

nexia™

CREATED BY

BIAMP®

# Operation Manual

(printable Help file)

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# Introduction

## Overview



The NEXIA™ family of digital signal processors (DSP) is designed with application specific inputs and outputs (I/O), but with much more power than comparable analog products. Intuitive drag-and-drop software allows for easy configuration and maximum flexibility. Setup and control is achieved utilizing Ethernet ports. NexLink™ ports allow up to four NEXIA units (any models) to be used together in the same system, providing totally different combinations of functionality.

NEXIA **CS** has 10 mic/line inputs and 6 independent mix outputs, and is intended for a variety of conferencing applications such as boardrooms, courtrooms, and council chambers.

NEXIA **PM** has 4 mic/line inputs, 6 stereo line inputs, and 6 line outputs outputs, and is intended for multi-media presentation applications requiring both microphone and program content.

NEXIA **SP** has 4 line inputs and 8 independent mix outputs, and is intended for speaker processing applications requiring line inputs feeding a larger number of discrete outputs.

NEXIA software includes a broad selection of audio components, routing options, and signal processing. The internal system design is completely user definable via PC software, and can be controlled via dedicated software screens, RS-232 control systems, and/or a variety of optional remote control devices.

# Architect's & Engineer's Specifications

## **NEXIA™ CS**

The DSP conference system shall provide ten balanced mic/line inputs and six balanced mic/line outputs on plug-in barrier-strip connectors. 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). NexLink™ connections shall allow sharing of digital audio within multi-unit systems.

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, remote controls, meters, generators, and diagnostics. Ethernet communications shall be utilized for software control and configuration. After initial programming, processors may be controlled via dedicated software screens, third-party RS-232 control systems, and/or optional remote control devices. Software shall operate on a PC computer, with network card installed, running Windows® 2000/XP.

The DSP conference system shall be NEXIA™ CS.

## **NEXIA™ PM**

The DSP presentation mixer shall provide four balanced mic/line inputs and three balanced stereo line outputs on plug-in barrier-strip connectors, plus six unbalanced stereo line inputs on RCA connectors. 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). NexLink™ connections shall allow sharing of digital audio within multi-unit systems.

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, remote controls, meters, generators, and diagnostics. Ethernet communications shall be utilized for software control and configuration. After initial programming, processors may be controlled via dedicated software screens, third-party RS-232 control systems, and/or optional remote control devices. Software shall operate on a PC computer, with network card installed, running Windows® 2000/XP.

The DSP presentation mixer shall be NEXIA™ PM.

## **NEXIA™ SP**

The DSP speaker processor shall provide four balanced line inputs and eight balanced line outputs on plug-in barrier-strip connectors. 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). NexLink™ connections shall allow sharing of digital audio within multi-unit systems.

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, remote controls, meters, generators, and diagnostics. Ethernet communications shall be utilized for software control and configuration. After initial programming, processors may be controlled via dedicated software screens, third-party RS-232 control systems, and/or optional remote control devices. Software shall operate on a PC computer, with network card installed, running Windows® 2000/XP.

The DSP speaker processor shall be NEXIA™ SP.

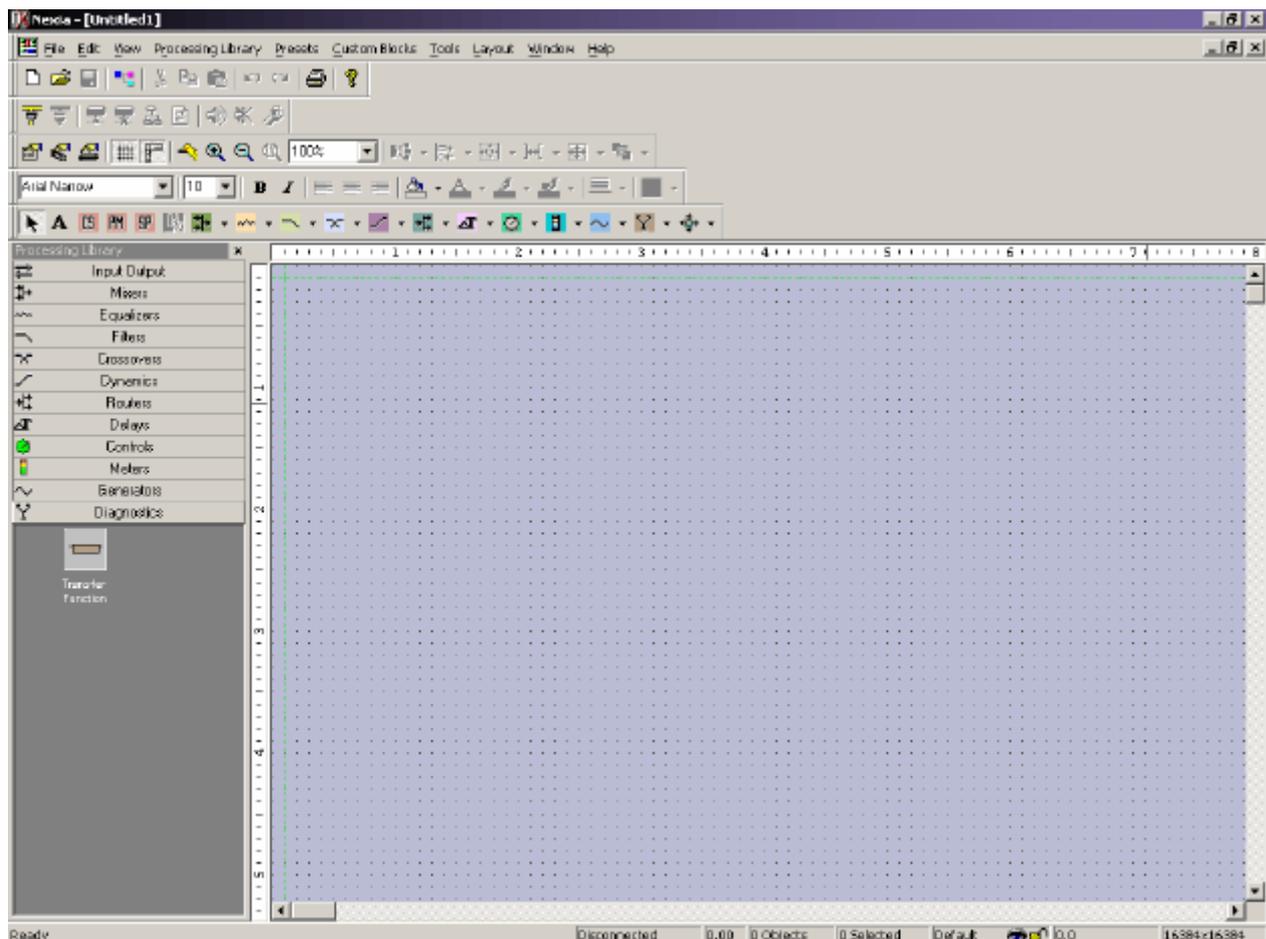
## Documentation

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 **NEXIA.pdf** is intended for printing on **Letter** (8.5" x 11") size paper. The file **NEXIA-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.

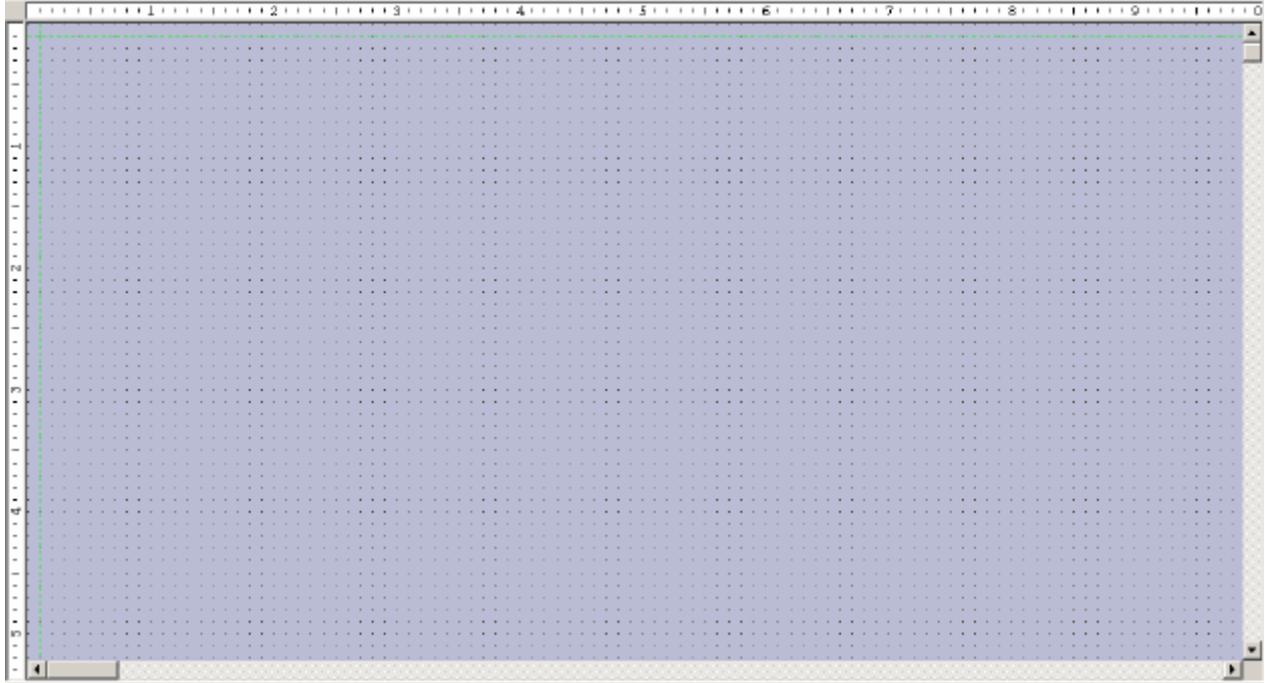
# Software Tools

## Basic Screen Elements

The main screen of the NEXIA 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 hardware devices and signal 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, visibility, & locking. The location and shape of all toolbars, including the Processing Library, may be changed to fit the user's preference.

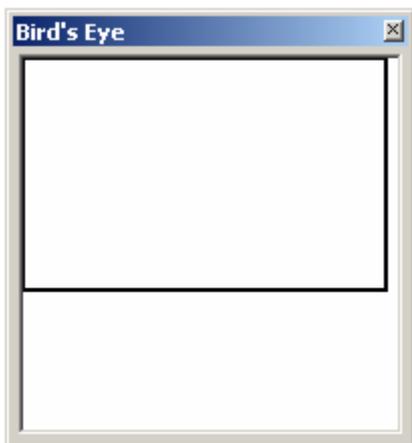


# Layout



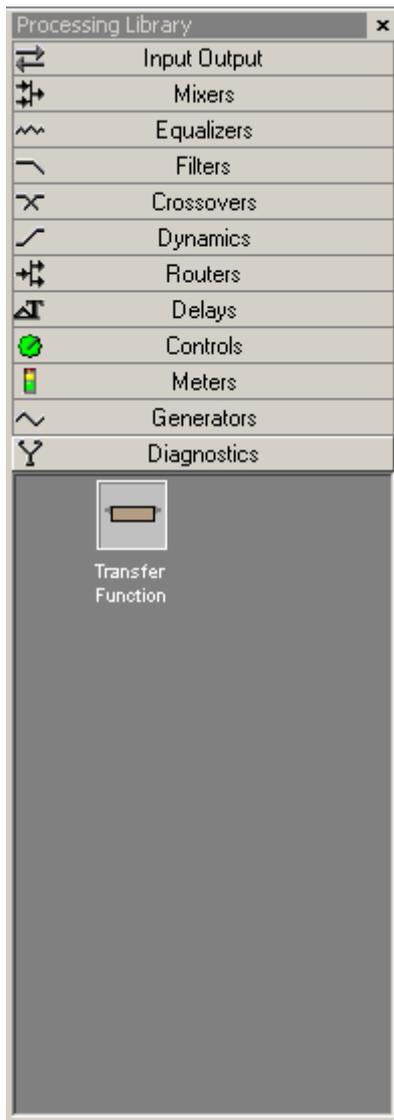
The Layout occupies the largest portion of the main screen, at the lower-right. This is the area where system design actually occurs, with the placement & connection of Component Objects. Component Objects represent the individual hardware devices and signal processing blocks within the system. Other 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 rectangle 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. CS, PM, and SP hardware are found under the Input Output category. All other Component Objects are organized in the following categories: 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 Processing 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. CS, PM, and SP represent the models of NEXIA analog input/output hardware to be used in a system. Nx allows up to four NEXIA devices (any models) to share digital audio signals via NexLink™. All other Component Objects are organized in the following categories: Mixers; Equalizers; Filters; Crossovers; Dynamics; Routers; Delays; Controls; Meters; Generators; Diagnostics; and Specialty.

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.

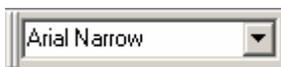
# Format Toolbar



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**



Changes the selected text to a thicker version of the chosen font.

## **Italic**



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.

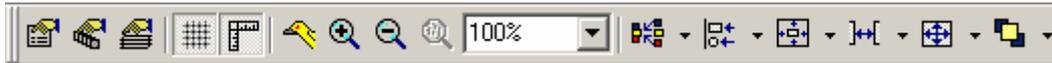
## Hatch Style



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



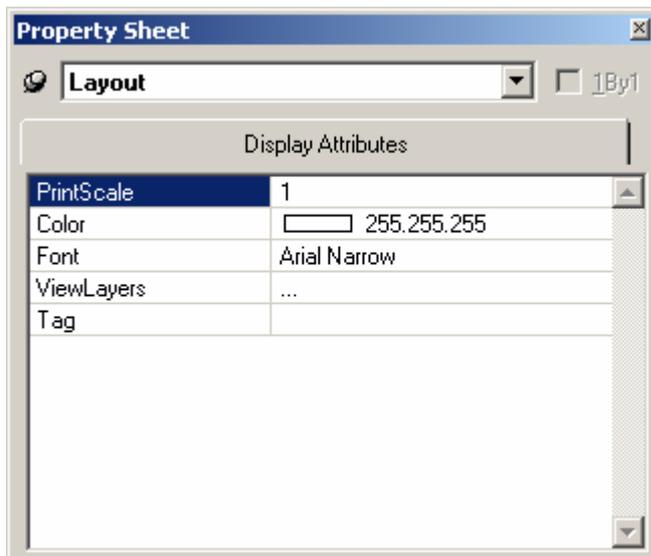
Provides an editable table of attributes regarding the Layout and its associated objects. Only Display Attributes are shown for the Layout (and Lines). Both Display and DSP Attributes are shown for Component Objects.

 see Layout Property Sheet

 see Line Property Sheet

 see Object Property Sheet

### Layout Property Sheet

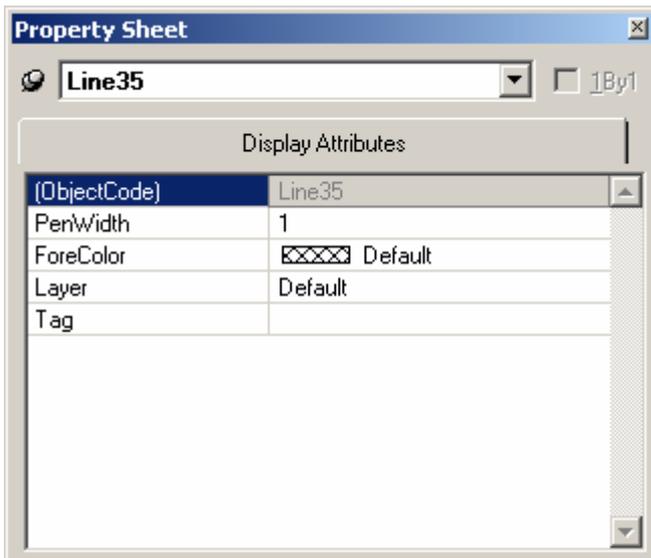


Provides an editable table of attributes regarding the Layout. Only Display Attributes are shown for the Layout. Most Display Attributes duplicate functions found in the [Format Toolbar](#). However, some exceptions are as follows:

**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

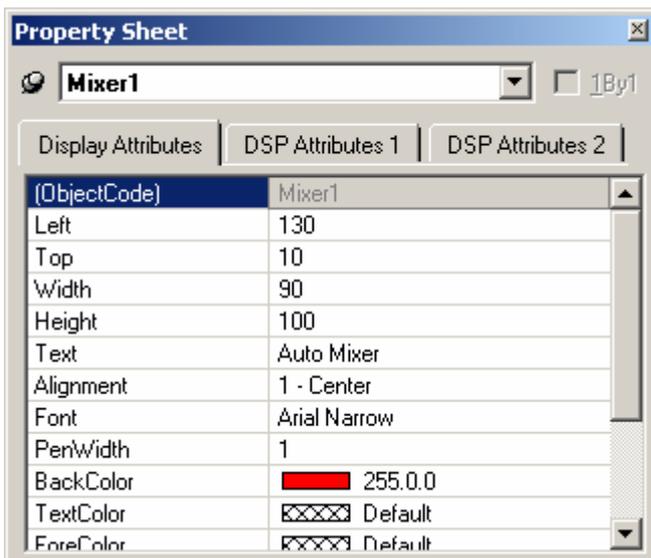


Only Display Attributes are shown for Lines (component connections). Most Display Attributes duplicate functions found in the [Format Toolbar](#). However, some exceptions are as follows:

**Object Code** is a non-editable identifier. **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

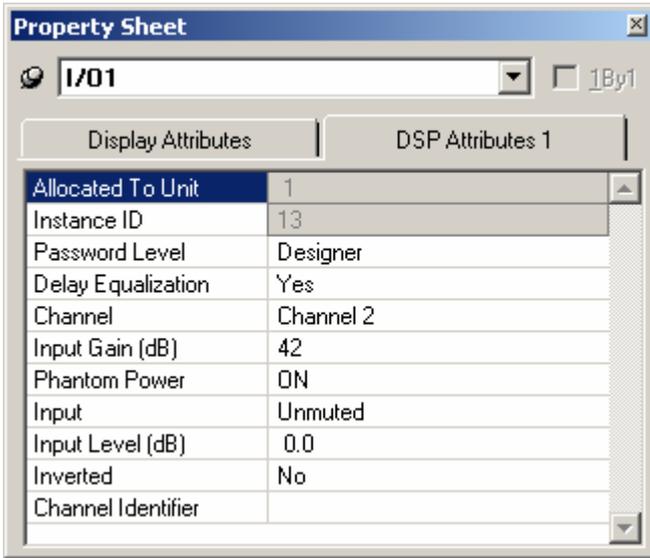


Both Display and DSP Attributes are shown for component objects.

Most Display Attributes duplicate functions found in the [Format Toolbar](#). However, some exceptions are as follows:

**Object Code** is a non-editable identifier. **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:



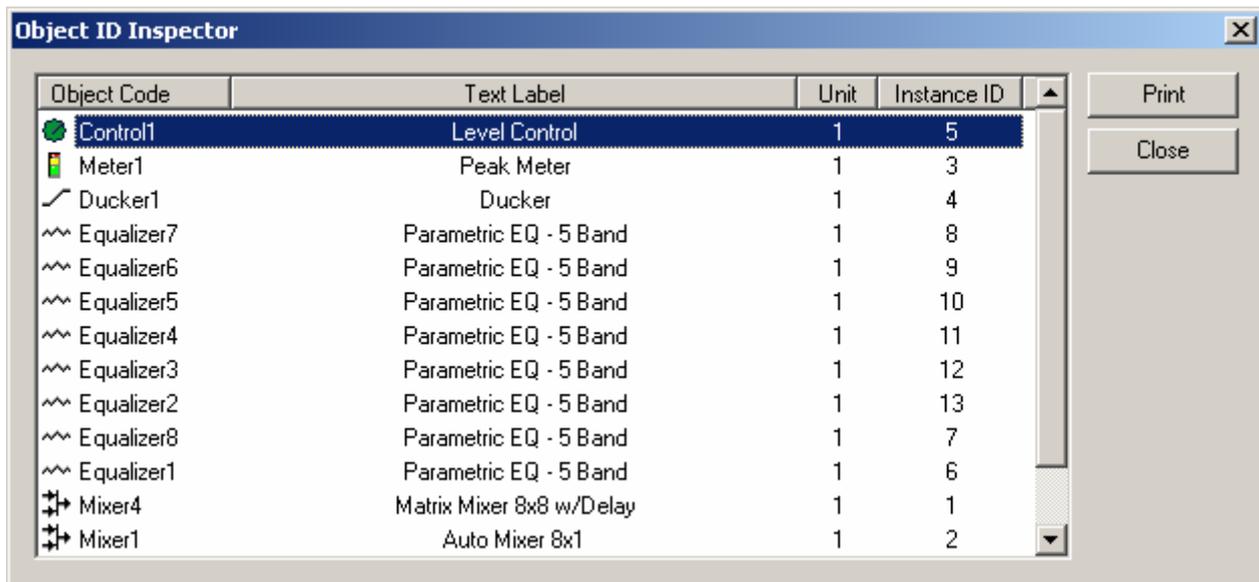
**Allocated To Unit** indicates the particular unit in which the component (DSP block) resides. **NOTE:** Some Control blocks allow *Allocated to Unit to be changed*. **Instance ID** is the system-wide identifier number for the component (DSP block). **Password Level** selects either Designer or Technician access level, for individual components. **Delay Equalization** turns on/off compensation for propagation delay (Input Output components only). See [System Compiling Considerations](#). **Channel Identifier** allows labeling of the individual inputs/outputs on a component. On most component blocks, this labeling appears only when the cursor is over the associated node.

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



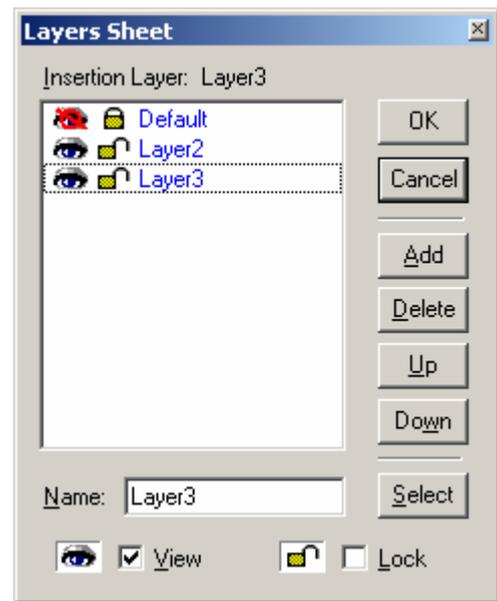
Provides a list of all objects within the Layout, along with their Object Codes, Text Labels, Unit numbers, and Instance ID numbers.



## 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



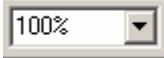
Decreases magnification of Layout in 25% increments.

## 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.



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.

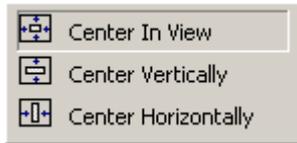


Left-clicking the icon applies the alignment which was selected last.

## Center In View



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

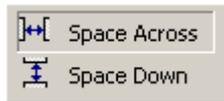


Left-clicking the icon applies the centering which was selected last.

## Space



Provides a drop-down menu for evenly spacing selected objects. Spacing is determined between the two most distantly spaced selected objects.

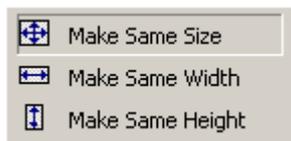


Left-clicking the icon applies the spacing which was selected last.

## 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.

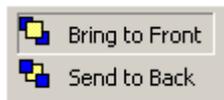


Left-clicking the icon applies the sizing which was selected last.

## 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.



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 NEXIA 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 NEXIA devices on the network. See [System Network Considerations](#).

### Connect To System



Establishes communication with, and retrieves data from, selected NEXIA 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 NEXIA 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 NEXIA devices in the system. See [System Network Considerations](#). Before data can be transmitted, a system design file (.NEX) must first be opened, then connected to a system, and have NEXIA device IP addresses assigned (see [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 all connected NEXIA devices in the system.

**NOTE:** An 'Auto-Update' feature allows software to detect system changes, and automatically re-synchronize with the devices where changes have occurred.

## 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



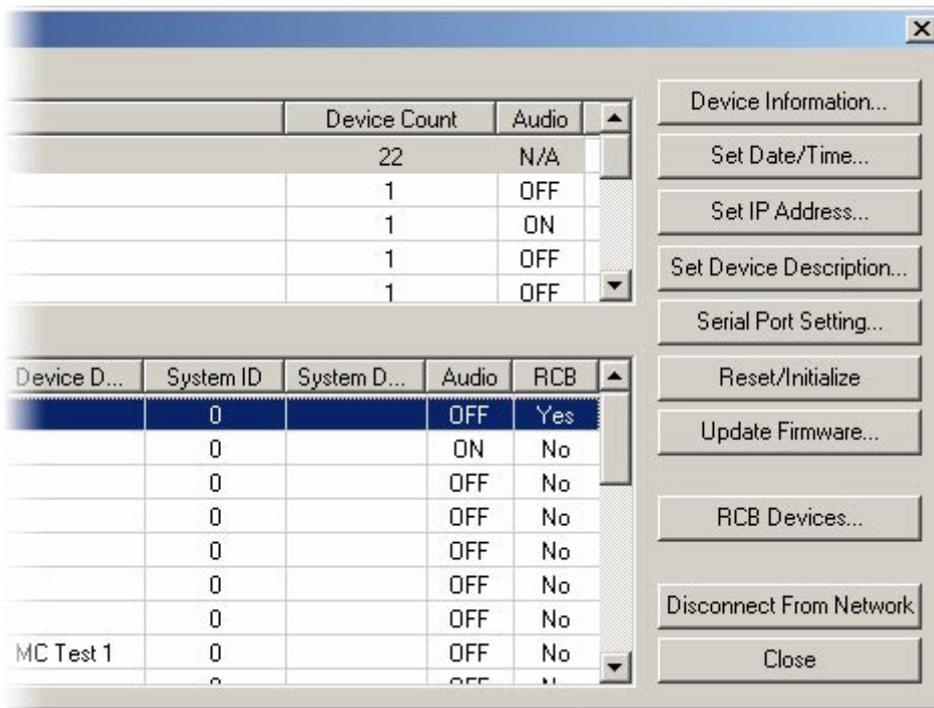
Disables audio signal flow within the selected system. See [System Network Considerations](#).

