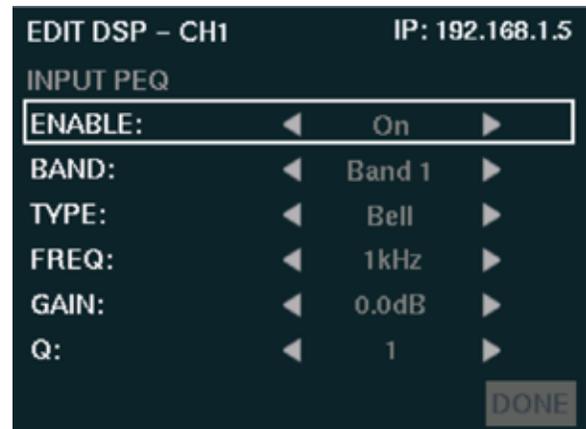
CONFIGURING THE AMP

CROSSOVER

Crossover filter settings can be edited from the Crossover screen (see **Figure 18**). Crossover filters are used to restrict the range of frequencies sent to a loudspeaker or driver for protection and sound optimization.

To edit crossover settings manually:

1. From the Home screen, press the MENU button.

2. Select the "Configure Amplifier" option from the menu using the **ENCODER**.

3. Select the "Speaker Tunings/DSP" option from the menu.

4. Select the "XOVER" icon for the channel you wish to edit.

5. Use the **ENCODER** to navigate, make selections, and edit settings.

6. When done, select "Done" at the bottom of the screen.

Figure 18: Crossover Screen

Available options/parameters:

- **HP Enable (Off, On)**
  Enables or disables the high-pass filter.

- **HP Type (Bessel 12 – 48dB/octave, Butterworth 6 – 48dB/octave, Linkwitz-Riley 12 – 48dB/octave)**
  Selects the high-pass filter's type and slope rate in dB/octave.

- **HP Freq (16Hz – 20kHz)**
  Sets the high-pass filter's corner frequency.

- **LP Enable (Off, On)**
  Enables or disables the low-pass filter.

- **LP Type (Bessel 12 – 48dB/octave, Butterworth 6 – 48dB/octave, Linkwitz-Riley 12 – 48dB/octave)**
  Selects the low-pass filter's type and slope rate in dB/octave.

- **LP Freq (16Hz – 20kHz)**
  Sets the low-pass filter's corner frequency.

- **Gain (-60 to 24dB)**
  Adjusts the crossover output gain, pre limiter.

- **Polarity (Normal, Inverted)**
  Selects between normal or inverted polarity for the selected output.

See **"Crossover Panel" on page 46** for information on editing the Crossover in Audio Architect

CONFIGURING THE AMP

LIMITER

The DSi 2 Series amplifiers include the LevelMAX™ suite of limiters. Limiter settings can be edited from the Limiter screen (see Figure 20). Limiters are used to set a "ceiling" on the output level to protect drivers from over-excursion. The thermal limiters in the DSi 2 Series amplifiers can also protect against thermal driver failure (overheating).

Figure 19: Limiter Screen

To edit limiter settings manually:
1. From the Home screen, press the **MENU** button.
2. Select the "Configure Amplifier" option from the menu using the **ENCODER**.
3. Select the "Speaker Tunings/DSP" option from the menu.
4. Select the "Limit" icon for the channel you wish to edit.
5. Use the **ENCODER** to navigate, make selections, and edit settings.
6. When done, select "Done" at the bottom of the screen.

Available options/parameters:
- **Enable (Off, On)**
  Turns the Limiter on or off.
- **RMS Voltage (1 – 400VRMS)**
  Sets the RMS voltage limit for the output.
- **Thermal Voltage (1 – 500V)**
  Sets the long-term output power limit of the amplifier to what the loudspeaker load can handle without overheating and going into thermal compression. This is based on the AES power/voltage ratings of drivers outlined in the AES2-2012 standard.
- **Thermal Response (1 – 600 sec)**
  Sets the time it takes for the thermal limiter to adjust output voltage. This is based on the AES power/voltage ratings of drivers outlined in the AES2-2012 standard.

NOTE: The LevelMax limiters include sidechain EQ for advanced speaker tunings. Sidechain EQ parameters are not user adjustable.

Additional limiter parameters are available in Audio Architect. For more information, see "LevelMAX Panel" on page 45.

For more information on the LevelMAX limiters and how to set the parameters, see the LevelMAX white paper available at www.jblpro.com.

CONFIGURING THE AMP

CONFIGURING SPEAKER TUNINGS

Speaker tunings can be selected when navigating the Guided Setup or at the end of each channel from the Speaker Tunings/DSP screen (see Figure 20).

Speaker tunings apply DSP settings specific to a particular speaker, making it easy to optimize a speaker's performance.

Figure 20: Selecting a speaker tuning

To select a speaker tuning for a channel:

1. From the Home screen, press the **MENU** button.

2. Select the "Configure Amplifier" option from the menu using the **ENCODER**.

3. Select the "Speaker Tunings/DSP" option from the menu.

4. Scroll to the end of the channel for which you are selecting a speaker tuning—a box will appear that reads "No Tuning".

5. Press the **ENCODER**. A list of available speaker tunings will appear on the screen.

6. Use the **ENCODER** to navigate the list then press the **ENCODER** to select the matching speaker series. Additional prompts will appear to allow selection of the specific speaker model and additional options depending on the tuning selected.

7. A confirmation prompt will appear that provides additional information on the tuning. Use the **ENCODER** to apply or cancel the selection.

8. Repeat for any additional channels.

9. When done, select "Done" at the bottom of the screen.

10. The screenshot below shows an example of how the Home screen will look after speaker tunings have been configured.

See **"Configuring Speaker Tunings in Audio Architect" on page 45** for information about configuring speaker tunings in Audio Architect.

CONFIGURING THE AMP

CONFIGURING OUTPUT FADER LINKING

The Output Fader Linking screen (see **Figure 21**) allows the amplifier's output channel levels and mutes to be linked for ganged operation.

To edit the Output Fader Linking settings:
1. From the Home screen, press the **MENU** button.
2. Select the "System Settings" option from the menu using the **ENCODER**.
3. Select the "Output Fader Linking" option from the menu, then press the **ENCODER**.
4. Turn the **ENCODER** to select the desired option, then press the **ENCODER** to toggle whether the option is enabled (checked) or disabled (unchecked).
5. When done, use the **ENCODER** to select "Done" at the bottom of the screen.
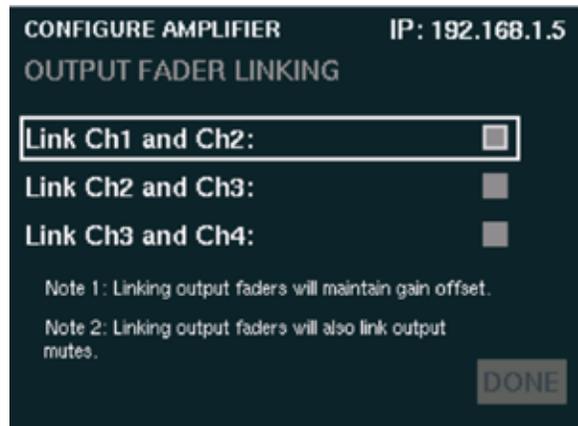
Figure 21: Output Fader Linking screen

NOTE: The output level faders can also be linked using Audio Architect. See **"Main DSI2 Control Panel" on page 38** for more information.

Available options:
- **Link Ch1 and Ch2**
  Links channel 1 and channel 2 output level faders for ganged operation.
- **Link Ch2 and Ch3**
  Links channel 2 and channel 3 output level faders for ganged operation.
- **Link Ch3 and Ch4**
  Links channel 3 and channel 4 output level faders for ganged operation.

TIP: Checking multiple checkboxes allows adjacent channels to be linked. For example, checking the "Link Ch1 and Ch2" checkbox and the "Link Ch2 and Ch3" checkbox will link channels 1, 2, and 3 together. Checking all checkboxes will link all channels together.

CONFIGURING THE AMP

CONFIGURING AES67 SETTINGS

The AES67 Settings menu is only available in '-D' DSi 2 models. From the AES67 Settings menu (see **Figure 22**), outputs can be configured.

To configure AES67 settings:

1. From the Home screen, press the **MENU** button.

2. Select the "AES67" option from the menu using the **ENCODER**.

3. Select the "AES67 Settings" option from the menu.

4. Select the desired options for your application, making selections with the **ENCODER**.

5. Select "Done" at the bottom of the screen.

Figure 22: AES67 Setting menu

Available options:

- **AES67 Source Output 1-4**
  These options allow you to select the source to route to each AES67 output channel, with the following options available:

  - Analog Input 1-4 (routes the pre-processed audio signal from the input)

For information on routing AES67 channels to the amplifier's inputs, see **"Assigning Input Sources" on page 18**.

INSTALLING AUDIO ARCHITECT & CONFIGURING THE NETWORK

INTRODUCTION TO HIQNET AUDIO ARCHITECT

DSi 2 amplifiers can be set up from either the front panel or from the HiQnet Audio Architect software program. Access to some settings and functionality are only available from Audio Architect.

The latest version of Audio Architect can be downloaded at **www.audioarchitect.harmanpro.com**. To communicate with Audio Architect, the amplifier must be connected to a TCP\IP network via the rear panel Ethernet port and, in some cases, configured for the network.

NOTE: The AES67 ports available on BLU link DSi 2 models cannot be used for network control and monitoring of the amplifier.

When Audio Architect is first loaded, the software will scan the network for HiQnet devices. All devices that are discovered on the network will be found under the Device Tree menu in the left-hand side of the Main Audio Architect window (see **Figure 23**).
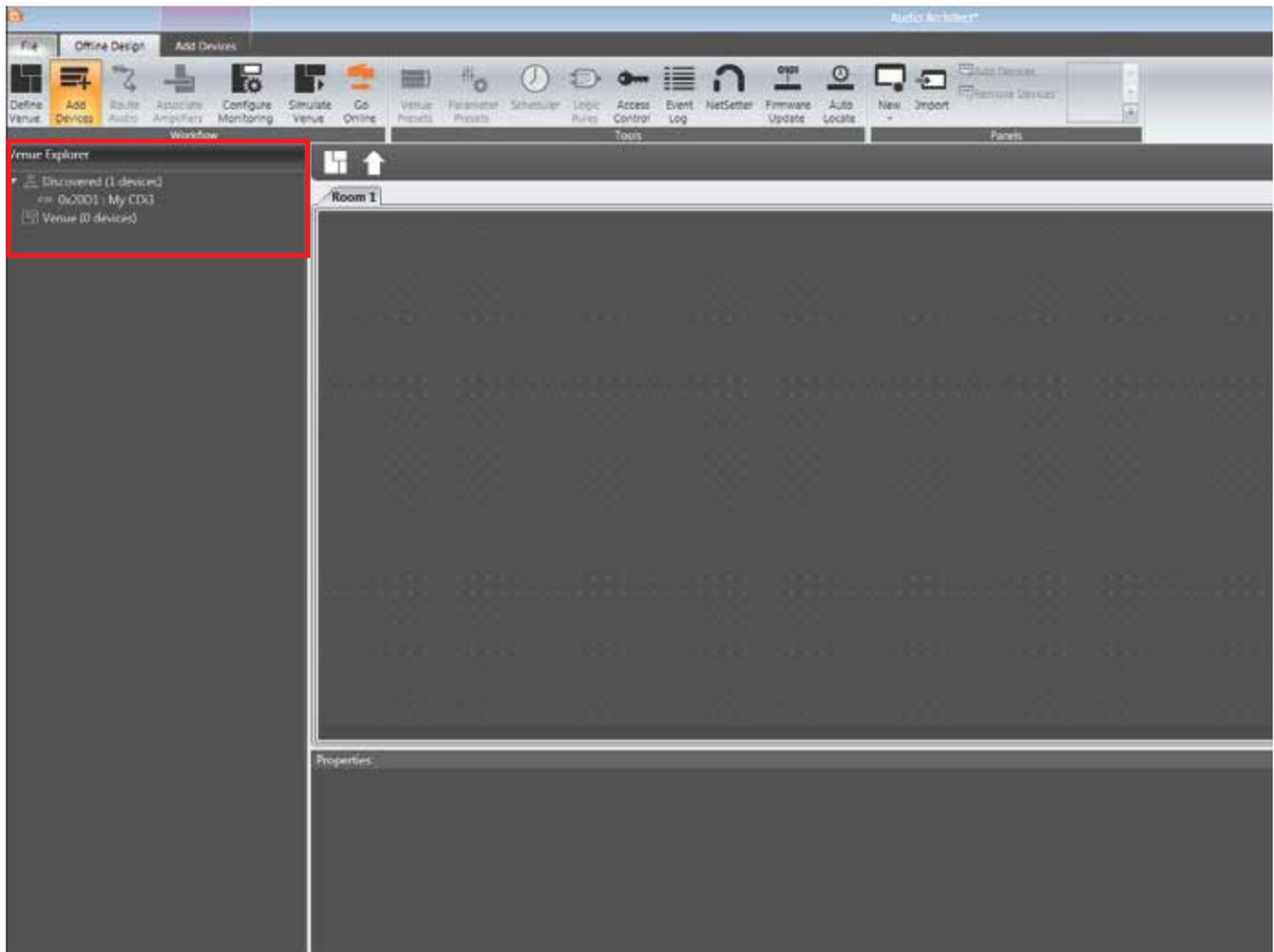
Figure 23: Device Tree menu

NOTE: If devices are not discovered and displayed in the Device Tree menu as shown above, the device and/or network may not be configured correctly. See **"Configuring Amplifier Network Settings" on page 28** for information on configuring network settings.

INSTALLING AUDIO ARCHITECT & CONFIGURING THE NETWORK

CONFIGURING AMPLIFIER NETWORK SETTINGS

Network settings can be configured from either the DSi 2's front panel or from the NetSetter software application. DHCP is enabled by default, allowing the DSi 2 amplifiers to automatically obtain an IP address when connecting to an Ethernet switch or router with an active DHCP server, or when using Auto-IP.

CONFIGURING THE NETWORK FROM THE FRONT PANEL

To configure the amplifier's network settings from the front panel:

1. From the Home screen, press the **MENU** button.

2. Select the "Network" option from the menu using the **ENCODER**.

3. Use the **ENCODER** to select and edit network settings.

4. When done, select "Save" then "Done" at the bottom of the screen for the changes to take affect.

TIP: To quickly configure multiple HiQnet devices, connect all the devices and configuration computer to the same network and use the NetSetter software application (see **"Configuring the Network using NetSetter" on page 29**).
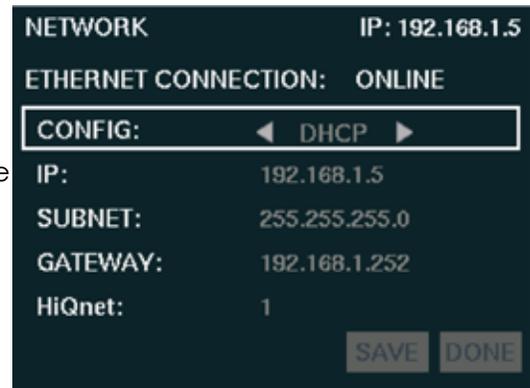
Figure 24: Network Screen

Available options/parameters:

- **Config (DHCP, Static)**
  Turns DHCP on or off. Select "DHCP" to allow the amplifier to automatically obtain an IP address from a DHCP server or via Auto-IP. Select "Static" to manually configure the amplifier's network settings.

- **IP**
  Allows for viewing and editing of the amplifier's IP address.

- **Subnet**
  Allows for viewing and editing of the amplifier's subnet mask.

- **Gateway**
  Allows for viewing and editing of the gateway address, if required to access the network. If using a router, the gateway address will typically be the router address.

- **HiQnet**
  Allows for viewing and editing of the HiQnet node address. Each device on a HiQnet network must have a unique node address.

For additional information on network configuration, please visit **www.audioarchitect.harmanpro.com**.

INSTALLING AUDIO ARCHITECT & CONFIGURING THE NETWORK

CONFIGURING THE NETWORK USING NETSETTER

NetSetter is a software tool which enables you to discover HiQnet devices and reconfigure their network settings in real time, from one central location. Its function is to configure a system of devices to interoperate correctly on the same network and resolve conflicts quickly and easily. The latest version of NetSetter can be downloaded at **www.audioarchitect.harmanpro.com/en-US/software**.

