Audia

DIGITAL AUDIO PLATFORM

CREATED BY
BIAMP™

OPERATION MANUAL

(printable Help file)

October 31, 2002

Table of Contents

Component Objects   40

System Design   69

Hardware   86

System Control   90

Introduction

Overview

Audia is a <u>Digital Audio Platform</u>, which provides distributed digital audio, signal processing, and control.

Audia is a networkable, decentralized audio system, which is easy to configure & program.

Audia allows the installer to quickly & accurately define the exact sound system required for each job.

Audia is software programmable, easily expandable, and remotely controllable.

Audia utilizes both CobraNet(TM) and Ethernet for enhanced system networking and control.

Audia is a completely customizable, yet cost-effective, solution for sound system design.

Audia is covered by a five-year warranty.

<u>ALGORITHMS</u>
- Mixers: standard, automatic, matrix, combiners
- Equalizers: graphic & parametric
- Filters: HPF, LPF, high shelving, low shelving
- Crossovers: 2-way, 3-way, 4-way
- Dynamics: levelers, comp/limiters, duckers, gates
- Routers: 2x4 to 40x40
- Delays: 0 to 2,000 mS
- Controls: levels, mutes, presets, remotes, logic
- Meters: signal present, peak reading, RMS reading
- Generators: single tone, sweep, pink-noise, white-noise
- Diagnostics: transfer function

HARDWARE:

- Six 60 MHz 32-bit floating point Analog Devices SHARC DSPs *(360 MFLOPS)*
- 80 MHz 32-bit Motorola Power PC host processor
- 32 Mbytes SDRAM
- 8 Mbytes Flash ROM
- Ethernet communications for software control and configuration
- Support of TCP/IP, UDP and ICMP *(ping)* networking standards
- Battery backed real-time clock and calendar
- Powered CAN bus for easy addition of AUDIA control devices; touch screens, rotary encoders, and contact switches
- RS-232 serial port for simple connection to 3rd party control devices
- Internal 80 watt universal switching power supply
- Multiple analog I/O configurations *(8x8, 4x12, & 12x4)*
- Mic/Line inputs with programmable mic preamp *(0dB to ~ +66dB gain)*
- Optional CobraNet interface supporting 64 channels of digital audio *(32 in/32 out)* over Fast Ethernet
- Compatible with all other CobraNet compliant devices
- Works with standard Ethernet switches
- Multiple system-wide presets and current settings stored in flash memory
- Layout drawing information stored in flash memory
- 24-bit A/D & D/A converters

SOFTWARE:

- Win32 application - Windows NT 4.0/2000/XP operating system required
- Fully dockable Menu and Toolbar support
- Birdseye viewer for easy panning and zooming of large layout files
- Fully customizable Processing Library bar for storing default and custom DSP objects
- Workspace state saved at program shutdown, including current documents, Toolbar, Catalog & Birdseye viewer states
- User configurable data file and Processing Library catalog
- Simple object attribute control: colors, line widths, hatching, text font, size, style & alignment, border widths, etc.
- Multiple simultaneous line *(wire)* drawing with no special editing modes required
- Special text block object to enter freeform text and label information
- Easy-to-use tools for object alignment, sizing, packing, spacing & centering
- Fully supported object drag-and-drop between Catalog and view, and between views
- Fully supported multiple layers within a drawing
- Support of Clipboard operation
- Programmable presets
- Export file types: DXF *(drawing interchange format)* & EMF *(enhanced meta files)*

Architect's & Engineer's Specification

AUDIA(TM) Digital Audio Platform

ARCHITECTS & ENGINEERS SPECIFICATION   (January 1, 2002)

The Digital Audio Platform shall be available in three hardware configurations:
8-in/8-out (8x8); 12-in/4-out (12x4); and 4-in/12-out (4x12). Inputs and
outputs shall be analog, with internal 24-bit A/D & D/A converters operating at
a sample rate of 48kHz. All internal processing shall be digital (DSP).
Electronically balanced inputs and outputs shall be provided on plug-in barrier-
strip connectors. Inputs shall be individually programmable to accept either
microphone or line level signals. The 12x4 configuration shall allow inputs 11
& 12 to be set for mono summing of unbalanced stereo line level signals.
Outputs shall normally provide line level signals, however, the 4x12
configuration shall allow outputs 1~4 to be individually programmed to provide
microphone level signals.

Each hardware configuration shall include six 60MHz 32-bit floating point SHARC
DSPs, an 80MHz 32-bit Power PC host processor, 32MB SDRAM, and 8MB Flash ROM.
Software shall be provided for creating/connecting DSP system components within
each hardware unit. Available system components shall include (but not be
limited to) various forms of: mixers, equalizers, filters, crossovers,
dynamics/gain controls, routers, delays, level controls, level meters, and tone
generators. Ethernet communications shall be utilized for software control,
configuration, and DSP sharing. CobraNet(TM) technology shall transport digital
audio over fast Ethernet, allowing multiple units to share digital audio. After
initial programming, systems may be controlled using either TCP/IP or RS-232
serial communication by third party control systems such as AMX(TM) and
Crestron(TM).

Each hardware configuration shall be available with CobraNet(TM) (for multi-unit
network applications) or without CobraNet(TM) (for stand-alone applications).
Multi-unit network applications require an external 10/100Base-T Ethernet
switch. All CobraNet(TM) & Ethernet connections shall be via CAT5 cable or
fiber-optic. Software shall operate on a PC computer, with network card
installed, running Windows(TM) NT 4.0/2000/XP.

The Digital Audio Platform shall be AUDIA.

Documentation

The information contained in this Help file can be printed in manual form (with Table of Contents and Index). Two PDF documents are provided on the software CD-ROM for this purpose. The file **AUDIA.pdf** is intended for printing on **Letter** (8.5" x 11") size paper. The file **AUDIA-A4.pdf** is intended for printing on **A4** (210mm x 297mm) size paper. These are printable Help files. Similar PDF files are also available on the software CD-ROM, for the 'RS-232 & Telnet Protocol' and the 'Quick Start Guide & Safety Information' documents.

Software Tools

Basic Screen Elements

The main screen of the **Audia**(TM) software has several sections. The Layout occupies the largest portion of the main screen, at the lower-right. This is the area where system design actually occurs, with the placement & connection of Component Objects. Component Objects represent the individual audio devices (processing blocks) within the system. Other objects include Lines (for connecting components) and Text (for labeling the system). If a system becomes too big to fit the Layout, a Bird's Eye View is available to aid navigation. A Processing Library of available Component Objects is displayed, at the lower-left of the main screen, for drag & drop placement into the Layout. However, the Processing Library can be closed, increasing the width of the Layout, and Component Object selection can then be accomplished using the Object Toolbar, located directly above the Layout. The Object Toolbar also provides the option of either a select or a text cursor. Above the Object Toolbar is the Format Toolbar, which allows customizing of text & colors used in the Layout and associated objects. Above the Format Toolbar is the Layout Toolbar, which affects certain aspects of Layout, such as the grid, rulers, zooming, & alignment of Component Objects. The Layout Toolbar can also open editing/information sheets for properties, objects, & layers. Above the Layout Toolbar is the Network Toolbar, with functions related to communications, configuration, maintenance, and testing of the system network. Above the Network Toolbar is the Standard Toolbar, with file functions such as new, open, & save, plus additional functions such as cut, copy, paste, print, & help. The Standard Toolbar also includes the Compile function, which will generate a new configuration file, while checking system layout/connections & determining DSP resource allocation. Above the Standard Toolbar are the Main Menus, which provides all of the toolbar functions mentioned above, with several more in-depth editing functions. Along the bottom edge of the main screen is a Status Bar, which gives indication of object quantity, location, & size, as well as layer name, visability, & locking. The location and shape of all toolbars, including the Processing Library, may be changed to fit the user's preference.
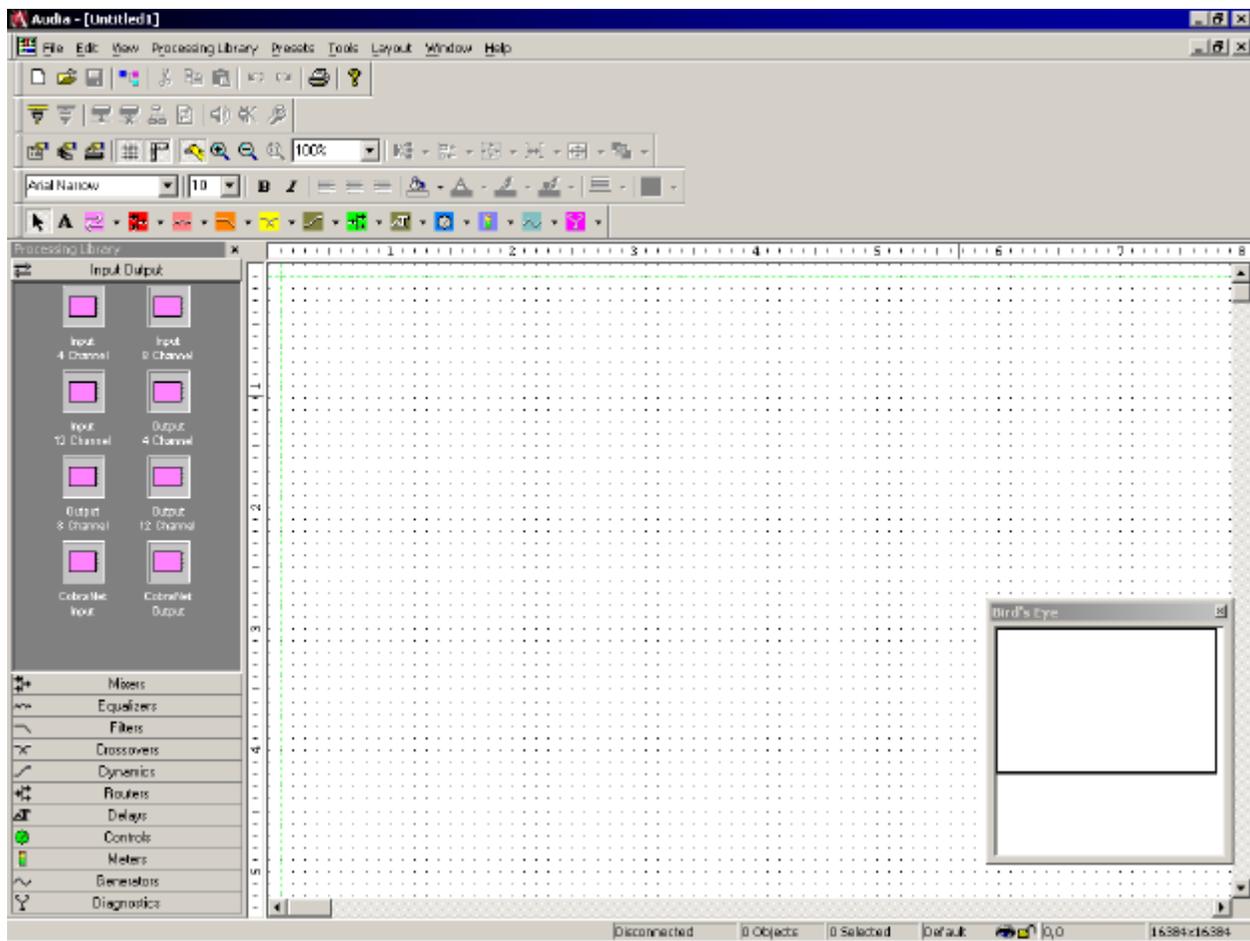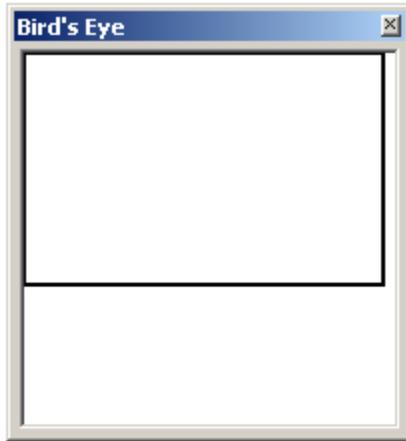
Layout
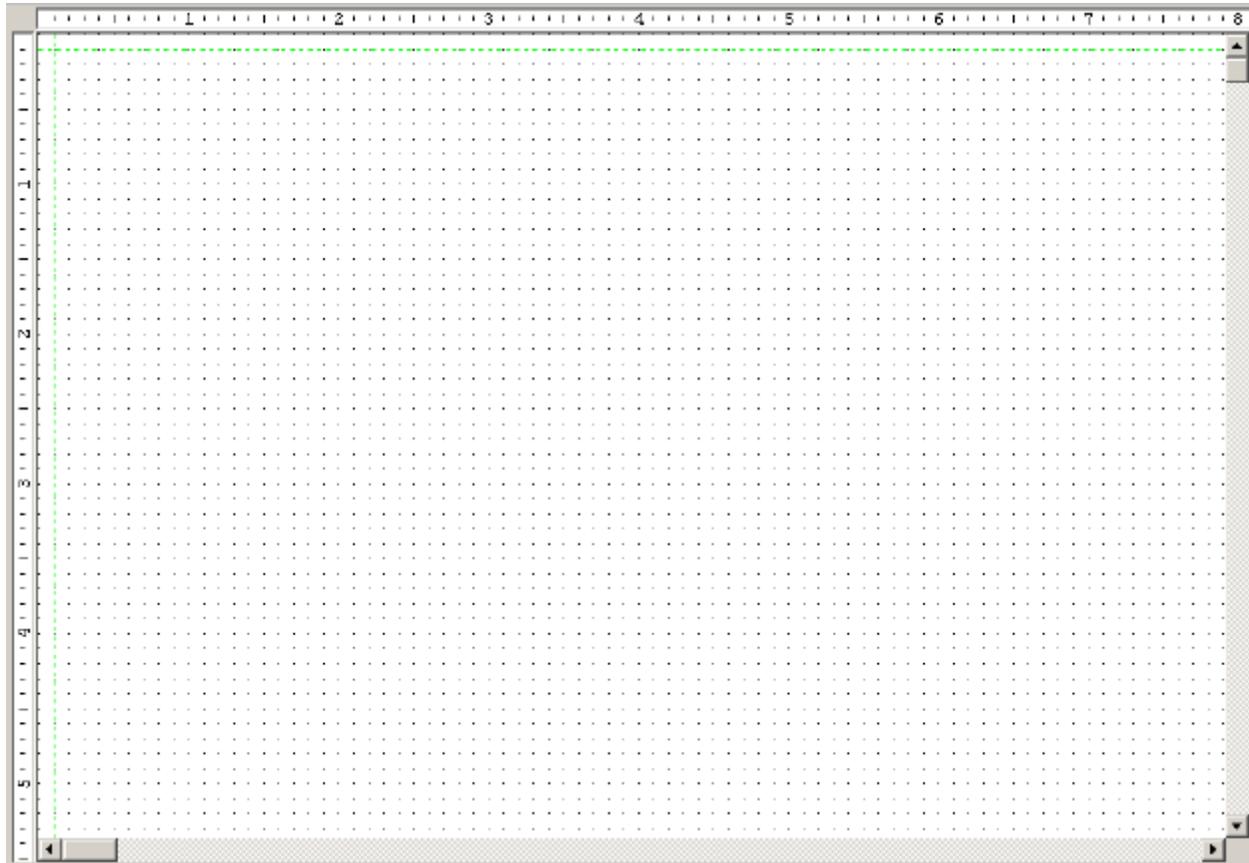
The Layout occupies the largest portion of the main screen, at the lower-right. This is the area where system design actually occurs, with the placement & connection of Component Objects. Component Objects represent the individual audio devices (processing blocks) within the system. Other objects include Lines (for connecting components) and Text (for labeling the system). Component objects can be placed into the Layout from the Processing Library, the Object Toolbar, or the Processing Library Menu. The Layout has fixed dimensions of 16384x16384 pixels (approx. 163.75" square). Therefore, horizontal & vertical scroll bars are used to navigate within the Layout. Zoom In/Out and a Bird's Eye View are also available as navigational aids, and can be accessed from the Layout Toolbar or View Menu. The Ruler and Grid may be turned on/off from the Layout Toolbar, and the background color of the Layout may be changed from the Format Toolbar. Grid Settings, such as snap-to-grid, grid spacing, and guideline spacing, are available from the Layout Menu. Minimize, Down-Size, and Close buttons for the Layout are located in the upper-right corner of the main screen. Right-clicking over the Layout provides a pop-up menu of options.

Bird's Eye View

The Bird's Eye View provides a thumb-nail sketch of the entire system design, to aid navigation within the Layout. Bird's Eye View initially covers an area of only 8" x 5", but will automatically increase size to cover a larger system design. A black rectangle frames the viewable area. The rectangle may be dragged to view any location within the system design. The rectagle also has handles to re-size the viewable area, from a minimum of 4" x 2.5" to a maximum of 16" x 10".

Processing Library
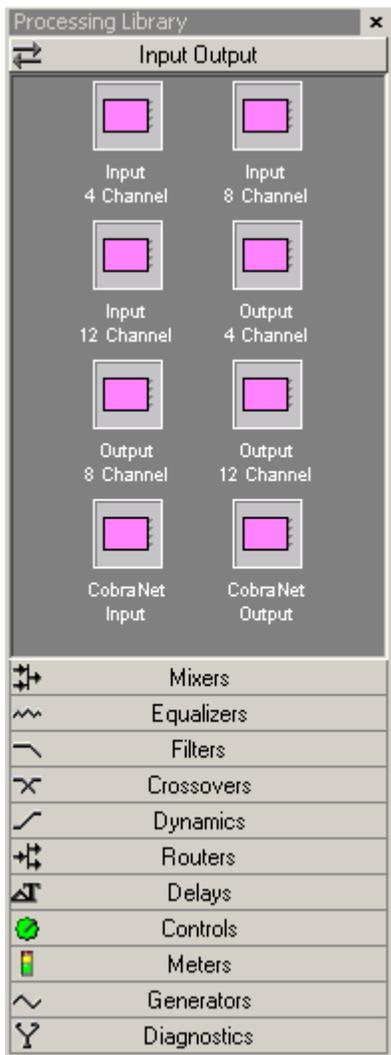
A Processing Library of available Component Objects is displayed, at the lower-left of the main screen. The Component Objects are organized in twelve categories: Input Output; Mixers; Equalizers; Filters; Crossovers; Dynamics; Routers; Delays; Controls; Meters; Generators; and Diagnostics.

Once a category is selected, the pre-defined components available from that category will be displayed underneath the category heading. A vertical scroll bar will appear on the right if the available components cannot all be displayed. To place a Component Object, simply drag & drop it into the Layout at the desired location. Customized and grouped components may be added to the Processing Library (see Customizing Component Objects).

The Processing Library may be closed, thereby increasing the width of the Layout, and components can instead be selected from the Object Toolbar. The Object Toolbar also allows configuration of some components, as they are placed into the Layout.

To close the Processing Library, left-click on the 'X' in the upper-right corner. The Processing Library can again be opened by selecting any component category from the Process Library Menu. The Processing Library can also be opened/closed from the View Menu.

Right-clicking over the Processing Library provides a pop-up menu of options. The location and shape of all toolbars, including the Processing Library, may be changed to fit the user's preference.

Object Toolbar

The Object Toolbar, located directly above the Layout, allows Component Object selection for placement into the Layout. The Component Objects are organized in twelve categories: Input Output; Mixers; Equalizers; Filters; Crossovers; Dynamics; Routers; Delays; Controls; Meters; Generators; and Diagnostics.

Each category is represented by an icon, with a drop-down menu to the right. To place a Component Object, first choose the appropriate category, then select the desired component from the drop-down menu. Once the component has been selected, simply left-click at the desired location on the Layout. Left-clicking a category icon will select the component which occurs first in the menu list. When using the Object Toolbar to place components into the Layout, certain components will present the user with a pop-up window of configuration options.

The Object Toolbar also provides the option of either a select cursor or a text cursor. The select cursor is for component selection, placement, wiring, etc. The text cursor is for placing Text Objects into the Layout, for system design labeling purposes.

When using the Object Toolbar, the Processing Library may be closed, increasing the width of the Layout. The Object Toolbar may be opened/closed from the View Menu. The location and shape of all toolbars may be changed to fit the user's preference.

Format Toolbar

The Format Toolbar allows customization of text & colors used in the Layout and associated Component, Line, & Text Objects. The available tools are: Font; Size; Bold; Italics; Align Left; Center; Align Right; Back Color; Text Color; Fore Color; Hilite Color; Pen Width; and Hatch Style. The Format Toolbar may be opened/closed from the View Menu. The location and shape of all toolbars may be changed to fit the user's preference.

Tools

Font
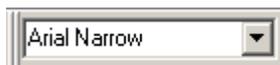
Provides a drop-down menu of lettering styles

for use in Component or Text Objects.

Size

Provides a drop-down menu of lettering sizes

for use in Component or Text Objects.

Bold

B

Changes the selected text to a thicker

version of the chosen font.

Italic

I

Changes the selected text to an italicized

version of the chosen font.

Align Left

Aligns the selected text to the left margin

of the Component or Text Object.

Center

Centers the selected text between the left and

right margins of the Component or Text Object.

Align Right

Aligns the selected text to the right margin

of the Component or Text Object.

Back Color

Provides a drop-down menu for changing the background

color of the Layout, or of selected Component or Text Objects.

Left-clicking the icon applies the color which was selected last.

Text Color

Provides a drop-down menu for changing the text color

in selected Component or Text Objects.

Left-clicking the icon applies the color which was selected last.

Fore Color

Provides a drop-down menu for changing the color of the lower

and right borders, as well as any internal Hatching, of the

selected Component, Line, or Text Objects.

Left-clicking the icon applies the color which was selected last.

Hilite Color

Provides a drop-down menu for changing the color of the upper

and left borders of the selected Component or Text Objects.

Left-clicking the icon applies the color which was selected last.

Pen Width

Provides a drop-down menu for changing the width of line used

for the borders of the selected Component, Line, or Text Objects.

Left-clicking the icon applies the width which was selected last.
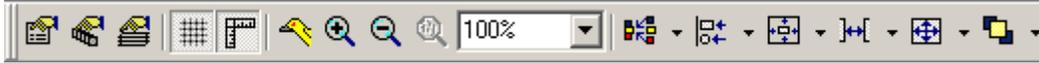
Hatch Style

Provides a drop-down menu for changing the hatching

style within the selected Component or Text Objects.

Left-clicking the icon applies the style which was selected last.

Layout Toolbar

The Layout Toolbar affects certain aspects of Layout, such as the grid, rulers, zooming, & alignment of Component Objects. The Layout Toolbar can also open editing/information sheets for properties, objects, & layers. The available tools are: Property Sheet; Object Inspector; Layers Sheet; Toggle Grid; Toggle Ruler; Bird's Eye View; Zoom In; Zoom Out; Zoom 1:1; Zoom Level; Pack Objects; Align Edges; Center In View; Space; Make Same Size; and To Front Or Back. The Layout Toolbar may be opened/closed from the View Menu. The location and shape of all toolbars may be changed to fit the user's preference.
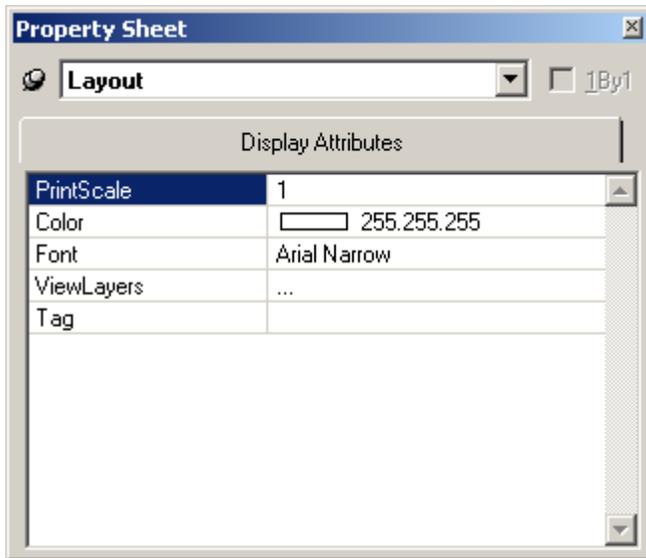
Tools

Property Sheet

Provides an editable table of attributes regarding the

Layout and its associated objects. Only Display Attributes

are shown for the Layout (and Lines). Both Display and

DSP Attributes are shown for Component Objects.

see Layout Property Sheet

see Line Property Sheet

see Object Property Sheet
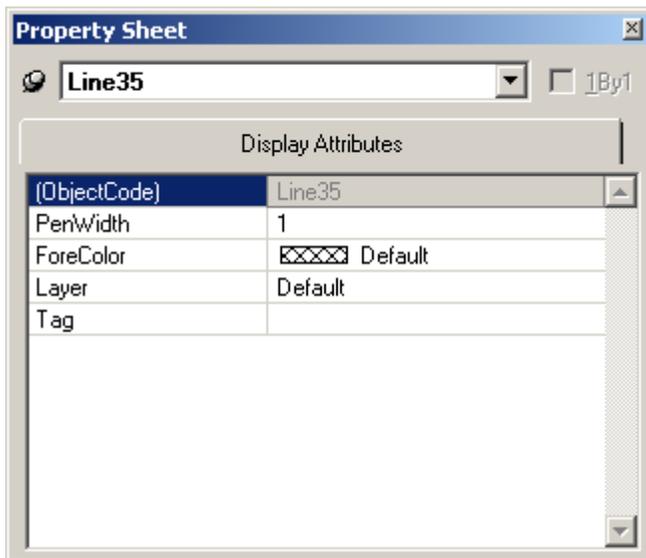
Layout Property Sheet

Provides an editable table of attributes regarding the Layout. Only Display Attributes are shown for the Layout. Most Display Attributes duplicate functions found in the Format Toolbar However, some exceptions are as follows:

PrintScale is entered as decimal information, where 0.5 = 50% or 2.0 = 200%. **ViewLayers** opens the Layers Sheet. **Tag** is for user comments or other identifying text.

The **thumb-tack** (upper-left) allows the Property Sheet to remain open while selecting other objects. **1By1** (upper-right) allows any group of selected components (multi-selection) to appear on the menu.

Line Property Sheet

Only Display Attributes are shown for Lines (component connections). Most Display Attributes duplicate functions found in the Format Toolbar. However, some exceptions are as follows:

Object Code is a non-editable indentifier. **Layer** determines which layer the Line is assigned to. **Tag** is for user comments or other identifying text.

The **thumb-tack** (upper-left) allows the Property Sheet to remain open while selecting other objects. **1By1** (upper-right) allows any group of selected components (multi-selection) to appear on the menu.
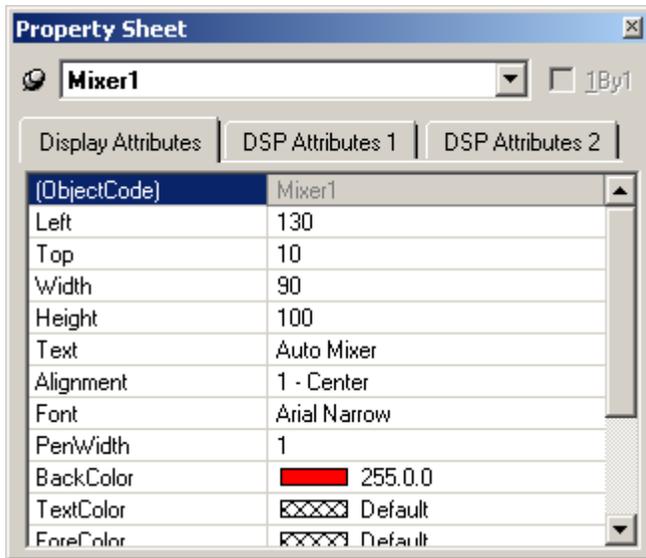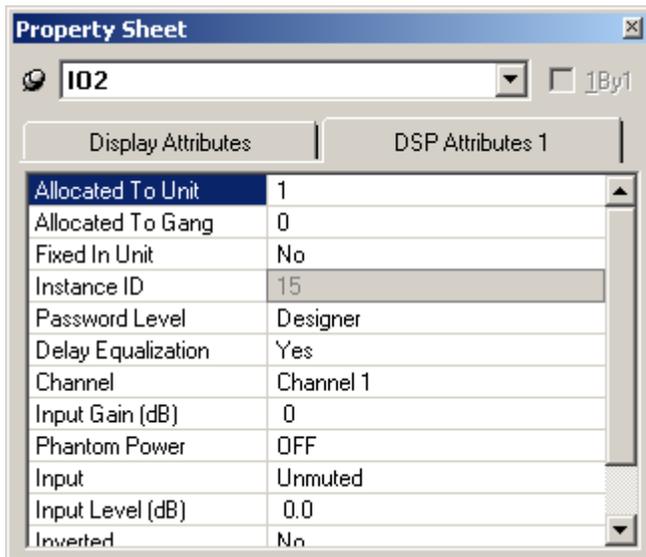
Object Property Sheet

Both Display and DSP Attributes are shown for component objects.