## Device Maintenance



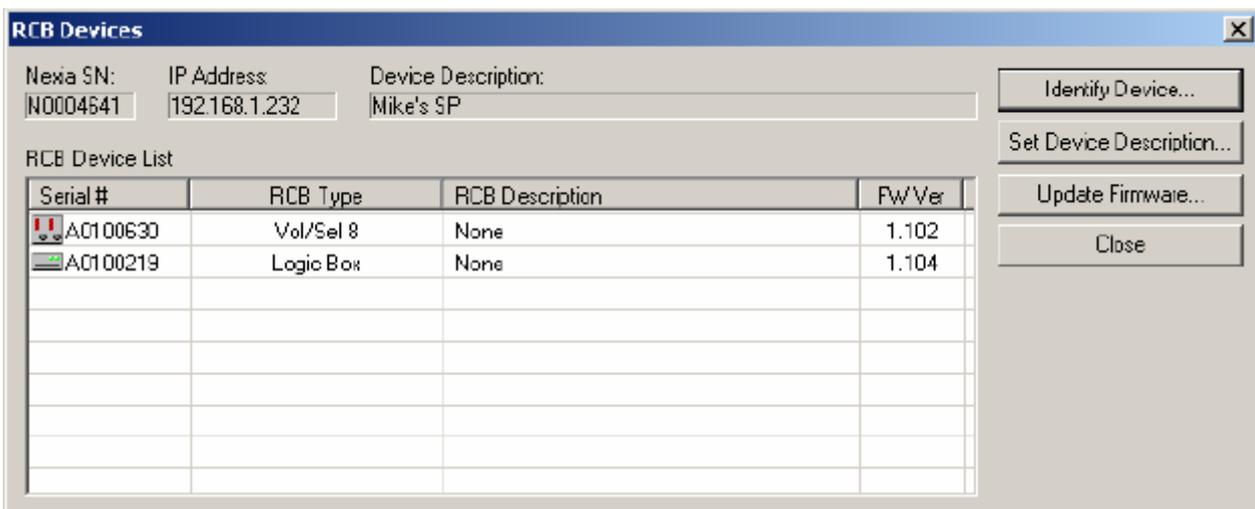
Provides an editable table of network related settings for selected NEXIA devices. Opens [Device Maintenance](#) dialog box. Device Maintenance settings include Date/Time, IP Address, Description, Serial Number, Reset/Initialize, Update Firmware, and Disconnect From Network. (See [System Network Considerations](#).)

## Device Maintenance Dialog Box

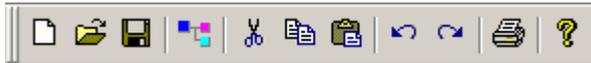


**Device Information** provides information (such as firmware version, input/output configuration, etc.) regarding the selected device. **Set Date/Time** allows update of the internal real-time clock. **Set IP Address** assigns a device IP Address such as **192.168.1.X** (where range of X = 1~254). The factory default IP Address is 192.168.1.101. However, IP Addresses cannot be duplicated, even in simple (NEXIA 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** selects the baud rate for RS-232 communications (default 38,400) and allows responses to NTP commands to be suppressed. **Reset/Initialize** clears all current system design data from the selected device. This happens automatically whenever a new system design file (.NEX) is uploaded (see [Send Configuration](#)). **Update Firmware** uploads flash update files (.JNM) to the selected device.

**RCB Devices** opens a list of devices connected to the [Remote Control Bus](#) of the selected NEXIA device. **Identify Device** causes indicators on the selected device to flash (for physical location). **Set Device Description** allows the selected device to 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 NEXIA system design file (.NEX).

### Open



Opens an existing NEXIA system design file (.NEX).

### Save



Saves the current NEXIA system design file (.NEX).

### Compile



Analyzes the system design and indicates design errors.  
Allocates DSP resources.  
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**



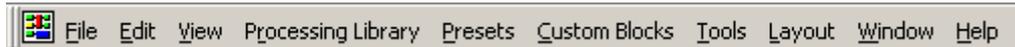
Opens a print dialog box, to adjust printer settings and print the Layout.

## **Help**



You're looking at it.

# Main Menus



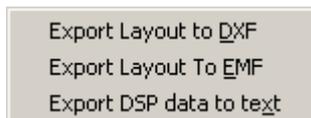
The Main Menus provide most of the toolbar functions mentioned previously, in [Basic Screen Elements](#), as well as several more in-depth functions. Main Menu includes the following individual menus: [File](#); [Edit](#); [View](#); [Processing Library](#); [Presets](#); [Custom Blocks](#); [Tools](#);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

## File Menu

### Menu Items

#### Export

Allows the NEXIA Layout to be exported in different file formats. DXF format is 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.



#### Close

Closes and saves the current NEXIA system design file.

#### Save As

Saves the current NEXIA system design file (.NEX), 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 NEXIA software program.

Also provides prompt to save the current NEXIA system design file if necessary.

If a file is open during Exit, that file will automatically open at next session.

# Edit Menu

## Menu Items

### 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.

**NOTE:** *Software now supports Copy/Paste DSP Data between objects which are of the same type, but which have different sized configurations.*

*Examples: 4x4 & 8x8 Matrix Mixers; 3-band & 5-band Parametric EQ.*

### 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 simultaneously into multiple Component Objects.

**NOTE:** *Software now supports Copy/Paste DSP Data between blocks which are of the same type, but which have different sized configurations.*

*Examples: 4x4 & 8x8 Matrix Mixers; 3-band & 5-band Parametric EQ.*

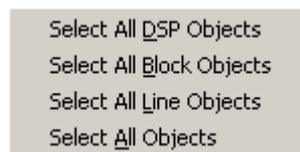
### Duplicate

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

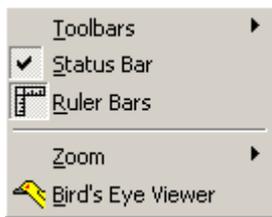
Removes the selected object(s) from the Layout, without placing a copy into the Clipboard.

## 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](#)). Status Bar, Ruler Bars, Zoom, & Bird's Eye Viewer select those functions, as found on the [Layout Toolbar](#).



## 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.

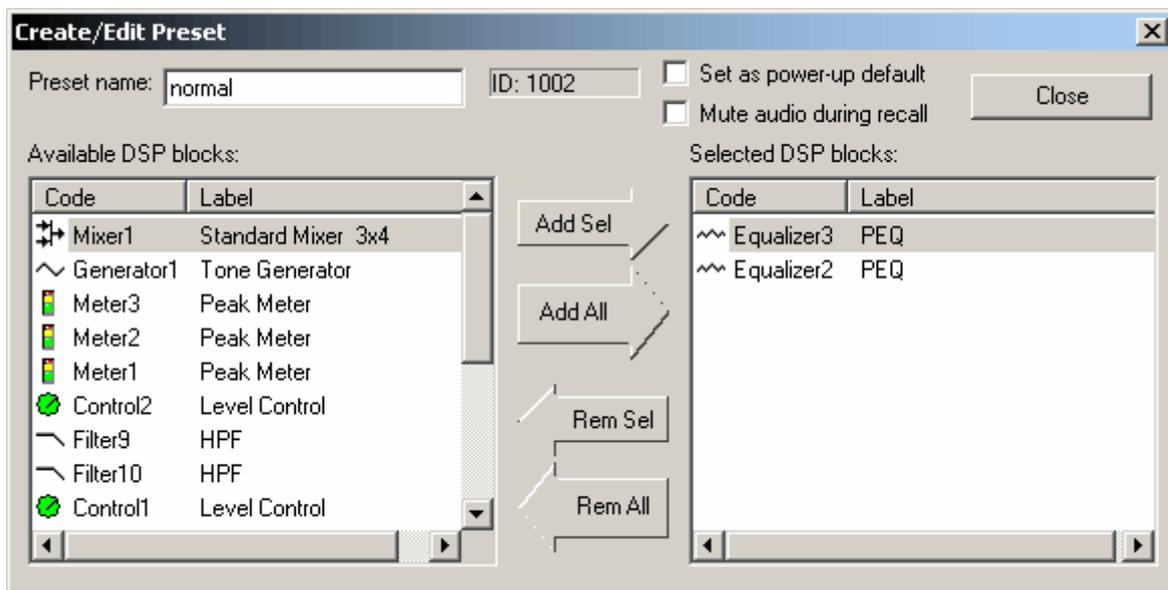
Input/Output	Shift+Z
Mixers	Shift+X
Equalizers	Shift+E
Filters	Shift+F
Crossovers	Shift+C
Dynamics	Shift+D
Routers	Shift+R
Delays	Shift+L
Controls	Shift+T
Meters	Shift+M
Generators	Shift+G
Diagnostics	Shift+N

# Presets Menu

## Menu Items

### 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 NEXIA 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.**

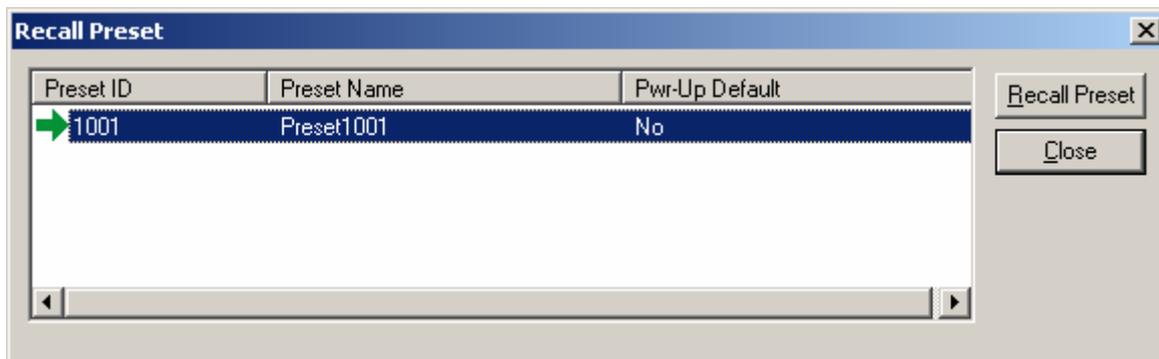
A tab at the lower-left of the Create/Edit Preset dialog box provides a list of existing presets. Left-clicking selects a preset. Double-clicking recalls a preset (as indicated by a green arrow to the left).



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.

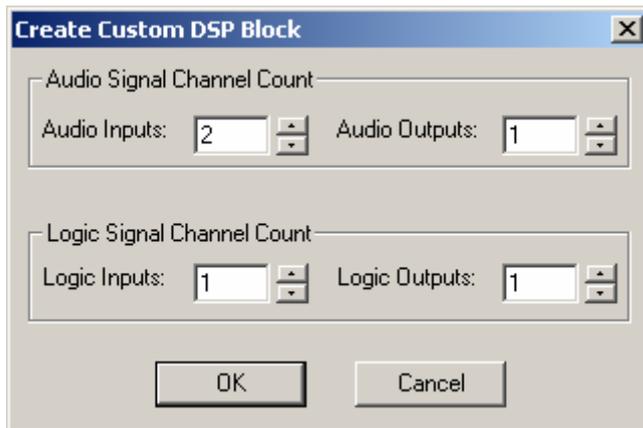


## Custom Blocks Menu

Multiple component objects may be merged into a single custom block. Custom Blocks can simplify the design process by integrating frequently used component combinations, and provide password protection for intellectual property such as unique processing and component settings.

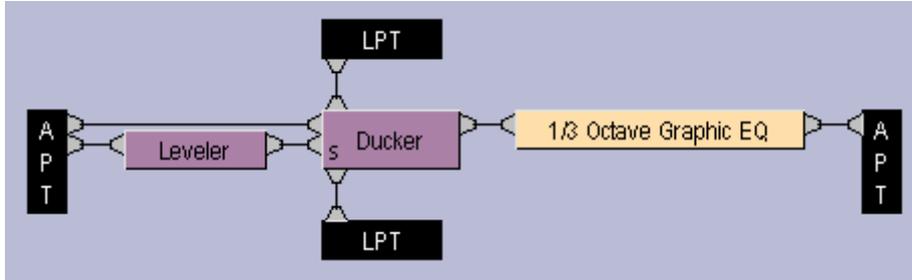
### Menu Items

#### Create Custom Block Document



Create Custom Block Document opens a new NEX file, and a Create Custom DSP Block screen determines the quantities of audio and logic inputs/outputs necessary for the custom block. These quantities should match the combined totals from all components to be included in the custom block. Once quantities are selected, appropriate APT (Audio Pass-Through) and LPT (Logic Pass-Through) blocks are placed into the layout. The desired components are then placed within, and connected to, the APT and LPT blocks. Components may be added individually, or copied as a group from a separate NEX file.

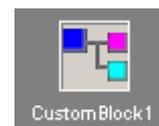
Certain components (such as NEXIA Hardware and Control Devices) cannot be placed within custom blocks. The number of components in a custom block is limited only by DSP resources available within a single hardware unit. Once the components are placed and connected, select **Merge Into Custom Block** from the menu.



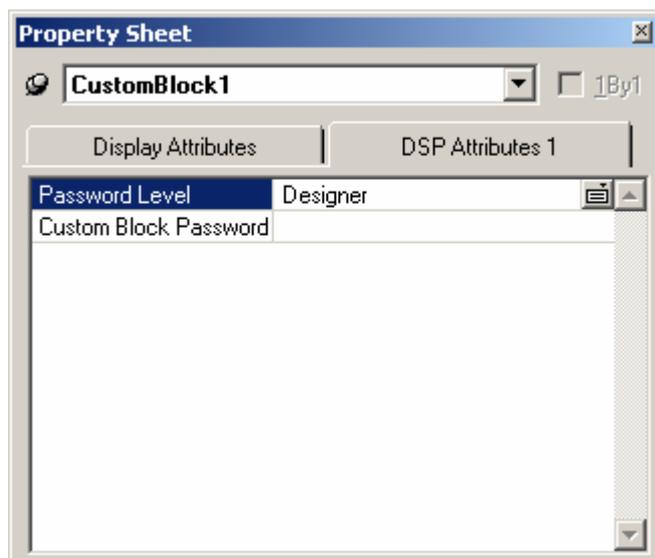
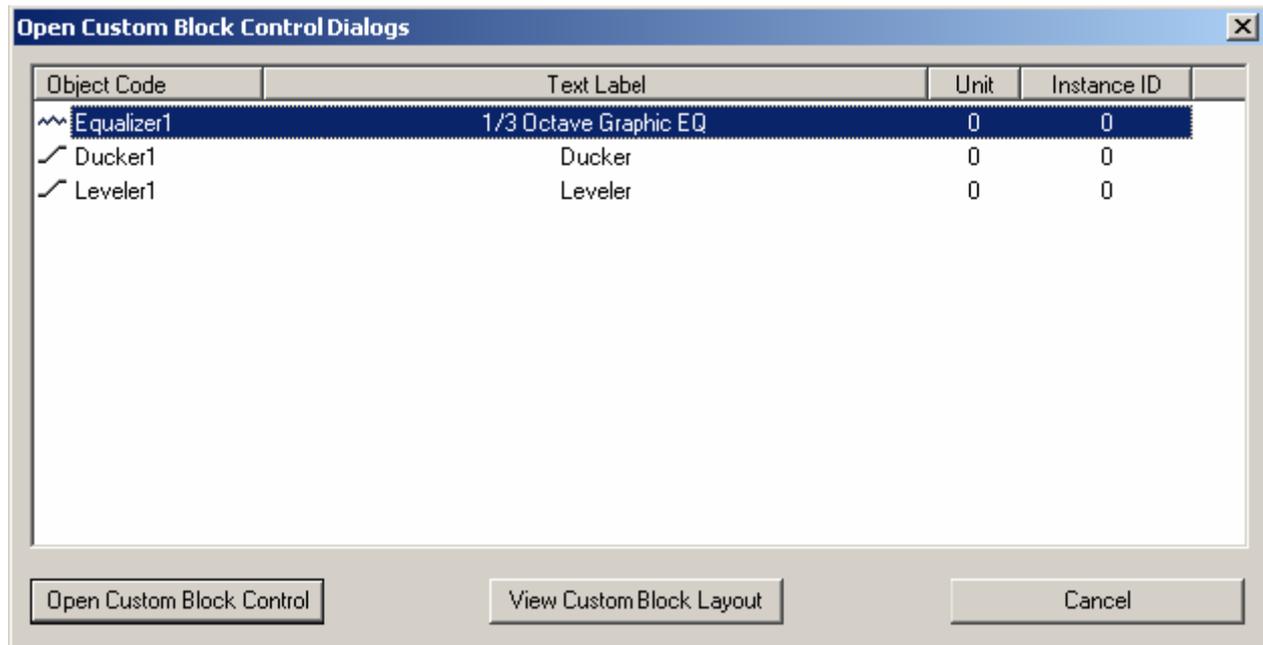
#### Merge Into Custom Block



Merge Into Custom Block checks for errors (such as inappropriate connections) as it packages the components into a single block. The resulting block can then be copied into the **Processing Library** (and named) for use in future NEX design files. The Custom Block NEX file should also be saved as a reference for subsequent modifications.



Control settings for each component within a Custom Block can be adjusted (see [Component Object Properties](#)). Double-clicking a Custom Block in a design layout produces an Open Custom Block Control Dialogs screen. **Open Custom Block Control** provides direct access to the control dialogs for selected components. **View Custom Block Layout** displays the individual components within the Custom Block, which can then be accessed normally. Control Settings are saved as part of the Custom Block NEX file.

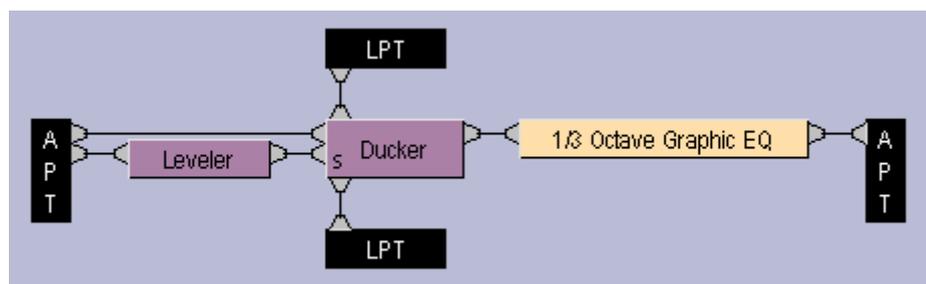


Control settings also remain part of any Custom Block which has been copied into the Processing Library. These control settings may again be addressed once the Custom Block is placed into a new NEX design file. However, to prevent tampering with control settings, password protection may be added to a Custom Block via the [Property Sheet](#). This option is available only while working in the Custom Block NEX file.

If components or connections within a merged Custom Block require modification, then select [Split Into Component Blocks](#) from the menu. Merge and Split operations are available only while working in the Custom Block NEX file.

## Split Into Component Blocks

Split Into Component Blocks allows additional component and connection changes to be made to a Custom Block. Merge and Split operations are available only while working in the Custom Block NEX file.

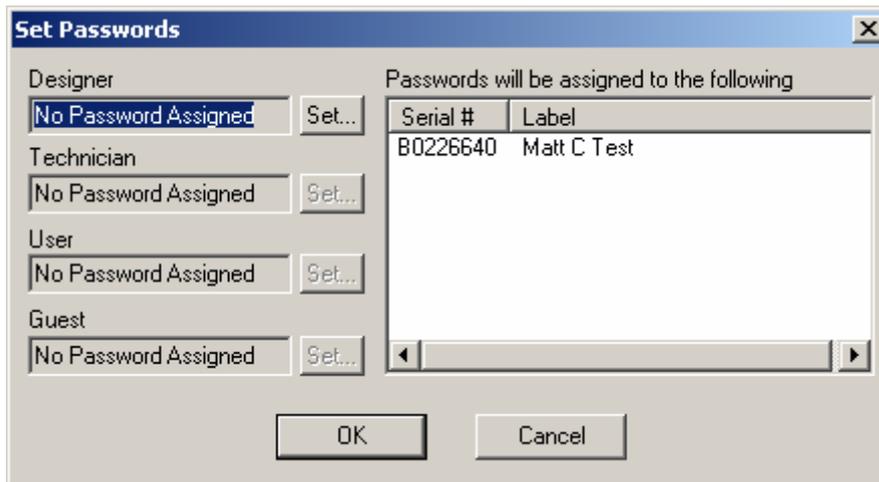


## Tools Menu

### Menu Items

#### Passwords

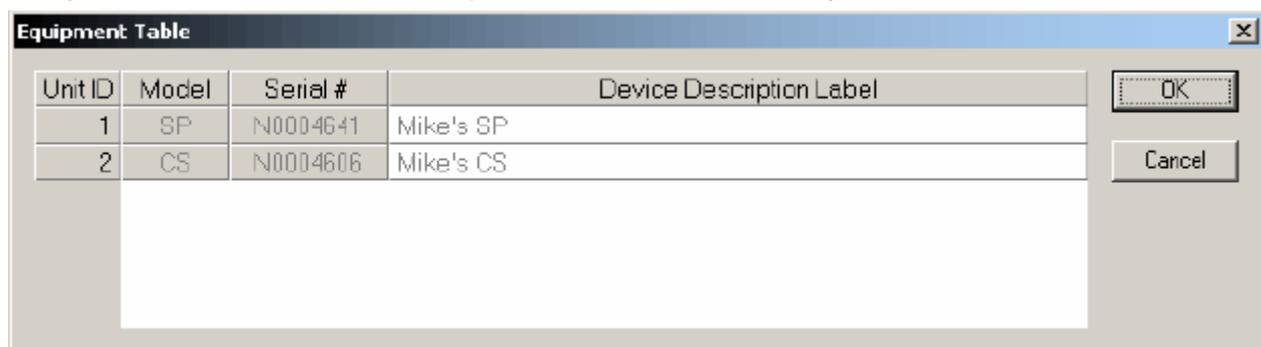
Provides the Set Passwords dialog box, for establishing password protection in selected NEXIA devices. Set Password allows up to four levels of protection, each with a unique password (6~16 characters). **Designer** level allows access to system configuration, component settings, storing/recalling presets, 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 a table of NEXIA devices used in the system design. Devices are automatically added to the Equipment Table whenever [CS](#), [PM](#), or [SP](#) blocks are placed into the Layout. When [connected to the network](#), specific hardware devices may be chosen (by Serial #) for use in the system. When [connected to the system](#), Serial # and Device Description Label becomes 'read-only' information.

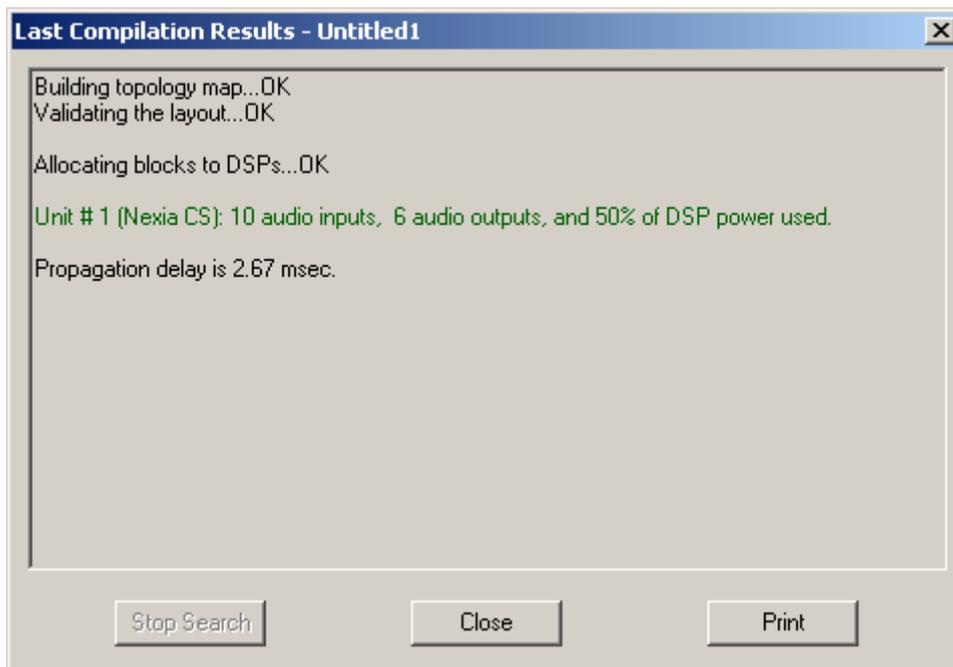


An **RCB** tab at the lower-left of the Equipment Table dialog box provides an editable table of devices connected to the [Remote Control Bus](#) of the NEXIA devices in the system design. This table is used to establish proper association between external physical controls and their corresponding component 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 Label information can be found for the physical controls using [Device Maintenance](#).

Dev.ID	Model	Serial #	Device Description Label
1	Logic Box	A0100219	None

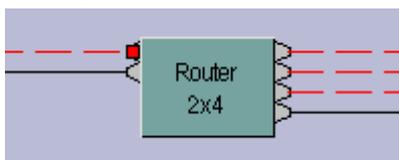
## Layout Compile Results

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



## Signal Path Identifier

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 three outputs. Signal Path Identifier is represented by a thin dashed red line. However, the Signal Path Identifier color may be changed in **Display Options**. When using Signal Path Identifier on a compiled design, propagation delay will appear in the **Status Bar**.



