

DriveCore Install DA Series Operation Manual



- DCi 4|300DA
- DCi 4|600DA
- DCi 4|1250DA
- DCi 8|300DA
- DCi 8|600DA

Product Registration: Register your new product at <http://warranty.harmanpro.com>.

Obtaining Other Language Versions: To obtain information in another language about the use of this product, please contact your local Crown Distributor. If you need assistance locating your local distributor, please contact Crown at 574-294-8000 or visit www.crownaudio.com.

This manual does not include all of the details of design, production, or variations of the equipment. Nor does it cover every possible situation which may arise during installation, operation or maintenance.

The information provided in this manual was deemed accurate as of the publication date. However, updates to this information may have occurred. To obtain the latest version of this manual, please visit the Crown website at www.crownaudio.com.

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Some models may be exported under the name Amcron®

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. Use the mains plug to disconnect the apparatus from the mains.
15. WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.
16. "DO NOT EXPOSE THIS APPARATUS TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, ARE PLACED ON THE APPARATUS" AND "NE PAS EXPOSER CET APPAREIL À DES ÉCLABOUSSURES OU GOUTTELETTES D'UN LIQUIDE. AUCUN OBJET REMPLIE DE LIQUIDE COMME PAR EXEMPLE UN VASE NE DOIT ÊTRE PLACÉ SUR L'APPAREIL".
17. THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY ACCESSIBLE. LA PRISE DU RÉSEAU D'ALIMENTATION DOIT DEMEURER AISÉMENT ACCESSIBLE.



TO PREVENT ELECTRIC SHOCK DO NOT REMOVE TOP COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

TO COMPLETELY DISCONNECT THIS APPARATUS FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE. POUR DÉCONNECTER COMPLÈTEMENT L'APPAREIL DU RÉSEAU D'ALIMENTATION, DÉCONNECTER LE CORDON D'ALIMENTATION DE LA PRISE MURALE.

WARNING:

- Apparatet må tilkoples jordet stikkontakt.
- Apparaten skall anslutas till jordat uttag.
- Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan.
- Apparatet skal tilsluttes jordet stikkontakt.

WATCH FOR THESE SYMBOLS:



The lightning bolt triangle is used to alert the user to the risk of electric shock.



The exclamation point triangle is used to alert the user to important operating or maintenance instructions.



IMPORTANT

Use Class 2 output wiring in stereo mode.
Use Class 3 output wiring in bridge mode.

MAGNETIC FIELD

CAUTION! Do not locate sensitive high-gain equipment such as preamplifiers or tape decks directly above or below the unit. Because this amplifier has a high power density, it has a strong magnetic field which can induce hum into unshielded devices that are located nearby. The field is strongest just above and below the unit.

If an equipment rack is used, we recommend locating the amplifier(s) in the bottom of the rack and the preamplifier or other sensitive equipment at the top.

FCC COMPLIANCE NOTICE

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Declaration of Conformity

EU DECLARATION OF CONFORMITY



Manufacturer:
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Brand: Crown
Equipment Type: Commercial Audio Power Amplifiers
Family Name: DCi DriveCore Installed DA Series
Model Names: 4 | 300DA, 4 | 600DA, 8 | 300DA, 8 | 600DA, 4 | 1250DA

This declaration of conformity is issued under the sole responsibility of **Harman Professional Inc.** The object of the declaration described above is in conformity with the relevant Union harmonization legislation:

2014/35/EU	Low Voltage Directive (LVD)
2014/30/EU	Electromagnetic compatibility directive (EMCD)
2011/65/EU	Restriction of the use of certain hazardous substances (RoHS2)
2012/19/EU	Waste electrical and electronic equipment directive (WEEE)
1907/2006/EC amended by 2015/282/EU	Registration, evaluation and authorization of chemicals (REACH)

The following harmonized standards and technical specifications have been applied:

EMC Standards:	Description
EN 55032:2012	EMC Compatibility of multimedia equipment – Emissions requirements: Class B
EN55103-2:2009	EMC Compatibility – Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 2: Immunity
EN 61000-3-2:2014	Limits for Harmonic Current Emissions (equipment input current less than or equal to 16A)
EN 61000-3-3:2013	Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply systems Rated Current less than or equal to 16A
EN 61000-4-2:2009	Electrostatic Discharge Immunity (Environment E2-Criteria B, 4k V Contact, 8k V Air Discharge)
EN 61000-4-3:2006 +A2:2010	Radiated, Radio-Frequency, EMC Immunity (Environment E2, Criteria A)
EN 61000-4-4:2012	Electrical Fast Transient/Burst Immunity (Criteria B)
EN 61000-4-5:2014	Surge Immunity (Criteria B)
EN 61000-4-6:2014	Immunity to Conducted Disturbances Induced by Radio-Frequency Fields (Criteria A)
EN 61000-4-11:2004	Voltage Dips, Short Interruptions and Voltage Variation
Safety Standard:	
EN 60065:02 +A1:06 +A2:10, +A11:08 +A12:11 IEC 60065:01 7 th Ed. +A1:05 +A2:10 EN 60065:14, IEC 60065:14 8 th Ed.	Safety Requirements – Audio, Video, and Similar Electronic Apparatus

Copies of all technical documentation can be obtained by contacting: Sue Whitfield at sue.whitfield@harman.com.

February 6, 2018
 Elkhart, Indiana, USA

(Place and Date of issue)

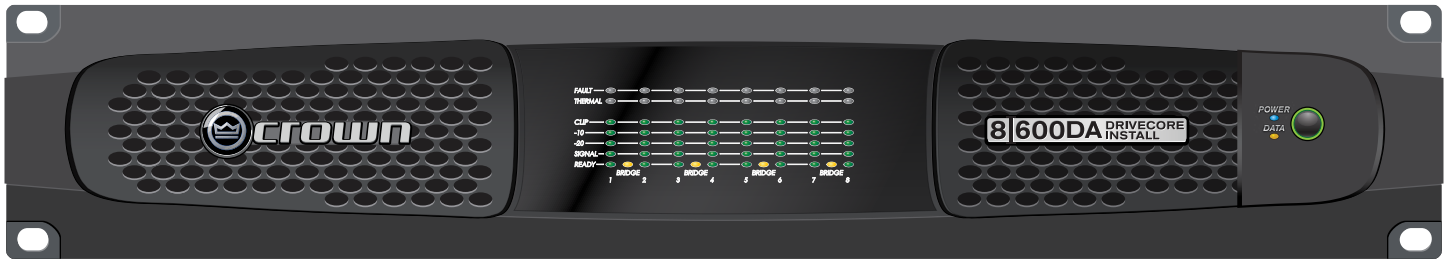
Marc Kellom,
 VP, Acoustics & Electronics Engineering

(Name, signature and function of authorized person)

Table of Contents

Welcome	1	Mastership.....	37
Features	1	Dante LED indicators.....	38
How to Use This Manual	1	Routing Dante.....	38
Installing the Amp	2	Using Device Presets	40
Unpacking	2	Amplifier Presets	40
Required Items.....	2	User Presets.....	40
Installing the Amplifier	2	Saving and Opening Audio Architect Venue Files	41
Proper Cooling	2	Using the Event Log	42
Front Panel Overview	3	Using the GPIO Port	43
Rear Panel Overview	3	Hardware Specification	43
Making Hardware Connections and Applying Power	4	Configuring the Control Port Inputs	43
Wiring Input Connectors	4	Control Port Input Fields	44
Wiring Output Connectors.....	4	Configuring the Control Port Outputs	46
Connecting Network Cables	5	Control Port Output Fields.....	46
Connecting to AC Mains	5	Using the Aux Port	48
Startup Procedure	5	Sleep	48
Precautions.....	5	Amp Status	48
Application Examples	6	System Protection	49
Dual Mode Low-Z (2Ω, 4Ω, 8Ω, or 16Ω) Output Operation	6	Faults.....	49
Bridge Mode Low-Z (4Ω, 8Ω, or 16Ω) Output Operation	7	Thermal Limit.....	49
Dual Mode High-Z (70Vrms/100Vrms) Output Operation	8	Auto-Insertion High-Pass Filters.....	49
Bridge Mode High-Z (140Vrms/200Vrms) Output Operation	9	AC Under/Over Voltage Protection	49
Installing the Software and Configuring the Network	10	Breaker	49
Installing Audio Architect	10	Fan-Cooled Chassis	49
Launching Audio Architect	10	Universal Switching Power Supply.....	49
Configuring the Network Using NetSetter	11	Troubleshooting	50
The NetSetter Grid.....	13	Signal Path Block Diagram	53
Offline/Online Operation Explained	17	Specifications	54
Going Online.....	18	Dual Mode – All Channels Driven	54
Matching Devices	18	Bridge Mono Mode – All Channels Driven	54
Configuring the Inputs and Outputs	19	Input Sensitivity	54
Amplifier Mode Settings.....	19	Dimensions	54
Cascading Inputs	20	Performance Specifications.....	55
Configuring the Outputs for Bridge Mono Operation	21	AC Power Draw and Thermal Dissipation	56
Configuring the Outputs for High-Z/Low-Z Operation	22	Warranty (United States Only)	61
Adjusting Input Levels	23	Service	62
Speaker Tunings	24	Worldwide Service	62
Speaker Tuning Panel.....	24	US and Canada Service.....	62
Speaker Tuning Libraries.....	26	Service at a US or Canada Service Center.....	62
Loading a Library	26	Factory Service	62
Saving a Library	26	Factory Service Shipping Instructions	62
Library File Locations	27	Packing Instructions	63
Library Filename Conventions	27	Estimate Approval	63
Editing DSP Settings	28	Payment of Non-Warranty Repairs.....	63
Configuration Panel	29	Service Return Authorization Request	64
Source Routing Panel	31		
Input/Output Delay	33		
Input/Output Equalization.....	34		
Crossover	35		
LevelMax™ Suite Limiters.....	36		
Using Dante	37		
Dante Introduction	37		
Dante Specifications	37		
Connecting Dante Ports	37		
Fault Tolerance.....	37		

Welcome



Thank you for purchasing a Crown DriveCore™ Install DA Series installation amplifier, one in a complete line of high-performance amplifiers based on exclusive DriveCore technology. The DCi DA Series amplifiers are designed, engineered and manufactured to the industry's highest quality standards and provide system integrators with the advanced features and flexibility required for challenging 21st-century installed-sound applications. Versatile, compact, and highly energy-efficient, DCi DA Series amplifiers continue the unbroken Crown tradition of leadership in professional and commercial power amplifier technology.

Features

- Exclusive multi-patented DriveCore™ technology, which combines hundreds of discrete circuits into one chip for better performance, lower power consumption, and improved reliability
- Dante™ digital audio transport
- Configurable using HiQnet® Audio Architect™
- Priority input router
- Digital signal processing (input/output EQ filters, crossover, input/output delay, LevelMAX™ limiters)
- Programmable general purpose input/output control port
- Universal power supply with PFC for reduced current draw and industry-leading efficiency
- Monitoring and control over TCP/IP
- Real-time continuous load monitoring
- Remote standby (Sleep mode is activated via the Aux port)
- Power saving modes (power consumption in Sleep mode is less than 1W)
- Adjustable auto-standby
- 70Vrms/100Vrms direct drive (each channel individually configurable for low-Z or high-Z operation)
- 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 operation)

How to Use This Manual

This manual provides the necessary information to safely and correctly setup and operate your Crown 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. Also, for your protection, please register your product at <http://warranty.harmanpro.com/>. And save your bill of sale—it's your official proof of purchase.

Installing the Amp

Unpacking

Unpack the amplifier and inspect it 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 Crown 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.

Required Items

For installation, you will need the following items (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.

Installing the Amplifier



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

Figure 1 shows the dimensions of the DCi DA Series amplifiers. The DCi 4|1250DA and DCi 8|600DA models are 3.5 in. (8.9 cm) high, 19 in. (48.3 cm) wide, and 17 in. (43.2 cm) deep. The DCi 4|300DA, DCi 4|600DA, and DCi 8|300DA models have the same width and height dimensions but are 14.25 in. (36.2 cm) deep.

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.

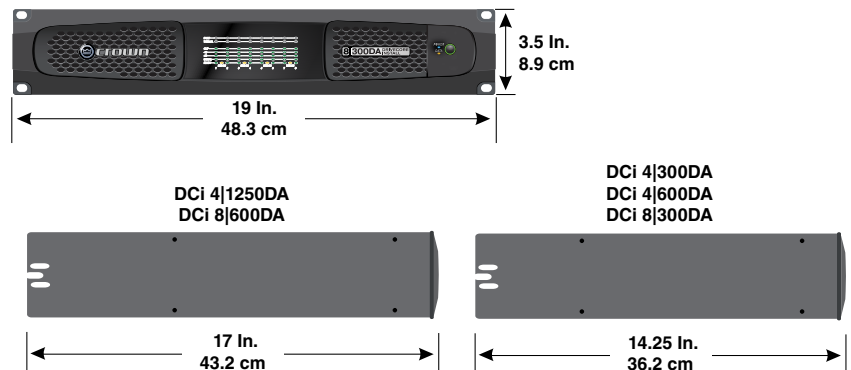


Figure 1: Dimensions

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

Air flow is front to back as illustrated in **Figure 2**.

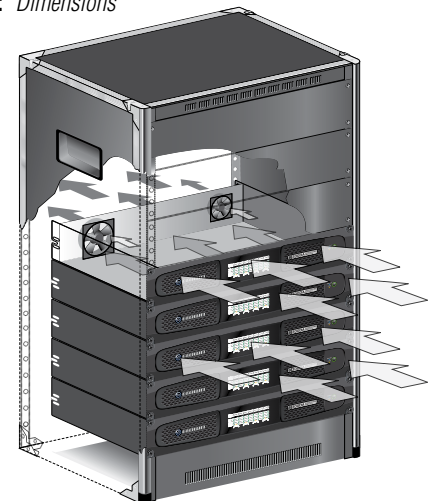


Figure 2: Proper rack venting

Front Panel Overview

Indicators

Fault Indicator (red): Flashes when the amplifier output channel has stopped operating.

Thermal Indicator (red): Illuminates when the channel reaches 80 degrees Celsius, indicating the onset of protection compression. If the temperature continues to rise, the amplifier output will shut off at 98 degrees Celsius and remain off until a safe operating temperature is reached.

Clip Indicator (red): Illuminates when any of the following conditions are present: onset of audible clipping, clipped signal detected at input, clipped signal detected at output, engagement of protection circuits.

Level and Signal Indicators (green): Three LEDs indicate signal presence and level as follows: -10 = 10 dB below rated output, -20 = 20 dB below rated output, Signal = -40 dBU input level.

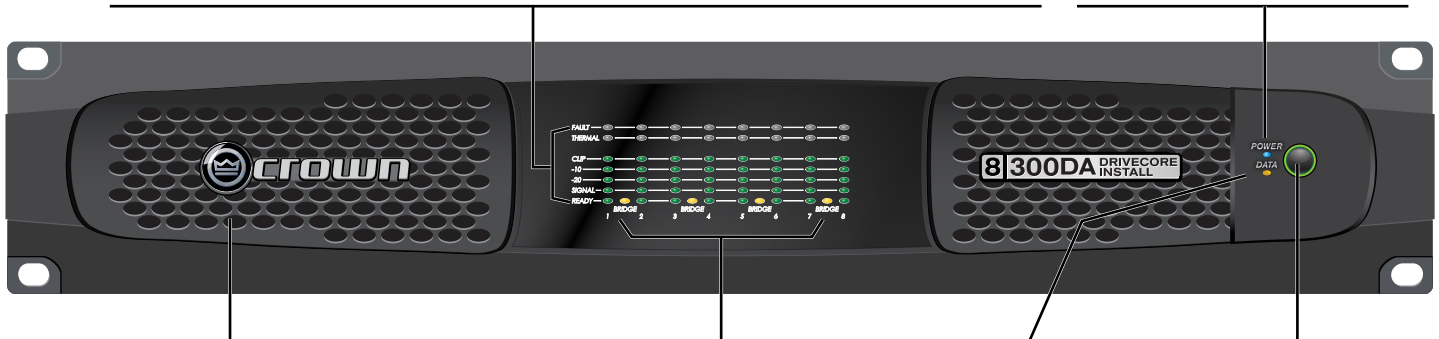
Ready Indicator (green): When this indicator lights, the amplifier is ready to pass audio.

Power Indicator (blue)

Illuminates when the amplifier is on and an acceptable AC line voltage is present.

Blinks when the AC line voltage is outside of the $\pm 10\%$ range.

Flashes for 4 seconds if the Power button is pressed when the amplifier is in Sleep mode.



Cooling Vent Grille

Provides cooling air flow. Do not block or cover these vents.

Bridge Mode Indicator (yellow)

Illuminates when Bridge mode is activated for the channel pair (only odd-numbered input channels will be active).

Data Indicator (yellow)

Illuminates when data is present on the data network. Dante traffic is not indicated on this LED.

Power Button

Power Ring Indicator (Green) - Illuminates when the amplifier is plugged into a wall outlet with acceptable power. NOTE: The Power button is disabled when the AUX port Sleep circuit is used.

NOTE: DCi 81300DA (8-channel) model shown. Indications per channel pair are identical for 4-channel models.

Rear Panel Overview

Reset Switch/Circuit Breaker (DCi 41250DA and 81600DA models only)

If the current draw of the amplifier exceeds safe limits, this breaker automatically disconnects the power supply from the AC mains. The switch resets the circuit breaker.

Ethernet*

For monitoring and control of the amplifier over Cat5e wiring via the Audio Architect software.

Dante*

Connect to a Dante audio network using Cat5e or higher wiring. (Cat5 wiring can be used for purely 100Mbps networks.)

Data LED

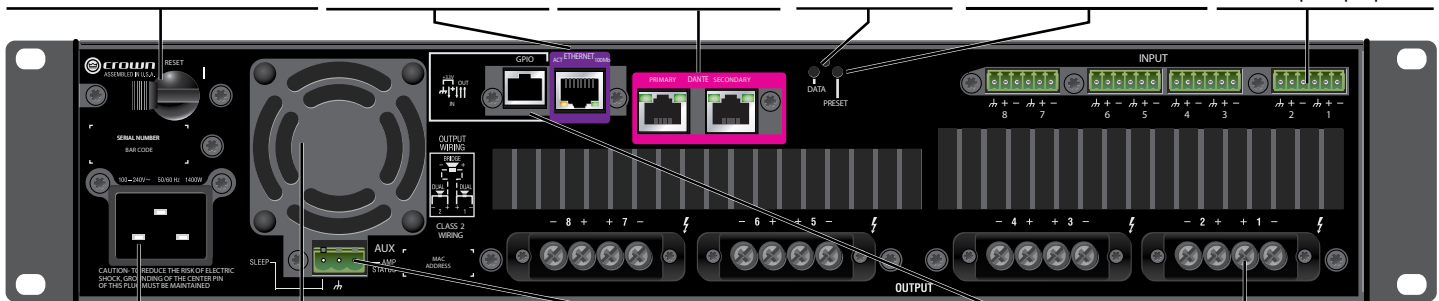
Data LED indicates HiQnet data activity.

Preset LED

Preset LED blinks successively to indicate preset number (e.g., if the LED blinks 5 times, pauses, then repeats, the amp is on preset 5).

Input Connectors

One balanced, high-impedance, 6-pin plug-in connector per input pair.



AC Power Inlet

The DCi 41250DA and 81600DA models have a 20A IEC inlet. The DCi 41300DA, 41600DA, and 81300DA models have a 15A IEC inlet. The AC inlet accepts ~100–240V, 50/60Hz.

Cooling Fan Outlet

Outlets for cooling air flow. Do not block or cover these outlets.

Auxiliary Connector

This 3-pin plug-in type connector enables Sleep mode and provides monitoring of amp status—unless the amplifier is in one of the following states: off, sleep, or fault.

General Purpose Input/Output (GPIO)

This RJ-11 connector provides 2 analog input controls and 2 digital output controls.

Output Connectors

One four-pole, touch-proof terminal strip per channel pair. Accepts up to 10 AWG wire or terminal forks.

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

NOTE: DCi 81300DA (8-channel) back panel shown. 4-channel models have the same features but half as many audio input/output channels.

Making Hardware Connections and Applying Power

Wiring Input Connectors

Crown 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 Crown (P/N 5024623).

Figure 3 shows connector pin assignments for balanced wiring, and **Figure 4** shows connector pin assignments for unbalanced wiring. Note that for bridged output operation, only the odd-numbered input channels (1,3,5,7) should be wired for each bridged pair.

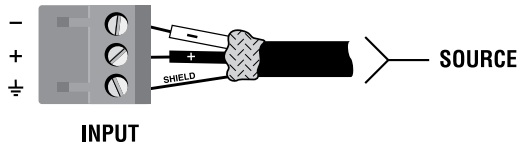


Figure 3: Balanced wiring

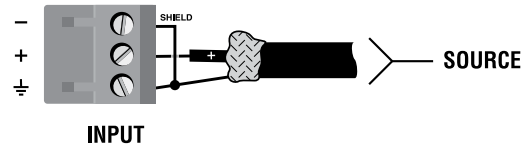


Figure 4: Unbalanced wiring

For Dante audio connections, standard Category 5e or 6 Ethernet cabling should be used for Gigabit networks. Category 5 cabling can be used for 100Mbps network connections. Primary and Secondary Dante ports are provided; Dante audio traffic is duplicated to both of these ports. The Secondary port can be connected to a second network switch for redundant operation in the event the Primary cable connection or switch is compromised.

Wiring Output Connectors

IMPORTANT: The amplifier output mode (Low-Z, High-Z) should be properly configured for the application before connecting the speakers. By default, all outputs are configured for low-Z operation. See **"Configuring the Outputs for High-Z/Low-Z Operation"** on page 22 for more information.

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 in Low-Z mode (i.e., in series, parallel, or series-parallel), be certain the total system impedance is within the allowed specification for the output. When multiple loudspeakers are connected to one output in High-Z mode, be certain total tapped power is below the rated power output for the channel. See **"Specifications"** on page 54 for supported load specifications.

NOTE: Crown has designed an output cover that does not need to be removed to connect the output wiring.

Crown recommends using the included spade connectors and two- or four-conductor, heavy-gauge speaker wire. You may use terminal forks up to 10 AWG or bare wire for the output connectors (see **Figure 5**). For best results, Crown recommends Panduit® part# PV10-6LF-L or equivalent terminal forks. For bare wire, it is highly recommended that output wiring is tinned. To reduce strain on input and output wiring, Crown recommends the use of horizontal lacer bars. For best results, Crown recommends Middle Atlantic® part# LBP-4R90 or equivalent horizontal lacer bar.

For low-impedance loads, 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

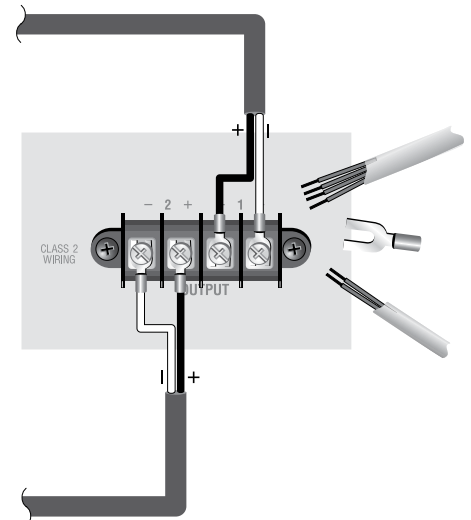


Figure 5: Wiring output connectors



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 6.

Connecting Network Cables

When making connections to the control network and Dante ports, the included ferrites should be attached to the network and Dante cables at the back of the amplifier as shown in **Figure 6**. Both a small and large ferrite should be attached to each cable as shown.

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

Connecting to AC Mains

Connect the amplifier to the AC mains power source (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 this 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. DCi DA amplifiers use a universal power supply. The AC voltage requirements are ~100V to ~240V ($\pm 10\%$), 50/60Hz. If the AC line voltage exceeds this acceptable range, the blue **Power** LED will flash and the amplifier will not pass audio until the line voltage returns to a safe operating level.

Startup Procedure

When first turning on the amplifier, perform the following:


1. Turn down the level of the audio source.
2. Turn on the amplifier's **Power** switch. The **Power** indicator should light.
3. Turn down the amplifier **Levels** in Audio Architect. See "**Adjusting Input Levels**" on page **23** for more information.
4. Turn up the audio source to an optimum level. Ensure that at no point in the signal chain is the signal being clipped in any way.
5. In Audio Architect, turn up the amplifier **Levels** to the desired level.

IMPORTANT: Before making any wiring or installation changes, turn off the amplifier and disconnect the power cord.

For help with determining your system's optimum gain structure (signal levels) please refer to the Crown Amplifier Application Guide, available online at www.crownaudio.com.

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 see "**Wiring Input Connectors**" and "**Wiring Output Connectors**" on page **4**. 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. The load you save may be your own!
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 mixer, 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: Crown is not liable for damage that results from overdriving other system components.

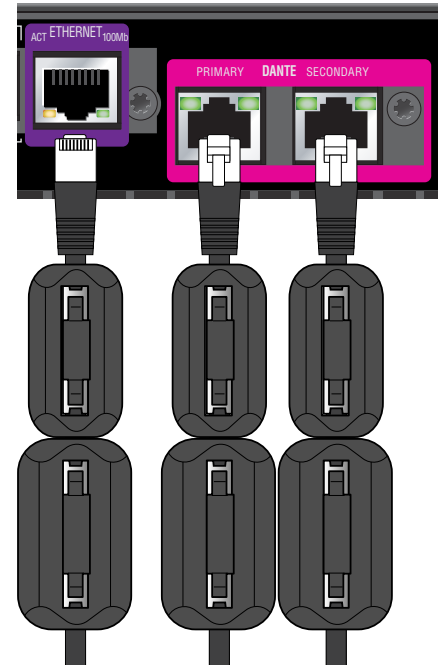


Figure 6: Ferrites attached to network cables

Application Examples

Dual Mode Low-Z (2Ω, 4Ω, 8Ω, or 16Ω) Output Operation

Typical input and output wiring, along with Audio Architect software settings, are shown in **Figure 7** and **Figure 8**.