The top of the NetSetter window displays overall operational functions that are available. At the bottom of the NetSetter window is an informational section that lists the number of discovered devices and the IP address of the DHCP server (if available). There is also information regarding the PC HiQnet Address, IP Address, and Subnet Mask.
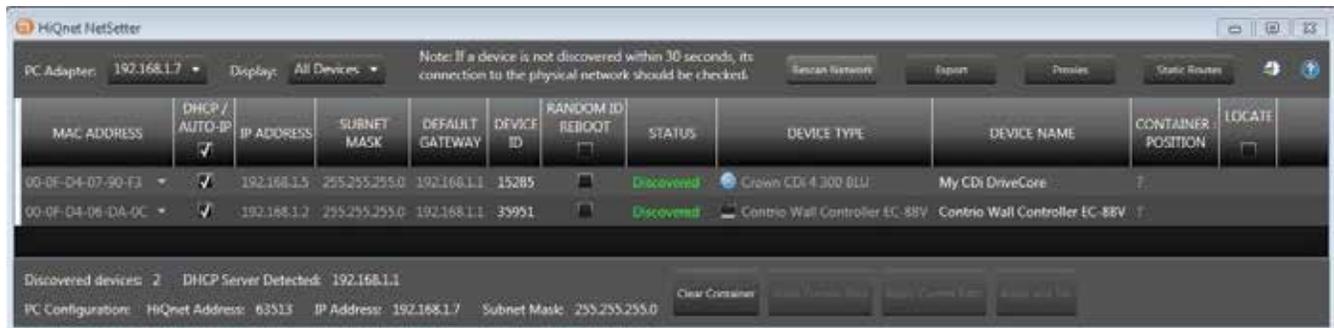
Figure 25: NetSetter Window

1. **PC Adapter**
   Use this dropdown menu to select the Network Interface Card (NIC) that NetSetter will use to attempt to discover HiQnet devices. All available NIC's are listed by IP Address. Selecting a new NIC will force a rescan of the network to which the new NIC is connected.
2. **Display**
   The options available in this dropdown menu will filter the device list as follows:
   a. **All Devices**
      This is the default setting. All discovered devices are displayed.
   b. **HiQnet ID conflicts**
      Only discovered devices with HiQnet address conflicts are displayed.
   c. **IP address conflicts**
      Only discovered devices with IP address conflicts are displayed.
   d. **All conflicts**
      Only discovered devices with either HiQnet address conflicts or IP address conflicts are displayed.
   e. **Locked**
      Only devices in a Locked configuration will be displayed.
   f. **Discovering**
      Only devices in the process of being discovered will be displayed.
   g. **Discovered**
      Only discovered devices with no conflicts will be displayed.
   h. **DHCP/Auto-IP**
      All devices which have been discovered with DHCP/Auto-IP enabled and those which have been set to use DHCP/Auto-IP on applying the edits are displayed.
3. **Rescan Network**
   Clicking this button re-scans the network to which the currently selected NIC is connected.
4. **Export**
   Clicking this button brings up a "Save As" window, allowing you to save the HiQnet Addresses and IP Configurations of all devices on the network as a .CSV (Comma Separated Values) formatted file. This allows you to archive the information and open it in a spreadsheet program such as Microsoft® Excel®.

INSTALLING AUDIO ARCHITECT & CONFIGURING THE NETWORK

5. **Proxies**
   This feature is used to connect to devices that cannot automatically be located by Audio Architect due to network configuration or security measures via proxy connections.

6. **Static Routes**
   This feature is used to set up a static route and connect directly to a device located on a different subnet than the PC.

7. **Clear Container**
   Resets the Container/Position Venue data of the selected device. The action occurs on either "Apply Current Edits" or "Apply and Exit" so that changes may be undone with the Undo Current Edits button.

8. **Undo Current Edits**
   Resets any open edits in the grid to the values as currently on the network.

9. **Apply Current Edits**
   Confirms any open edits in the grid. Devices update accordingly until connection is re-established with HiQnet NetSetter.

10. **Apply and Exit**
    Confirms and saves any open edits in the grid. Devices update accordingly until connection is re-established with HiQnet.

NOTE: If you have made changes to NetSetter and attempt to exit the program, the confirmation window shown in **Figure 26** will appear. Clicking **OK** will apply the edits you have made since opening NetSetter. Clicking **Cancel** will return you to the program.
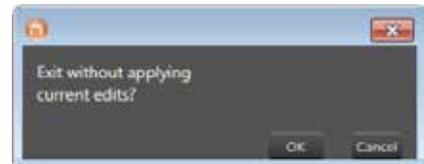
Figure 26: Confirmation Window

INSTALLING AUDIO ARCHITECT & CONFIGURING THE NETWORK

THE NETSETTER GRID

The NetSetter grid is divided into the 12 sections described below.
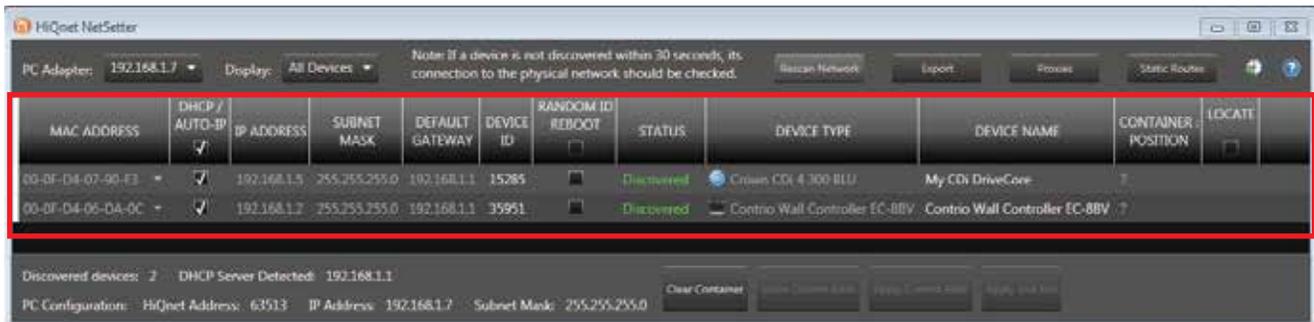
Figure 27: NetSetter Grid

1. **MAC Address**
   Displays the MAC address of the discovered device. The data in this field cannot be edited.

   NOTE: If more than one MAC address is discovered for a single device (e.g., HiQnet device MAC address, AVB card MAC address, etc.), the field will be represented as a dropdown menu and the desired MAC address can be selected from the list. For a device connected to the same control network with two control MAC addresses, the MAC address field will be displayed in red.

2. **DHCP/Auto-IP**
   If the discovered device is configured to use DHCP/Auto-IP, this checkbox will be checked. If the discovered device is not using DHCP/Auto-IP, you may check the box so it will do so on applying edits. The device row will then become selected. The device will attempt to have its IP settings configured by DHCP on applying the edits; if no DHCP server is present, the device will attempt to have IP settings configured by Auto-IP.

   All devices in the current filter view may be configured with DHCP/Auto-IP enabled by checking the checkbox in the column header — the individual checkboxes for all devices will become checked. If a single individual checkbox for a device is subsequently unchecked, the column header DHCP/ Auto-IP checkbox will be automatically unchecked. Conversely, all devices in the current filter view can be configured with DHCP/Auto-IP disabled by unchecking the checkbox in the column header.

   DHCP server status will be among the information displayed at the bottom of the NetSetter window. If a DHCP server is not detected, the information will read "DHCP server not detected". Note that checking a device's DHCP/Auto-IP checkbox has no immediate effect on the column sort order

   NOTE: Once edits have been made, it is critical to click the Apply Current Edits or Apply and Exit buttons for the changes to take affect.

3. **IP Address**
   Displays the IP address of the discovered device. A valid IP address may be edited inline. If the edited value scopes the device out of the current Display filter, it will not be visible.

   NOTE: A discovered device with an IP address that conflicts with that of another, already discovered device will be displayed in red. A conflicting IP address may be edited inline if you wish to change the device IP address on applying current edits. If DHCP/Auto-IP is enabled, the IP address field may not be edited inline.

   NOTE: Once edits have been made, it is critical to click the Apply Current Edits or Apply and Exit buttons for the changes to take affect.

4. **Subnet Mask**
   Displays the Subnet Mask of the discovered device. The Subnet Mask may be edited inline. The device row will be ordered accordingly with the current column sort immediately on successful editing of the field. The device row will remain selected.

   NOTE: If DHCP/Auto-IP is enabled, the Subnet Mask field may not be edited inline.

   NOTE: Once edits have been made, it is critical to click the Apply Current Edits or Apply and Exit buttons for the changes to take affect.

INSTALLING AUDIO ARCHITECT & CONFIGURING THE NETWORK

5. **Default Gateway**
Displays the Default Gateway of the discovered device. The Default Gateway may be edited inline. The device row will be ordered accordingly with the current column sort immediately on successful editing of the field. The device row will remain selected.

NOTE: If DHCP/Auto-IP is enabled, the Default Gateway field may not be edited inline.

If the device is being rediscovered, then the following behavior will occur:

- When the device is not selected, the device Default Gateway address field is displayed but is grayed out.
- When the device is selected and highlighted in orange, the field is represented in dark gray.

NOTE: Once edits have been made, it is critical to click the Apply Current Edits or Apply and Exit buttons for the changes to take affect.

6. **Device ID**
Displays the HiQnet address of the discovered device. This field may be edited inline if you want to change the device HiQnet address. If the edited value scopes the device out of the current Display filter, it will not be visible and no devices will be selected. If devices are discovered with a conflicting HiQnet address, then the following will occur:

- The HiQnet ID field of a discovered device will be displayed in pink when a HiQnet address conflicts with that of another, already discovered HiQnet address.
- When the device is selected and highlighted in orange, the field is represented in red.
- The HiQnet address is not displayed, instead a dash is displayed as grayed out.

NOTE: A conflicting HiQnet address may be edited inline if you want to change the device HiQnet address.

NOTE: Devices are not discoverable at the IP level. A device which is not discoverable at the IP level (invalid IP address, etc.) will not be able to report a HiQnet address. In this instance, the HiQnet ID field will display a "?" to indicate that the field may exist but that the software does not have enough discoverability of the device to determine the value. A blank field or "-" implies the value is null and the HiQnet ID field may not be edited inline.

NOTE: Once edits have been made, it is critical to click the Apply Current Edits or Apply and Exit buttons for the changes to take affect.

7. **Random ID Reboot**
When enabled, the device will be given a random HiQnet address. If you want to set the HiQnet address of a device to a random ID, check the Random ID checkbox. If the checkbox is unchecked before applying current edits, the prior HiQnet ID value will be restored.

All devices in the current filter view may be set to Random HiQnet ID by checking the checkbox in the column header — the individual checkboxes for all devices will become checked. If any individual checkbox is subsequently unchecked, the column header Random ID checkbox will automatically be unchecked. Conversely, if all devices in the current filter view are set to Random ID on and the Random HiQnet ID column header checkbox is checked, all devices may be set to Random ID off by unchecking the column header checkbox — the individual checkboxes for all devices will become unchecked.

NOTE: Devices are not discoverable at the IP level. A device which is not discoverable at the IP level (invalid IP address, etc.) will not be able to report a HiQnet address. In this instance, the Random ID checkbox will be unavailable.

8. **Status**

Displays the current discovery status of the device. The Status field may not be edited. Discovery status hierarchy is as follows:

a. **Discovered**

If a device has a unique IP address and a unique HiQnet address, this condition will be shown unless the device is access controlled. When the device is not selected, the "Discovered" label is represented in green.

The "Discovered" status is determined by the following conditions:
- The device is discoverable at the MAC address level.
- The device has a valid and unique IP address (manual or DHCP/Auto-IP).
- The device has a unique HiQnet address.
- The device is not access controlled.

b. **IP Conflict**

If a device has an IP address conflict, this error will be shown regardless of other status notifications. When the device is not selected, the "IP conflict" label is represented in blue.

The "IP conflict" status is determined by the following conditions:
- The device is discoverable at the MAC address level.
- The device has an IP address that conflicts with another device which has already been discovered by NetSetter.

c. **HiQnet Conflict**

If a device has a unique IP address yet has a HiQnet address conflict, this error will be shown regardless of other status notifications. When the device is not selected, the "HiQnet conflict" label is represented in red.

The "HiQnet conflict" status is determined by the following conditions:
- The device is discoverable at the MAC address level.
- The device has a valid and unique IP address (manual or DHCP/Auto-IP).
- The device has a HiQnet address that conflicts with another device which has already been discovered by NetSetter.

d. **Locked**

If a device has a unique IP address and a unique HiQnet address, this condition will be shown if the device is access controlled. When the device is not selected, the "Locked" label is represented in yellow.

The "Locked" status is determined by the following conditions:
- The device is discoverable at the MAC address level.
- The device has a valid and unique IP address (manual or DHCP/Auto-IP).
- The device has a unique HiQnet address.
- The device is access controlled.

When a device has been discovered in a Locked state and any field is attempted to be edited for the first time, a dialog prompting for the Admin password will appear. Only a successful login with the Admin password will enable all fields to be edited. This state may need to be reset on rediscovery after applying current edits, requiring the Admin password to be entered again.

e. **Discovering**

This condition will be displayed if the device has had changes made to its IP configuration or HiQnet address and HiQnet NetSetter is waiting to re-establish connection. When a device being rediscovered is not selected, all fields within the device row are displayed but grayed out.

The "Discovering" status is determined by the following conditions:
- The device had been previously discovered at the MAC address level.
- Edits had been made to one or more fields.
- The device is being rediscovered after applying current edits.

NOTE: Since the sort order automatically updates when a field within the sorted column is updated, the rediscovered device will occupy the same row on rediscovery. The exception is when DHCP/ Auto-IP or Random ID has been set prior to applying current edits, in which case the rediscovered device will occupy the appropriate row in the current column sort order.

9. **Device Type**
The device class name is displayed here, as reported by the discovered device. To the left of each device class name, the brand icon is displayed. The software application name is displayed for discovered PCs running an instance of HiQnet software. HiQnet software programs include System Architect, Audio Architect, and Performance Manager.

NOTE: The Device Type field may not be edited inline.

NOTE: Devices are not discoverable at the IP or HiQnet level. A device which is not discoverable at the IP level (invalid IP address, etc.) or HiQnet address level (HiQnet address conflict, etc.) will not be able to report its class name. In this instance, the Device Type field will display a "?" to indicate that the field may exist but that the software does not have enough discoverability of the device to determine the value. A blank field or "-" implies the value is null.

10. **Device Name**
The user-definable Device Name is displayed here, as reported by the discovered device.

NOTE: This field may be edited inline if you want to change the Device Name. This field may not be edited for discovered PCs running an instance of HiQnet software.

NOTE: Devices are not discoverable at the IP or HiQnet level. A device which is not discoverable at the IP level (invalid IP address, etc.) or HiQnet address level (HiQnet address conflict, etc.) will not be able to report its Device Name. In this instance, the Device Name field will display a "?" to indicate that the field may exist but that the software does not have enough discoverability of the device to determine the value. A blank field or "-" implies the value is null.

NOTE: Once edits have been made, it is critical to click the Apply Current Edits or Apply and Exit buttons for the changes to take affect.

11. **Container : Position**
The Container and Position Venue Data is displayed here (separated by a colon), as reported by the discovered device. The field is left blank for discovered PCs running an instance of HiQnet software. HiQnet software programs include System Architect, Audio Architect, and Performance Manager.

TIP: A selected device may have its Venue Data cleared (including all Building, Floor, and Room Venue data) by pressing the Clear Container button. This action takes place on applying current edits only and can be undone with the Undo Current Edits button.

NOTE: The Container/Position Venue Data may not be edited inline.

NOTE: Devices are not discoverable at the IP or HiQnet level. A device which is not discoverable at the IP level (invalid IP address, etc.) or HiQnet address level (HiQnet address conflict, etc.) will not be able to report its Container : Position data. In this instance, the Container : Position field will display a "?" to indicate that the field may exist but that the software does not have enough discoverability of the device to determine the value. A blank field or "-" implies the value is null.

12. **Locate**
The Locate feature allows a device to be easily identified within a network full of HiQnet devices. Clicking in the Locate column for a device will put the corresponding networked device into a Locate state — the Locate icon will be displayed on-screen and something will happen on the device to indicate the Locate state is active (e.g., an LCD or LED will flash, etc.). Clicking an active Locate icon will disable the Locate state for the device. Disabling the Locate state from the device will clear the icon. Devices may be put into a Locate state independently from selection so that more than one device can be located at any one time.

USING HIQNET AUDIO ARCHITECT

JBL DSi 2 amplifiers have Digital Signal Processing built in. When using a DSi 2 amp, the loudspeaker processing (crossovers, limiters, EQs, and delays) are in the onboard DSP, making discrete rackmount loudspeaker processing devices unnecessary. This drastically reduces setup time, commissioning, rack space, and costs. The DSi 2's internal DSP can be used to perform the following:

- Configure signal flow
- Optimize system gain structure
- Configure DSP settings (set driver levels, crossover bands, delays, equalization, and limiting for your particular speakers)
- Configure output bridging, and much more

Much of the DSi 2's DSP can be monitored and controlled from the front panel. However, additional control and functionality can be achieved via a networked PC running the HiQnet Audio Architect software. The following sections describe how to start using Audio Architect to configure DSi 2 Series amplifiers. For additional information on using Audio Architect, please refer to the Audio Architect help file.

LAUNCHING THE AUDIO ARCHITECT SOFTWARE

After launching Audio Architect, a prompt will appear if the connected HiQnet devices are properly configured for the network and discovered (see **Figure 28**). Checking the "Add discovered devices to the Venue automatically" checkbox can save a step when getting started.
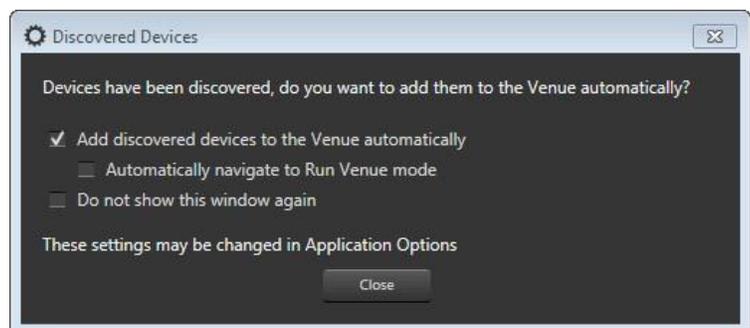
Figure 28: Discovered Devices Prompt

USING HIQNET AUDIO ARCHITECT

OFFLINE & ONLINE OPERATION EXPLAINED

Audio Architect has two defined modes of operation: Offline and Online. When operating in Offline mode, system setting changes made in Audio Architect will not be reflected in the system hardware devices in real time; offline changes must be sent to the system devices in a second step, at which point device settings will be updated. Conversely, when operating in Online mode, any changes made in Audio Architect will be reflected in the system devices in real time.