## Options

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

 see General Options

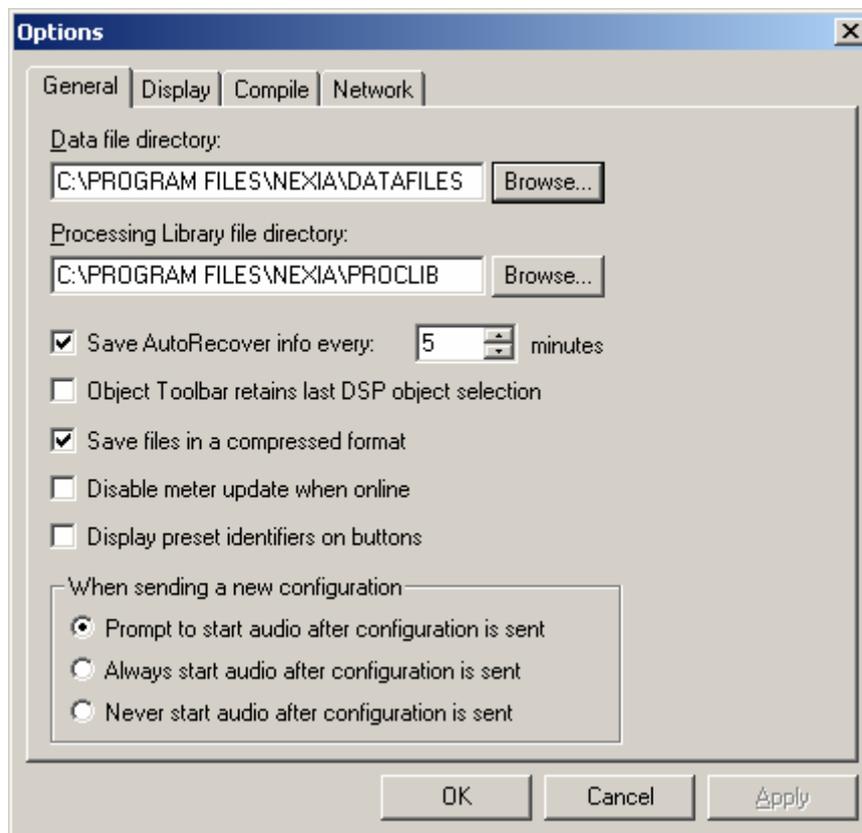
 see Display Options

 see Compile Options

 see Network Options

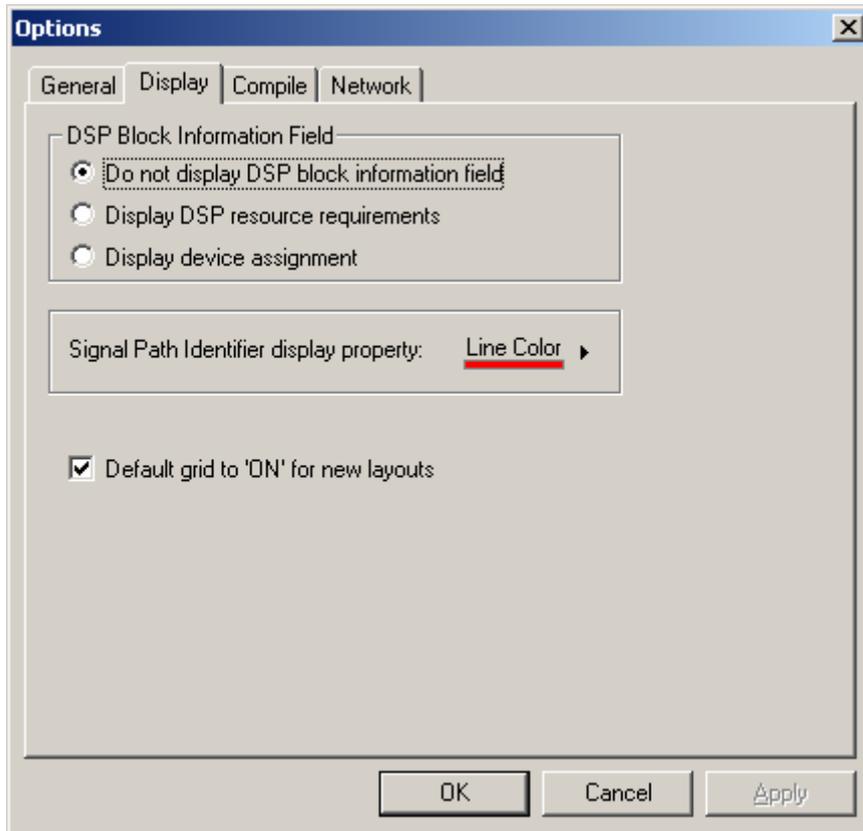
## General Options

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. Allows Preset Buttons to display identifier numbers, or simply the word 'Recall'. Allows Start Audio to be prompted, automatic, or manual when sending new configuration.



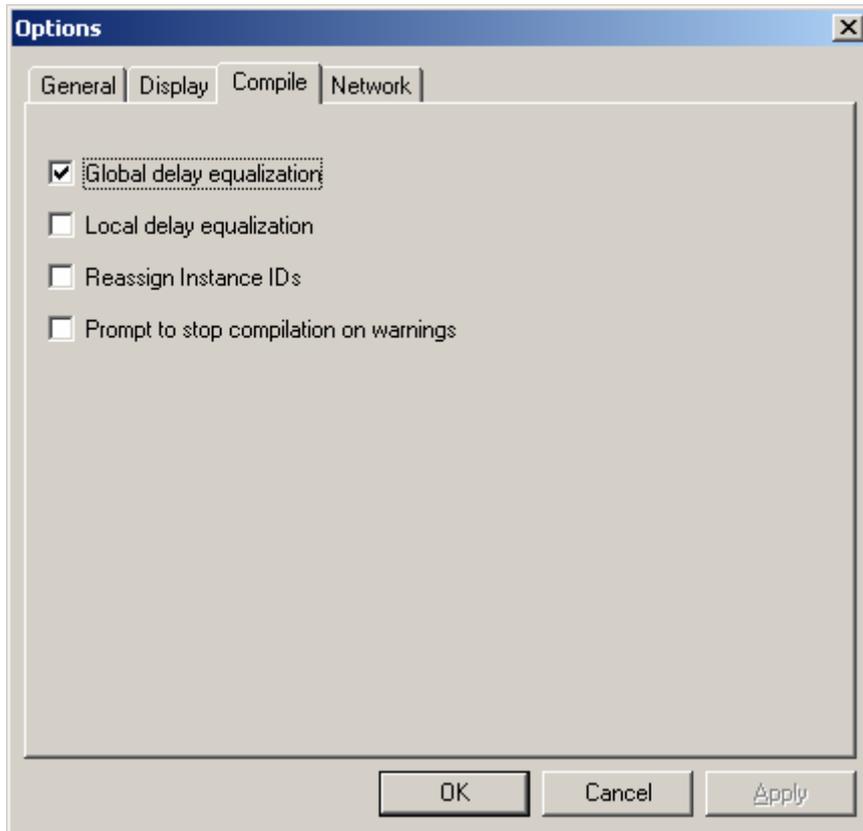
## Display Options

Allows DSP Blocks (Component Objects) to display Device Assignment numbers, as determined by **Compile**. (Device Assignments can be changed in the **Property Sheet**.) A second option is to display DSP Resource Requirements, which indicates the block's DSP usage as a percentage of total DSP resources available within a single hardware unit. Allows color of **Signal Path Identifier** to be changed. Allows the default **Grid** to be applied when starting new design files.



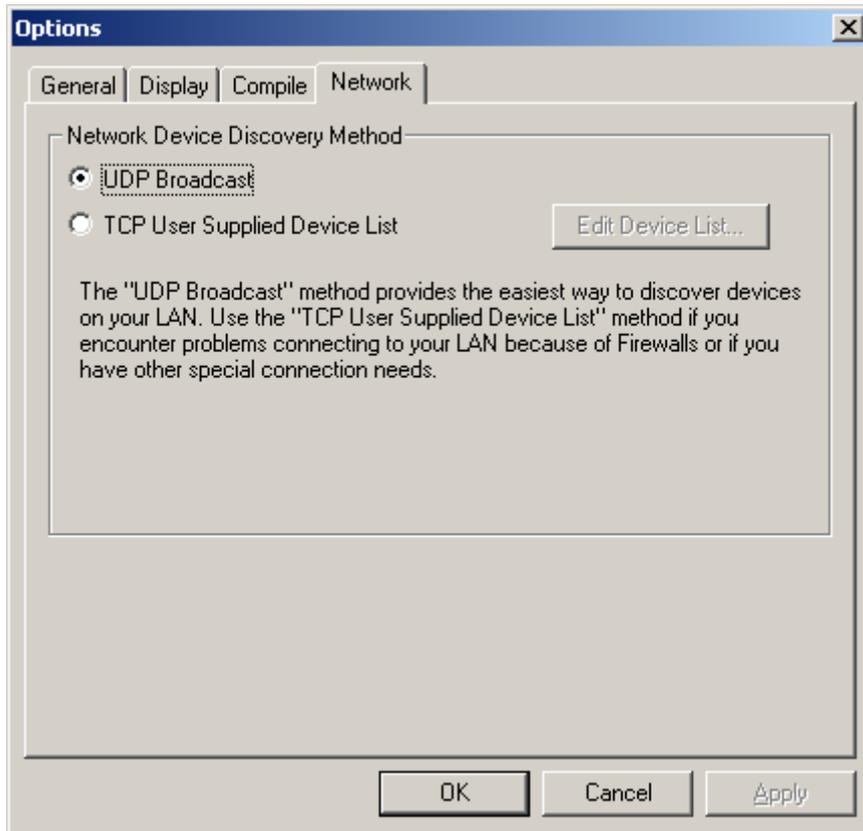
## Compile Options

Allows Global Delay Equalization to be disabled system-wide (see [System Compiling Considerations](#)). Allows Local Delay Equalization to be enabled for I/O blocks which have Global Delay Equalization turned off (provides localized delay equalization for multi-input DSP blocks such as mixers). Allows automatic re-assignment of [Instance IDs](#) during [Compile](#) or [Send Configuration](#). Allows [Compile](#) function to be stopped if warning occurs.



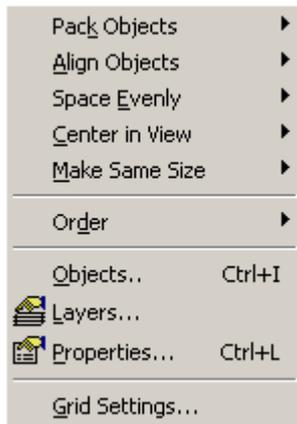
## Network Options

Allows the user to choose which method is used to **Connect** to a network. UDP Broadcast is the default 'message' based routine, which looks for devices on a common network. TCP User Supplied Device List allows connection to a specified list of device IP addresses. This approach is 'communication' based, and allows the user the ability to: avoid firewall conflicts; create custom device lists; access multiple sub-networks; connect remotely via modem.



## 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](#).



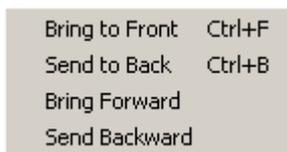
### Menu Items

#### Align Objects



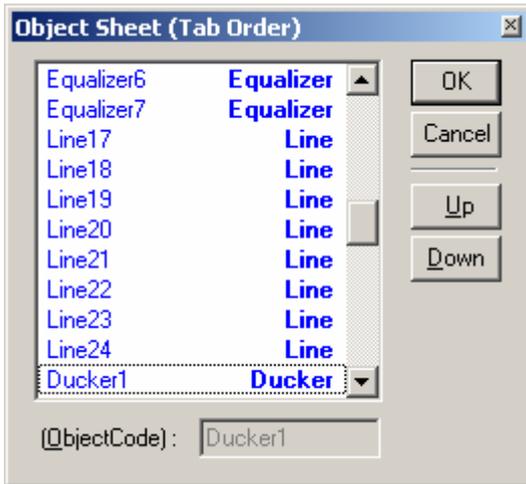
Align Objects provides Vertical Center & Horizontal Center functions, in addition to the Align Edges functions found on the Layout Toolbar.

#### Order



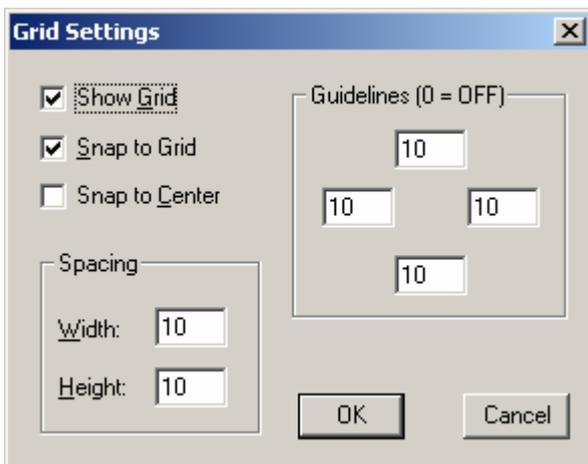
Order provides Bring Forward & Send Backward functions, in addition to the To Front Or Back functions found on the Layout Toolbar.

## 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.

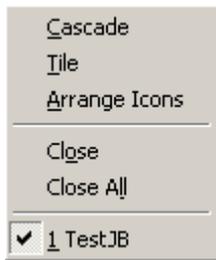
## Grid Settings



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.



## Help Menu

Provides NEXIA Help Topics and About NEXIA information.



## 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), device DSP usage, total number of objects, number of objects selected, Layer status, object location, and object size.



# Component Objects

## CS

### CS Hardware



**Mic/Line Inputs:** These ten plug-in barrier strip connectors provide balanced input for microphone or line level signals. For unbalanced input, wire high to (+) and ground to both (▼) & (-). Settings for these inputs are accessed by double-clicking the **CS Input 10 Channel** block in the Layout.

**Outputs:** These six plug-in barrier strip connectors provide balanced output of microphone or line level signals. For unbalanced output, wire high to (+) and ground to (▼), leaving (-) un-connected. Settings for these outputs are accessed by double-clicking the **CS Output 6 Channel** block in the Layout.

**NexLink™:** These two RJ45 jacks provide the NexLink Tx (transmit) and Rx (receive) connections. Up to four NEXIA devices may be linked together to share digital audio signals. Tx on one NEXIA device is connected to RX on the next device. NexLink utilizes standard CAT5 cabling, with a maximum recommended length of 5 meters per cable. When multiple NEXIA devices are placed in the Layout, **NexLink** blocks allow routing of digital audio between linked devices.

**Ethernet:** All NEXIA devices use Ethernet, both for system programming and control. Programming is accomplished using the NEXIA software provided with each unit. NEXIA software is for PC computers, with Windows® 2000/XP operating system required. The PC computer must have a network card installed, which supports 10/100BaseT Ethernet. A 10/100BaseT Ethernet switch (not hub) is required when networking multiple units (see **System Network Considerations**). Ethernet utilizes standard CAT5 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.

**Serial Control Port:** After initial programming and configuration, NEXIA systems may be controlled by **RS-232** or **Telnet** communications from third-party control systems such as AMX® or Crestron®, using the Serial Control Port. Also, external devices may be controlled via the Serial Control Port, by utilizing **Command String** blocks within the NEXIA system design.

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

**Power Entrance:** The Power Entrance provides connection for the appropriate power cord (included with unit). An internal universal switching power supply accepts 100~240VAC @ 50/60Hz, with a maximum power consumption of 65 Watts.



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

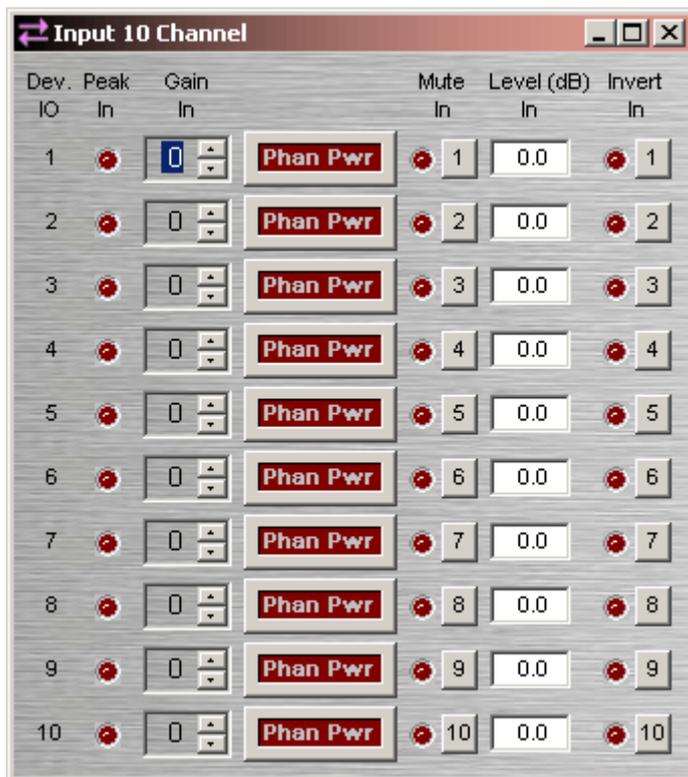
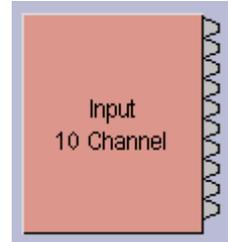
<b>All LEDs green</b>	Normal operating state. Configuration was successful (if applicable). Device is in a stable state awaiting commands.
<b>I/O LED red</b>	Internal audio hardware error.
<b>Com LED red</b>	Serial Port error. Ethernet error. CAN Bus error. No IP address defined (cleared by setting IP address).
<b>Status LED red</b>	Configuration error. Last configuration unsuccessful (cleared by 'reset/initializing' the device). Operating systems resource error. File system error. DSP error.
<b>All LEDs blinking</b>	Operating system is not executing. Device must be power cycled.
<b>Status LED blinking</b>	The firmware has attempted to perform an illegal operation. Device must be power cycled.

# Control Dialogs

## CS Input 10 Channel



NEXIA **CS** hardware is always represented in the Layout as two separate blocks, one for input connections and one for output connections. Between these blocks can be placed virtually any of the other available NEXIA mixing, routing, and processing blocks (component objects). Like other component objects, NEXIA CS blocks can be placed into the Layout either from the **Processing Library** or from the **Object Toolbar**. To access **Input 10 Channel** settings, double-click over the corresponding block in the Layout. This opens a Control Dialog Box which provides all available settings.



**Device IO** indicates which hardware input is associated with that software channel. **Gain In** compensates for different input levels (mic or line), 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 (dB) In** adjusts the relative input volume. **Invert In** reverses the polarity of the input signal.

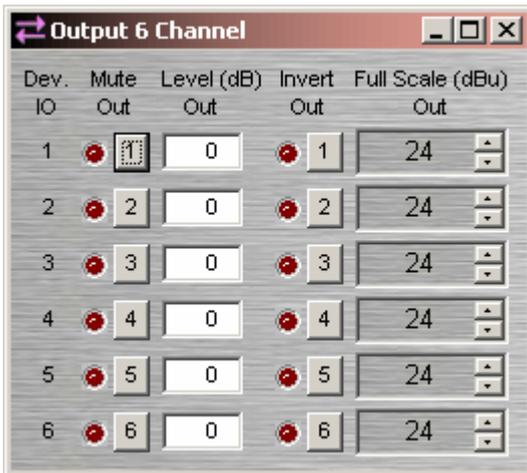
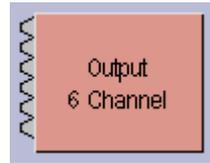
Right-clicking over certain settings will provide a menu of additional options.

Each NEXIA CS comes pre-configured from the factory with a **default system design**. If you wish to load your own custom designed configuration you will need to **reset/initialize** the unit(s) first.

## CS Output 6 Channel



NEXIA **CS** hardware is always represented in the Layout as two separate blocks, one for input connections and one for output connections. Between these blocks can be placed virtually any of the other available NEXIA mixing, routing, and processing blocks (component objects). Like other component objects, NEXIA CS blocks can be placed into the Layout either from the **Processing Library** or from the **Object Toolbar**. To access **Output 6 Channel** settings, double-click over the corresponding block in the Layout. This opens a Control Dialog Box which provides all available settings.



**Device IO** indicates which hardware output is associated with that software channel. **Mute Out** turns the output signal on/off. **Level (dB) Out** adjusts the relative output volume. **Invert Out** reverses the polarity of the output signal. **Full Scale (dBU) Out** selects the appropriate maximum output reference level (mic or line).

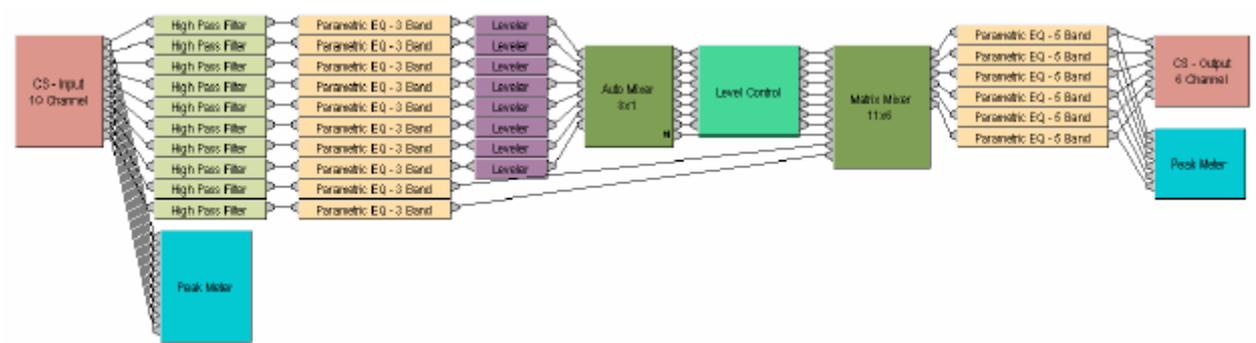
Right-clicking over certain settings will provide a menu of additional options.

Each NEXIA CS comes pre-configured from the factory with a **default system design**. If you wish to load your own custom designed configuration you will need to **reset/initialize** the unit(s) first.

## CS Default Configuration

### Conference System

Each Nexia device comes pre-configured from the factory with a default system design. The factory default configuration for a NEXIA CS is a 'conference system' with 8 automixer mic inputs and 2 program line inputs feeding a matrix to 6 outputs (see design layout below). This "**CS Default Configuration.NEX**" file can be found under Sample Files on the NEXIA software CD. If you wish to load your own custom designed configuration you will need to **reset/initialize** the unit(s) first.



# PM

## PM Hardware



**Mic/Line Inputs:** These four plug-in barrier strip connectors provide balanced input for microphone or line level signals. For unbalanced input, wire high to (+) and ground to both (▼) & (-). Settings for these inputs are accessed by double-clicking the **PM Input 4 Channel** block in the Layout.

**Stereo Line Inputs:** These six RCA jack pairs provide unbalanced input for stereo line level signals. Settings for these inputs are accessed by double-clicking the **PM Input (Stereo) 12 Channel** block in the Layout.

**Outputs:** These six plug-in barrier strip connectors provide balanced output of line level signals. For unbalanced output, wire high to (+) and ground to (▼), leaving (-) un-connected. Settings for these outputs are accessed by double-clicking the **PM Output (Stereo) 6 Channel** block in the Layout.

**NexLink™:** These two RJ45 jacks provide the NexLink Tx (transmit) and Rx (receive) connections. Up to four NEXIA devices may be linked together to share digital audio signals. Tx on one NEXIA device is connected to RX on the next device. NexLink utilizes standard CAT5 cabling, with a maximum recommended length of 5 meters per cable. When multiple NEXIA devices are placed in the Layout, **NexLink** blocks allow routing of digital audio between linked devices.

**Ethernet:** All NEXIA devices use Ethernet, both for system programming and control. Programming is accomplished using the NEXIA software provided with each unit. NEXIA software is for PC computers, with Windows® 2000/XP operating system required. The PC computer must have a network card installed, which supports 10/100BaseT Ethernet. A 10/100BaseT Ethernet switch (not hub) is required when networking multiple units (see **System Network Considerations**). Ethernet utilizes standard CAT5 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.

**Serial Control Port:** After initial programming and configuration, NEXIA systems may be controlled by **RS-232** or **Telnet** communications from third-party control systems such as AMX® or Crestron®, using the Serial Control Port. Also, external devices may be controlled via the Serial Control Port, by utilizing **Command String** blocks within the NEXIA system design.

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

**Power Entrance:** The Power Entrance provides connection for the appropriate power cord (included with unit). An internal universal switching power supply accepts 100~240VAC @ 50/60Hz, with a maximum power consumption of 65 Watts.



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

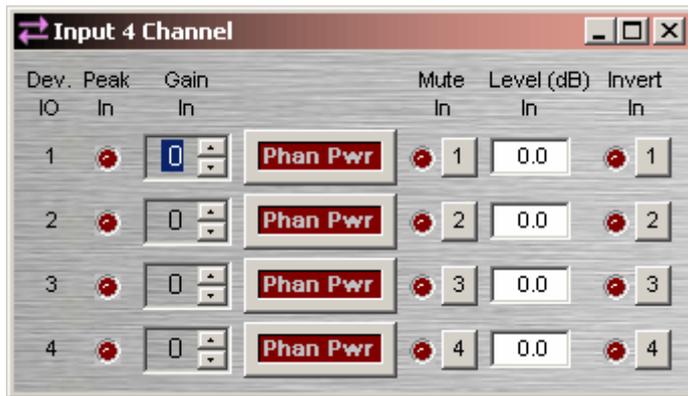
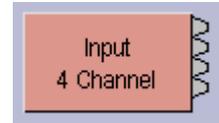
<b>All LEDs green</b>	Normal operating state. Configuration was successful (if applicable). Device is in a stable state awaiting commands.
<b>I/O LED red</b>	Internal audio hardware error.
<b>Com LED red</b>	Serial Port error. Ethernet error. CAN Bus error. No IP address defined (cleared by setting IP address).
<b>Status LED red</b>	Configuration error. Last configuration unsuccessful (cleared by 'reset/initializing' the device). Operating systems resource error. File system error. DSP error.
<b>All LEDs blinking</b>	Operating system is not executing. Device must be power cycled.
<b>Status LED blinking</b>	The firmware has attempted to perform an illegal operation. Device must be power cycled.

# Control Dialogs

## PM Input 4 Channel



NEXIA **PM** hardware is always represented in the Layout as three separate blocks, two for input connections and one for output connections. Between these blocks can be placed virtually any of the other available NEXIA mixing, routing, and processing blocks (component objects). Like other component objects, NEXIA PM blocks can be placed into the Layout either from the **Processing Library** or from the **Object Toolbar**. To access **Input 4 Channel** settings, double-click over the corresponding block in the Layout. This opens a Control Dialog Box which provides all available settings.



**Device IO** indicates which hardware input is associated with that software channel. **Gain In** compensates for different input levels (mic or line), 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 (dB) In** adjusts the relative input volume. **Invert In** reverses the polarity of the input signal.

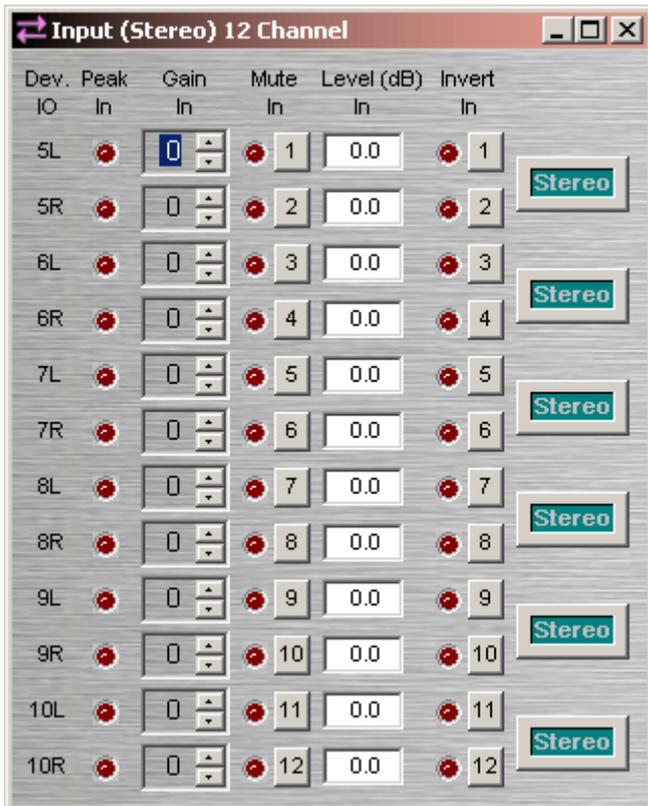
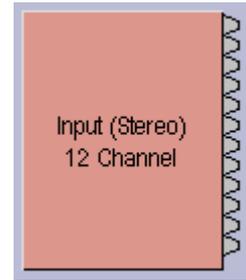
Right-clicking over certain settings will provide a menu of additional options.