Inputs

If using analog inputs, connect the inputs with wiring in place for each channel. If the same signal is to drive both outputs of a channel pair, the input signal can be sent to adjacent amplifier channels using the "Y" options (see **Figure 8**).

Outputs

Maintain proper polarity (+/−) on output connectors. Connect the channel 1 speaker's positive (+) lead to the amplifier channel 1 positive terminal; repeat for negative (−). Repeat channel 2 wiring as for channel 1, and for any subsequent channel pairs on multichannel models.

Dante

When connecting via Dante, two Dante-equipped devices can be connected directly together using the Primary Dante ports. If connecting more than two Dante devices, the Primary ports of each device should be connected to a network switch (this is referred to as a "star" network topology).

100Mbps network switches and Category 5 cabling can be used for smaller Dante networks, where smaller channel counts and/or lower sample rates are used. For optimum performance and improved reliability, a Gigabit network and Category 5e or Category 6 cabling should be used. Visit the Audinate® website for more information.

To provide fault protection when using Dante, connect the Secondary ports of all Dante devices to a secondary (separate) network switch. If any "primary" cable connections or the "primary" switch fail, the "secondary" Dante network will automatically take over.

For further information on Dante, refer to **"Using Dante" on page 37**.

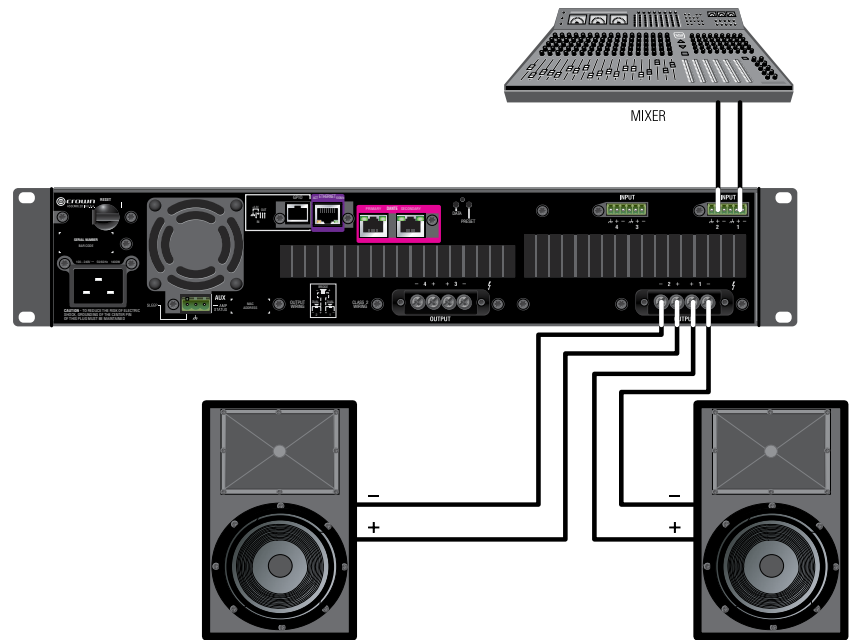


Figure 7: System wiring in dual mode

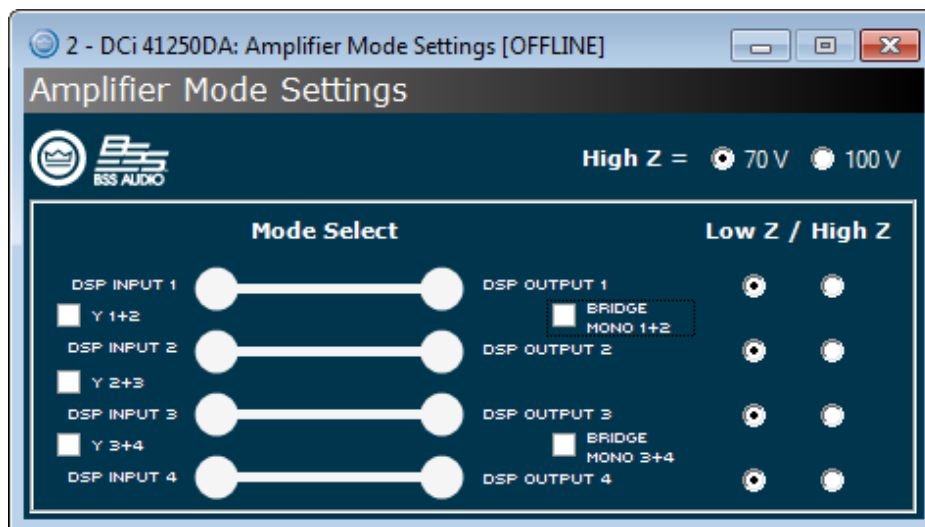


Figure 8: Audio Architect amplifier mode settings

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

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

Bridge Mode Low-Z (4Ω, 8Ω, or 16Ω) Output Operation

Typical input and output wiring, along with software settings, are shown in **Figure 9** and **Figure 10**.

Inputs

If using analog inputs, connect the inputs to the odd-numbered channels (1,3,5,7) only. Even-numbered inputs are disabled when bridge mono mode is used.

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.

Dante

When connecting via Dante, two Dante-equipped devices can be connected directly together using the Primary Dante ports. If connecting more than two Dante devices, the Primary ports of each device should be connected to a network switch (this is referred to as a "star" network topology).

100Mbps network switches and Category 5 cabling can be used for smaller Dante networks, where smaller channel counts and/or lower sample rates are used. For optimum performance and improved reliability, a Gigabit network and Category 5e or Category 6 cabling should be used. Visit the Audinate website for more information.

To provide fault protection when using Dante, connect the Secondary ports of all Dante devices to a secondary (separate) network switch. If any "primary" cable connections or the "primary" switch fail, the "secondary" Dante network will automatically take over.

For further information on Dante, refer to **"Using Dante" on page 37**.



Figure 9: System wiring in bridge mono mode

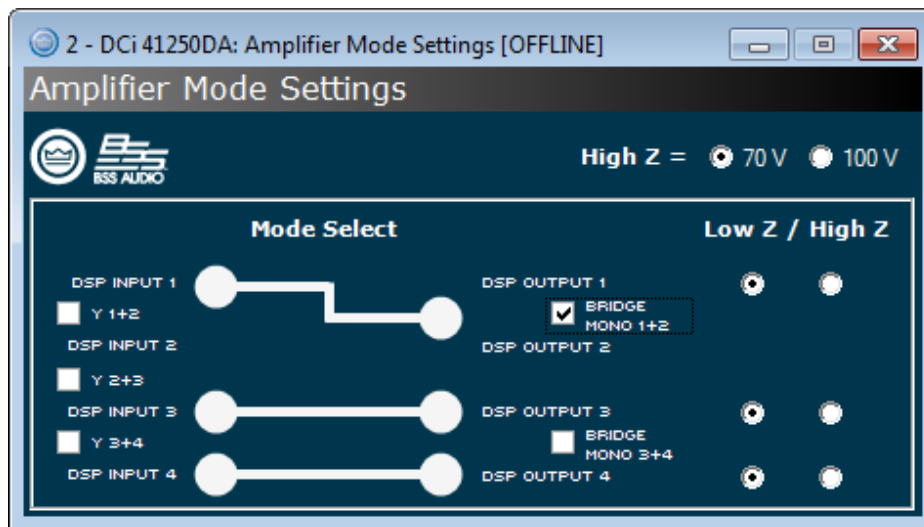


Figure 10: Audio Architect amplifier mode settings

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

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

Dual Mode High-Z (70Vrms/100Vrms) Output Operation

Typical input and output wiring, along with software settings, are shown in **Figure 11** and **Figure 12**.

Inputs

If using analog inputs, connect the inputs with wiring in place for each channel. If the same signal is to drive both outputs of a channel pair, the input signal can be sent to adjacent amplifier channels using the "Y" options (see **Figure 12**).

Outputs

Maintain proper polarity (+/-) on output connectors. Connect the channel 1 speaker's positive (+) lead to the amplifier channel 1 positive terminal; repeat for negative (-). Repeat channel 2 wiring as for channel 1, and for any subsequent channel pairs on multichannel models.

Dante

When connecting via Dante, two Dante-equipped devices can be connected directly together using the Primary Dante ports. If connecting more than two Dante devices, the Primary ports of each device should be connected to a network switch (this is referred to as a "star" network topology).

100Mbps network switches and Category 5 cabling can be used for smaller Dante networks, where smaller channel counts and/or lower sample rates are used. For optimum performance and improved reliability, a Gigabit network and Category 5e or Category 6 cabling should be used. Visit the Audinate website for more information.

To provide fault protection when using Dante, connect the Secondary ports of all Dante devices to a secondary (separate) network switch. If any "primary" cable connections or the "primary" switch fail, the "secondary" Dante network will automatically take over.

For further information on Dante, refer to **"Using Dante" on page 37**.

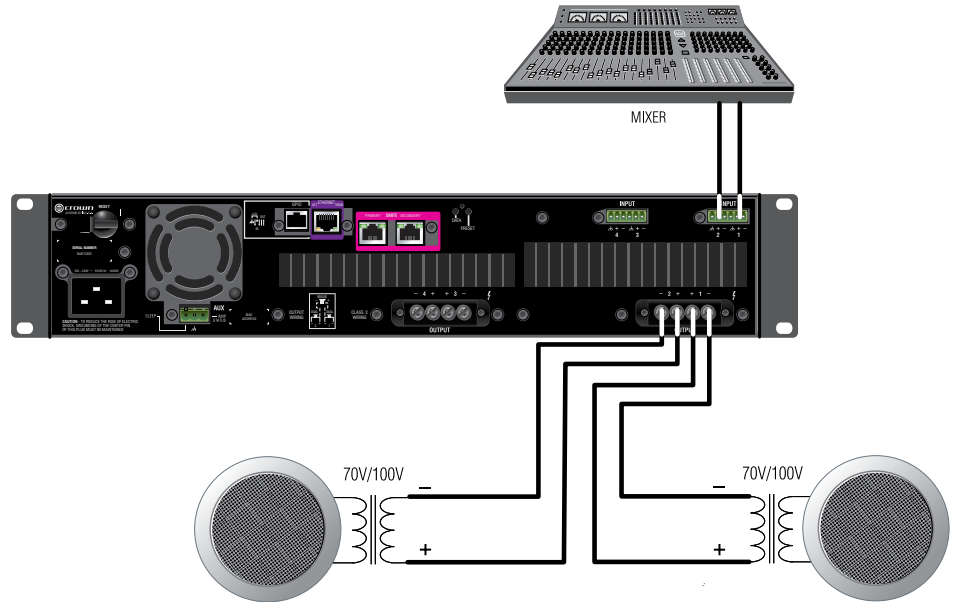


Figure 11: System wiring for 70Vrms/100Vrms operation

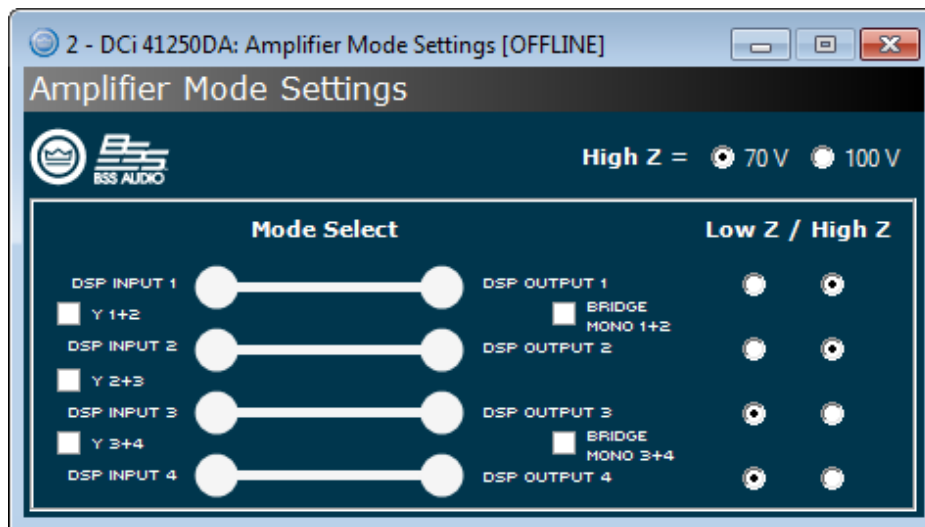


Figure 12: Audio Architect amplifier mode settings

NOTE: A 35Hz high-pass filter is automatically inserted when an amplifier output channel is configured for high-Z operation.

NOTE: Amplifier outputs can be independently configured for high-Z or low-Z operation, while 70V/100V selection is global.

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

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

Bridge Mode High-Z (140Vrms/200Vrms) Output Operation

Typical input and output wiring, along with software settings, are shown in **Figure 13** and **Figure 14**.

Inputs

If using analog inputs, connect the inputs to the odd-numbered channels (1,3,5,7) only. Even-numbered inputs are disabled when bridge mono mode is used.

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.

Dante

When connecting via Dante, two Dante-equipped devices can be connected directly together using the Primary Dante ports. If connecting more than two Dante devices, the Primary ports of each device should be connected to a network switch (this is referred to as a "star" network topology).

100Mbps network switches and Category 5 cabling can be used for smaller Dante networks, where smaller channel counts and/or lower sample rates are used. For optimum performance and improved reliability, a Gigabit network and Category 5e or Category 6 cabling should be used. Visit the Audinate website for more information.

To provide fault protection when using Dante, connect the Secondary ports of all Dante devices to a secondary (separate) network switch. If any "primary" cable connections or the "primary" switch fail, the "secondary" Dante network will automatically take over.

For further information on Dante, refer to **"Using Dante" on page 37**.

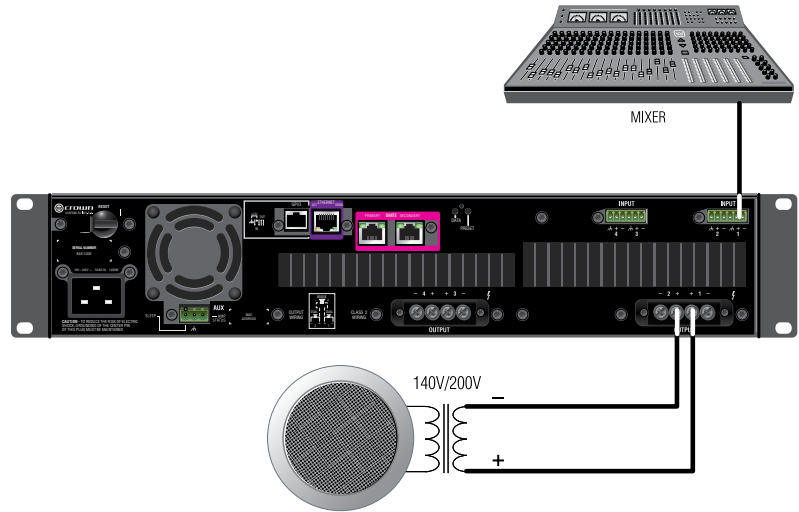


Figure 13: System wiring for 140Vrms/200Vrms operation

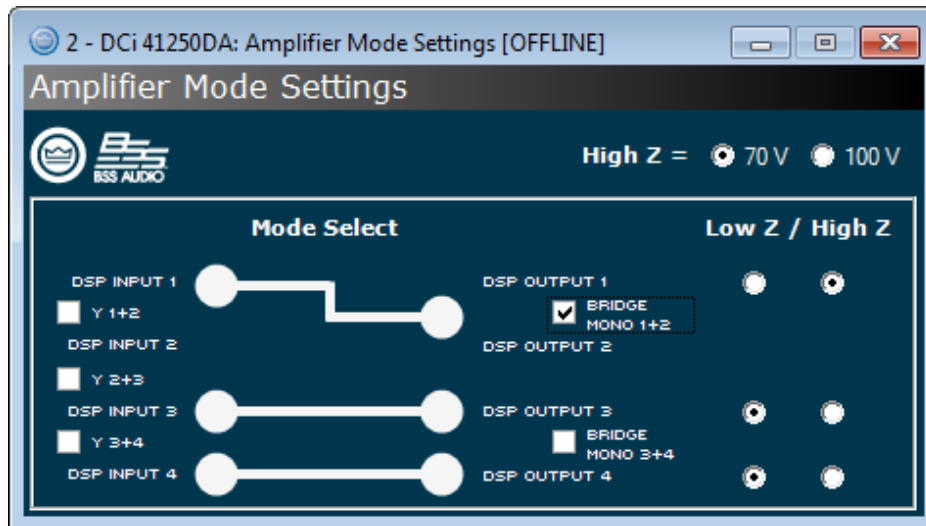


Figure 14: Audio Architect amplifier mode settings

NOTE: A 35Hz high-pass filter is automatically inserted when an amplifier output channel is configured for high-Z operation.

NOTE: Amplifier outputs can be independently configured for high-Z or low-Z operation, while 70V/100V selection (140V/200V when bridged) is global.

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

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

Installing the Software and Configuring the Network

Installing Audio Architect

The DCi DA Series amplifiers are configured using the HiQnet Audio Architect software. The latest version of Audio Architect can be downloaded from <https://audioarchitect.harmanpro.com/en-US/software>. To install Audio Architect, launch the software installer and follow the on-screen installation instructions.

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. To quickly configure the DCi DA Series amplifiers for a network, connect all of the amplifiers and the configuration computer to the same network. See "**Configuring the Network Using NetSetter**" on page 11 for information on using NetSetter to configure all connected HiQnet devices for proper network connectivity.

NOTE: The Dante digital audio transport connectors carry Dante audio only and cannot be used for control and monitoring of the amplifier.

Launching Audio Architect

After launching Audio Architect, the software will scan the network for HiQnet devices and a prompt will appear if the connected HiQnet devices are properly configured for the network and discovered (see **Figure 15**). Checking the **Add discovered devices to the Venue automatically** checkbox can save a step when getting started.

If you decide not to check the **Add discovered devices to the Venue automatically** checkbox, all devices that are discovered on the network will be found under the Add Devices menu on the left-hand side of the main Audio Architect window (see **Figure 16**). If devices are not discovered and displayed in the Add Devices menu tree as shown, the device and/or network may not be configured correctly. See "**Configuring the Network Using NetSetter**" on page 11 for information on configuring network settings.

NOTE: Illustrations and some text references are for channel pair 1-2 and 3-4 only. Note that channels 5-6 and 7-8 in 8-channel models can be programmed in the same manner, and each channel may be configured independently.

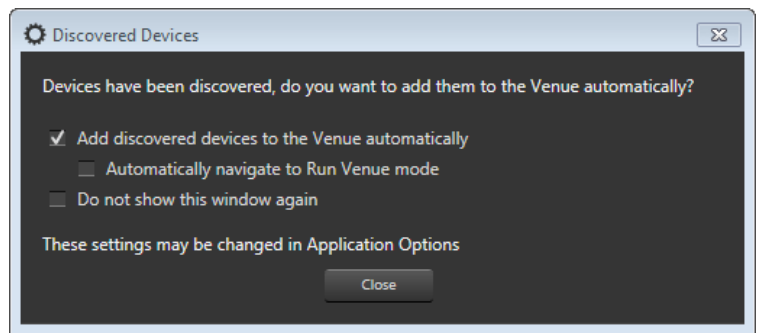


Figure 15: Discovered Devices prompt

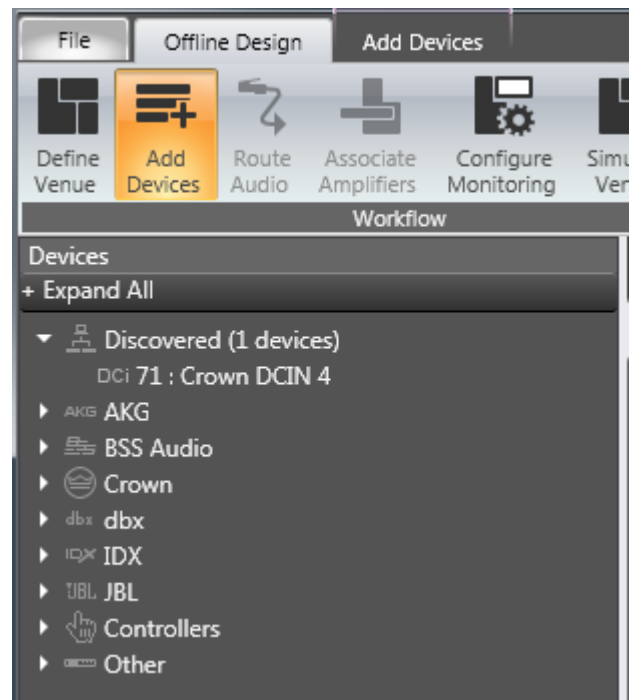


Figure 16: Add Devices tab tree menu

Configuring the Network Using NetSetter

NetSetter is a software tool that 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 <https://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.

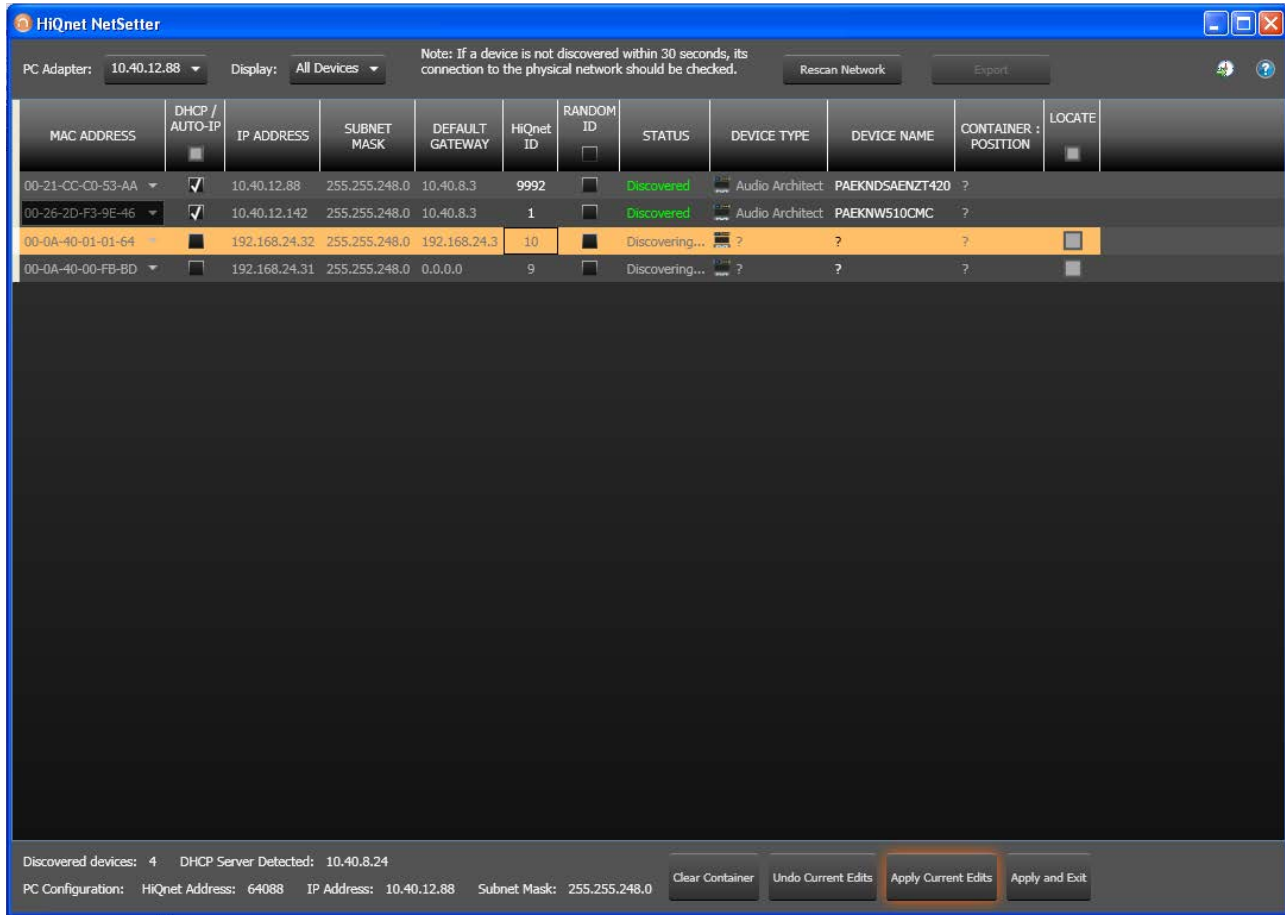


Figure 17: NetSetter window

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 and, when selected, 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®.

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 when clicking on either the **Apply Current Edits** or **Apply and Exit** button 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 18** will appear. Clicking **OK** will apply the edits you have made since opening NetSetter. Clicking **Cancel** will return you to the program without applying the edits made.

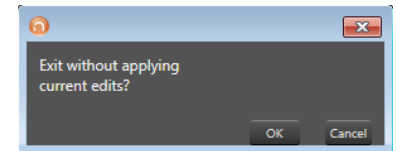


Figure 18: Confirmation window

The NetSetter Grid

The NetSetter grid is divided into the 12 sections described below.



Figure 19: 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, Dante 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.

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.

NOTE: For additional information on network configuration, please visit <https://audioarchitect.harmanpro.com/en-US>.

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.

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 20**).

NOTE: 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 21**). The name ID can be edited in the Properties section 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.