Most Display Attributes duplicate functions found in the Format Toolbar. However, some exceptions are as follows:

Object Code is a non-editable indentifier. **Left**, **Top**, **Width**, & **Height** specify object location and size (in pixels). **Layer** determines which layer the component is assigned to. **Tag** is for user comments or other identifying text.

Most DSP Attributes duplicate functions found in the individual component Control Dialog boxes (see Component Object Properties). However, some exceptions are as follows:

Allocated To Unit assigns the component (DSP block) to a particular unit in the system. **Allocated To Gang** assigns multiple components (DSP blocks) to a common 'gang', forcing them to be grouped into the same unit. **Fixed In Unit** prevents changes to Allocated To Unit and Allocated To Gang. **Instance ID** is the system-wide identifier number for the component (DSP block). **Password Level** selects either Designer or Technician access level, for individual components. **Delay Equalization** turns on/off compensation for propagation delay (Input Output components only). See System Compiling Considerations.

The **thumb-tack** (upper-left) allows the Property Sheet to remain open while selecting other objects. **1By1** (upper-right) allows any group of selected components (multi-selection) to appear on the menu.

Object Inspector

Provides a list of all objects within the Layout, along with their Object Codes,

Text Labels, Unit numbers, and Instance ID numbers.

Object Code	Text Label	Unit	Instance ID
Control1	Level Control	1	5
Meter1	Peak Meter	1	3
Ducker1	Ducker	1	4
Equalizer7	Parametric EQ - 5 Band	1	8
Equalizer6	Parametric EQ - 5 Band	1	9
Equalizer5	Parametric EQ - 5 Band	1	10
Equalizer4	Parametric EQ - 5 Band	1	11
Equalizer3	Parametric EQ - 5 Band	1	12
Equalizer2	Parametric EQ - 5 Band	1	13
Equalizer8	Parametric EQ - 5 Band	1	7
Equalizer1	Parametric EQ - 5 Band	1	6
Mixer4	Matrix Mixer 8x8 w/Delay	1	1
Mixer1	Auto Mixer 8x1	1	2

Layers Sheet

Provides an editable table of Layer properties. Layers can be used to separate a Layout into multiple parts. The Layers can be organized with regards to object types, system segments, or any other criteria. The Default Layer always remains, but other Layers may be created or removed, using **Add** & **Delete**. Layers may be selected directly from the list. **Up** & **Down** change the position of a Layer in the list only (Layers are not stacked, so this does not affect Tab Order or visual overlapping). All objects in a given Layer can be selected with **Select**. Added Layers can be given a custom **Name**. **View** turns on/off visibility of a Layer in the Layout. *NOTE: Components cannot be selected when the current Layer is invisible.* **Lock** prevents a Layer from being changed or selected. Lock & View may also be accessed by double-clicking on the corresponding icons within the list.
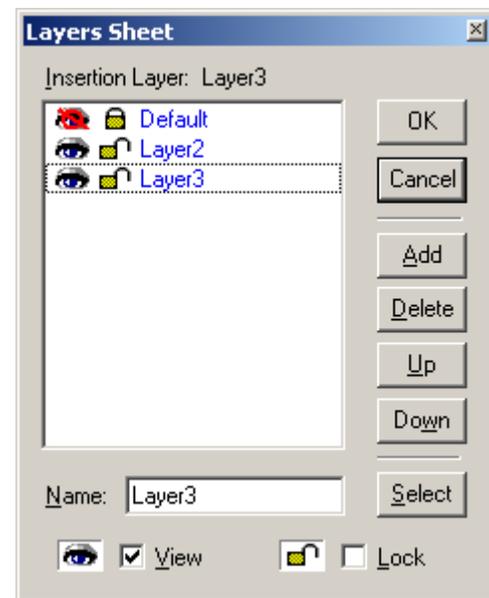
Toggle Grid

Turns Layout Grid on/off.

Toggle Ruler

Turns Layout Ruler on/off.

Bird's Eye View

Turns Bird's Eye View on/off.

Zoom In

Increases magnification of Layout in 25% increments.

Zoom Out

Decreases magnification of Layout in 25% increments.

Zoom 1:1

Returns magnification of Layout to 100%.

Zoom Level

Provides a drop-down menu of available Zoom

magnifications (50% ~ 200% in 25% increments).

Pack Objects

Provides a drop-down menu for packing selected objects next
to each other. The target location for packing left/right is the top
most selected object. The target location for packing top/bottom
is the left most selected object.

Pack Left
Pack Right
Pack Top
Pack Bottom

Left-clicking the icon applies the packing which was selected last.

Align Edges

Provides a drop-down menu for aligning the edges of selected
objects. The primary selected object (green handles) provides
the target edges for alignment.

Align Left
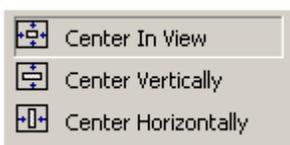Align Right
Align Top
Align Bottom

Left-clicking the icon applies the alignment which was selected last.

Center In View

Provides a drop-down menu for centering the Layout view on the
selected objects.

Center In View
Center Vertically
Center Horizontally

Left-clicking the icon applies the centering which was selected last.

Space

]↔[▾

Provides a drop-down menu for evenly spacing selected objects. Spacing

is determined between the two most distantly spaced selected objects.

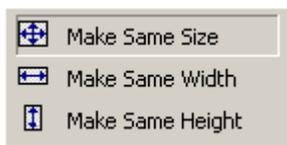|]↔[Space Across |
| 🔁 Space Down |

Left-clicking the icon applies the spacing which was selected last.

Make Same Size

⊞ ▾

Provides a drop-down menu for matching the dimensions of selected

objects. The primary selected object (green handles) provides the target

dimensions. Objects cannot be smaller than original size.

| ⊞ Make Same Size |
| ↔ Make Same Width |
| ↕ Make Same Height |

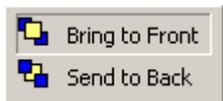Left-clicking the icon applies the sizing which was selected last.

To Front Or Back

🗗 ▾

Provides a drop-down menu for changing the order in which overlapping

objects appear on the Layout. The selected object(s) will either move in

front of overlying objects, or will move behind underlying objects.

| 🗗 Bring to Front |
| 🗗 Send to Back |

Left-clicking the icon applies the direction which was selected last.

Network Toolbar

The Network Toolbar provides functions related to communications, configuration, maintenance, and testing of the system network (see System Network Considerations).

Network Toolbar function includes: Connect; Disconnect; Connect To System; Disconnect From System; Send Configuration; Sync Data; Start Audio; Stop Audio; and Device Maintenance.

Tools

Connect

Establishes communication with, and provides a list of,

all **Audia**(TM) devices on the network. Opens System Connect

dialog box (see System Network Considerations).

No system design data is transmitted or retrieved.

Disconnect

Ends communications with all **Audia**(TM) devices on the network.

See System Network Considerations.

Connect To System

Establishes communication with, and retrieves data from, selected

Audia(TM) systems on the network. Opens System Connect dialog

box (see System Network Considerations). Password protection is

then available from the Tools Menu. When connected to a system,

Component Object Properties may be changed, but system design

(objects & connections) cannot.

Disconnect From System

Ends communications with selected **Audia**(TM) systems on the
network. See System Network Considerations. System design
data is retained in software after disconnect.

Send Configuration

Transmits system design data to selected **Audia**(TM) devices in the
system. See System Network Considerations. Before data can be
transmitted, a system design file (.DAP) must first be opened,
connected to a system, and have **Audia**(TM) device IP addresses assigned
(see Tools Menu and Device Maintenance). Send Configuration will
automatically Compile the system design, and reset the hardware
devices, before sending the new configuration.

Sync Data

Re-synchronizes the software with the
connected **Audia**(TM) devices in the system.

Start Audio

Enables audio signal flow within the selected system. See
System Network Considerations. Start Audio is available
only after Send Configuration has been successfully performed.

Stop Audio

Disables audio signal flow within the selected system.

See System Network Considerations.

Device Maintenance

Provides an editable table of network related settings for selected **Audia**(TM)

devices. Opens Device Maintenance dialog box. Device Maintenance settings

include Date/Time, IP Adress, Description, Serial Number, Reset/Initialize,

Update Firmware, and Disconnect From Network. (See System Network Considerations.)

Device Maintenance Dialog Box
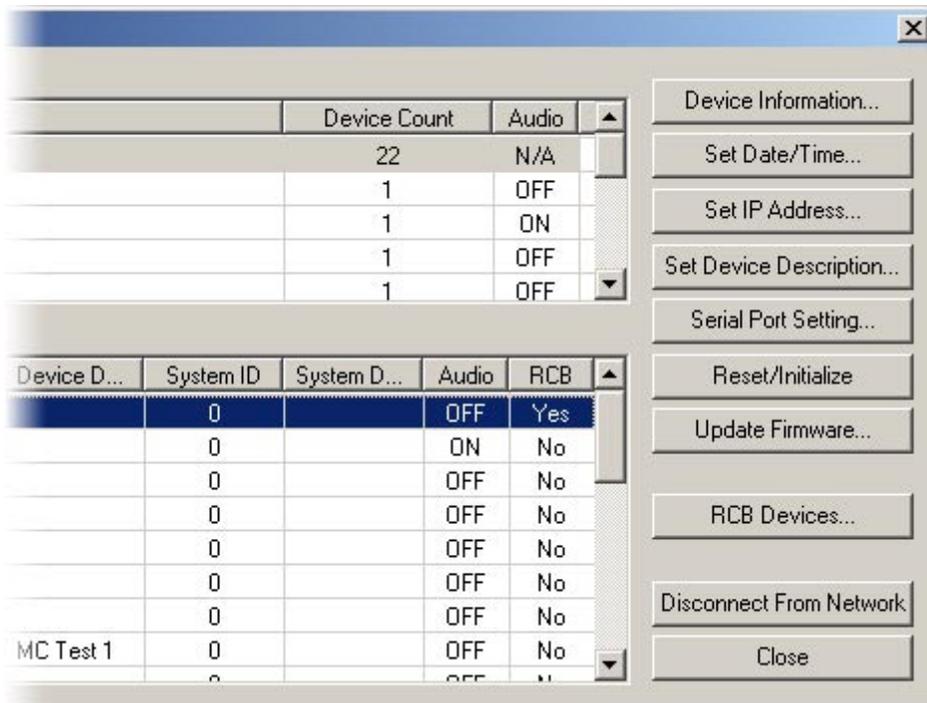
Device Information provides information (such as firmware version, input/output configuration, etc.) regarding the selected device. **Set Date/Time** allows update of the internal real-time clock. **Set IP Address** assigns the device IP Address as **192.168.1.X** (where range of X = 1~254). IP Address cannot be duplicated, even in simple (**Audia** only) networks, and must be carefully managed when network topology is more complex. **Set Device Description** allows the selected device to be given a descriptive name. **Serial Port Setting** determines the baud rate of RS-232 communications (currently fixed at 38,400). **Reset/Initialize** clears all current system design data from the selected device. This happens automatically whenever a new system design file (.DAP) is uploaded (see Send Configuration). **Update Firmware** uploads flash update files (.JAM) to the selected device.

RCB Devices opens a list of devices connected to the Remote Control Bus of the selected Audia device. **Identify Device** causes indicators on the selected device to flash (for physical location). **Set Device Description** allows the selected device be given a custom name. **Update Firmware** allows future firmware updates to be loaded into the selected device. The information in this list (including Serial #) is used to establish proper association between the external physical controls and their corresponding component counterparts in the layout (see Equipment Table).
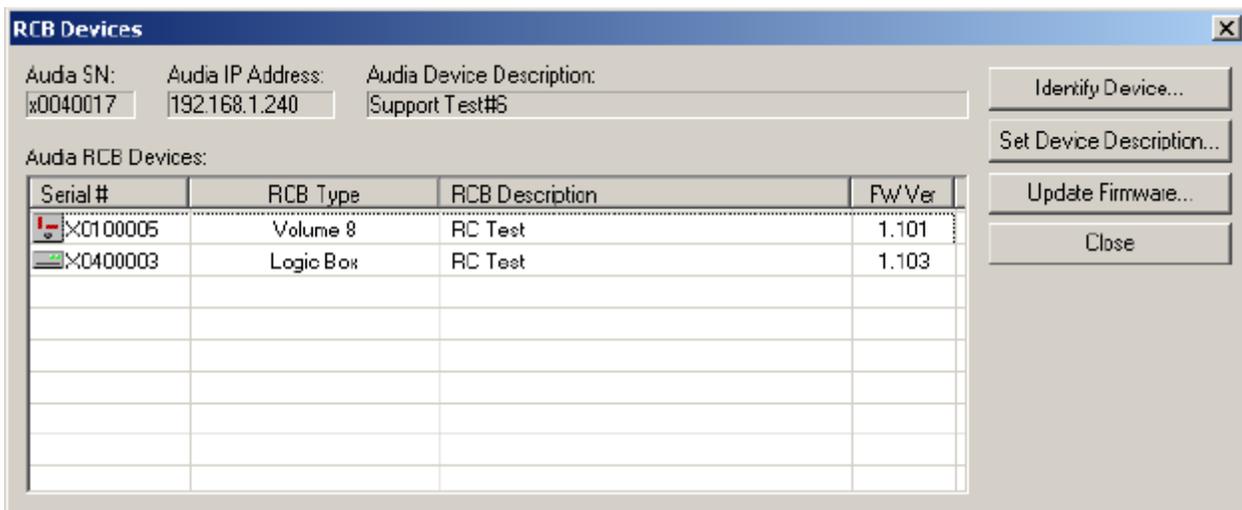
Standard Toolbar

The Standard Toolbar provides file functions such as New, Open, & Save, plus additional functions such as Cut, Copy, Paste, Undo, Redo, Print, & Help. The Standard Toolbar also includes the Compile function, which will generate a new configuration file, while checking system layout/connections & determining DSP resource allocation. See File Menu and Edit Menu for more options.

Tools

New

Begins a new **Audia**(TM) system design file (.DAP).

Open

Opens an existing **Audia**(TM) system design file (.DAP).

Save

Saves the current **Audia**(TM) system design file (.DAP).

Compile

Provides system design analysis and calculates DSP processing requirements.

Makes initial determinations of quantity/type of **Audia**(TM) devices needed,

CobraNet(TM) channel assignments, and allocation of DSP resources. Also

provides indication of system design errors. See System Compiling Considerations.

Cut

Removes the selected object(s) from the

Layout, and places them in the Clipboard.

Copy

Places a copy of the selected

object(s) into the Clipboard.

Paste

Places a copy of the object(s) from

the Clipboard into the Layout.
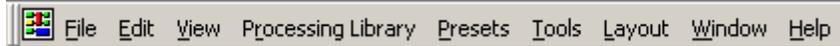
Undo

Will undo last operation.

Redo

Will redo most recent Undo operation.

Print

Opens a print dialog box, to adjust

printer settings and print the Layout.

Main Menus

File Edit View Processing Library Presets Tools Layout Window Help

The Main Menus provide most of the toolbar functions mentioned previously, in Basic Sceen Elements, as well as several more in-depth functions. Main Menus includes the following individual menus: File; Edit; View; Processing Library; Presets; Tools; Layout; Window; and Help. Keyboard shortcuts are shown on the menus, where applicable.

File Menu

Export

Allows the **Audia**(TM) Layout to be exported in different file formats.

DXF & Enhanced DXF formats are for use with CAD programs.

EMF (Enhanced MetaFile) is for insertion as a picture into

documents such as Word & PowerPoint. DSP Data to Text

provides signal processing data in Text file format.

Export Layout to DXF
Export Layout to enhanced DXF
Export Layout To EMF
Export DSP data to text

Close

Closes and saves the current **Audia**(TM) system design file.

Save As

Saves the current **Audia**(TM) system design file (.DAP),

with choice of directory location and file name.

Network

Most Network Menu items duplicate functions found in the

Network Toolbar, except for **Send Control Dialog Layout Information**,

which allows open (or minimized) control dialog box settings to be

updated/saved to the hardware device.

See Component Object Properties and Software User Interface.

Print Preview

Previews printing results based on Print Setup.

Print Setup

Opens a print dialog box to adjust printer settings.

Recent File

Provides a list of recently saved files for convenient access.

Exit

Closes the **Audia**(TM) software program.

Also provides prompt to save the current

Audia system design file if necessary.

If a file is open during Exit, that file will

automatically open at next session.

Edit Menu

Copy DSP Data

Places a copy of the DSP data from the selected object

into the Clipboard. DSP Data represents the current settings

of that Component Object. See Component Object Properties.

DSP Data can be copied from only one Component Object at a time.

Paste DSP Data

Places a copy of the DSP data from the Clipboard into the

selected Component Object. DSP Data represents the current

settings of that Component Object. See Component Object Properties.

DSP Data can be pasted into multiple Component Objects, as long as

they are all of the identical configuration as the original.

Duplicate

Places a copy of the selected Component or Text Object directly

into the Layout. Duplicate also places a copy of the object into the

Clipboard. Duplicate works with only one object at a time.

Select All

Provides an easy way to select all objects on the Layout.

Also allows all objects of a specific type to be selected.
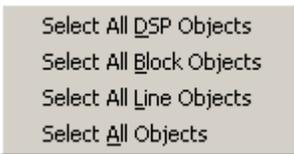
Delete

Removes the selected object(s) from the Layout,

without placing a copy into the Clipboard.

Control Dialog

Opens a Control Dialog box for the selected Component Object.

Control Dialog boxes provide a graphic means of displaying and

adjusting Component Object settings. See Component Object Properties.

View Menu

Toolbars provides a drop-down menu to turn on/off any of the toolbars

(see Basic Screen Elements). Staus Bar, Ruler Bars, Zoom, & Bird's Eye Viewer

select those functions, as found on the Layout Toolbar.

Toolbars	▶
✔ Status Bar	
⊞ Ruler Bars	
Zoom	▶
◀ Bird's Eye Viewer	
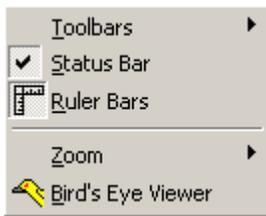
Processing Library Menu

Provides a list of Component Object categories from the

Processing Library. When a category is selected from the menu,

the Processing Library opens to that category automatically.

Input/Output	Shift+Z
Mixers	Shift+X
Equalizers	Shift+E
Filters	Shift+F
Crossovers	Shift+C
Dynamics	Shift+D
Routers	Shift+R
Delays	Shift+L
Controls	Shift+T
Meters	Shift+M
Generators	Shift+G
Diagnostics	Shift+N

Presets Menu

Create/Edit/Recall

Provides the Create/Edit Preset dialog box, for creating, editing, saving, and recalling presets. Each preset can have a custom **Preset Name**, and will automatically be assigned a **Preset ID** number. A check-box is provided to assign the selected preset to be **Set As Power-Up Default**. This preset will automatically be recalled each time the system is powered up. A check-box is also provided to assign the selected preset to **Mute Audio During Recall**. If audio is not muted during recall, some processing noises may be audible. Component Objects (DSP Blocks) may be selected, and added or removed from any preset using the **Add Sel**, **Add All**, **Rem Sel**, and **Rem All** buttons. Therefore, presets may be customized to affect Component Objects individually, in groups, or as an entire system. Initially, all Component Objects in the Layout will be selected (included in the preset). Individually selected components become highlighted in the layout. Right-clicking the selected component allows it to be located in the layout and its control dialog to be opened. These features make it easy to change individual component settings within the preset being created/edited.
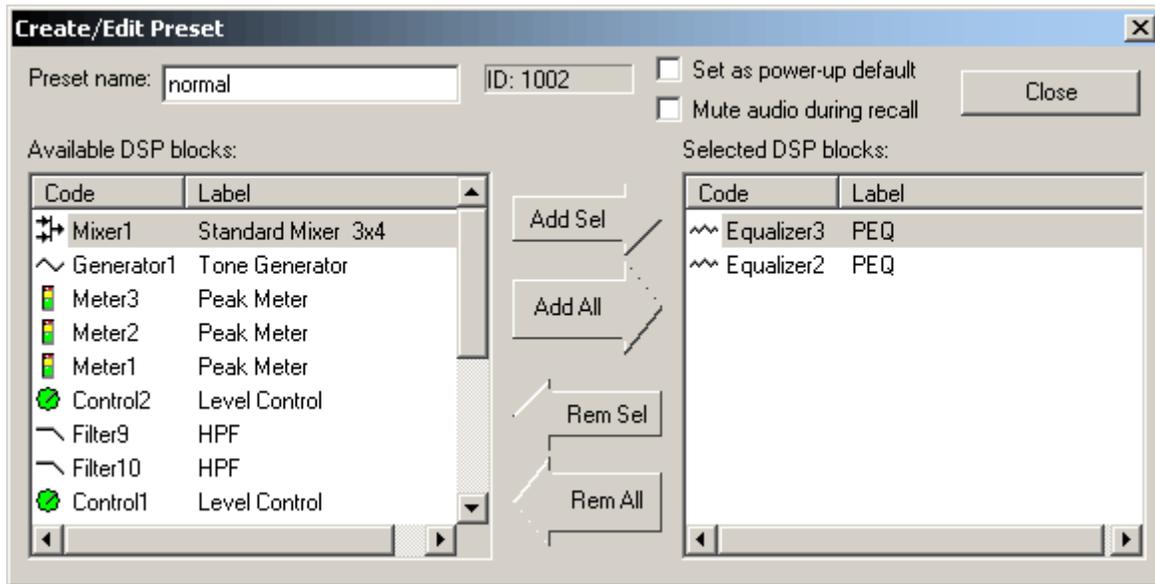
A tab at the upper-right of the Create/Edit Preset dialog box provides additional functions. **Next ID** and **Prev ID** allow selection from a list of existing presets. **Recall** retrieves all settings stored in the selected preset. **New** selects the next available Preset ID, for creation of a new preset. **Save** will over-write the selected Preset ID with all changes, including Preset Name. **Save As** will write changes into the next available Preset ID. **Delete** will remove the selected preset from memory. **Send** will send all saved presets to the Audia devices in the system. *NOTE: Be sure to use Recall before attempting to edit an existing preset. Otherwise, the preset could be over-written with settings from a previous preset, and any settings made since it was recalled.*
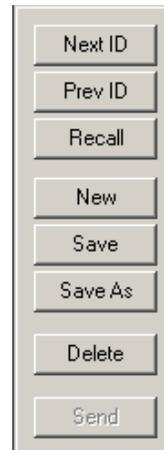
A tab at the lower-left of the Create/Edit Preset dialog box provides a list of existing presets. Left-clicking selects a preset. Double-clicking recalls a preset (as indicated by a green arrow to the left).

Preset ID	Preset Name	Pwr-Up Default	Mute On Recall
1001	Preset1001	Yes	Yes
1002	Preset1002	No	Yes
1003	Preset1003	No	Yes
1004	Preset1004	No	Yes

Recall

Provides the Recall Preset dialog box, for recalling existing presets. **Recall Preset** will retrieve all settings stored in the selected preset. Presets can also be recalled using components called Preset Buttons and Remote Preset Buttons, which can be placed into the Layout from Controls on the Object Toolbar.
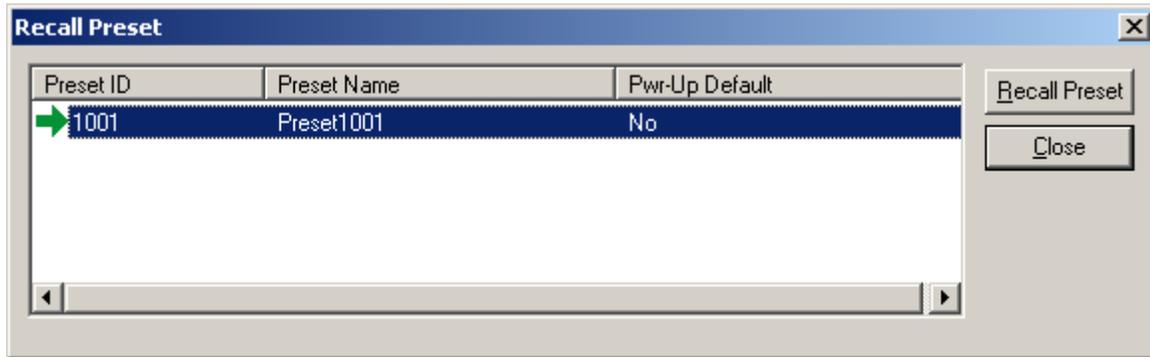
Tools Menu

Passwords

Provides the Set Passwords dialog box, for establishing password protection in selected **Audia**(TM) devices. Set Password allows up to four levels of protection, each with a unique password (6~16 characters). **Designer** level allows access to system configuration, component settings, storing/recalling presets, and password assignments. **Technician** level limits access to component settings and storing/recalling presets. **User** level limits access to recalling presets only. However, Level Control and Meter dialog boxes can be minimized for User access (see Customizing Component Objects). **Guest** level limits access strictly to connection and viewing only.
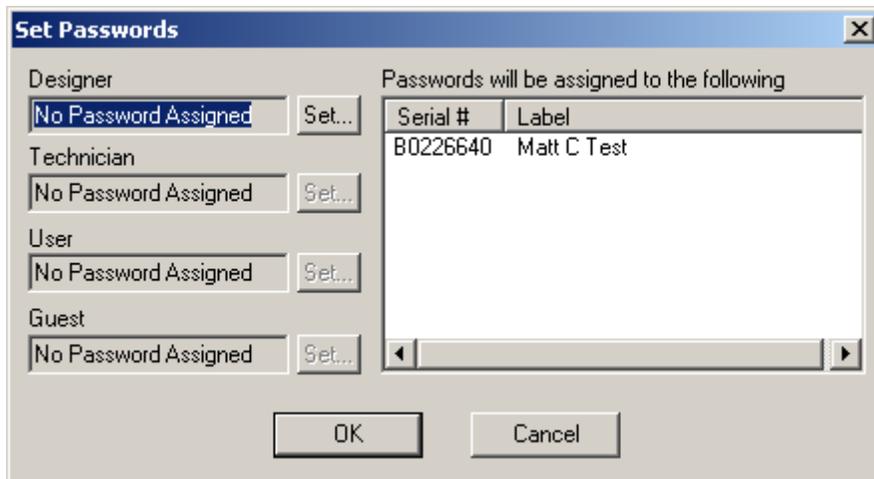
NOTE: You must first Send Configuration to a device before a Password can be assigned. Passwords cannot be assigned to non-configured devices or design layouts.

Equipment Table

Provides an editable table of **Audia**(TM) devices in the system design. Devices may be manually added or removed from the design. However, Compile will add devices if needed (but will not automatically remove unnecessary devices). The Equipment Table may be used to aid system design, by initially specifying desired hardware configurations. Serial # and Device Description Label appear only when connected to a system, at which time the Equipment Table becomes 'read-only' information.

Unit ID	Use	CobraNet	Model	Serial #	Device Description Label	
1	☑	Yes	8x8CM	x0040005 ▾		Add
						Remove
						OK
						Cancel

A tab at the lower-left of the Equipment Table dialog box provides an editable table of devices connected to the Remote Control Bus of the Audia devices in the system design. This table is used to establish proper association between external physical controls and their corresponding component counterparts in the layout. Each **DevID** (control component) should be matched to an appropriate **Serial #** (physical control). The DevID number can be found in the right corner of control component objects in the layout, when 'Display Device Assignment in DSP Block Info Field' is selected from Display Options. Serial # and Device Description information can be found for the physical controls using Device Maintenance.