Drag and drop to add device to venue
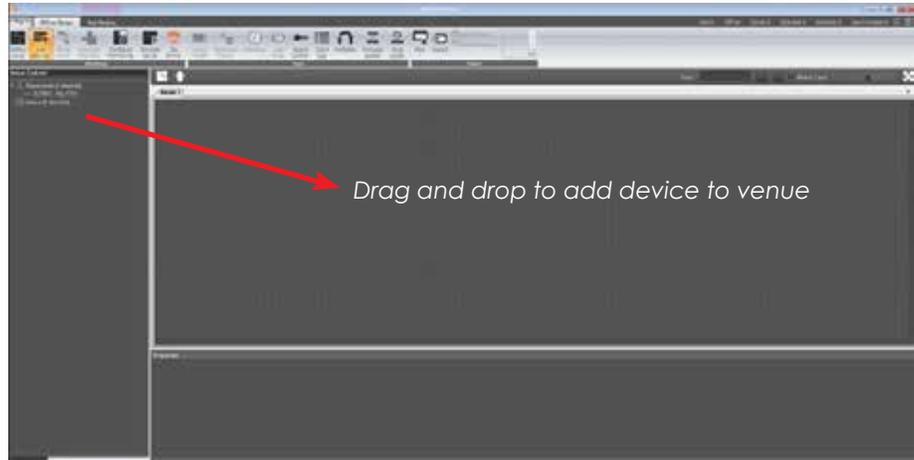
Figure 29: Main Audio Architect Window

When operating in Offline mode, the Offline Design ribbon is presented at the top of the Main Audio Architect window. From this window, discovered devices can be added to the venue by clicking on them in the Devices tab on the left and dragging them into the Room window on the right (see **Figure 29**).

Note that when a device is added to the venue, it is automatically removed from the "Discovered" device list. If the "Add discovered devices to the Venue automatically" checkbox was checked upon launching Audio Architect, as previously mentioned, discovered devices were already added to the Venue and this step is not necessary.

Each device added to the venue will have an IP address listed to the left of the amplifier image and a Name ID to the right (see **Figure 30**). The Name ID can be edited in the Properties menu at the bottom of the window. The number to the left of the Name ID is the HiQnet Device Address. The green circle indicates that the amplifier has been discovered on the network.

Figure 30: Device Information

TIP: Double clicking a device image will open the device's Main Control panel (see **"Main DSi 2 Control Panel" on page 38** for more information).

USING HIQNET AUDIO ARCHITECT

GOING ONLINE

You will have to go online in Audio Architect before any changes can be made to device settings.

To Go Online:
1. From the Offline Design ribbon at the top of the Main Audio Architect window, click the **Go Online** button. The Offline Design and Add Devices ribbons will now be replaced with the Online Operate ribbon and, in some cases, the Match Devices ribbon.
2. When going online, the following scenarios are possible:
   a. If one or more devices in the venue are not matched AND corresponding devices are available on the network, going online lands in Match Devices mode.

   NOTE: Before you can go online with a device, it must be "matched". See **"Matching Devices" on page 37** for more information.
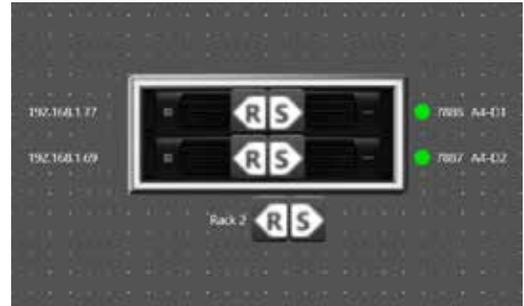
Figure 31: Send and Receive Icons

   b. If all the devices in the venue are matched, going online lands in Synchronize Venue mode. In Synchronize Venue mode, **Receive** and **Send** icons will appear for each device in the venue, as well as for a rack if more than one device has been added (see Figure 32). This provides the ability to send/receive data either to/from a single device, or to/from all devices within the rack with a single click.

   c. If no devices require matching or synchronization, going online lands in Run Venue mode. In this mode, Audio Architect is online with the devices in the venue and real-time setting changes can be made.

Matching Devices

The Match Devices ribbon appears at the top of the Main Audio Architect window after clicking on the **Go Online** button from the Offline Design ribbon, then clicking the **Match Devices** button from the Online Operate ribbon.

Figure 32: Match Devices Ribbon

The Match Devices feature allows devices within the venue design to be associated with the hardware devices on the network. If a device image in the venue says "UNMATCHED", the device must be matched before it can be associated and controlled with Audio Architect. This can usually be accomplished by simply clicking the **Auto-Match Venue** button (see **Figure 32**).

In The Match Devices Ribbon, The Following Options Are Available:
- **Networking**
  Clicking the Refresh button will temporarily take Audio Architect offline, then restart the network.
- **Match**
  Clicking the Auto-Match Venue button will automatically match devices on the network with the devices in the Audio Architect venue. Selecting a
- device then clicking the Detach button removes the device's virtual connection with Audio Architect.
- **Editing**
  Clicking the Undo button will undo the last change made and revert back to the previous state.
  Clicking the Redo button will redo the last action that was undone.
- **Show**
  Any checked items in this section will be displayed alongside the appropriate devices in the Main Audio Architect window. The available items include Device Names, Rack/Array Names, HiQnet Addresses, IP Addresses, Matched Indicator, and Unmatched Indicator.

USING HIQNET AUDIO ARCHITECT

MAIN DSI 2 CONTROL PANEL

Double-clicking the DSi 2 image from the Room window (see **Figure 30**) will open the Main DSi 2 Control panel. **Figure 33** shows the 4-channel version of the Main DSi 2 Control panel. The DSi 2 amplifiers include Digital Signal Processing (DSP), multiple input/output routing options, and a comprehensive diagnostics feature set. All of these features can be accessed from the Main DSi 2 Control panel.

Figure 33: DSi 2 Device panel (-D version shown)

1. **Level Faders**
   These faders set the output signal level of each channel and correspond with the levels set using the front panel ENCODER.

2. **Link Buttons**
   Links the Level faders and Mute buttons for ganged operation.

3. **Mute Buttons**
   Mutes the corresponding output channel.

4. **Input Meters**
   These meters display input signal level, and range from -40dBFS to 0dBFS. Each input channel has the following monitors:

   • Peak and RMS Meters: The wider left meter shows RMS level and the right meter shows peak level.

   • Clip Indicator: Lights to indicate input clipping.

5. **Output Meters**
   These meters display output signal level, and range from -40dBFS to 0dBFS. The meters are scaled so that 0dBFS is referenced to the full rated output voltage of the amplifier. Each output channel has the following monitors:

   • Peak and RMS Meters: The wider left meter shows RMS level and the right meter shows peak level.

   • Clip Indicator: Lights to indicate output clipping.

USING HIQNET AUDIO ARCHITECT

6. **Indicators**

    a. **AES67***
        Locked: This indicator light up when a clock sync is detected indicating a valid network audio configuration.
        Primary/Secondary Status: These indicator light up when a network connection is detected.

    b. **Temp:** Indicates the temperature of an amplifier channel andprovides warning when an amplifier channel is too high and near shutdown. These indicators may light one of the following

        • Green: Thermal temperature is less than 80° C.

        • Yellow: Thermal temperature is between 80-100° C.

        • Red: Thermal temperature is greater than 100° C.

    c. **Limit:** Lights when the amplifier's output signal is being limited by the clip limiter, LevelMAX peak/rms/thermal speaker limiters, or the amp thermal protection limiter.

    d. **Ready:** Lights when the amplifier is on and ready to supply power.

    e. **Fault:** Lights when the amplifier detects a fault and enters a fault state. See **"System Protection" on page 68** for more information on the various types of possible faults.

7. **DSP Buttons**
    Double-clicking any of these buttons will open the corresponding DSP control panel, where DSP settings can be edited.

8. **Other Buttons**

    a. **Basic/Normal View (Arrow Button):** Collapses or expands the window.
    b. **Mode:** Opens the Amplifier Mode Settings panel, where input wiring and output operation can be configured.
    c. **Signal Generator:** Opens the Signal Generator panel.
    d. **Label:** Opens a tab where you can label inputs and outputs
    e. **Global Settings:** Opens the Global Settings panel (see **"Amplifier Information" on page 40**).
    f. **Speaker Tunings:** Allows a speaker tuning to be selected for each output to optimize DSP settings for particular speaker models.
    g. **Recall:** Loads a device preset.
    h. **Store:** Stores a device preset.

Many of these functions will be further explained on the following pages.

USING HIQNET AUDIO ARCHITECT

AMPLIFIER INFORMATION

The Global Settings panel can be accessed by clicking the **Global Settings** button from the Main DSi 2 Control panel (**Figure 34**). The Global Settings panel (**Figure 35**) displays amplifier information such as current firmware version, power supply temperature, channel temperature, and more.

Figure 34: Global Setting Button

The following functions can also be configured from the Global Settings panel:

1. **Output Labels**
   These fields allow user-defined names to be entered for the analog output channels for reference.

2. **Front Panel Lockout**
   When turned on, the front panel controls will be locked to prevent tampering. The exception is the Power button, which will remain functional.

   TIP: The front panel controls can also be locked directly from the front panel, however, if the front panel has been locked from Audio Architect,

Figure 35: Global Settings Panel

   it must be unlocked from Audio Architect. See "Security/Front Panel Lockout" on page 66 for more information on locking/unlocking the front panel controls from the front panel.

3. **Front Panel Blackout Mode**
   Turns the front panel display on or off.

4. **Amp Status Port**
   Selects whether a 2Hz square wave heartbeat or +5VDC signal is sent to the Amp Status pin on the AUX port — either can be used to remotely determine amp health/status.

5. **Mute Input**
   Determines which output channels will be muted when using GPIO Input 1 (pin 3). By default, a high condition will cause all checked input channels to mute. Checking the Invert checkbox will invert the polarity/functionality, meaning a low condition will cause all checked inputs to mute.

6. **Fault Output**
   Inverts the polarity/functionality of GPIO Output 1 (pin 1). When checked, GPIO Output 1 will indicate an amp fault when in a low state, rather than the default high state. See **"System Protection" on page 68** for more information on faults.

7. **Preset Recall Input**
   Loads one of two presets depending on the high/low state of Input 2 (pin 5) on the GPIO port. By default, these values are set to 0, which disables the function.

8. **Manual Aux Output**
   When this button is switched on, GPIO pin 2 (Output 2) will go high; when the button is off the state will be low. This provides a general purpose output which can be used to control many external devices such as relays, indicators, PLC system controllers, or any other 3rd party device with logic control inputs. This button can be controlled from its default loacation on the Global Settings panel, from a user-created custom control panel, using logic functions in Audio Architect, or from a compatible HiQnet wall controller. The state of this button and the resulting output are stored/recalled along with device presets.

9. **Power Modes**
   Use these settings to turn the ACD power saving modes on or off and adjust the behavior of the ACD feature.

For more information on using the GPIO control port, see **"Using the GPIO Control Port" on page 66**.

USING HIQNET AUDIO ARCHITECT

CONFIGURING INPUTS & OUTPUTS IN AUDIO ARCHITECT

Assigning Input Sources in Audio Architect

All channels of the DSi 2 signal processing share a single Input Selector panel (shown in **Figure 37**). From this panel, you can select the audio signal that will be routed to each amplifier channel and adjust the levels entering each channel's DSP chain.

Figure 36: Input Button

The Input Selector panel can be accessed by clicking any of the **INPUT** buttons from the Main DSi 2 Control panel (see **Figure 36**).

1. **Levels, Meters, & Clip Indicators**
   The level faders are used to adjust signal levels entering the DSP chains from the various input sources. The meters in this panel display both peak and RMS levels — the wider left meter shows RMS level and the right meter shows peak level for each channel. The clip indicators light to indicate clipping at the signal point just before the loudspeaker management processing (delays, EQ, crossover, etc.).
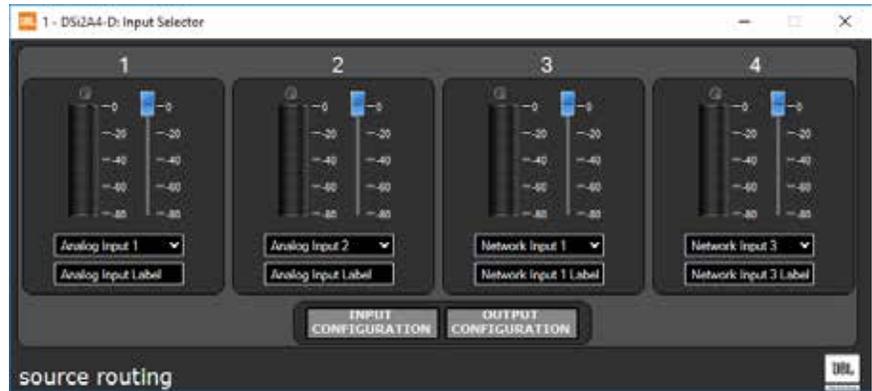
Figure 37: Input Selector Panel (DSi 2 A4-D model shown)

2. **Input Selector Dropdown Menus**
   From these dropdown menus, input channel assignments can be selected for each channel. Analog inputs are available for selection in all DSi 2 amp models. Network Input options are available in '-D' DSi 2 amp models.

3. **Input Configuration and Output Configuration Buttons**
   Clicking the **Input Configuration** button opens the Input Configuration panel, where input levels and analog gain structure can be adjusted (see **"Configuring Inputs" on page 42** for more information). Clicking the Output Configuration button (available only in '-D' amp models) opens the AES67 Output Configuration panel, where the amplifier's AES67 output channels can be configured.

USING HIQNET AUDIO ARCHITECT

CONFIGURING INPUTS

The Input Configuration panel can be accessed by clicking the Input Configuration button from the Input Selector panel (see **Figure 37**).

The Input Configuration panel (**Figure 38**) allows you to adjust signal levels entering the amplifier from the various sources. The '-D' DSi 2 models will display additional Network inputs.

The meters in this panel display both peak and RMS input levels — the wider left meter shows RMS level and the right meter shows peak level for each channel. Input Mute buttons are available for each channel. Network Signal Status LEDs below each AES67 input channel provide confirmation of AES67 signal presence.

The AMP Sensitivity Mode option is used to set the Sensitivity of the amplifier to ensure that all 3 models provide the same gain structure. The available options are +4 dBu, +10 dBu, and +16 dBu. Note that changes to this setting will affect all channels.
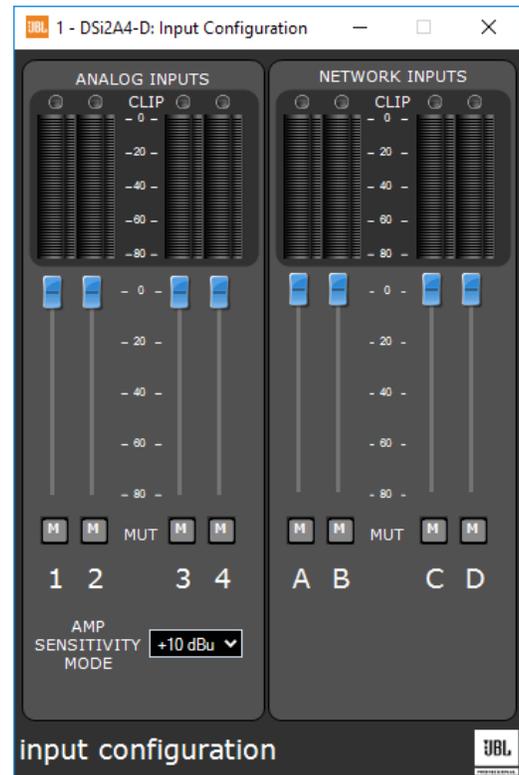
Figure 38: Input Configuration Panel

CONFIGURING AES67 OUTPUTS

Clicking the Output Configuration button from the Input Selector panel (see **Figure 37**) opens the AES67 Output Configuration panel (see **Figure 39**). From this panel, audio source signals can be transmitted onto the AES67 Stream as follows:

NOTE: The audio from the analog inputs will still pass through the amplifier input gain stage. This means the signals will be affected by the Gain Mode setting and the Input Level faders located in the Input Configuration panel (**Figure 38**) before being sent out to the AES67 Stream
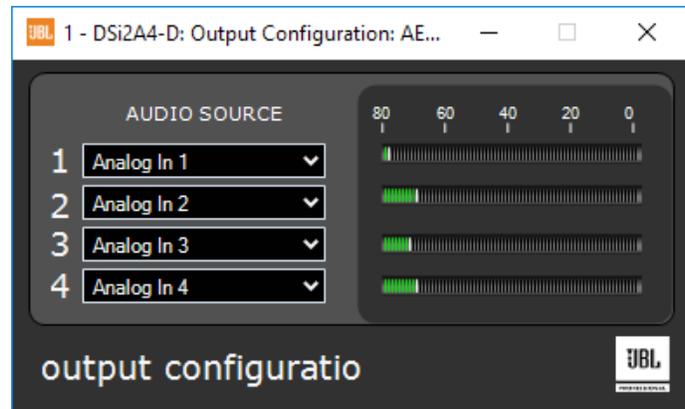
Figure 39: Advanced Settings Panel

USING HIQNET AUDIO ARCHITECT

CONFIGURING AMP WIRING & OUTPUT MODES IN AUDIO ARCHITECT

The DSi 2 amplifiers are very capable and flexible amplifiers. From Settings panel, the following items can be configured:

Figure 40: Mode Button

- Inputs can be cascaded ("Y'ed") to multiple outputs.
- Output pairs can be bridged for mono operation.