The small box located below the rack allows quick access to the following amplifier factory panels:

- Factory Master panels
- Monitor panels
- Meter panels
- Level and Mute panels

TIP: Double-clicking an amplifier icon will open the device's Configuration panel (see **Figure 24 on page 19** for more information on the Configuration panel).

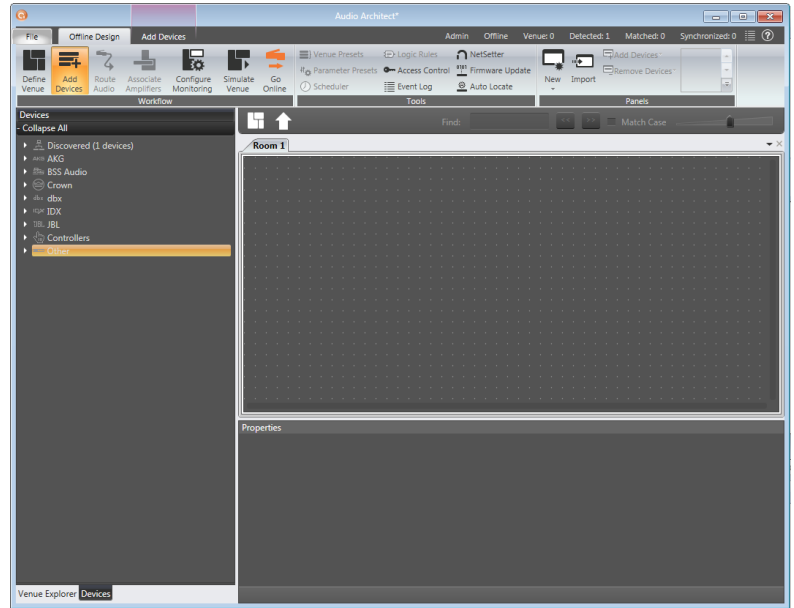


Figure 20: Main Audio Architect window

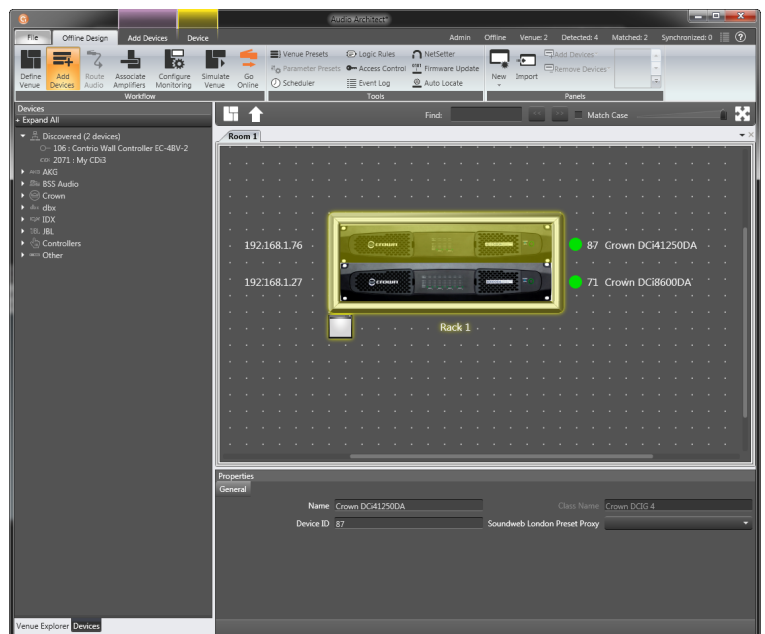


Figure 21: Device information

Going Online

Before any changes can be made to the amplifier settings, you must first go online in Audio Architect.

Follow these steps to go online:

1. Ensure the amplifier has been added to the venue (an icon of the amplifier should appear in the Room window).
2. From the Offline Design ribbon at the top of the 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.
3. 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 18 for more information.

- 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, rack, and room in the venue design (see **Figure 22**). This provides the ability to send/receive data either to/from a single device, all devices within a rack, or the entire venue with a single click. Click the **Send** icon to send settings from Audio Architect to the device(s), or click the **Receive** icon to pull the current settings from the device(s) and display them in Audio Architect.

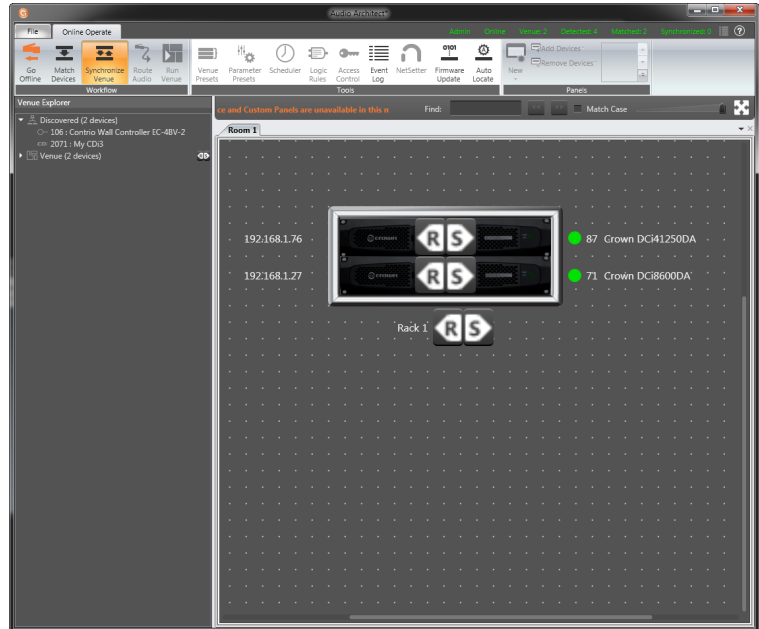


Figure 22: Send and Receive icons

Matching Devices

The Match Devices ribbon appears at the top of the main Audio Architect window after clicking the **Go Online** button from the Offline Design ribbon, then clicking the **Match Devices** button from the Online Operate 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 selecting the Match Devices ribbon and then clicking the **Auto-Match Venue** button (see **Figure 23**).

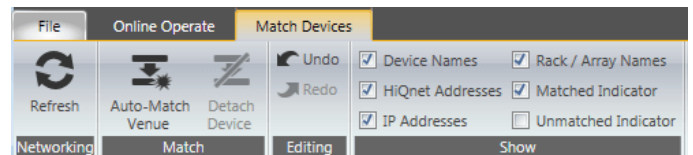


Figure 23: Match Devices ribbon

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, HiQnet Addresses, IP Addresses, Rack/Array Names, Matched Indicator, and Unmatched Indicator.

Configuring the Inputs and Outputs

Amplifier Mode Settings

Figure 24 shows the Configuration panel for a 4-channel DCi DA amplifier. The 8-channel amplifier Configuration panel has the same feature set, but with an additional four rows (channels) of DSP icons. The DCi DA amplifier includes digital signal processing (DSP), multiple input/output routing options, and a comprehensive diagnostics feature set. All of these features can be accessed from the Configuration panel.

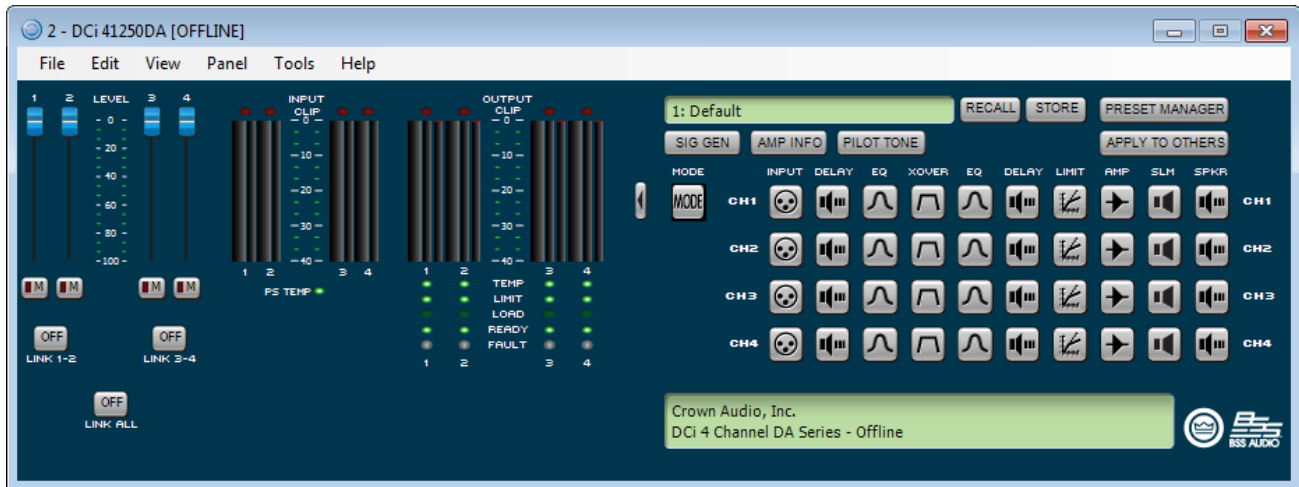


Figure 24: Configuration panel (4-channel amp model shown)

The DCi DA amplifiers are very capable and flexible amplifiers. In the Amplifier Mode Settings window (see Figure 25), the following options can be adjusted:

- Inputs can be cascaded (or "Y'ed") to amplifier outputs
- Each output pair can operate as dual mono channels or bridged for mono operation
- Select between high-Z or low-Z output operation per channel
- Select between 70Vrms or 100Vrms output operation (only affects outputs configured for high-Z operation)

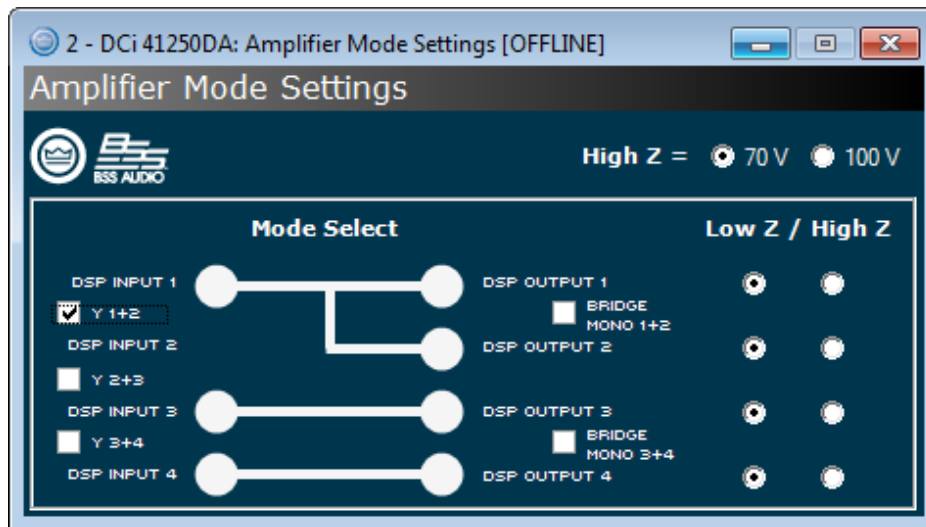


Figure 25: The Amplifier Mode Settings window

Cascading Inputs

Cascading the analog inputs, or "Y-ing channels", gives more flexibility to the installation of a DCi DA amplifier (see **Figure 26**). One input can be used to drive some or all of the amplifier outputs.

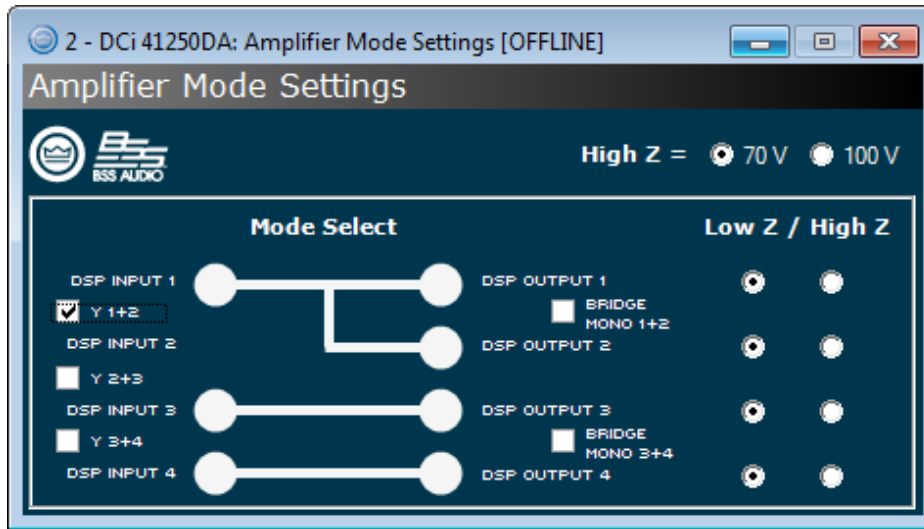


Figure 26: Use the "Y" checkboxes to cascade input channels

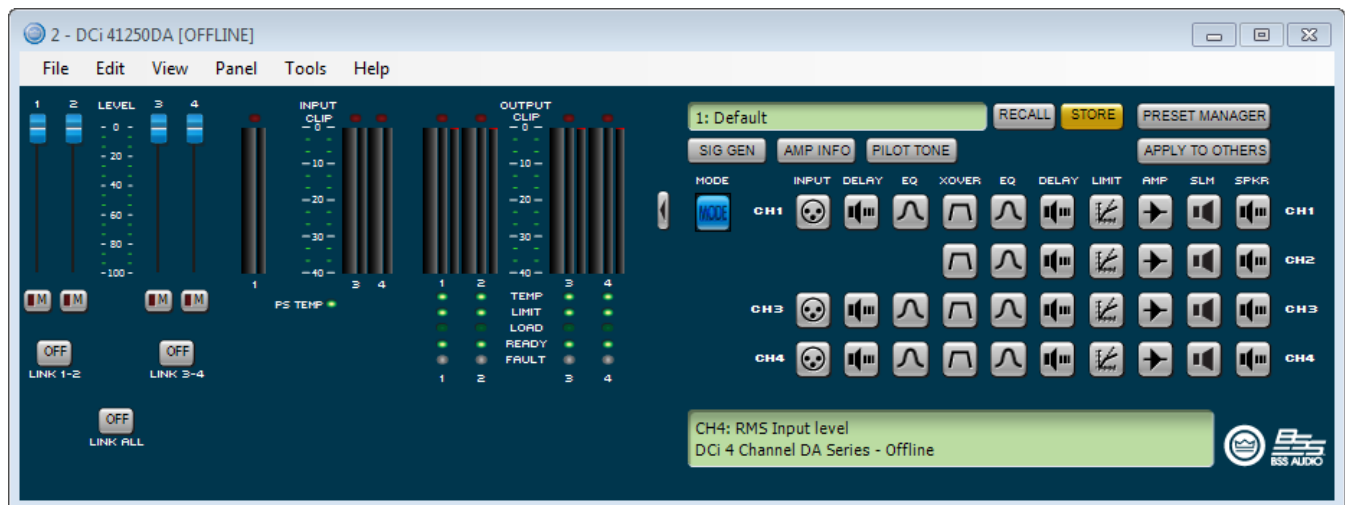


Figure 27: With the "Y 1+2" box checked, both output Ch.1 and Ch.2 are fed by input Ch.1 and input processing is organized accordingly

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 (see **Figure 27**).

Configuring the Outputs for Bridge Mono Operation

The DCi DA amplifier outputs can be bridged to increase the power and voltage available at the output of the amplifier. The amplifier can be bridged in the Amplifier Mode Settings window (see **Figure 28**). When an output channel pair is configured for bridge mono operation, only the first (odd) input channel of the pair should be wired.

NOTE: The Low-Z and High-Z options are still available in bridge mono mode. If the amplifier outputs are configured for bridge mono operation and the High-Z option is selected, the amplifier will produce 140Vrms (with 70V selected) or 200Vrms (with 100V selected).

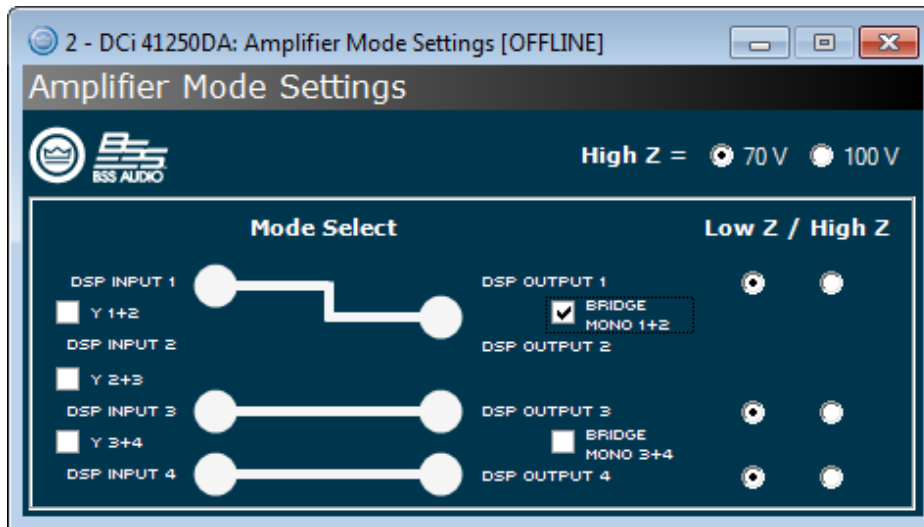


Figure 28: Bridge mono configuration

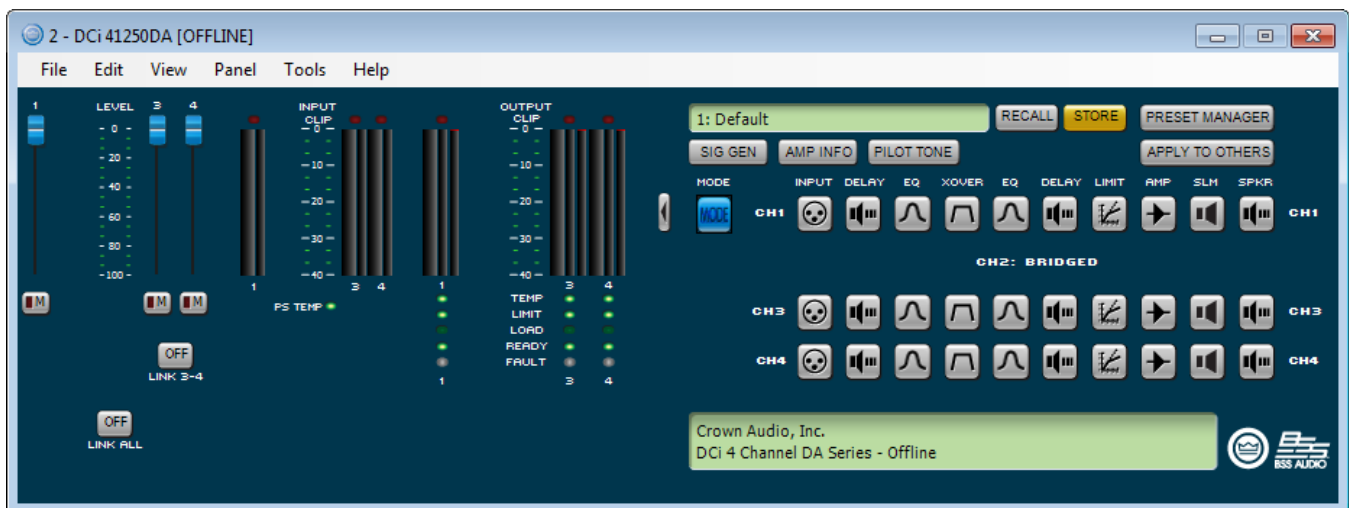


Figure 29: DSP chain configured for bridge mono operation

NOTE: When an output is configured for bridge mono operation, only one channel in the channel pair DSP will be available (see **Figure 29**).

Configuring the Outputs for High-Z/Low-Z Operation

Each amplifier output channel can be configured for high-Z or low-Z operation from the Amplifier Mode Settings window (see **Figure 30**).

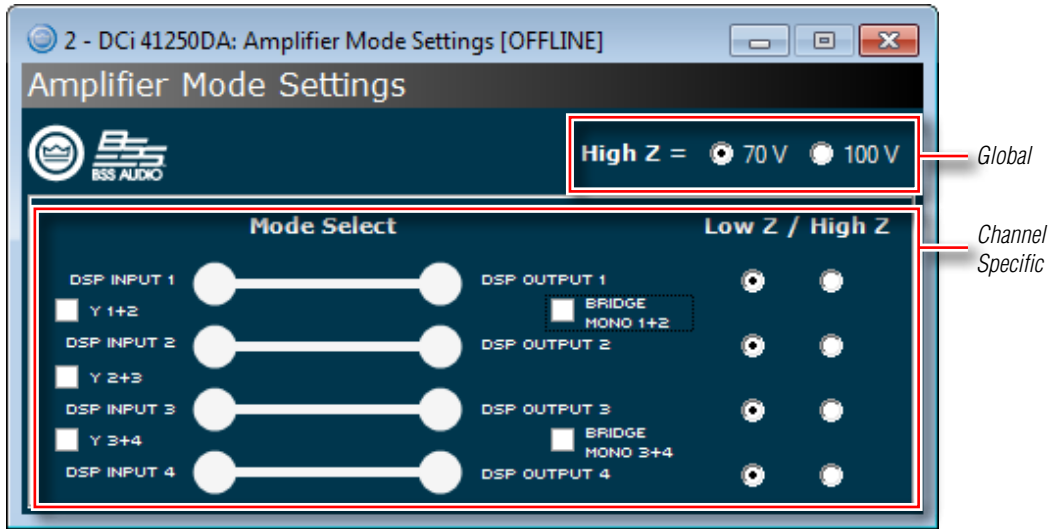


Figure 30: Low-Z/High-Z configuration

NOTE: The 70Vrms/100Vrms setting is global and affects all output channels configured for high-Z operation.

Adjusting Input Levels

The DCi DA amplifiers can use both analog and/or Dante inputs. Input levels can be adjusted from the Input Configuration panel, which can be accessed by double-clicking a channel's **Input** icon and then clicking the **Input Configuration** button from the Source Routing panel (see **Figure 31**). This opens the Input Configuration panel, where the amplifier input levels can be adjusted to accommodate different signal levels from the sources. The meters on this panel display both peak and rms levels. The **Gain Mode** setting (maximum analog input level for the amplifier) can also be set here, which will affect all analog input channels.

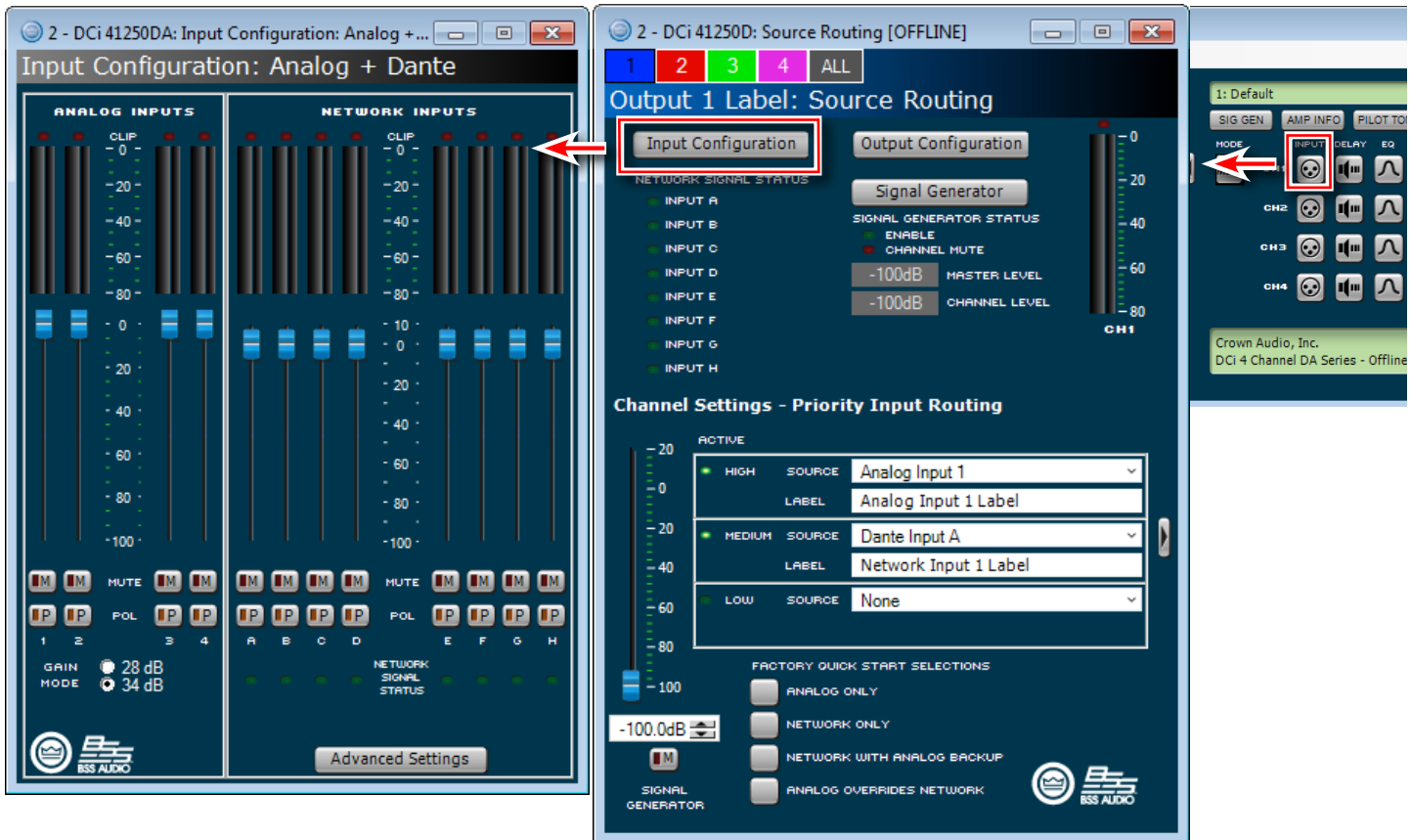


Figure 31: Input Configuration panel

TIP: To maximize the signal-to-noise ratio when using the analog inputs, select the **Gain Mode** setting that most closely matches the maximum output level of the source device yet doesn't allow the inputs of the amplifier to clip.