DevID	Model	Serial #	Device Description Label
1	V8	X0100005 ▾	RC Test
2	Logic I/O	X0400003	RC Test

Layout Compile Results

Provides the most recent Compile results. This information may be viewed at any time.

```
Compilation Status                                          [x]

Building topology map...OK
Validating the layout...OK

Collating DSP blocks into groups...2 groups built.
Generating all feasible allocations...3 total.
Solution found: 1 unit.
Allocating blocks to DSPs...OK

Unit # 1 (model 8x8NC):  8 audio inputs,  8 audio outputs, and 54% of DSP power used.

Propagation delay is 2.33 msec.

Elapsed time: 00 mins 00 secs.



       [ Stop Search ]        [ Close ]          [ Print ]
```
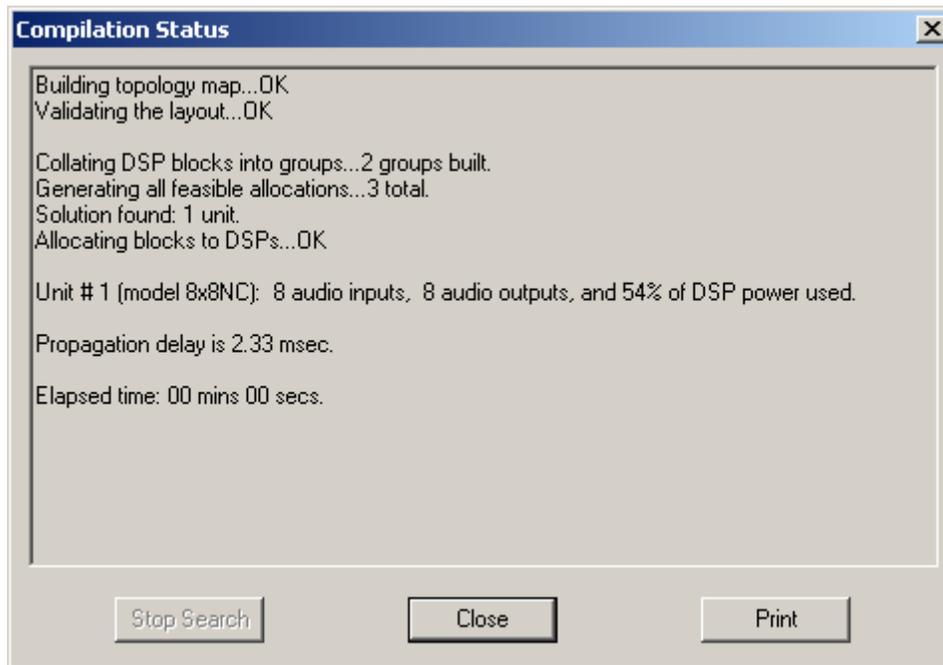
Signal Path Indentifier

Provides a temporary color-coded identification of all signal paths (Lines) which are associated with a selected Line Object. See example below, where the selected input is shown as being routed to four outputs. Signal Path Indentifier is represented by a thin dashed red line. However, the Signal Path Indentifier color may be changed in Display Options.
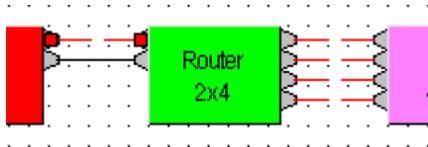
Options

Allows global options to be selected, which affect software behavior. An Options dialog box appears, with three tabs: General; Display; and Compile.

[icon] see General Options

[icon] see Display Options
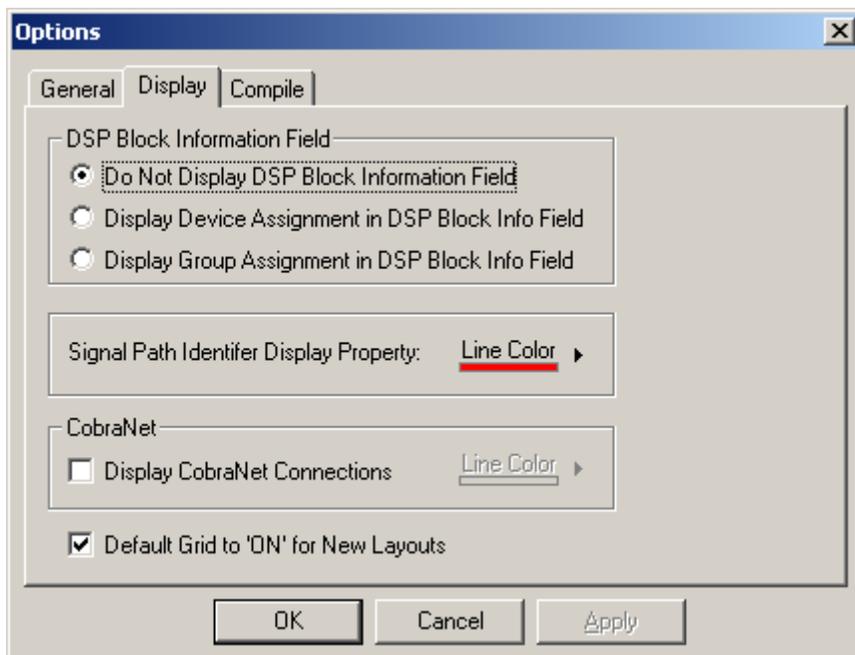
[icon] see Compile Options

General Options

Allows Data Files (system designs) and Processing Libraries (Component Objects) to be saved to specified directory locations. Allows Save AutoRecover time to be adjusted or disabled. Allows most recent Component Object selection to be retained, for repeated placement into Layout. Allows Compressed File Format to be disabled. Allows Meter activity to be disabled (locked), to reduce network data traffic.
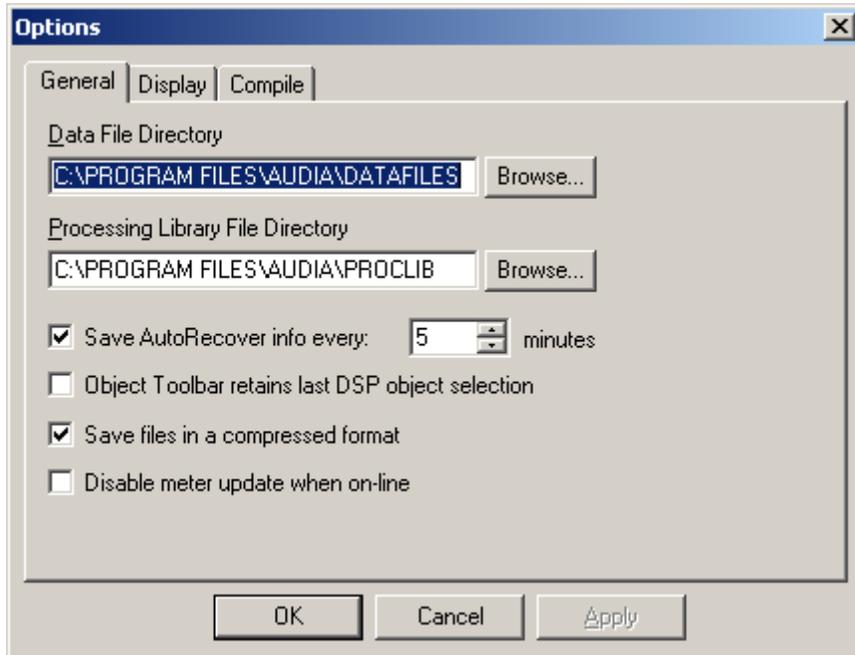
Display Options

Allows DSP Blocks (Component Objects) to display Device Assignment or Group Assignment numbers, as determined by Compile. (Device Assignments can be changed in the Property Sheet.) Allows color of Signal Path Identifier to be changed. Allows CobraNet(TM) Connections to be displayed, and color to be changed (see System Network Considerations). Alows the default Grid to be applied when starting new design files.

Compile Options

Allows Auto Device Add to be disabled, or **Audia**(TM) device type preference to be specified (guides Compile function in determining hardware requirements). See System Compiling Considerations. Allows Delay Equalization to be disabled system-wide (see System Compiling Considerations). Allows automatic re-assignment of Instance IDs during Compile or Send Configuration. Allows Compile function to be stopped if warning occurs. Allows Device Assignments to be excluded from Paste DSP Data.
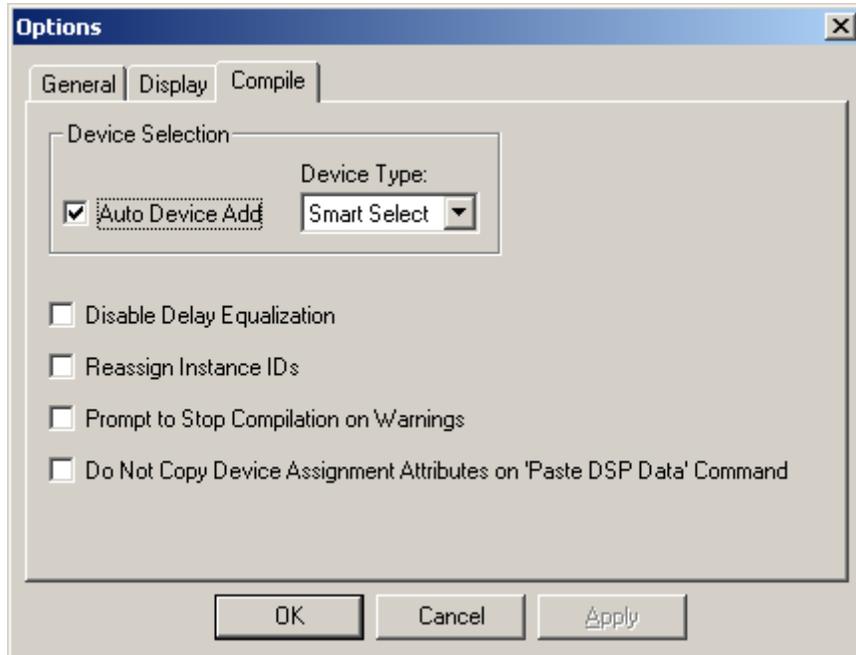
Layout Menu

Most Layout Menu items duplicate functions found in the

Layout Toolbar. However, some exceptions are as follows:

Align Objects; Order; Objects; and Grid Settings.

Align Objects

Left	
Right	
Top	
Bottom	
Vert. Center	
Horz. Center	
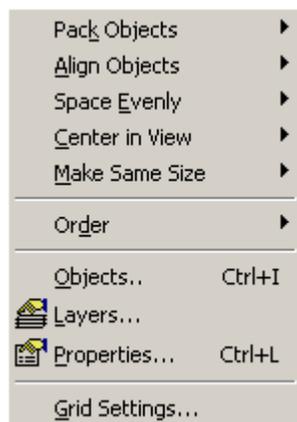
Align Objects provides Vertical Center &

Horizontal Center functions, in addition to the

Align Edges functions found on the Layout Toolbar.

Order

Bring to Front	Ctrl+F
Send to Back	Ctrl+B
Bring Forward	
Send Backward	

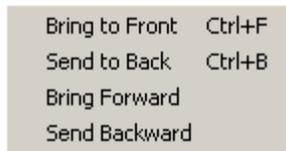Order provides Bring Forward & Send Backward

functions, in addition to the To Front Or Back

functions found on the Layout Toolbar.

Object Sheet
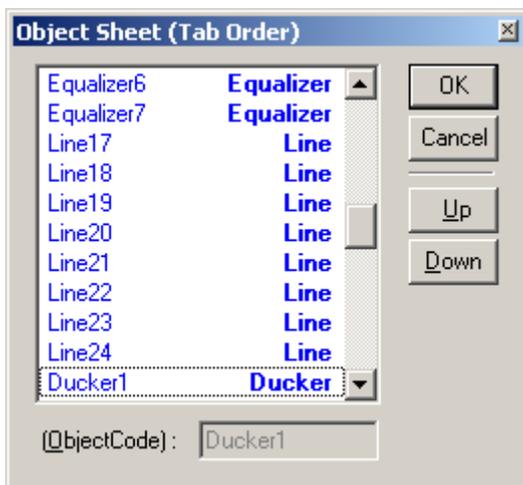
Provides a list of all objects within the Layout. Normally, objects can be selected sequentially using the *Tab* key. The Object Sheet allows the order of this *Tab* selection to be changed. Objects may be selected directly from the list. When an object is selected, **Up** and **Down** change the Tab Order position of that object.

Grid Settings
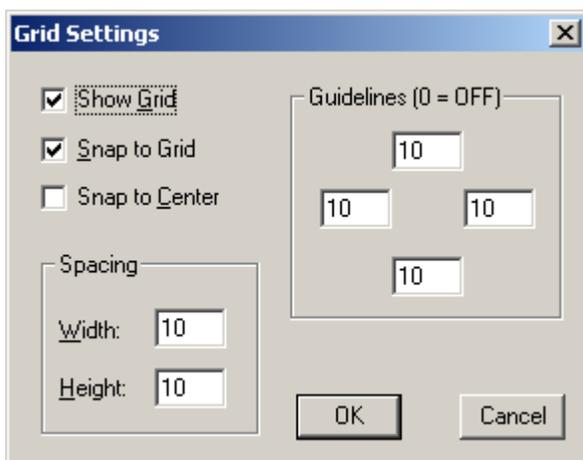
Grid Settings allows the Layout Grid to be customized. **Show Grid** turns the Grid on/off. **Snap To Grid** forces the upper-left corner of objects to align with grid-marks. **Snap To Center** forces objects to center around grid-marks. **Spacing** determines the space between grid-marks (in pixels). **Guidelines** changes the location (in pixels) of the blue, dotted guidelines (initially found near the edges of the Layout).

Window Menu

Multiple Layouts (system design files) may be open at the same

time. Only one Layout will be active at a time (as indicated by the title bar).

Layouts can be arranged on the display using the Window Menu.

Cascade overlays the Layouts in an hierarchy. Tile fits the Layouts within

the display. Close will close the active Layout. Close All will close all Layouts.

A list of open Layouts is provided for selection.

```
Cascade
Tile
Arrange Icons

Close
Close All

✔  1 TestJB
```

Help Menu

Provides **Audia**(TM) Help Topics and About Audia information.

```
?  Help Topics

   About Audia...
```

Status Bar

```
Ready
```

The Status Bar, along the bottom of the main screen, provides system information. The left side of the Status Bar (shown above) indicates system status, tool tips, or flash update information   The right side of the Status Bar (shown below) indicates system/network connection status (with progress bar), total number of objects, number of objects selected, Layer status, object location, and object size.

```
Disconnected    65 Objects    22 Selected    Default    👁🔒   250,120       69x30
```

Component Objects

Input Output

These Component Objects provide the analog audio input/output (I/O) to the system. CobraNet(TM) Input/Output components are also available, allowing system designs to include third-party A/D & D/A converters which have CobraNet capability. Input Output components are available in pre-defined configurations, however, the configuration may be customized when being placed from the Object Toolbar.

Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

see Input Control Dialog

see Output Control Dialog

see CobraNet Input Control Dialog

see CobraNet Output Control Dialog

Right-clicking over the object provides a pop-up menu of options.

Control Dialog

Input Control Dialog
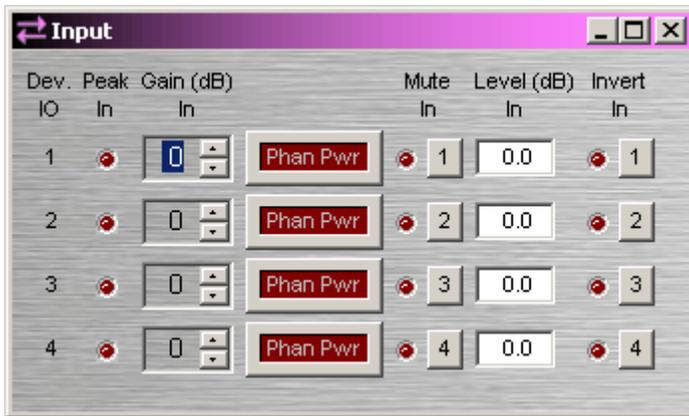
Device IO indicates which hardware input is associated with that software channel. **Gain In** compensates for different input signal levels, and should be set so **Peak In** flashes only occasionally (6dB headroom). **Phan Pwr** assigns +48 Volt phantom power to the input for condenser microphones. **Mute In** turns the input signal on/off. **Level In** adjusts the relative input volume. **Invert In** reverses polarity (phase) of the input signal.

Right-clicking over certain settings will provide a menu of additional options.

Output Control Dialog
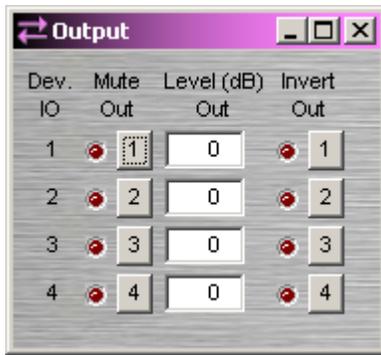
Device IO indicates which hardware output is associated with that software channel. **Mute Out** turns the output signal on/off. **Level Out** adjusts the relative output volume. **Invert Out** reverses polarity (phase) of the output signal.

Right-clicking over certain settings will provide a menu of additional options.

CobraNet Input Control Dialog
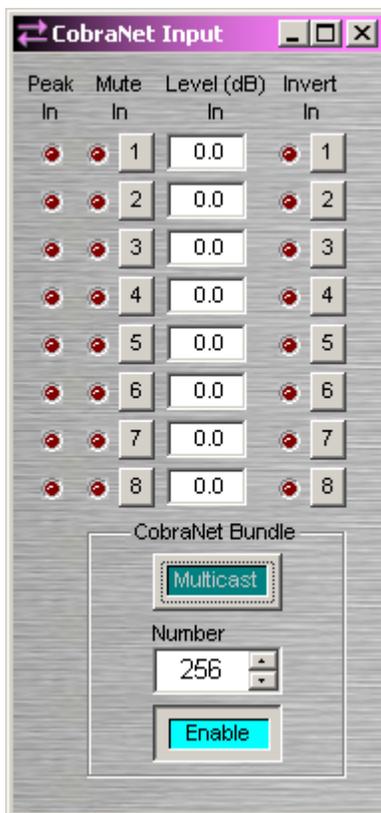
Adjust external signal source so **Peak In** flashes only occasionally (6dB headroom). **Mute In** turns the input signal on/off. **Level In** adjusts the relative input volume. **Invert In** reverses polarity (phase) of the input signal.

CobraNet Bundle assigns digital audio data to a particular bundle number. CobraNet Bundle Numbers are used to match those of any third-party CobraNet A/D converters being used in the system. Normally, 'unicast' bundles 256 ~ 61,439 are selectable. These are device specific bundles (for exchange of digital audio with only one other device). **Multicast** allows selection of bundles 1 ~ 255, which are not device specific (for exchange of digital audio with multiple devices). **Enable** turns on/off the exchange of CobraNet digital audio data from this device.

Right-clicking over certain settings will provide a menu of additional options.

CobraNet Output Control Dialog

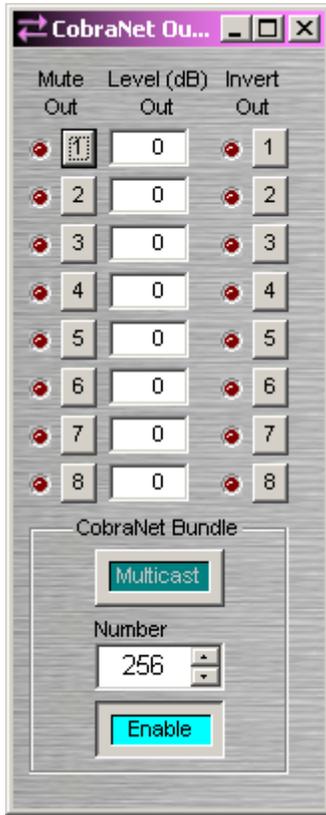**Mute Out** turns the output signal on/off. **Level Out** adjusts the relative output volume. **Invert Out** reverses polarity (phase) of the output signal.

CobraNet Bundle assigns digital audio data to a particular bundle. CobraNet Bundle Numbers are used to match those of any third-party CobraNet D/A converters being used in the system. Normally, 'unicast' bundles 256 ~ 61,439 are selectable. These are device specific bundles (for exchange of digital audio with only one other device). **Multicast** allows selection of bundles 1 ~ 255, which are not device specific (for exchange of digital audio with multiple devices). **Enable** turns on/off the exchange of CobraNet digital audio data from this device.

Right-clicking over certain settings will provide a menu of additional options.

Mixers

These Component Objects provide typical audio mixing functions, in five categories: Standard Mixers; Matrix Mixers; Auto Mixers; Mix-Minus Combiners; and Room Combiners. Mix-Minus Combiners are provided to enhance the capabilities of Auto Mixers in mix-minus and input expansion applications. Room Combiners are provided to enhance the capabilities of Auto Mixers in room combining and zone routing applications. Mixers are available in pre-defined configurations, however, the configuration may be customized when being placed from the Object Toolbar.

Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

see Standard Mixers Control Dialog

see Matrix Mixers Control Dialog

see Auto Mixers Control Dialog

see Mix-Minus Combiners Control Dialog

see Room Combiners Control Dialog

Right-clicking over the object provides a pop-up menu of options. Control Dialog Boxes for Room Combiner components can be minimized to create user control surfaces (see Customizing Component Objects).

Control Dialog

Standard Mixers Control Dialog
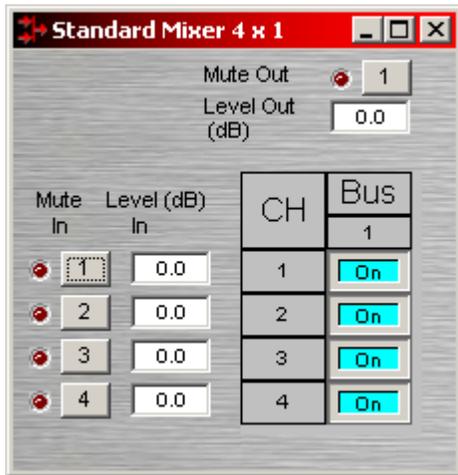
Mute In turns the input signal on/off. **Level In** adjusts the relative input volume. **Ch / Bus** assigns inputs to specific outputs. **Mute Out** turns the output signal on/off. **Level Out** adjusts the relative output volume.

Right-clicking over certain settings will provide a menu of additional options.

Matrix Mixers Control Dialog
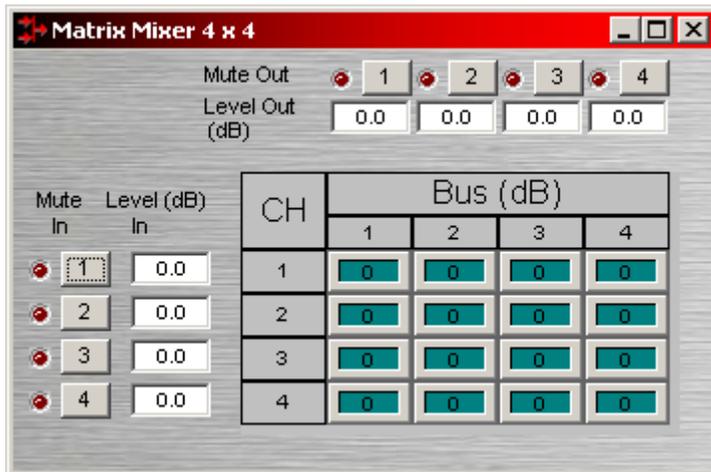
Mute In turns the input signal on/off. **Level In** adjusts the relative input volume. **Ch / Bus** assigns inputs to specific outputs, and right-clicking allows level adjustment. **Mute Out** turns the output signal on/off. **Level Out** adjusts the relative output volume.

Matrix Mixers w/Delay are also available. **Mix Table** assigns Ch / Bus to affect either level or delay settings.

Right-clicking over certain settings will provide a menu of additional options.

Auto Mixers Control Dialog

Mute In turns the input signal on/off. **Level In** adjusts the relative input volume. **Ch / Bus** assigns inputs to the output. **Mute Out** turns the output signal on/off. **Level Out** adjusts the relative output volume.
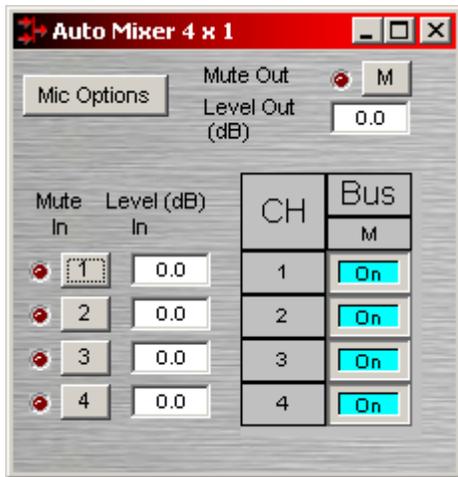
Mic Options opens a separate control dialog box to establish global settings.

Designated Mic On / Last Mic Hold determines which microphone (if any) will stay/become active when no signal is present. **Logic Outputs Follow Mic Logic** assigns logic outputs to follow Designated Mic On / Last Mic Hold. **Open Mic Limits** enables (and designates) a maximum allowable number of active microphones.

Right-clicking over Ch / Bus assignments allows selection of two additional dialog boxes.

Channel Settings affects individual channel settings, but may be applied to all channels.
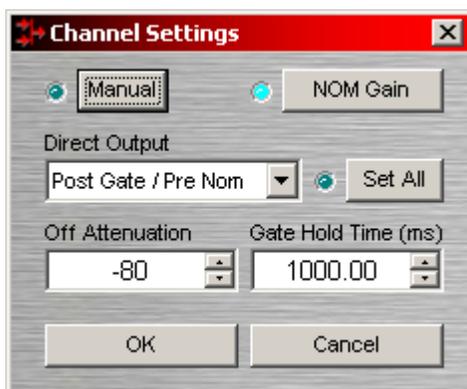
Manual turns on/off channel gating. **NOM Gain** turns on/off channel contribution to NOM (number of open mics) attenuation. **Direct Output** designates channel direct output signal as Post Gate / Pre NOM, Post Gate / Post NOM, or Off. (Direct Outputs must be enabled when placing Auto Mixers from the Object Toolbar.) **Set All** causes current Channel Settings to be applied to all channels. **Off Attenuation** determines the amount of attenuation applied when channel is inactive. **Gate Hold Time** determines length of time before channel becomes inactive, once signal is no longer present.

Logic Outputs affects individual Logic Output settings, but may be applied to all Logic Outputs. (Logic Outputs must be designated when placing Auto Mixers from the Object Toolbar.)
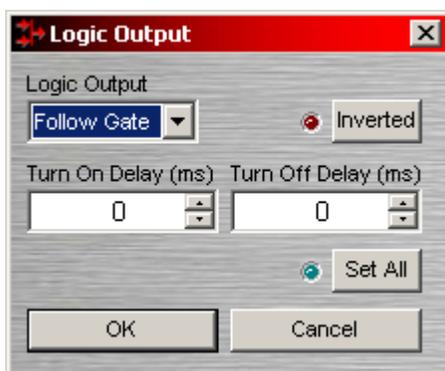
Logic Output selects Follow Gate, On, or Off condition of the Logic Output. **Invert** reverses operation of the Logic Output (off when channel active). **Turn On Delay** & **Turn Off Delay** determine the length of time Logic Output functions lag behind channel gating activity. **Set All** causes current Logic Output settings to be applied to all channels.

Right-clicking over certain settings will provide a menu of additional options.

44

Mix-Minus Combiners Control Dialog
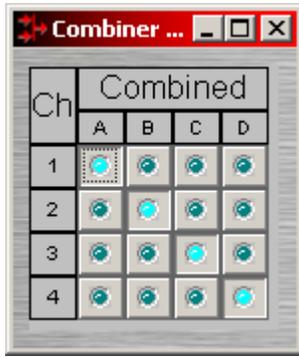
Mix-Minus Combiners are provided to enhance the capabilities of Auto Mixers in mix-minus and input expansion applications. Mix-Minus Combiners combine control data only and, therefore, have no audio outputs. Inputs to a Mix-Minus Combiner come from outputs of separate Auto Mixers. **Ch / Combine** allows input channels (1, 2, 3 etc.) to be grouped into specific combinations (A, B, C, etc.). These combinations automatically determine proper routing of control data for the Auto Mixers. Control data represents NOM (number of open mics) and ATS (adaptive threshold sensing) information. Mix-Minus Combiners are used when the Auto Mixer outputs are also connected to a separate Matrix Mixer (to create multiple 'mix-minus' outputs). Also, Mix-Minus Combiners allow large Auto Mixers to be created from multiple, smaller ones. This is useful when more than 32 inputs are required, or when an Auto Mixer must be placed into multiple Audia units (for proper DSP allocation or for physical location of inputs).