The Amplifier Mode Settings panel can be accessed by double-clicking the 'MODE' Object in the Device Panel.

CASCADING INPUTS

The ability to cascade inputs (or "Y" channels) makes the DSi 2 Series amps even more flexible. One input can be used to drive some or all of the amplifier outputs (see **Figure 41**).

NOTE: By cascading the inputs, the corresponding input DSP functions for individual channels will be removed and only the output DSP functions will be available, as shown in **Figure 42**.
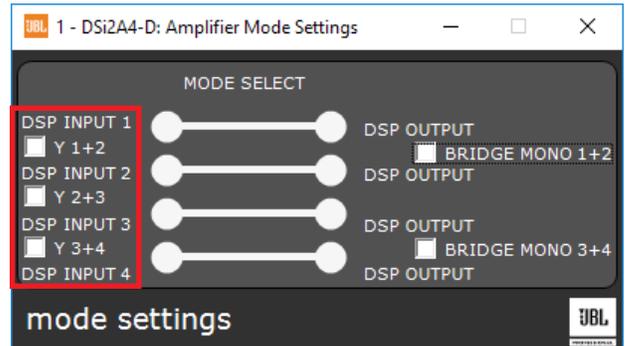
Figure 41: Use the "Y" checkboxes to cascade input channels

Figure 42: With the "Y 1+2" box checked, both output Ch.1 and Ch.2 are fed by input Ch.1 and input processing is organized accordingly

USING HIQNET AUDIO ARCHITECT

CONFIGURING OUTPUTS FOR BRIDGE MONO OPERATION

When more output power is required for the application, output channel pairs can be configured for bridge mono operation. This can be configured in the Amplifier Mode Settings panel (see **Figure 43**).

When selecting the Bridge Mono option for an output pair, only the odd-numbered input channel will need to be wired.

NOTE: When configured for bridge mono operation, only one channel in the channel pair DSP will be available, as shown in **Figure 44**.
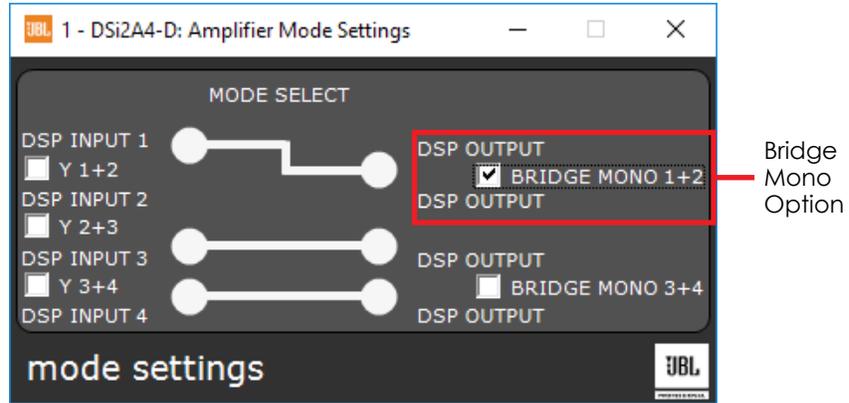
Figure 43: Bridge Mono Configuration

Figure 44: DSP chain configured for bridge mono operation

USING HIQNET AUDIO ARCHITECT

CONFIGURING SPEAKER TUNINGS IN AUDIO ARCHITECT

Speaker tunings apply DSP settings specific to a particular speaker, making it easy to optimize a speaker's performance.

To Configure Speaker Tunings in Audio Architect:

1. From the Main DSi 2 Control panel, click the **Speaker Tunings** button.

2. Select the speaker series, model, and desired options from the dropdown menus, then click the **Apply** button.
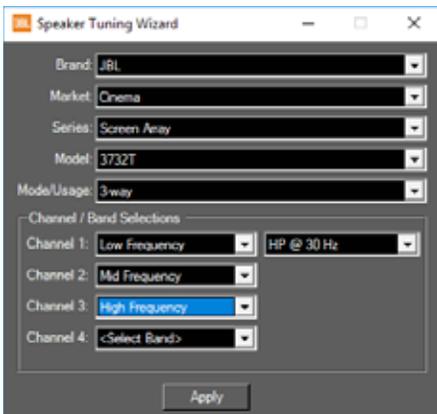
3. The example screenshot below shows the Main DSi 2 Control panel with the configured speaker tunings.

TIP: To clear a tuning, double-click the tuning block in the configuration map and then press the **Clear** button.

USING HIQNET AUDIO ARCHITECT

CROSSOVER PANEL

The Crossover provides infinite impulse response (IIR) filters. Each filter has up to +24/-60dB of gain. The Crossover panel is used to edit the crossover settings and can be accessed by doubleclicking the **XOVER** button from the Main DSi 2 Control panel (see **Figure 45**).

Figure 45: XOVER Button

NOTE: If speaker tunings have been configured for a channel, the Crossover panel will not be available for that channel.

Available low-pass/high-pass filter types:

- Bessel: 12dB/oct, 18dB/oct, 24dB/oct, 30dB/oct, 36dB/oct, 42dB/oct, 48dB/oct

- Butterworth: 6dB/oct, 12dB/oct, 18dB/oct, 24dB/oct, 30dB/oct, 36dB/oct, 42dB/oct, 48dB/oct

- Linkwitz-Riley: 12dB/oct, 24dB/oct, 36dB/oct, 48dB/oct

Figure 46: X-Over panel

FIR Filters

For advanced users, the JBL DSi 2 amplifiers provide support for importing or entering FIR filter coefficients. Support is provided for one FIR filter per amplifier channel using up to 1024 taps per filter.

The FIR filter window can be accessed by holding the alt key on the keyboard while double-clicking the JBL logo on the bottom-right corner of the Main DSi 2 Control panel (see **Figure 47**).
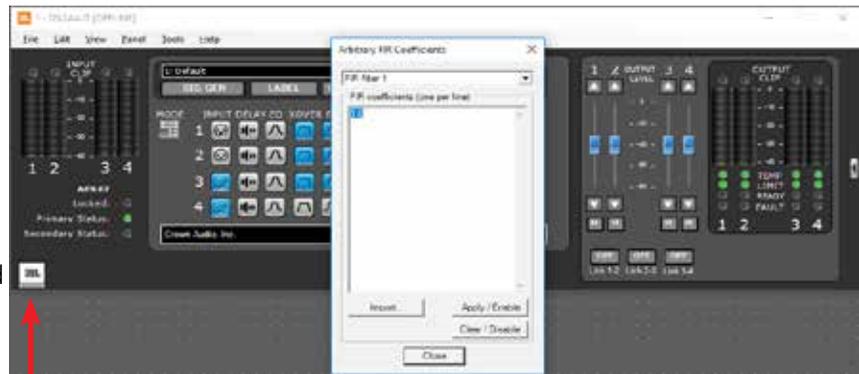
Hold the alt key while double-clicking the JBL logo to open the FIR Filter window

Figure 47: The FIR Filter Window

USING HIQNET AUDIO ARCHITECT

INPUT/OUTPUT EQ PANELS

The DSi 2 amplifiers offer an Input (pre-Crossover) and Output (post-Crossover) EQ for each channel. The Output EQs are generally used for speaker tunings, and the Input EQs are used for additional filtering if required for the application. The Input EQ panel can be accessed by clicking the **Input EQ** button, and the Output EQ panel can be accessed by clicking the **Output EQ** button from the Main DSi 2 Control panel (see **Figure 48**).

Figure 48: Input and Output EQ buttons

The Input and Output EQs each provide up to 8 bands per channel. You can select filter type, frequency, boost/cut, and width or slope. The EQ's frequency response can be edited by typing in parameters, using the **UP** and **DOWN** buttons, or clicking and dragging in the graph (see **Figure 49**).

NOTE: If speaker tunings have been configured for a channel, the Output EQ panel will not be available for that channel.

Available Options/Parameters:

Note: Certain Options/Parameters are visible only if associated with a particular filter type.

- **Off/On**
  Turns the EQ on or off.

- **Type**
  Selects the type of filter for the band. See available filter types listed below.

- **Slope (3 – 15 dB/Oct)**
  Sets the slope rate of the band for Shelf-type filters.

- **Frequency (3 – 15 dB/Oct)**
  Sets the center/corner frequency of the band.

- **Gain (±20dB)**
  Sets the amount of gain (boost/cut) applied to the band.

- **Q (0.10 – 32)**
  Sets the width of the band for Bell-type filters, or adjusts the resonant peak for 2nd Order Lowpass/Highpass filters.

- **Clear**
  Use these buttons to reset a band's settings back to default.
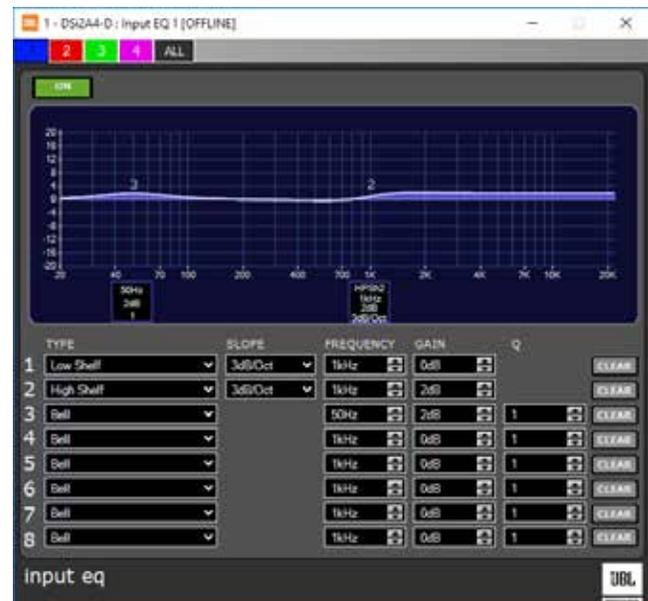
Figure 49: EQ Panel

Available Filter Types:

- Bell
- Low Shelf
- High Shelf
- Lowpass BW1 (Butterworth 6dB/oct filter)
- Highpass BW1 (Butterworth 6dB/oct filter)
- Lowpass 2nd Order (6-12dB/oct filter with variable resonant peak using the Width parameter)
- Highpass 2nd Order (6-12dB/oct filter with variable resonant peak using the Width parameter)
- Allpass 1 (90º phase shift)
- Allpass 2 (180º phase shift)

USING HIQNET AUDIO ARCHITECT

INPUT/OUTPUT DELAY PANELS

The DSi 2 Series amplifiers offer an Input (pre-Crossover) and Output (post-Crossover) Delay for each channel. The Output delay is typically used for driver alignment and provides up to 100ms of delay time per channel. The Input Delay provides up to 1 second of additional delay time and can be used for delaying the system to the stage backline, delay fills, or whenever more delay time is required than the Output Delay has to offer. Delay can be adjusted in seconds, feet, or meters (see **Figure 51**).

Figure 50: Input and Output Delay Buttons

The Input Delay panel can be accessed by clicking the **Input Delay** button, and the Output Delay panel can be accessed by clicking the **Output Delay** utton from the Main DSi 2 Control panel (see **Figure 50**).

NOTE: If speaker tunings have been configured for a channel, the Output Delay panel will not be available for that channel.

Figure 51: Input Delay Panel

USING HIQNET AUDIO ARCHITECT

LEVELMAX PANEL

The LevelMAX panel contains the entire LevelMAX suite of limiters, which consist of a peak voltage limiter, RMS power limiter, and transducer thermal limiter (see **Figure 53**).

The LevelMAX panel can be accessed by double-clicking the LevelMAX button from the Main DSi 2 Control panel (see **Figure 52**).

Figure 52: LevelMAX Button

NOTE: If speaker tunings have been configured for a channel, the LevelMAX panel will not be available for that channel.

Available Options/Parameters:

- **LevelMAX (Off, On)**
  Turns the limiters on or off.
- **Mode (Auto, Advanced)**
  Sets whether certain parameters will be set automatically or available for manual configuration. The following Mode options are available:

    Auto Mode – When this option is selected, the software determines the best settings based on the signal characteristics. You can modify only the RMS Threshold, Thermal Threshold, and Thermal Time Constant. All other parameters will be set automatically.

    Advanced Mode – Selecting this option allows the parameters which are set automatically when "Auto" mode is selected to be manually adjusted. This includes Peak Threshold, Peak Release, and RMS Release.

Figure 53: LevelMAX Panel

- **Peak Threshold (1 – 200 VPK)**
  Sets the peak level, in absolute voltage, which the limiter will allow from the amplifier. In Automatic mode, the Peak Threshold value is automatically determined from the defined RMS threshold and the low pass frequency defined in the crossover.
- **Peak Release (0 – 10 seconds)**
  Sets the release time of the peak limiter. The release time is defined as the time it takes the limiter to increase the output signal by 20dB.
- **RMS Threshold (1 – 400 VRMS)**
  Sets the RMS level, in absolute voltage, which the limiter will allow from the amplifier. The RMS Threshold should be set to correspond to the short term (2 hour) power handling of the transducer or system.
- **RMS Release (0 – 10 seconds)**
  Sets the release time of the RMS limiter. The release time is defined as the time it takes the limiter to increase the output signal by 20dB.
- **Thermal Voltage (1 – 500V)**
  Sets the long-term output power limit of the amplifier to what the loudspeaker load can handle without overheating and going into thermal compression. This is based on the AES power/voltage ratings of drivers outlined in the AES2-2012 standard.
- **Thermal Response (1 – 600 sec)**
  Sets the time it takes for the thermal limiter to adjust output voltage. This is based on the AES power/voltage ratings of drivers outlined in the AES2-2012 standard.
- **Metering**
  These meters display levels in dBFS and include Amp Output (peak level on the left meter and RMS level on the right), Gain Reduction (peak, RMS, and total), and Thermal Limiting amount. The Transducer Thermal Limiting indicator lights to indicate the Thermal Threshold has been exceeded.

NOTE: The LevelMax limiters include sidechain EQ for advanced speaker tunings. Sidechain EQ parameters are not user adjustable.

For more information on the LevelMAX limiters and how to set the parameters, see the LevelMAX white paper available at **www.jblpro.com**.

USING HIQNET AUDIO ARCHITECT

ABOUT THE TRANSDUCER THERMAL LIMITER

The Transducer Thermal Limiter limits the long-term output power of the amplifier to what the loudspeaker load can handle without overheating and going into thermal compression. You can set the voltage level at which the thermal limiter engages, and the thermal response time. Your loudspeaker manufacturer might be able to provide this information.

SIGNAL GENERATOR PANEL

The signal generator can be used to tune or troubleshoot loudspeakers connected to the amplifier. The Signal Generator panel (**Figure 55**) can be accessed by clicking the **Signal Generator** button from the Main DSi 2 Control panel (see **Figure 54**).
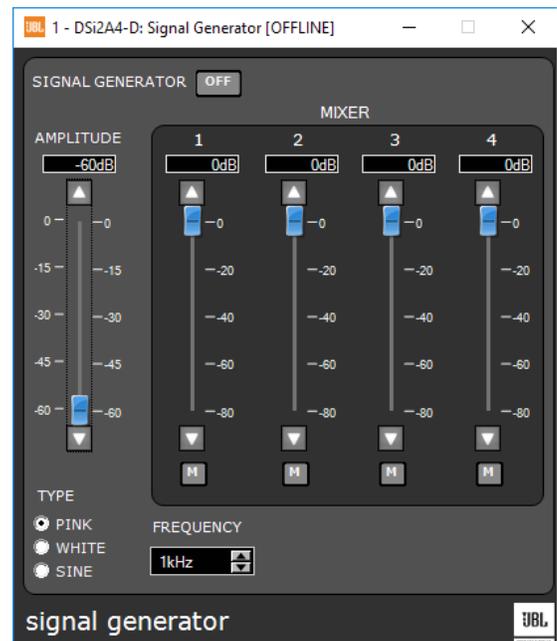

Figure 54: Signal Generator Button

Available Options/Parameters:

- **Signal Generator Button (Off, On)**
  Turns the signal generator on or off.

- **Amplitude Fader (-60dBFS to 0dBFS)**
  Adjusts the global level of the signal generator.

- **Mixer Faders (-80dBFS to 0dBFS)**
  Adjust the individual signal generator levels feeding each DSP chain.

- **Mute Buttons (Off, On)**
  Mutes the signal generator signal feeding each DSP chain.

- **Type (Pink, White, Sine)**
  Selects the type of signal to be generated.

- **Frequency (20Hz – 20kHz)**
  Selects the sine tone frequency when the "Sine" type has been selected.

NOTE: Signal Generator settings are stored with device presets.

Figure 55: Signal Generator Panel

USING HIQNET AUDIO ARCHITECT

MANAGING DEVICE & PRESET FILES

Using Audio Architect, a single amplifier preset can be backed up to a computer as a "preset file", or all amplifier presets and applicable settings can be backed up as a "device file". It is good practice to back up the amplifier's user presets and device settings for safe keeping whenever completing the setup and optimization of a loudspeaker system.

To Save a Preset File in Audio Architect:
1. Go online with the device. You must be online during this operation or the saved settings will not reflect the settings in the actual device. See **"Going Online" on page 37** for instructions on going online.

2. Open the Main DSi 2 Control panel.

3. Select "File | Save | Preset File" to save a single preset as a preset file.

4. When saving a preset file, the below window will appear. From the "Save this preset:" dropdown menu, select the preset you wish to save. Click Select, then select the desired folder location on the hard drive, name the file, then click Save. Now click OK. The preset file is now saved.