Speaker Tunings

The DCi DA amplifiers have a wide variety of onboard digital signal processing (DSP). The HiQnet Audio Architect software is used to adjust DSP settings.

Crown and JBL engineers have designed DriveCore Install DSP settings that are optimized for various JBL loudspeakers. Speaker tunings can be downloaded from www.jblpro.com. The speaker tuning system is software library-based rather than device preset-based. This provides the following benefits:

- Organize an unlimited number of tunings into an unlimited number of libraries
- Recall, store, and delete speaker tunings quickly and easily
- Channel/band-specific tunings mean no more managing tunings across channels or amp chassis; this also yields a logical one-to-one correlation of amp output to transducer/band
- Faster tuning load/store times, making it much easier to compare and run A/B tests on multiple tunings without audio dropouts
- Allows for logical grouping and archiving of similar tunings (e.g., Screen Array Series, VTX Series, etc.)
- Tunings are held within the amp but are de-coupled from device presets, eliminating the concern of accidentally deleting or changing other device parameters
- Speaker tunings only contain the parameters required for speaker tunings, allowing presets to be used for complete device configurations—as intended
- Simpler and faster development of third-party and user tunings and libraries, encouraging more people to develop custom or third-party tunings
- Single-panel access to all required tuning parameters, making it easier and faster to create/modify tunings

Speaker Tuning Panel

To open the Basic Speaker Tuning panel, double-click the **Speaker Tuning** icon for the desired channel from the Configuration panel (see **Figure 32**).

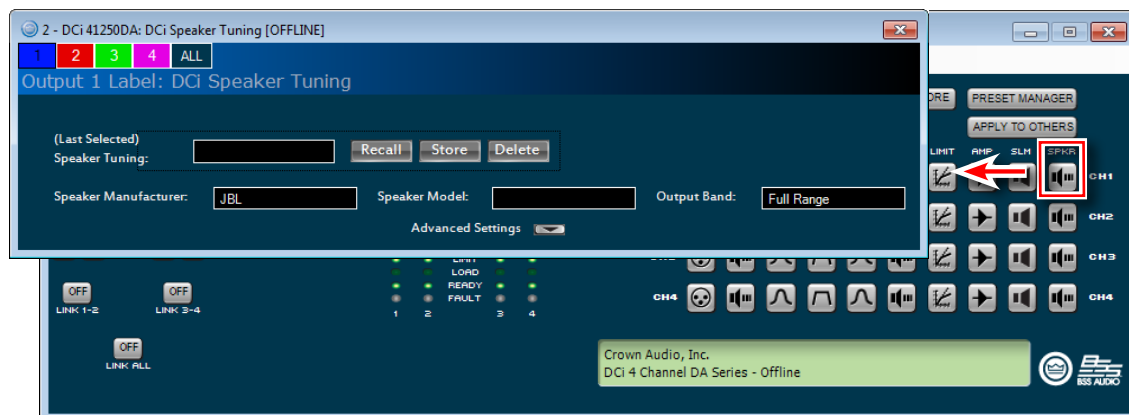


Figure 32: Basic Speaker Tuning panel

Recall Button

This button loads the selected tuning from the working library (dropdown list) into the respective channel.

Store Button

This button stores the Speaker Tuning panel settings from the respective channel into the working library with a specified user name. The stored tuning is then available in the list for any other channel or amp.

Delete Button

This button deletes the selected tuning from the working library.

Speaker Manufacturer Field

This field displays a text description of the respective speaker manufacturer (e.g., JBL, custom, etc.). The data for this parameter is stored within the tuning and also within the device settings.

Speaker Model Field

This field displays a text description of the respective speaker model (e.g., 3722, 3-Way, etc.). The data for this parameter is stored within the tuning and also within the device settings.

Output Band Field

This field displays a text description of the respective tuning band (e.g., LF, MF, HF). The data for this parameter is stored within the tuning and also within the device settings.

Advanced Settings Arrow Button

This button expands the window to display the advanced speaker tuning parameters.

Advanced Speaker Tuning panel functions are available to create/modify speaker tunings. To open the Advanced Speaker Tuning panel, either hold CTRL-ALT-SHIFT while double-clicking the **Speaker Tuning** icon (see **Figure 33**) or click the **Advanced Settings Arrow** button on the bottom of the Basic Speaker Tuning panel (see **Figure 32**).

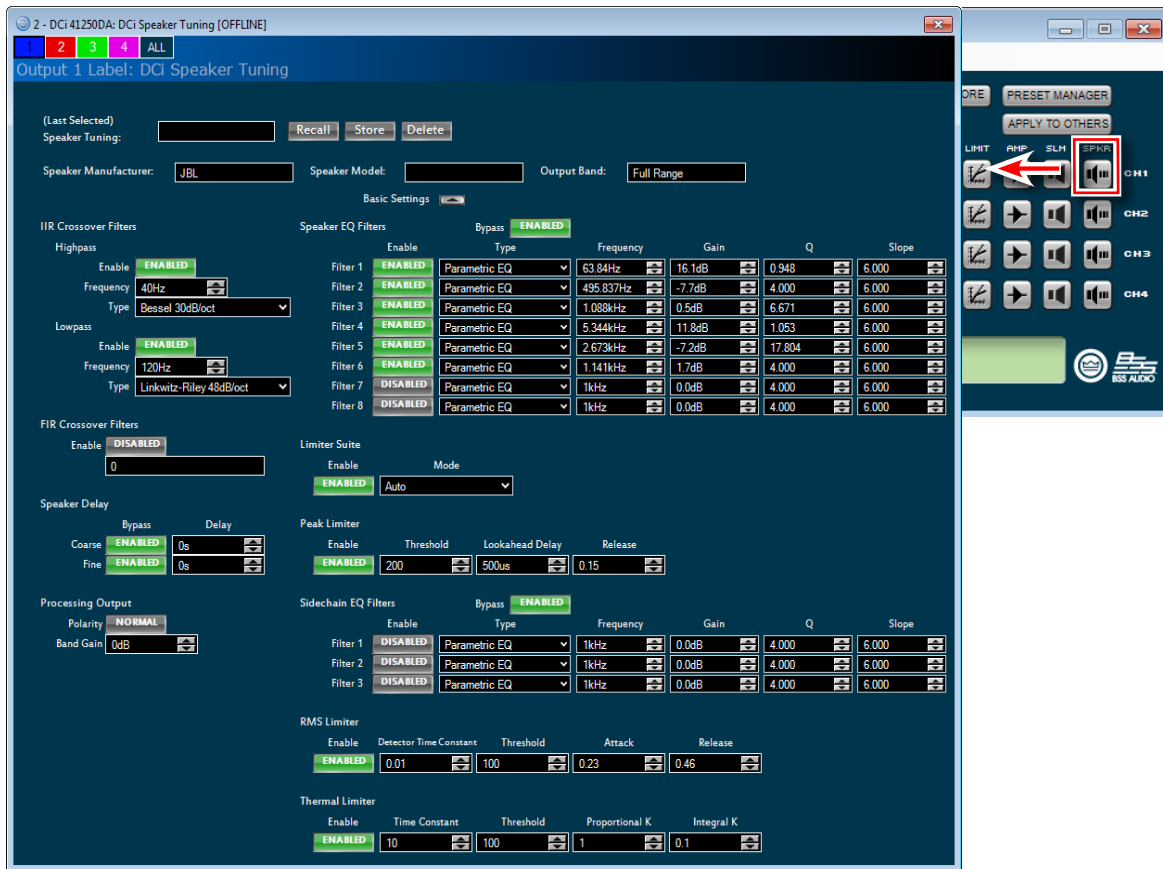


Figure 33: Advanced Speaker Tuning panel

The Advanced Speaker Tuning panel includes every parameter implemented in a speaker tuning:

- All parameters from the Basic Speaker Tuning panel (Recall, Store, Delete, Mfr Name, Model, Band)
- Crossover Filters (HP lower band-edge, LP upper band-edge, 18 types up to 48 dB/oct)
- EQ Filters (8 second-order filter sections, 11 types, full parametric control)
- LevelMax Limiter Suite (Peak, RMS, Thermal Limiters, Auto/Manual modes)
- Delay (fine adjustable from 0 second to 0.1 second, coarse adjustable from 0 second to 2 seconds)
- Band Gain (adjustable from -100 dB to +20 dB in 0.5 dB steps)
- Polarity Invert

Speaker Tuning Libraries

The speaker tuning library system uses software-based speaker tuning libraries. Audio Architect manages these libraries within the device DLL. A library can contain any number of tunings. Audio Architect can manage any number of libraries. The library system implemented includes the following:

- **Working Library** – The working library is opened and active when opening any Speaker Tuning panel. The working library is automatically updated with the latest stored tunings/settings when exiting the open Speaker Tuning panel. Audio Architect is installed preconfigured for DCi amplifiers with a working library previously loaded with JBL Screen Array tunings from the JBL Master Screen Array Library.

NOTE: Multiple Speaker Tuning panel's can be opened but only the last parameters on the last panel closed are saved to the working library.

- **JBL Master Screen Array Library** – This library is included with Audio Architect at install. The tunings in this library were developed and validated against previous same tunings for Crown DSI amplifiers. These tunings are read-only to prevent overwrite. At any time, you can load this library to access reference tunings for JBL Screen Array loudspeakers.
- **User Libraries** – At any time, you may save the current working library to a custom user library file.

Loading a Library

From the Configuration panel, click on **File > Open > Speaker Tuning** to load an existing library file into the working library. This action replaces the current working library. Any changes not saved to the existing working library will be lost.

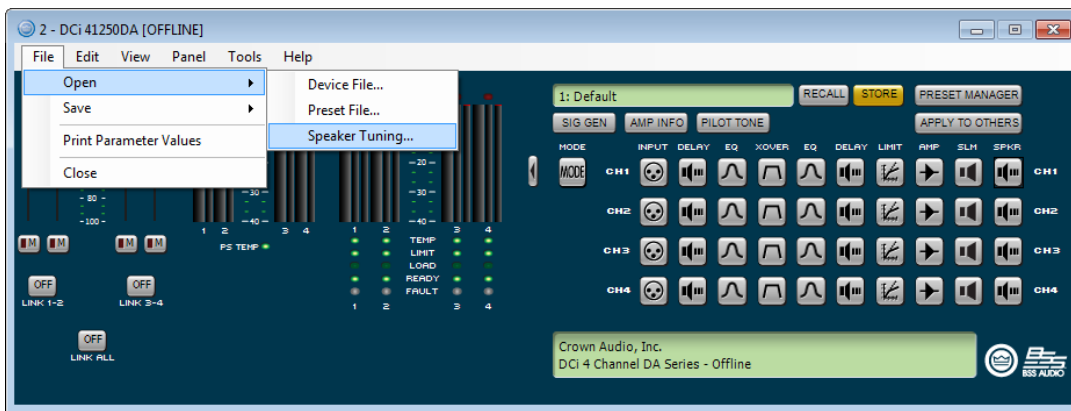


Figure 34: Loading a speaker tuning library

Saving a Library

From the Configuration panel, click on **File > Save > Speaker Tuning** to save the current working library as a library file.

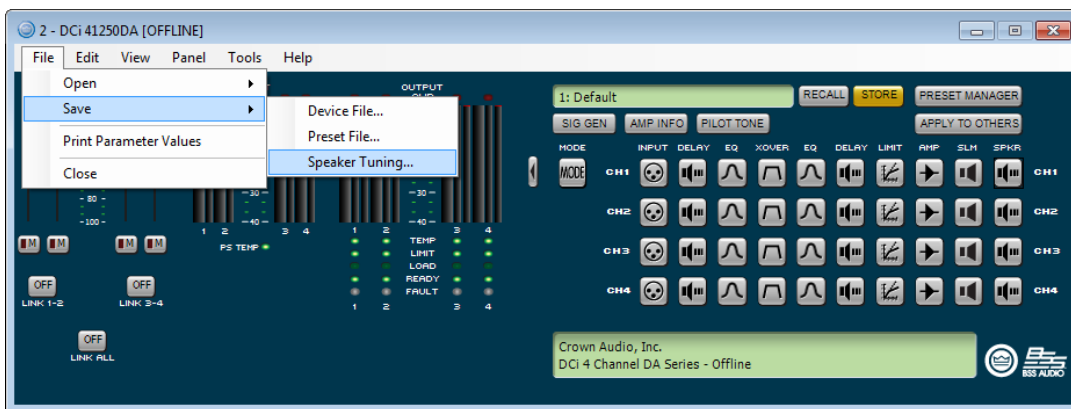


Figure 35: Saving a speaker tuning library

NOTE: JBL files are write-protected/read-only and cannot be overwritten.

Library File Locations

The file location for speaker tuning libraries is as follows:

- **Windows 7 and Windows 8.1 path:** C:\ProgramData\Harman Professional\Audio Architect\
- **Windows XP path:** C:\Documents and Settings\All Users\Application Data\Harman Professional\Audio Architect\

Library Filename Conventions

The file naming convention for speaker tuning libraries is as follows:

- **Working Library:** Crown Library.DCi Series.SpeakerTuning
- **JBL Master Screen Array Library:** JBL Master Screen Array Library.DCi Series.SpeakerTuning
- **User Libraries:** Any_user_file_name.DCi Series.SpeakerTuning

Editing DSP Settings

Crown DCi DA amplifiers have digital signal processing built into the amplifier. When using a DCi DA amp, the loudspeaker processing is in the onboard DSP, so discrete rackmount loudspeaker management devices are not needed. This drastically cuts setup time, commissioning, rack space, and costs. The DCi DA DSP can be monitored and controlled via the network using a computer running Audio Architect.

Some applications for this DSP are:

- Configure signal flow
- Optimize system gain structure
- Configure speaker configurations (set the drive levels, frequency bands, delays, and limiting for your particular speakers)
- Configure EQ, filtering, and much more

See the Audio Architect help file for more detailed information on available processing.

Configuration Panel

The Configuration panel can be accessed by clicking the amplifier icon from the Room window in Audio Architect. It provides access to all the amplifier's settings to configure and optimize the amplifier for the loudspeaker system. When viewing the Configuration panel, the panel can be expanded or minimized using the **Arrow** button (shown on the right side of the Basic Configuration panel in **Figure 36**).

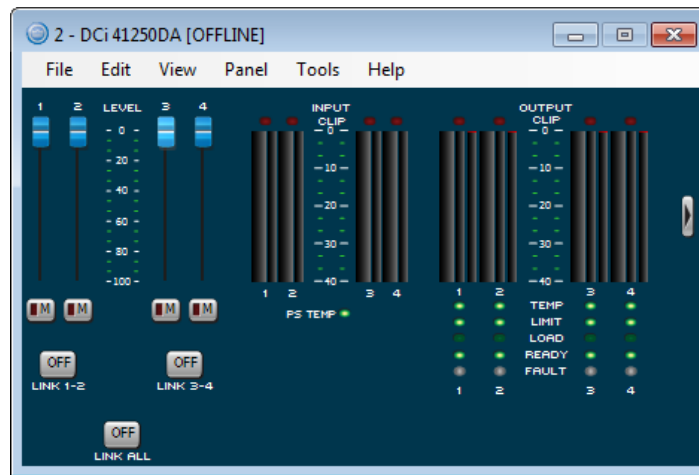


Figure 36: Basic Configuration panel

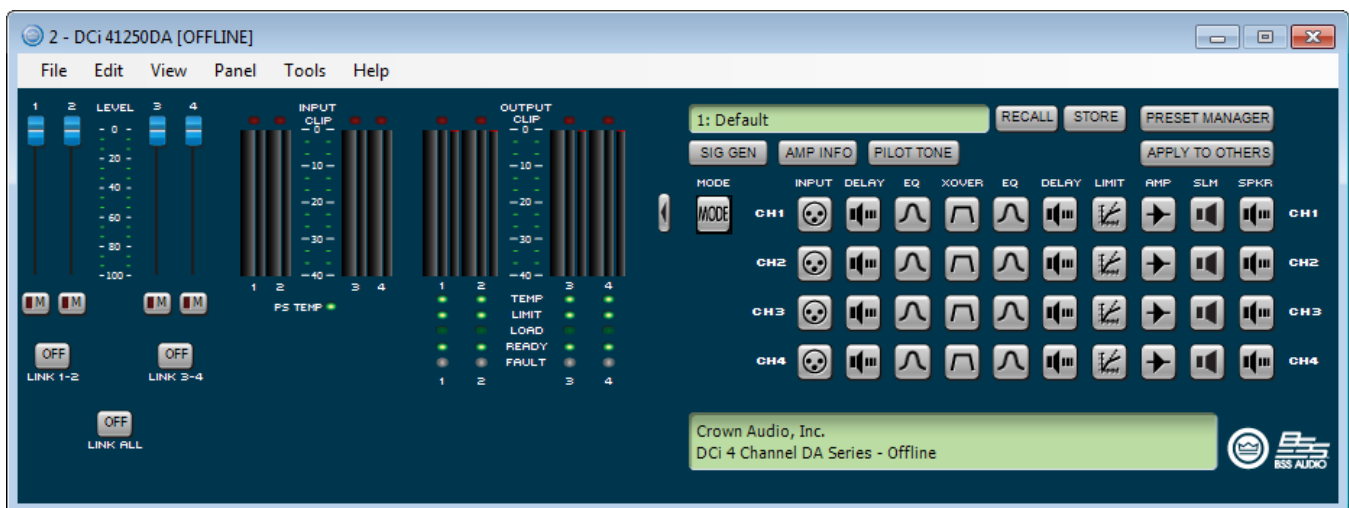


Figure 37: Advanced Configuration panel

Level Faders

Use these faders to adjust the signal level for each channel.

Mute Buttons

Use these buttons to mute each channel.

Link Buttons

These buttons can be used to link the controls of channels for ganged operation.

Input Signal Level Meter

The measurement range of these input meters is from 0 dBFS to -40 dBFS, with 0.5 dB resolution. Each audio channel has the following monitors:

- Switched audio input (this meter shows only the switched (selected) audio input post the Input Audio Router)
- Clip indicator
- Peak + rms levels

Output Signal Level Meter

The measurement range of these output meters is from 0 dB to -40 dB, with 0.5 dB resolution. The monitors are scaled so that 0 dB is referenced to the full rated output voltage of the amplifier. The wider left meter is rms and the right meter is peak for each channel. An output clip indicator is also provided.

PS Temp Indicator

This indicator lights one of the following colors if the temperature of the amplifier's power supply is too high and the amplifier is near shutdown:

- **Green** – Thermal headroom used up is less than 59%
- **Yellow** – Thermal headroom used up is 60–80%
- **Red** – Thermal headroom used up is more than 81%

Channel Temp Indicators

These indicators light one of the following colors if the temperature of an amplifier channel is too high and near shutdown:

- **Green** – Thermal headroom used up is less than 59%
- **Yellow** – Thermal headroom used up is 60–80%
- **Red** – Thermal headroom used up is more than 81%

Channel Limit Indicators

This indicator lights when the corresponding amplifier channel's signal is being limited.

Channel Load Indicators

This indicator lights when the corresponding amplifier channel's load impedance is out of range.

Channel Ready Indicators

This indicator lights when the corresponding amplifier channel is on and ready to supply power.

Channel Fault Indicators

This indicator lights when the corresponding amplifier channel is in a fault state, indicating service may be required.

Arrow Button

Clicking this button expands or minimizes the Configuration panel window.

Mode Button

Clicking this button opens the Amplifier Mode Settings panel, where inputs and outputs can be configured for the application.

Channel DSP Icons

Double-clicking any of these icons will open the corresponding DSP control panel, where DSP settings can be edited for each channel.

Sig Gen Button

Double-clicking this button opens the Signal Generator panel, with pink noise, white noise, and adjustable sine tone options available.

Amp Info Button

Double-clicking this button opens the Amplifier Information panel.

Pilot Tone Button

Double-clicking this button opens the Pilot Tone panel. In some life safety applications it is required to monitor the integrity of the emergency signal path from the source to the speaker line. Pilot tone detection allows the amplifier to monitor the speaker line for open and closed circuits using an end of line termination.

Recall Button

Click this button to recall a device preset.

Store Button

Click this button to store a device preset.

Preset Manager Button

Click this button to manage stored device presets.

Apply To Others Button

Clicking this button allows the amplifiers DSP settings to be applied to other like devices in the venue.

Source Routing Panel

Each channel of the DCi DA signal processing has an input signal router that lets you choose the audio signal that will be used by the channel. This includes priority routing features.

The Source Routing panel can be accessed by clicking one of the amplifier channel's **Input** icons from the Configuration panel (see **Figure 38**).

Use one of the following factory quick start selections to get up and running quickly:

Analog Only

This selection configures the input router for analog sources. Each output channel will select its corresponding analog input by default. Choices for the Analog Audio input are any available analog input channels or one of the summed variants (e.g., Analog Inputs 1+2, Analog Inputs 3+4, etc.). Selecting this option will automatically change the Medium Source to none.

Network Only

This option selects the audio input from the Dante port on the back panel of the amp. Each amplifier has 8 Dante input channels, as well as summed variants (e.g., Dante Inputs A+B, Dante Inputs C+D, etc.).

Network With Analog Backup

With this option selected, the input takes the network signal as its source when the network signal or clock is present. If the network lock is lost, the input switches to the selected analog source. Once that network lock is found again, the input switches back to the selected network source. This works even when the network signal has no audio but is sending a clock signal.

Analog Overrides Network

With this option selected, the Dante input is used as the channel's source. If the analog signal level is greater than the user-defined analog signal threshold, the input switches to the analog signal. As long as the analog signal level exceeds the threshold, or as long as its level falls below threshold for a user-defined hold time, the analog signal remains the channel's source.

NOTE: Dante signal routing must also be configured using Audinate's [Dante Controller software](#).

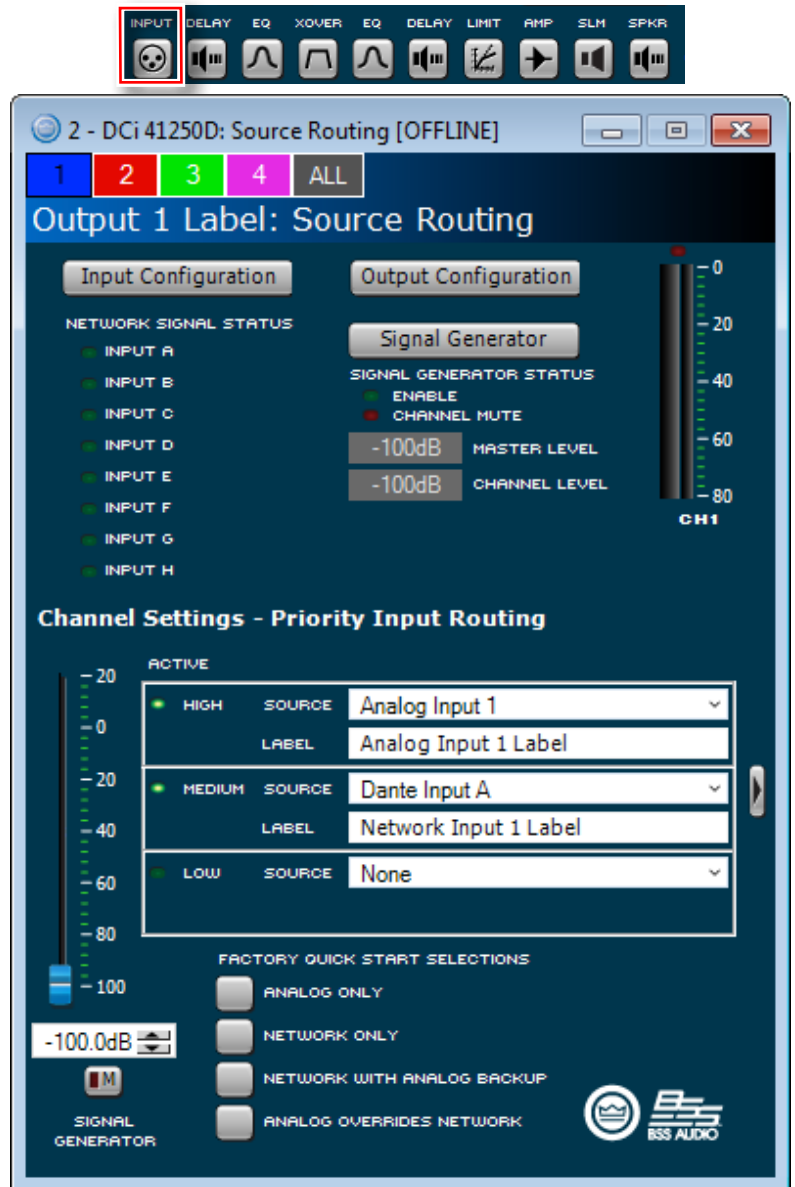


Figure 38: Basic Source Routing panel

The **Arrow** button on the right of the Basic Source Routing panel (see **Figure 38**) can be used to expand the window and show the Advanced Source Routing panel (shown in **Figure 39**).