Right-clicking over certain settings will provide a menu of additional options.

Room Combiners Control Dialog

Room Combiners are provided to enhance the capabilities of Auto Mixers in room combining and zone routing applications. Room Combiners automatically determine proper routin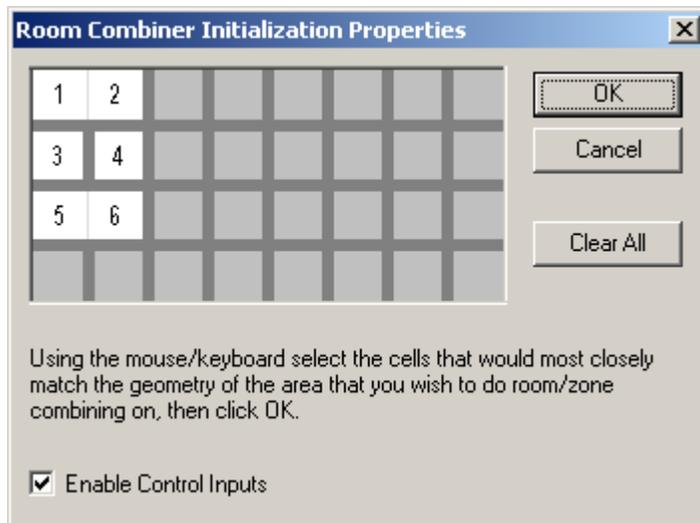g of audio signals & control data for the Auto Mixers. Control data represents NOM (number of open mics) and ATS (adaptive threshold sensing) information. Room Combiners are available only from the Object Toolbar (not from the Processing Library).

When a Room Combiner is placed, an Initialization Properties dialog box appears for creating physical relationships between rooms. The overall space is first defined by left-clicking multiple squares (non-contiguous rooms are allowed). Right-clicking then provides a menu of additional options, such as **Merge** adjacent squares into larger rooms, and **Isolate** rooms which have no moveable partitions. **Enable Control Inputs** provides the Room Combiner with control nodes, which allow combining via external devices (see Controls).
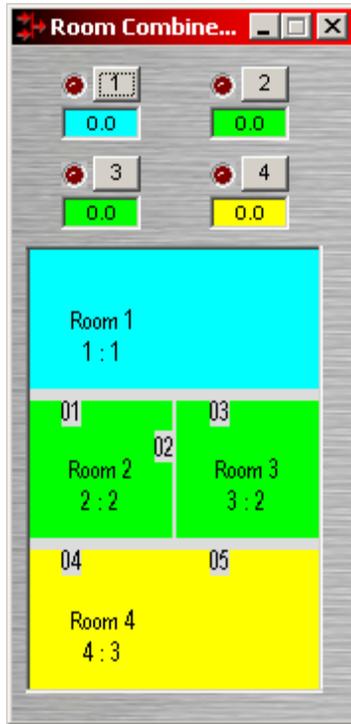
Once a Room Combiner is placed, the Control Dialog Box is available, which displays the overall space, including zones, partitions, levels, and mutes. Moveable partitions are numbered relative to control input nodes on the block. Combining may be accomplished 'automatically' by manipulation of these partitions. Moveable partitions can be opened/closed by means of external controls (see Controls & RS-232/Telnet). Combining can instead be accomplished by recalling stored preset configurations. Preset configurations must first be created, then recalled through either a Software User Interface or external controls (see Controls & RS-232/Telnet).

The Room Combiner dialog box allows rooms to be combined in groups, which are color-coded and numbered for identification. This can be used for real-time software control, or to generate various configurations to be stored as presets. Rooms can be grouped by manipulating partitions (using the mouse), or by selecting multiple rooms while holding *Shift* or *Ctrl*. This last approach allows non-contiguous and isolated rooms to be included in combined groups. Right-clicking on a room provides a menu of sixteen available groups. Level and mute adjustments become ganged for all rooms combined in the same group.

Right-clicking over certain settings will provide a menu of additional options. Control Dialog Boxes for Room Combiner components can be minimized to create user control surfaces (see Customizing Component Objects).

Equalizers

These Component Objects provide both graphic and parametric equalizers. Equalizers may be connected between any components within the Layout, for applications which require room equalization and/or tone control. Equalizers are available in pre-defined configurations, however, the configuration may be customized when being placed from the Object Toolbar.

Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

see Graphic Equalizer Control Dialog

see Parametric Equalizer Control Dialog

Right-clicking over the object provides a pop-up menu of options.

Control Dialog

Graphic Equalizer Control Dialog
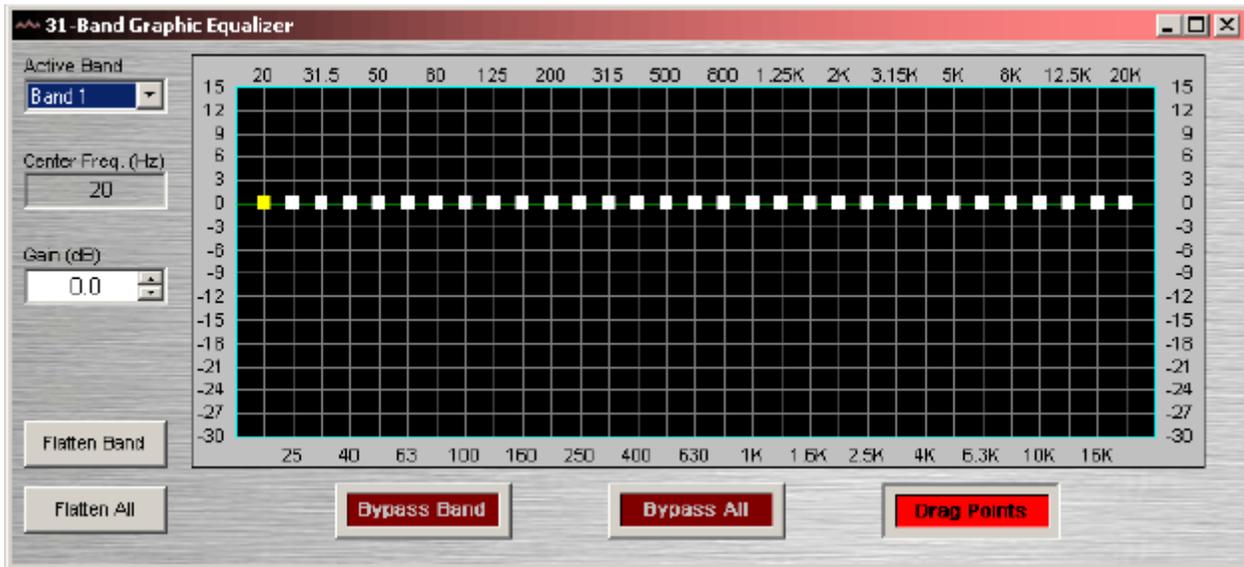
Active Band selects the current band to be adjusted. **Center Freq.** displays the center frequency for the current band. **Gain** adjusts the amount of cut or boost applied at the center frequency for the current band. Active Band and Gain may also be adjusted by dragging the band controls shown inside the graph. The selected band control becomes yellow, and dragging it up/down affects Gain for that band. **Flatten Band** & **Flatten All** change the band(s) Gain to '0' (flat). **Bypass Band** & **Bypass All** disable the band(s) without changing settings. **Drag Points** turns on/off the band controls, revealing the resultant curve only.

Right-clicking over certain settings will provide a menu of additional options.

Parametric Equalizer Control Dialog
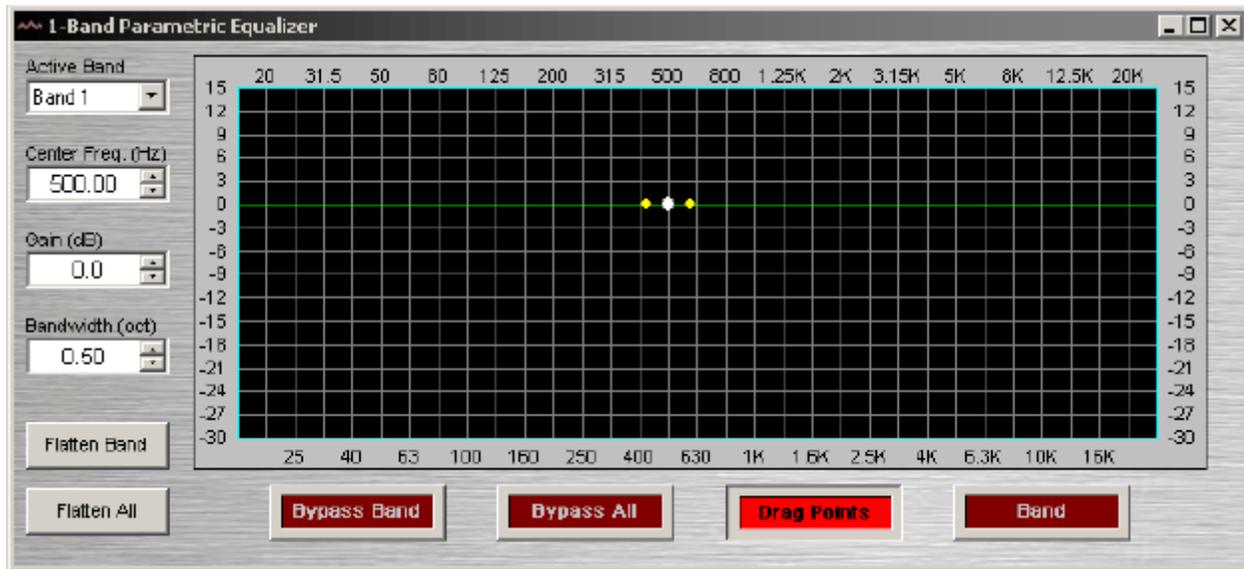
Active Band selects the current band to be adjusted. **Center Freq.** adjusts the center frequency for the current band. **Gain** adjusts the amount of cut or boost applied at the center frequency for the current band. **Bandwidth** adjusts the range of frequencies, above & below the center frequency, which are also affected by the current band. These settings may also be adjusted by dragging the band controls shown inside the graph. Dragging the white dot affects both Center Freq. & Gain. Dragging either yellow dot affects Bandwidth. **Flatten Band** & **Flatten All** change the band(s) Gain to '0' (flat). **Bypass Band** & **Bypass All** disable the band(s) without changing settings. **Drag Points** turns on/off the band controls, revealing the resultant curve only. **Band** highlights the current band inside the graph.

Right-clicking over certain settings will provide a menu of additional options.

Filters

These Component Objects provide High-Pass, Low-Pass, High-Shelf, & Low-Shelf filters. Filters may be connected between any components within the Layout, for applications which require 'roll-offs' and/or simple tone control.

Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

see High Pass Filter Control Dialog

see Low Pass Filter Control Dialog

see High Shelf Filter Control Dialog

see Low Shelf Filter Control Dialog

Right-clicking over the object provides a pop-up menu of options.

Control Dialog

High Pass Filter Control Dialog
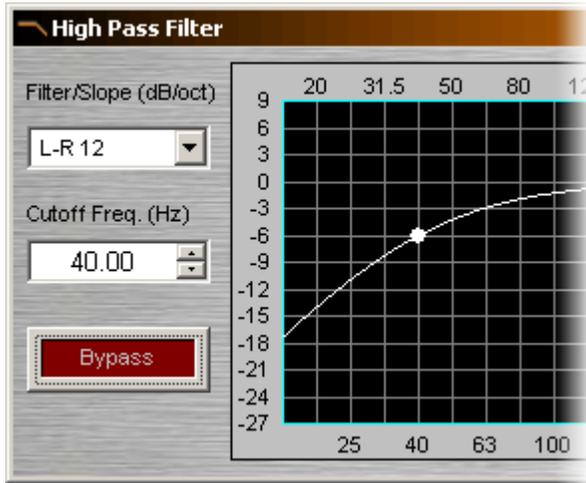
Filter / Slope selects the type (Linkwitz-Riley or Butterworth) and slope of the filter. **Cutoff Freq.** selects the cutoff frequency for the filter. Cutoff Freq. may also be adjusted by dragging the cursor shown inside the graph. **Bypass Band** disables the filter without changing settings.

Right-clicking over certain settings will provide a menu of additional options.

Low Pass Filter Control Dialog
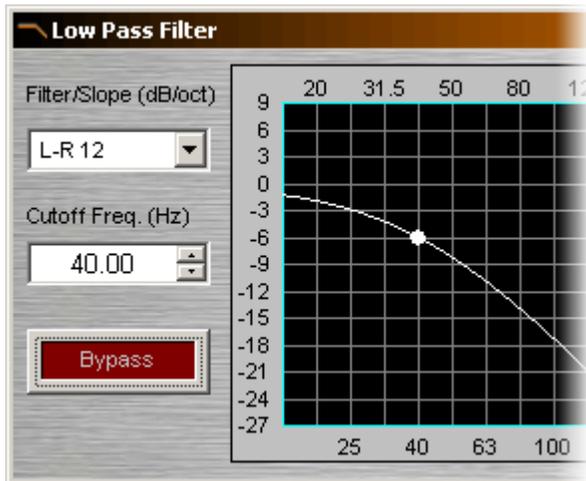
Filter / Slope selects the type (Linkwitz-Riley or Butterworth) and slope of the filter. **Cutoff Freq.** selects the cutoff frequency for the filter. Cutoff Freq. may also be adjusted by dragging the cursor shown inside the graph. **Bypass Band** disables the filter without changing settings.

Right-clicking over certain settings will provide a menu of additional options.

High Shelf Filter Control Dialog
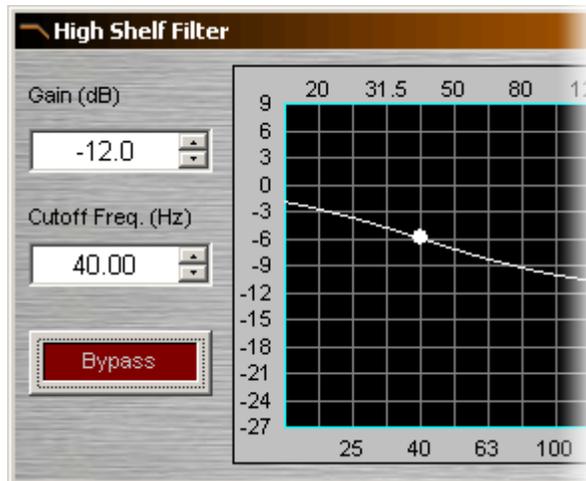
Gain selects the amount of maximum cut or boost applied by the filter. **Cutoff Freq.** selects the cutoff frequency for the filter. These settings may also be adjusted by dragging the cursor shown inside the graph. **Bypass Band** disables the filter without changing settings.

Right-clicking over certain settings will provide a menu of additional options.

Low Shelf Filter Control Dialog
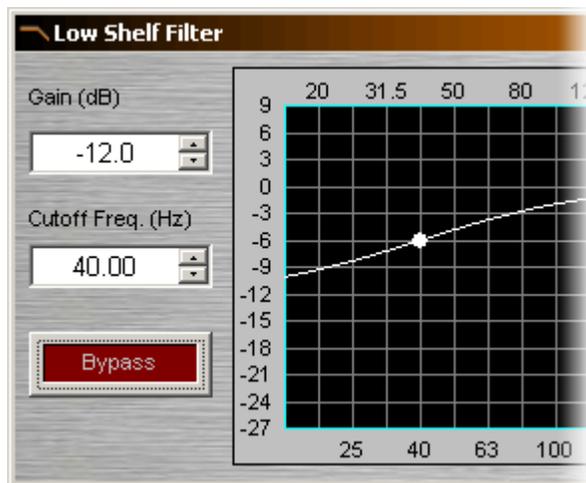
Gain selects the amount of maximum cut or boost applied by the filter. **Cutoff Freq.** selects the cutoff frequency for the filter. These settings may also be adjusted by dragging the cursor shown inside the graph. **Bypass Band** disables the filter without changing settings.

Right-clicking over certain settings will provide a menu of additional options.

Crossovers

These Component Objects provide 2-way, 3-way, & 4-way crossover functions. Crossovers may be connected between any components within the Layout, for applications which require multiple outputs with specified frequency ranges.

Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

see 2-Way Crossover Control Dialog

see 3-Way Crossover Control Dialog

see 4-Way Crossover Control Dialog

Right-clicking over the object provides a pop-up menu of options.

Control Dialog

### 2-Way Crossover Control Dialog

Input Level provides muting and level adjustment for the input. **Output Range** selects the Low or High frequency output. **Frequency** selects the filter cutoff frequency for the selected output. Output Range & Frequency may also be selected by dragging the cursors shown inside the graph. **Filter / Slope** selects the type (Linkwitz-Riley or Butterworth) and slope of filter used at the associated Frequency. **Output Level** provides muting, level adjustment, & polarity (phase) reversal for the selected output. **Sync** forces filter adjustments on adjacent outputs to be linked. Settings for each output are displayed across the bottom of the dialog box.

Right-clicking over certain settings will provide a menu of additional options.

3-Way Crossover Control Dialog

Input Level provides muting and level adjustment for the input. **Output Range** selects the Low, Mid, or High frequency output. **Frequency** selects the filter cutoff frequencies for the selected output. Output Range & Frequency may also be selected by dragging the cursors shown inside the graph. **Filter / Slope** selects the type (Linkwitz-Riley or Butterworth) and slope of filter used at the associated Frequency. **Output Level** provides muting, level adjustment, & polarity (phase) reversal for the selected output. **Sync** forces filter adjustments on adjacent outputs to be linked. Settings for each output are displayed across the bottom of the dialog box.

Right-clicking over certain settings will provide a menu of additional options.

4-Way Crossover Control Dialog
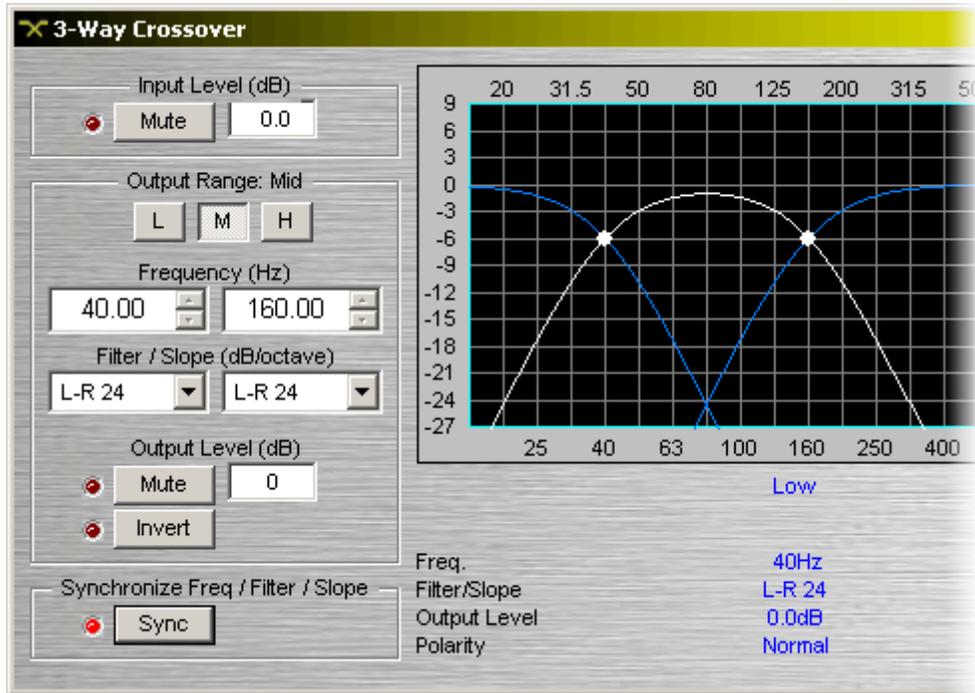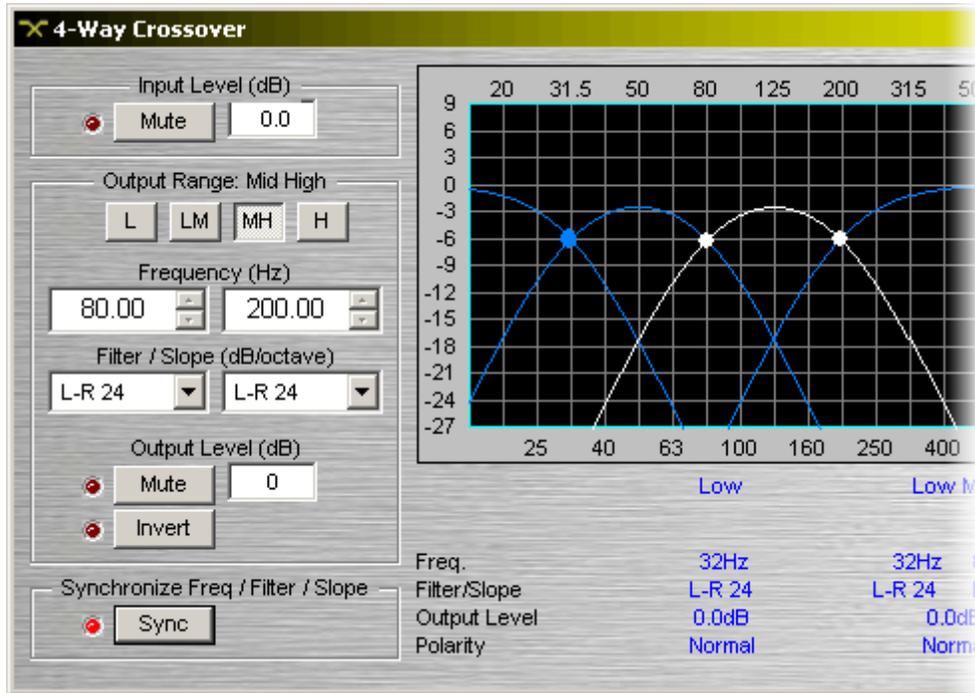

Input Level provides muting and level adjustment for the input. **Output Range** selects the Low, Low-Mid, Mid-High, or High frequency output. **Frequency** selects the filter cutoff frequencies for the selected output. Output Range & Frequency may also be selected by dragging the cursors shown inside the graph. **Filter / Slope** selects the type (Linkwitz-Riley or Butterworth) and slope of filter used at the associated Frequency. **Output Level** provides muting, level adjustment, & polarity (phase) reversal for the selected output. **Sync** forces filter adjustments on adjacent outputs to be linked. Settings for each output are displayed across the bottom of the dialog box.

Right-clicking over certain settings will provide a menu of additional options.

Dynamics

These Component Objects provide Leveler, Comp/Limiter, Ducker, & Noise Gate functions. Dynamics components may be connected between any other components within the Layout, for applications which require automatic control of volume levels and/or dynamics.

Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

see Leveler Control Dialog

see Comp/Limiter Control Dialog

see Ducker Control Dialog

see Noise Gate Control Dialog

Right-clicking over the object provides a pop-up menu of options. Control Dialog Boxes for some Dynamics components can be minimized to create user control surfaces (see Customizing Component Objects).

Control Dialog

Leveler Control Dialog
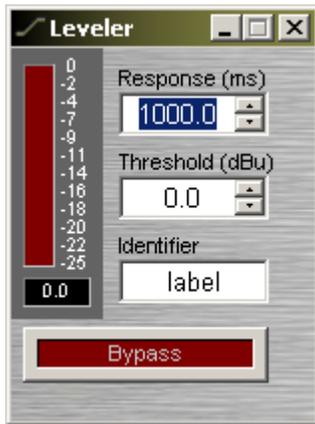
Levelers are automatic gain controls, which affect long-term average levels. **Response Time** determines how quickly the Leveler reacts to input level changes. **Threshold** determines what input level will trigger gain reduction. To maintain a consistent level, set Threshold to lowest desired level. A meter & numeric display indicate the amount of gain reduction. **Identifier** provides a custom label, when dialog box is minimized (see below). **Bypass** disables the Leveler without changing settings.

Right-clicking over certain settings will provide a menu of additional options. Control Dialog Boxes for Levelers can be minimized to create user control surfaces (see Customizing Component Objects).

Comp/Limiter Control Dialog
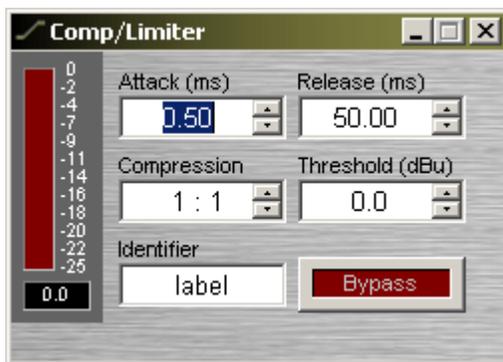
Comp/Limiters affect short-term signal dynamics (peaks). **Attack** determines how quickly the Comp/Limiter reacts to input level changes. **Compression Ratio** determines the intensity of gain reduction (input level increase vs. output level increase). **Release Time** determines how quickly gain reduction is released, once input signal falls below Threshold. **Threshold** determines what input level will trigger gain reduction. A meter & numeric display indicate the amount of gain reduction. **Bypass** disables the Comp/Limiter without changing settings. **Identifier** provides a custom label, when dialog box is minimized (see below).

Right-clicking over certain settings will provide a menu of additional options. Control Dialog Boxes for Comp/Limiters can be minimized to create user control surfaces (see Customizing Component Objects).

54

Ducker Control Dialog
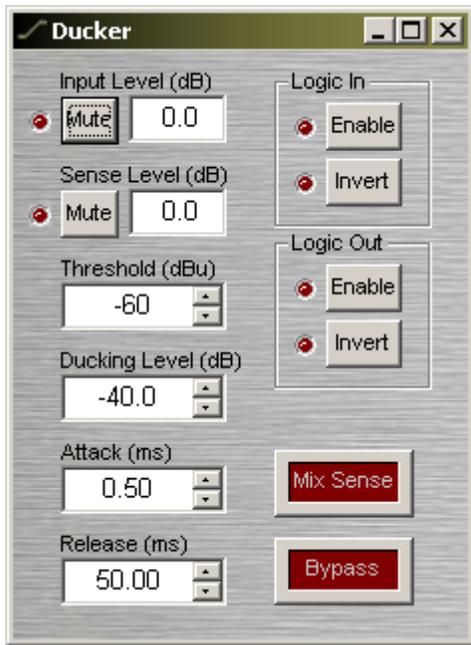
Duckers provide level attenuation, triggered by signal or logic inputs. **Input Level** provides muting and level adjustment for the normal audio input, which appears as the upper input, on the left side of the Ducker. **Sense Level** provides muting and level adjustment for the signal trigger input, which appears as the lower input, on the left side of the Ducker. **Threshold** determines what sense input signal level will trigger ducking. **Ducking Level** determines how much attenuation is applied to the normal audio signal during ducking. **Attack** determines how quickly the ducker reacts to trigger input (signal or logic). **Release** determines how quickly attenuation is released, once trigger input is removed (signal or logic). **Logic In** turns on/off and reverses operation (off triggers ducking) of the logic trigger input. **Logic Out** provides the same functions as Logic In, but instead as a trigger output (which follows ducking activity). **Mix Sense** allows the Sense input signal to be mixed with normal audio input signal, at the output of the Ducker. **Bypass** disables the Ducker without changing settings.

Right-clicking over certain settings will provide a menu of additional options.

Noise Gate Control Dialog
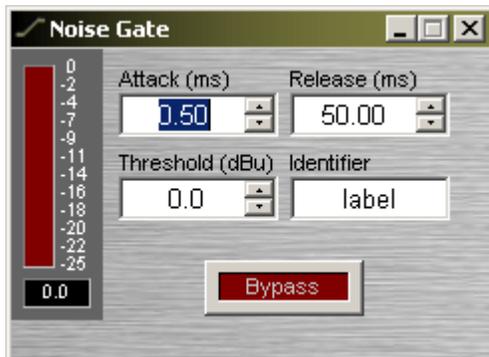
Noise Gates provide automatic muting, until triggered by signal presence. **Attack Time** determines how quickly the gate opens when signal is present. **Release Time** determines how quickly the gate closes when signal is no longer present. **Threshold** determines what input signal level will trigger the gate to open. A meter & numeric display indicate the amount of gain reduction. **Identifier** provides a custom label, when dialog box is minimized (see below). **Bypass** disables the Noise Gate without changing settings.