Each NEXIA PM comes pre-configured from the factory with a **default system design**. If you wish to load your own custom designed configuration you will need to **reset/initialize** the unit(s) first.

## PM Input (Stereo) 12 Channel



NEXIA **PM** hardware is always represented in the Layout as three separate blocks, two for input connections and one for output connections. Between these blocks can be placed virtually any of the other available NEXIA mixing, routing, and processing blocks (component objects). Like other component objects, NEXIA PM blocks can be placed into the Layout either from the [Processing Library](#) or from the [Object Toolbar](#). To access **Input (Stereo) 12 Channel** settings, double-click over the corresponding block in the Layout. This opens a Control Dialog Box which provides all available settings.



**Device IO** indicates which hardware input is associated with that software channel. **Gain In** compensates for different input levels, and should be set so **Peak In** flashes only occasionally (6dB headroom). **Mute In** turns the input signal on/off. **Level (dB) In** adjusts the relative input volume. **Invert In** reverses the polarity of the input signal. **Stereo** combines the Level (dB) In adjustment for the associated left & right inputs.

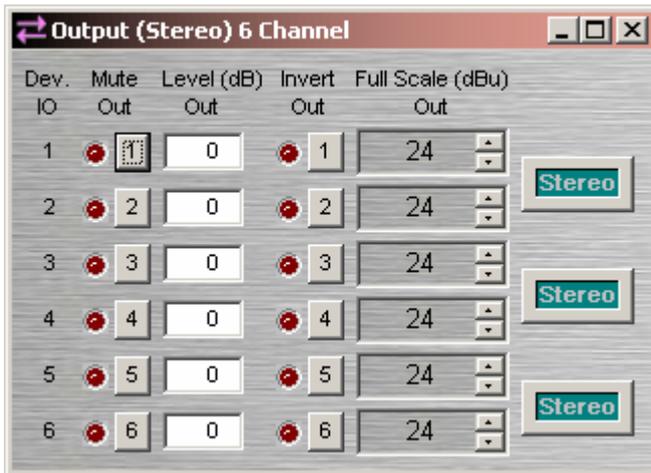
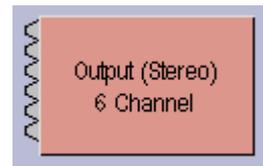
Right-clicking over certain settings will provide a menu of additional options.

Each NEXIA PM comes pre-configured from the factory with a [default system design](#). If you wish to load your own custom designed configuration you will need to [reset/initialize](#) the unit(s) first.

## PM Output (Stereo) 6 Channel



NEXIA **PM** hardware is always represented in the Layout as three separate blocks, two for input connections and one for output connections. Between these blocks can be placed virtually any of the other available NEXIA mixing, routing, and processing blocks (component objects). Like other component objects, NEXIA PM blocks can be placed into the Layout either from the [Processing Library](#) or from the [Object Toolbar](#). To access **Output (Stereo) 6 Channel** settings, double-click over the corresponding block in the Layout. This opens a Control Dialog Box which provides all available settings.



**Device IO** indicates which hardware output is associated with that software channel. **Mute Out** turns the output signal on/off. **Level (dB) Out** adjusts the relative output volume. **Invert Out** reverses the polarity of the output signal. **Full Scale (dBu) Out** selects the appropriate maximum output reference level. **Stereo** combines the Level (dB) Out and Full Scale (dBu) Out adjustments for the associated outputs.

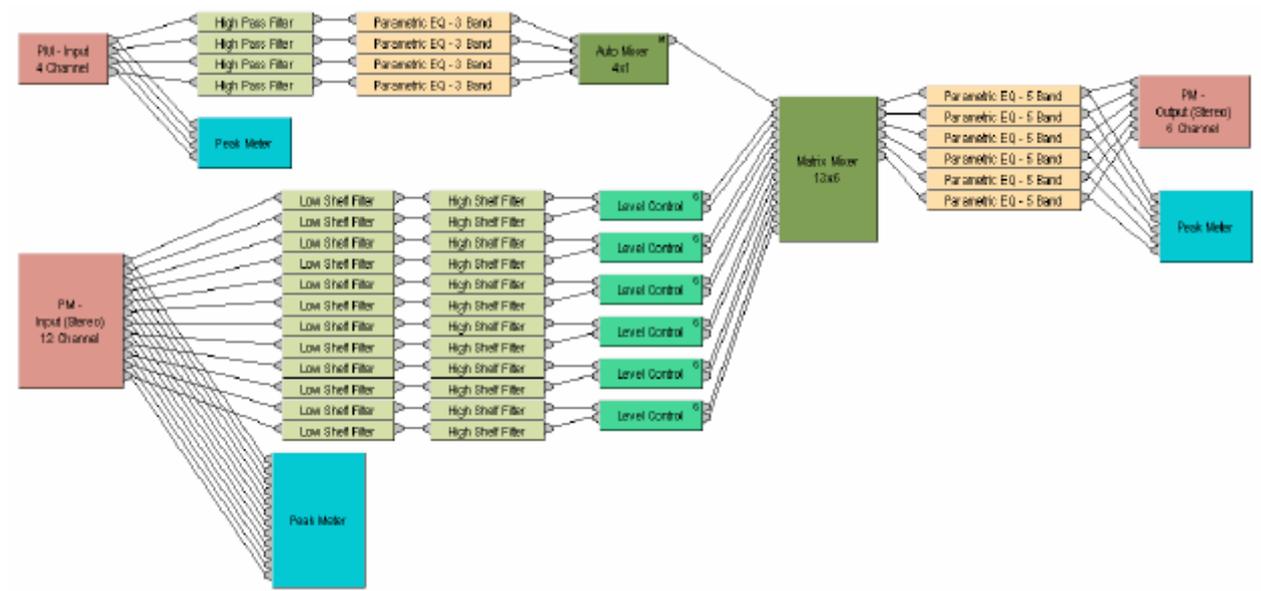
Right-clicking over certain settings will provide a menu of additional options.

Each NEXIA PM comes pre-configured from the factory with a [default system design](#). If you wish to load your own custom designed configuration you will need to [reset/initialize](#) the unit(s) first.

# PM Default Configuration

## Presentation Mixer

Each Nexia device comes pre-configured from the factory with a default system design. The factory default configuration for a NEXIA PM is a 'presentation mixer' with 4 automixer mic inputs and 6 stereo program line inputs feeding a matrix to 6 mono / 3 stereo outputs (see design layout below). This "[PM Default Configuration.NEX](#)" file can be found under Sample Files on the NEXIA software CD. If you wish to load your own custom designed configuration you will need to [reset/initialize](#) the unit(s) first.



# SP

## SP Hardware



**Inputs:** These four plug-in barrier strip connectors provide balanced input for line level signals. For unbalanced input, wire high to (+) and ground to both (▼) & (-). Settings for these inputs are accessed by double-clicking the [SP Input 4 Channel](#) block in the Layout.

**Outputs:** These eight plug-in barrier strip connectors provide balanced output of line level signals. For unbalanced output, wire high to (+) and ground to (▼), leaving (-) un-connected. Settings for these outputs are accessed by double-clicking the [SP Output 8 Channel](#) block in the Layout.

**NexLink™:** These two RJ45 jacks provide the NexLink Tx (transmit) and Rx (receive) connections. Up to four NEXIA devices may be linked together to share digital audio signals. Tx on one NEXIA device is connected to RX on the next device. NexLink utilizes standard CAT5 cabling, with a maximum recommended length of 5 meters per cable. When multiple NEXIA devices are placed in the Layout, [NexLink](#) blocks allow routing of digital audio between linked devices.

**Ethernet:** All NEXIA devices use Ethernet, both for system programming and control. Programming is accomplished using the NEXIA software provided with each unit. NEXIA software is for PC computers, with Windows® 2000/XP operating system required. The PC computer must have a network card installed, which supports 10/100BaseT Ethernet. A 10/100BaseT Ethernet switch (not hub) is required when networking multiple units (see [System Network Considerations](#)). Ethernet utilizes standard CAT5 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.

**Serial Control Port:** After initial programming and configuration, NEXIA systems may be controlled by [RS-232](#) or [Telnet](#) communications from third-party control systems such as AMX® or Crestron®, using the Serial Control Port. Also, external devices may be controlled via the Serial Control Port, by utilizing [Command String](#) blocks within the NEXIA system design.

**Remote Control Bus:** The Remote Control Bus provides connection for [Volume 8](#), [Select 8](#), [Volume/Select 8](#), and [Logic Box](#) external control devices (see [Remote Control Bus](#) for more information).

**Power Entrance:** The Power Entrance provides connection for the appropriate power cord (included with unit). An internal universal switching power supply accepts 100~240VAC @ 50/60Hz, with a maximum power consumption of 65 Watts.



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

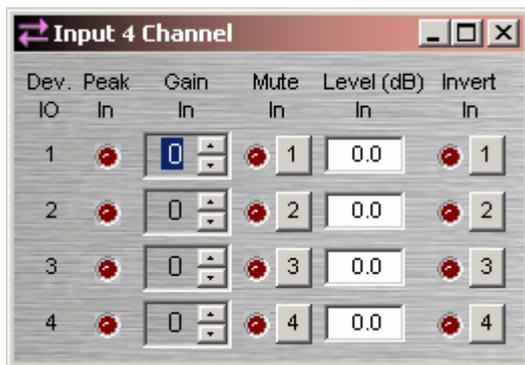
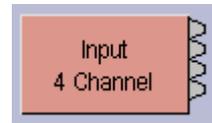
<b>All LEDs green</b>	Normal operating state. Configuration was successful (if applicable). Device is in a stable state awaiting commands.
<b>I/O LED red</b>	Internal audio hardware error.
<b>Com LED red</b>	Serial Port error. Ethernet error. CAN Bus error. No IP address defined (cleared by setting IP address).
<b>Status LED red</b>	Configuration error. Last configuration unsuccessful (cleared by 'reset/initializing' the device). Operating systems resource error. File system error. DSP error.
<b>All LEDs blinking</b>	Operating system is not executing. Device must be power cycled.
<b>Status LED blinking</b>	The firmware has attempted to perform an illegal operation. Device must be power cycled.

# Control Dialogs

## SP Input 4 Channel



NEXIA **SP** hardware is always represented in the Layout as two separate blocks, one for input connections and one for output connections. Between these blocks can be placed virtually any of the other available NEXIA mixing, routing, and processing blocks (component objects). Like other component objects, NEXIA SP blocks can be placed into the Layout either from the **Processing Library** or from the **Object Toolbar**. To access **Input 4 Channel** settings, double-click over the corresponding block in the Layout. This opens a Control Dialog Box which provides all available settings.



**Device IO** indicates which hardware input is associated with that software channel. **Gain In** compensates for different input levels, and should be set so **Peak In** flashes only occasionally (6dB headroom). **Mute In** turns the input signal on/off. **Level (dB) In** adjusts the relative input volume. **Invert In** reverses the polarity of the input signal.

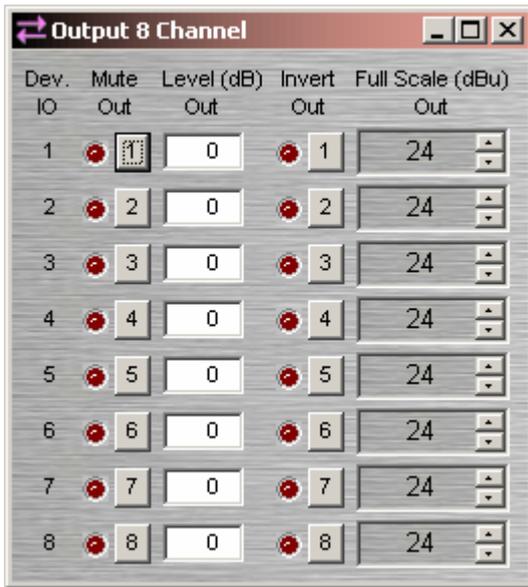
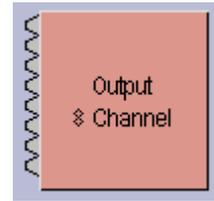
Right-clicking over certain settings will provide a menu of additional options.

Each NEXIA SP comes pre-configured from the factory with a **default system design**. If you wish to load your own custom designed configuration you will need to **reset/initialize** the unit(s) first.

## SP Output 8 Channel



NEXIA **SP** hardware is always represented in the Layout as two separate blocks, one for input connections and one for output connections. Between these blocks can be placed virtually any of the other available NEXIA mixing, routing, and processing blocks (component objects). Like other component objects, NEXIA SP blocks can be placed into the Layout either from the **Processing Library** or from the **Object Toolbar**. To access **Output 8 Channel** settings, double-click over the corresponding block in the Layout. This opens a Control Dialog Box which provides all available settings.



**Device IO** indicates which hardware output is associated with that software channel. **Mute Out** turns the output signal on/off. **Level (dB) Out** adjusts the relative output volume. **Invert Out** reverses the polarity of the output signal. **Full Scale (dBu) Out** selects the appropriate maximum output reference level.

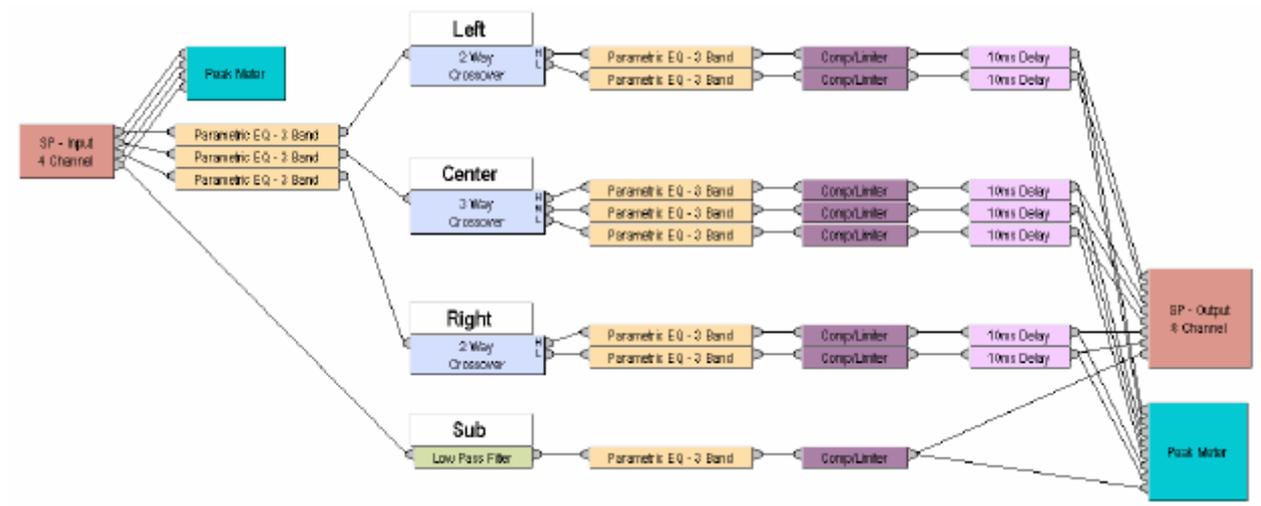
Right-clicking over certain settings will provide a menu of additional options.

Each NEXIA SP comes pre-configured from the factory with a **default system design**. If you wish to load your own custom designed configuration you will need to **reset/initialize** the unit(s) first.

# SP Default Configuration

## Speaker Processor

Each Nexia device comes pre-configured from the factory with a default system design. The factory default configuration for a NEXIA SP is a 'speaker processor' with 4 line inputs feeding outputs with processing for 4 multi-component speaker systems (see design layout below). This "[SP Default Configuration.NEX](#)" file can be found under Sample Files on the NEXIA software CD. If you wish to load your own custom designed configuration you will need to **reset/initialize** the unit(s) first.



# Nx

## NexLink™



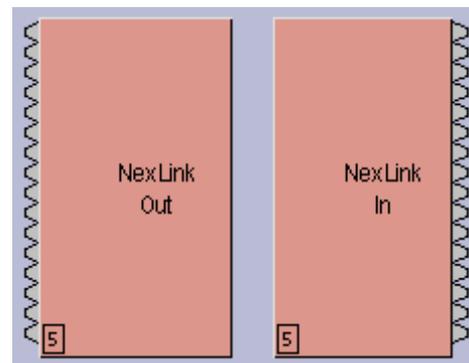
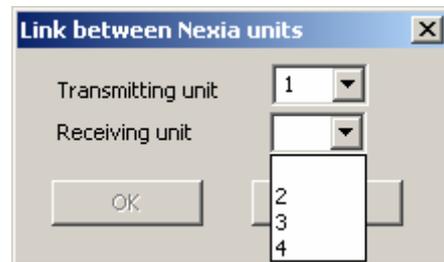
Up to four NEXIA devices may be linked together to share digital audio signals. Tx on one NEXIA device is connected to RX on the next device. NexLink utilizes standard CAT5 cabling, with a maximum recommended length of 5 meters per cable.

When multiple NEXIA devices are placed in the Layout, NexLink blocks become available for routing digital audio between linked devices. As NexLink blocks are placed into the Layout, a dialog box appears for establishing links between specific devices.

A device can transmit up to sixteen channels of digital audio to any other single device in the system. A device can also receive up to sixteen channels of digital audio from any other single device in the system.

NexLink is always represented in the Layout as two separate blocks, one for output connections (from transmitting device) and one for input connections (to receiving device).

Signals received by one device may be mixed and processed as desired, then passed on to another device, using a separate set of NexLink blocks. NexLink transmissions are unidirectional, however, signals will pass through other devices to reach the destination device. A complete circuit may be created between devices by connecting the final device back to the first (see diagram to left).



**NOTE:** Double-clicking a NexLink In block provides a Link Status indicator. This indicator will be green only when communicating with devices that have appropriate NexLink cabling in place.

# 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](#).

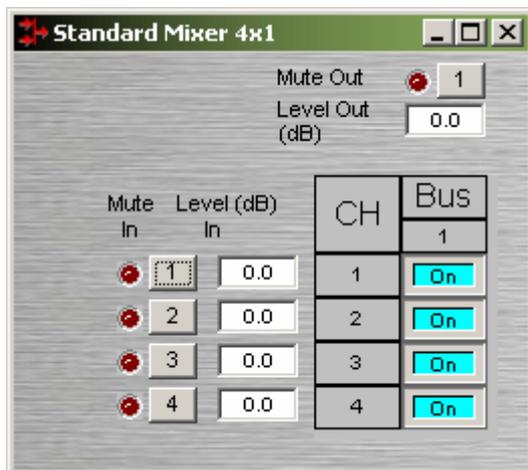
Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

- 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 Dialogs

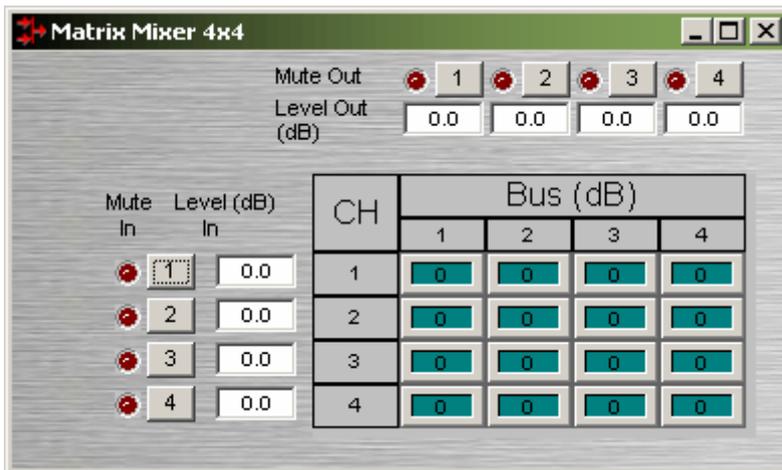
### Standard Mixers



**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. Unlike other components, Mixers allow labeling of inputs/outputs within their dialog boxes. See **Channel Identifier** under [Object Properties Sheet](#).

## Matrix Mixers

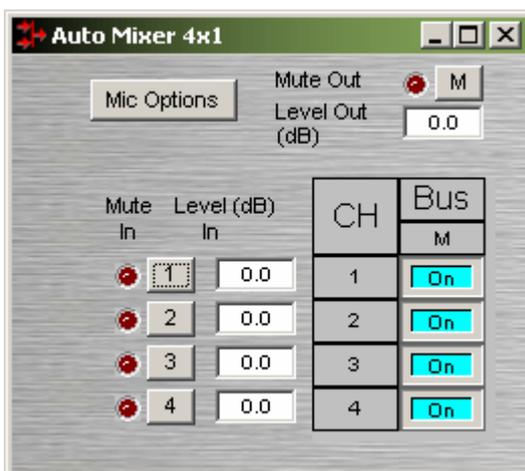


**Mute In** turns the input signal on/off. **Level In** adjusts the relative input volume. **Ch / Bus** assigns inputs to specific outputs, and right-clicking allows level adjustment. **Mute Out** turns the output signal on/off. **Level Out** adjusts the relative output volume.

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. Unlike other components, Mixers allow labeling of inputs/outputs within their dialog boxes. See **Channel Identifier** under **Object Properties Sheet**.

## Auto Mixers



**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.

Right-clicking over certain settings will provide a menu of additional options. Unlike other components, Mixers allow labeling of inputs/outputs within their dialog boxes. See **Channel Identifier** under **Object Properties Sheet**.

**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). **Set All** causes current Logic Output settings to be applied to all channels.

## Mix-Minus Combiners

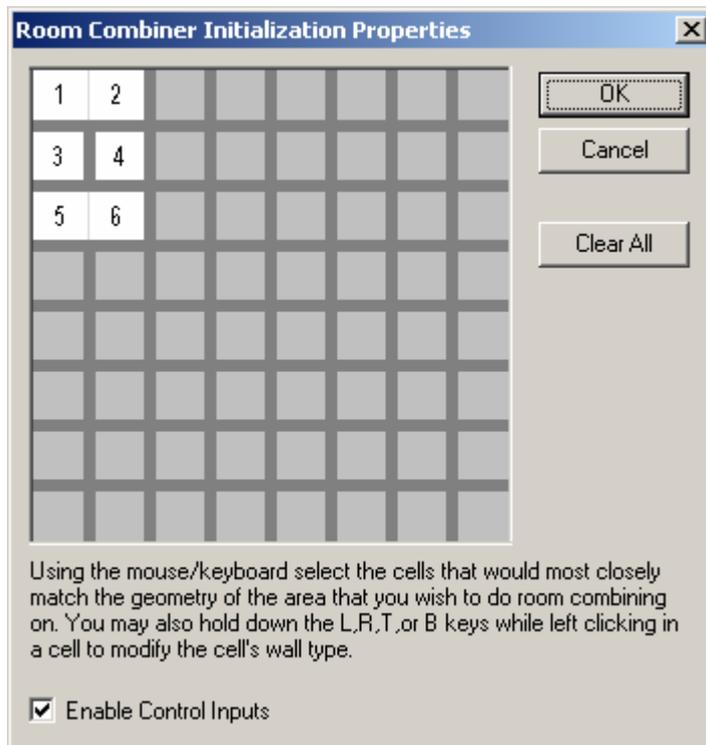


Mix-Minus Combiners are provided to enhance the capabilities of Auto Mixers in mix-minus and input expansion applications. Mix-Minus Combiners combine control data only and, therefore, have no audio outputs. Inputs to a Mix-Minus Combiner come from outputs of separate Auto Mixers. **Ch / Combine** allows 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 NEXIA units (for proper DSP allocation or for physical location of inputs).

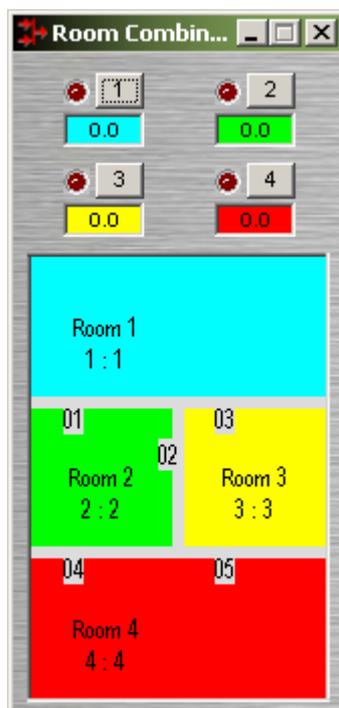
Right-clicking over certain settings will provide a menu of additional options.