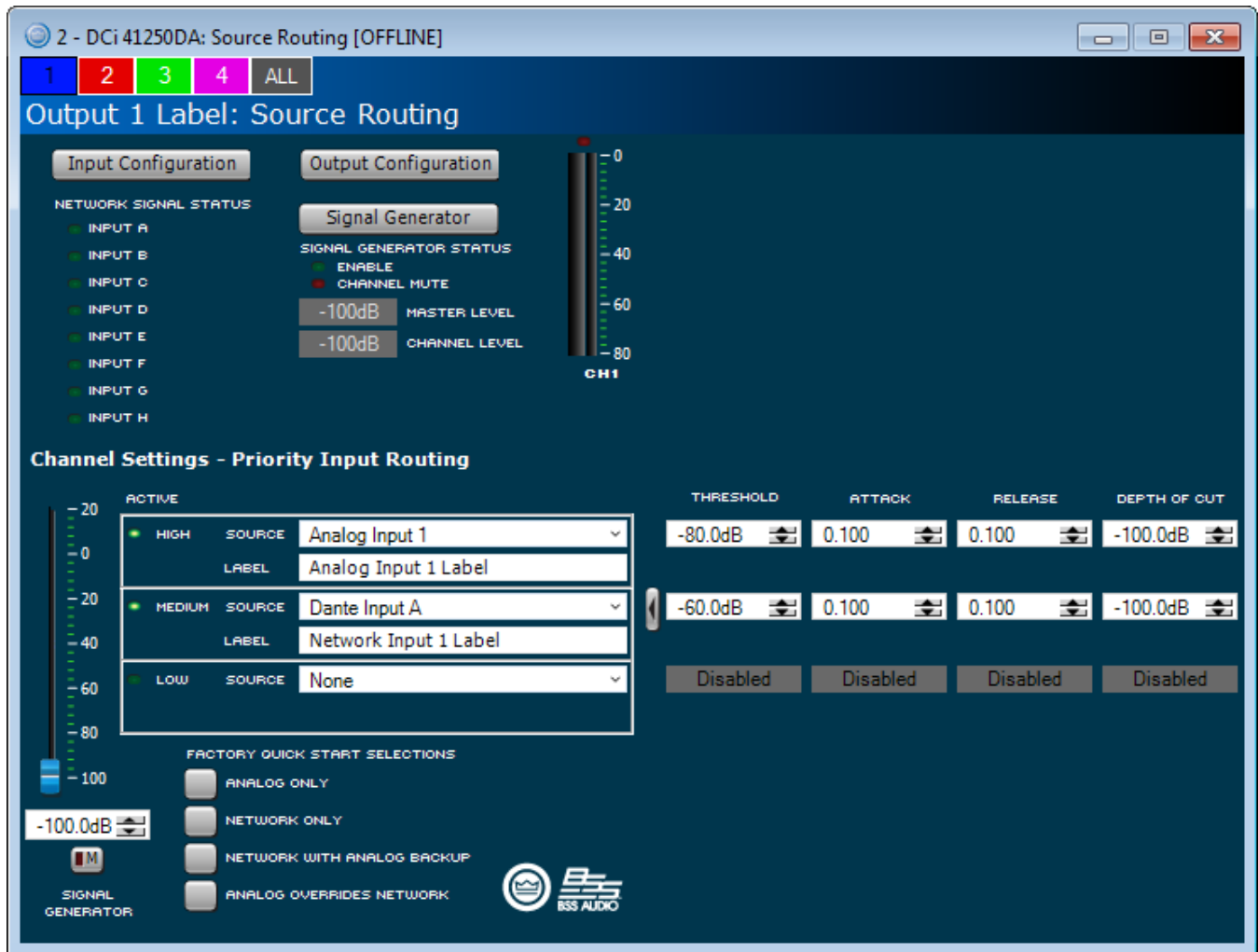


Figure 39: Advanced Source Routing panel

The Advanced Source Routing panel provides the following additional parameters:

Threshold

This parameter sets the level in dB below which the secondary source will be engaged.

Attack

This parameter determines the time that it takes for the secondary source to engage. This can range from 0.1 second to 1.0 second.

Release

This parameter determines the time that it takes for the primary source to re-engage once the threshold level is exceeded.

Depth of Cut

This parameter determines the amount of attenuation applied to the primary source when the secondary source is active.

Input/Output Delay

The Input delay includes up to 2 seconds of delay. The Output delay is typically used for driver alignment and offers up to 0.1 second of output delay. The Input/Output Delay panels can be accessed by clicking one of the amplifier channel's **Delay** icons from the Configuration panel (see **Figure 40**).

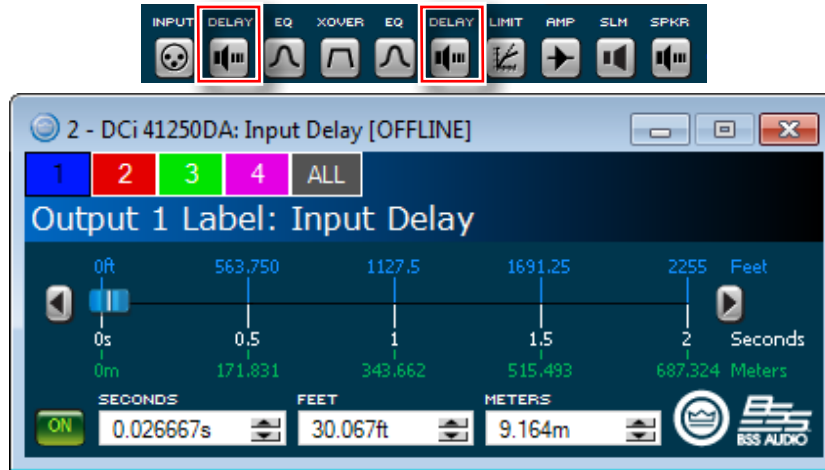


Figure 40: Delay panel

On Button

This button turns the delay on or off.

Slider and Arrow Buttons

Click-drag this slider or click the arrow buttons at either end of the slider to adjust delay time.

Seconds Field

Use this field to enter delay time in seconds by clicking and entering the desired value or clicking the up/down buttons.

Feet Field

Use this field to enter delay time in feet by clicking and entering the desired value or clicking the up/down buttons.

Meters Field

Use this field to enter delay time in meters by clicking and entering the desired value or clicking the up/down buttons.

Input/Output Equalization

The Input and Output EQ panels let you adjust channel equalization for up to 8 frequency bands. You can select filter type, frequency, gain, and bandwidth. Changes to the equalizer's frequency response can be performed by typing in the values, using the up/down buttons, or by click-dragging the graphical response curve. The Input/Output EQ panels can be accessed by clicking one of the amplifier channel's **EQ** icons from the Configuration panel (see **Figure 41**).

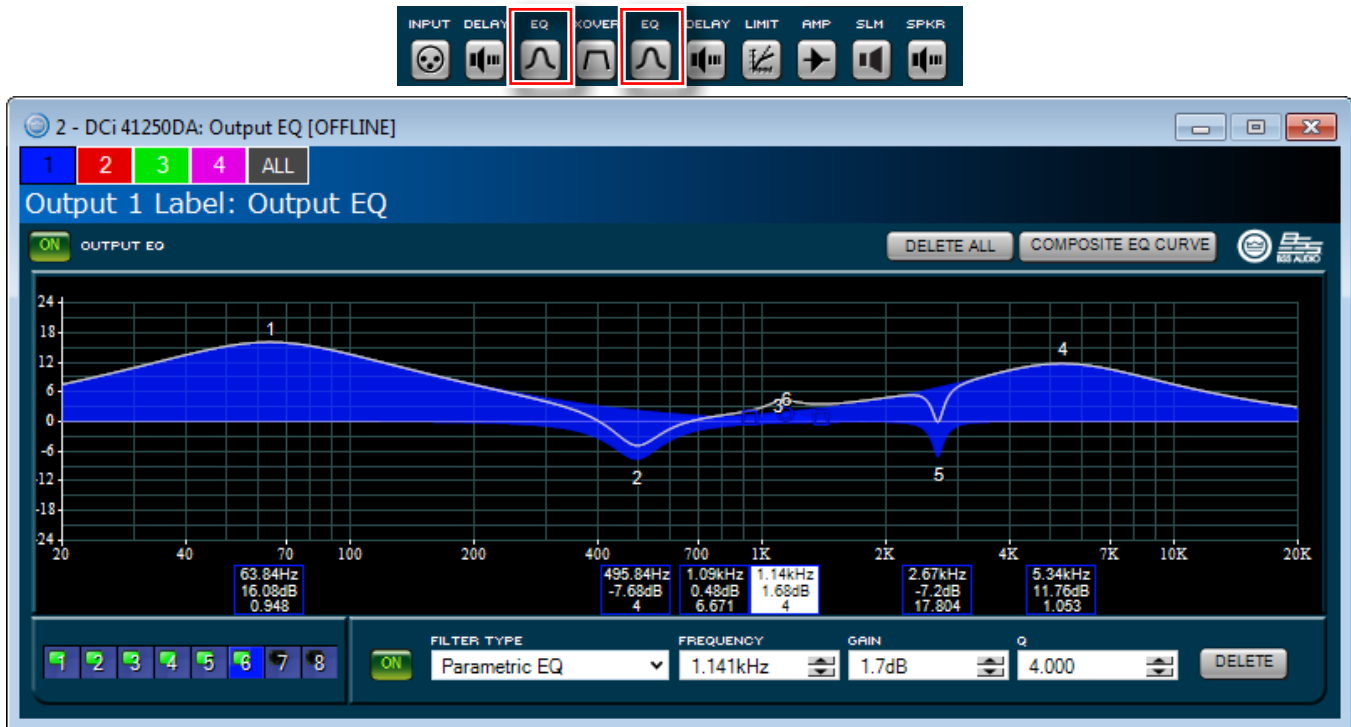


Figure 41: EQ panel

1-8 Buttons

Use these buttons to select a filter band to edit.

On Button

This button turns the EQ on or off.

Filter Type

This field selects the type of filter for the selected band. Available filter types include the following: Parametric EQ (Bell), LP Shelf 6dB/Oct, HP Shelf 6dB/Oct, LP Shelf EQ, HP Shelf EQ, LP Butterworth 6dB/Oct, HP Butterworth 6dB/Oct, LP EQ 2nd Order (6-12dB/oct filter with variable resonant peak using the Q parameter), HP EQ 2nd Order (6-12dB/oct filter with variable resonant peak using the Q parameter), All Pass 1 (90° phase shift), All Pass 2 (180° phase shift).

Frequency

This field sets the center/corner frequency of the selected band.

Gain

This field sets the amount of gain (boost/cut) applied to the selected band. Each filter band has up to ± 24 dB of gain.

Slope

This field is only available on shelving-type filters and sets the slope rate of the selected band.

Q or Bandwidth

This parameter sets the width of the selected band for bell-type filters, or it adjusts the resonant peak if a 2nd order lowpass or highpass filter is selected. Filter width can be set in octaves (bandwidth) or Q as set by the user preferences in Audio Architect.

Delete Button

Pressing this button will "zero out" the currently selected filter band and set all of the band's parameters back to their default values.

Delete All Button

Pressing this button will "zero out" all of the filter bands in the EQ and set all parameters back to their default values.

Composite Curve Button

Pressing this button will toggle the view of the graphical response curve between the standard EQ view and a composite EQ view.

Crossover

The Crossover lets you apply an infinite impulse response (IIR) crossover filter to each channel. The Crossover panels can be accessed by clicking one of the amplifier channel's **XOVER** icons from the Configuration panel (see **Figure 42**).

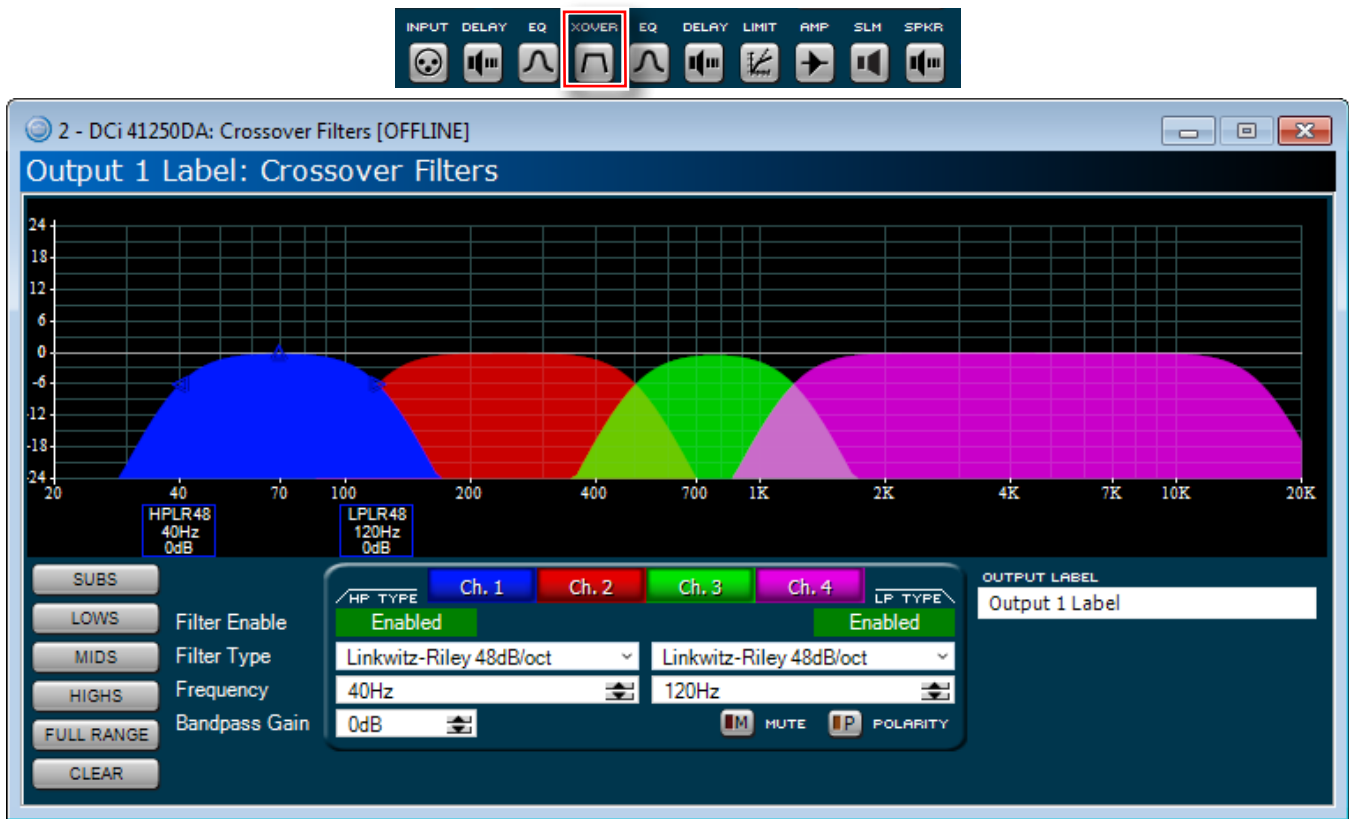


Figure 42: Crossover panel

Graphical Display

This display shows the crossover filters for all channels of the amplifier. Crossover bands can be adjusted from this display by click-dragging the nodes.

Subs, Lows, Mids, Highs, Full Range, and Clear Buttons

These buttons can be used to quickly apply a specific range of frequencies to a filter. The band's parameters can then be fine tuned if required.

Ch. 1-Ch. 8 Buttons (Ch. 1-Ch. 4 in 4-channel models)

These buttons are used to select between the different channels of the amplifier, allowing crossover band settings for all channels to be edited from a single panel.

Filter Enable Buttons

These buttons are used to enable/disable the highpass and lowpass filters for the selected band.

Filter Type Fields

These fields are used to select the filter type for each highpass/lowpass filter. The following filter types are available: Bessel 12 dB/oct, 18 dB/oct, 24 dB/oct, 30 dB/oct, 36 dB/oct, 42 dB/oct, 48 dB/oct; Butterworth 12 dB/oct, 18 dB/oct, 24 dB/oct, 30 dB/oct, 36 dB/oct, 42 dB/oct, 48 dB/oct; Linkwitz-Riley 24 dB/oct, 36 dB/oct, 48 dB/oct.

Frequency Fields

These fields are used to select the corner frequency for each highpass/lowpass filter. Values can be edited by typing them in or by using the up/down arrow buttons.

Bandpass Gain Field

This field adjusts the output gain of the selected band. Values can be edited by typing them in or by using the up/down arrow buttons. Each crossover filter has up to ± 24 dB of gain.

Mute Button

Enabling this button will mute the selected output channel.

Polarity Button

Enabling this button will invert the polarity for the selected output channel.

Output Label Field

Allows a custom label to be entered for each output channel.

LevelMax™ Suite Limiters

This is a suite consisting of a peak voltage limiter, rms power limiter, clip limiter, and transducer thermal limiter. The Limiter panels can be accessed by clicking one of the amplifier channel's **Limit** icons from the Configuration panel (see **Figure 43**).

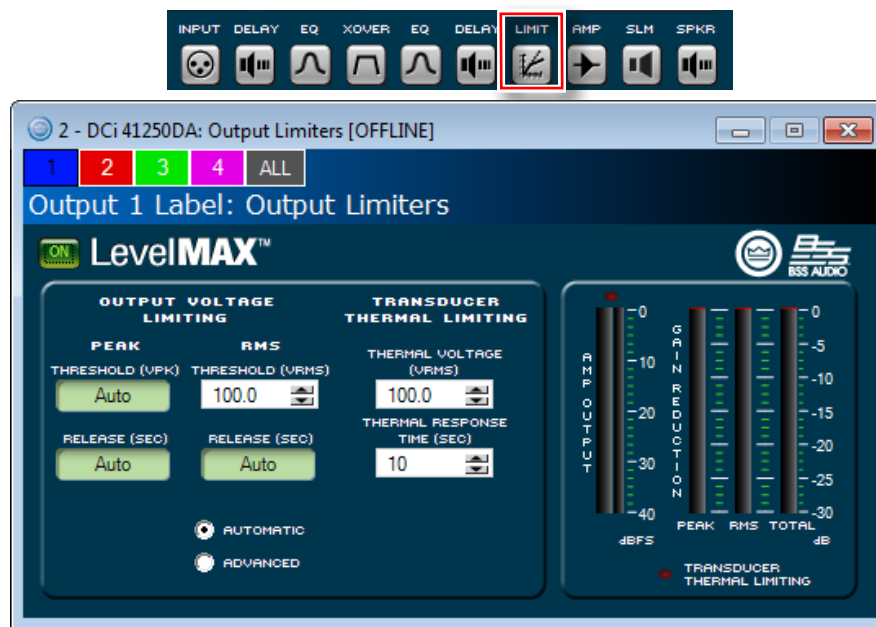


Figure 43: LevelMAX panel

On Button

This button turns the LevelMax limiters on or off.

Threshold (Peak and RMS)

These parameters set the level, in absolute voltage, which the peak and rms limiters will allow from the amplifier. Note that the Advanced option must be selected to adjust the Peak Threshold parameter manually.

Release (Peak and RMS)

These parameters set the release time of the peak and rms limiters. The release time is defined as the time it takes each limiter to increase the output signal by 20 dB. Note that the Advanced option must be selected to adjust these parameters manually.

Transducer Thermal Limiting (Thermal Voltage and Thermal Response Time)

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.

Automatic

With this option selected, the software determines the best settings based on the signal characteristics. You can still modify the Threshold, Transducer Thermal Voltage, and Transducer Thermal Response Time parameters, but all other parameters will be set automatically.

Advanced

With this option selected, you can modify all parameters available in the Limiter panel.

Amp Output Meter

This meter shows peak and rms output levels in dBFS.

Gain Reduction Meters

These meters show the peak, rms, and total gain reduction levels incurred by limiting.

Using Dante

Dante Introduction

Dante is a licensed technology from Audinate. It uses standard Internet protocols over a 100Mb or Gigabit network and is capable of transporting professional-quality, low-latency audio. Dante runs on inexpensive off-the-shelf computer networking hardware and does not require dedicated network infrastructure; Ethernet switches transmit Dante digital media streams alongside ordinary data traffic. The physical Dante connections must be made using Category 5e or Category 6 cables when using a Gigabit network (Category 5 cables may be used for purely 100Mbps networks).

The two Dante (RJ-45) ports on the back of the DCi DA amplifiers can be used to connect to other Dante-enabled devices for transmission and receipt of high-resolution digital audio over standard Ethernet cabling. The Dante protocol supports 24-bit resolution with a sample rate of either 48kHz or 96kHz. All DCi DA amplifiers support 8 Dante input channels and 8 Dante output channels.

Dante Specifications

- Supports 48kHz or 96kHz sample rates
- 24-bit audio resolution
- Dante data can co-exist on a network alongside control information and other standard data traffic
- Supports high channel counts; maximum channel count varies based on network speed (e.g., 100Mbps, Gigabit, etc.)
- Dante protocol based on networking technology standards, allowing the transport to operate with off-the-shelf networking peripherals
- Supports cable distances of up to 100m/328ft over Category 5e or Category 6 cable between devices (Category 5 cable can be used for purely 100Mbps networks)
- Supports fiber runs using fiber-enabled network switches
- Typical Dante transport latency contribution to a system is approximately 150µs or less
- Supports unicast (point-to-point) or multi-cast (one-to-many) audio packet transmission
- Supports redundancy using the Secondary Dante ports and a secondary network switch

Connecting Dante Ports

Dante devices have two Dante ports. One is the Primary and the other is the Secondary. When using only two Dante devices, the devices can be connected directly together using the Primary ports. When connecting more than two devices, they should be connected to an Ethernet switch using a star networking topology.

Fault Tolerance

Dante audio traffic is duplicated to both the Primary and Secondary Dante ports. The Secondary port can be connected to a secondary network switch for redundant operation in the event a primary cable connection or the primary network is compromised. If using the Secondary Dante ports for redundancy, the Secondary ports should be connected to a second switch and operated separately from the primary network.

Mastership

The Dante network requires one device on the network to act as master for the whole network. The master will provide the clock for all other Dante devices on the network. This means that the whole network is synchronized to a single audio clock.

In certain cases, it is possible to use devices of more than one Ethernet transport type (i.e., AVB, CobraNet™, or BLU link) connected within the same Dante network. In other words, if you're careful, you can design a HARMAN system that actually includes more than two transports. For example, it's possible for a HARMAN system to have CobraNet™ audio being converted to BLU link audio (the BSS Audio BLU-800 and BLU-320 both have the ability to "bridge" CobraNet to/from BLU link), which is then converted to Dante audio (BLU-806, BLU-326 and BLU-DAN all have the ability to "bridge" BLU link to/from Dante). It all depends on a given transport's ability to "slave" (or "re-clock") to a clock being generated by a separate transport.

Can it be "slaved" to the clock of another transport?

AVB	No
BLU link	Yes
CobraNet	No
Dante	Yes

The previous list has critical implications on system design when combining two or more transports. Any system based on Soundweb London (including Architectural Media Systems) supports the following five multi-transport combinations:

- BLU link + AVB (AVB provides the clock)
- BLU link + CobraNet (CobraNet provides the clock)
- BLU link + Dante (either BLU link or Dante provides the clock)
- BLU link + Dante + AVB (AVB provides the clock)
- BLU link + Dante + CobraNet (CobraNet provides the clock)

Any multi-transport combination NOT specifically listed in the previous section is not allowed in Soundweb London systems (without being forced to use analog interconnects between transports). For example, Dante + AVB + CobraNet is NOT allowed, because the AVB and CobraNet networks would each be synced to different clocks—their own.

Mastership is negotiated between all the devices on the network, and changes to the network will trigger the negotiation to be re-started. There are various rules for determining which device on the network becomes clock master:

- If there is only one device connected to CobraNet/AVB then that is master.
- If there are multiple devices connected to CobraNet/AVB, then they compare master priorities.
- If there are multiple devices on CobraNet/AVB with the same highest priority, then their MAC addresses are compared to decide which is master.
- If there are no devices connected to CobraNet/AVB, then they first compare master priorities. Next, if the priorities are the same, they compare MAC addresses.

Dante LED indicators

These are found on the Dante ports on the back panel of the device and indicate the following:

- **Green LEDs** – The green LED will light solid to indicate a network link is established and flash to indicate link activity.
- **Orange LEDs** – The orange LED indicates network connection speed (off = 10/100Mbps, on = 1 Gbps).

Routing Dante

The DCi DA amplifiers can use both analog and/or Dante inputs. All Dante routing must be initially configured using Audinate's Dante Controller software, which can be downloaded from <https://www.audinate.com/products/software/dante-controller>. Once Dante audio has been configured using Dante Controller, Dante input channels must also be routed using the Source dropdown menus in the Source Routing panel, which can be accessed by double-clicking a channel's **Input** icon (see **Figure 44**). Note that, by default, the Dante channels will be routed as the "medium priority" source.

Dante input levels can be adjusted in the DCi DA amplifier from the Input Configuration panel, which can be accessed by clicking the **Input Configuration** button from the Source Routing panel (see **Figure 44**). From the Input Configuration panel, the amplifier input levels can be adjusted to accommodate different signal levels from the sources. The meters on this panel display both peak and rms levels. Network Signal Status lights below each Dante input channel provide confirmation of Dante signal presence.