Right-clicking over certain settings will provide a menu of additional options. Control Dialog Boxes for Noise Gates can be minimized to create user control surfaces (see Customizing Component Objects).

Routers

These Component Objects provide typical audio routing functions. Routers may be connected between any components within the Layout, for applications which require routing of input signals to various outputs. Routers are available in pre-defined configurations, however, the configuration may be customized when being placed from the Object Toolbar.

Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

see Router Control Dialog

Right-clicking over the object provides a pop-up menu of options.

Control Dialog

Router Control Dialog

Routers allow each input to be assigned to multiple outputs via **In / Out**. However, each output allows only one input assigned at a time. Therefore, Routers behave like a series of individual distribution amplifiers. For increased input/output assignment capability, see Mixers.

Right-clicking over certain settings will provide a menu of additional options.

Delays

These Component Objects provide typical audio time-delay functions. Delays may be connected between any components within the Layout, for applications which require room delay and/or loudspeaker time-alignment.

Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

see Delay Control Dialog

Right-clicking over the object provides a pop-up menu of options.

Control Dialog

Delay Control Dialog

Value determines the amount of delay, based on the selected Units. **Units** selects either time (milliseconds) or distance (meters, centimeters, feet, or inches). **Bypass** disables the Delay without changing settings.

Right-clicking over certain settings will provide a menu of additional options.

Controls

These Component Objects provide both internal and external control functions. Level Controls and Mute Buttons may be connected between components within the Layout, for control of volume and muting. Preset and Remote Preset Buttons may be placed within the Layout, and defined to recall specified Presets. Logic Gates may be connected between component control nodes in the layout, to customize control behavior. Volume 8, Select 8, Volume/Select 8, and Logic Box components may be placed within the layout, to represent their corresponding external control devices. Controls are available in pre-defined configurations, however, the configuration may be customized when being placed from the Object Toolbar.
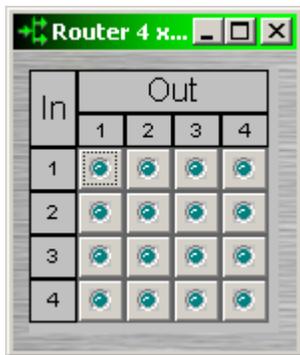
Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

see Level Control Dialog

see Mute Button Control Dialog

see Preset Button Control Dialog

see Remote Preset Button Control Dialog

see Logic Gates

see Volume 8 Control Dialog

see Select 8

see Volume/Select 8 Control Dialog

see Logic Box

Right-clicking over the object provides a pop-up menu of options. Control Dialog Boxes for Level, Mute, and Preset related components can be minimized to create user control surfaces (see Customizing Component Objects).

Control Dialog

Level Control Dialog
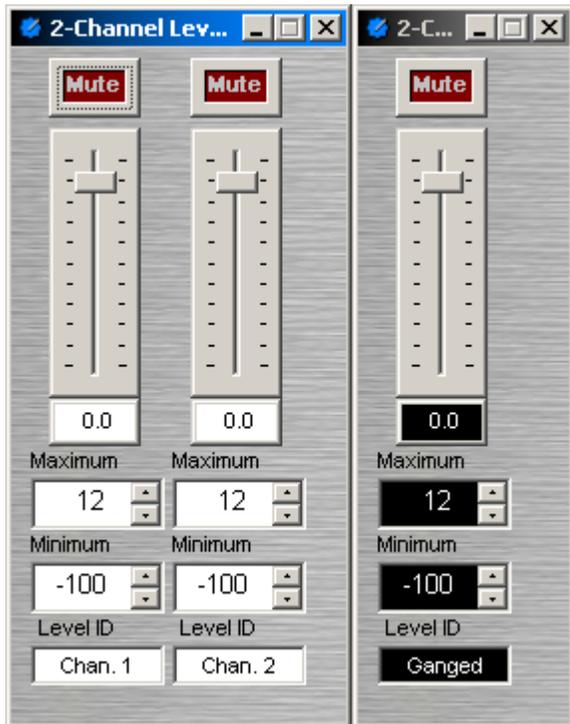
Mute turns on/off the channel. Channel level may be entered numerically, or may be adjusted by dragging the **fader**. **Maximum** and **Minimum** can be used to restrict the range of level adjustment provided by the fader. **Level ID** provides a custom label, when the dialog box is minimized (see below).

Right-clicking over certain settings will provide a menu of additional options. Control Dialog Boxes for Level Control components can be minimized to create user control surfaces (see Customizing Component Objects).

When placed from the Object Toolbar, multiple Level Controls may be 'ganged' together onto a single fader. Ganged Level Controls display a 'G' in the upper-right of the Component Object, and Level ID colors are reversed on the Control Dialog. Non-ganged Level Controls have a maximum of eight channels, whereas ganged Level Controls have a maximum of forty channels.

Mute Button Control Dialog
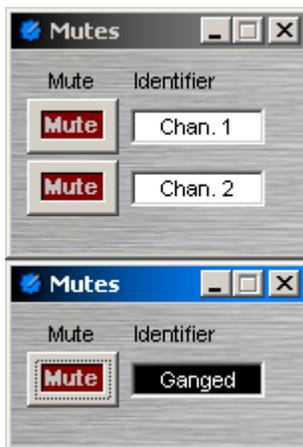
Mute turns on/off the channel. **Identifier** provides a custom label, when the dialog box is minimized (see below).

Right-clicking over certain settings will provide a menu of additional options. Control Dialog Boxes for Mute Button components can be minimized to create user control surfaces (see Customizing Component Objects).

When placed from the Object Toolbar, multiple Mute Buttons may be 'ganged' together onto a single button. Ganged Mute Buttons display a 'G' in the upper-right of the Component Object, and Indentifier colors are reversed on the Control Dialog. Non-ganged Mute Buttons have a maximum of eight channels, whereas ganged Mute Buttons have a maximum of forty channels.

Preset Button Control Dialog

Right-clicking over a button provides a list of available Presets which can be assigned to that button. The Preset Number will appear on the button, and the Preset Name will appear to the right. Control Dialog Boxes for Preset Button components can be minimized to create user control surfaces (see Customizing Component Objects).

Remote Preset Button Control Dialog

Remote Preset Buttons are identical to Preset Buttons, except they have control input nodes on the block. These control input nodes allow presets to be recalled via control output nodes on other component blocks. This provides remote control of preset selection, both from internal components and external controls. Control Dialog Boxes for Remote Preset Button components can be minimized to create user control surfaces (see Customizing Component Objects).

Logic Gates

Most Logic Gates have no Control Dialog Boxes. They are used only to customize behavior of other control functions in the system. Logic Gates are connected between the output and input control nodes of other components in the layout. These components can represent internal or external control functions.

Examples

Internal: Auto Mixer output nodes; Ducker input/output nodes; Remote Preset Button input nodes.

External: Select 8 output nodes; Volume/Select 8 output nodes; Logic Box input/output nodes.

Logic Gates alter the normal operation of component control outputs in the following ways:

NOT: produces opposite/inverted operation (input ON turns output OFF; input OFF turns output ON).

AND: all inputs ON causes output to go ON (any inputs OFF causes output to go OFF).

NAND: all inputs ON causes output to go OFF (any inputs OFF causes output to go ON).

OR: any inputs ON causes output to go ON (all inputs OFF causes output to go OFF).

NOR: any inputs ON causes output to go OFF (all inputs OFF causes output to go ON).

XOR: any inputs (except all) ON causes output to go ON (all inputs OFF/ON causes output to go OFF).

Flip Flop: produces toggle/latching operation (input ON changes output state, ON/OFF).

NOTES: NOT and Flip Flop gates have only a single input per output, whereas other gates have multiple inputs, up to 8. Flip Flop gates provide a control dialog box, for establishing their initial output state.

Sample Application
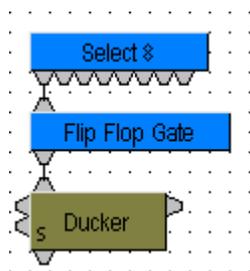
Normally, a Select 8 control output connected to a Ducker control input provides a momentary operation (ducking occurs only as long as the Select 8 control is being pressed). However, connecting a Flip Flop Logic Gate between the Select 8 control output and the Ducker control input produces a press-on/press-off operation (ducking begins with the first press of the Select 8 control, and ceases only upon a second press of the Select 8 control).

60

Volume 8 Control Dialog
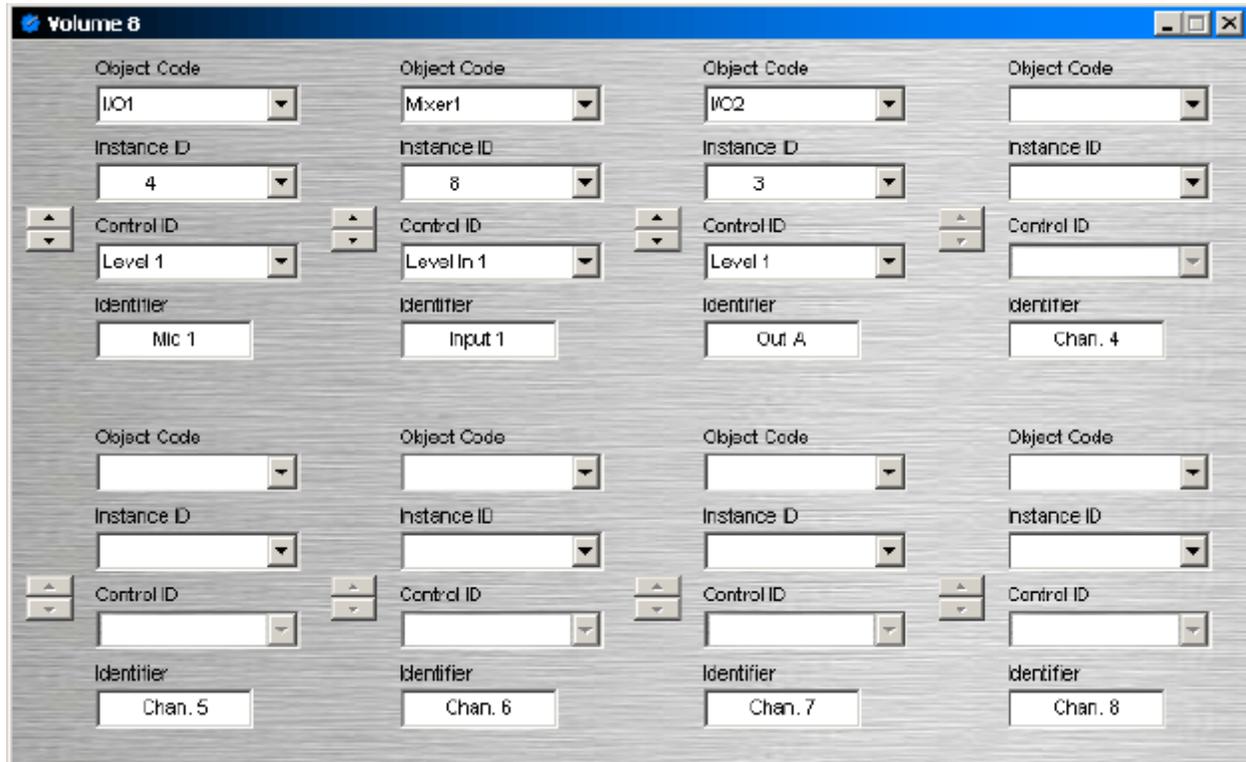
The Volume 8 is an external control device, which allows adjustment of eight selectable Audia volumes. Volumes can be individual or grouped levels within Audia. This includes Level Control blocks, as well as levels within other component blocks (such as Inputs/Outputs, Mixers, Equalizers, etc.).

Volume 8 is represented in the layout as a block with no audio or control connections. All functions are assigned using the control dialog box. **Object Code** selects from a list of blocks found in the layout, and **Instance ID** is entered automatically, but both can be found easily using Object ID Inspector. **Control ID** selects from a list of available levels within the chosen block. Volume up/down buttons allow control of assigned levels directly from the dialog box. **Identifier** provides a custom label, when the dialog box is minimized (see below).

Control Dialog Boxes for Volume 8 components can be minimized to create user control surfaces (see Customizing Component Objects).

Volume 8 controls include a raceway (surface-mount) back-box, but will fit most US standard single-gang (flush-mount) back-boxes. Custom Control Labels may be printed for the Volume 8. Please refer to the 'Installation Guide' (included with controls), or see Control Bus for more information. External controls must be identified (see Device Maintenance) and associated with their corresponding component blocks within the layout (see Equipment Table).

Select 8

The Select 8 is an external control device, which allows initiation of eight selectable Audia actions. Actions can be individual or grouped functions within Audia. This includes recalling presets, ducking, combining, etc.

Select 8 components have no Control Dialog Boxes. They are represented in the layout as a block with eight control output nodes. These control output nodes are connected to control input nodes on the other component blocks to be controlled. These other components may include Remote Preset Buttons, Duckers, Room Combiners, and Logic Boxes. Muting and room combining routines can also be achieved using presets. Logic Boxes can provide logic outputs for controlling additional equipment, external to Audia.

Select 8 behavior can be altered using Logic Gates.

Select 8 controls include a raceway (surface-mount) back-box, but will fit most US standard single-gang (flush-mount) back-boxes. Custom Control Labels may be printed for the Select 8.

Please refer to the 'Installation Guide' (included with controls), or see Control Bus for more information. External controls must be identified (see Device Maintenance) and associated with their corresponding component blocks within the layout (see Equipment Table).

Volume/Select 8 Control Dialog
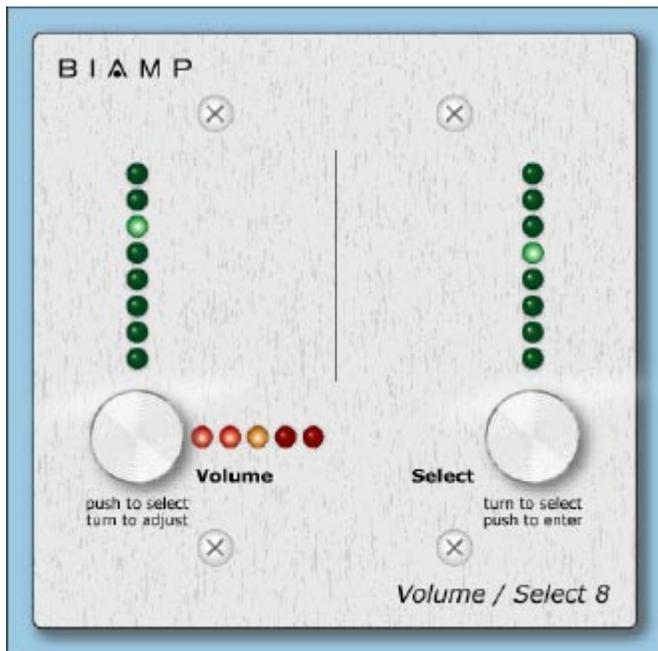
The Volume 8 is an external control device, which combines the functions of both Volume 8 and Select 8 controls.

Therefore, the Volume/Select 8 is represented with a control dialog box (for volume functions), as well as a component block with control output nodes (for select functions).

Control Dialog Boxes for Volume/Select 8 components can be minimized to create user control surfaces (see Customizing Component Objects).

Volume/Select 8 controls include a raceway (surface-mount) back-box, but will fit most US standard single-gang (flush-mount) back-boxes.

Custom Control Labels may be printed for the Volume/Select 8. Please refer to the 'Installation Guide' (included with controls), or see Control Bus for more information. External controls must be identified (see Device Maintenance) and associated with their corresponding component blocks within the layout (see Equipment Table).

Logic Box

Logic Box Initialization Properties

Logic Inputs/Outputs

Inputs: 10   Outputs: 10

OK   Cancel
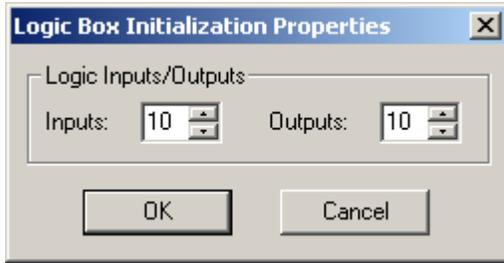
The Logic Box is an external control device, which provides twenty logic input/output connections. When a Logic Box is placed, an Initialization Properties dialog box appears for assigning the quantities of logic inputs/outputs (20 total). Logic inputs allow external switches to initiate Audia actions. Actions can be individual or grouped functions within Audia. This includes recalling presets, ducking, combining, etc. Logic outputs can be used to control additional equipment, external to Audia.
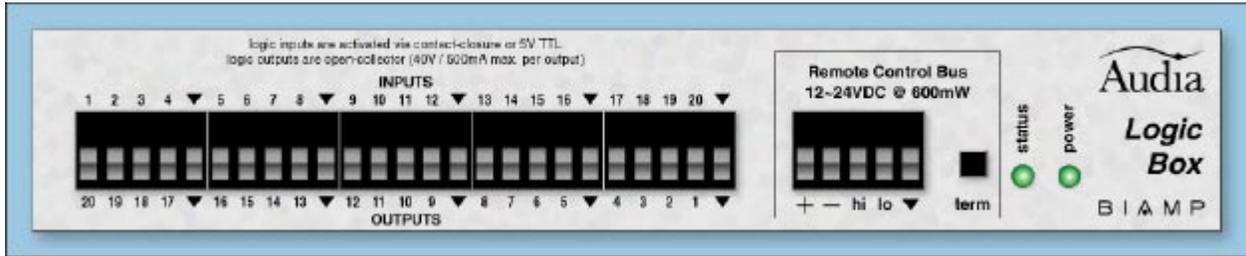
Logic Box components have no Control Dialog Boxes. They are represented in the layout as a block with a total of twenty control input/output nodes. Logic Inputs (on the box) are represented as control output nodes (on the block). These control output nodes may be connected to control input nodes on other components, such as Remote Preset Buttons, Duckers, and Room Combiners. Logic Outputs (on the box) are represented as control input nodes (on the block). These control input nodes may be connected to control output nodes on other components, such as Auto Mixers, Duckers, and Select 8. Unlike other components, Logic Box output nodes may be connected to input nodes on the same Logic Box block, allowing Logic Inputs (external switches) to control Logic Outputs (external equipment).
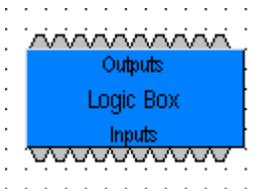
Logic Box behavior can be altered using Logic Gates. Please refer to the 'Installation Guide' (included with controls), or see Control Bus for more information. External controls must be identified (see Device Maintenance) and associated with their corresponding component blocks within the layout (see Equipment Table).
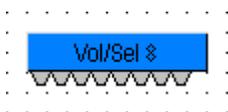
Control Labels

The Volume 8, Select 8, and Volume/Select 8 controls all come with a sheet of clear, adhesive-backed labels, for custom printing on a laser printer. A Word document (V8S8 Labels.doc) is available on the Audia software CD and the Biamp web site (www.biamp.com), as a label printing template. These labels are meant to be printed using desk-top laser printers only. It is recommended that the printer be set for 'label' printing, and the label sheet should be 'short-edge' feed from the 'bypass' tray. A test printing of a single label should be done, to assure proper alignment of text. To compensate for any mis-alignment of text, margins within the Word document may be adjusted. Care should be taken in placement of the labels onto the controls. To avoid finger-prints, the use of a knife-blade or tweezers is recommended for handling. Severe bending or curling of the label may cause loss of some toner (text). When placing the label on the control panel, use the vertical column of LED indicators as a visual reference of alignment. Once the label is in place, a second (un-printed) label may be placed over the first label, to provide protection against wear. Each sheet contains 25 labels, so in case of errors, additional labels may be printed.

In the label template (V8S8 Labels.doc), select Show Gridlines from the Table menu. Each large cell represents a label. The first four columns are 'left-justified' to create labels for *Volume 8* and *Select 8* panels, as well as for the 'Volume' (left) section of *Volume/Select 8* panels. The last column is 'right-justified' to create labels for the 'Select' (right) section of *Volume/Select 8* panels. Left-click inside any large cell, and begin typing. Use 'Enter' to begin a new line, and again to leave a blank line. To avoid printing errors, do not change line-spacing or other formatting parameters. However, if you do not have the default font (Helvetica), or if you wish to change label appearance, you may select a different font before typing.

Meters

These Component Objects provide signal present, peak, and RMS metering functions. Meters may be connected to any component output, and may be used for diagnostic and setup purposes, or for applications which require real-time metering. Meters are available in pre-defined configurations, however, the configuration may be customized when being placed from the Object Toolbar.

Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

 see Signal Present Meter Control Dialog

 see Peak Meter Control Dialog

 see RMS Meter Control Dialog

Right-clicking over the object provides a pop-up menu of options. Control Dialog Boxes for Meters components can be minimized to create user control surfaces (see Customizing Component Objects).

Control Dialog

Signal Present Meter Control Dialog

Threshold determines at what level the signal present indicator will light. **Identifier** provides a custom label, when dialog box is minimized (see below).

Right-clicking over certain settings will provide a menu of additional options. Control Dialog Boxes for Meters components can be minimized to create user control surfaces (see Customizing Component Objects).

Peak Meter Control Dialog
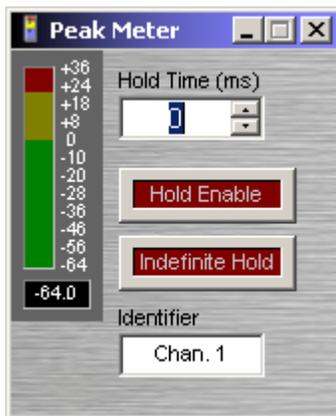
A peak-reading meter & numeric display indicate signal level. **Hold Time** determines how long the meter will display the most recent level increase. **Hold Enable** turns the Hold Time function on/off. **Indefinite Hold** causes the Hold function to be continuous, updating the display only when levels increase beyond the current reading. **Identifier** provides a custom label, when dialog box is minimized (see below).

Right-clicking over certain settings will provide a menu of additional options. Control Dialog Boxes for Meters components can be minimized to create user control surfaces (see Customizing Component Objects).

RMS Meter Control Dialog
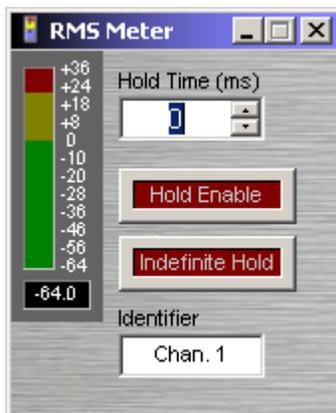
An RMS-reading meter & numeric display indicate signal level. **Hold Time** determines how long the meter will display the most recent level increase. **Hold Enable** turns the Hold Time function on/off. **Indefinite Hold** causes the Hold function to be continuous, updating the display only when levels increase beyond the current reading. **Identifier** provides a custom label, when dialog box is minimized (see below).

Right-clicking over certain settings will provide a menu of additional options. Control Dialog Boxes for Meters components can be minimized to create user control surfaces (see Customizing Component Objects).

Generators

These Component Objects provide sine-wave, sweep, pink-noise, and white-noise generator functions. Generators may be connected to any component input, and may be used for diagnostic and setup purposes, or for applications which require tones or sound-masking.

Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

see Tone Generator Control Dialog

see Pink Noise Generator Control Dialog

see White Noise Generator Control Dialog

Right-clicking over the object provides a pop-up menu of options.

Control Dialog

Tone Generator Control Dialog
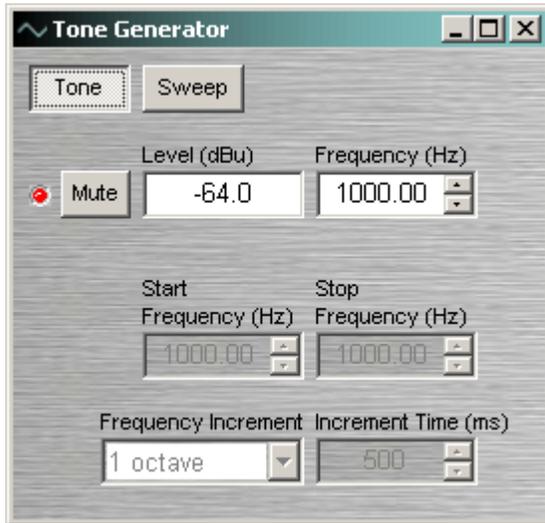
Tone selects a single frequency. **Sweep** selects a range of frequencies (instead of a single tone). **Mute** turns on/off the generator. **Level** determines the generator output level. **Frequency** determines the frequency for Tone. **Start Frequency** & **Stop Frequency** determine the range of frequencies for Sweep. **Frequency Interval** selects the spacing (and quantity) of individual tones for Sweep. **Time Interval** determines the time each tone is held for Sweep.

Right-clicking over certain settings will provide a menu of additional options.

Pink Noise Generator Control Dialog

Mute turns on/off the generator. **Level** determines generator output level.

Right-clicking over certain settings will provide a menu of additional options.

White Noise Generator Control Dialog

Mute turns on/off the generator. **Level** determines generator output level.

Right-clicking over certain settings will provide a menu of additional options.

Diagnostics

These Component Objects provide Transfer Function displays for diagnostic purposes. Transfer Function may be connected between any two component outputs on the same signal path, for a comparative analysis of processing.

Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

see Transfer Function Control Dialog

Right-clicking over the object provides a pop-up menu of options.

Control Dialog

Transfer Function

Transfer Function may be connected between any two component outputs on the same signal path, for a comparative analysis of processing. **Gain** displays the difference in frequency response between the two comparison points, as a white line. **Phase** displays the phase relationship between the two comparison points, as a green line. **Unwrap** removes out-of-range phase rotations from the phase display. **Delays** adds the effect of user-placed delay blocks (Delay and Matrix Mixer w/ Delay) into the phase display. The Phase display does not indicate inherent propagation delay within the system. When a Transfer Function dialog box is open, the associated signal path is indicated as a dashed red line in the layout.

System Design

Placing Component Objects

Audia(TM) system design begins with the placement of Component Objects into the Layout. This can be done in two ways. The simplest way is to select a component category from the Processing Library, and then drag & drop a pre-defined component into the Layout. Processing Library component categories can also be selected from the Processing Library Menu (at the top of the screen), which indicates keyboard short-cuts as well. However, component placement can instead be done using the Object Toolbar, located directly above the Layout. On the Object Toolbar, next to each category icon is a drop-down menu of components. Selecting a component from the menu, then clicking over the Layout, will place the selected component at that location. Holding the *Shift* key allows multiple copies of the component to be placed. Certain components will provide a pop-up window, allowing further component definition & customization before placement. Using the Object Bar also allows the Processing Library to be closed (providing greater width to the Layout). Component Objects, and their current settings (DSP data), can also be placed using the Copy/Paste functions on the Standard Toolbar or the Edit Menu. Selected objects can also be copied by holding the *Alt* key while dragging and dropping. ***NOTE: Components cannot be selected when the current Layer is invisible (see Layers Sheet).***

Arranging Component Objects

The physical arrangement of objects within the Layout can be modified in several ways. Objects can be packed side-by-side, have their edges aligned, be centered in the view, be spaced evenly, and be made the same size. Objects can also be arranged from front to back, when multiple objects are overlaid. In addition, objects can be forced to snap to an adjustable grid. See Layout Toolbar and Layout Menu. Objects within the Layout can also be organized in separate groups called Layers (see Layers Sheet).

Connecting Component Objects

Each Component Object includes Nodes for making system wiring connections. Nodes are provided in four types, each with a specific location on the Component Object. Audio input Nodes are always on the left. Audio outputs Nodes are always on the right. Control (logic) input Nodes are always on the top. Control (logic) output Nodes are always on the bottom. When an object (such as a Ducker) includes an audio control (sense) input, it will be below the audio inputs (on the left).

To make a connection, select a Node and drag/drop a Line Object (wire) to a corresponding Node. Multiple Nodes on one object can be selected, and then connected to a matching set of multiple Nodes on another object. If multiple Nodes from individual objects are to be connected to multiple Nodes on a single object, select the individual object Nodes first (drag to select as group). Nodes from multiple individual objects must be connected to Nodes of other individual objects one at a time.