## Room Combiners

Room Combiners are provided to enhance the capabilities of Auto Mixers in room combining and zone routing applications. Room Combiners automatically determine proper routing 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 equalization, as well as feedback suppression. Equalizers may be connected between any components within the Layout, for applications which require room equalization, tone adjustment, or feedback 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 Parametric Equalizer Control Dialog

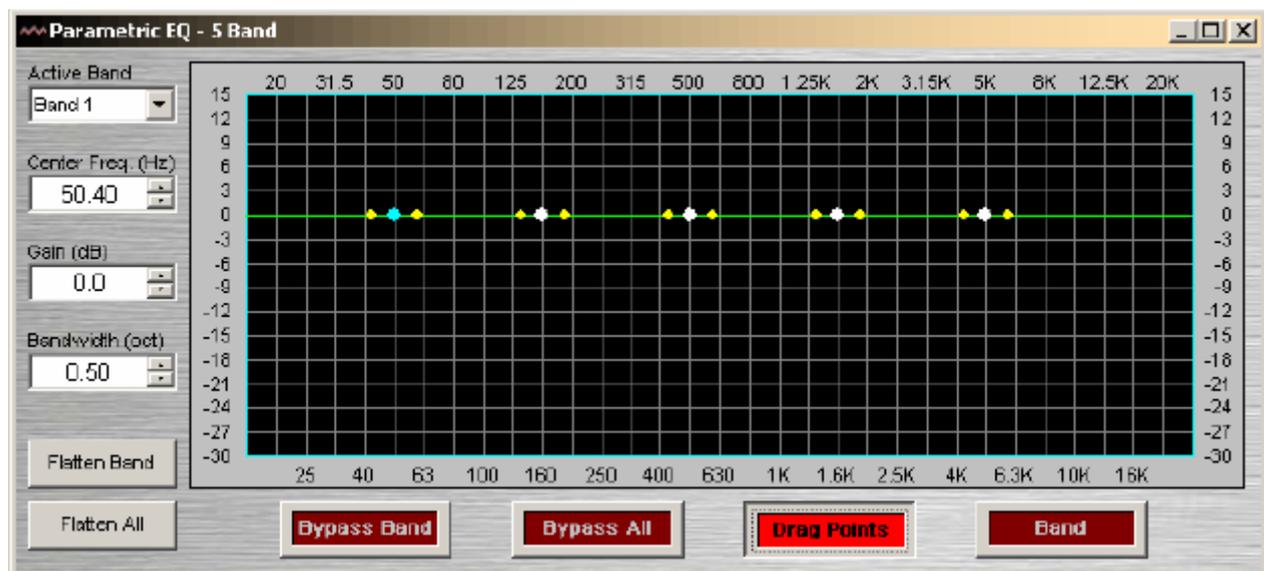
 see Graphic Equalizer Control Dialog

 see Feedback Suppressor Control Dialog

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

## Control Dialogs

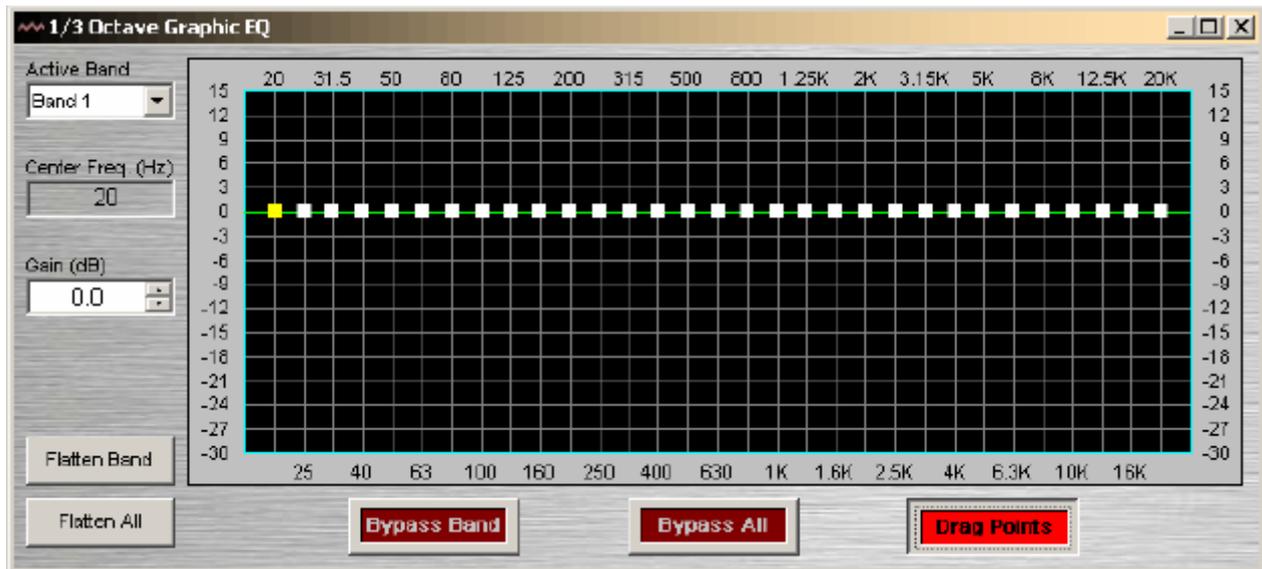
### Parametric Equalizer



**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.

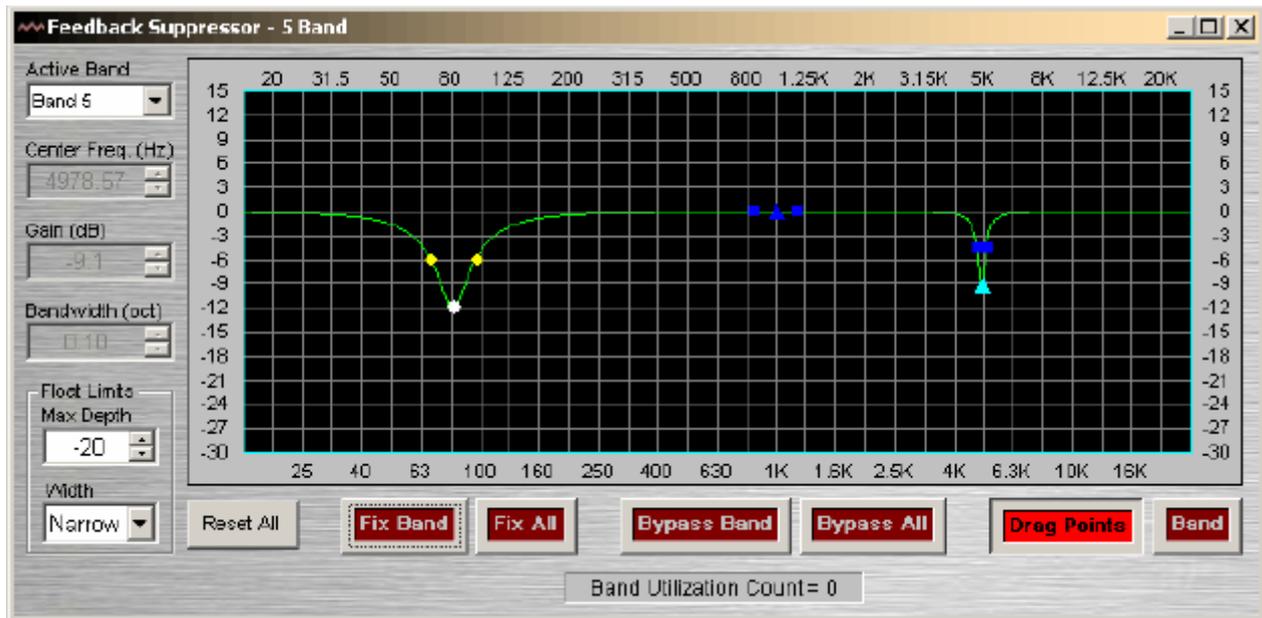
## Graphic Equalizer



**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.

## Feedback Suppressor



Feedback Suppressors behave like automatic cut-only **parametric equalizers**. They utilize 'floating' bands of equalization which detect and remove feedback frequencies.

**Active Band** selects the current band for which settings will be displayed. **Center Freq.** displays the center frequency for the current band. **Gain** displays the amount of cut applied at the center frequency for the current band. **Bandwidth** displays the range of frequencies, above & below the center frequency, which are also affected by the current band. **Float Limits** restricts all floating bands to a selected maximum depth (cut) and bandwidth (Narrow = 1/40-octave; Wide = 1/10-octave). **Reset All** temporarily returns the gain of all floating bands to 0dB (flat). **Fix Band & Fix All** allow the band(s) to become manually adjustable (non-floating). **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. **Band Utilization Count** indicates the quantity of floating bands currently being employed.

**NOTE:** Feedback Suppressors are fairly intensive in their use of DSP resources. They are limited to a maximum of sixteen bands, however, in most applications the number of actual bands used should be significantly less. Fixed bands in a Feedback Suppressor may be copied to a Parametric Equalizer. When applicable, this may be a more DSP efficient choice.

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, & All-Pass filters. Filters may be connected between any components within the Layout, for applications which require 'roll-offs', simple tone controls, or even phase compensation.

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

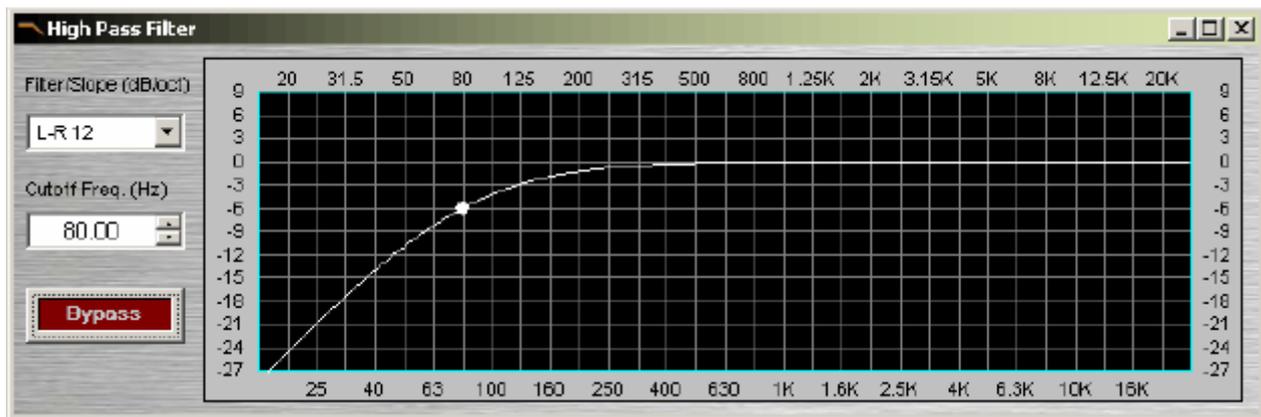
 see Low Shelf Filter Control Dialog

 see All-Pass Filter Control Dialog

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

## Control Dialogs

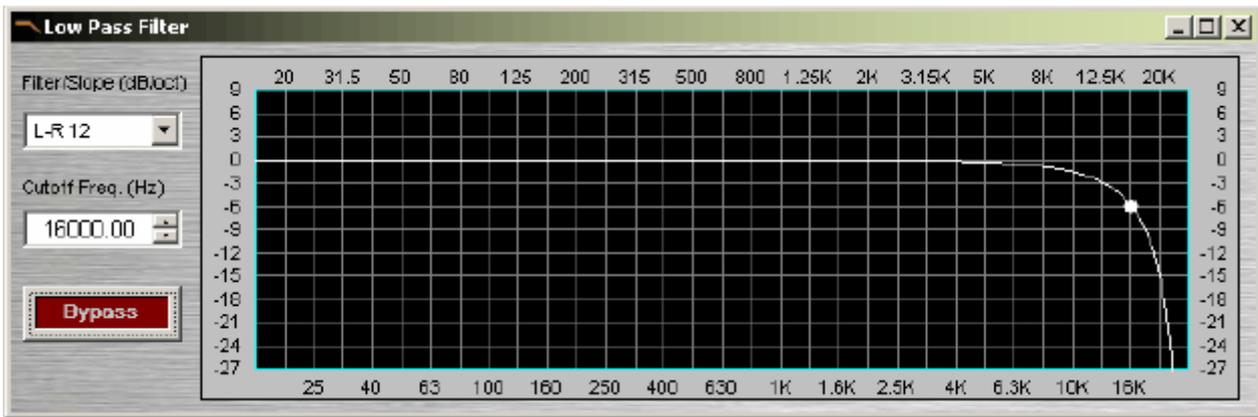
### High Pass Filter



**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** disables the filter without changing settings.

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

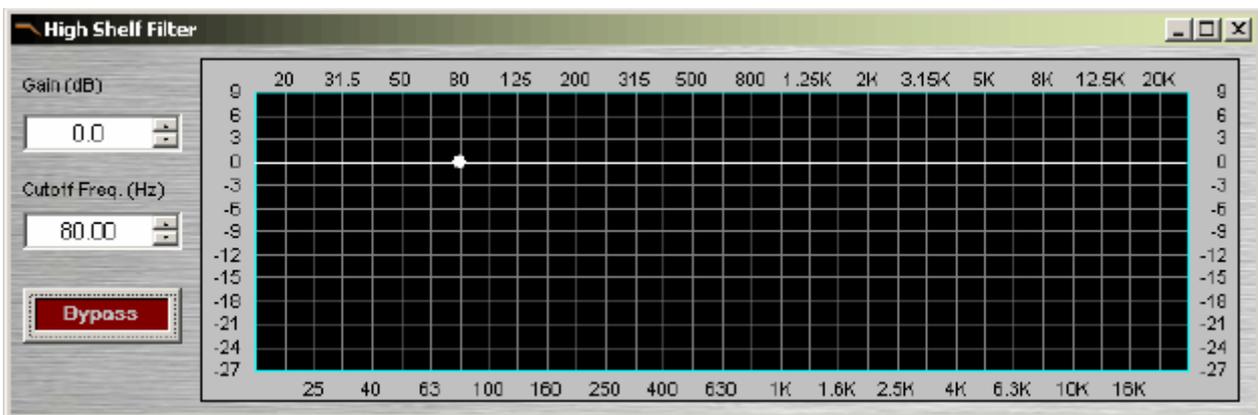
## Low Pass Filter



**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** disables the filter without changing settings.

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

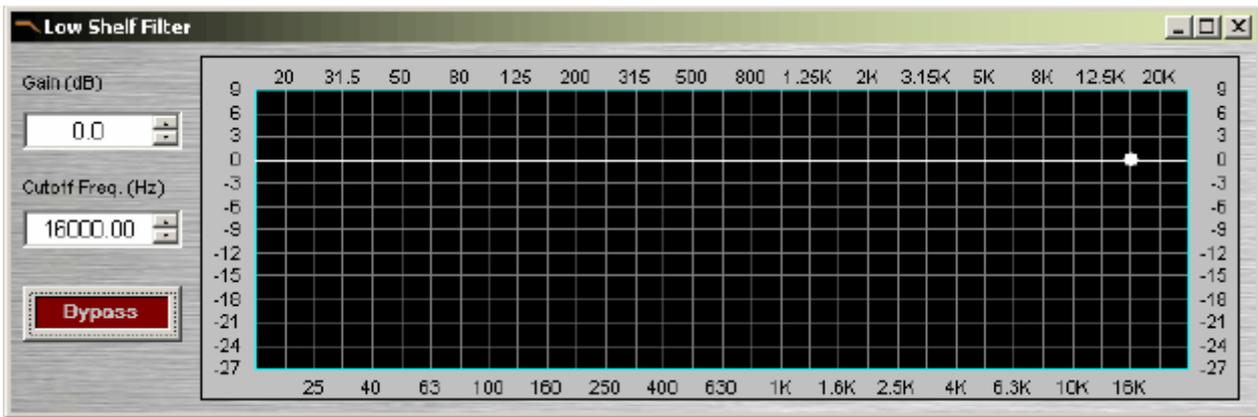
## High Shelf Filter



**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** disables the filter without changing settings.

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

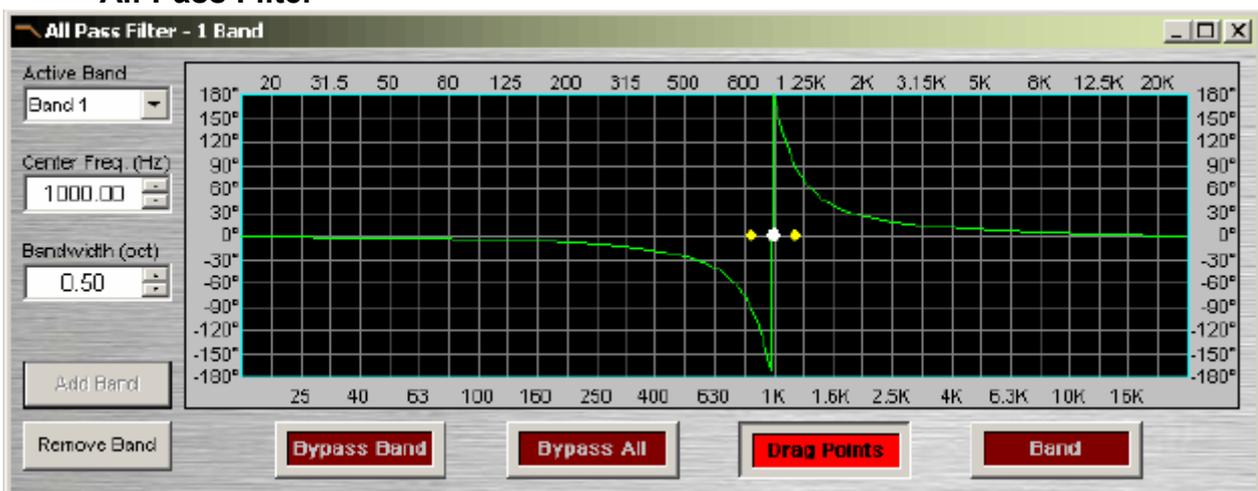
## Low Shelf Filter



**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** disables the filter without changing settings.

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

## All-Pass Filter



All-Pass Filters are so named because they do not affect frequency response. Instead, they affect signal phase only and, therefore, can be used to compensate for the phase anomalies caused by normal equalization filters. All-Pass Filters are available with up to sixteen bands.

**Active Band** selects the current band to be adjusted. **Center Freq.** adjusts 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 Center Freq. Dragging either yellow dot affects Bandwidth. **Add Band & Remove Band** work within the designated number of bands for the filter. **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 phase response of the current band inside the graph.

See [Transfer Function](#) as an effective diagnostic tool to be used in conjunction with All-Pass Filters.

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

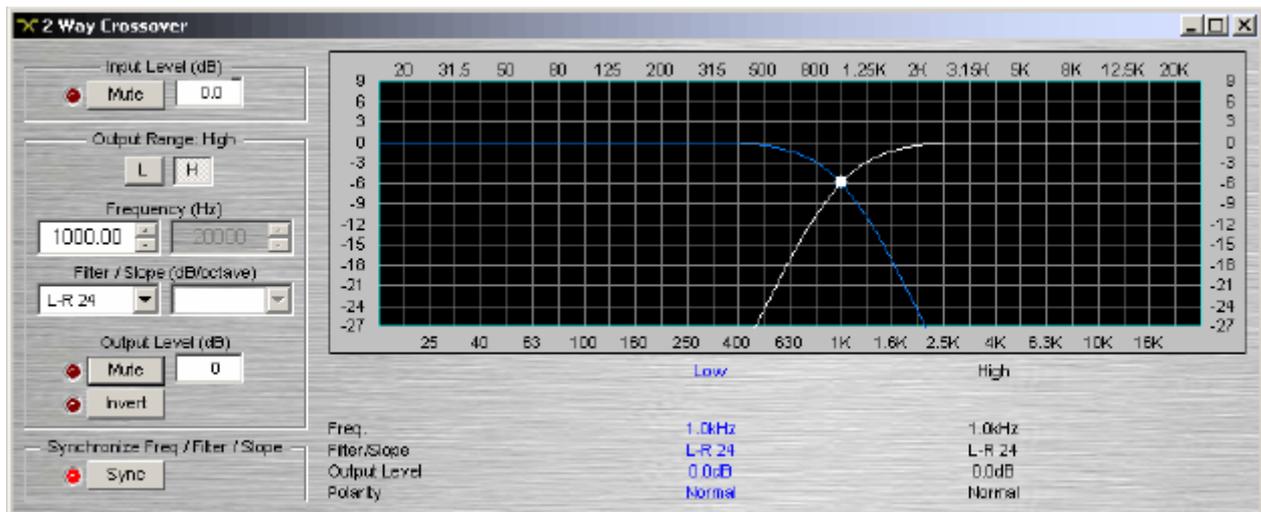
see 3-Way Crossover Control Dialog

see 4-Way Crossover Control Dialog

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

## Control Dialogs

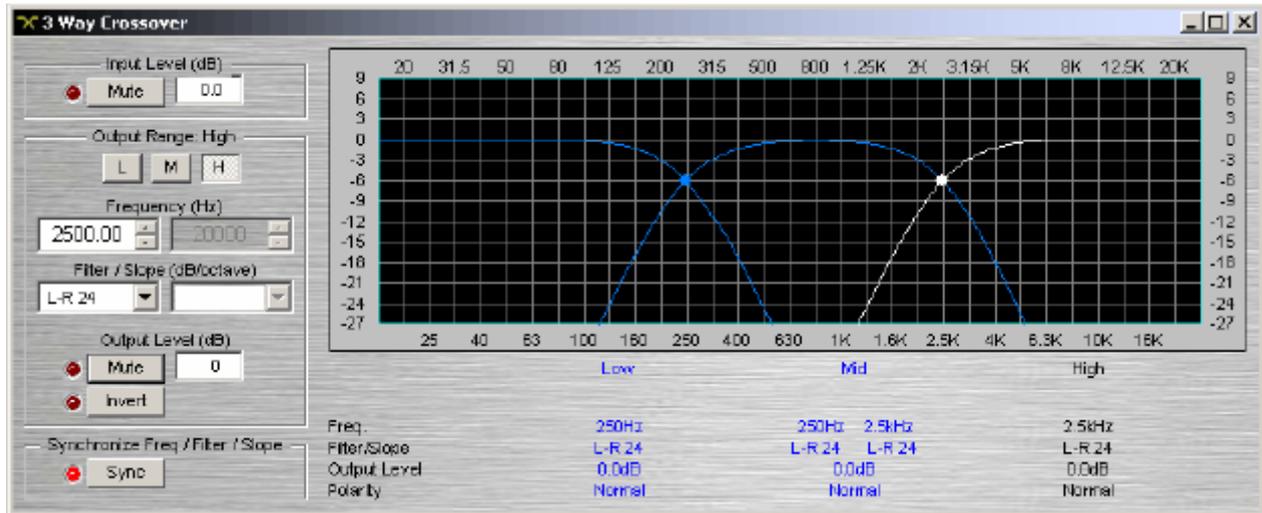
### 2-Way Crossover



**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 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.

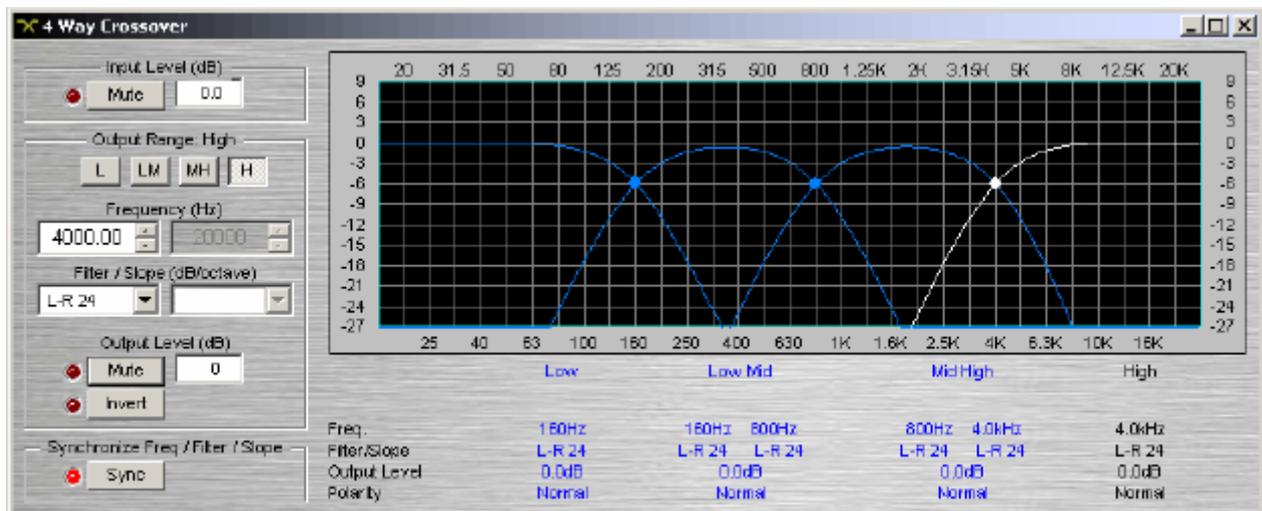
### 3-Way Crossover



**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 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



**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 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, & Ambient Noise Compensator 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

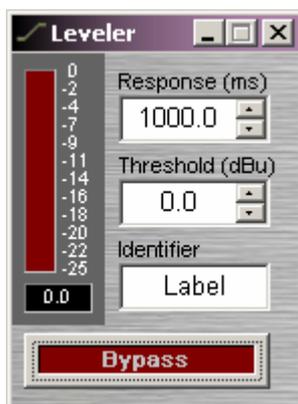
 see Noise Gate Control Dialog

 see Ambient Noise Compensator 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 Dialogs

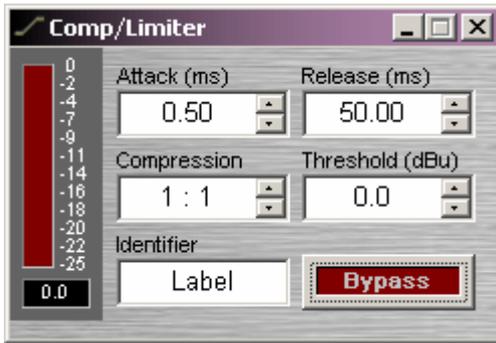
### Leveler



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](#)).

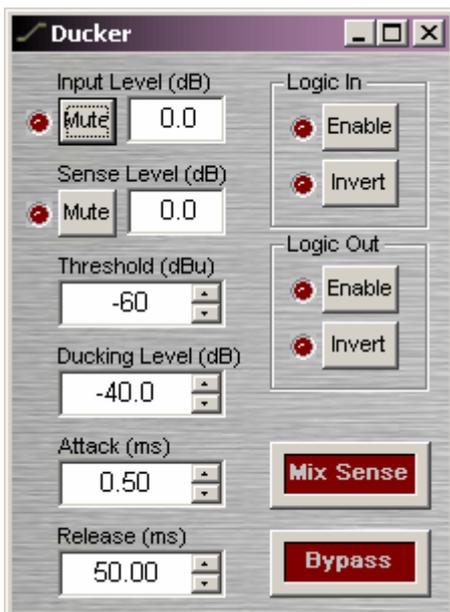
## Comp/Limiter



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](#)).

## Ducker

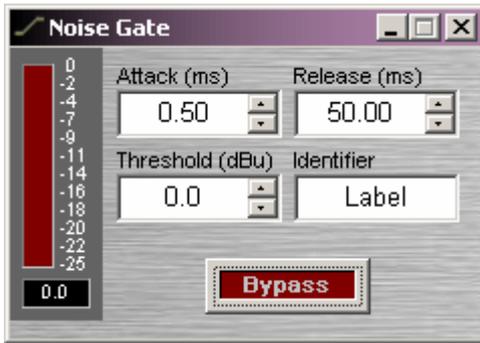


Duckers provide level attenuation, triggered by signal or logic inputs. **Input Level** provides muting and level adjustment for the normal audio input, which appears as the upper input on the left side of the Ducker. **Sense Level** provides muting and level adjustment for the signal trigger input, 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, which appears at the top of the Ducker. **Logic Out** provides the same functions as Logic In, but instead as a trigger output (follows ducking activity), which appears at the bottom of the Ducker. **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.