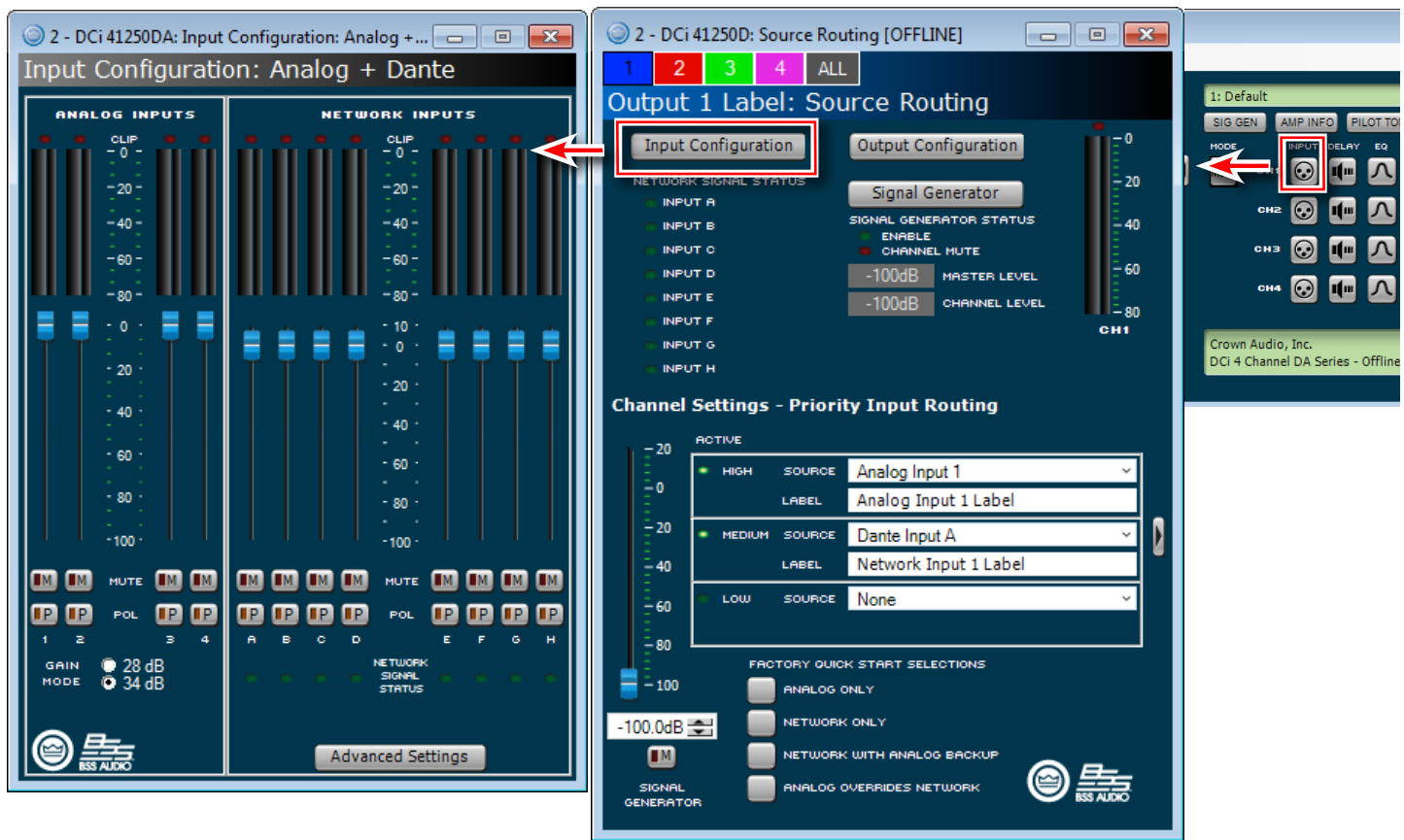


Figure 44: Input Configuration panel

Clicking the **Advanced Settings** button from the Input Configuration panel (see **Figure 44**) or Output Configuration panel (see **Figure 46**) opens the Dante Advanced Settings window (see **Figure 45**), where Dante and AES67 information is displayed.

Additional flexibility is provided when using the amplifier's Dante outputs. Clicking the **Output Configuration** button from the Source Routing panel opens the Dante Output Configuration panel (see **Figure 46**). From this panel, audio source signals can be routed (or "on-ramped") back on to the Dante network from one of two signal source points:

1. Pre-processed audio from the analog inputs of the amplifier can be routed to one of the 8 available Dante outputs.

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, Input Level, and Polarity settings—located in the Input Configuration panel (see **Figure 44 on page 38**)—before being sent to the Dante network.

2. Post-processed audio from an amplifier output channel can be routed to one of the 8 available Dante outputs.

NOTE: The post-processed output audio is bussed from a point at the end of the amp's signal processing chain. This is effectively analogous to taking the audio from the physical output of the amplifier, which feeds the loudspeaker, and routing it on to the Dante network.

TIP: After selecting audio sources from the dropdown menus (as shown in **Figure 46**), audio must also be routed using the [Dante Controller software](#).

NOTE: When connected to a Dante network operating at a 96kHz sample rate, the DCi DA's Dante outputs will be disabled, and the amp will not be able to transmit audio on to the Dante network. The amplifier will be able to receive a full compliment of up to 8 Dante streams to send to the input router, but it will not be able to output any audio signals back on to the Dante network.

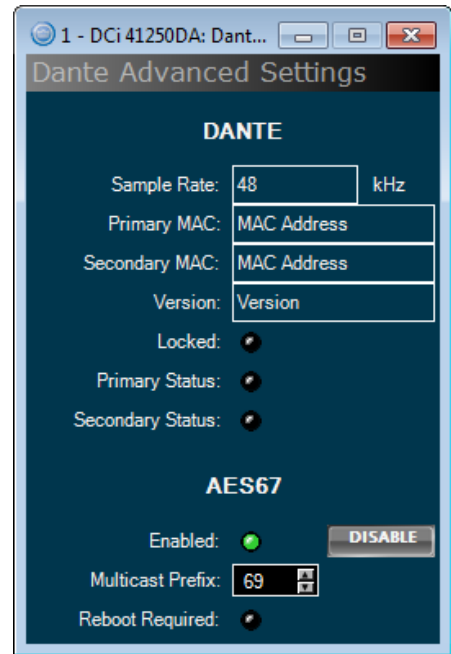


Figure 45: Dante Advanced Settings panel

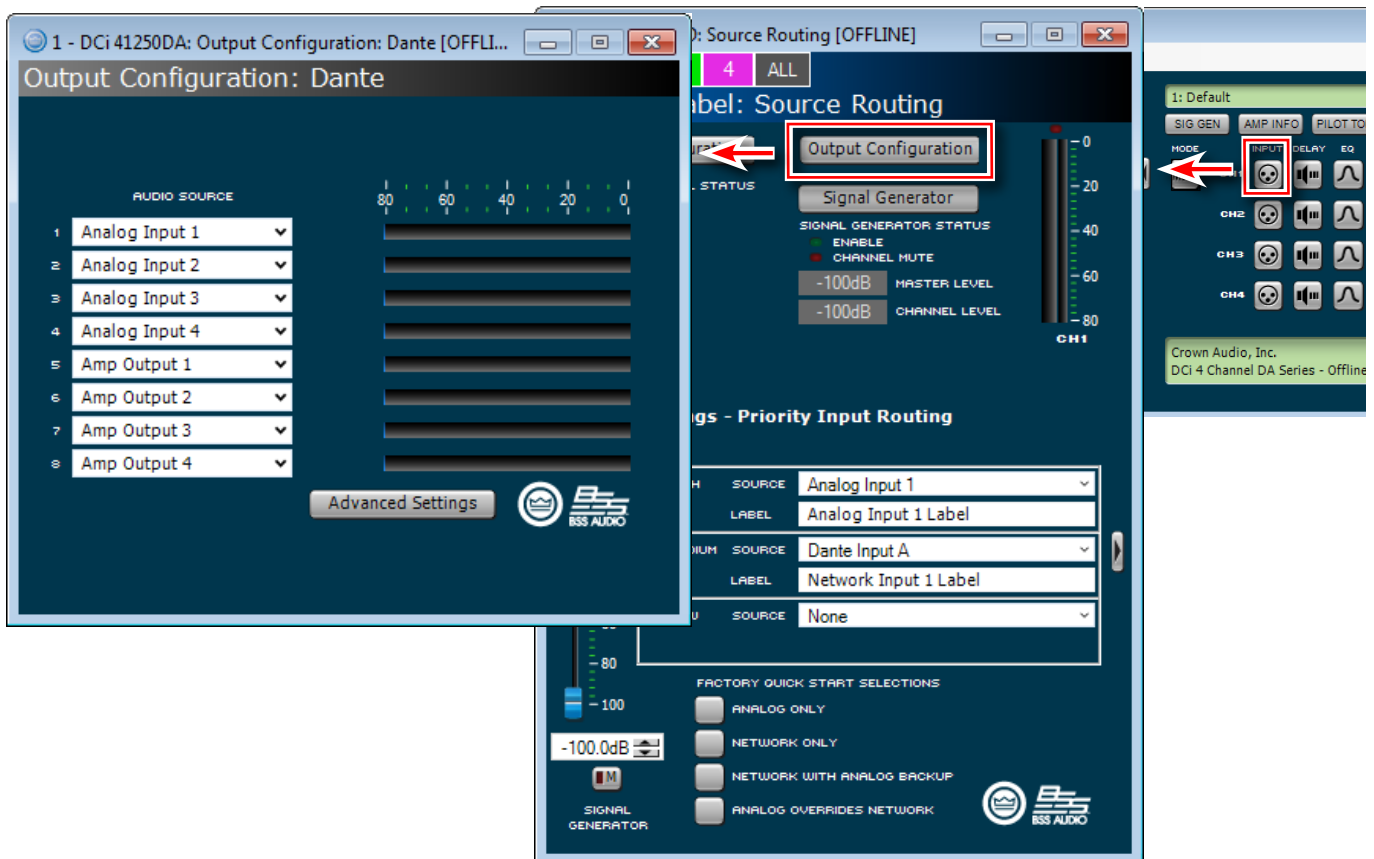


Figure 46: Dante Output Configuration panel

Using 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 tri-amplified speaker system. Or, you might use a device preset that sets up the DSP for a stereo pair of loudspeakers of your choice.

Up to 20 presets can be stored within a DCi DA amplifier (1 factory default preset and 19 user-definable presets). Additional presets can be stored to a computer 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.

Amplifier Presets

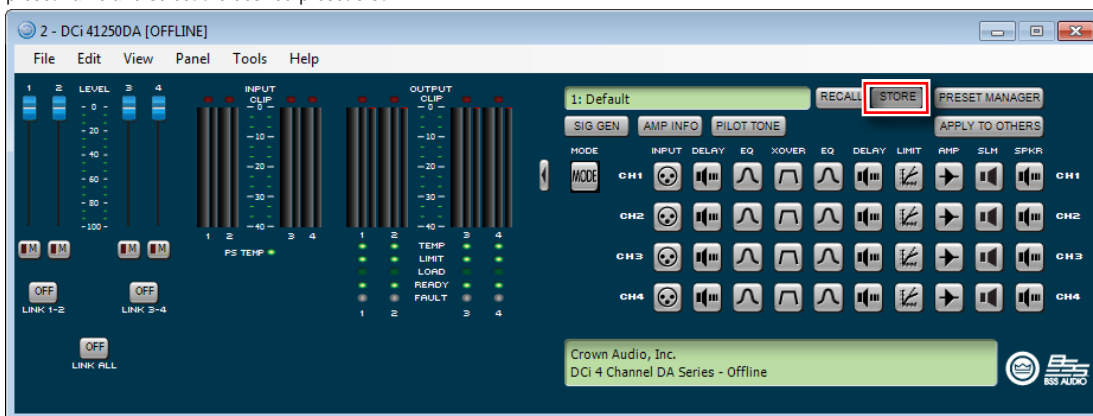
The DCi DA amplifier works with two types of presets:

- **User Presets** – Using Audio Architect you can create your own custom DSP presets, label them, and send them to the DCi DA amplifier. The amp stores those presets in firmware.
- **Downloadable Presets** – Available for download from a variety of manufacturers, these presets are configured for optimal performance and can be sent to the amplifier via Audio Architect.

User Presets

User presets are DSP presets that are configured manually. To set up a user preset, follow these steps:

1. Adjust the DSP settings as desired in Audio Architect.
2. Press the **STORE** button from the amplifier's Configuration panel in Audio Architect to store the settings as a preset. A prompt will appear, allowing you to change the preset name and select the desired preset slot.



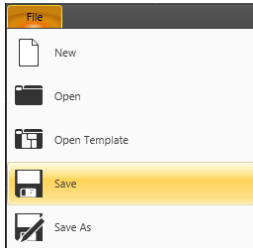
3. If you adjusted the DSP settings and stored the preset in offline mode, go online to send the preset to the amplifier. If you adjusted the DSP settings and stored the preset in online mode, changes to the DSP settings and presets will be stored in the amplifier in real time. See the Audio Architect help file for further details.

Saving and Opening Audio Architect Venue Files

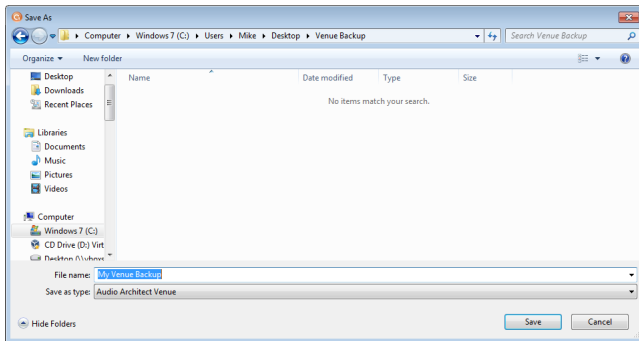
When finished programming HARMAN devices in Audio Architect, it is good practice to save the entire venue as a "Venue" file. This will save all Audio Architect configuration changes and the programming and settings for all devices in the current venue configuration to a single file for backup and recall.

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 and then select "Save" or "Save As" from the menu.

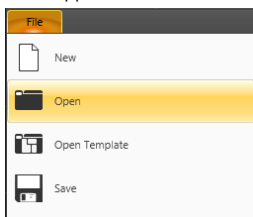


2. Select the desired location on the hard drive, name the file, and then click the **Save** button.

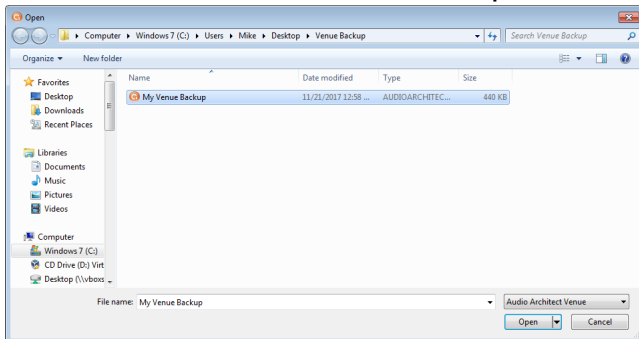


To open a Venue file in Audio Architect:

1. In the upper left-hand corner of the main Audio Architect window, select the File tab and then select "Open" from the menu.



2. Select the Venue file on the hard drive and then click the **Open** button.



Using the Event Log

The Event Log Viewer window (**Figure 47**) shows events that have occurred within Audio Architect and on HiQNet devices. The Event Log can be used for troubleshooting purposes or by individual devices to perform certain operations.

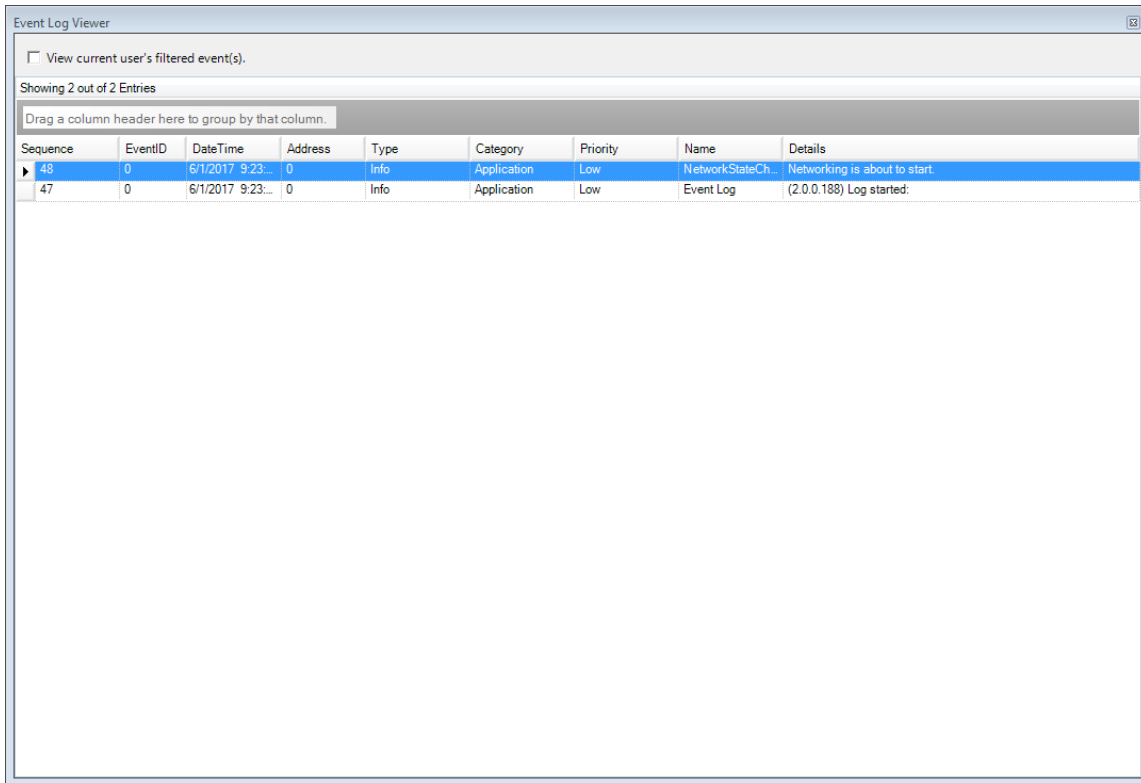


Figure 47: The Event Log Viewer window

The Event Log can be accessed from either the Offline ribbon (**Figure 48**) or Online ribbon (**Figure 49**).

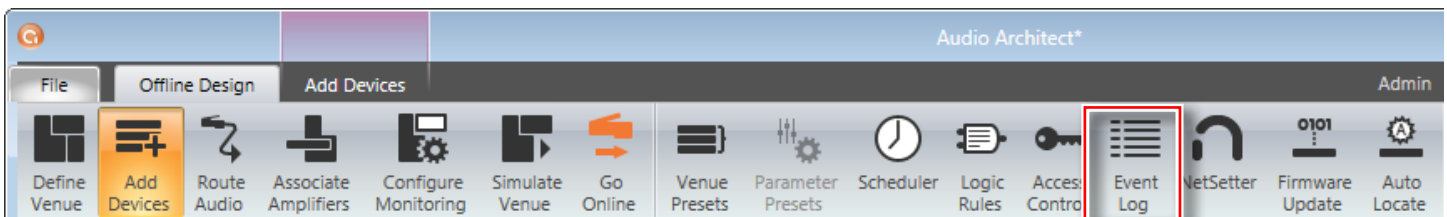


Figure 48: Accessing the Event Log from the Offline ribbon



Figure 49: Accessing the Event Log from the Online ribbon

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

Using the GPIO Port

DCi DA Series amplifiers come with a 2-in/2-out General Purpose In/Out (GPIO) Control port in the form of a 6-position RJ-11 connector. The Control port has multiple functions and uses, which include preset selection and gain control, among others.

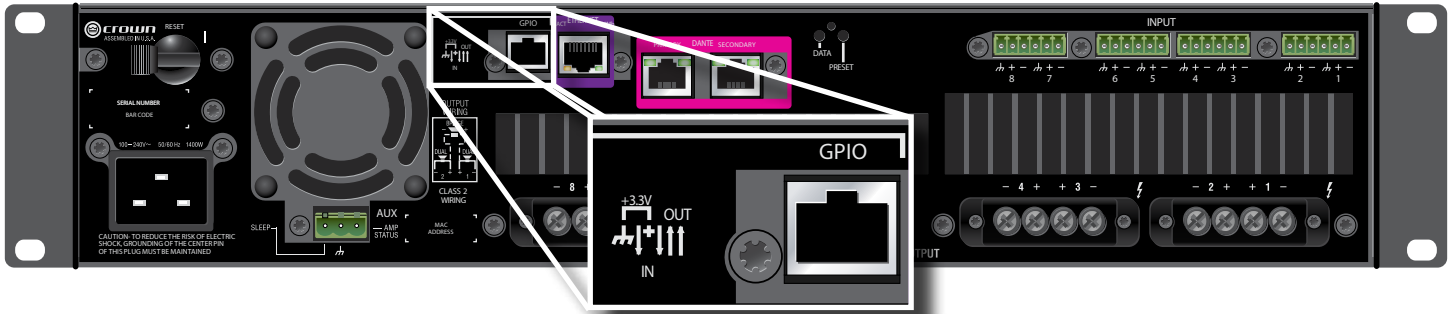


Figure 50: The GPIO port

Hardware Specification

Inputs are capable of either binary or analog control of a state variable (SV) within the amplifier. Outputs are binary only and represent an SV of the amplifier. Additionally, outputs can be controlled independently via the software.

Control port pinout descriptions:

- PIN 1:** Output 1. 0VDC to +3.3VDC output. Output impedance = 1K Ω pullup to +3.3V.
- PIN 2:** Output 2. 0VDC to +3.3VDC output. Output impedance = 1K Ω pullup to +3.3V.
- PIN 3:** Input 1. 0VDC to +3.3VDC input. Logic = TTL thresholds. Analog = full scale 0–3.3V. Input impedance > 20K Ω .
- PIN 4:** +3.3VDC output. LIMIT = 30mA. Output impedance = 100 Ω to +3.3V.
- PIN 5:** Input 2. 0VDC to +3.3VDC input. Logic = TTL thresholds. Analog = full scale 0–3.3V. Input impedance > 20K Ω .
- PIN 6:** GND.

Configuring the Control Port Inputs

To access Control port configuration, double-left-click on the **DCi DA Amp** icon in the Room window to highlight it. Now, right-click the **DCi DA Amp** icon, and then select **Configure Control Ports** from the menu (see **Figure 53**). The Control Ports tab will open (see **Figure 52**).

Key Control port input configuration points:

- Each of the two Control port inputs support variable control (using a potentiometer), binary control (using a switch), or multilevel control (using a rotary switch with voltage dividers).
- Audio Architect is used to assign up to 40 SV's to each control input.

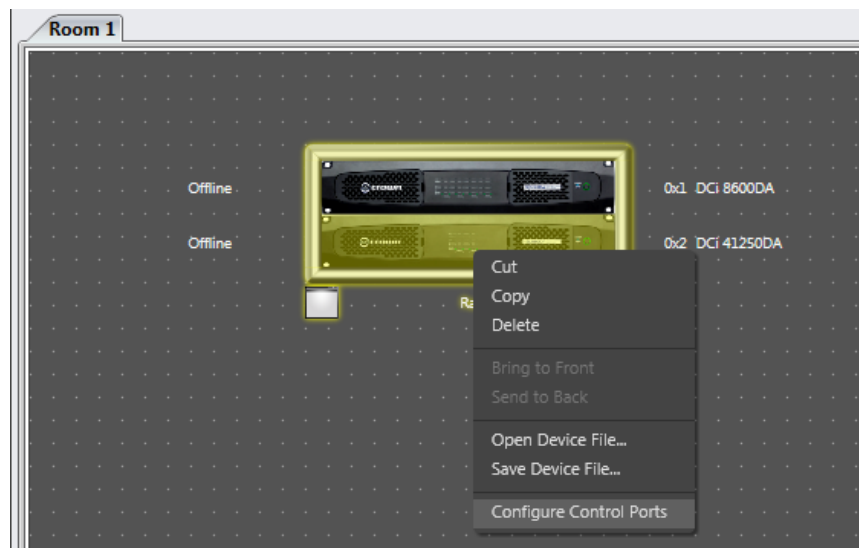


Figure 51: Accessing the Control Ports tab

Control Port Input Fields

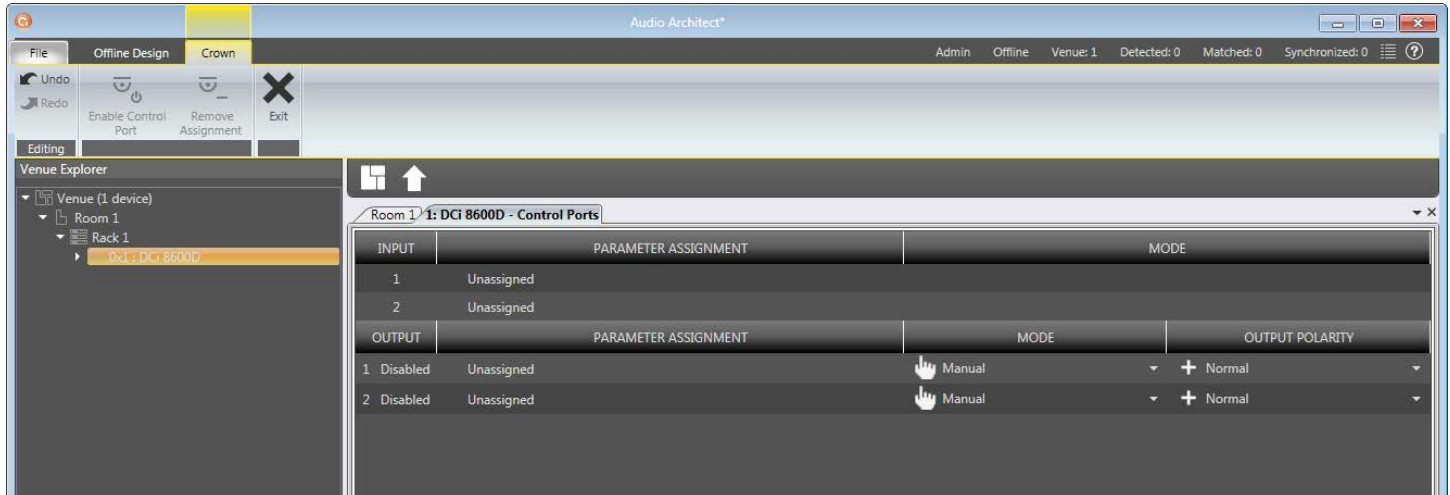


Figure 52: Control Ports tab

Input

This field identifies each input port, labeled 1 and 2.