An output Node can be connected to multiple input Nodes, but an input Node cannot be connected to multiple output Nodes. Audio Nodes & Control (logic) Nodes cannot be connected to each other. Input & Output Nodes on the same object cannot be connected to each other. Nodes of the same type (Input or Output) cannot be connected together.

An individual Line Object (wire) or Node connection can be moved (but not copied). The appearance & properties of Line Objects (wires) in the Layout can be changed (see Format Toolbar and Property Sheet).

Component Object Properties

Component Object Properties are the control settings available for each component. These represent the same settings normally found on equivalent analog audio products. Component Object Properties for a selected component can be viewed/edited (in table form) using the Object Property Sheet. They can also be copied & pasted (as DSP Data) between identical components, using the Edit Menu. However, once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

There are eleven Component Object categories, with some categories providing several component variations. Each component type will have a unique Control Dialog Box. For more information on Control Dialog Boxes for specific components, select the desired category from the list below.

see Input Output

see Mixers

see Equalizers

see Filters

see Crossovers

see Dynamics

see Routers

see Delays

see Controls

see Meters

see Generators

see Diagnostics

Customizing Component Objects

Component Objects can be customized in several ways. First, when using the Object Toolbar to place components into the Layout, certain components will present the user with a pop-up window of configuration options. Several pre-defined configuration (input/output) options may be available for the component, as well as a 'custom' selection that allows the user to more specifically configure the component. Some components (such as Auto Mixers) will also allow activation of additional functions (such as Logic Inputs & Direct Outputs). Also, multiple channels of Level Control may also be 'ganged' together onto a single fader.

Actual component settings can be customized through Control Dialog Boxes (see Component Object Properties). Control Dialog Boxes for certain Combiners, Dynamics, Controls, & Meters components can be minimized to create customized control surfaces (room combiners, meters, level controls, mute buttons, & preset buttons). These control surfaces can then be made user accessible only on specific Layers and with specific Passwords. (See Software User Interface.)

Individual or multiple Component Objects can be customized, connected, and then saved as new Component Objects in the Processing Library. This can be done by selecting the desired object(s) in the Layout, then pressing *ALT* and dragging the object(s) into an appropriate category in the Processing Library. *ALT* can also be used to drag object(s) between design (.DAP) files, and to copy objects within the same Layout. Right-clicking over objects (to Copy) and then right-clicking over a Processing Library category (to Paste), can also be used.

Right-clicking over the Processing Library will also allow new category files (.APL) to be created, for quick access to specialized or often-used components. Existing category files (.APL) can be closed, to customize the Processing Library. All available category files (.APL) can be viewed and opened from the Processing Library Menu and from the Open dialog box.

Object and Layout Text

The size and appearance of both text and objects can be customized. Special Text Objects can be placed into the Layout using the Text cursor on the Object Toolbar. When selected, Component & Text Objects display handles which can be dragged for re-sizing. Right-clicking over an object provides a pop-up menu which includes the Edit Text option. Edit Text can also be accessed for a selected object by simply pressing the *Enter* key. Text (and object) appearance can be customized using the associated tools on the Format Toolbar.

System Compiling Considerations

Once a system design is created (components placed & connected), the system can be compiled by selecting Compile from either the File Menu or the Standard Toolbar. Compile provides system design analysis and calculates DSP processing requirements. Compile also makes initial determinations of quantity/type of **Audia**(TM) devices needed, **CobraNet**(TM) channel assignments, allocation of DSP resources, and I/O channel number assignments. In addition, Compile will provide indication of system design errors.

Although Compile is an automatic process, certain settings can be pre-determined to help guide this process. DSP blocks (components) can be Allocated To Unit, which assigns them to a particular **Audia** device. This can be useful either to dedicate particular audio functions to specific physical locations, or to reduce the number of CobraNet channels being transmitted between **Audia** devices (reduces propagation delay).

Propagation Delay (also known as Latency) is an inherent time delay of the audio signals, which increases with the amount of DSP processing and CobraNet routing applied. Each CobraNet 'hop' (one-way transmission) produces 5.13mS delay. Therefore, system outputs can have different amounts of propagation delay. Compile determines worst-case propagation delay for a system, and applies Delay Equalization to syncronize all audio outputs. In applications where audio output syncronization is not important (audibly isolated areas), then Delay Equalization may be disabled on individual Input Output components (DSP blocks) or system wide. See Object Property Sheet and Compile Options.

Compile also attempts to 'group' simple DSP blocks together, reducing the number of DSP blocks to be allocated to the available **Audia** devices. Allocated To Gang can be used to 'gang' specific components (DSP blocks) into the same group and, therefore, the same device.

Compile will automatically add appropriate **Audia** devices to the system, based upon Input & Output needs of the design. However, this Auto Device Add function may be defeated, and **Audia** devices may be added manually, using the Equipment Table. Also, I/O Preference can be changed, to force Compile to use a specific **Audia** device (Input/Output configuration).

For visual aids in determining DSP block allocations, see Display Options. A system design file must be compiled before it can be downloaded to **Audia** devices (see Send Configuration).

Compile results may be reviewed at any time (see Tools Menu > Layout Compile Results).

Example of Compile results for a simple system
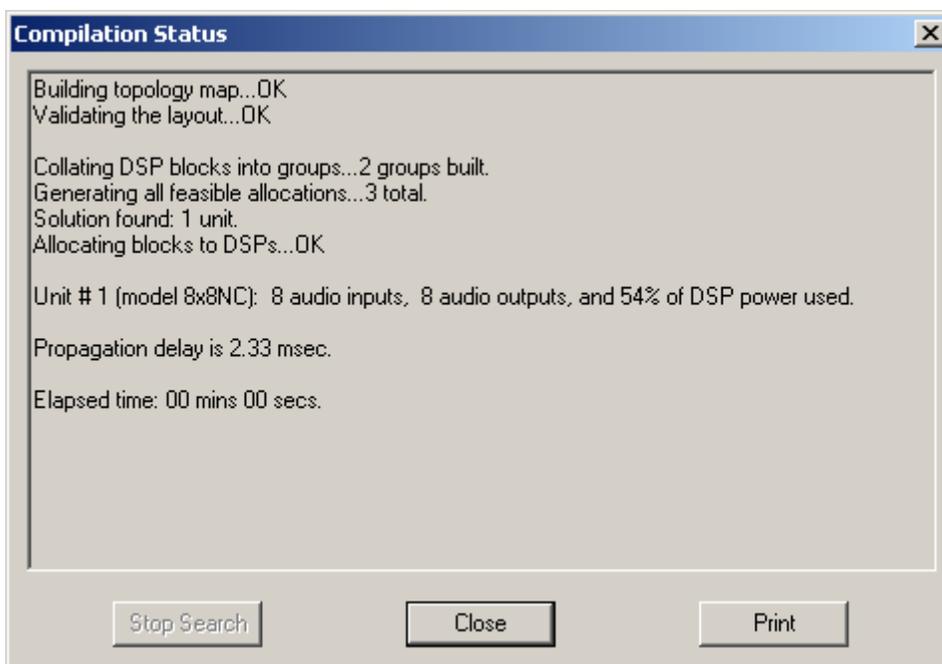
see a list of possible Compile Error Messages

Channel Number Assignments

Release Notes for Audia version 1.2

The assignment of channel numbers to Audio Input and Output blocks has been modified. It is still the exclusive function of the compiler to make channel number assignments, but now the user can influence the way the compiler does this.

Here is the suggested procedure for assignment of channel numbers to I/O blocks. It is assumed that all blocks are assigned to the same Audia unit. If the system contains multiple units, the following procedure should be performed several times.

As always, the compiler does not modify the existing channel assignments if the I/O block has a fixed allocation to an Audia unit. Therefore, in order to reassign the channel numbers in the desired way, it is necessary to unassign them first. To do this, select all I/O blocks for the unit in question and open the Property Sheet. Select the "DSP Attributes 1" tab and change the value in the "Allocated To Unit" field to 0 (you will have to set the flag "Fixed In Unit" to "No" first). This will reset the channel number assignments in the selected I/O blocks. Then change the "Allocated To Unit" field back to its original value and set the flag "Fixed In Unit" back to "Yes". Unselect all DSP blocks by left clicking in the view.

The next step is to indicate to the compiler the desired order in which you want the channel numbers assigned. Repeat the following sequence for each I/O block in the order you want the channel numbers assigned, *i.e.*, I/O block with the lowest channel number(s) first, I/O block with the highest channel number(s) last:

- Select the block by left-clicking on it

- Bring it to front by hitting CTRL+F.

Now recompile, and the channel numbers will be assigned in the order you selected the blocks.

Note: the Input and Output blocks for a given single unit can be processed at the same time.

Compile Error Messages

Construction of the Topology Map

Message: Unintended use of Combiner block detected.

Explanation: A source, other than an Auto Mixer Main Output, is connected to a

                  Mix-Minus Combiner input. Mix-Minus Combiners allow Auto Mixers to share

                  control data only, and do not support audio input or output.

Message: The main output of an Auto Mixer is connected to more than one

                  Combiner block.

Explanation: The main output of an Auto Mixer can be connected to only a single

                  Combiner input (Mix-Minus or Room). Otherwise, Auto Mixer control

                  data might be shared with multiple groups of combined mixers, causing

                  convoluted behavior.

Validation of the Topology Map

Messages: Failed to load 'DSPNodeSpecs.dll'.

                  Could not locate the function 'DSPRes' within the

                  'DSPNodeSpecs.dll'.

Explanation: Indicates a software or software installation problem.

Message: Empty layout !

Explanation: No objects have been placed in the layout.

Messages: There are no audio sources or destinations.

                  There are no audio sources.

                  There are no audio destinations.

Explanation: No audio input/output objects have been placed (or connected) in the

                  layout.

<u>Messages</u>:	Some DSP blocks do not have inputs. Ignore them ?
	Some DSP blocks do not have outputs. Ignore them ?
	Some DSP blocks are not connected to any audio output. Ignore
	them ?
<u>Explanation</u>:	These messages appear only if the flag 'Prompt To Stop Compilation
	On Warnings' is set under Tools>Options>Compile. If the choice to
	'Ignore' is selected, then the warning "Ignored '...' (object code '...') at
	[__, __]" will be listed in the compile results. If the 'Prompt To Stop
	Compilation On Warnings' flag is not set, then compilation proceeds
	and 'Ignores' automatically.

<u>Messages</u>:	The algorithm for the '__' block (object code '__') at [__,__] has been deprecated.
	You should replace the existing block with a newly created one which uses the
	most up to date algorithm.
	You should replace the existing blocks with newly created ones which use the
	most up to date algorithms.
<u>Explanation</u>:	The first warning is issued for each DSP block in the layout that is considered
	outdated. One of the subsequent messages will also appear, depending upon
	whether there is only one outdated block or multiple outdated blocks detected.

<u>Message</u>:	Channel numbers have been reset in some audio I/O blocks.
	Re-compile to update the channel number assignments.
<u>Explanation</u>:	Channel numbers were assigned in an input/output object, and that
	object was assigned to a specific Audia unit by fixed alllocation.
	Therefore, the channel numbers also became fixed. Then the
	Audia I/O configuration was changed in the Equipment Table.
	Since the new I/O configuration has less input or ouput channels,
	some channel numbers have become invalid.
	Once reset, Compile will automatically re-assign channel numbers.

<u>Message</u>:	Nothing to compile !
<u>Explanation</u>:	All objects placed in layout have been ignored.

<u>Messages</u>:	Insufficient audio inputs and outputs to implement this layout.
	Insufficient audio inputs to implement this layout.
	Insufficient audio outputs to implement this layout.
<u>Explanation</u>:	The design requires more input/output channels than are available from the Audia device(s) specified in the Equipment Table. This can only occur if the flag 'Auto Device Add' is not set under Tools>Options>Compile.

<u>Message</u>:	Insufficient computing power to implement this layout.
<u>Explanation</u>:	The design requires more DSP resources than are available from the Audia device(s) specified in the Equipment Table. This can only occur if the flag 'Auto Device Add' is not set under Tools>Options>Compile.

<u>Message</u>:	Feedback loop detected.
<u>Explanation</u>:	The potential exists for an audio path to be indirectly looped back upon itself. This condition could be dangerous, and is not allowed.

<u>Messages</u>:	Specified Audia unit #__ is not in the Equipment Table.
	Specified Audia unit #__ is not selected for use.
<u>Explanation</u>:	Some DSP blocks have been assigned as fixed allocations in a specific Audia unit which is not available or selected for use.

<u>Messages</u>:	Too many audio inputs required for fixed allocations in unit #__.
	Too many audio outputs required for fixed allocations in unit #__.
	Unit #__ has no CobraNet communication module.
	Too many CobraNet inputs or outputs allocated to unit #__.
<u>Explanation</u>:	The number of audio channels assigned as fixed allocations in a specific Audia unit exceeds the capacity of that unit.

Messages:	Insufficient DSP power for fixed allocations in unit #__: ___% of capacity requested.
Explanation:	The DSP resources assigned as fixed allocations in a specific Audia unit exceed the capacity of that unit.

Message:	Gang #__ requires too many resources.
Explanation:	The component objects allocated to the specified gang require more resources (audio channels, CobraNet channels, and/or DSP power) than is available from any current Audia unit.

Allocation of DSP blocks to Audia Devices

Message:	Too many combinations. Try to reduce the number of groups by combining DSP blocks.
Explanation:	The possibilities are too numerous to determine a solution within a reasonable period of time. Reduce the number of groups by ganging components together or giving them fixed allocations.

Message:	Group #__ has too many connections to be placed into an Audia unit.
Explanation:	The specified group requires so many links to other groups that it would exceed the 'bundle' limitations of CobraNet. Normally, the number of CobraNet connections could be reduced by combining the specified group with some other group(s). However, in this case, it would require more resources than available in a single Audia unit. Attempt to produce more compact groups, with fewer connections, using fixed allocations and/or ganging. This can also happen if CobraNet I/O blocks have been placed into a non-CobraNet unit.

Message:	Could not place group #__ anywhere. There might be a contention on group(s)____.
Explanation:	The specified group requires so many links to other groups that it would exceed the 'bundle' limitations of CobraNet. Normally, the number of CobraNet connections could be reduced by combining the specified group with some other group(s). However, in this case, the number of CobraNet connections cannot be reduced sufficiently.

Message:	Could not find a solution.
Explanation:	Compile was unable to place the produced groups into available Audia units. Attempt to use fixed allocations and/or ganging to change the formation of groups..

Message:	Although the total DSP power is sufficient, the compiler cannot place the resulting groups into the Audia units in the Equipment Table. More units would have to be added.
Explanation:	Compile was not able to distribute the produced groups among the available Audia units. This can only occur if the flag 'Auto Device Add' is not set under Tools>Options>Compile. Attempt to produce smaller groups using fixed allocations and/or ganging. If unsuccessful, set 'Auto Device Add' so Compile will automatically add necessary Audia units to the Equipment Table. Audia units can also be added manually.

Message:	Total maximal duration of delays exceeded in the unit #_.
Explanation:	The number of delay blocks, and their combined delay ranges, exceeds the maximum capability of this unit. Currently, any single Audia unit can provide a maximum of 45 seconds of delay blocks. Matrix Mixers with Delay also contribute to this total, consuming 1 second per input channel.

Allocation of DSP blocks to DSPs

Message: Allocating blocks to DSPs...failed to set up a feasible DSP task schedule in the unit #__. You should move some processing blocks from this unit into another unit using fixed allocations.

Explanation: Although the total DSP power in the Audia unit is sufficient, compile was not able to distribute the component objects among the available DSPs. When the DSP load approaches 100%, it becomes crucial that the objects be distributed more uniformly. Try moving certain objects to another unit (using fixed allocations), or replace them with a comparable set of smaller objects (within the same unit).

Assigning control blocks to Audia units

Message: Some unconnected control blocks have been ignored.

Explanation: Control blocks with no connections have been excluded from the system. Only Logic Gate and Remote Preset Button blocks can be ignored. When connected to the system, control dialogs for ignored blocks cannot be accessed.

Message: Feedback detected in the control network.

Explanation: The potential exists for a control path to be indirectly looped back upon itself. This condition could be dangerous, and is not allowed.

Message: Unit #__ has too many control connections.

Explanation: Although quite large, there is a limit to the quantity of control connections within a single unit. Connections include both internal (source and destination within same unit) and external links (source or destination within this unit). Try moving certain control objects to another unit (using fixed allocations),

Setting up the Audia units after a successful compilation

Message: Could not assign audio I/O channels in the unit # __.

Explanation: Indicates a software problem. Please contact Biamp Systems.

Messages: Available range of Instance IDs is nearly exhausted.

                  Range of Instance IDs has been exhausted.

Explanation: The total number of Instance IDs, as assigned to component and

                  line objects, is limited to 65,535. When component objects are

                  removed from a design, their Instance IDs are not automatically

                  re-assigned to new component objects. Therefore, the messages

                  above indicate that a significant number of Instance IDs has been

                  wasted. Set 'Reassign Instance IDs' under Tools>Options>Compile

                  and re-compile to recover wasted Instance IDs. *CAUTION: This*

                  will change most component Instance IDs, and will render existing

                  external control command scripts useless. Once Instance IDs have

                  been recovered, turn off 'Reassign Instance IDs' to avoid further

                  re-assignments.

System Network Considerations

The computer must have a 10/100 BaseT network card (NIC) installed. When connecting directly to a single **Audia**(TM) unit, a 'cross-over' CAT5 cable is used. When connecting to a network (or system) of multiple **Audia** units, a 'straight-through' CAT5 cable is used (via an Ethernet switch). The Ethernet switch (not 'hub') must be 10/100 BaseT compatible, with sufficient ports for both Ethernet and CobraNet connections to each **Audia** unit (multiple switches may be used). If the Ethernet switch is 'managed', be careful to assign all CobraNet connections to 100 BaseT, and all Ethernet connections to 10 BaseT. These connections also use 'straight-through' CAT5 cables.

Ethernet and CobraNet both have a cable length limitation of 100 meters, between the Ethernet switch and an Audia device. However, fiber-optic cable may be used to extend this distance limitation to 2 km. Fiber-optic cable can be used with switches that have fiber-optic ports, or media converters can be used to interface fiber-optic cable with standard RJ-45 ports.

Due to network delay, CobraNet has a limitation of seven (7) 'hops' (one-way transmissions) within a network. Additionally, because CobraNet transmits (32) channels of digital audio on (4) 'bundles' of (8) channels, each Audia device can transmit digital audio to no more than (4) other Audia devices within a network. The same is true for receiving digital audio over CobraNet.

The computer must be assigned an IP address (under Network Card Settings>Properties). Most computers set TCP/IP address automatically, but **Audia** devices require manual assignment. IP addresses can be assigned as **192.168.1.X** (where range of X = 1~254). Each **Audia** device must also be assigned a unique IP address (see Device Maintenance).

Many system designs require only a single **Audia** device. These would be systems where the number of inputs/outputs, and the amount of DSP processing, does not exceed that of a standard configuration (see Hardware Overview). When a single unit is used, network considerations are simplified. A 'non-CobraNet' unit may be used, and no Ethernet switch is required. Therefore, all CobraNet connections, and most Ethernet connections go away, as well. The only Ethernet connection is that between the computer and the **Audia** device ('cross-over' CAT5 cable). A 'cross-over' cable is included with each **Audia** device.
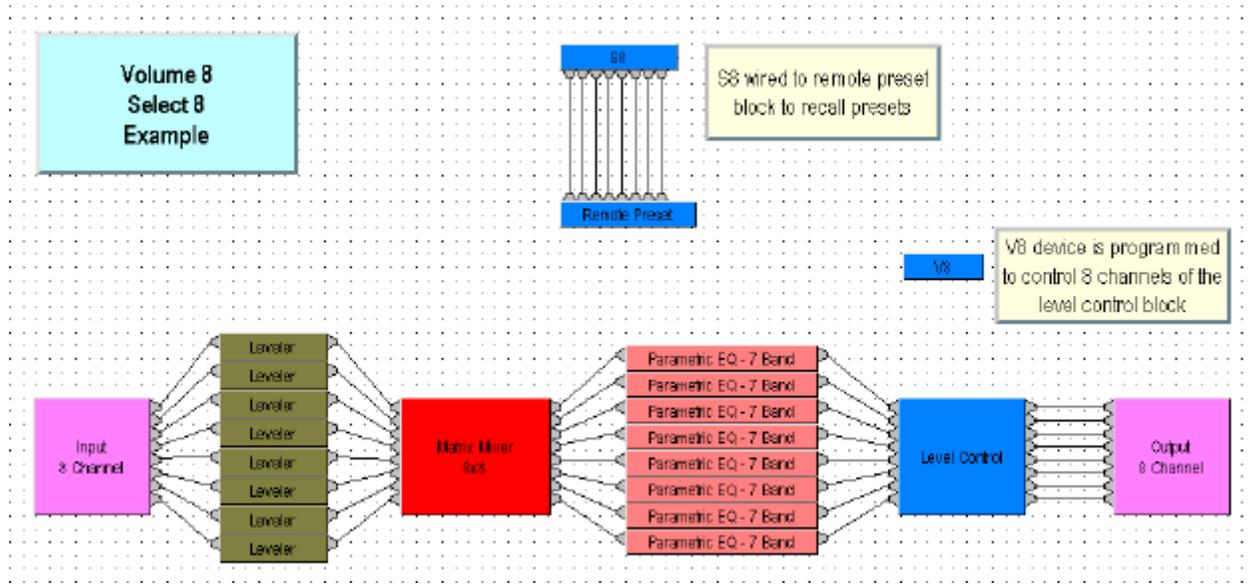
Applications

Example of a 6 room combining system controlled by logic inputs

This example shows 2 Audia 12x4CM units used in a 6 room combining system. Each room has 4 inputs that route into an Auto Mixer. The outputs of each Auto Mixer route into a Room Combiner. The Room Combiner allows one to create a graphical representation of the room geometry and any moveable barriers between rooms. When rooms are combined with the Room Combiner, audio as well as Auto Mixer ATS and NOM data are shared. This example shows the Room Combiner block controlled by external logic inputs through the Audia Logic Box. Each moveable barrier within the Room Combiner has a logic input. By opening and closing external switches wired to these logic inputs, rooms are combined or separated automatically within the Room Combiner block.
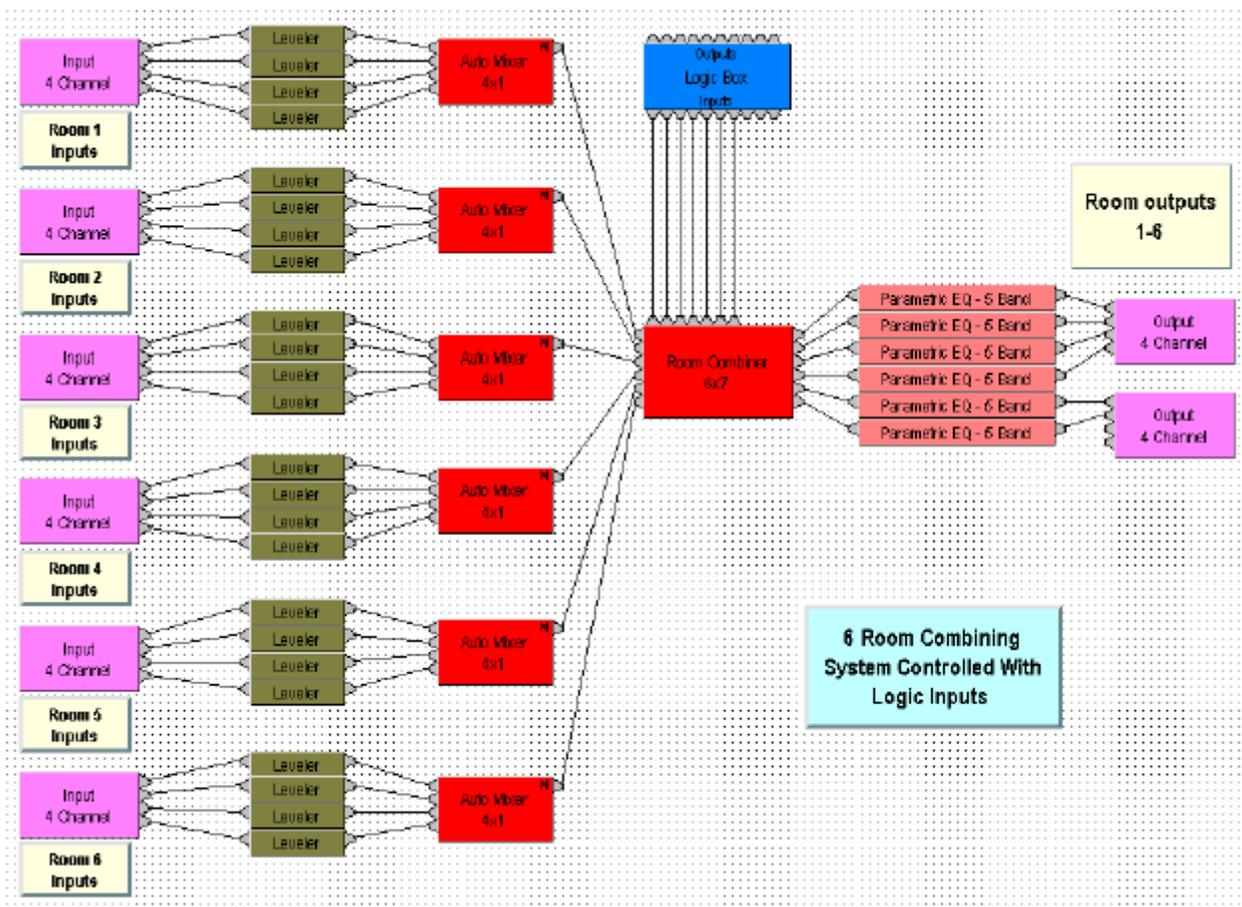
Example of a system using Select 8 and Volume 8 remote control devices

This example demonstrates the use of external remote controls to recall presets and adjust volume within an Audia system. The Select 8 block is wired to a Remote Preset Button block where 8 presets have been assigned. One may simply select the appropriate preset on the external Select 8 device and activate it with the press of the button. The Volume 8 block has been programmed to control an 8 channel Level Control block. One can select the appropriate channel on the external Volume 8 device and adjust the level by turning the rotary encoder.

Example of a stereo sound system with delay and subwoofer.

This example demonstrates an 8x8 Audia unit utilized in a live sound application. 8 line inputs feed an 8x4 Standard Mixer. Audio is routed from the mixer to both left and right channels of a 3-Way Crossover. A five-band Parametric Equalizer is provided at each Crossover output channel for precise driver equalization. A mono Delay line output is provided for delayed speakers, as well as a Low Pass Filter output for a mono subwoofer. A Level Control for each output provides precision volume control. This example also includes a Comp/Limiter on each channel and RMS Meters on both the input and the output of the system.