USING HIQNET AUDIO ARCHITECT
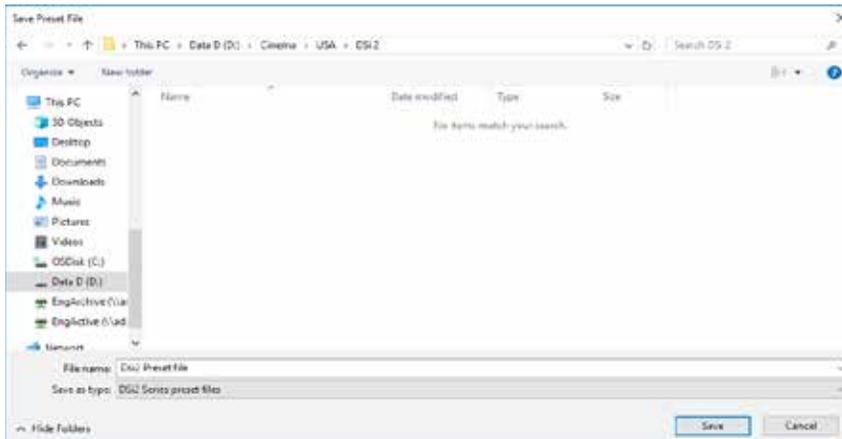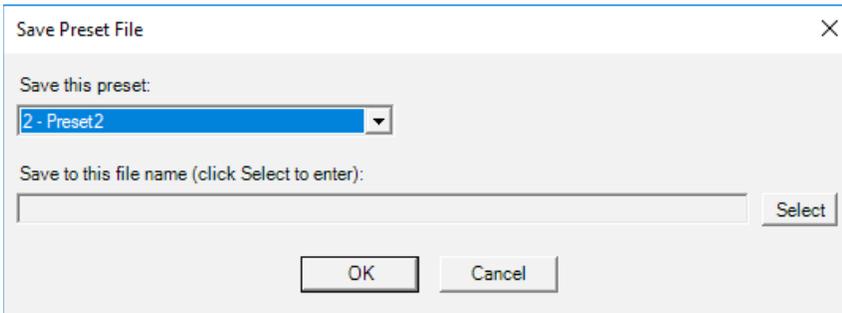
To Save a Device File in Audio Architect:

1. Go online with the device. You must be online during this operation or the saved settings will not reflect the setting in the actual device. See **"Going Online" on page 37** for instructions on going online.

2. Open the Main DSi 2 Control panel.

3. Select "File | Save | Device File" to save a device file.

4. From the "Save As" window, select the desired folder location on the hard drive, name the file, then click Save. Now click OK. The Device file is now saved.

USING HIQNET AUDIO ARCHITECT
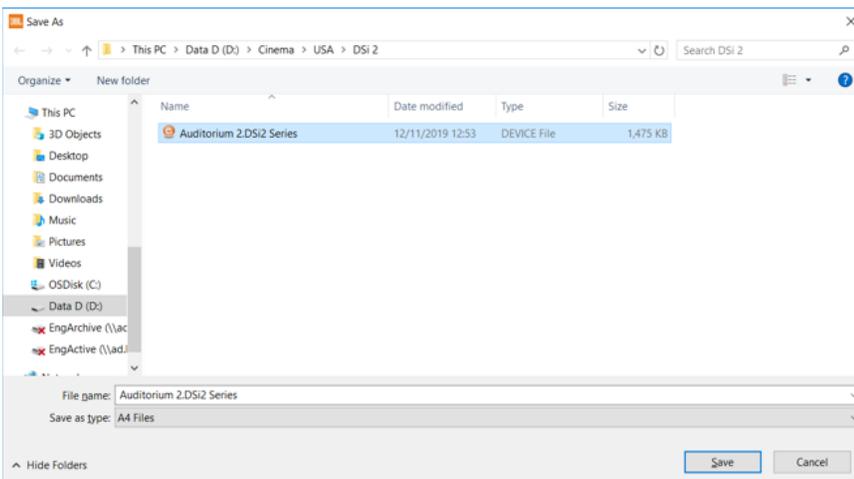
To Open a Preset File in Audio Architect:

1. Go online with the device. You must be online for the settings to be sent down to the actual device. See **"Going Online" on page 37** for instructions on going online.

2. Open the Main DSi 2 Control panel.

3. Select "File | Open | Preset File" to open a preset file.

4. The below window will appear.
   From the "Load into preset:" dropdown menu, select the preset location to which you wish to load the preset. Click Select, navigate to the folder containing the preset file, select the file, and then click Open. Now click OK. The preset file has now been loaded.
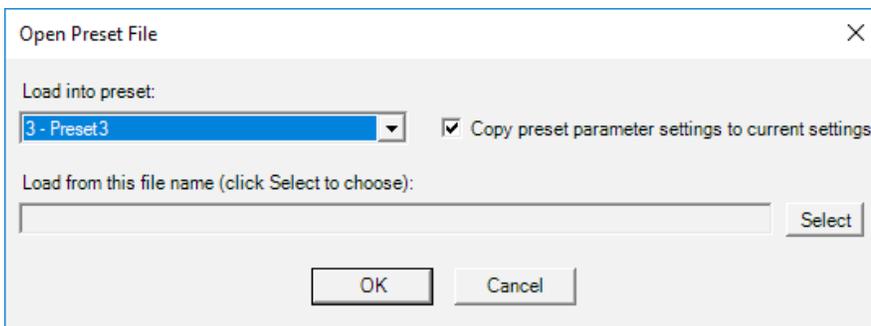
USING HIQNET AUDIO ARCHITECT

To Open a Device File in Audio Architect:

1. Go online with the device. You must be online for the settings to be sent down to the actual device. See **"Going Online" on page 37** for instructions on going online.

2. Open the Main DSi 2 Control panel.

3. Select "File | Open | Device File" to open a device file.

4. When the Open prompt appears, navigate to the folder containing the device file, select the file, and then click Open. The device file has now been opened and all presets and applicable settings will be reflected in the device.

USING HIQNET AUDIO ARCHITECT

SAVING & OPENING AUDIO ARCHITECT VENUE FILES

When finished programming HARMAN devices in Audio Architect, it is good practice to save the entire venue as a "Venue" file. This will save all Audio Architect configuration changes and the programming and settings for all devices in the current venue configuration to a single file for backup and recall.

To Save a Venue File in Audio Architect:

1.   In the upper left-hand corner of the Main Audio Architect window, select the File tab.

2.   Select "Save" or "Save As" from the menu
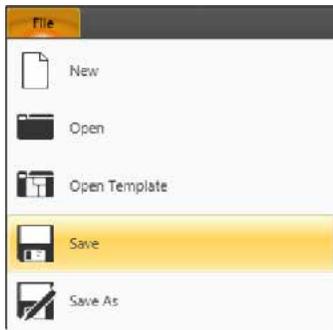
3.   Select the desired location on the hard drive and name the file. Click the Save button.
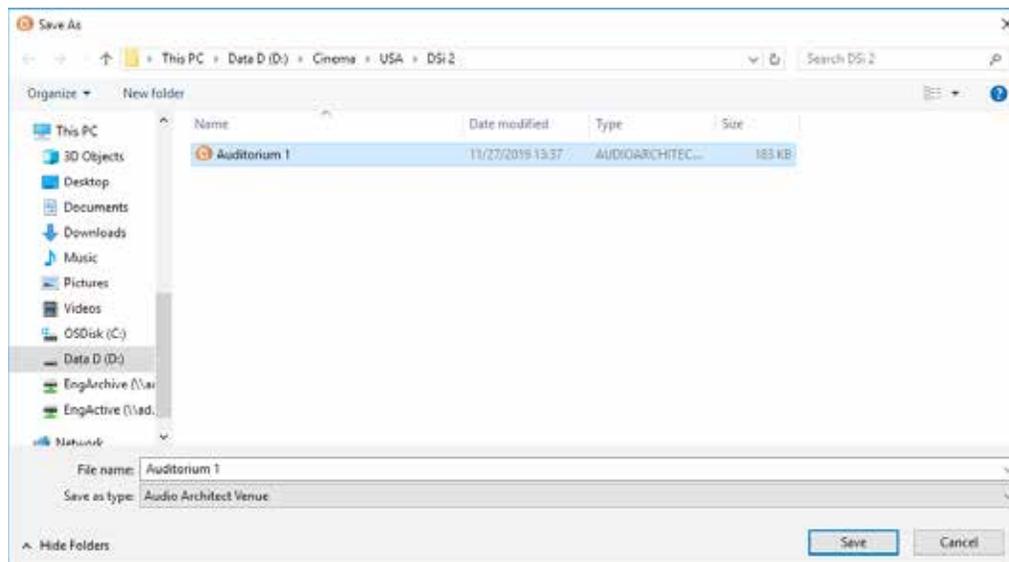
USING HIQNET AUDIO ARCHITECT

To open a Venue file in Audio Architect:

1. In the upper left-hand corner of the Main Audio Architect window, select the File tab.
2. Select "Open" from the menu.
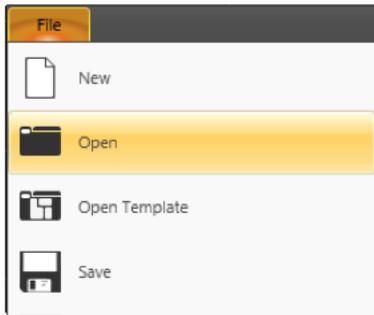
3. Select the Venue file on the hard drive, then click the Open button.
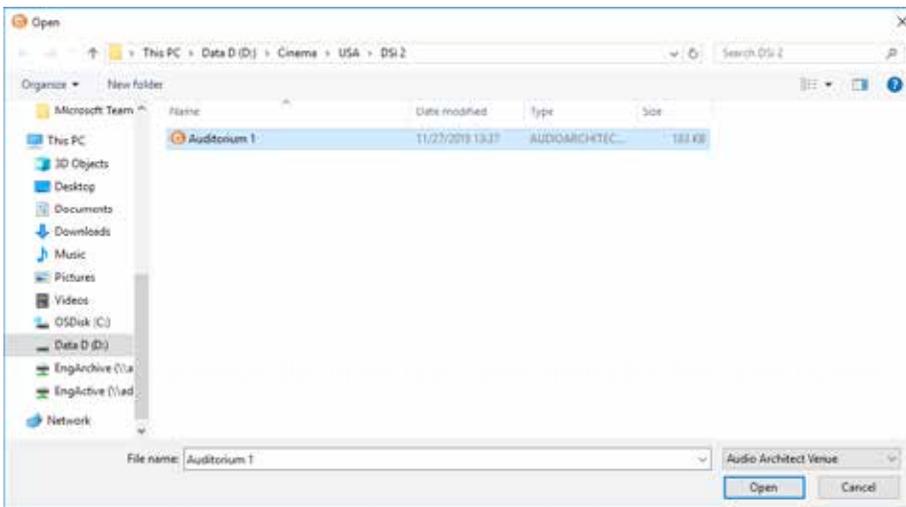
USING HIQNET AUDIO ARCHITECT

THE EVENT LOG

The Event Log Viewer window **(Figure 58)** shows events that have occurred within Audio Architect and on HiQnet devices. The log can be used by individual devices to perform certain operations. It can also be used for troubleshooting purposes. The Event Log can be accessed from either the Offline ribbon **(Figure 56)** or Online ribbon **(Figure 57).**

Figure 56: Accessing the Event Log from the Offline ribbon:

Figure 57: Accessing the Event Log from the Online ribbon:
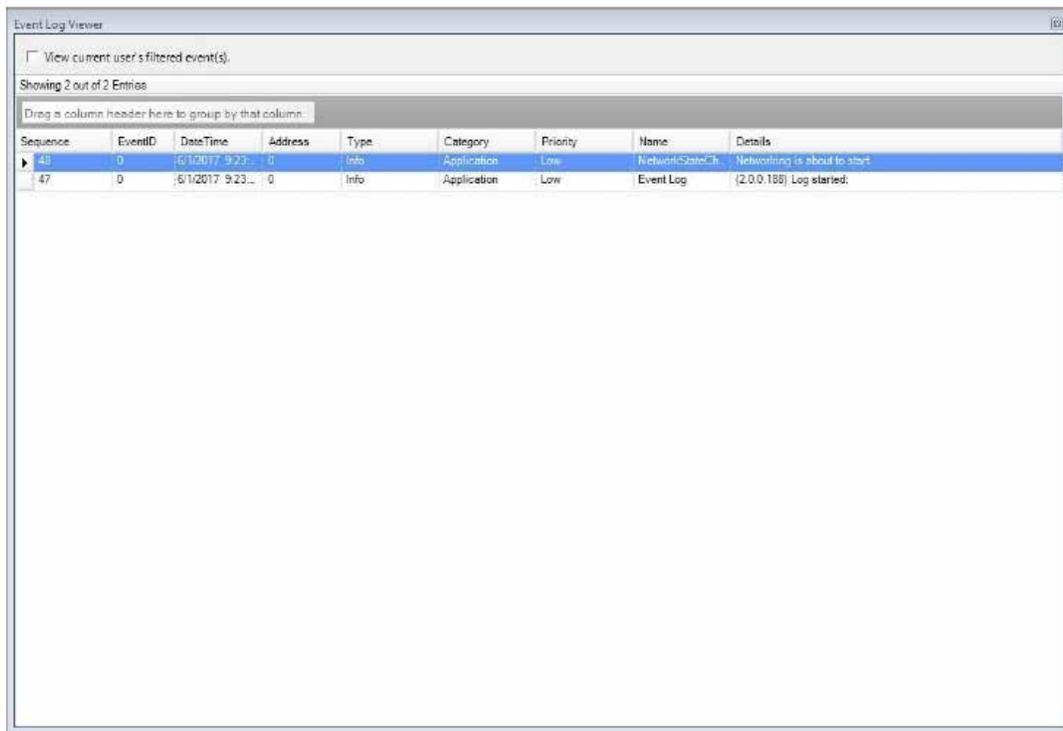
Figure 58: The Event Log Viewer window:

For more information about the Event Log and editing Event Log settings, see the Audio Architect help file.

APPLICATION EXAMPLES

DUAL MODE

Typical input/output wiring is shown in **Figure 59**.

INPUTS: Connect the input wires for each channel. See **"Wiring Input Connectors" on page 10** for further information on analog input wiring.

If the same input signal is to drive multiple outputs, the input signal can be "Y'ed" by checking the "Y" checkboxes (**Refer to 'Cascading Inputs' on page 43**). See **"Configuring Amp Wiring & Bridge Mode" on page 17** for more information.

OUTPUTS: Maintain proper polarity (+/–) on output connectors. Connect the Channel 1 speaker's positive (+) lead to amplifier Channel 1 positive terminal; repeat for the negative (–) lead. Repeat Channel 2 wiring as for Channel 1, and for any subsequent channel pairs on multichannel models. See **"Wiring Output Connectors" on page 10** for additional information on output wiring.
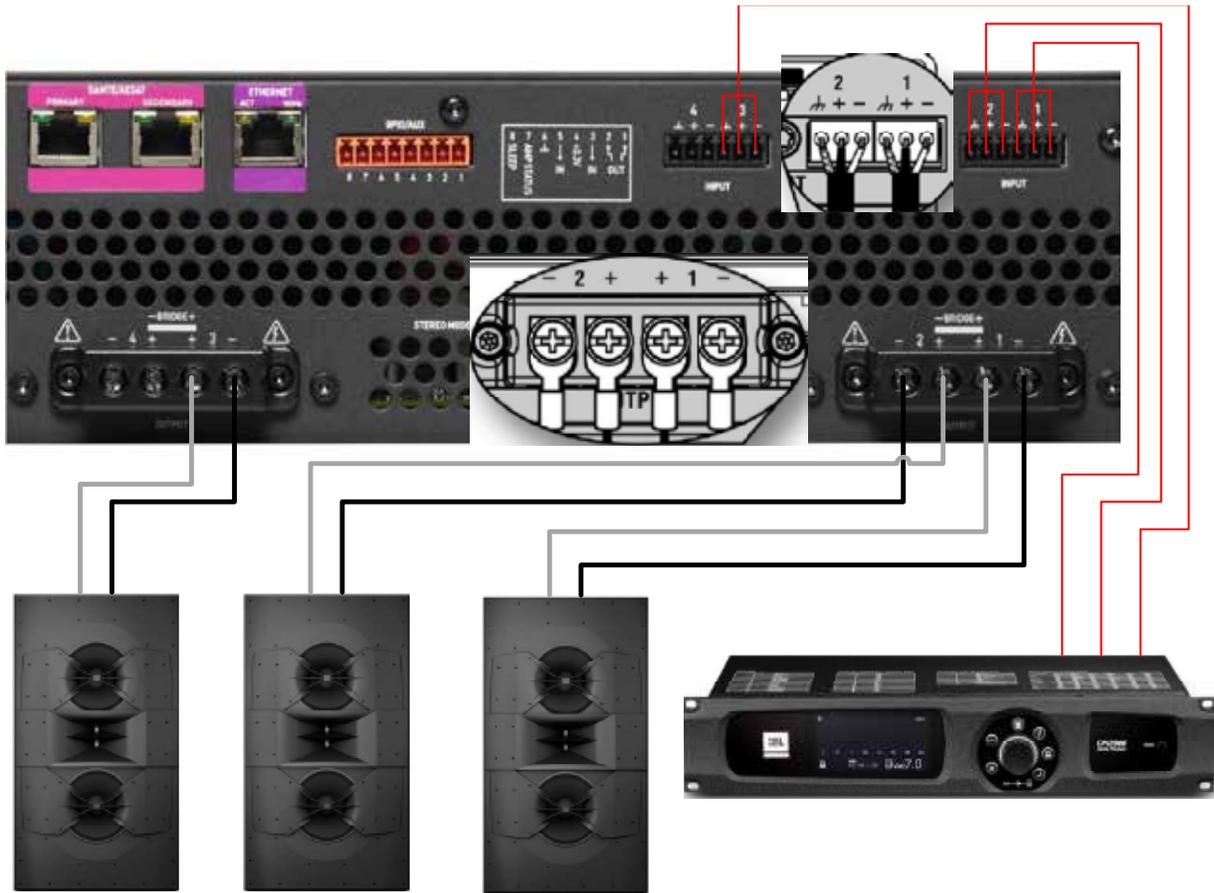
Figure 59: System wiring in Dual mode

NOTE: Always route the input and output wires in separate bundles.