Parameter Assignment

This field lists the parameters currently assigned to each control input.

Mode

This option determines how the assigned parameters will be controlled, with the following modes available:

- **Direct Action** – Sets the assigned SV(s) to a specific value
- **Analog Input** – Continuously varies the assigned SV(s) by a specified value (typically used when a volume pot is connected)
- **Bump** – Similar to Analog Input mode but implemented with a button instead of a pot (each transition from low to high state will bump the assigned SV(s) by a specified value)
- **Autobump** – Similar to Bump mode but will continue to bump the assigned SV(s) value for as long as the input state is changed
- **Device Preset** – Recalls the max preset in the high state and the min preset in the low state (available only when a device preset is assigned to a control input)

On Value

This option determines what the value of the assigned parameter will be when the Control port input is logic “high” (available only when Direct Action mode is selected).

Off Value

This option determines what the value of the assigned parameter will be when the Control port input is logic “low” (available only when Direct Action mode is selected).

High Limit

This option determines the value that the assigned parameter will assume when the Control port input is at the maximum end of its range.

Low Limit

This option determines the value that the assigned parameter will assume when the Control port input is at the minimum end of its range.

Bump Increment

This option determines the amount of level increase with each “bump” (available only when the Bump or Autobump mode is selected).

Bump Decrement

This option determines the amount of level decrease with each “bump” (available only when the Bump or Autobump mode is selected).

In the Venue Explorer menu on the left, click the arrow to expand the device and reveal a list of objects. Expand an object for a list of state variables (SV's) within the object. To assign an SV to a Control port input channel, click on the SV in the Venue Explorer menu and drag it to the Parameter Assignment field for either Input 1 or Input 2. See the example assignment in **Figure 53**.

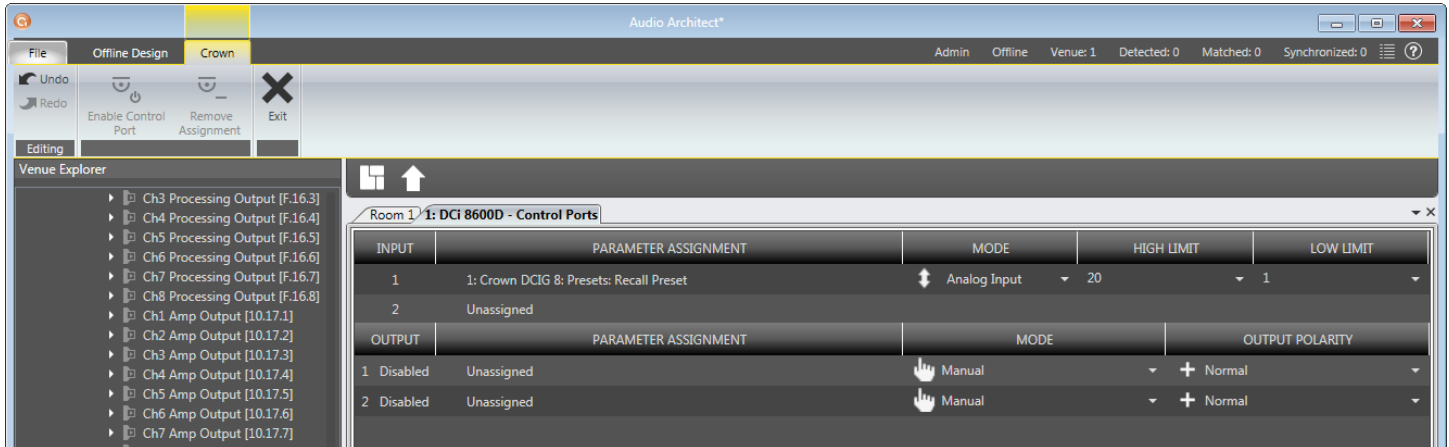


Figure 53: The current preset has been assigned for recall via Control port Input 1

Once an SV has been added, its type will determine which options become available in the Mode field. If a binary SV has been assigned, only the Direct Action mode is selectable, and the On Value and Off Value parameters can be toggled as desired. However, if a non-binary SV is added, the Analog Input mode becomes available. In this mode, the High Limit and Low Limit parameters become available instead. The High Limit and Low Limit parameters allow control of an SV over a specified range.

TIP: Additional SV's can be added to a given control input by selecting the SV and dragging it on top of a previously assigned row of the desired input (see **Figure 54**). However, once an SV has been assigned and the Mode parameter has been set, any subsequent SV that is added must function in the same mode. Up to 40 SV's can be assigned to a given input.

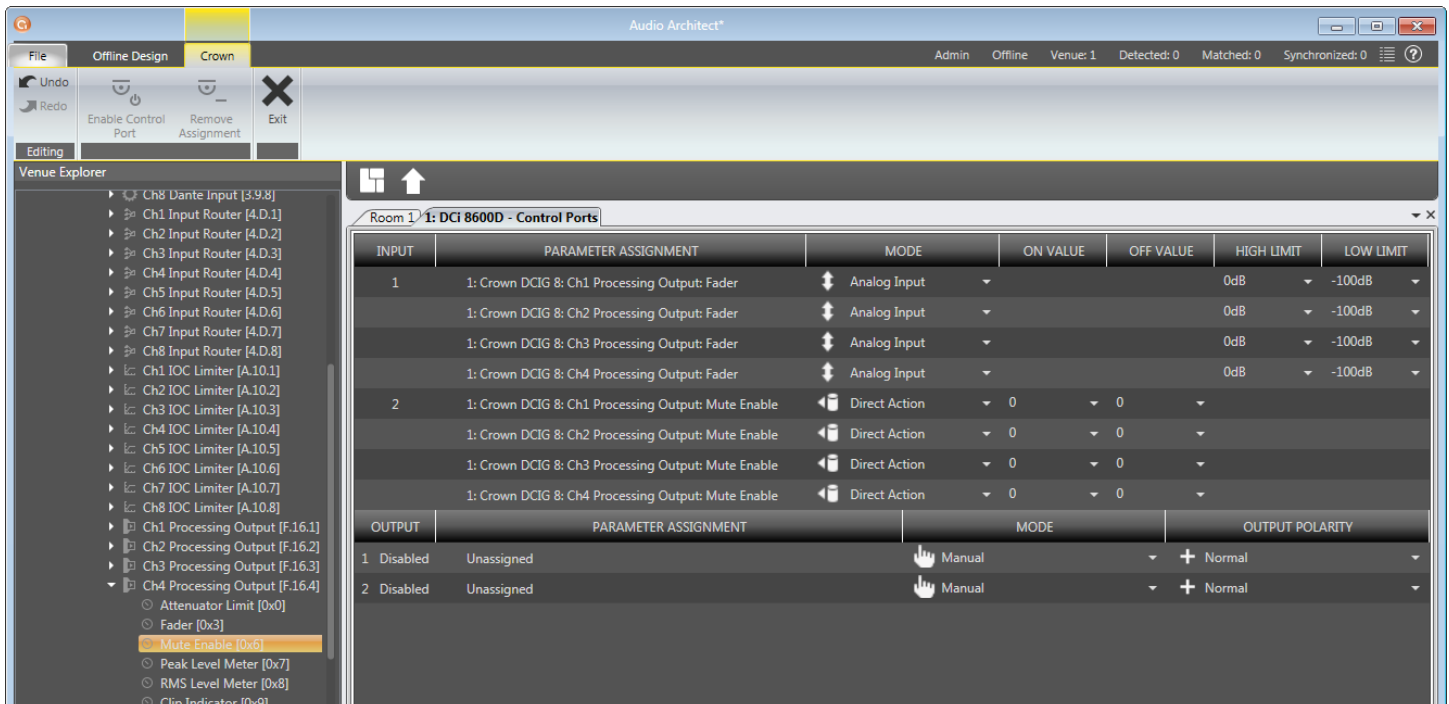


Figure 54: Shows Input 1 configured for fader control and Input 2 configured for mute control for channels 1-4

TIP: An assigned SV can be removed by highlighting it and then selecting **Remove Assignment** in the upper-left-hand corner of the window.

Configuring the Control Port Outputs

To access Control port configuration, left-click on the **DCi DA Amp Rack** icon in the Room window (see **Figure 21 on page 17**). Now, right click on the desired DCi DA amp icon within the selected rack, and then select **Configure Control Ports** from the list. A new tab labeled “(amplifier name) – Control Ports” will open.

Key Control port output configuration points:

- The 2 Control port outputs support binary control only.
- There is a polarity control on each output so that it may function as active-high or active-low.

The Control port output configuration options can be found directly below those for the inputs. No parameters can be assigned to the outputs. Instead, there are three modes available: Manual, Report Errors, and Report Online Status. Manual mode enables direct control over the selected output. In Report Errors mode, the output status will change if any errors are reported to the network, such as clip errors, temperature errors, line voltage errors, etc. Finally, in Report Online Status mode, the output status will change if no network communication is detected for at least 60 seconds. The Control port output does not turn off right away when reporting errors or online status. There are several reasons for this. The online status does not change quickly; it can take up to 60 seconds to drop offline or to recover. In these modes, the output is intended to be used with devices such as a backup amp switcher or an electro-mechanical system. Therefore, it is desirable to prevent this output from toggling on/off quickly. It may take the output up to 90 seconds to recover (i.e., switch states) from an error or loss of connection.

Control Port Output Fields

Output

This field identifies each output port, labeled 1 and 2.

Parameter Assignment

This field lists the parameters currently assigned to each control output.

Mode

This option determines the conditions under which the output status will change, with the following modes available:

- **Manual** – With this option selected, the output state can be manually controlled using a button in Audio Architect.
- **Report Errors** – With this option selected, the output state is active when any enabled error is reported. The indicator will stay on for up to 60 seconds after the error is cleared. Errors include:
 - Load Supervision
 - AC Line Voltage is out of range
 - Hardware Protection (faults)
 - Over temperature (any channel or the power supply)
 - Amp output clipping
 - Processing output clipping (off by default)
 - Analog Input clipping (off by default)
- **Report Online Status** – With this option selected, the output state is active when the HiQnet connection is lost. The length of time to wait for a time out is user adjustable, with the default time being 60 seconds.

Output Polarity

This option enables selection between “Normal” and “Inverted” for each control output.

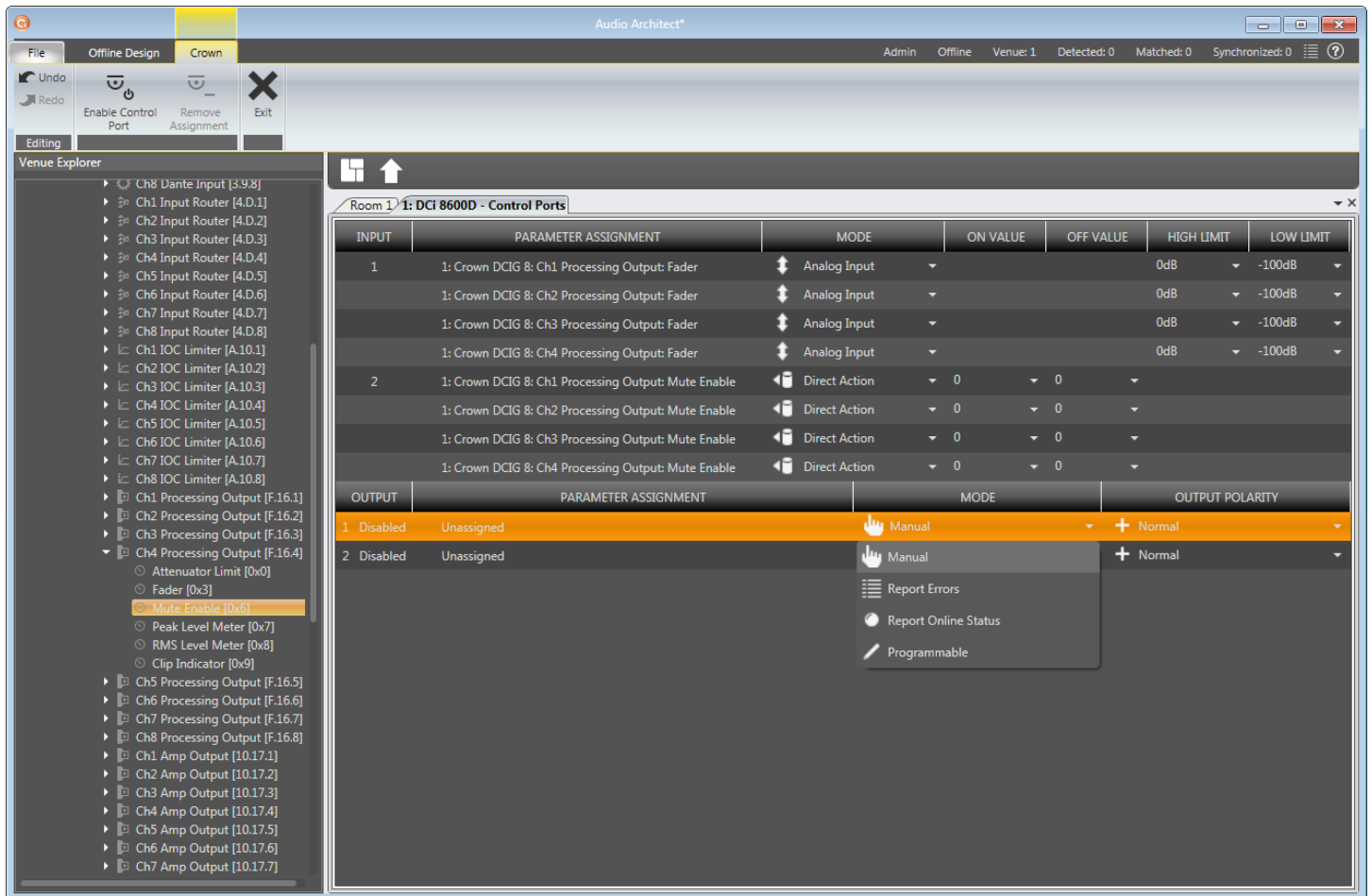


Figure 55: Control Port output configuration

NOTE: In all modes, the polarity of the binary output can be toggled under the Output Polarity tab, where “Normal” or “Inverted” can be selected.

Using the Aux Port

The Aux port can be used for basic monitoring of the amplifier and for remote standby (sleep). The port is a 3-pin block connector with pin 2 used as ground.

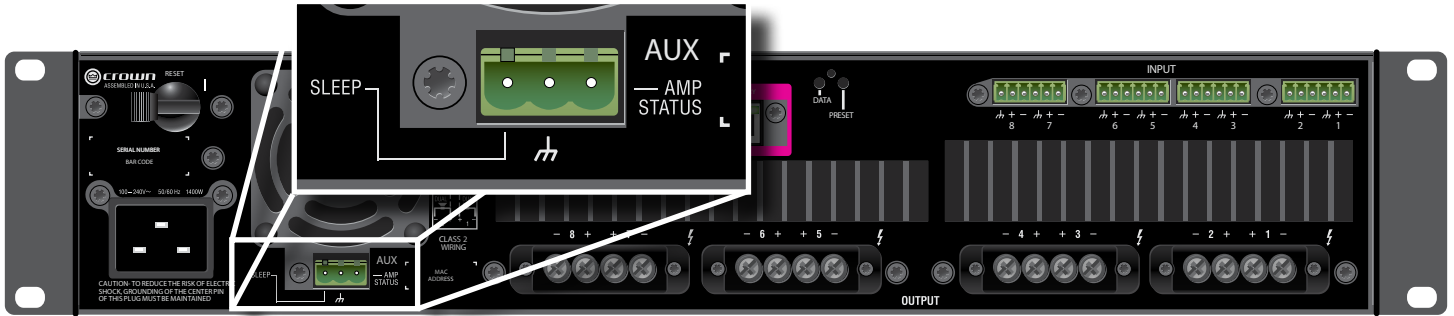


Figure 56: The Aux port

Sleep

The amplifier can be put to sleep by connecting pins 1 and 2 together on the Aux port. When applying this connection, the amplifier will shut down and remain in standby until the connection between pins 1 and 2 is opened. When the connection between pins 1 and 2 is opened, the amplifier will revert to its last configuration and begin to output audio within ~20 seconds. Network communication will be re-established once the network interface card boots. While the amplifier is in standby, the front-panel **Power** button is disabled and, if pressed, the blue **Power** indicator will blink twice to indicate the device is in standby.

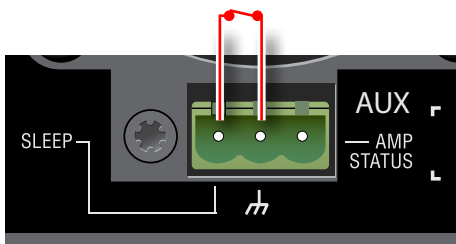


Figure 57: Sleep circuit closed (active)

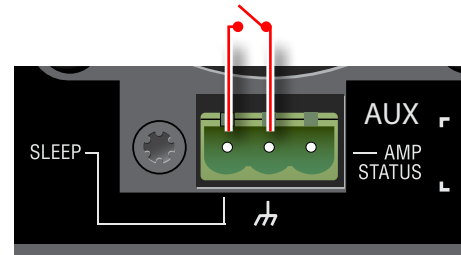


Figure 58: Sleep circuit open (inactive)

Amp Status

Amp Status can be used for basic monitoring of the amplifier. Monitoring of the amplifier can determine if it is operating within optimal parameters or if it has been shut off or is in fault.

There will be either a +5VDC potential or a 2Hz square wave (heart beat) between pins 2 and 3. This option can be set from the Amplifier Information panel, which can be accessed by clicking the **Amp Info** button on the amplifier's Configuration panel (see **Figure 59**).

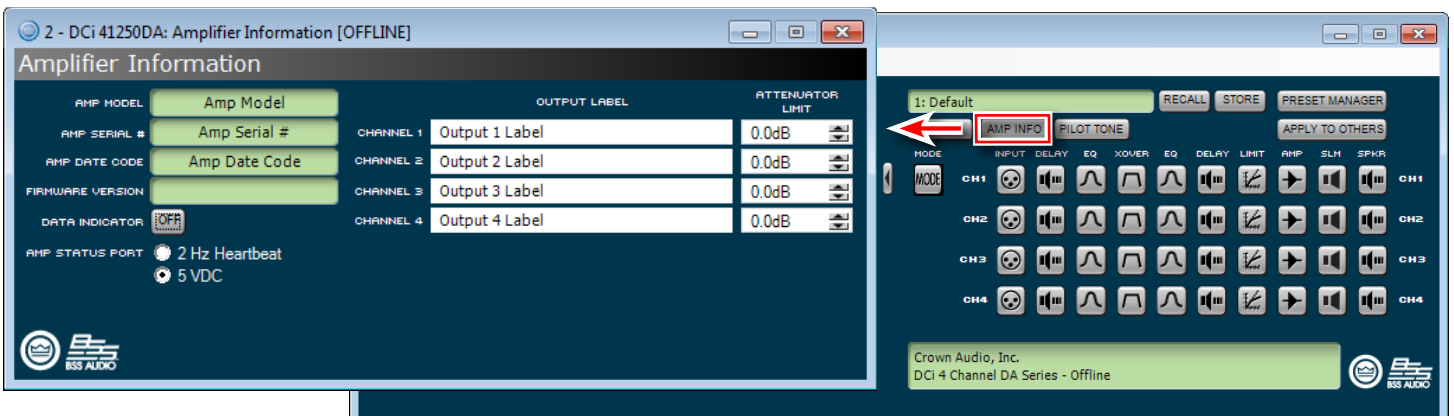


Figure 59: Amplifier Information panel

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 Ω limit (4–16 Ω limit in bridge mono mode). If wiring is verified as correct and the fault condition persists, see "**Service**" on page 62 for servicing information.

Thermal Limit

If the amplifier becomes too hot for safe operation, the channel that is generating too much heat will be shut down until the temperature drops below the thermal limit. The front-panel thermal indicator will illuminate at 80 degrees Celsius, indicating the onset of compression affecting the audio signal. 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 shuts off to protect itself above 98 degrees Celsius.

Auto-Insertion High-Pass Filters

A 35Hz high-pass filter is inserted automatically when an output channel is configured for high-Z operation.

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 a safe operating range.

Breaker

The DCi 4|1250DA and 8|600DA models use a resettable breaker. Please contact Crown Service for more information.

Fan-Cooled Chassis

DCi DA Series amplifiers are cooled by quiet, variable-speed fans. The maximum fan noise level of a DCi DA amplifier is 47 dBA. The fans will pull air from the front of the amplifier to the rear of the amplifier.

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





- High-frequency fault
- DC fault
- Short-circuit fault
- Thermal fault
- Rail fault

NOTE: After a fault, the fan will remain on at full speed for at least 60 seconds.

Universal Switching Power Supply

The DCi DA Series amplifiers incorporate a switching power supply designed for extremely high efficiency and high output power. The supply includes Power Factor Correction (PFC), a Series Resonant Converter (SRC), and accepts AC supply voltages from ~100V to ~240V ($\pm 10\%$), 50/60Hz. Microprocessor-controlled diagnostic and control capabilities both optimize performance and enhance long-term reliability.

Troubleshooting

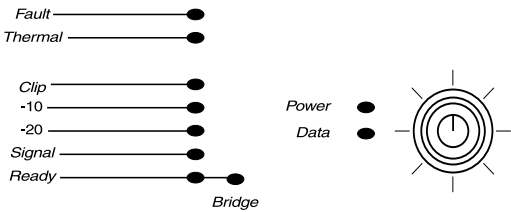
Key		Off
		Flashing
		Off/Flashing/On
		On

"Off/Flashing/On" above means that the LED can be off, flashing, or on.

CONDITION: Power indicator is off. Mains indicator is on.

POSSIBLE REASON:

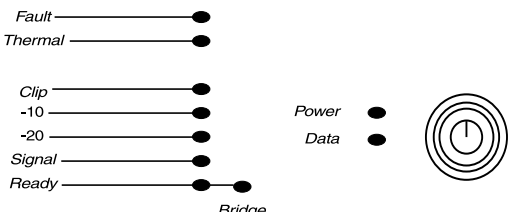
- The amplifier's **Power** switch is off.



CONDITION: Power indicator is off. Mains indicator is off.

POSSIBLE REASON:

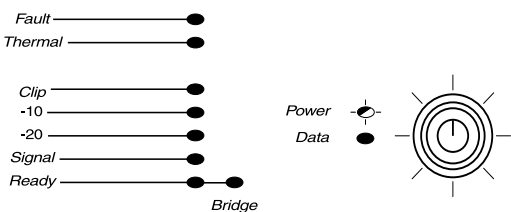
- The power supply breaker has tripped.
- The amplifier has lost AC Power.
- The amplifier is not plugged in to the power receptacle.



CONDITION: Power indicator is flashing.

POSSIBLE REASON:

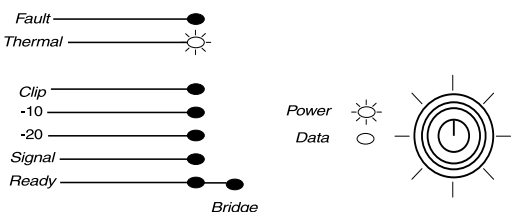
- The AC line voltage has dropped below 10% or has risen above 10% of the nominal line voltage of the power supply.
- When the Amp is in Sleep mode, as set by the Aux port, the amplifier will not power up until the ground closure on the Aux port is released. When the **Power** button is pushed in this condition, the **Power** Indicator will flash for 2-3 seconds.



CONDITION: Thermal indicator is on.

POSSIBLE REASON:

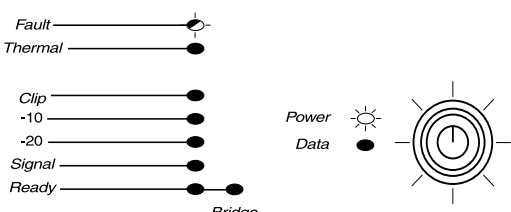
- The amplifier is becoming too hot for safe operation. Allow the amplifier to cool. Check for loads less than 2Ω (or less than 4Ω in bridge mono mode) and for excessive input levels. Check for proper ventilation and proper output mode (dual/bridge) configuration.



CONDITION: Fault indicator is flashing.

POSSIBLE REASON:

- There are a number of conditions that result in the **Fault** indicator flashing: the temperature is above 98°C, DC/LF protection is engaged, excessive high-frequency content is detected, 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.



CONDITION: Distorted sound.

POSSIBLE REASON:

- Load is wired incorrectly or the output mode (dual/bridge) configuration is set incorrectly. Check both.
- Input is overloaded by a signal level that is too high. Turn down your amplifier level controls, or turn down the input signal, until the **Clip** LED goes out.

NOTE: If the signal sounds distorted even though the **Clip** LED is off, the input signal may be distorted before it reaches the amplifier input. Check gain staging and output levels of the mixer or preamp.

Key



- Off
- ◐ Flashing
- Off/Flashing/On
- ☀ On

“Off/Flashing/On” above means that the LED can be off, flashing, or on.

CONDITION: No sound, even though the amp has power. Power LED is on (not flashing) and the amp is receiving an input signal. Signal indicator is flashing.

POSSIBLE REASON:

- Speakers not connected.
- Open circuit due to speaker failure.
- Based on the front-panel LEDs, determine which channel has a short. Remove the associated input connector to ensure that no voltage will be present on the output. Remove the shorted load (and possibly attached cables) and have it checked by a qualified technician. If the shorted condition remains after the load is removed, the unit should be serviced.
- If the **Ready** LED is off, the channel has been set to Sleep mode via the Aux port or Power Save mode.