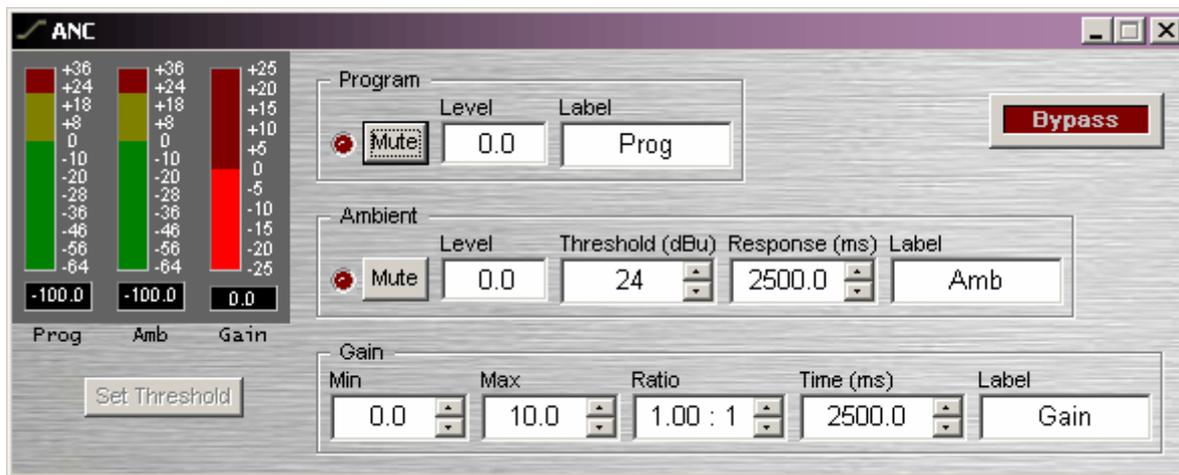
## Noise Gate



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](#)).

## Ambient Noise Compensator



Ambient Noise Compensators automatically adjust program volume in response to changes in background noise levels, as monitored by external ambient sensing microphone(s). **Program Mute** turns the program input signal on/off. **Program Level** adjusts the relative program input volume. **Program Label** provides a custom label, when the dialog box is minimized (see below). **Prog Meter** displays the current program input level. **Ambient Mute** turns the ambient input signal on/off. **Ambient Level** adjusts the relative ambient input volume. **Ambient Threshold** determines the ambient noise level at which program gain increases will begin. **Ambient Response** sets the period of time to be considered when calculating an average of ambient level changes. **Ambient Label** provides a custom label, when the dialog box is minimized (see below). **Amb Meter** displays the current ambient input level. The **Set Threshold** button can be used to estimate an appropriate Ambient Threshold setting. **Gain Min** sets the minimum output gain (for periods of low ambient noise). **Gain Max** sets the maximum output gain (for periods of high ambient noise). **Gain Ratio** determines how much the program volume will increase, relative to a given increase in ambient noise. **Gain Time** establishes how quickly program gain changes are applied. Gain Time indicates the amount of time required for a gain change between Min and Max settings. Lesser gain changes will occur more rapidly. **Gain Meter** displays the current gain compensation being applied. **Bypass** disables the Ambient Noise Compensator without changing settings.

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

 see Ambient Noise Compensator setup procedure.

## ANC Setup Procedure

### Connections

- Feed the "program" signal into the Program Input (top left) of the ANC block. Setup of the ANC block is best done with a relatively constant program source. This can be the actual program source or a pink noise approximation, but its level should represent the highest program material level you expect will be fed to the ANC block.
- Feed the "ambient" signal into the Ambient Input (bottom left, marked with an "A") of the ANC block. This signal should be derived from either a single dedicated sensing microphone, or from a dedicated array of sensing microphones feeding a common Mixer block. Setup of the ANC block is best done when the ambient noise in the room(s) is minimal, but the Ambient Meter should read *at least* -60dBu.
- Connect the output of the ANC block to its destination. Keep in mind that the ANC should be the last block in the program signal path, with no form of level control provided at the outputs, amplifiers, or speakers.

### Setting Min and Max Gain

- Adjust the Min Gain and Max Gain settings for the desired amounts of minimum and maximum gain to be applied to the program signal. Remember that Min Gain is the constant gain that the ANC block will apply while the Ambient Input signal level is below the Ambient Threshold. Remember that Max Gain is the maximum amount of gain that the ANC block will ever apply to the program input.

If Min Gain and Max Gain are not known, these settings may be determined by listening to the ANC output, as follows:

- Set the Ambient Threshold to its maximum setting (+24dBu) to ensure the Ambient Input level is below threshold. This ramps the ANC to the Min Gain setting. Keep in mind that the speed of this ramping is determined by the Gain Time setting.
- Adjust Min Gain until you have the desired minimum program level coming out of the ANC block. Note this value for later.
- Adjust Min Gain until you have the desired maximum program level coming out of the ANC block. Set Max Gain to this value. Set Min Gain to the value determined in the previous step.

### Setting Response Times

- Adjust the Gain Time to determine how quickly the ANC gain changes. Gain Time is the amount of time it takes for the ANC block to ramp from Gain Min to Gain Max, or vice versa.
- Adjust the Ambient Response time to determine how quickly the Ambient Input detector responds to changes in the Ambient Input signal. Ambient Response should be set fast enough to track important ambient level changes (e.g. an approaching train in a depot), but slow enough to ignore unimportant ambient level changes (e.g. someone popping their bubble gum).

**Note:** The overall responsiveness of the ANC output is determined by the larger (slower) of the two aforementioned times: Gain Time and Ambient Response time.

### Setting Thresholds

- Press the "Set Threshold" button, ensuring that the Program Input level is a good approximation of the highest program signal level you expect will be fed to the ANC. This process records the levels of both the Ambient and Program inputs. The Ambient Threshold is set to 10dBu higher than the recorded Ambient level. This process takes up to 5 seconds.

### Set Gain Ratio

- Adjust Gain Ratio to specify how many dB of gain is applied for every dBu over Ambient Threshold the Ambient level is.

# 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](#).

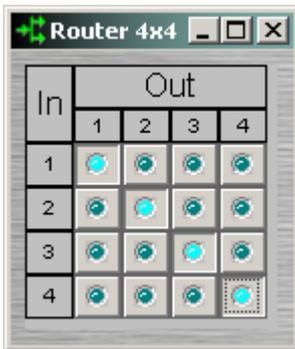
Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

 see Router Control Dialog

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

## Control Dialogs

### Router



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.

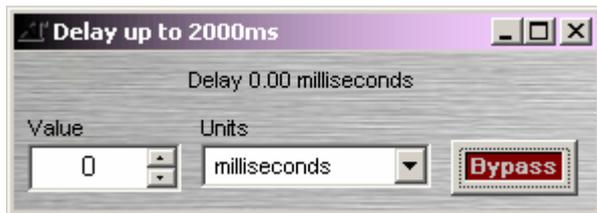
Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

see Delay Control Dialog

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

## Control Dialogs

### Delay



**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, Mute Buttons, and Invert may be connected between components within the Layout, for control of volume, muting, and polarity. Preset and Remote Preset Buttons may be placed within the Layout, and defined to recall specified [Presets](#). Logic Gates and Logic Delay may be connected between component control nodes in the layout, to customize control behavior. Command Strings can provide serial control of external devices, when triggered by control nodes on other components in the layout. 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](#).

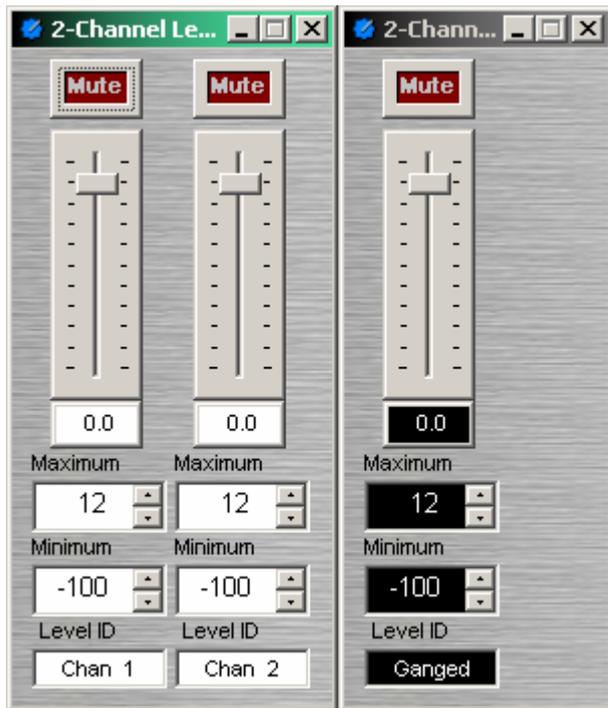
Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

-  see Level Control Dialog
-  see Level Inc/Dec Control Dialog
-  see Invert Control Dialog
-  see Mute Button Control Dialog
-  see Preset Button Control Dialog
-  see Remote Preset Button Control Dialog
-  see Logic Gates
-  see Logic Delay Control Dialog
-  see Command String Control Dialog
-  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 Dialogs

### Level

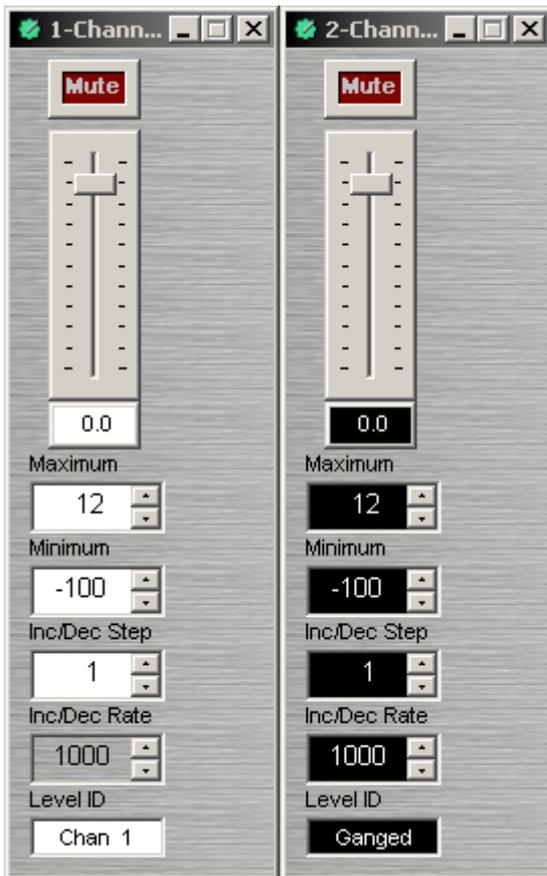


**Mute** turns on/off the channel. Channel level may be entered numerically, or may be adjusted by dragging the **fader**. **Maximum** and **Minimum** can be used to restrict the range of level adjustment provided by the fader. **Level ID** provides a custom label, when the dialog box is minimized (see 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 16 channels, whereas ganged Level Controls have a maximum of 32 channels.

## Level Inc/Dec

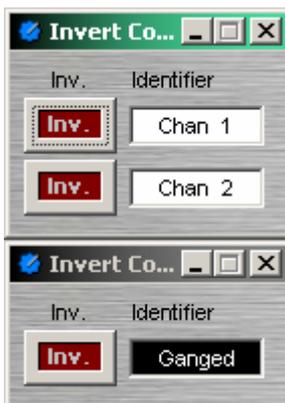


Level Inc/Dec blocks are identical to [Level](#) blocks, except they also provide control input nodes for making incremental level changes. **Inc/Dec Step** determines the amount of level change to occur each time the associated control node is triggered. Control input nodes along the top of the block are labeled as positive (+) and negative (-). When triggered by control output nodes on other components within the layout design, positive nodes produce a single-step increase in level ("Increment") and negative nodes produce a single-step decrease in level ("Decrement").

When placed from the [Object Toolbar](#), multiple Level Inc/Dec Controls may be 'ganged' together onto a single fader. Also, ramping may be enabled at this time. When ramping is enabled, **Inc/Dec Rate** sets timing (mS) between repetitive incremental changes (Inc/Dec Steps) which occur automatically as long as the associated control node (+ or -) remains triggered.



## Invert

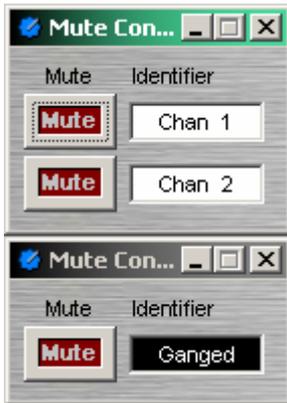


**Invert** reverses the polarity of the audio signal (180°). **Identifier** provides a custom label, when the dialog box is minimized (see below).

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

When placed from the [Object Toolbar](#), multiple Invert channels may be 'ganged' together onto a single control. Ganged Invert controls display a 'G' in the upper-right of the Component Object, and Identifier colors are reversed on the Control Dialog. Non-ganged Invert controls have a maximum of 16 channels, whereas ganged Invert Controls have a maximum of 32 channels.

## Mute Button

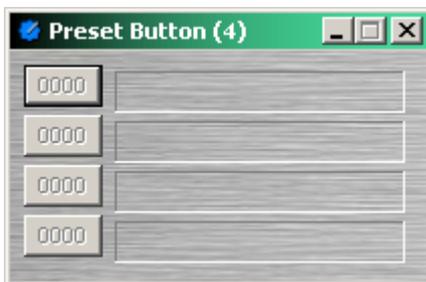


**Mute** turns on/off the channel. **Identifier** provides a custom label, when the dialog box is minimized (see below).

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](#)).

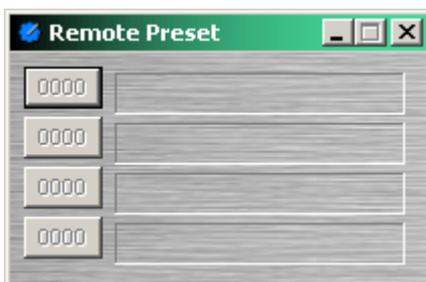
When placed from the [Object Toolbar](#), multiple Mute Buttons may be 'ganged' together onto a single button. Ganged Mute Buttons display a 'G' in the upper-right of the Component Object, and Identifier colors are reversed on the Control Dialog. Non-ganged Mute Buttons have a maximum of 16 channels, whereas ganged Mute Buttons have a maximum of 32 channels. Also, Mute Button blocks may be placed with control input nodes selected.

## Preset Button



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. Preset Numbers can be replaced with the word 'Recall' (see [General Options](#)). Control Dialog Boxes for Preset Button components can be minimized to create user control surfaces (see [Customizing Component Objects](#)).

## Remote Preset Button



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. Unlike most other blocks, multiple control output nodes may be connected to a single control input node on a Remote Preset Button. 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).

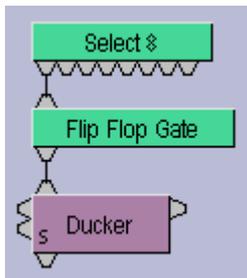
XOR: any inputs (except all) ON causes output to go ON (all inputs OFF/ON causes output to go OFF).

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

Logic State: provides manual latching operation only (includes no input node).

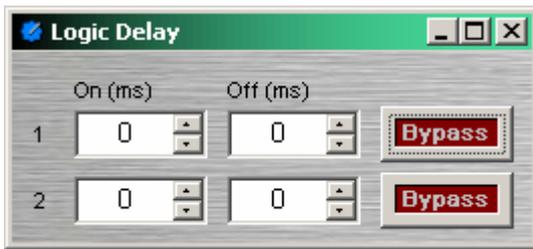
**NOTES:** NOT and Flip Flop gates have only a single input per output, whereas most other gates have multiple inputs, up to 8. Flip Flop gates provide a control dialog box, for establishing their initial output state. Also, unlike most other blocks, multiple control output nodes may be connected to a single control input node on a Flip Flop gate. Control Dialog boxes for Logic State gates can be minimized to create user control surfaces (see [Customizing Component Objects](#)).

### 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).

## Logic Delay

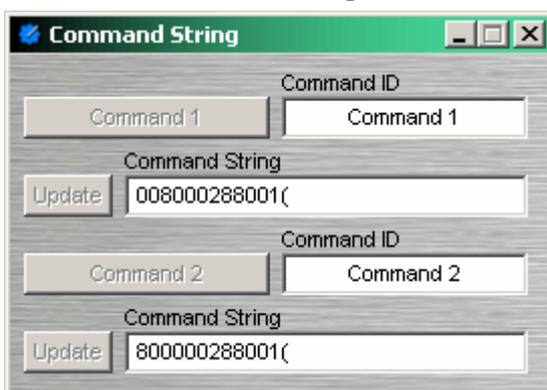


Logic Delays are connected between the output and input control nodes of other components in the layout. These other components may represent internal or external control functions. When a change (on/off) occurs at the Logic Delay input, and remains in that condition beyond the designated delay time, the Logic Delay output will then produce that same change..

**On** sets turn on delay. **Off** sets turn off delay. The range for either selection is 0~60,000mS (1 minute). **Bypass** disables the delay without changing settings.

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

## Command String



Command String blocks allow RS-232 control of external devices via NEXIA's Serial port. Control input nodes along the top of the block produce corresponding serial commands, when triggered by control output nodes on other components within the design. Commands can also be initiated using the command button which appears within the control dialog box. **Command ID** allows the command/button to be named. **Command String** allows the appropriate character string to be entered. **Update** sends the character string to be stored in NEXIA device memory.



Unlike most other blocks, multiple control output nodes may be connected to a single control input node on a Command String block. Control Dialog Boxes for Command String components can be minimized to create user control surfaces (see [Customizing Component Objects](#)).

**NOTE:** Some command strings may need to output nonprintable characters. The strings themselves must be printable, so this is done by including three-character sequences in the command string. The first will be a tilde, the second and third hex digits. To include a carriage return and line feed pair, for example, in the string, include the text ~0d~0a (either case may be used). A tilde may only be included by using the sequence ~7E (or ~7e) for the tilde character itself.

## Volume 8

The screenshot shows a software interface titled "Volume 8" with a green header bar. It contains two rows of four control dialog boxes each. Each dialog box has the following fields:

- Object Code:** A dropdown menu. The first row shows "I/O1", "Mixer1", "I/O2", and an empty field. The second row shows empty fields.
- Instance ID:** A dropdown menu. The first row shows "2", "1", "3", and an empty field. The second row shows empty fields.
- Control ID:** A dropdown menu with up/down arrows. The first row shows "Level 1", "Level In 1", "Level 1", and an empty field. The second row shows empty fields.
- Identifier:** A text input field. The first row shows "Chan. 1", "Chan. 2", "Chan. 3", and "Chan. 4". The second row shows "Chan. 5", "Chan. 6", "Chan. 7", and "Chan. 8".



The Volume 8 is an external control device, which allows adjustment of eight selectable NEXIA volumes. Volumes can be individual or grouped levels within NEXIA. This includes [Level Control](#) blocks, as well as level adjustments found in the Control Dialog boxes of other component blocks.

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 NEXIA actions. Actions can be individual or grouped functions within NEXIA. This includes recalling presets, ducking, combining, etc.

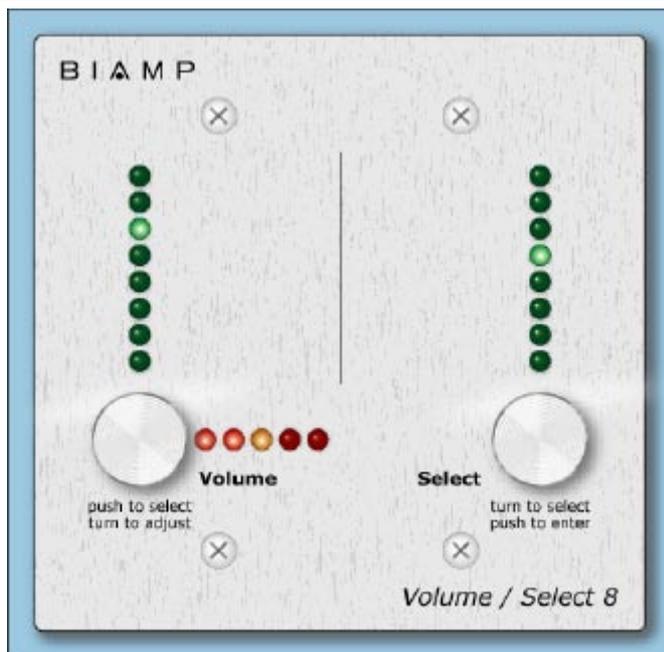
Select 8 components have no Control Dialog Boxes. They are represented in the layout as a block with eight control output nodes. These control output nodes are connected to control input nodes on the other component blocks to be controlled. These other components may include [Remote Preset Buttons](#), [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 NEXIA.

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



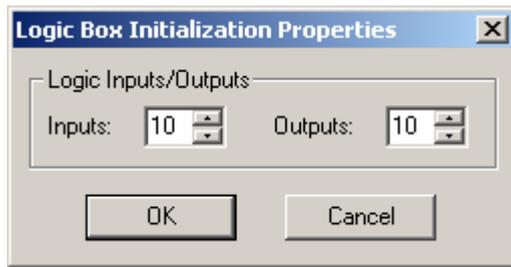
The Volume 8 is an external control device, which combines the functions of both [Volume 8](#) and [Select 8](#) controls. Therefore, the Volume/Select 8 is represented with a control dialog box (for volume functions), as well as a component block with control output nodes (for select functions).

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

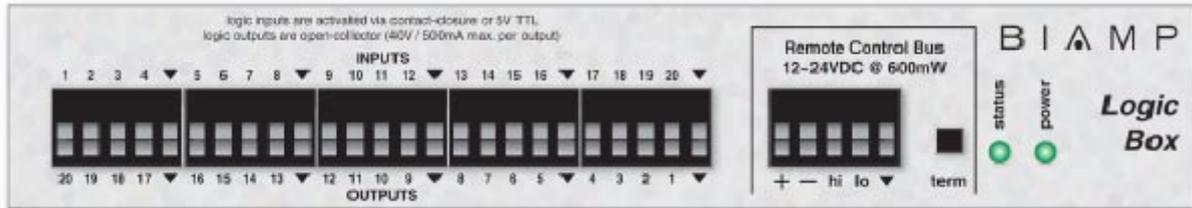
Volume/Select 8 controls include a raceway (surface-mount) back-box, but will fit most US standard double-gang (flush-mount) back-boxes.

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](#)).

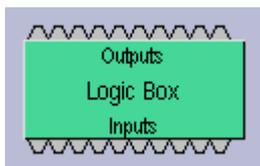
## Logic Box



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 NEXIA actions. Actions can be individual or grouped functions within NEXIA. This includes recalling presets, ducking, combining, etc. Logic outputs can be used to control additional equipment, external to NEXIA.



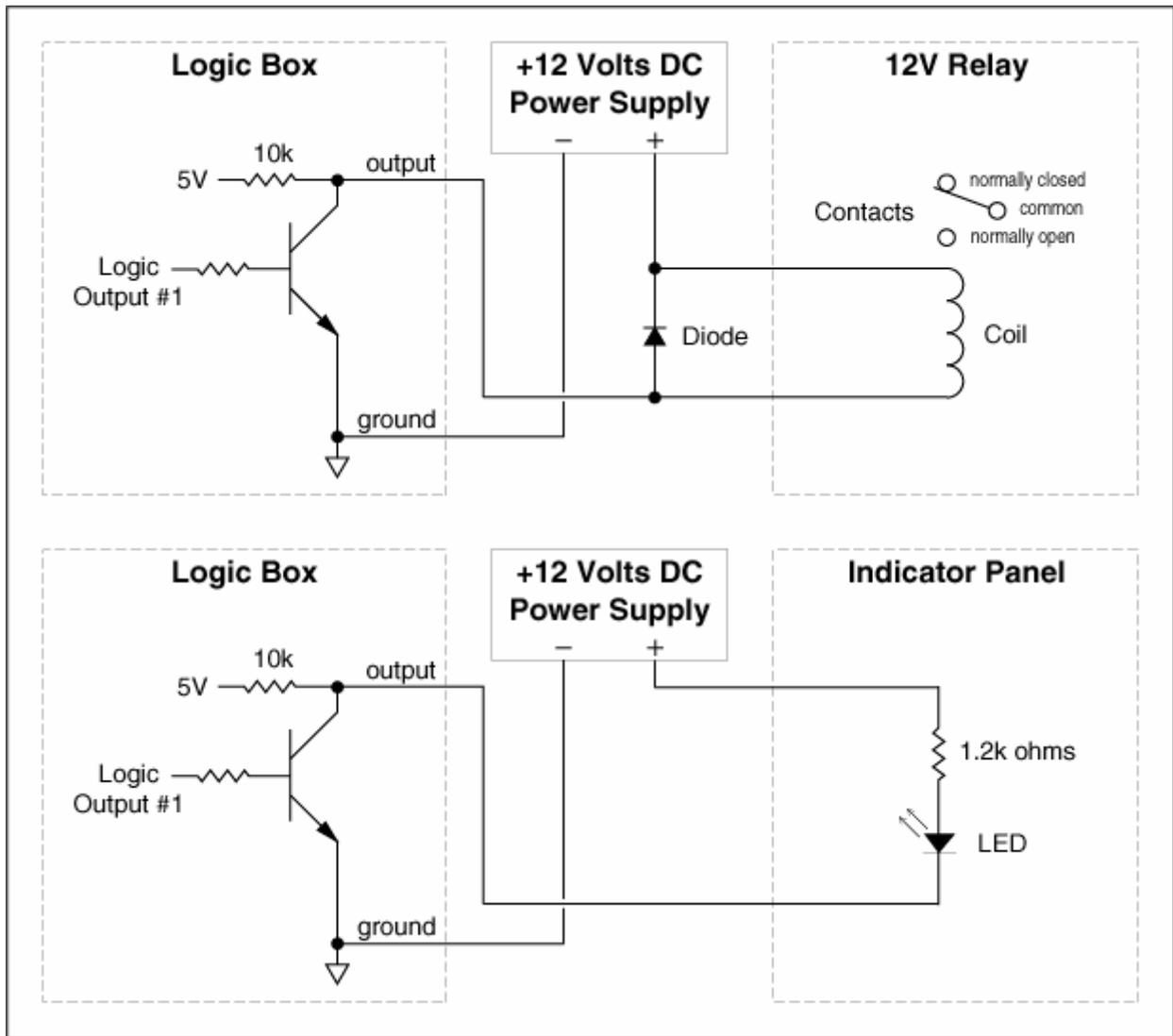
Logic Box components have no Control Dialog Boxes. They are represented in the layout as a block with a total of twenty control input/output nodes. Logic Inputs (on the box) are represented as control output nodes (on the block). These control output nodes may be connected to control input nodes on other components, such as [Remote Preset Buttons](#), [Room Combiners](#), [Duckers](#), [Mute Buttons](#), and [Level Inc/Dec controls](#). 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](#)).