WARNING: Only connect to networks that remain inside the building.

APPLICATION EXAMPLES

BRIDGE MONO MODE

Audio Architect software settings are shown in **Figure 60.** Typical input/output wiring is shown in **Figure 61.**

INPUTS: If using analog inputs, connect to the odd-numbered input channels (1,3) only. Even-numbered inputs (2,4) are disabled when Bridge Mono mode is active. See **"Wiring Input Connectors" on page 10** for further information on analog input wiring.
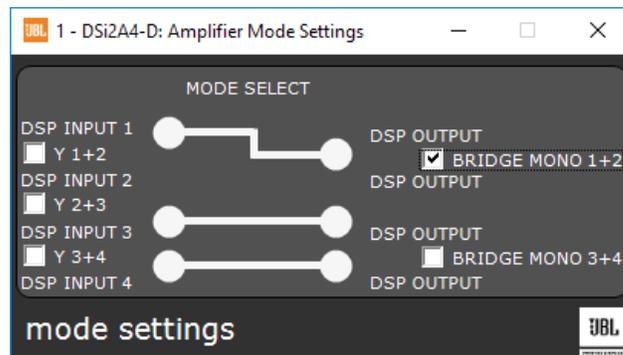
Figure 60: Audio Architect amplifier mode settings

OUTPUTS: Connect the speaker across the positive (+) terminals of each channel pair. Do not use the negative (-) terminals of the channel pair when the pair is being operated in Bridge Mono mode. See **"Wiring Output Connectors" on page 10** for additional information on output wiring. See **"Configuring Amp Wiring & Bridge Mode" on page 17** for information on configuring an output pair for bridge mono operation.

Figure 61: System wiring in Bridge Mono mode

NOTE: Always route the input and output wires in separate bundles.

WARNING: Only connect to networks that remain inside the building

DEVICE PRESETS

Device presets allow configuration, DSP, channel assignment, gains, as well as other settings to be stored for later recall. A device preset can be used to configure the amp for a specific application and speaker model. For example, you might use one device preset that optimizes the amp's DSP for a JBL bi- amplified speaker setting. Or, you might use a device preset that sets up the DSP for a stereo pair of loudspeakers of your choice. Subtle changes can also be made between device presets, such as a change of input channel assignments. Device presets can be stored within the amplifier or backed up to a PC using Audio Architect.

Preset 1 is the factory default device preset and cannot be overwritten. It sets up the amplifier for pass-thru operation with no DSP features enabled. Presets 2-20 are user device presets and can be overwritten.

The following bullets outline which settings are stored to device presets and which are not:

Settings Stored to Device Presets

Settings NOT Stored to Device Presets

- DSP Settings
- Signal Generator Settings
- Levels
- Mutes
- Internal Amp Wiring (Y'ed inputs, dual-mono/bridge mode)
- Input Source Assignments (analog and Network)
- Amp Gain Mode
- GPIO Manual Aux Output Setting (available in Audio Architect)

- Front Panel Lighting/Display Options
- Front Panel Security
- Network Settings

SAVING DEVICE PRESETS

To save the current settings as a device preset from the front panel:

1. From the Home screen, press the **MENU** button.
2. Select the "Configure Amplifier" option from the menu using the **ENCODER**.
3. Select the "Save Preset" option.
4. Select "YES".
5. Select the Preset ID to which you wish to save the preset.
6. An on-screen keyboard will appear, allowing you to name the preset. Select "Done"when done.
7. Press the **ENCODER** to save the preset.
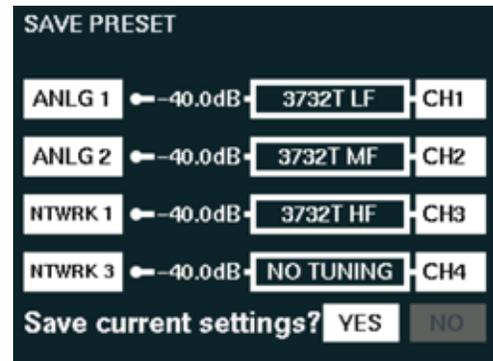
Figure 62: Saving a device preset

NOTE: Any unsaved settings will be retained in the amplifier after a power cycle. However, settings should be saved before loading another device preset if you wish to recall them at a later time, otherwise settings will be lost.

For information on saving device presets in Audio Architect, see "**Main DSi 2 Control Panel" on page 38.**

DEVICE PRESETS

LOADING DEVICE PRESETS

To load a device preset from the front panel:

1. From the Home screen, press the **MENU** button.

2. Select the "Configure Amplifier" option from the menu using the **ENCODER**.

3. Select the "Load Preset" option.

4. Use the **ENCODER** to navigate presets using the on-screen "PREV" and "NEXT" buttons. As each preset is selected, the preset number, name, and configuration will be displayed on-screen.

5. Once the desired preset has been selected, use the **ENCODER** to select "LOAD".

For information on loading device presets in Audio Architect, see .

Figure 63: Loading a device preset

SYSTEM SETTINGS

LIGHTING/DISPLAY OPTIONS

These options can be used to turn off the front panel LCD and LEDs, and change the on- screen color scheme.

To Edit Lighting Options:

1. From the Home screen, press the **MENU** button.

2. Select the "System Settings" option from the menu using the **ENCODER**.

3. Select "Lighting/Display Options" from the menu.

4. Select the desired options, making selections with the **ENCODER**.

5. When done, select "Done" at the bottom of the screen.
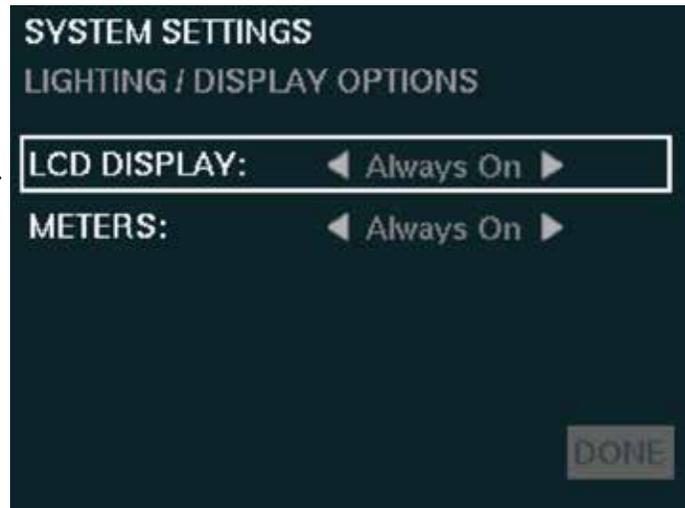
Figure 64: Lighting Options menu

Available options/parameters:

- **LCD Display (Always On, 30 sec, 5 min, 30 min)**
  This option allows the LCD to go to sleep after a specified time period of inactivity. Once asleep, any button press will wake up the LCD.

  NOTE: In the event of an error, such as a shorted output or thermal error, the LCD screen will turn on and indicate the issue, regardless of the selected lighting options.

- **Meters (Always On, 30 sec, 5 min, 30 min)**
  This option allows the signal level meters to turn off after a specified time period of inactivity.

  NOTE: The LED meters will still show clip indication when LEDs are turned off.

SYSTEM SETTINGS

SECURITY/FRONT PANEL LOCKOUT

The Front Panel Lockout feature allows front panel functionality to be locked out to prevent unauthorized tampering of the amplifier's settings. This feature can be enabled from the Security screen **(see Figure 65)** or by simply pressing and holding the CH1 SELECT button and ENCODER simultaneously for 2 seconds from the Home screen.

To Enable The Front Panel Lockout:

1. From the Home screen, press the **MENU** button.

2. Select the "System Settings" option from the menu using the **ENCODER**.

3. Select "Security" from the menu.

4. Enable the "Front Panel Lockout Enable" option using the **ENCODER**.

   NOTE: You can also enable the "Front Panel Lockout Delay" option which will cause the front panel to automatically re-lock after approximately 30 seconds each time the front panel is unlocked.

5. Using the **ENCODER**, select "Done" at the bottom of the screen. If the "Front Panel Lockout Delay" option was not enabled, a prompt will immediately appear on the LCD to indicate that the front panel is now locked. If the "Front Panel Lockout Delay" option was enabled, the front panel will be locked after approximately 30 seconds

NOTE: The POWER button will still function when the Front Panel Lockout feature is enabled.

To Disable The Front Panel Lockout:

1. Simultaneously press and hold the CH1 **SELECT** button and **ENCODER** for 2 seconds. A prompt will appear on the LCD to indicate the front panel is now unlocked. Note that the front panel will only remain unlocked for approximately 30 seconds if the "Front Panel Lockout Delay" option has been enabled.

2. From the Home screen, press the **MENU** button.

3. Select the "System Settings" option from the menu using the **ENCODER**.

4. Select "Security" from the menu.

5. Disable the "Front Panel Lockout Enable" option using the **ENCODER**.

6. Using the **ENCODER**, select "Done" at the bottom of the screen.

TIP: The front panel can also be locked from the Global Settings panel in Audio Architect. Note that if the front panel has been locked from Audio Architect, the above procedure will not work for unlocking it and it must be unlocked using Audio Architect. **See "Amplifier Information" on page 40** for information on locking/unlocking the front panel from Audio Architect.
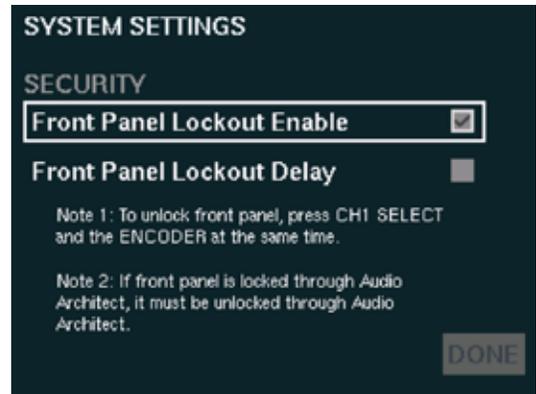
Figure 65: Security screen

SYSTEM SETTINGS

AMP SENSITIVITY MODE

The amp sensitivity setting selects the level of input signal required for the amplifier to achieve maximum output.

To Edit The Amp Gain Setting:

1. From the Home screen, press the **MENU** button.

2. Select the "System Settings" option from the menu using the **ENCODER**.

3. Select the "Amp Gain" option from the menu.

4. Press the **ENCODER** to edit the Amp Gain setting.

5. Turn the **ENCODER** to select the desired Amp Gain setting.

6. When done, press the **ENCODER** to make the selection then select "Done" at the bottom of the screen.
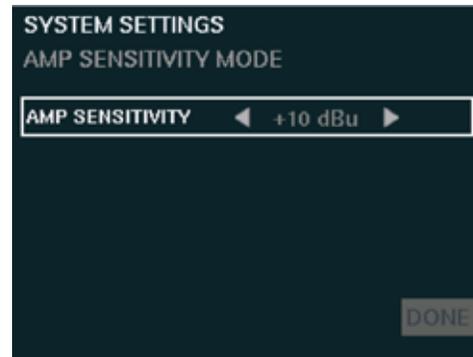
Figure 66: Amp Gain Mode screen

Available options:

- **Amp Sensitivity**
  Sets how much Input signal voltage is required to generate full rated amplified Output.
  Available Options are **+4 dBu, +10 dBu and +16 dBu**.

POWER MODES

The ACD power mode allow the DSi 2 amplifiers to conserve power consumption during periods of inactivity.

To Edit Power Mode Settings:

1. From the Home screen, press the **MENU** button.

2. Select the "System Settings" option from the menu using the **ENCODER**.

3. Select the "Power Modes" option from the menu.

4. Turn and press the **ENCODER** to select the desired settings.

5. When done, select "Done" at the bottom of the screen.
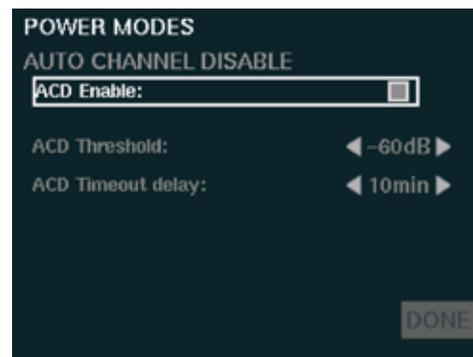
Figure 67: Power Modes screen

Available Options:

- **ACD Enable**
  Checking this checkbox enables the ACD feature.

  The DSi 2's individual amplifier channels will automatically disable after a period of channel inactivity. This will occur 30 minutes after audio is no longer present at the output of the DSP for a given channel. A channel will re-enable within 0.5 seconds of audio being sensed at the output of the DSP.

  NOTE: The ACD feature can be disabled or adjusted from the front panel. Note that ACD will be disabled if the amplifier is factory reset or the default preset is loaded.

See **"Amplifier Information" on page 40** for information on editing power mode settings in Audio Architect.

SYSTEM SETTINGS

AMPLIFIER DIAGNOSTICS

The Diagnostics screen provides a read-only list of amplifier information **(see Figure 68).**

To Enter the Diagnostics Screen:

1. From the Home screen, press and hold the **ENCODER** for ~2 seconds to navigate directly to the Diagnostics screen. Alternatively, you can press the **MENU** button and follow the proceeding steps

2. Select the "System Settings" option from the menu using the **ENCODER**.

3. Select the "Diagnostics" option.

4. Use the **ENCODER** to scroll the menu.

Figure 68: Diagnostics screen

Information Displayed:

- Firmware Version
- AC Input Voltage
- Power Supply Temperature
- Channel 1 Temperature
- Channel 2 Temperature
- Channel 3 Temperature
- Channel 4 Temperature
- Serial Number
- Manufactured Date

USING THE GPIO CONTROL PORT

DSi 2 amplifiers come with a 2-in, 2-out General Purpose In/Out (GPIO) control port in the form of a block connector. The Control port has multiple uses which include fault status reporting, device preset selection, output muting, and more. Control ports are configured using the Audio Architect software.

GPIO PINOUT, SPECIFICATION, USE, & CONFIGURATION:

PIN 1 (Output 1): 0VDC to +3.3VDC output. Output impedance = 1KΩ pullup to +3.3V. This pin is used for fault reporting. If a fault occurs in the amplifier, this pin will change from a low/false state to a high/true state. Polarity can be inverted when reversed functionality is required. See **"Amplifier Information" on page 40** for information on inverting this output.

PIN 2 (Output 2): 0VDC to +3.3VDC output. Output impedance = 1KΩ pullup to +3.3V. This pin is used by Audio Architect and compatible HiQnet wall controllers for generic output control functions. The function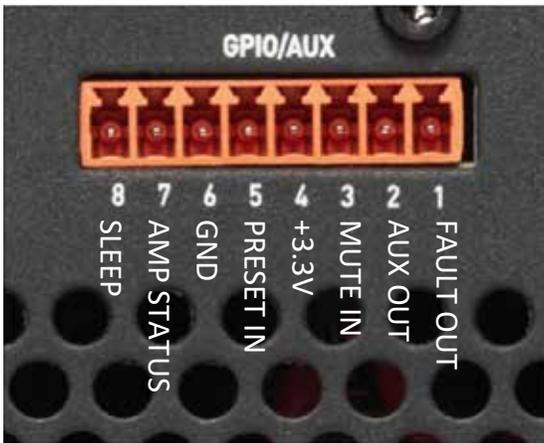ality of this output is tied to the Manual Aux Output button in the Global Settings panel in Audio Architect. See **"Amplifier Information" on page 40** for more information on the Manual Aux Output button.

PIN 3 (Input 1): 0VDC to +3.3VDC input. Logic = TTL thresholds. Analog = full scale 0-3.3V. Input impedance > 20KΩ. This pin is used to trigger input mutes. By default, a high/true state at the input will trigger the mutes. Polarity can be inverted when reversed functionality is required. Which input channels are muted can be programmed from the Global Settings panel in Audio Architect. See **"Amplifier Information" on page 40** for more information on configuring this input.

PIN 4 (3.3V): +3.3VDC output. LIMIT = 30mA. Output impedance = 100Ω to +3.3V. This pin provides the power source to drive the GPIO inputs. For example, a simple switch between this pin and pin 3 (Input 1) will mute/un-mute the designated input channels (a closed switch connects the 3.3V for high/true condition, an open switch allows the pin to float low for false condition).

PIN 5 (Input 2): 0VDC to +3.3VDC input. Logic = TTL thresholds. Analog = full scale 0-3.3V. Input impedance > 20KΩ. This pin is used to trigger preset changes between two stored presets depending on high/low state. Which presets are triggered can be configured from the Global Settings panel in Audio Architect. See **"Amplifier Information" on page 40** for more information on configuring this input port.

PIN 6 (GND): Provides the ground potential for GPIO outputs and the AUX port.