Stereo Sound System with Delay and Subwoofer
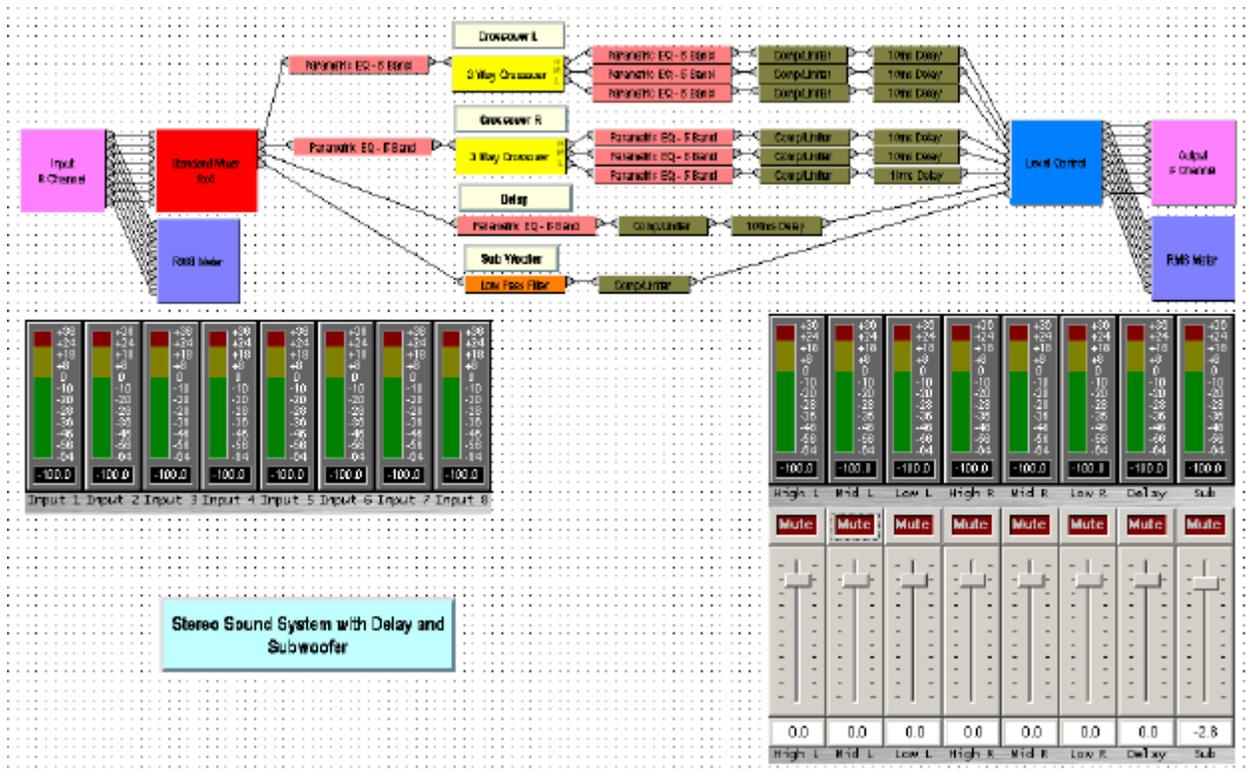
Example of a 3 unit audio distribution/routing system.

This example demonstrates three 8x8 Audia units used in a large audio distribution and routing system. Such a system could be used for paging or background music distribution in a very large hotel or convention center. Each of the three units is connected via CobraNet using Cat5 cable with a 10/100 Base-T Ethernet switch. *Note: dotted blue lines represent CobraNet connections.* In this example we have a total of 24 audio inputs, each with its own Level Control. The 24x24 Matrix Mixer allows audio from any source to be routed to any combination of outputs. A Comp/Limiter is included on each output channel in this example.
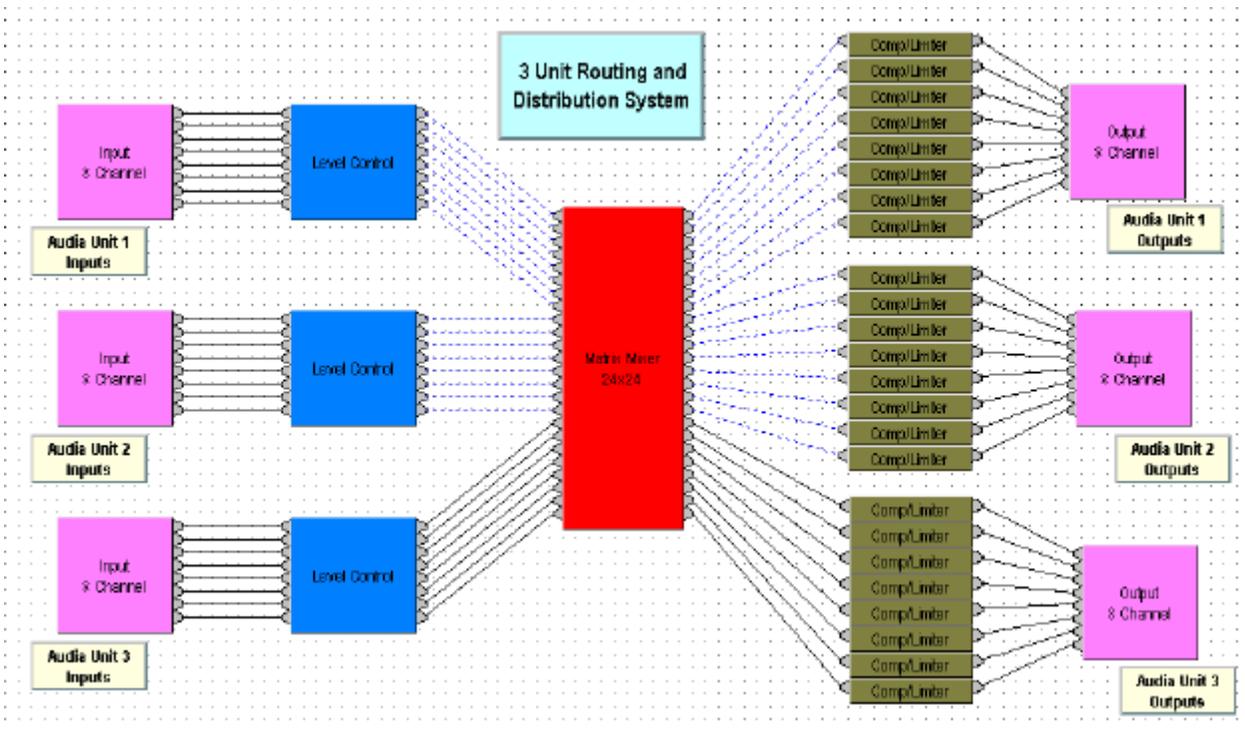
Hardware

Hardware Overview

Audia(TM) is currently available in three I/O configurations: 8-in & 8-out *(8x8)*; 12-in & 4-out *(12x4)*; 4-in & 12-out *(4x12)*. Additional input/output configurations will become available in the future. Inputs & outputs are analog, with internal 24-bit A/D & D/A converters, operating at a sample rate of 48kHz. All internal processing is digital (DSP).
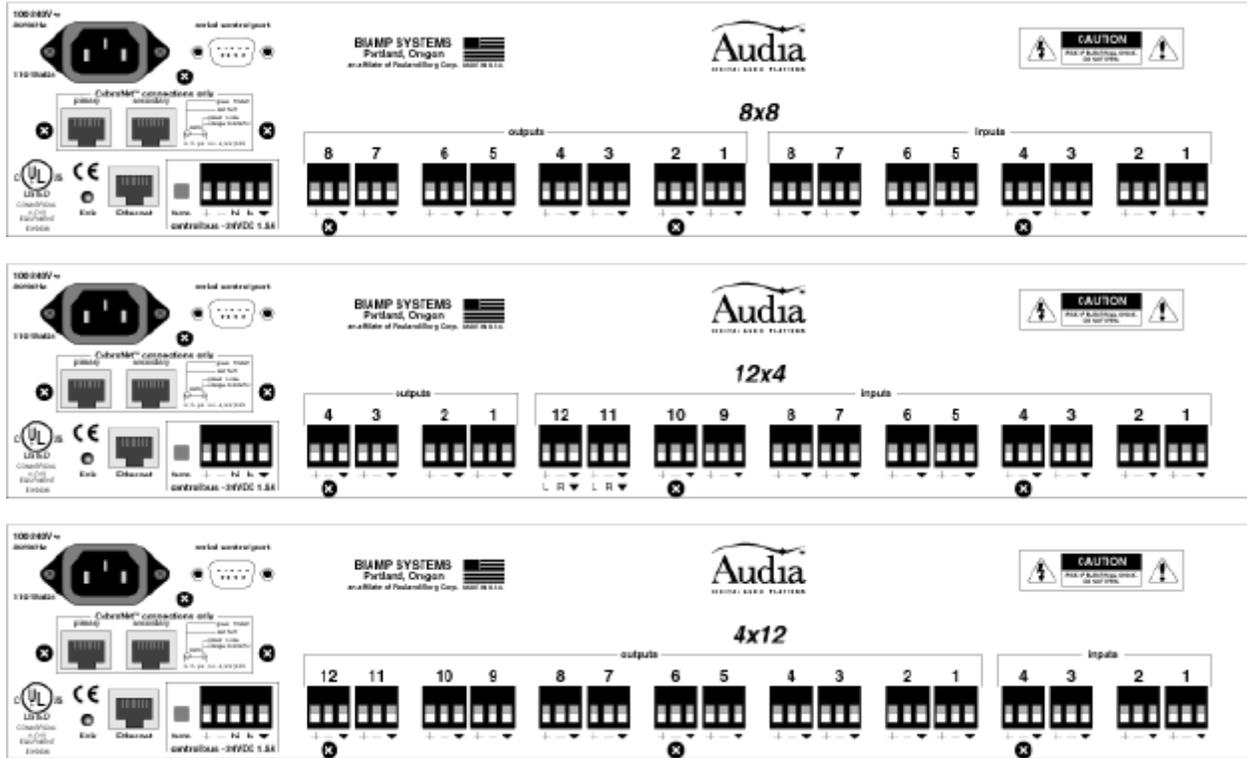
Inputs & Outputs: Inputs & outputs are provided on balanced plug-in barrier-strip connectors. For unbalanced input, wire high to (+) and ground to both (▼) & (-). For unbalanced output, wire high to (+) and ground to (▼), leaving (-) un-connected. Inputs can be individually programmed to accept either microphone or line level signals. A *12x4* configuration allows Inputs 11 & 12 to be set for stereo input summing. Outputs normally provide line level signal only. However, a *4x12* configuration allows Outputs 1~4 to be set for mic level.

Ethernet: All **Audia** units use Ethernet, both for system programming & control. Programming is accomplished using the **Audia** software provided with each unit. **Audia** software is for PC computers, with Windows NT 4.0/2000/XP operating system required. The PC computer must have a network card installed, which supports 10/100BaseT Ethernet. A 10/100Base-T Ethernet switch (not hub) is required when networking multiple units. Ethernet utilizes standard CAT-5 cabling, which has a specified maximum length of 100 meters. However, Ethernet switches which provide fiber-optic interface can be used to extend the physical distance between units within a network.

Remote Control Bus: The Remote Control Bus provides the connection for Volume 8, Select 8, Volume/Select 8, and Logic Box external control devices. (See Control Bus for more information).

CobraNet(TM): All **Audia** configurations are available without CobraNet (for stand-alone applications) or with CobraNet (for networking applications). Individual or multiple 'non-CobraNet' **Audia** units can be used within a system, but without the ability to share digital audio or DSP resources. However, **Audia** units with CobraNet can automatically share digital audio & DSP resources within a system, allowing seamless networking. The **Audia** CobraNet interface supports 64 channels of digital audio (32-in & 32-out), over Fast Ethernet, and is compatible with other CobraNet compliant devices. Therefore, **Audia** can also be networked with CobraNet products from other manufacturers, expanding the system configuration capabilities. A 10/100Base-T Ethernet switch (not hub) is required when networking multiple units. CobraNet utilizes standard CAT-5 cabling, which has a specified maximum length of 100 meters. However, Ethernet switches which provide fiber-optic interface can be used to extend the physical distance between units within a network. The primary and secondary CobraNet ports are redundant.

Serial Control Port: After initial programming & configuration, **Audia** systems may be controlled by RS-232 or Telnet communication from third-party control systems such as AMX® or Crestron®, using the Serial Control Port.

Power Entrance: The Power Entrance provides for connection of the appropriate power cord (included with unit). An internal universal switching power supply accepts 100~240VAC @ 50/60Hz, with a maximum power consumption of 115 Watts.

Front Panel Indicators: The Front Panel Indicators (**I/O**, **Com**, & **Status**) are 2-color LEDs.

The following table lists their behaviors:

<u>**I/O LED: green**</u>

<u>**Com LED: green**</u>

<u>**Status LED: green**</u>

Normal operating state. Application framework successfully executed. Configuration was successful (if applicable). Device is in a stable state awaiting commands.

<u>**I/0 LED: red**</u>

CM-1 error

Daughterboard error

Com LED: red

Serial port error

Ethernet error

CAN bus error

No IP address defined (cleared by setting an IP address)

Status LED: red

Configuration error

Last configuration unsuccessful (cleared by 'reset/initializing' the device)

Operating system resource error

File system error

DSP error

All LEDs blinking

Operating system is not executing. Device must be power-cycled.

Status LED blinking

The firmware has attempted to perform an illegal operation. Device must be power-cycled.

System Connections

For wiring information on specific connectors, see Hardware Overview, System Network Considerations, and Control Bus.

**Example of connections for a system with 24 inputs and 8 outputs**
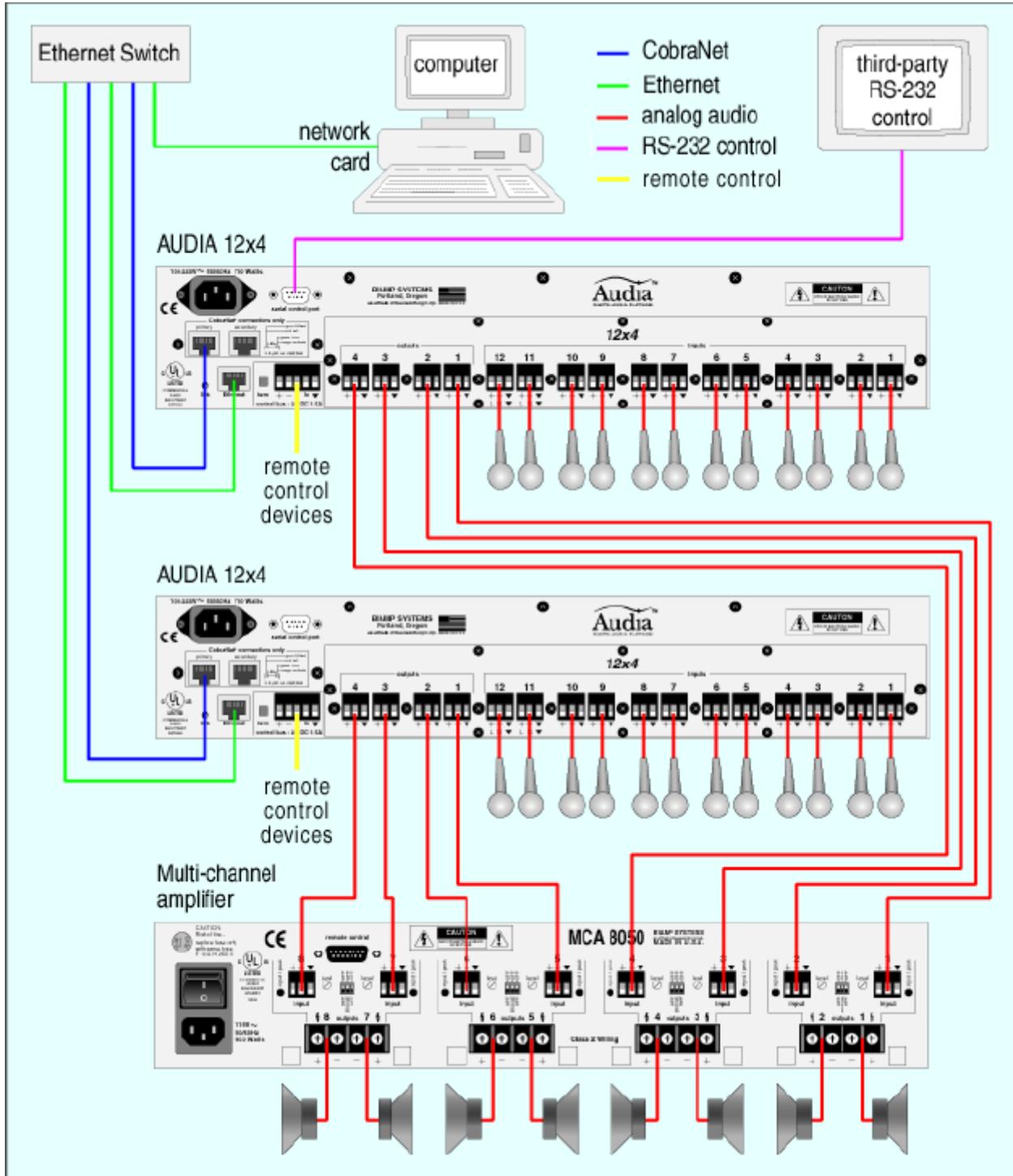
System Control

Software User Interface

Once a system design is compiled and downloaded into **Audia** devices, the system can be controlled in real-time the via the **Audia** software. The extent of control can be limited with different password levels.

In addition, Control Dialog Boxes for certain Combiners, Dynamics, Controls, & Meters components can be minimized to create customized control surfaces (room combiners, meters, level controls, mute buttons, & preset buttons). These control surfaces can then be made accessible to the User, only with a specific Password.

These control surfaces remain functional, even if other component settings are made inaccessible to the User (via Password Level). The control surfaces can also remain visible, even if the components they represent are made invisible (via Layer View). Therefore, a custom User control surface can be created in the Layout, with User access allowed, but with all other system settings inaccessable (and hidden). The size & shape of the Layout may be changed, and Toolbars hidden, to customize the appearance of the User control screen.

Example of simple 8x8 system user control surface
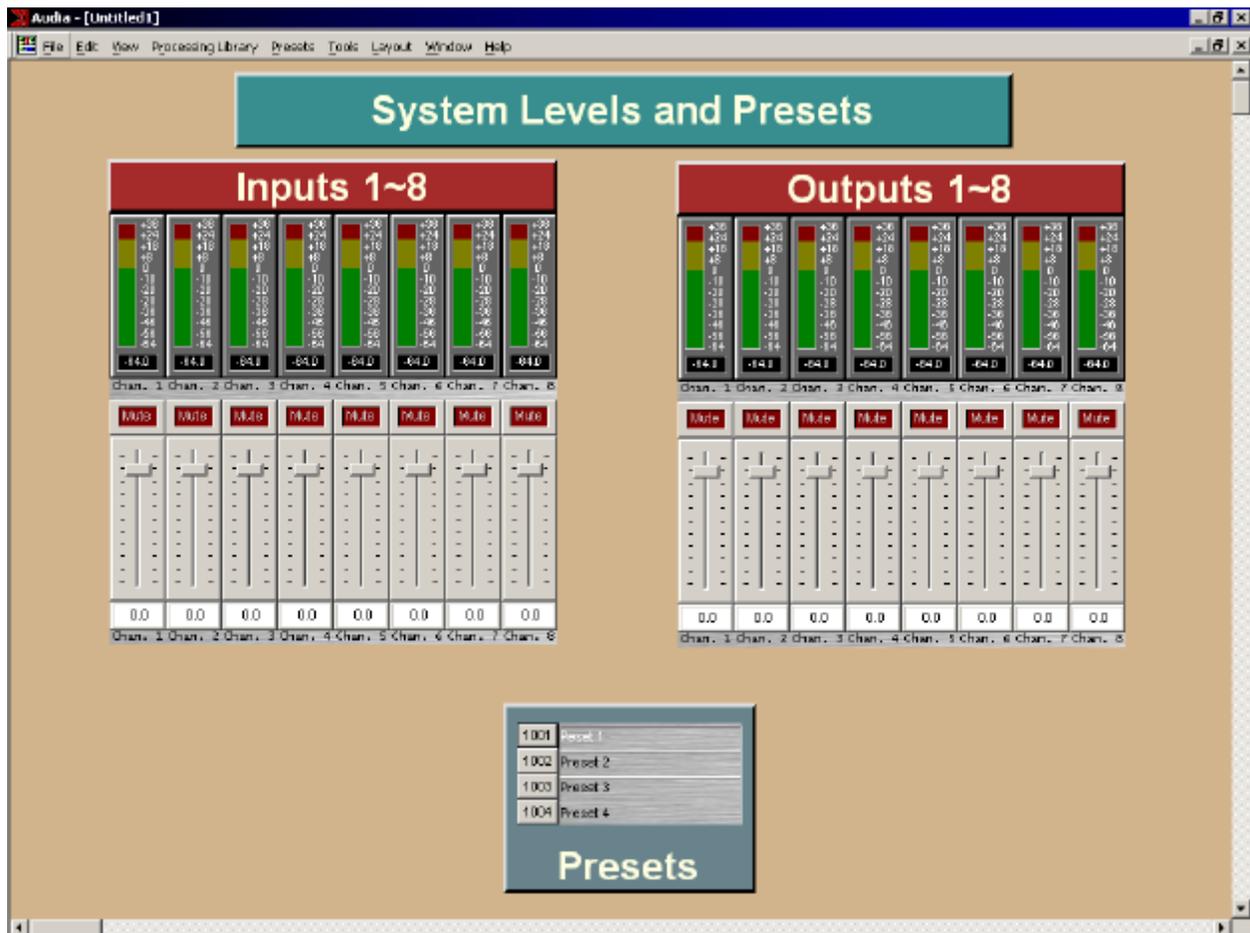
Remote Control Bus

Remote Control Bus provides the connection for Volume 8, Select 8, Volume/Select 8, and Logic Box external control devices.

Each Audia device can support any combination of the controls mentioned above. Up to 32 controls may be connected to each Audia device, on a daisy-chain 'network', with a maximum cable length of 1000 feet (300 meters). Controls are wired in parallel (pin-for-pin), using 5-conductor data grade cable (95~120 ohms nominal impedance; 16 pF/ft. max. capacitance; 65% min. velocity of prop.).

Recommended cable: Gepco UNC220 or equivalent

(use data pair for Hi & Lo; use power pair for + & -).

The 'network' requires termination at each 'end' for proper operation. All controls (and Audia) include either a termination switch or jumper strap. These terminations should be disabled (switch out or jumper removed) on all devices except those at the two extreme ends of the network. (See wiring diagram below).

A control network may be wired with the Audia device at one end, and a control device at the other end, creating one continuous run. In this case, the Audia device would have the 'term' switch engaged (in), and the control device at the other end of the network would have the 'term' switch engaged (in) or jumper installed. All other controls, between the Audia device and the last control, would have their 'term' switches released (out) or jumpers removed.

If a control network needs to service two areas which are in opposite directions from the Audia device, a network with two separate runs can be created. This type network actually remains as a single run, but is configured with the Audia device in the middle. Therefore, only the controls at the two extreme ends of the network would have their 'term' switches engaged (in) or jumpers installed. All other controls (including the Audia device), between the two end controls, would have their 'term' switches released (out) or jumpers removed. (See network diagrams on next page.)

single run network

two run network

termination

termination

termination

termination
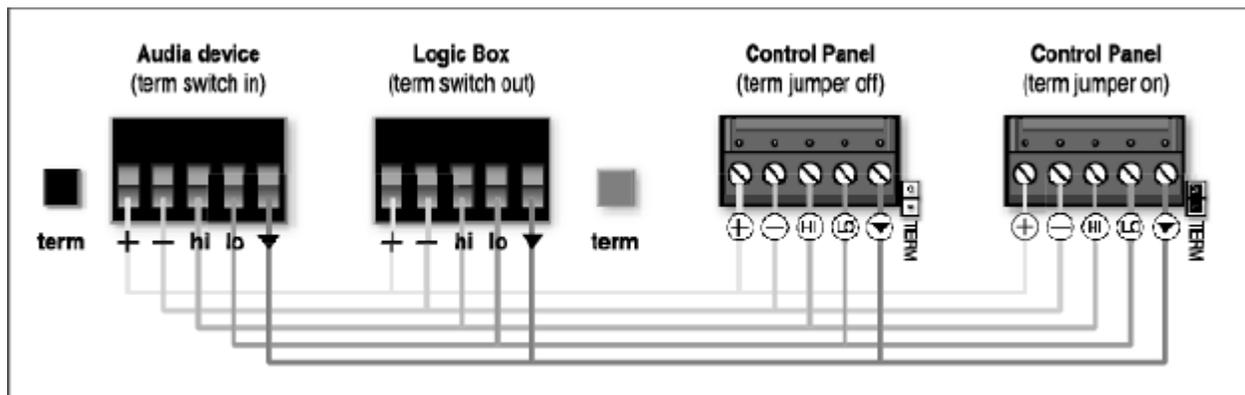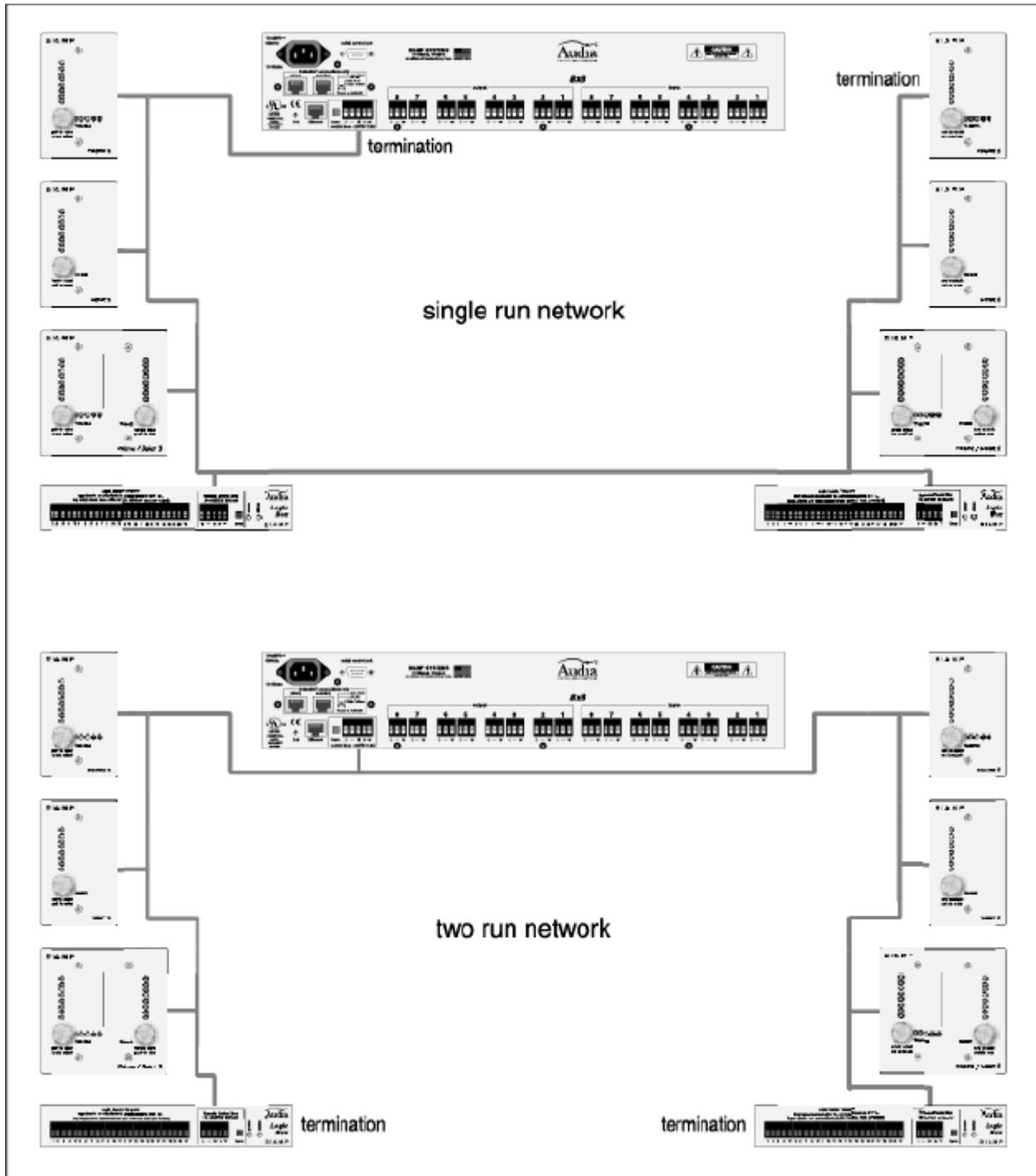
Third-Party Control

After initial programming & configuration, **Audia** systems may be controlled by RS-232 communication from third-party control systems such as AMX® or Crestron®, using the Serial Control Port. See RS-232 and Telnet Protocol.

RS-232 and Telnet Protocol

Overview

Audia can be controlled via customized control dialogs in the Audia software, or via third-party controllers using RS-232 or Telnet.

For RS-232 or Ethernet (Telnet) control of Audia, Biamp created ATP (Audia Text Protocol). This simply means that Audia will accept strings of ASCII characters to control and read settings of gain, mute, logic state, frequency, audio levels, and other parameters of DSP blocks that exist in Audia products.

ATP strings can be sent via third-party controllers using RS-232 or Telnet via TCP/IP. A line feed needs to be sent after each command string sent. (RS-232 Control) (Telnet Control)

The ATP string is structured in the following order: Command Device Number Attribute Instance ID Number Index1 Index2 Value <LF>

ATP strings require a space between each parameter; the last character in the string needs to be a line feed <LF>.