Up to 20 logic inputs are available on the Logic Box. Logic inputs allow remote control of NEXIA via external circuits such as switches, relays, and logic outputs from other devices. When nothing is connected to a logic input, an internal pull-up resistor keeps it at a 'high' state (+5.0 VDC). The logic input is activated when its input goes 'low' (less than +0.8 VDC), and is de-activated when its input goes 'high' (greater than +2.0 VDC). A logic input can be controlled in one of three ways: 1) Using an 'open-collector' or 'open-drain' logic output from an external device to short the logic input to ground. 2) Using a switch, relay, or other contact-closure to short the logic input to ground. 3) Using an active 5V TTL output driver circuit (such as from a third-party controller) to actively drive the logic input to a 'high' or 'low' state. Multiple contact-closures or 'open-collector'/'open-drain' logic outputs may be wired in parallel to a single logic input (see diagram below). Open-collector or open-drain logic outputs and contact-closures should be rated for at least 5 Volts / 1mA operation. Active output driver circuits should not exceed a signal range of 0~5 Volts DC, and should have a minimum pulse width of 10 milli-seconds. The logic input impedance is approximately 10 Kohms.

The Logic Box provides up to 20 logic outputs. Logic outputs can be used to control relays and indicators or to drive logic inputs of other devices. The Logic Box logic outputs are 'open collector' with an internal pull-up. Each logic output is an NPN transistor with the collector being the output and the emitter being ground (see diagram below). When a logic output is turned on, the transistor provides a path for DC current to flow, lowering the output voltage to below 0.8V. When a logic output is turned off, the internal pull-up resistor raises the output voltage to near 5V, depending on the output current. To activate external relays or indicators, an external power supply must be used (see diagram below). The logic output transistors are rated up to a maximum of 40 VDC and 500 mA per output (24 volt relay coils maximum). However, +12 Volts DC is sufficient power for most applications. When using the logic outputs to control relays, protection diodes must be used to suppress high voltage transients that are generated when the relays turn off (see diagram below).



## 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 is available on the NEXIA software CD and on the Biamp web site ([www.biamp.com](http://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.

**NOTE:** Originally, labels were 1.35" wide and used the Word document (*V8S8 Labels.doc*). However, newer control panels require labels which are only 1.25" wide and use Word document (*V8S8 B Labels.doc*). Check label width and use the appropriate file for printing.

In the Word document, 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 Dialogs

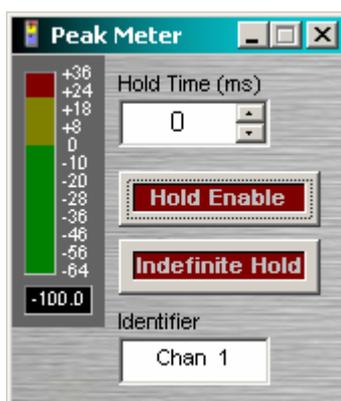
### Signal Present Meter



**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](#)).

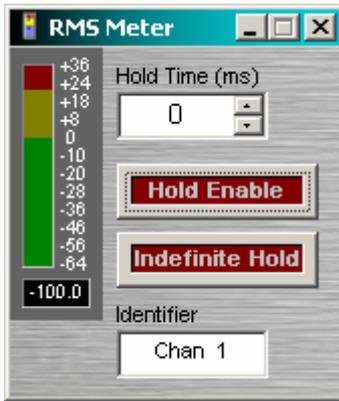
### Peak Meter



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



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

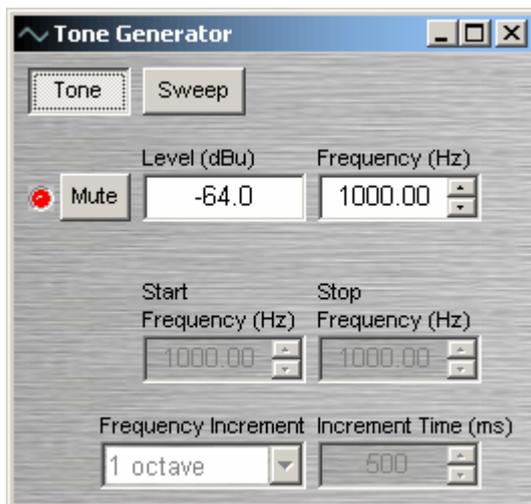
 see Pink Noise Generator Control Dialog

 see White Noise Generator Control Dialog

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

## Control Dialogs

### Tone Generator



**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



**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



**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.

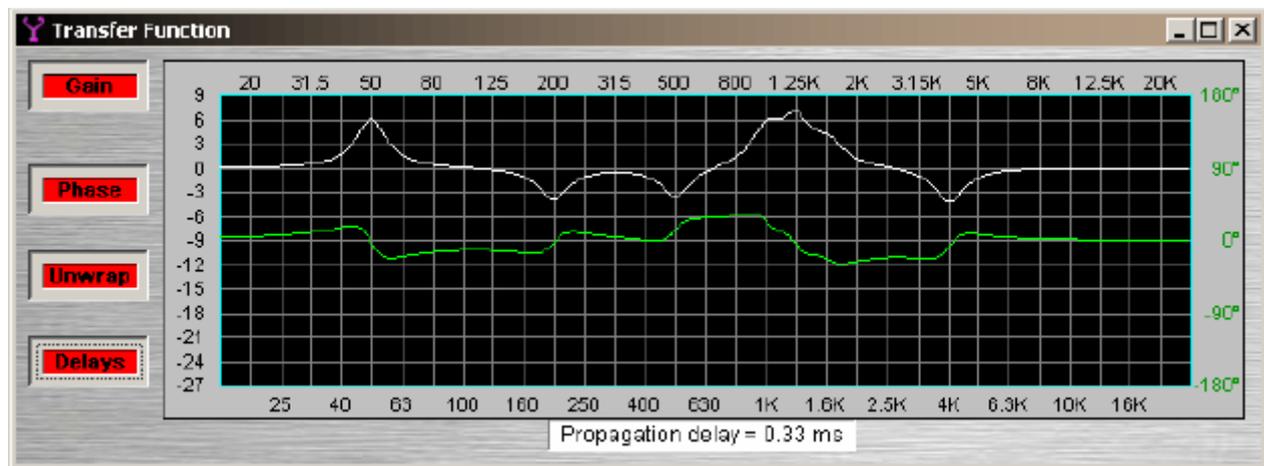
Once a Component Object is placed into the Layout, all available settings can be accessed by double-clicking over the object. This produces a Control Dialog Box, which displays the component controls in a more conventional user interface.

see Transfer Function Control Dialog

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

## Control Dialogs

### 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. **Propagation delay** is indicated separately at the bottom of the dialog box (1/3mS hops, if not compiled...or...real-time including equalization delay, if compiled). When a Transfer Function dialog box is open, the associated signal path is indicated as a dashed red line in the layout.

# Specialty



These Component Objects provide Pass-Through and Split Pass-Through functions, to aid in the organization of system connections. Pass-Through blocks allow wiring nodes to be strategically placed, so audio or control (logic) signals can be routed in different directions. Split Pass-Through blocks allow associated input and output wiring nodes to be placed in separate locations, with an implicit or 'wireless' connection being maintained between them.

Pass Through and Split Pass Through blocks simply allow custom signal routing, and provide no actual processing of their own. Therefore, they do not have Control Dialog Boxes. Instead, an Initialization Properties window appears, for component definition and customization, when these blocks are placed into the Layout.

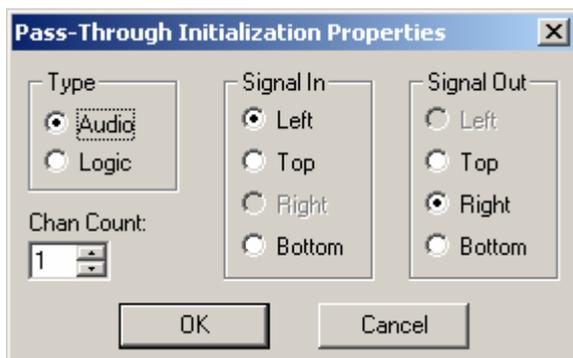
 see Pass-Through

 see Split Pass-Through Input

 see Split Pass-Through Output

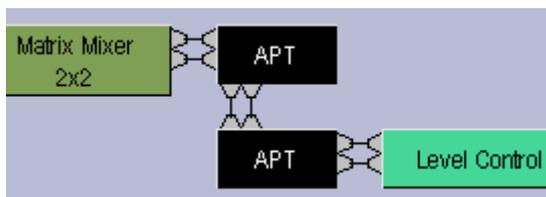
## Control Dialogs

### Pass-Through



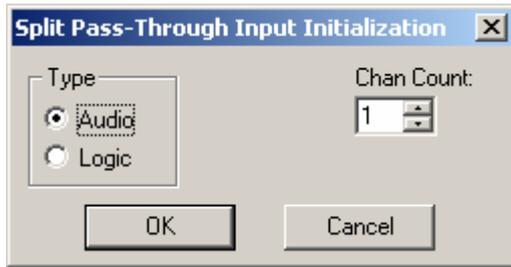
Pass-Through blocks allow wiring nodes to be strategically placed, so audio or control (logic) signals can be routed in different directions.

**Type** selects whether the block is for audio or logic connections. **Channel Count** selects the quantity of input/output connections to be provided on the block. **Signal In** determines the physical location of input wiring nodes on the block. **Signal Out** determines the physical location of output wiring nodes on the block.



Pass-Through blocks simply allow custom signal routing, and provide no actual processing of their own. **APT** stands for Audio Pass-Through. **LPT** stands for Logic Pass-Through. This example shows a pair of 2-channel Audio Pass-Through blocks used to create a double-bend.

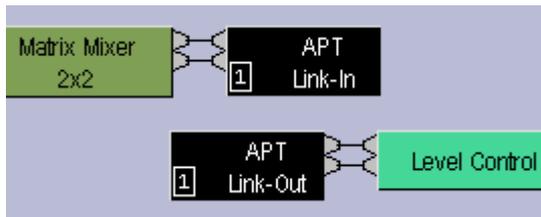
## Split Pass-Through Input



Split Pass-Through blocks allow associated input and output wiring nodes to be placed in separate locations, with an implicit or 'wireless' connection being maintained between them.

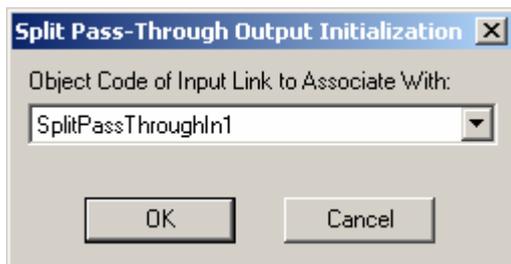
**Type** selects whether the blocks are for audio or logic connections. **Channel Count** selects the quantity of input/output connections to be provided on the blocks.

Separate 'Link-In' and 'Link-Out' blocks are placed for input and output connections. Wiring nodes appear on the left side of input blocks and on the right side of output blocks. Link-In and Link-Out blocks are also numbered to identify their association. More than one Link-Out block can be placed in association with an existing Link-In block (see [Split Pass-Through Output](#)).



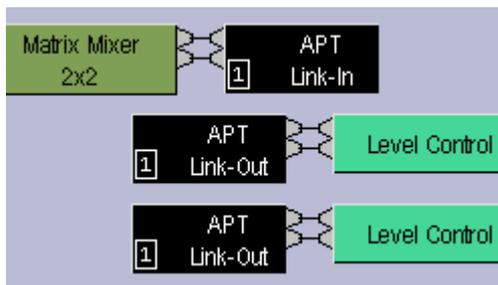
Split Pass-Through blocks simply allow custom signal routing, and provide no actual processing of their own. **APT** stands for Audio Pass-Through. **LPT** stands for Logic Pass-Through. This example shows a 2-channel Audio Split Pass-Through.

## Split Pass-Through Output



More than one Link-Out block can be placed in association with an existing Link-In block (see [Split Pass-Through Input](#)).

**Object Code of Input Link to Associate With** selects which existing Link-In block the new Link-Out block should be associated with. The new Link-Out block will include the appropriate number of output wiring nodes, and the same numbered association, as other Link-Out blocks already associated with the selected Link-In block. Additional Link-Out blocks allow a single set of input connections to be distributed to multiple sets of output connections.



Pass-Through blocks simply allow custom signal routing, and provide no actual processing of their own. **APT** stands for Audio Pass-Through. **LPT** stands for Logic Pass-Through. This example shows an existing 2-channel Audio Split Pass-Through with an additional 2-channel Link-Out block.

# System Design

## Placing Component Objects

NEXIA 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 shortcuts 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. An exception to these rules is the [Pass-Through](#) block, which allows wiring nodes to be strategically placed for routing signals in different directions. 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. (**NOTE:** *Exceptions to this rule are the control input nodes of [Remote Preset](#), [Command String](#), and [Flip Flop Gate](#) blocks.*) Audio Nodes & Control (logic) Nodes cannot be connected to each other. Input & Output Nodes on the same object cannot be connected to each other. (**NOTE:** *An exception to this rule is the control input and control output nodes of a [Logic Box](#) block.*) 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 components of the same type, 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 several Component Object categories, with some categories providing several component variations. Each component type will have a unique Control Dialog Box. For more information on specific components and their Control Dialog Boxes, see [Object Toolbar](#).

## 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) allow activation of additional features (such as Logic Inputs & Direct Outputs). Multiple channels of Level Control may be 'ganged' onto a single fader. Invert and Mute Button Controls may be set for 'horizontal alignment' and/or 'no labeling' when minimized as a user control.

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, etc.). 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 (.NEX) 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.

Multiple component objects may be merged together using the [Custom Blocks](#) menu. Custom Blocks can then be copied to the Processing Library as mentioned above. Custom Blocks can simplify the design process by integrating frequently used component combinations, and can provide password protection for intellectual property such as unique processing and component settings.

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 analyzes the system design and indicates design errors if there are any. If there are no errors, Compile proceeds and allocates the required DSP resources.

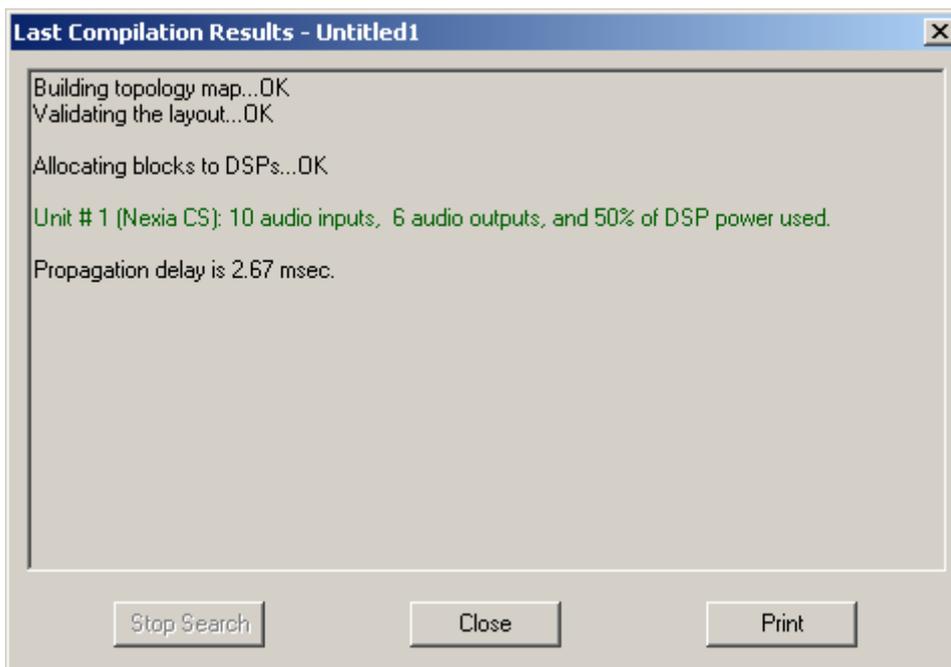
Although Compile is an automatic process, certain settings can be pre-determined to help guide this process. Control blocks (i.e., those processing blocks that do not have audio inputs or outputs) can be **Allocated To Unit**, which assigns them to a particular Nexia device. This can be useful to dedicate particular control functions to specific physical locations, for example, to have all RCB devices wired to the same unit using a single cable.

Propagation Delay (also known as Latency) is an inherent time delay of the audio signals, which increases with the amount of DSP processing and NexLink™ routing applied. Each NexLink 'hop' (one-way transmission) produces 0.67mS 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 synchronize all audio outputs. In applications where audio output synchronization 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**.

For visual aids in determining DSP block allocations, see **Display Options**. A system design file must be compiled before it can be downloaded to NEXIA 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

# Compile Error Messages

## Validation of the Topology Map

Message: The Automatic Mixer (object code '\_\_\_') at [\_\_, \_\_] has no active audio output.

Explanation: An **Auto Mixer** Main Output is connected to a **Mix-Minus Combiner** input, but appropriate audio output connections have not been made. Mix-Minus Combiners allow Auto Mixers to share control data only, and do not support audio input or output.

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.

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**.

Messages: Some DSP blocks do not have inputs. Ignore them ?  
Some DSP blocks do not have outputs. Ignore them ?

Explanation: 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.

Messages: 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.

Explanation: 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.

Messages: The algorithm for the '\_\_\_' block (object code '\_\_\_') at [\_\_,\_] has been eliminated. 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.

Explanation: These messages are similar to the ones above. The difference is that they are not warnings, but errors.

Message: Nothing to compile !

Explanation: All **objects** placed in **layout** have been ignored.

Message: Feedback loop detected.

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

### **Allocation of DSP blocks to NEXIA Devices**

Message: The allocation of some DSP blocks cannot be resolved. You should use **NexLink** I/O blocks to pass audio signals between units.

Explanation: This system design attempts to pass audio signal(s) from one Nexia unit to another. Use a pair of **NexLink** Input and Output blocks to accomplish this.

Message: Too many resources required in the unit #\_.  
Too many resources required in the units ##\_.

Explanation: The design requires more **DSP resources** than are available from the Nexia device(s) specified in the **Equipment Table**.

Message: Due to insufficient DSP resources all disjoint blocks have been ignored.

Explanation: There are not enough DSP resources available in any Nexia unit in the system. The compiler chose to ignore all blocks which are isolated from any I/O blocks and, therefore, do not affect the rest of the system in any way.

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 NEXIA unit can provide a maximum of 15 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 #\_\_\_.  
Explanation: Although the total DSP power in the NEXIA 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, or replace them with a comparable set of smaller objects (within the same unit). Otherwise, it may be necessary to add an additional NEXIA unit to the system, and move large DSP blocks into it.

### **Assigning control blocks to NEXIA units**

Message: Some unconnected control blocks have been ignored.  
Explanation: Control blocks with no connections have been excluded from the system. Only **Logic Gate**, **Logic Delay**, 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 NEXIA units after a successful compilation

- 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

Ethernet allows multiple NEXIA devices to be connected on a network, for system-wide programming and control. Ethernet supports **Software User Interface**, **Remote Control Bus**, and **Third-Party Control**, but does not include sharing of digital audio signals via **NexLink™**.

The PC computer, running NEXIA software under Windows® 2000/XP, must have a 10/100 BaseT network card (NIC) installed. When connecting directly to the Ethernet port on a single NEXIA unit, a 'cross-over' CAT5 cable is used. When connecting to a network (or system) of multiple NEXIA units, a 'straight-through' CAT5 cable is used (via an Ethernet switch). Ethernet switches (not 'hubs') must be 10/100 BaseT compatible, with sufficient ports for connection to each NEXIA unit (multiple switches may be used). These connections also use 'straight-through' CAT5 cables. When a system using only two NEXIA devices has been configured, and the computer connection is removed, Ethernet may be connected directly between the two units using a 'cross-over' CAT5 cable.

Ethernet has a cable length limitation of 100 meters, between the Ethernet switch and a NEXIA 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. **NOTE:** *Distances between devices in systems utilizing NexLink are restricted to a maximum length of 5 meters for each NexLink cable. NexLink is proprietary and is not Ethernet compatible. Therefore, Ethernet switches cannot be used within NexLink cabling.*

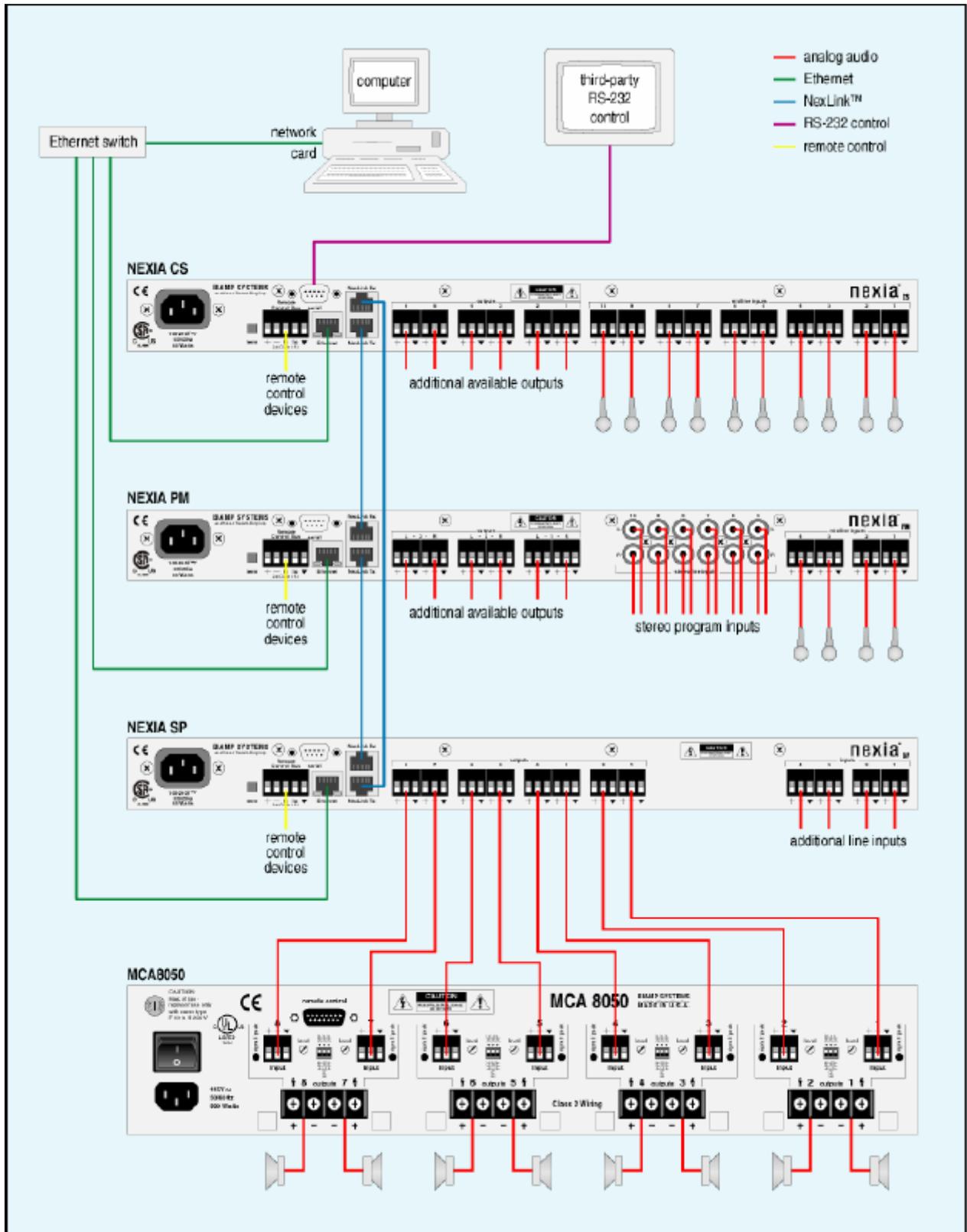
The computer must be assigned an IP address (under Network Card Settings>Properties). Most computers set TCP/IP address automatically, but NEXIA devices require manual assignment. Initially, the computer IP addresses should be assigned as **192.168.1.X** (where range of X = 1~254). Each NEXIA device must also be assigned a unique IP address (see **Device Maintenance**). The factory default IP address for all NEXIA devices is 192.168.1.101.

Many system designs require only a single NEXIA device. These systems do not exceed the number of inputs/outputs, and the amount of DSP processing, provided by one specific model. When a single unit is used, network considerations are simplified. No Ethernet switch is required. The only Ethernet connection is that between the computer and the NEXIA device ('cross-over' CAT5 cable). A 'cross-over' cable is included with each NEXIA device.

# System Hardware Connections

For wiring information on specific connectors, see [CS Hardware](#), [PM Hardware](#), and [SP Hardware](#).

## Example of system connections



# Applications

Application Bulletin (.pdf) files are available on the NEXIA software CD-ROM. The associated design (.NEX) files for these applications are also included, as example references.

## System Control

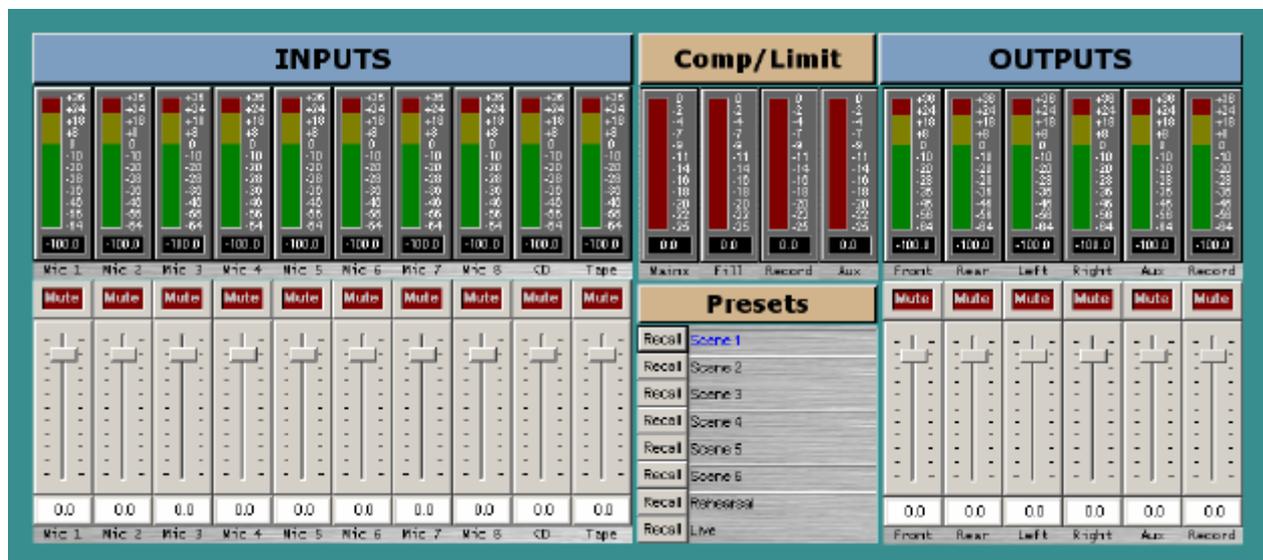
### Software User Interface

Once a system design is **compiled** and **downloaded** into NEXIA devices, the system can be controlled in real-time the via the NEXIA 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 inaccessible (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 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 NEXIA device can support any combination of the controls mentioned above. Up to 12 controls may be connected to each NEXIA 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.).