USING THE AUX PORT

The AUX port can be used for basic monitoring of the amplifier and for remote standby (sleep). The port is shared with the GPIO using an 8-pin block connector, with pin 6 used as ground.

SLEEP

The amplifier can be put to sleep by connecting pins 6 and 8 together on the AUX port. When applying this connection, the amplifier will shut down and remain asleep until the connection between pins 6 and 8 is opened. When the connection between pins 6 and 8 is open, the amplifier will revert to its last configuration and begin to output audio within ~15 seconds. Network communication will be re-established once the network interface card boots. While

the amplifier is asleep, the front panel **POWER** button is disabled and, if pressed, the blue power indicator will blink briefly to indicate the device is asleep.

Sleep Closed

Sleep Open
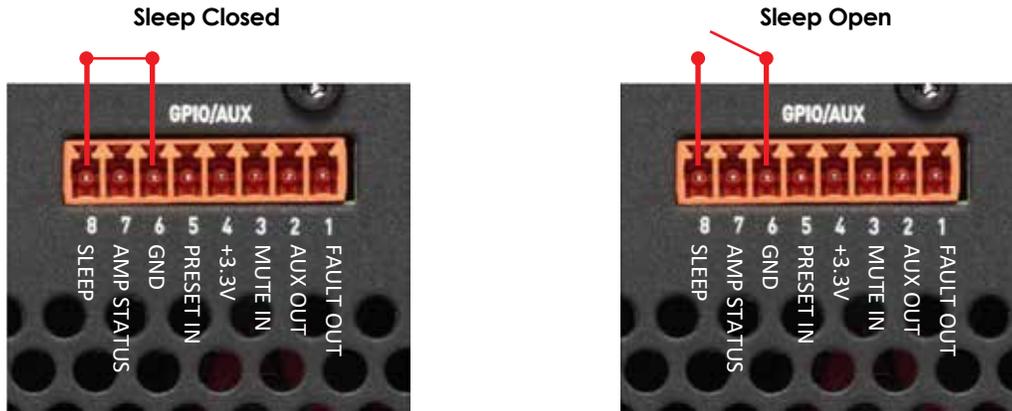
Amp Status

Amp Status can be used for basic monitoring of the amplifier. Monitoring of the amplifier can determine if the amplifier is operating within optimal parameters, or if the amplifier has been shut off or is in fault. Between pins 6 and 7, there will be either a +5VDC potential or a 2Hz square wave (heart beat). This option can be set from the Global Settings panel in Audio Architect, see **"Amplifier Information" on page 40.**

Amp Status - Normal

Amp Status - Fault
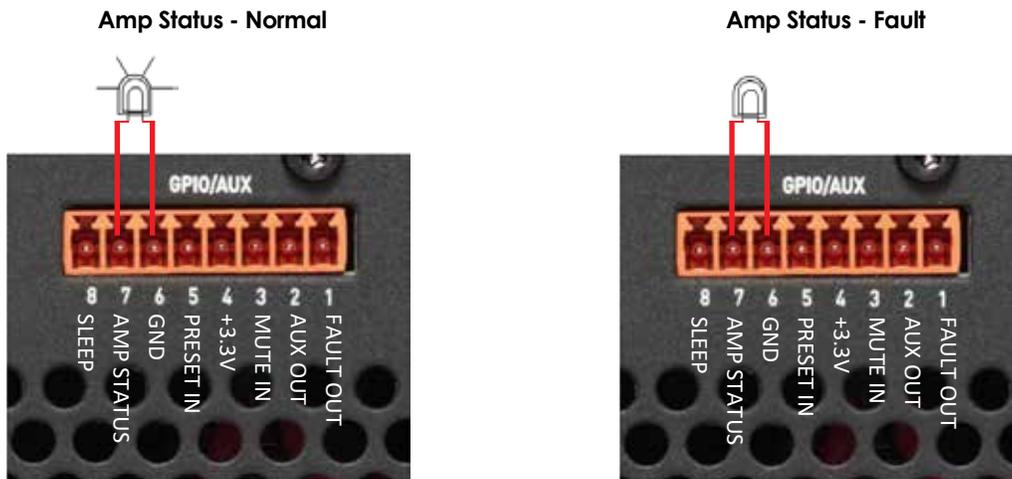
SYSTEM PROTECTION

FAULTS

The amplifier will enter a fault state if it senses an unsafe condition. This protection is for both internal and external faults. In addition, be sure that the load connected to the amplifier is within the 2-16 Ohm limit (4-16 Ohm in Bridge Mono mode). If wiring and load are verified as correct and the fault condition persists, see **"Service" on page 77** for servicing information.

The following faults are possible:

Fault	Fault Type	Description
HF Detect	Channel	Excessive high frequency signal content has been sensed at the output of the amplifier.
DCLF	Channel	Excessive DC or low frequency signal content has been sensed at the output of the amplifier.
Short Circuit Detect	Channel	A short is detected at the output of the amplifier.
Thermal	Channel/Power Supply	An amp channel and/or the power supply has exceeded the maximum acceptable temperature threshold.
High Voltage Rail	Power Supply	The power supply's high voltage rails are no longer within a safe operating range for the amplifier or other components attached.
Low Voltage Rail	Power Supply	The power supply's low voltage rails are no longer within a safe operating range for the amplifier or other components attached.
AC Mains	Power Supply	The AC mains have reached an unsafe level.

THERMAL LIMIT

If the amplifier power supply and/or any channels become too hot for safe operation, a thermal fault will occur. If a channel's temperature reaches 80° Celsius, a message will appear in the front panel display to indicate the onset of audio compression. The amplifier will continue to run in this state until either the temperature is reduced to a safe operating range, or if the temperature continues to rise, the channel will shut off to protect itself above 100° Celsius. The amplifier will exit the thermal fault state only when the temperature drops back below the thermal limit.

NOTE: If the thermal limit is exceeded while the front panel LCD is asleep, the display will wake up to indicate that thermal limiting is occurring.

AC UNDER/OVER-VOLTAGE PROTECTION

If the AC line voltage drops below 10% or rises above 10% of the nominal operating voltage of the amplifier, the amplifier's power supply will turn off and the blue Power LED will flash. The amplifier will turn back on when the AC line voltage returns to safe operating levels.

FAN-COOLED CHASSIS

DSi 2 Series amplifiers are cooled by quiet, variable-speed fans. Maximum fan noise level of the DSi 2 amplifier is 51dBA. The fans will pull air from the front of the amplifier to the rear.

The following fault conditions cause the fan to turn on full speed:

• High frequency fault (excessive high frequency signal content has been sensed at the output of the amplifier)

• Thermal fault (excessive power supply or channel temperature is detected)

NOTE: After a fault, the fan will remain on at full speed until the fault is cleared.

SYSTEM PROTECTION

UNIVERSAL SWITCHING POWER SUPPLY

The DSi 2 Series amplifiers incorporate a switching power supply designed for extremely high efficiency and high output power. The supply includes Power Factor Correction (PFC) and a Series Resonant Converter, and accepts AC supply voltages from ~100V to ~240V. Microprocessor- controlled diagnostic and control capabilities both optimize performance and enhance long-term reliability.

TROUBLESHOOTING

TROUBLESHOOTING

	CONDITION: Power indicator and LCD are off. **POSSIBLE REASON** • The amplifier is not plugged in to the power receptacle. • The amplifier has lost AC Power.
	CONDITION: Power indicator is flashing blue indefinitely. **POSSIBLE REASON:** • The AC line voltage has dropped below 10% or has risen above 10% of the nominal line voltage of the power supply. See **"System Protection" on page 68** for information on AC under/over voltage protection.
	CONDITION: When pressing the Power button, power won't turn on and Power indicator flashes blue briefly. **POSSIBLE REASON:** • The amplifier is asleep via the Aux port (contact closure) circuit. See "**Using the AUX Port**" **on page 67** for more information.
	CONDITION: Thermal fault is indicated in the display. **POSSIBLE REASON:** • The amplifier is becoming too hot for safe operation. Allow amplifier to cool. Check for loads less than 2Ω and for excessive input levels. Check for proper ventilation. See **"Proper Cooling"on page 5** for information on rack mounting and cooling. See "**System Protection" on page 68** for detailed information on thermal limits.

TROUBLESHOOTING

fault displayed here	**CONDITION: Some other fault is indicated in the display.** **POSSIBLE REASON** • There are a number of conditions that result in a fault error being displayed: the operating temperature exceeds 100°C, excessive high or low frequencies are detected at the output, or an output short circuit is detected. These conditions should all be checked and attempted to be resolved before the amp is shipped back for service. See "**System Protection" on page 68** for more information on these protection features.
	CONDITION: Distorted sound. **POSSIBLE REASON:** • Load is wired incorrectly or Dual/Bridge mode is configured incorrectly — both should be verified. See "**Wiring Output Connectors" on page 7 and "Configuring Outputs for Bridge Mono Operation" on page 44.** • Input is overloaded by a signal level that is too high. Turn down the amplifier input level controls, or turn down the output of the source signal until the Clip LED goes out **NOTE:** If the signal sounds distorted even though the Clip LED is off, the signal may be distorted before it reaches the amplifier input. Check gain staging and output levels of the mixer or preamp.
	CONDITION: No sound, even though the Power LED is lit blue and the level meters indicate the amp is receiving an input signal. **POSSIBLE REASON:** • Speaker not connected. Power off the amplifier, disconnect the AC power cord, then verify speaker connection. • Open circuit due to speaker failure. From the front panel display, determine which channel has the short. Power down the amplifier then disconnect the AC power cable. Remove the shorted load from the channel (and possibly attached cables) and have it checked by a qualified technician. Reconnect the power cord and power up the amplifier. If the shorted condition remains after the load is removed, the unit should serviced. See **"Service" on page 77.**
	CONDITION: No input signal. Input signal indicator is not lighting, even though audio is being sent to the amplifier's input and the amp is powered on (blue Power indicator lit). **POSSIBLE REASON:** • Input signal level is very low. Double check the gain structure of the system and ensure that the amplifier's input trim levels are set accordingly. • Input routing is not configured correctly for application. See **"Assigning Input Sources" on page 18.**

SIGNAL PATH DIAGRAM
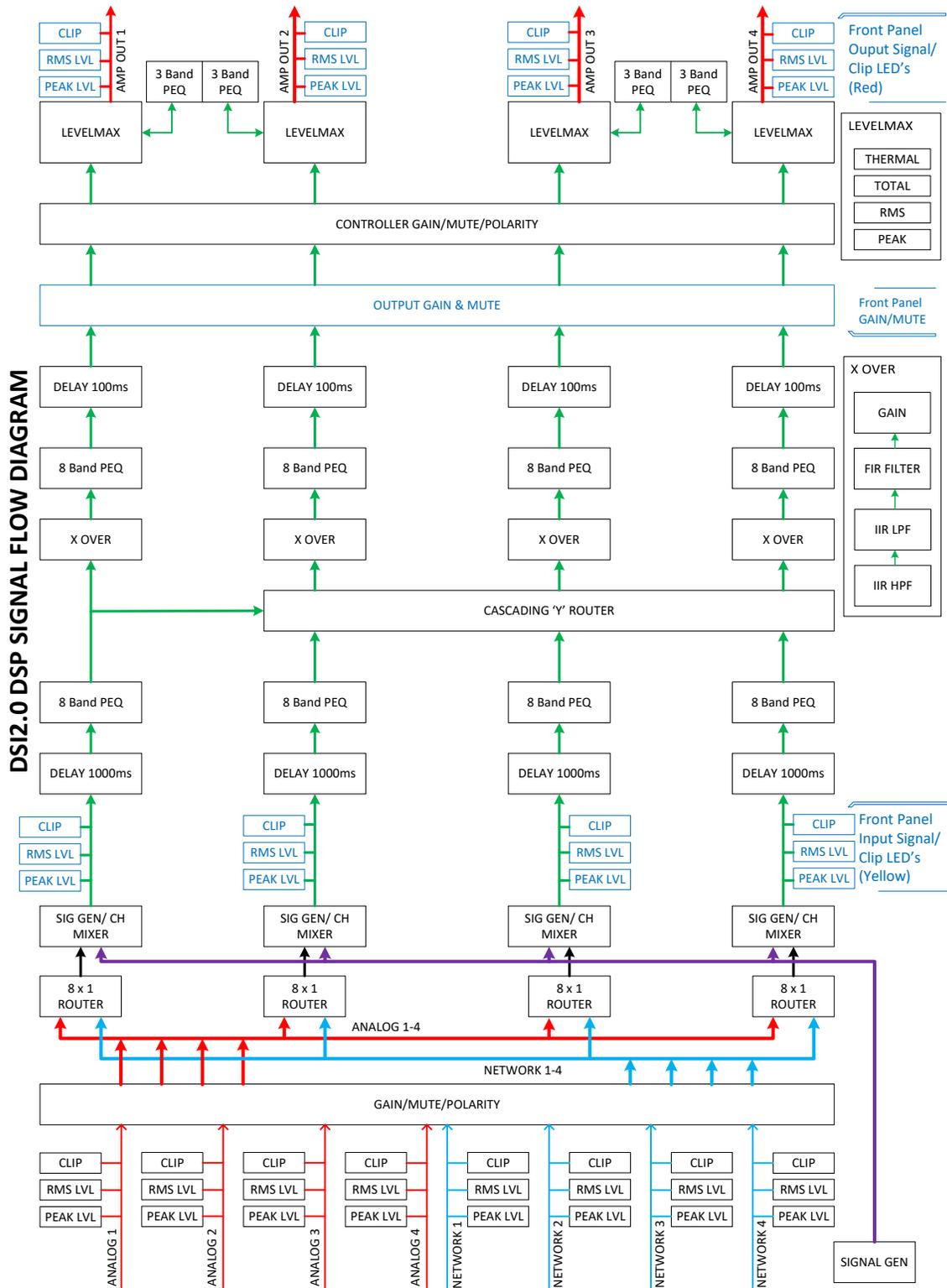
Figure 69: Signal path block diagram (A4-D model Shown)

FACTORY RESET

The Factory Reset allows a DSi 2 amplifier to be reverted back to its factory default state. When initiated, the Factory Reset will perform the following tasks:

- Erase all user presets (this includes all user DSP and configuration settings)
- Reset all system settings

To Perform The Factory Reset Procedure:

Warning! All user presets will be permanently deleted and all settings reverted back to their factory default state. This process is irreversible. If you have any user presets you wish to keep, they should be backed up using Audio Architect before performing the Factory Reset. See **"Managing Device & Preset Files" on page 51** for more information.

1. Power off the amplifier by pressing and holding the Power button for 2 seconds.
2. Press and hold the **CH1** and **CH2 SELECT** buttons while powering on the amp. Continue to hold these buttons until the LCD reads: "Press MENU to restore Factory Settings or any other button to exit". Now release the **SELECT** buttons.
3. Press and release the **MENU** button to start the Factory Reset procedure (pressing any other button will abort the Factory Reset procedure and the amp will boot up normally).
4. Once the Factory Reset procedure begins, the LCD will display the message: "Restoring factory defaults!" and when complete, the device will boot up normally.