<p>Fault — ●</p> <p>Thermal — ●</p> <p>Clip — ●</p> <p>-10 — ●</p> <p>-20 — ●</p> <p>Signal — ●</p> <p>Ready — ☀</p> <p style="text-align: right;">Bridge</p> <p>Power ☀</p> <p>Data ○</p> 	<p>CONDITION: No input signal. The Signal LED is not flashing, even though audio is present and the channel is ready.</p> <p>POSSIBLE REASON:</p> <ul style="list-style-type: none"> • Input signal level is very low.
<p>Power ☀</p> <p>Data ●</p> <p>Bridge ☀</p> 	<p>CONDITION: Bridge LED is lit.</p> <p>POSSIBLE REASON:</p> <ul style="list-style-type: none"> • Amplifier is in bridge mono mode.

Key	● Off
	☀ Flashing
	○ Off/Flashing/On
	☀ On

“Off/Flashing/On” above means that the LED can be off, flashing, or on.

Signal Path Block Diagram

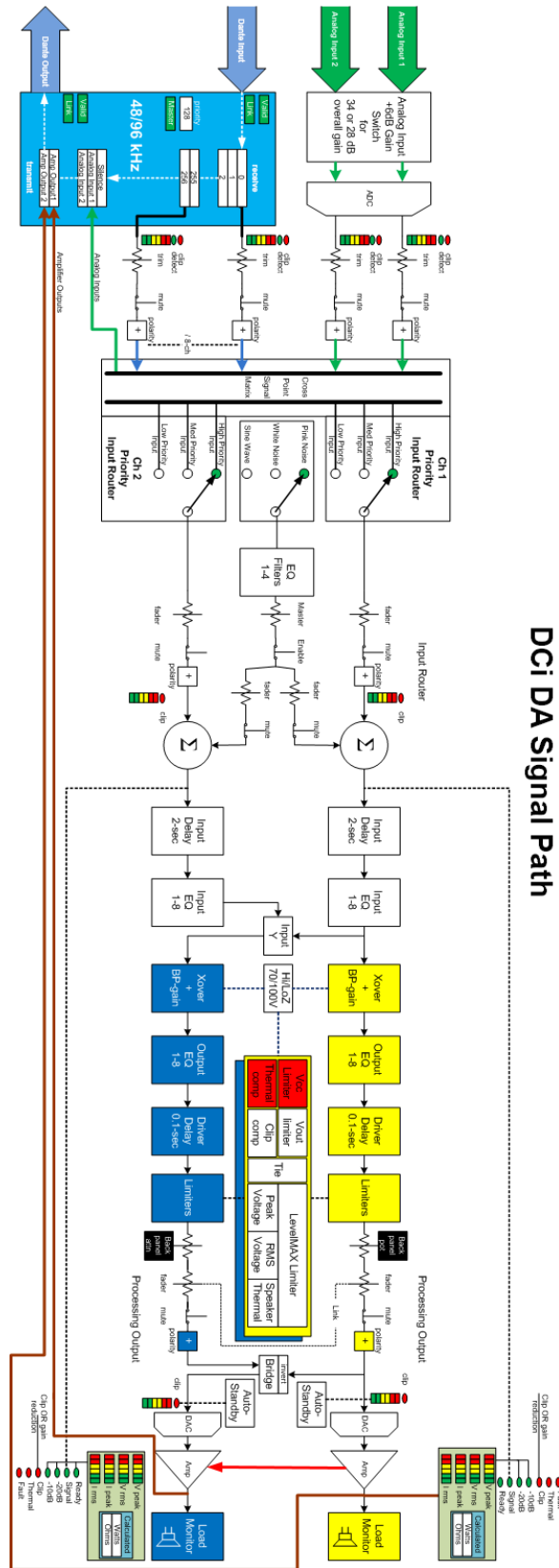


Figure 60: Signal Path Block Diagram

Specifications

Dual Mode – All Channels Driven

DCi Dante Model	Channels	2Ω	4Ω	8Ω	16Ω	70Vrms	100Vrms
4I300DA	4	150W	300W	300W	150W	300W	300W
4I600DA	4	300W	600W	600W	300W	600W	600W
4I1250DA	4	1250W	1250W	1250W	625W	1250W	1250W
8I300DA	8	150W	300W	300W	150W	300W	300W
8I600DA	8	300W	600W	600W	300W	600W	600W

Minimum Guaranteed Power (20Hz – 20kHz)

Bridge Mono Mode – All Channels Driven

DCi Dante Model	4Ω	8Ω	16Ω	140Vrms	200Vrms
4I300DA	300W	600W	600W	600W	600W
4I600DA	600W	1200W	1200W	1200W	1200W
4I1250DA	2500W	2500W	2500W	2500W	2500W
8I300DA	300W	600W	600W	600W	600W
8I600DA	600W	1200W	1200W	1200W	1200W

Minimum Guaranteed Power (20Hz – 20kHz)

Input Sensitivity

DCi Dante Model	8Ω	70Vrms	100Vrms
4I300DA	1.0Vrms	1.4Vrms	2.0Vrms
4I600DA	1.4Vrms	1.4Vrms	2.0Vrms
4I1250DA	2.0Vrms	1.4Vrms	2.0Vrms
8I300DA	1.0Vrms	1.4Vrms	2.0Vrms
8I600DA	1.4Vrms	1.4Vrms	2.0Vrms

Dimensions

DCi Dante Model	Width	Height	Depth
4I300DA	19 in (48.3 cm)	3.5 in. (8.9 cm)	14.25 in. (36.2 cm)
4I600DA	19 in (48.3 cm)	3.5 in. (8.9 cm)	14.25 in. (36.2 cm)
4I1250DA	19 in (48.3 cm)	3.5 in. (8.9 cm)	17 in. (43.2 cm)
8I300DA	19 in (48.3 cm)	3.5 in. (8.9 cm)	14.25 in. (36.2 cm)
8I600DA	19 in. (48.3 cm)	3.5 in. (8.9 cm)	17 in. (43.2 cm)

Performance Specifications

	4 300DA	4 600DA	4 1250DA	8 300DA	8 600DA
Voltage Gain (at maximum level setting) 4/8Ω, 70Vrms and 100Vrms Operation	34 dB				
Frequency Response (8Ω, 20Hz – 20kHz)	±0.25 dB				
Dante Signal-to-Noise Ratio (ref. rated power, 8Ω, 20Hz – 20kHz)	>108 dB				
Total Harmonic Distortion (at full rated power, from 20Hz – 20kHz)	0.35%				
Analog Input Signal to Noise Ratio (ref. rated power, 8Ω, 20Hz – 20kHz)	>104 dB				
Intermodulation Distortion (60Hz and 7kHz at 4:1, from -30 dB to full rated power)	≤0.35%				
Damping Factor (20Hz to 100Hz)	>1000	>1000	>1500	>1000	>1000
Crosstalk (below rated power, 20Hz to 1kHz)	>80 dB				
Common Mode Rejection (20Hz to 1kHz, typical)	>70 dB				
DC Output Offset (with inputs shorted)	±10mV				
Input Impedance (Nominally balanced, nominally unbalanced)	10 kΩ, 5 kΩ				
Maximum Input Level (Low Gain Mode)	+20 dBU				
Required AC Mains (±10%)	~100Vrms – ~240Vrms, 50/60Hz				
Cooling	Continuously variable speed forced air, front-to-back airflow				
Power Supply Connector	15A IEC connector	15A IEC connector	20A IEC connector	15A IEC connector	20A IEC connector
Load Impedance Stereo/Dual Mode	2Ω – 16Ω; 70Vrms and 100Vrms				
Load Impedance Bridge Mono	4Ω – 16Ω; 140Vrms and 200Vrms				
Maximum Fan Noise (re dB SPL @ 1M)	45 dBA	45 dBA	47 dBA	45 dBA	47 dBA
Weight	20.1 lbs (9.12 kg)	20.1 lbs (9.12 kg)	30 lbs (13.60 kg)	23.5 lbs (10.66 kg)	30 lbs (13.60 kg)

AC Power Draw and Thermal Dissipation

AC Power Draw and Thermal Dissipation:

Pink noise 12 dB crest factor, bandwidth limited 22Hz to 22kHz.

Typical line impedance used.

Data based on all channels driven.

DCi 4 300DA – Bridge Mode									
		120VAC / 60Hz				230VAC / 50Hz			
Condition	Load	Line current (amps)	Power Dissipated as Heat			Line current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.0	118	402	101	0.6	118	401	101
1/8 Power Pink Noise Typical of program material just at clip	4Ω	1.9	152	520	131	1.0	148	505	127
	8Ω	2.5	152	517	130	1.3	151	515	130
	16Ω	2.5	141	480	121	1.3	136	464	117
	140V (32.67Ω)	2.5	133	453	114	1.3	131	446	113
	200V (66.67Ω)	2.4	128	435	110	1.2	126	430	108
1/3 Power Pink Noise Typical of program material at extreme clip	4Ω	3.2	190	650	164	1.7	185	630	159
	8Ω	5.2	205	699	176	2.6	194	664	167
	16Ω	4.9	171	583	147	2.5	168	575	145
	140V (32.67Ω)	4.7	157	535	135	2.4	153	523	132
	200V (66.67Ω)	4.8	148	507	128	2.5	146	498	125

DCi 4 300DA – Dual Mode									
		120VAC / 60Hz				230VAC / 50Hz			
Condition	Load	Line current (amps)	Power Dissipated as Heat			Line current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.0	119	407	103	0.6	114	389	98
1/8 Power Pink Noise Typical of program material just at clip	2Ω	2.0	153	523	132	1.0	140	478	120
	4Ω	2.6	155	528	133	1.4	146	498	125
	8Ω	2.4	136	463	117	1.3	135	460	116
	70V (16.33Ω)	2.5	135	459	116	1.3	127	433	109
	100V (33.33Ω)	2.4	129	440	111	1.3	121	414	104
1/3 Power Pink Noise Typical of program material at extreme clip	2Ω	3.3	195	665	168	1.7	177	604	152
	4Ω	5.0	207	705	178	2.6	185	632	159
	8Ω	4.8	178	609	154	2.5	159	544	137
	70V (16.33Ω)	4.7	155	530	134	2.4	148	505	127
	100V (33.33Ω)	4.7	150	514	129	2.5	142	486	122

AC Power Draw and Thermal Dissipation:

Pink noise 12 dB crest factor, bandwidth limited 22Hz to 22kHz.

Typical line impedance used.

Data based on all channels driven.

DCi 4 600DA – Bridge Mode									
		120VAC / 60Hz				230VAC / 50Hz			
Condition	Load	Line current (amps)	Power Dissipated as Heat			Line current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.0	113	387	98	0.6	118	404	102
1/8 Power Pink Noise Typical of program material just at clip	4Ω	2.7	170	582	147	1.4	165	563	142
	8Ω	4.1	176	599	151	2.1	178	608	153
	16Ω	3.8	156	531	134	2.0	151	516	130
	140V (16Ω)	3.9	156	534	135	2.1	158	538	136
	200V (33.33Ω)	3.8	150	511	129	2.0	141	482	122
1/3 Power Pink Noise Typical of program material at extreme clip	4Ω	5.6	247	844	213	2.9	235	801	202
	8Ω	9.5	298	1018	257	4.8	269	916	231
	16Ω	8.7	223	760	192	4.5	207	705	178
	140V (16Ω)	8.7	230	786	198	4.5	214	730	184
	200V (33.33Ω)	8.7	203	692	174	4.4	176	601	151

DCi 4 600DA – Dual Mode									
		120VAC / 60Hz				230VAC / 50Hz			
Condition	Load	Line current (amps)	Power Dissipated as Heat			Line current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.0	113	386	97	0.6	115	391	99
1/8 Power Pink Noise Typical of program material just at clip	2Ω	2.8	172	588	148	1.5	162	555	140
	4Ω	4.1	165	564	142	2.1	171	582	147
	8Ω	3.9	151	514	130	2.0	138	470	119
	70V (16.33Ω)	3.9	147	500	126	2.1	143	488	123
	100V (33.33Ω)	3.7	138	470	118	2.0	134	458	115
1/3 Power Pink Noise Typical of program material at extreme clip	2Ω	5.9	256	874	220	3.1	253	862	217
	4Ω	9.0	264	900	227	4.5	234	799	201
	8Ω	8.6	213	726	183	4.5	206	704	178
	70V (16.33Ω)	8.8	223	760	192	4.5	200	682	172
	100V (33.33Ω)	8.5	196	670	169	4.4	190	648	163

AC Power Draw and Thermal Dissipation:

Pink noise 12 dB crest factor, bandwidth limited 22Hz to 22kHz.

Typical line impedance used.

Data based on all channels driven.

DCi 4 1250DA – Bridge Mode									
		120VAC / 60Hz				230VAC / 50Hz			
Condition	Load	Line current (amps)	Power Dissipated as Heat			Line current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.6	183	625	157	0.9	183	625	157
1/8 Power Pink Noise Typical of program material just at clip	4Ω	8.4	309	1054	266	4.3	238	813	205
	8Ω	8.0	263	898	226	3.8	207	707	178
	16Ω	7.4	232	792	200	3.8	216	737	186
	140V (8Ω)	7.3	227	775	195	4.3	230	785	198
	200V (16Ω)	7.6	226	773	195	3.9	229	781	197
1/3 Power Pink Noise Typical of program material at extreme clip	4Ω	19.5	533	1819	458	10.0	419	1432	361
	8Ω	17.5	384	1311	330	9.5	414	1412	356
	16Ω	17.5	365	1246	314	9.0	292	997	251
	140V (8Ω)	16.8	330	1128	284	8.8	345	1176	296
	200V (16Ω)	17.1	334	1139	287	9.0	291	991	250

DCi 4 1250DA – Dual Mode									
		120VAC / 60Hz				230VAC / 50Hz			
Condition	Load	Line current (amps)	Power Dissipated as Heat			Line current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.6	183	625	157	0.9	184	628	158
1/8 Power Pink Noise Typical of program material just at clip	2Ω	8.9	217	740	187	4.5	230	787	198
	4Ω	9.0	245	835	210	4.3	215	734	185
	8Ω	8.3	232	792	200	3.9	195	665	168
	70V (4Ω)	8.5	220	751	189	4.4	198	675	170
	100V (8Ω)	7.6	219	747	188	3.9	177	604	152
1/3 Power Pink Noise Typical of program material at extreme clip	2Ω	21.3	443	1512	381	10.6	405	1382	348
	4Ω	20.3	397	1357	342	9.3	300	1025	258
	8Ω	18.0	301	1027	259	8.8	249	851	215
	70V (4Ω)	17.1	289	988	249	9.0	262	896	226
	100V (8Ω)	17.4	278	950	240	9.1	265	904	228

AC Power Draw and Thermal Dissipation:

Pink noise 12 dB crest factor, bandwidth limited 22Hz to 22kHz.

Typical line impedance used.

Data based on all channels driven.

DCi 8 300DA – Bridge Mode									
		120VAC / 60Hz				230VAC / 50Hz			
Condition	Load	Line current (amps)	Power Dissipated as Heat			Line current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.8	206	705	178	0.9	201	686	173
1/8 Power Pink Noise Typical of program material just at clip	4Ω	3.5	260	886	223	1.8	261	890	224
	8Ω	4.9	277	944	238	2.5	259	884	223
	16Ω	4.7	251	857	216	2.4	232	792	200
	140V (32.67Ω)	4.6	236	806	203	2.4	226	770	194
	200V (66.67Ω)	4.5	236	805	203	2.3	216	737	186
1/3 Power Pink Noise Typical of program material at extreme clip	4Ω	6.5	357	1220	308	3.3	335	1144	288
	8Ω	10.0	377	1287	324	5.2	369	1259	317
	16Ω	9.5	313	1069	269	4.8	305	1041	263
	140V (32.67Ω)	9.4	296	1011	255	4.8	279	951	240
	200V (66.67Ω)	9.2	287	979	247	4.8	273	932	235

DCi 8 300DA – Dual Mode									
		120VAC / 60Hz				230VAC / 50Hz			
Condition	Load	Line current (amps)	Power Dissipated as Heat			Line current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.8	203	693	175	0.9	201	685	173
1/8 Power Pink Noise Typical of program material just at clip	2Ω	3.9	276	941	237	2.1	267	913	230
	4Ω	4.8	276	943	238	2.5	261	891	225
	8Ω	4.9	252	859	217	2.5	237	807	204
	70V (16.33Ω)	4.5	222	759	191	2.4	222	756	191
	100V (33.33Ω)	4.5	228	779	196	2.4	219	746	188
1/3 Power Pink Noise Typical of program material at extreme clip	2Ω	6.7	353	1206	304	3.4	343	1171	295
	4Ω	9.9	341	1165	294	5.0	318	1085	273
	8Ω	9.5	312	1066	269	4.8	293	1000	252
	70V (16.33Ω)	9.4	304	1037	262	4.8	275	938	237
	100V (33.33Ω)	9.2	295	1007	254	4.7	270	923	233

AC Power Draw and Thermal Dissipation:

Pink noise 12 dB crest factor, bandwidth limited 22Hz to 22kHz.

Typical line impedance used.

Data based on all channels driven.

DCi 8 600DA – Bridge Mode									
		120VAC / 60Hz				230VAC / 50Hz			
Condition	Load	Line current (amps)	Power Dissipated as Heat			Line current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.9	218	744	188	1.0	220	751	189
1/8 Power Pink Noise Typical of program material just at clip	4Ω	5.4	330	1126	284	2.8	325	1109	279
	8Ω	8.1	346	1181	298	4.2	335	1144	288
	16Ω	7.7	306	1044	263	3.8	276	941	237
	140V (16Ω)	7.7	300	1023	258	3.9	285	973	245
	200V (33.33Ω)	7.5	281	960	242	3.9	272	929	234
1/3 Power Pink Noise Typical of program material at extreme clip	4Ω	10.8	468	1597	403	5.4	445	1519	383
	8Ω	17.9	530	1810	456	9.0	476	1625	410
	16Ω	17.0	421	1437	362	8.7	389	1328	335
	140V (16Ω)	17.3	439	1500	378	8.8	382	1305	329
	200V (33.33Ω)	17.0	412	1407	355	8.6	342	1168	294

DCi 8 600DA – Dual Mode									
		120VAC / 60Hz				230VAC / 50Hz			
Condition	Load	Line current (amps)	Power Dissipated as Heat			Line current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.9	222	756	191	1.0	221	754	190
1/8 Power Pink Noise Typical of program material just at clip	2Ω	5.5	336	1147	298	3.0	332	1133	286
	4Ω	8.2	363	1241	313	4.4	348	1186	299
	8Ω	7.8	314	1071	270	4.1	293	999	252
	70V (16.33Ω)	7.6	307	1047	264	4.0	289	979	274
	100V (33.33Ω)	7.8	293	1001	252	3.9	262	896	226
1/3 Power Pink Noise Typical of program material at extreme clip	2Ω	11.0	498	1700	429	5.9	476	1625	410
	4Ω	17.5	510	1739	438	10.0	547	1868	471
	8Ω	17.4	467	1593	402	9.1	421	1437	362
	70V (16.33Ω)	17.0	446	1522	384	9.0	393	1342	338
	100V (33.33Ω)	16.8	419	1430	360	8.9	362	1234	311

Warranty (United States Only)

SUMMARY OF WARRANTY

Crown International, 1718 West Mishawaka Road, Elkhart, Indiana 46517-4095 U.S.A. warrants to you, the ORIGINAL PURCHASER and ANY SUBSEQUENT OWNER of each NEW Crown product, for three years from the date of purchase by the original purchaser (the "warranty period") that the new Crown product is free of defects in materials and workmanship. We further warrant the new Crown product regardless of the reason for failure, except as excluded in this Warranty.

**Warranty is only valid within the United States of America. For information on Warranty outside of the U.S.A, please contact your local distributor.*



ITEMS EXCLUDED FROM THIS CROWN WARRANTY

This Crown Warranty is in effect only for failure of a new Crown product which occurred within the Warranty Period. It does not cover any product which has been damaged because of any intentional misuse, accident, negligence, or loss which is covered under any of your insurance contracts. This Crown Warranty also does not extend to the new Crown product if the serial number has been defaced, altered, or removed.

WHAT THE WARRANTOR WILL DO

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 CROWN 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.

WARRANTY ALTERATIONS

No person has the authority to enlarge, amend, or modify this Crown Warranty. This Crown Warranty is not extended by the length of time which you are deprived of the use of the new Crown product. Repairs and replacement parts provided under the terms of this Crown Warranty shall carry only the unexpired portion of this Crown 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 CROWN WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. No action to enforce this Crown Warranty shall be commenced after expiration of the warranty period.

THIS STATEMENT OF WARRANTY SUPERSEDES ANY OTHERS CONTAINED IN THIS MANUAL FOR CROWN PRODUCTS. 04/15

Service

Crown products are quality units that rarely require servicing. Before returning your unit for servicing, please contact Crown 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 Crown 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 Crown/Amcron 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. A list of authorized service centers in your area can be obtained from Crown Factory Service, or online from www.crownaudio.com/en/support/service_lookup

Factory Service

Crown 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.

A Service Return Authorization (SRA) is required for product being sent to the factory for repair. An SRA can be completed online at www.crownaudio.com/support/rma. If you do not have access to the web, please call Customer Service at 574.294.8200 or 800.342.6939 extension 8205 in North America, Puerto Rico and the Virgin Islands only.

For warranty service, we will pay for ground shipping both ways in the United States. Contact Customer Service to obtain prepaid shipping labels prior to sending the unit. Or, if you prefer, you may prepay the cost of shipping, and HARMAN will reimburse you. Send copies of the shipping receipts to HARMAN to receive reimbursement.

Your repaired unit will be returned via UPS ground. Please contact us if other arrangements are required.

Factory Service Shipping Instructions

1. Service Return Authorization (SRA) is required for product being sent to the factory for service. Please complete the SRA by going to www.crownaudio.com/support/rma. If you do not have access to our website, call 1.800.342.6939, extension 8205 and we will create the SRA for you.
2. See packing instructions that follow.
3. Ship product to:
HARMAN Factory Service
1718 W Mishawaka Rd.
Elkhart, IN 46517
4. Use a bold black marker and write the SRA number on three sides of the box.
5. Record the SRA number for future reference. The SRA number can be used to check the repair status.

Packing Instructions

Important: These instructions must be followed. If they are not followed, HARMAN International, Inc. assumes no responsibility for damaged goods and/or accessories that are sent with your unit.

1. Fill out and include the Service Return Authorization Request in the back of this manual.
2. Do not ship any accessories (manuals, cords, hardware, etc.) with your unit. These items are not needed to service your product. We will not be responsible for these items.
3. When shipping your Crown product, it is important that it has adequate protection. We recommend you use the original pack material when returning the product for repair. If you do not have the original box, please call HARMAN at 800.342.6939 or 574.294.8210 and order new pack material. (Do not ship your unit in a wood or metal cabinet).
4. If you provide your own shipping pack, the minimum recommended requirements for materials are as follows:
 - a. 275 P.S.I. burst test, double-wall carton that allows for 2-inch solid Styrofoam on all six sides of unit or 3 inches of plastic bubble wrap on all six sides of unit.
 - b. Securely seal the package with an adequate carton sealing tape.
 - c. Do not use light boxes or "peanuts". Damage caused by poor packaging will not be covered under warranty.

Enclose the completed Service Return Authorization Request (or securely attach it to the outside of carton) and re-seal the shipping pack with a sturdy carton sealing tape.

Estimate Approval

Approval of estimate must be given within 30 days after being notified by HARMAN International. Units still in the possession of HARMAN after 30 days of the estimate will become the property of HARMAN International.

Payment of Non-Warranty Repairs

Payment on out-of-warranty repairs must be received within 30 days of the repair date. Units unclaimed after 30 days become the property of HARMAN International.

If you have any questions, please contact HARMAN.

HARMAN Factory Service

1718 W. Mishawaka Rd.,
Elkhart, Indiana 46517 U.S.A.

Telephone:

574-294-8200
800-342-6939 (North America, Puerto Rico, and Virgin Islands only)

Facsimile:

574-294-8301 (Technical Support)
574-294-8124 (Factory Service)

Web site:

www.crownaudio.com

Service Return Authorization Request

Shipping Address: HARMAN Factory Service, 1718 W. Mishawaka Rd., Elkhart, IN 46517
You may also request a service return authorization at www.crownaudio.com/support/rma

PLEASE PRINT CLEARLY

SRA #: _____ (If sending product to Crown factory service)
Model: _____ Serial Number: _____ Purchase Date: _____

PRODUCT RETURN INFORMATION

Individual or Business Name: _____
Phone #: _____ Fax #: _____ E-Mail: _____
Street Address (please, no P.O. Boxes): _____
City: _____ State/Prov: _____ Postal Code: _____ Country: _____
Nature of problem: _____

Other equipment in your system: _____

If warranty is expired, please provide method of payment. Proof of purchase may be required to validate warranty.

PAYMENT OPTIONS

- I have open account payment terms. Purchase order required. PO#: _____ COD
- Credit Card (Information below is required; however if you do not want to provide this information at this time, we will contact you when your unit is repaired for the information.)

Credit card information:

Type of credit card: MasterCard Visa American Express Discover

Type of credit card account: Personal/Consumer Business/Corporate

Card # _____ Exp. date: _____ *Card ID #: _____

*Card ID # is located on the back of the card following the credit card #, in the signature area. On American Express, it may be located on the front of the card. This number is required to process the charge to your account. If you do not want to provide it at this time, we will call you to obtain this number when the repair of your unit is complete.

Name on credit card: _____

Billing address of credit card: _____