For each control string a few components will need to be derived from the Audia software; Device Number, Instance ID Number, and Index. Command and Attribute are derived from this document.   In a SET command, Value is used to specify what the DSP block is to be set to. In an increment or decrement (INC or DEC) command Value is used to specify how much the DSP block is to be changed by.

Note Audia software will assign an Instance ID Number to each DSP block on the initial Compile of the system. Subsequent Compiles will not change the Instance ID Numbers unless the "Reassign Instance IDs" check box is selected under Compile Options.

Example: A string to control a fader might look like this:

SET 1 FDRLVL 2 1 9 <LF>. The individual components for this string are:

Command	Device Number	Attribute	Instance ID Number	Index1	Index2	Value	Line feed
SET	1	FDRLVL	2	1		9	<LF>

Notice that Index2 is not used since there is nothing entered in this parameter.

Example: A string to mute a standard mixer output might look like this:

SET 3 SMMUTEOUT 5 5 1 <LF> The individual components for this string are:

Command	Device Number	Attribute	Instance ID Number	Index1	Index2	Value	Line feed
SET	3	SMMUTEOUT	5		5	1	<LF>

Notice that Index1 is not used since there is nothing entered in this parameter.

Example: A string to turn up a cross point on a matrix mixer might look like this:

INC 2 MMLVLXP 4 3 2 1 <LF> The individual components for this string are:

Command	Device Number	Attribute	Instance ID Number	Index1	Index2	Value	Line feed
INC	2	MMLVLXP	4	3	2	1	<LF>

In this example Index1 and Index2 are both used; together they specify which cross point is to be changed.

RS-232 Control

The RS-232 port on the back of an Audia unit is set to a default baud rate of 38400, 8 data bits, no parity, 1 stop bit, and no flow control. (38400:8:None:1). If multiple Audia units are connected together in a system then only one RS-232 port needs to be connected to a third-party control system; communication data is shared via Ethernet through a switch.

When controlling multiple Audia units that are not part of the same DAP file, each Audia unit will need to be addressed via its own RS-232 port from a control system or PC. Audia units cannot be linked together via RS-232, like some other BIAMP Advantage products can.

 (The RS-232 baud rate can be set to 9600, 19200, or 38400 – default is 38400)

A straight through PC Serial Cable is used to communicate from an RS-232 port on a third-party controller (or PC*) to the RS-232 port located on the back of an Audia unit.
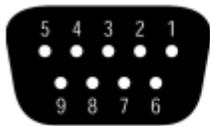
pin #1 = not used   pin #6 = not used
pin #2 = Transmit Data (TxD) output   pin #7 = not used
pin #3 = Receive Data (RxD) input   pin #8 = not used
pin #4 = not used   pin #9 = not used
pin #5 = ground

 (* A PC can be used with a terminal emulator program, such as HyperTerminal etc, to send/receive ATP Strings…Audia software must be connected via Ethernet in order to communicate.)

Telnet Control

Audia can be controlled using Telnet via TCP/IP. The same command strings that are used via RS-232 are used for Telnet as well.

When controlling multiple Audia units that are not a part of the same DAP file, each Audia unit will need to be addressed via its own Telnet session from a control system or PC.

Command

SET – Tells Audia that a DSP attribute is to be set to a specific value – may contain negative number and/or decimal points

GET - Tells Audia that a DSP attribute is to be read - Response may contain a decimal point and/or a negative number.

INC - Tells Audia that a DSP attribute is to be incremented by a specific amount

DEC- Tells Audia that a DSP attribute is to be decremented by a specific amount

RECALL – Tells Audia that a preset is to be recalled.

SETL and GETL can be used if negative numbers and/or decimals are not supported by a control system.

SETL – Tells Audia that a DSP attribute is to be set to a specific value, no decimal places or negative numbers – To convert a dB number: add 100 to the desired level and then multiply by 10.

Example: To set a level to –60.5dB, add 100 (-60.5 +100 = 39.5). Then multiply by 10 (39.5 X 10 = 395). Instead of Value being –60.5, Value after this SETL command will equal 395.

GETL - Tells Audia that a DSP attribute is to be read without negative numbers or decimals. To convert this number to dB: divide the number by 10, then subtract 100.

Example: With a returned GETL response of 405, divide by 10 (405 / 10 = 40.5), then subtract 100 (40.5 – 100 = -59.5dB)

For your reference, the SETL/GETL table shows .5dB increments converted into the SETL/GETL format.

Some Attribute do not support all commands. The Attribute section defines which commands support SET/SETL, GET/GETL, INC, or DEC functions. RECALL is only used on preset commands.

*When GET or GETL is used, a Value will not need to be specified since GET/GETL is a request command. A Value must be specified in order for strings with SET/SETL, INC, DEC, and RECALL to work.

Level	Value	Level	Value	Level	Value	Level	Value	Level	Value
12	1120	-10.5	895	-33	670	-55.5	445	-78	220
11.5	1115	-11	890	-33.5	665	-56	440	-79.5	215
11	1110	-11.5	885	-34	660	-56.5	435	-79	210
10.5	1105	-12	880	-34.5	655	-57	430	-79.5	205
10	1100	-12.5	875	-35	650	-57.5	425	-80	200
9.5	1095	-13	870	-35.5	645	-58	420	-80.5	195
9	1090	-13.5	865	-36	640	-58.5	415	-81	190
8.5	1085	-14	860	-36.5	635	-59	410	-81.5	185
8	1080	-14.5	855	-37	630	-59.5	405	-82.5	175
7.5	1075	-15	850	-37.5	625	-60	400	-83	170
7	1070	-15.5	845	-38	620	-60.5	395	-83.5	165
6.5	1065	-16	840	-38.5	615	-61	390	-84	160
6	1060	-16.5	835	-39	610	-61.5	385	-84.5	155
5.5	1055	-17	830	-39.5	605	-62	380	-85	150
5	1050	-17.5	825	-40	600	-62.5	375	-85.5	145
4.5	1045	-18	820	-40.5	595	-63	370	-86	140
4	1040	-18.5	815	-41	590	-63.5	365	-86.5	135
3.5	1035	-19	810	-41.5	585	-64	360	-87	130
3	1030	-19.5	805	-42	580	-64.5	355	-87.5	125
2.5	1025	-20	800	-42.5	575	-65	350	-88	120
2	1020	-20.5	795	-43	570	-65.5	345	-88.5	115
1.5	1015	-21	790	-43.5	565	-66	340	-89	110
1	1010	-21.5	785	-44	560	-66.5	335	-89.5	105
.5	1005	-22	780	-44.5	555	-67	330	-90	100
0	1000	-22.5	775	-45	550	-67.5	325	-90.5	95
-.5	995	-23	770	-45.5	545	-68	320	-91	90
-1	990	-23.5	765	-46	540	-68.5	315	-91.5	85
-1.5	985	-24	760	-46.5	535	-69	310	-92	80
-2	980	-24.5	755	-47	530	-69.5	305	-92.5	75
-2.5	975	-25	750	-47.5	425	-70	300	-93	70
-3	970	-25.5	745	-48	520	-70.5	295	-93.5	65
-3.5	965	-26	740	-48.5	515	-71	290	-94	60
-4	960	-26.5	735	-49	510	-71.5	285	-94.5	55
-4.5	955	-27	730	-49.5	505	-72	280	-95	50
-5	950	-27.5	725	-50	500	-72.5	275	-95.5	45
-5.5	945	-28	720	-50.5	495	-73	270	-96	40
-6	940	-28.5	715	-51	490	-73.5	265	-96.5	35
-6.5	935	-29	710	-51.5	485	-74	260	-97	30
-7	930	-2.5	705	-52	480	-74.5	255	-97.5	25
-7.5	925	-30	700	-52.5	475	-75	250	-98	20
-8	920	-30.5	695	-53	470	-75.5	245	-98.5	15
-8.5	915	-31	690	-53.5	465	-76	240	-99	10
-9	910	-31.5	685	-54	460	-76.5	235	-99.5	5
-9.5	905	-32	680	-54.5	455	-77	230	-100	0
-10	900	-32.5	675	-55	450	-77.5	225		

Table of SETL and GETL levels converted from floating-point numbers.

Device Number

An Audia Device Number represents the physical Audia box's defined address. The Audia software automatically sets this number when a system is Compiled and loaded.

The Device number that a DSP block has been assigned to can be determined in two ways:

First Way:

1) Right click on the DSP block and select 'Properties'.

2) Click on DSP 1 attributes tab and scroll down. The device that the block is assigned to will be displayed in the 'Allocated To Unit' field.

*Note: Each DSP block can be assigned to a device by changing 'Fixed In to Unit" to 'Yes' (this is defaulted to no).
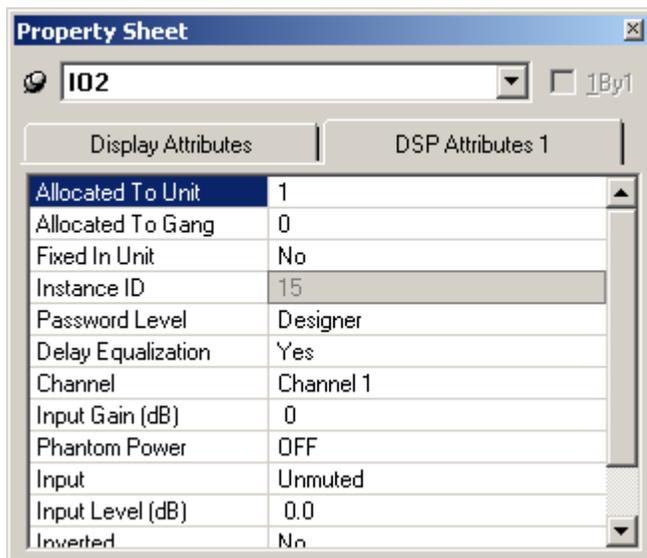
Second Way:

1)   In the Display Options tab select "Display Device Assignment in DSP Block info field".

This will display the device that each DSP block is assigned to on the main screen.

Third Way:

1)   While connected an Audia's RS-232 port, type the string; GET 0 DEVID   Audia will return the Device Number of the unit you are connected to.

Attribute

The Attribute defines the portion of the DSP block to be controlled (fader level, crosspoint mute etc). The following tables show whether each ATP Attribute supports SET/SETL, GET/GETL, INC, and DEC Commands, as well as the Value range that the Attribute will accept. Index1/Index2 determines whether Index1, Index2 or BOTH are needed for a ATP String to be complete.

ATP Strings can address: (click on the links to view the tables in each topic)

Input/Output Blocks

Mixer Blocks

Equalizer Blocks

Filter Blocks

Crossover Blocks

Dynamics Blocks

Router Blocks

Delay Blocks

Control Blocks

Meter Blocks

Generator Blocks

Input/Output Blocks

Analog Inputs	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Input Gain	MICGAIN	Y	Y	Y	Index1	0 ~ 66 *
Input Level	INPLVL	Y	Y	Y	Index1	-100 ~ 12 *
Phantom Power	PHPWR	Y	Y	N	Index1	0 = off 1= on
Input Mute	INPMUTE	Y	Y	N	Index1	0=unmuted 1=muted
Invert Polarity	INPINVRT	Y	Y	N	Index1	0=normal 1=inverted

* Can contain a decimal number.

Example: In the command: SET 1 INPLVL 6 3 –10<LF>

We are telling Audia device 1 to set an input fader, Instance ID 6, input 3 (index1), to –10dB. (We set channel 3 input level of instance 6 to –10dB)

Analog Outputs	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Output Level	OUTLVL	Y	Y	Y	Index2	-100 ~ 0 *
Output Mute	OUTMUTE	Y	Y	N	Index2	0=unmuted 1=muted
Invert Polarity	OUTINVRT	Y	Y	N	Index2	0=Normal 1=inverted
Mic level pad	OUTPAD	Y	Y	N	Index2	0 = off 1= on

* Can contain a decimal number.

Example: In the command: SET 2 OUTMUTE 3 4 1<LF>

We are telling Audia device 2 to set the output mute Instance ID 3, output 4 (index1) to on. (We muted the 4th output of Instance ID 3 of an Audia)

CobraNet	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
CobraNet RX	CNINBNDL	Y	Y	N	None	0 ~ 61439
CobraNet TX	CNOUTBNDL	Y	Y	N	None	0 ~ 61439
CobraNet Input	CNNLVLIN	Y	Y	Y	Index1	-100 ~ 12 *
CobraNet Output	CNNLVLOUT	Y	Y	Y	Index1	-100 ~ 12 *

* Can contain a decimal number.

Mixer Blocks

Automixer	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Input Level	AMLVLIN	Y	Y	Y	Index1	-100 ~ 12 *
Output Level	AMLVLOUT	Y	Y	Y	None	-100 ~ 12 *
Input Mute	AMMUTEIN	Y	Y	N	Index1	0=unmuted 1=muted
Output Mute	AMMUTEOUT	Y	Y	N	None	0=unmuted 1=muted
Crosspoint Mute	AMMUTEXP	Y	Y	N	Index1	1=unmuted 0=muted
Logic Output	AMLOGOUT	Y	Y	N	Index 2	0=off 1=on

* Can contain a decimal number.

Example: In the command: SET 1 AMMUTEXP 3 1 0<LF>

We are telling Audia device 1 to set the automixer's crosspoint (row 1, column 1) on instance ID 3 to off.

Note: for attributes with 2 Index fields, Index1 is the row, and Index2 is the column.

Matrix Mixer	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Input Level	MMLVLIN	Y	Y	Y	Index1	-100 ~ 0 *
Output Level	MMLVLOUT	Y	Y	Y	Index2	-100 ~ 0 *
Input Mute	MMMUTEIN	Y	Y	N	Index1	0=unmuted 1=muted
Output Mute	MMMUTEOUT	Y	Y	N	Index2	0=unmuted 1=muted
Crosspoint Level	MMLVLXP	Y	Y	Y	Index1 & Index2	-100 ~ 0 *
Crosspoint Mute	MMMUTEXP	Y	Y	N	Index1 & Index2	1=unmuted 0=muted

* Can contain a decimal number.

Note: for attributes with 2 Index fields, Index 1 is the row, and Index2 is the column.

Standard Mixer	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Input Level	SMLVLIN	Y	Y	Y	Index1	-100 ~ 12 *
Output Level	SMLVLOUT	Y	Y	Y	Index2	-100 ~ 12 *
Input Mute	SMMUTEIN	Y	Y	N	Index1	0=unmuted 1=muted
Output Mute	SMMUTEOUT	Y	Y	N	Index2	0=unmuted 1=muted
Crosspoint Mute	SMMUTEXP	Y	Y	N	Index1 & Index2	1=unmuted 0=muted

* Can contain a decimal number.

Note: for attributes with 2 Index fields, Index1 is the row, and Index2 is the column.

Room Combiner	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Wall State	RMCMBWALL	Y	Y	N	Index1	0 = down 1 = up
Input Level	RMCMBLVL	Y	Y	Y	Index1	-100 ~ 12 *
Input Mute	RMCMBMUTE	Y	Y	N	Index1	0=unmuted 1=muted

* Can contain a decimal number.

Note: For wall state, Index1 represents the wall being opened or closed**.**

Mix-minus Combiner	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Group State	MCMBGROUP	Y	Y	N	Both	0 = not grouped 1 = grouped

Note: Index1 is the input number being addressed. Index2 is the group number; this is represented by a letter in the software, but addressed as a number in ATP commands.

(Example: A=1, B=2, C=3.…)

Equalizer Blocks

Graphic EQ	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
EQ Band Level	GEQLVLBND	Y	Y	Y	Index1	-27 ~ 15 *
Bypass All Bands	GEQBYPALL	Y	Y	N	None	0 = active 1 = bypassed

* Can contain a decimal number.

The Index field represents the filter to be controlled. EQ filter farthest to the left is #1, next one is #2 and so forth. Upper left hand area of Graphic EQ dialog screen displays, which numbered filter, is being adjusted, use this number as the Index1 for Graphic EQ strings.

Example: In the string SET 2 GEQBYPALL 9 1 <LF>

We are telling Audia to bypass all bands on Graphic EQ Instance ID 9.

Parametric EQ	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
EQ Bandwidth	PEQBWBND	Y	Y	Y	Index1	0.01 ~ 4.0 *
Bypass EQ Band	PEQBYPBND	Y	Y	N	Index1	0 = active 1 = bypassed
Center Freq.	PEQFCBND	Y	Y	Y	Index1	20 ~ 20000
EQ Band Level	PEQLVLBND	Y	Y	Y	Index1	-27 ~ 15 *
Bypass All Bands	PEQBYPALL	Y	Y	N	None	0 = active 1 = bypassed

* Can contain a decimal number.

Upper left hand area of Parametric EQ dialog screen displays, which numbered filter, is being adjusted, use this number as the Index1 for Parametric EQ strings.

Example: In the string INC 1 PEQLVLBND 11 3 2<LF>

We are telling Audia to increment the second parametric EQ filter on Instance ID 11 by 2dB.

Filter Blocks

HPF	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Cut off freq.	HPFLTFC	Y	Y	N	None	20 ~ 20000 *
Filter Bypass	HPFLTBYP	Y	Y	N	None	0 = active 1= bypassed

LPF	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Cut off freq.	LPFLTFC	Y	Y	N	None	20 ~ 20000 *
Filter Bypass	LPFLTBYP	Y	Y	N	None	0 = active 1 = bypassed

High Shelf	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Cut off freq.	HSFLTFC	Y	Y	N	None	20.0 ~ 20000 *
Gain	HSFTGAIN	Y	Y	Y	None	-27.0 ~ 9.0
Filter Bypass	HSFLTBYP	Y	Y	N	None	0 = active 1 = bypassed

Low Shelf	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Cut off freq.	LSFLTFC	Y	Y	N	None	20.0 ~ 20000 *
Gain	LSFTGAIN	Y	Y	Y	None	-27 ~ 9
Filter Bypass	LSFLTBYP	Y	Y	N	None	0 = active 1 = bypassed

* Can contain a decimal number.

Example: SET 1 HSFTGAIN 100 –10<LF>

We are telling Audia to set the High Shelf filter gain on instance ID 100 to –10dB.

Crossover Blocks

2-Way	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Cutoff Freq.	XOVR2FC	Y	Y	N	Index1	20 ~ 20000 *

3-Way	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Cutoff Freq.	XOVR3FC	Y	Y	N	Index1	20 ~ 20000 *

4-Way	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Cutoff Freq.	XOVR4FC	Y	Y	N	Index1	20 ~ 20000 *

* Can contain a decimal number.

Example: GET 2 XOVR3FC 40 1 <LF>

We are asking Audia to tell us the 3-way crossover low-pass cutoff frequency on instance ID 40.

2-way crossover:

> *Index1*= 1 is the low-pass cutoff frequency
> *Index1*= 2 is the high-pass cutoff frequency

3-Way crossover:

> *Index1* = 1 is low-pass cutoff frequency
> *Index1* = 2 is the lower slope of the mid cutoff frequency
> *Index1* = 3 is the higher slope of the mid cutoff frequency
> *Index1* = 4 is the high-pass cutoff frequency

4-way crossover:

> *Index1* = 1 is the low-pass cutoff frequency
> *Index1* = 2 is the lower slope of the low-mid cutoff frequency
> *Index1* = 3 is the higher slope of the low-mid cutoff frequency
> *Index1* = 4 is the lower slope of the high-mid cutoff frequency
> *Index1* = 5 is the higher slope of the high-mid cutoff frequency
> *Index1* = 6 is the high-pass cutoff frequency

Dynamics Blocks

Leveler	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Bypass	LVLRBYP	Y	Y	N	None	0=Active 1=Bypassed

Comp / Limiter	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Bypass	CLIMBYP	Y	Y	N	None	0=Active 1=Bypassed

Ducker	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Input level	DKRLVLIN	Y	Y	N	None	-100 ~ 12 *
Level sense	DKRLVLSENSE	Y	Y	N	None	-100 ~ 12 *
Bypass Ducker	DKRBYP	Y	Y	N	None	0= Active 1= Bypassed
Mute sense	DKRMUTESENSE	Y	Y	N	None	0 = unmuted 1 = muted
Input mute	DKRMUTEIN	Y	Y	N	None	0 = unmuted 1 = muted
Logic in enable	DKRENLOGIN	Y	Y	N	None	0 = disabled 1= enabled
Logic out enable	DKRENLOGOUT	Y	Y	N	None	0 = disabled 1= enabled
Logic input invert	DKRINVLOGIN	Y	Y	N	None	0= normal 1= inverted
Logic output invert	DKRINVLOGOUT	Y	Y	N	None	0= normal 1= inverted

* Can contain a decimal number.

Noise Gate	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Bypass	NGBYP	Y	Y	N	None	0 = Active 1 = Bypassed

Example: SET 3 CLIMBYP 55 0<LF>

We are telling Audia to set the Comp/Limiter on instance ID 55 to active.

Router Blocks

Router	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Cross point	RTRMUTEXP	Y	Y	N	Both	1 = off 0 = on

Example: SET 1 RTRMUTEXP 98 4 5 0<LF>

Note: for attributes with 2 Index fields, Index1 is the row, and Index2 is the column.

Delay Blocks

No Attributes are specified at this time

Control Blocks

Level Faders	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Fader Levels	FDRLVL	Y	Y	Y	Index1	-100 ~ 12 *
Mute Fader	FDRMUTE	Y	Y	N	Index1	0 = unmuted 1 = muted

* Can contain a decimal number.

Presets	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Preset	PRESET	N	N	N	None	1001 to max preset number

Note: Instead of SET/SETL, GET/GETL, INC, or DEC; the preset attribute uses RECALL as the Command. Preset numbers begin at 1001, regardless of preset name (the first preset defined is 1001, the next 1002, and so forth).

Example: in the string: RECALL 2 PRESET 1001<LF>

We are telling Audia to recall the first preset on an Audia system. Since presets apply to entire systems, or DAP files, the Device Number will always be 1 for Preset strings.

Meter Blocks

Meters	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Signal	SPMTRLVL	N	Y	N	Index1	-100 ~ 36 *
Peak	PKMTRLVL	N	Y	N	Index1	0 = off 1 = peak
RMS	RMSMTRLVL	N	Y	N	Index1	-100 ~ 36 *

* Can contain a decimal number.

Example: GET 1 RMSMTRLVL 48 1 <LF>

We are asking Audia the RMS Meter 1 level on instance ID 48.

Generator Blocks

No Attributes are specified at this time

Instance ID Number

Audia uses an instance ID number to specify the exact DSP block to be controlled. Right click on the DSP block and select "Properties", the instance number can be found the DSP Attributes 1 tab.
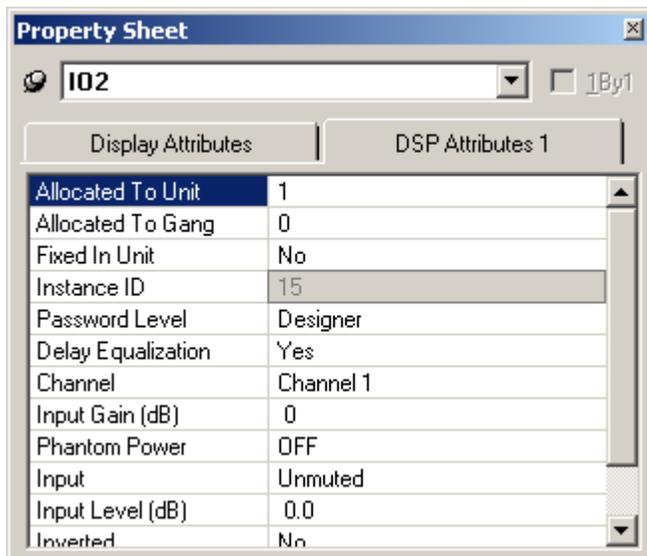
Note From the factory the Audia software will assign an instance number to each DSP block on the initial Compile of the system. Subsequent compiles will not change the Instance ID Numbers unless the "re-assign Instance IDs" check box is selected under Compile Options.

If one or more DSP blocks are disconnected from the audio path (when connections are not made to at least one input or output) the Instance IDs will be unassigned. New Instance ID(s) will be reassigned once the DSP block(s) are properly connected again.

Index

Index refers to inputs, outputs, or cross points of an Attribute. Some Attributes will need an Index1 (Input or Row) and/or an Index2 (output or Column). The tables in the Attribute section will define which, if any, indexes are required for the string.
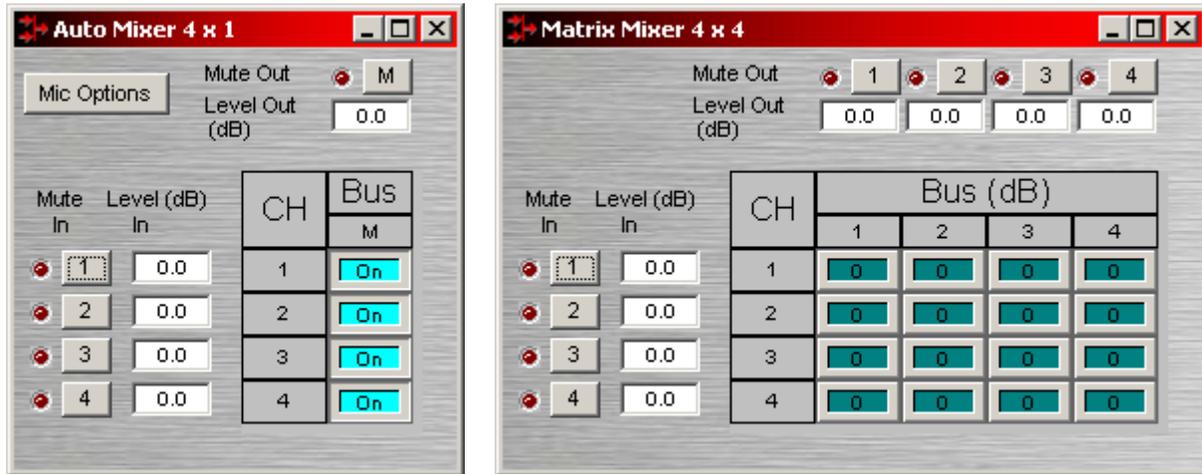
Example: INC 1 AMLVLIN 4 **1** 1<LF>

In an Automatic mixer on device 1 we are increasing the level of input 1 on instance ID 4 by 1dB. Index1 is used to represent the input number.

Example: DEC 2 AMLVLOUT 6 **1** 2<LF>

In an Automatic mixer on device 2 we are decreasing the level of output 1 on instance ID 6 by 2dB. Index2 is used to represent the output number.

Example: SET 1 MMLXP 5 **1 2** –5<LF>

In a matrix mixer on device 1 we are setting cross point 1:2 (row 1, column 2) level to –5dB on instance ID 5.

Note for commands with 2 Index fields, Index1 is the row, and Index2 is the column.

Value

Value determines what a DSP block is being set to, incremented by, or decremented by. The Attribute section will define which type of value the string will need in order to execute the ATP string.

Example: INC 1 AMLVLIN 4 1 **1**<LF>

In an Automatic mixer input level string, the Value equal to **1** states that the fader is to be incremented by 1 dB.

Example: SET 2 MMLVLIN 5 2 **–100**<LF>

In a matrix mixer input level string, the value is set to –100dB.

Example: RECALL 1 PRESET **1004**<LF>

For a preset recall we are telling device 2 to recall the fourth preset.

*When GET is used, a Value will not need to be specified since GET is a request command. A Value must be set in order for SET, INC, DEC, and RECALL command strings to work.

Example: GET 4 MMLVLOUT 5 <LF>

We are asking the level of a matrix mixer's output. There is no Value required for this string.

Responses

When a successful SET, SETL, INC, DEC, or RECALL command is sent to an Audia device via RS-232 or TCP/IP, Audia will respond with: '+OK' followed by a carriage return and line feed.

Example: Sending the string: SET 2 AMLVLIN 4 2 1< LF> will result in an: +OK<CR><LF> response.

A successful GET or GETL command will result in a numerical response to the command string followed by <CR><LF>.

The response from a ATP string with a GET command can contain negative numbers, and/or decimal points, depending on type of Attribute addressed. If the control system does not support negative numbers or decimal places a GETL command may be used instead.

Example: After sending the above example to an Audia device the string:

GET 2 AMLVLIN 4 2<LF> would result in the response: 1.0000<CR><LF> this tells us that the level is currently set to 1dB.

If an incorrect command string is sent, an Audia will respond with: -ERR <CR><LF>

Index

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