SPECIFICATIONS

	SA4	SA4-D	MA4	MA4-D	LA4	LA4-D
USER INTERFACE						
Front-Panel Interface	Mute and configuration with encoder					
Front-Panel Display	LCD display and signal LED's (input/output)					
Channels	4					
CONNECTORS						
Analog Audio Input	Block connector					
Digital Audio Input (DANTE/AES67)	N/A	2x RJ-45	N/A	2x RJ-45	N/A	2x RJ-45
Speaker Output	Barrier terminal block, accommodates 10AWG wire					
Network/Monitoring/Control	RJ-45					
GPIO/AUX	2in/2out block connector					
Power	Standard IEC					
POWER						
Rated Power (8Ω)	360W x 4		750W x 4		1,300W x 4	
Rated Power (4Ω)	700W x 4		1,400W x 4		2,200W x 4	
Rated Power (2Ω)	1050W x 4		2,100W x 4		1,200W x 4	
Rated Power (8Ω Bridged)	1,300W x 2		2,600W x 2		4,000W x 2	
Rated Power (4Ω Bridged)	2,200W x 2		4,200W x 2		2,300W x 2	
PERFORMANCE						
Digital Signal Processing	96kHz, 32-bit floating point					
Voltage Gain (at 4,10,16dBu Sensitivity) 4/8Ω	32.5/26.5/20.5dB		35.5/29.5/23.5dB		38/32/26dB	
Frequency Response (4Ω, 20Hz – 20KHz)	±0.5dB					
Total Harmonic Distortion (At Full Rated Power, From 20Hz – 20kHz)	0.35%					
Analog Input Signal To Noise Ratio (Ref. Rated Power, 'A'-Wtd.)	>106dB		>105dB		>104dB	
Analog Input Signal To Noise Ratio (Ref. Rated Power, 20Hz – 20kHz)	>100dB		>99dB		>98dB	
Intermodulation Distortion (60Hz and 7kHz AT 4:1, from - 30dB To Full Rated Power)	≤0.35%					
Damping Factor (20Hz TO 100Hz)	>1000					
Crosstalk (Below Rated Power, 20HZ – 1kHZ)	>80dB					
Common Mode Rejection (20Hz – 1kHz, Typical)	>70dB					
DC Output Offset (With Inputs Shorted)	±10mV					
Input Impedance (Nominally Balanced, Nominally Unbalanced)	70 kΩ balanced, 35 kΩ unblanced					
Maximum Input Level (Low Amp Gain Mode)	+21dBU					
Load Impedance Stereo/Dual Mode	2Ω –16Ω					
Load Impedance Bridge Mono	4Ω – 16Ω					
Maximum Fan Noise (Ref. dB SPL @ 1M)	51dBA					
ELECTRICAL						
Power Supply	100 – 220V ±10%, 50/60Hz					
Sleep	GPIO/AUX connector					
PHYSICAL						
Dimensions (DxWxH)	17.21 x 18.98 x 3.46 in (437.2 x 482 x 88 mm)					
Net Weight	23.15 lb (10.5 kg)					

SPECIFICATIONS

POWER DRAW AND THERMAL

JBL DSi2 SA4 & SA4-D Dual Mode

Condition	Load	120V AC/60Hz				230V AC/50Hz			
		Line current	Power Dissipated as Heat			Line current	Power Dissipated as Heat		
		(amps)	watts	BTU	kcal/hr	(amps)	watts	BTU	kcal/hr
At Idle Awake	N/A	0.85	78.6	268	68	0.65	77.6	265	67
1/8 Power Pink Noise Typical of program material just at clip	2 ohms	6.11	710	2421	611	3.14	712	2428	612
	4 ohms	3.62	413	1408	355	2.09	418	1425	359
	8 ohms	2.31	268	914	230	1.28	265	904	228
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	14.5	1712	5838	1472	7.63	1688	5756	1452
	4 ohms	8.64	992	3383	853	4.74	987	3366	849
	8 ohms	5.15	613	2090	527	2.84	601	2049	517

JBL DSi2 SA4 & SA4-D Bridge Mono

Condition	Load	120V AC/60Hz				230V AC/50Hz			
		Line current	Power Dissipated as Heat			Line current	Power Dissipated as Heat		
		(amps)	watts	BTU	kcal/hr	(amps)	watts	BTU	kcal/hr
At Idle Awake	N/A	0.78	79.7	272	69	0.66	78.7	268	68
1/8 Power Pink Noise Typical of program material just at clip	4 ohms	5.96	685	2336	589	3.23	697	2377	599
	8 ohms	3.62	410	1398	353	1.95	414	1412	356
1/3 Power Pink Noise Typical of program material at extreme clip	4 ohms	14.43	1678	5722	1443	7.62	1687	5753	1451
	8 ohms	8.47	982	3349	845	4.64	975	3325	839

JBL DSi2 MA4 & MA4-D Dual Mode

Condition	Load	120V AC/60Hz				230V AC/50Hz			
		Line current	Power Dissipated as Heat			Line current	Power Dissipated as Heat		
		(amps)	watts	BTU	kcal/hr	(amps)	watts	BTU	kcal/hr
At Idle Awake	N/A	0.8	85.5	292	74	0.52	82.5	281	71
1/8 Power Pink Noise Typical of program material just at clip	2 ohms	11.9	1378	4699	1185	6.46	1378	4699	1185
	4 ohms	6.99	830	2830	714	3.96	828	2823	712
	8 ohms	4.31	502	1712	432	2.36	505	1722	434
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	28.4	3371	11495	2899	14.9	3350	11424	2881
	4 ohms	16.8	1968	6711	1692	9.05	1981	6755	1704
	8 ohms	9.71	1152	3928	991	5.26	1140	3887	980

JBL DSi2 MA4 & MA4-D Bridge Mono

Condition	Load	120V AC/60Hz				230V AC/50Hz			
		Line current	Power Dissipated as Heat			Line current	Power Dissipated as Heat		
		(amps)	watts	BTU	kcal/hr	(amps)	watts	BTU	kcal/hr
At Idle Awake	N/A	0.78	84.1	287	72	0.48	80.7	275	69
1/8 Power Pink Noise Typical of program material just at clip	4 ohms	11.68	1376	4692	1183	6.24	1334	4549	1147
	8 ohms	6.96	832	2837	716	3.74	838	2858	721
1/3 Power Pink Noise Typical of program material at extreme clip	4 ohms	28.7	3350	11424	2881	14.76	3368	11485	2896
	8 ohms	16.71	1977	6742	1700	9.04	1970	6718	1694

JBL DSi2 LA4 & LA4-D Dual Mode

Condition	Load	120V AC/60Hz				230V AC/50Hz			
		Line current	Power Dissipated as Heat			Line current	Power Dissipated as Heat		
		(amps)	watts	BTU	kcal/hr	(amps)	watts	BTU	kcal/hr
At Idle Awake	N/A	0.98	109.6	374	94	0.66	107.6	367	93
1/8 Power Pink Noise Typical of program material just at clip	2 ohms	6.92	806	2748	693	3.88	796	2714	685
	4 ohms	11.2	1348	4597	1159	6.21	1352	4610	1163
	8 ohms	5.9	690	2353	593	3.24	685	2336	589
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	15.7	1852	6315	1593	8.3	1860	6343	1600
	4 ohms	28.2	3363	11468	2892	14.5	3315	11304	2851
	8 ohms	13.8	1642	5599	1412	7.54	1623	5534	1396

JBL DSi2 LA4 & LA4-D Bridge Mono

Condition	Load	120V AC/60Hz				230V AC/50Hz			
		Line current	Power Dissipated as Heat			Line current	Power Dissipated as Heat		
		(amps)	watts	BTU	kcal/hr	(amps)	watts	BTU	kcal/hr
At Idle Awake	N/A	0.98	108.9	371	94	0.74	106.5	363	92
1/8 Power Pink Noise Typical of program material just at clip	4 ohms	6.86	790	2694	679	3.63	789	2690	679
	8 ohms	11.3	1329	4532	1143	6.13	1321	4505	1136
1/3 Power Pink Noise Typical of program material at extreme clip	4 ohms	15.4	1832	6247	1576	8.32	1836	6261	1579
	8 ohms	27.6	3332	11362	2866	14.55	3342	11396	2874

SPECIFICATIONS

DIMENSIONS

17.21 X 18.98 X 3.46 IN
(437.2MM X 482 X 88MM)
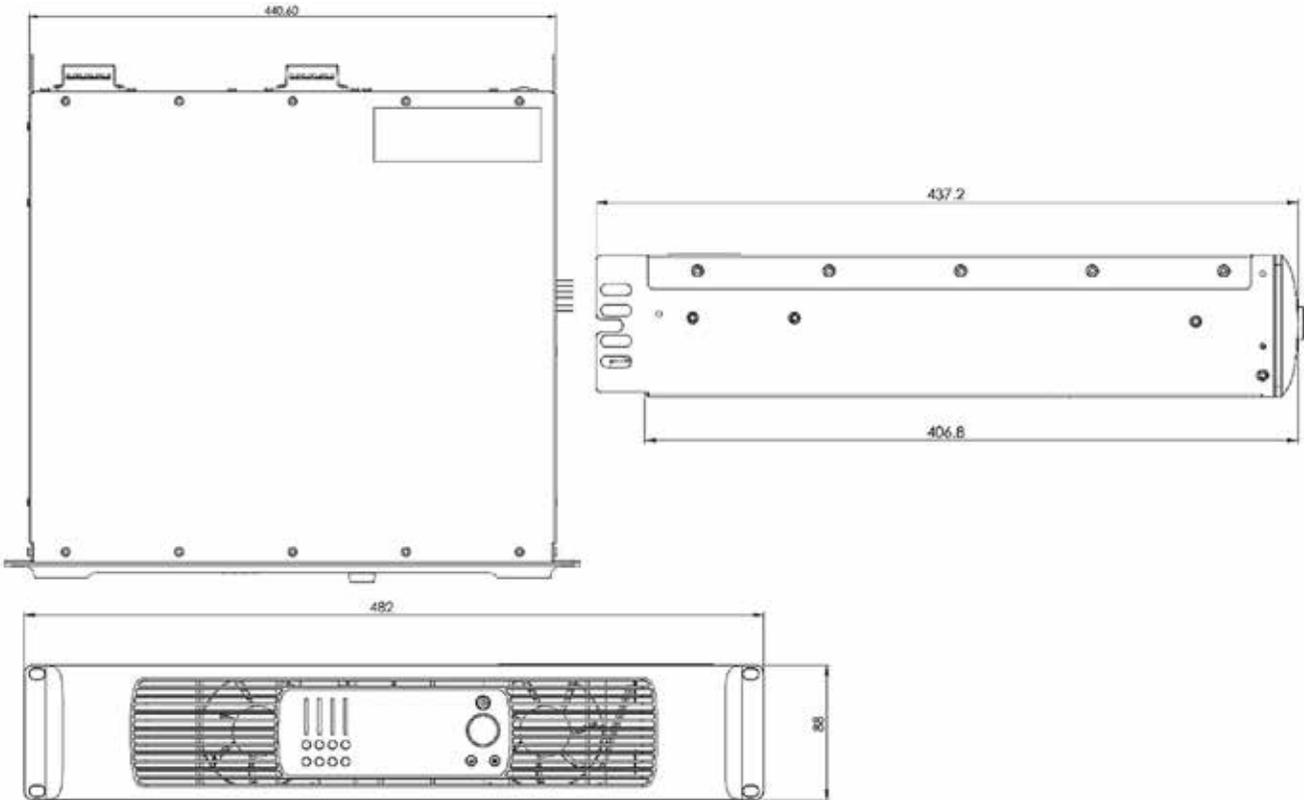
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SUMMARY OF WARRANTY

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We will remedy any defect, regardless of the reason for failure (except as excluded), by repair, replacement, or refund. We may not elect refund unless you agree, or unless we are unable to provide replacement, and repair is not practical or cannot be timely made. If a refund is elected, then you must make the defective or malfunctioning product available to us free and clear of all liens or other encumbrances. The refund will be equal to the actual purchase price, not including interest, insurance, closing costs, and other finance charges less a reasonable depreciation on the product from the date of original purchase. Warranty work can only be performed at our authorized service centers or at the factory. Warranty work for some products can only be performed at our factory. We will remedy the defect and ship the product from the service center or our factory within a reasonable time after receipt of the defective product at our authorized service center or our factory. All expenses in remedying the defect, including surface shipping costs in the United States, will be borne by us. (You must bear the expense of shipping the product between any foreign country and the port of entry in the United States including the return shipment, and all taxes, duties, and other customs fees for such foreign shipments.)

HOW TO OBTAIN WARRANTY SERVICE

You must notify us of your need for warranty service within the warranty period. All components must be shipped in a factory pack, which, if needed, may be obtained from us free of charge. Corrective action will be taken within a reasonable time of the date of receipt of the defective product by us or our authorized service center. If the repairs made by us or our authorized service center are not satisfactory, notify us or our authorized service center immediately.

DISCLAIMER OF CONSEQUENTIAL AND INCIDENTAL DAMAGES

YOU ARE NOT ENTITLED TO RECOVER FROM US ANY INCIDENTAL DAMAGES RESULTING FROM ANY DEFECT IN THE NEW JBL PRODUCT. THIS INCLUDES ANY DAMAGE TO ANOTHER PRODUCT OR PRODUCTS RESULTING FROM SUCH A DEFECT. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

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No person has the authority to enlarge, amend, or modify this JBL Warranty. This JBL Warranty is not extended by the length of time which you are deprived of the use of the new JBL product. Repairs and replacement parts provided under the terms of this JBL Warranty shall carry only the unexpired portion of this JBL Warranty.

DESIGN CHANGES

We reserve the right to change the design of any product from time to time without notice and with no obligation to make corresponding changes in products previously manufactured.

LEGAL REMEDIES OF PURCHASER

THIS JBL WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. No action to enforce this JBL Warranty shall be commenced after expiration of the warranty period.

THIS STATEMENT OF WARRANTY SUPERSEDES ANY OTHERS CONTAINED IN THIS MANUAL FOR JBL PRODUCTS.

SERVICE

JBL products are quality units that rarely require servicing. Before returning your unit for servicing, please contact JBL Technical Support to verify the need for servicing.

Warranty is only valid within the country in which the product was purchased.

This unit has very sophisticated circuitry which should only be serviced by a fully trained technician. This is one reason why each unit bears the following label:

⚡ **CAUTION: To prevent electric shock, do not remove covers. No user serviceable parts inside. Refer servicing to a qualified technician.**

Complete the Service Return Authorization form in the back of this manual, when returning a JBL product to the factory or authorized service center. The form must be included with your product inside the box or in a packing slip envelope securely attached to the outside of the shipping carton. Do not send this form separately.

WORLDWIDE SERVICE

Service may be obtained from an authorized service center (contact your local JBL/HARMAN representative or our office for a list of authorized service centers). To obtain service, simply present the bill of sale as proof of purchase along with the defective unit to an authorized service center. They will handle the necessary paperwork and repair.

Remember to transport your unit in the original factory pack.

US AND CANADA SERVICE

Service may be obtained in one of two ways: from an authorized service center or from the factory. You may choose either. It is important that you have your copy of the bill of sale as your proof of purchase.

SERVICE AT A US OR CANADA SERVICE CENTER

This method usually saves the most time and effort. Simply present your bill of sale along with the defective unit to an authorized service center to obtain service. They will handle the necessary paperwork and repair. Remember to transport the unit in the original factory pack.

FACTORY SERVICE

JBL accepts no responsibility for non-serviceable product that is sent to us for factory repair. It is the owner's responsibility to ensure that their product is serviceable prior to sending it to the factory.

SPOC (Single Point of Contact) for SERVICE/WARRANTY :

HProTechSupportUSA@harman.com Tech Support

HProWarrantyClaims@harman.com Warranty claims

https://pro.harman.com/service General service site, assistance from After-Sales Services 844-776-4899

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Lua	http://lua.org	MIT
zlib	http://boost.org	Boost License
augeas 1.4.0	http://augeas.net/	GNU LGPLv2.1
libfa	http://augeas.net/libfa/	GNU LGPLv2 or greater
dhcpcd 6.11.3	http://roy.marples.name/projects/dhcpcd/index	BSD
gdb and/or gdbserver 7.10.1	http://www.gnu.org/software/gdb/current/	GNU GPLv2
libxml2 2.9.3	http://xmlsoft.org/	MIT
BOOST 1.53.0	http://www.boost.org/	Boost Software License - Version 1.0 - August 17th, 2003
JSON 0.6.0-rc2	https://github.com/open-source-parsers/jsoncpp	MIT
tinyXML	https://sourceforge.net/projects/tinyxml/	zlib/libpng
ticpp (tinyXML++)	https://github.com/rjpcomputing/ticpp	MIT
sqlite 3.8.4.3	https://www.sqlite.org/	public domain
Qt qt-everywhere-opensource-src-4.8.6	https://download.qt.io/archive/qt/4.8/4.8.6/	GNU LGPLv2.1
lua	http://www.lua.org/about.html	MIT
at91bootstrap	http://www.at91.com/linux4sam/bin/view/Linux4SAM/AT91Bootstrap	2-clause BSD
uBoot	http://www.at91.com/linux4sam/bin/view/Linux4SAM/U-Boot	GNU GPLv2
Linux kernel 3.10	https://github.com/linux4sam/linux-at91	GNU GPLv2
busybox 1.20.2	http://www.busybox.net	GNU GPLv2
MTD utils 1.5.0	http://www.linux-mtd.infradead.org/	GNU GPLv2
MD5	http://userpages.umbc.edu/~mabzug1/cs/md5/md5.html	RSA Data Security, Inc. MD5 Message-Digest Algorithm

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util-linux	www.kernel.org/pub/linux/utils/util-linux/	GNU GPLv2 GNU GPLv2+ GNU LGPLv2+ BSD
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glibc 2.18	www.gnu.org/software/libc/	GNU GPLv2+ GNU LGPLv2.1+
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alsa	http://alsa-project.org/main/index.php/Main_Page	GNU GPLv3 GNU LGPLv3
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libffi	https://sourceware.org/libffi/	MIT
freetype	https://www.freetype.org/license.html	GNU GPLv2
gio	https://developer.gnome.org/gio/stable/	GNU LGPLv2.1
GLib	wiki.gnome.org/Projects/GLib	GNU LGPLv2.1
libjpeg	ijg.org	Custom BSD-like
MPEG Audio Decoder	http://www.underbit.com/products/mad/	GNU GPLv2
ncurses	www.gnu.org/software/ncurses/ncurses.html	X11
I2C Tools for Linux	http://freecode.com/projects/i2ctools	GNU GPLv2
libstdc++	https://gcc.gnu.org/onlinedocs/libstdc++/	GNU GPLv3 + GCC Runtime Library Exception, v3.1
udev	www.freedesktop.org/software/systemd/man/udev.html	GNU GPLv2
zlib	http://www.zlib.net/	zlib
fbv	http://freecode.com/projects/fbv	GNU GPLv2
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Rng-tools	https://git.kernel.org/cgit/utils/kernel/rng-tools/rng-tools.git/	GNU GPLv2
OpenSSH	http://www.openssh.com/	BSD
ethtool	www.kernel.org/pub/software/network/ethtool/	GNU GPLv2
OpenSSL	https://www.openssl.org/	SSLeay OpenSSL
libpng	http://www.libpng.org/pub/png/libpng.html	libpng
fdformat	ftp://ftp.kernel.org/pub/linux/utils/util-linux-ng/	GNU GPLv2 GNU GPLv2+ GNU LGPLv2+ BSD
mii-diag	http://ftp.psu.ac.th/pub/scyld/mii-diag.c	GPLv2
top (included with Procps-ng)	https://sourceforge.net/projects/procps-ng/	GNU GPLv2 GNU LGPLv2
udevadm	https://kernel.googlesource.com/pub/scm/linux/hotplug/udev/+/118/udevadm.c	GPLv2
libproc-3.2.8.so	https://rpmfind.net/linux/RPM/sourceforge/m/ma/magicspecs/apt/3.0/x86_64/RPMS.p/procps-3.2.8-25.20110302gitmgc30.x86_64.html	GNU GPLv2+ GNU LGPLv2+
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