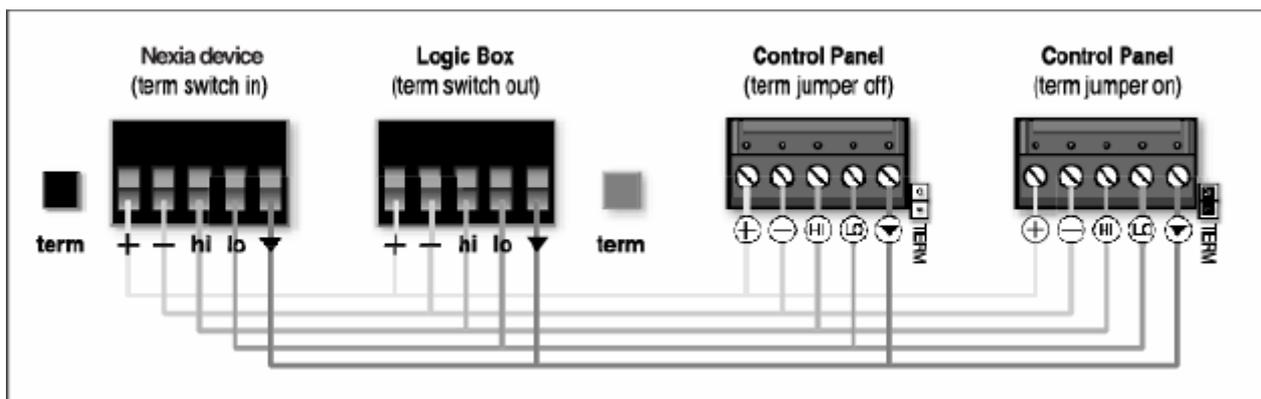
Recommended cable: Gepco UNC220 or equivalent

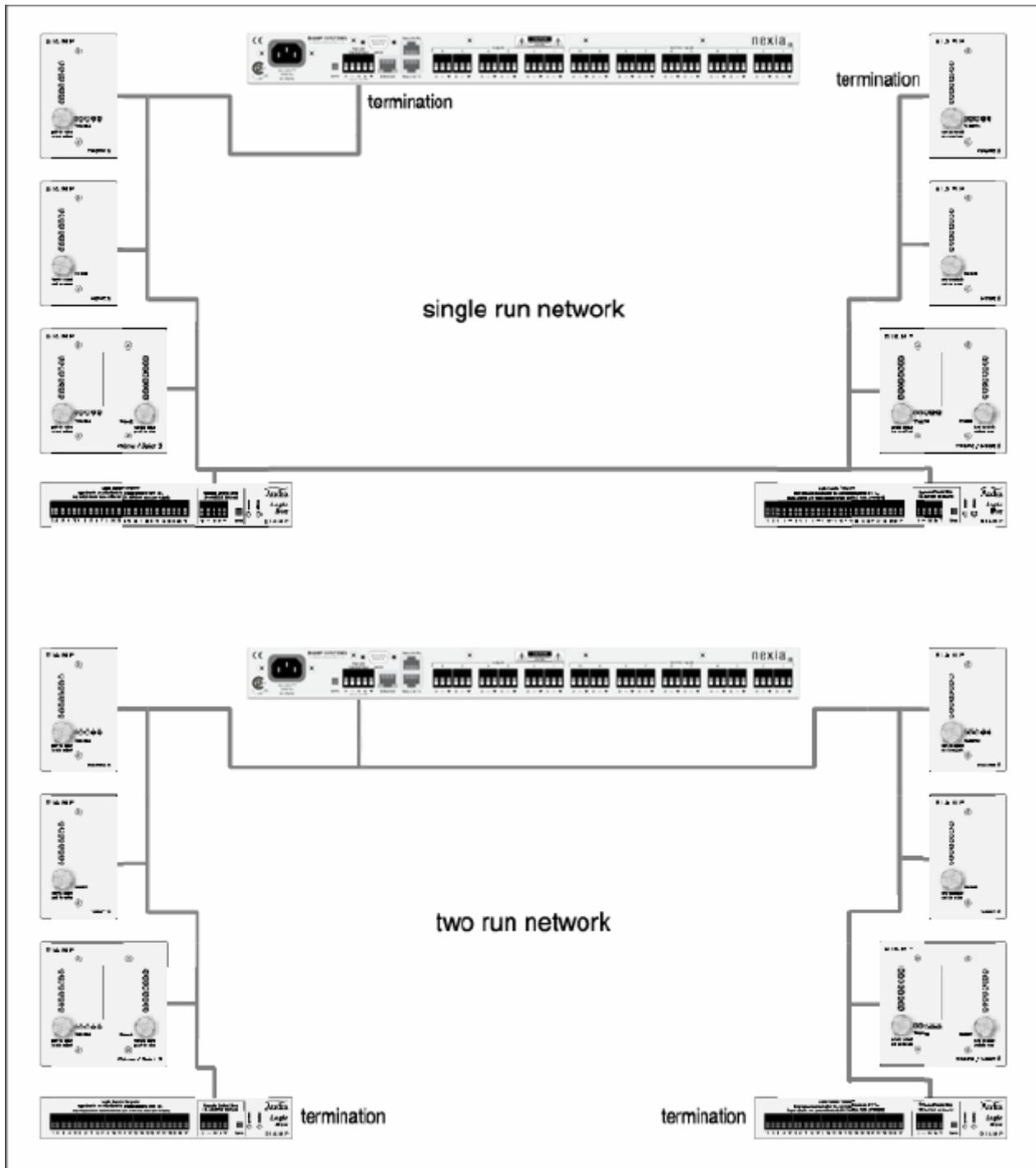
(use data pair for Hi & Lo; use power pair for + & -).

The 'network' requires termination at each 'end' for proper operation. All controls (and NEXIA) 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 NEXIA device at one end, and a control device at the other end, creating one continuous run. In this case, the NEXIA 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 NEXIA 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 NEXIA device, a network with two separate runs can be created. This type of network actually remains as a single run, but is configured with the NEXIA 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 NEXIA device), between the two end controls, would have their 'term' switches released (out) or jumpers removed. (See network diagrams below.)





## Third-Party Control

After initial programming & configuration, NEXIA 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

NEXIA can be controlled via customized control dialogs in the NEXIA software, or via third-party controllers using [RS-232](#) or [Telnet](#).

For RS-232 or Ethernet (Telnet) control of NEXIA, Biamp created NTP (NEXIA Text Protocol). This simply means that NEXIA 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 NEXIA products.

NTP 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 NTP string is structured in the following order: [Command](#) [Device Number](#) [Attribute](#) [Instance ID Number](#) [Index1](#) [Index2](#) [Value](#) <LF>

NTP 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 NEXIA 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\*\*** NEXIA 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.

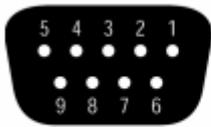
## RS-232 Control

The RS-232 port on the back of an NEXIA 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 NEXIA 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 NEXIA units that are not part of the same NEX file, each NEXIA unit will need to be addressed via its own RS-232 port from a control system or PC. NEXIA 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, 38400, 57600, or 115200 – 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 NEXIA unit.



pin #1 = not used  
pin #2 = Transmit Data (TxD) output  
pin #3 = Receive Data (RxD) input  
pin #4 = not used  
pin #5 = ground

pin #6 = not used  
pin #7 = not used  
pin #8 = not used  
pin #9 = not used

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

## Telnet Control

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

## Command

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

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

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

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

RECALL – Tells NEXIA 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 NEXIA 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  $-60.5\text{dB}$ , add 100 ( $-60.5 + 100 = 39.5$ ). Then multiply by 10 ( $39.5 \times 10 = 395$ ). Instead of Value being  $-60.5$ , Value after this SETL command will equal 395.

GETL - Tells NEXIA 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 ( $40.5 - 100 = -59.5\text{dB}$ )

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								
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
-0.5	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	-29.5	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.

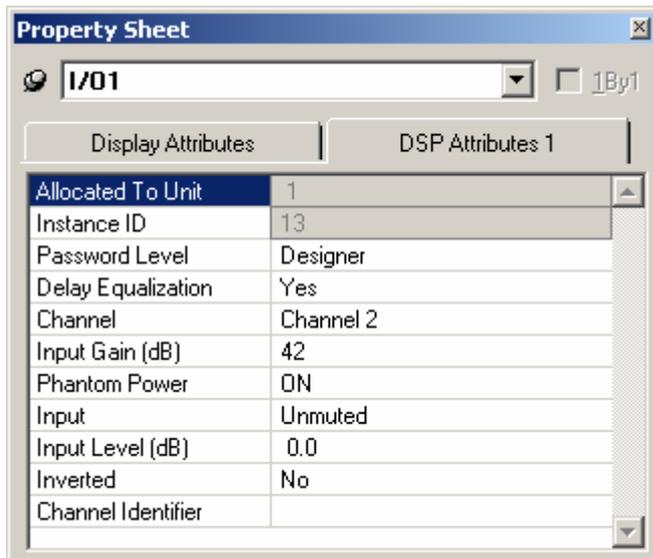
## Device Number

A NEXIA Device Number represents the physical NEXIA box's defined address. The NEXIA 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 three ways:

### First Way:

- 1) Right click on the DSP block and select '**Properties**'.
- 2) Click on DSP 1 attributes tab. The device that the block is assigned to will be displayed in the 'Allocated To Unit' field.



### Second Way:

In the **Display Options** tab select "Display Device Assignment".

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



### Third Way:

While connected an NEXIA's RS-232 port, type the string; GET 0 DEVID NEXIA 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 NTP 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 NTP String to be complete.

NTP 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

CS Inputs	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Mic/line input gain	INPGAINCS	Y	Y	Y	Index1	0 ~ 66 in steps of 6
Input level	INPLVLCS	Y	Y	Y	Index1	-100 ~ 12.0*
Input mute	INPMUTECS	Y	Y	N	Index1	0=unmuted 1=muted
Input invert	INPINVRTCS	Y	Y	Y	Index1	0=normal 1=inverted
Phantom Power	PHPWRCS	Y	Y	N	Index1	0 = off 1 = on

\* Can contain a decimal number.

Example: In the command: SET 1 INPLVLCS 6 3 -10<LF>

We are telling NEXIA device 1 to set an input fader, Instance ID 6, input 3 (index1), to -10dB.

(We set channel 3 input level of a NEXIA CS Instance ID 6 to -10dB)

CS Outputs	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Output level	OUTLVLCS	Y	Y	Y	Index2	-100 ~ 0 *
Output mute	OUTMUTECS	Y	Y	N	Index2	0=unmuted 1=muted
Output invert	OUTINVRTCS	Y	Y	N	Index2	0=normal 1=inverted
Output full-scale level	OUTFSCS	Y	Y	N	Index2	-31, & 0 to 24 in steps of 6

\* Can contain a decimal number.

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

We are telling NEXIA device 2 to set the output mute Instance ID 3, output 4 (index1) to on.

(We muted the 4th output of a NEXIA CS Instance ID 3)

PM Mic Inputs	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Mic/line input gain	INPGAINPMM	Y	Y	Y	Index1	0 ~ 66 in steps of 6
Input level	INPLVLPMM	Y	Y	Y	Index1	-100 ~ 12.0*
Input mute	INPMUTEPMM	Y	Y	N	Index1	0=unmuted 1=muted
Input invert	INPINVRTPMM	Y	Y	Y	Index1	0=normal 1=inverted
Phantom Power	PHPWRPMM	Y	Y	N	Index1	0 = off 1 = on

\* Can contain a decimal number.

PM Line Inputs	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Line input gain	INPGAINPML	Y	Y	Y	Index 1	0 ~ 18 in steps of 6
Input level	INPLVLPML	Y	Y	Y	Index 1	-100 ~ 12.0*
Input mute	INPMUTEPM	Y	Y	N	Index 1	0=unmuted 1=muted
Input invert	INPINVRTPML	Y	Y	Y	Index 1	0=normal 1=inverted
Line input stereo linking	INPGANGPML	Y	Y	N	Index 1	0=Separate 1=Ganged

Faders that can be ganged together are: 1 & 2, 3 & 4, 5 & 6, 7 & 8, 9 & 10, 11 & 12.

PM Outputs	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Output level	OUTLVLP	Y	Y	Y	Index2	-100 ~ 0 *
Output mute	OUTMUTEPM	Y	Y	N	Index2	0=unmuted 1=muted
Output invert	OUTINVRTPM	Y	Y	N	Index2	0=normal 1=inverted
Output full-scale level	OUTFSPM	Y	Y	N	Index2	0 to 24 in steps of 6
Output stereo linking	OUTGANGPM	Y	Y	N	Index2	0=Separate 1=Ganged

\* Can contain a decimal number.

Example: In the command: SET 1 OUTGANGPM 5 2 1<LF>

We are telling NEXIA PM device 1 to gang the output 1 & 2 faders together on Instance ID 5.

This command would work the same with the Index2 changed to a 1 as well.

Faders that can be ganged together are: 1 & 2, 3 & 4, 5 & 6.

SP Inputs	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Mic/line input gain	INPGAINSP	Y	Y	Y	Index 1	0 ~ 66 in steps of 6
Input level	INPLVLSP	Y	Y	Y	Index 1	-100 ~ 12.0*
Input mute	INPMUTESP	Y	Y	N	Index 1	0=unmuted 1=muted
Input invert	INPINVRTSP	Y	Y	Y	Index 1	0=normal 1=inverted

\* Can contain a decimal number.

Example: In the command: SET 1 INPLVLSP 6 3 -10<LF>

We are telling NEXIA device 1 to set an input fader, Instance ID 6, input 3 (index1), to -10dB.

(We set channel 3 input level of a NEXIA SP Instance ID 6 to -10dB)

SP Outputs	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Output level	OUTLVLSP	Y	Y	Y	Index2	-100 ~ 0 *
Output mute	OUTMUTESP	Y	Y	N	Index2	0=unmuted 1=muted
Output invert	OUTINVRTSP	Y	Y	N	Index2	0=normal 1=inverted
Output full-scale level	OUTFSSP	Y	Y	N	Index2	0 to 24 in steps of 6

\* Can contain a decimal number.

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

We are telling NEXIA device 1 to set the output mute Instance ID 3, input 4 (index1) to on.

(We muted the 4th output of a NEXIA SP Instance ID 3)

## 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 NEXIA 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
Group State+	RMCMBGROUP	Y	Y	N	Index1	0-16

\* Can contain a decimal number.

Example: In the string SET 1 RMCMBWALL 4 2 1 <LF>

We are telling NEXIA to set the 2nd 'wall' in the room combiner, Instance ID 4, up (separate rooms).

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

**+Note:** The behavior of **RMCMBGROUP** is the same as that of the "Set Selected Group" commands in the right-click-context menus in the Room Combiner control dialogue in the NEXIA Software: the specified room is isolated, meaning all moveable walls at its borders are put up. All neighboring rooms maintain their previous group assignments. Index1 represents the room being addressed.

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 NTP 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 NEXIA® 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 NEXIA to increment the second parametric EQ filter on Instance ID 11 by 2dB.

Feedback Suppressor	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Reset All Filters	FBSRESET	Y	N	N	None	None
Fix All Filters	FBSFIXALL	Y	N	N	None	0 - Not fixed 1- Fix all

Example: In the string SET 1 FBSRESET 4<LF>

We are telling NEXIA to reset all of the filters on the feedback suppressor on Instance ID 4.

## 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	HSFLTGAIN	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	LSFLTGAIN	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 NEXIA to set the High Shelf filter gain on instance ID 100 to -10dB.

All Pass Filter	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Bandwidth	APFLTBWBND	Y	Y	N	Band Number	0.01 ~ 4.0 *
Center Freq.	APFLTFCBND	Y	Y	Y	Band Number	20.0 ~ 20000 *
Filter Bypass	APFLTBYPBND	Y	Y	N	Band Number	0 = active 1 = bypassed
Bypass All	APFLTBYBALL	Y	Y	N	None	0 = active 1 = bypassed

\* Can contain a decimal number.

## 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 NEXIA 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 mid-high cutoff frequency

*Index1* = 5 is the higher slope of the mid-high 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 NEXIA to set the Comp/Limiter on instance ID 55 to active.

Ambient Noise Compensator	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Program Mute	ANCMUTEPGM	Y	Y	N	None	0 = unmuted 1 = muted
Program Level	ANCLVLPGM	Y	Y	N	None	-100 ~ 12 *
Program Threshold	ANCTHRSHPGM	Y	Y	N	None	-60.0 to 24 *
Program Response	ANCRSPTMPGM	Y	Y	N	None	500 to 500000*
Ambient Mute	ANCMUTEAMB	Y	Y	N	None	0 = unmuted 1 = muted
Ambient Level	ANCLVLAMB	Y	Y	N	None	-100 ~ 12 *
Ambient Threshold	ANCTHRSHAMB	Y	Y	N	None	-60.0 to 24 *
Ambient Response	ANCRSPTMAMB	Y	Y	N	None	500 to 500000*
Min Gain Setting	ANCGAINMIN	Y	Y	N	None	-25.0 to 25.0 *
Max Gain Setting	ANCGAINMAX	Y	Y	N	None	-25.0 to 25.0 *
Gain Ratio	ANCGAINRATIO	Y	Y	N	None	0.25 to 4.0 *
Gain Response Time	ANCGAINRSPTM	Y	Y	N	None	500 to 350000*

\* Can contain a decimal number.

Example: SET 1 ANCMUTEPGM 20 0<LF>

We are telling NEXIA to set the ANC to unmute the program input on instance ID 20.

## 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

Delay	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Delay in Milliseconds	DLYMSEC	Y	Y	N	None	0 ~ ?*
Delay in Centimeters	DLYCM	Y	Y	N	None	0 ~ ?*
Delay in Meters	DLYM	Y	Y	N	None	0 ~ ?*
Delay in Inches	DLYIN	Y	Y	N	None	0 ~ ?*
Delay in feet	DLYFT	Y	Y	N	None	0 ~ ?*
Delay Bypass	DLYBYP	Y	Y	N	None	0 – Active 1 – Bypassed

\* Can contain a decimal number.

Example: SET 1 DLYCM 24 40<LF>

We are telling NEXIA to set the delay block at instance ID 24 to 40 centimeters.

**Note:** Value range is 0 to max value for the specific delay block. Example: a 50mSec delay has a maximum setting of 1763 centimeters, 17meters, 694 inches, and 57 feet.

## 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.

Mute Button	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Mute	MUTE	Y	Y	N	Index1	0 = unmute 1 = mute

Logic State	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Logic State	LGSTATE	Y	Y	N	Index1	0 = Off 1 = On

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 0 PRESET 1001<LF>

We are telling NEXIA to recall the first preset on an NEXIA system. Since presets apply to entire systems, or NEX files, the Device Number will always be 0 for Preset strings.

## Meter Blocks

Meters	Attribute	SET / SETL	GET / GETL	INC / DEC	Index1/ Index2	Value Range
Signal	SPMTRSTATE	N	Y	N	Index1	0 = No signal 1 = Signal
Peak	PKMTRLVL	N	Y	N	Index1	-100 ~ 36 *
RMS	RMSMTRLVL	N	Y	N	Index1	-100 ~ 36 *

\* Can contain a decimal number.

Example: GET 1 RMSMTRLVL 48 1 <LF>

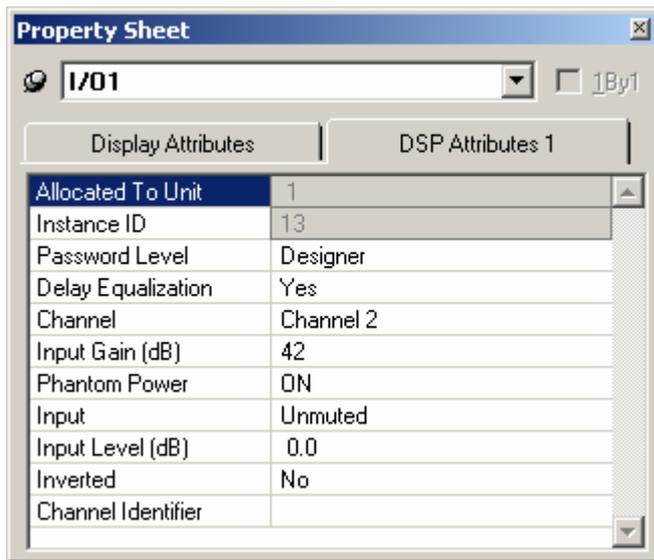
We are asking NEXIA the RMS Meter 1 level on instance ID 48.

## Generator Blocks

No Attributes are specified at this time

## Instance ID Number

NEXIA 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.

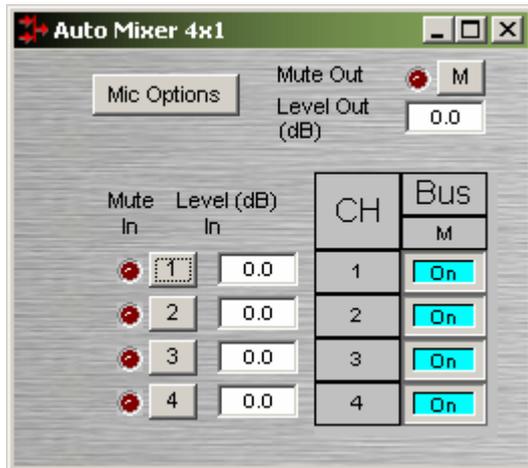


**\*\*Note\*\*** From the factory the NEXIA software will assign an instance number to each DSP block on the initial **Compile** of the system. Subsequent compiles will not change the Instance ID Numbers unless the "re-assign Instance IDs" check box is selected under **Compile Options**.

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.

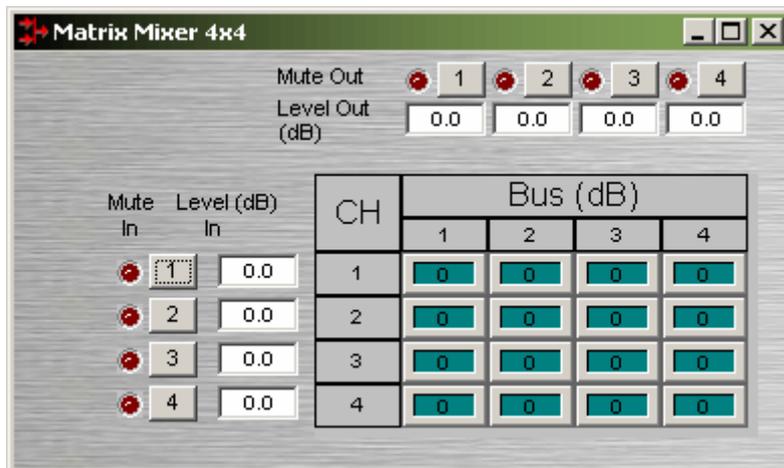


Example: `INC 1 AMLVLIN 4 1 1<LF>`

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 NTP 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 1 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 NEXIA device via RS-232 or TCP/IP, NEXIA 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 an NTP 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 NEXIA 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.

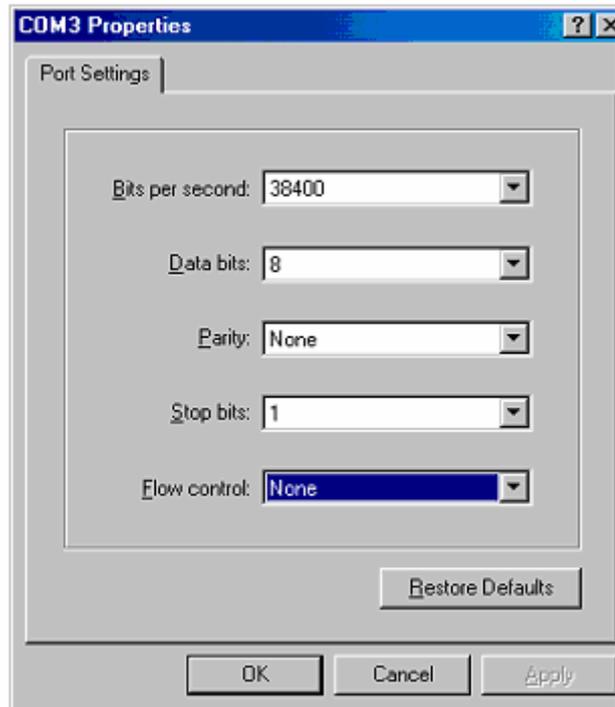
If an incorrect command string is sent, an NEXIA will respond with: -ERR <CR><LF>

# HyperTerminal

HyperTerminal is a useful tool that comes with Windows® and can be used for RS-232 purposes. Simply open a HyperTerminal session by going to: Start> Programs> Accessories> Communications> HyperTerminal. Enter a name for your connection and click 'OK'. Under the pull-down menu labeled 'Connect Using' select the location of your RS-232 Comm. port.



Under the Comm. port properties set it to 38400, 8, None, 1, and None as shown below. Now HyperTerminal is ready to use. NEXIA does not echo characters typed, so if you want to view what is being typed into NEXIA, click on "echo typed characters locally" in the ASCII setup screen.



## IP Address Commands

NEXIA has some useful IP and reset tools that may be useful when returning to older systems for service work.

NEXIA will automatically output its IP Address through the RS-232 port when it is powered up and functioning. Simply have a straight through RS-232 cable connected to NEXIA and a PC with HyperTerminal running. When NEXIA is powered up it will print the data in the HyperTerminal screen.

### Get/Set IP Address

By typing '**GET 0 IPADDR**<LF>' in HyperTerminal NEXIA will reveal the IP Address it is set to. Substituting the '0' for a 1, 2, 3, etc will tell NEXIA to reveal the IP Address for the device whose number is 1, 2, 3 etc. A '0' asks for the IP Address of the NEXIA you are currently connected to. Note: You can only use a 1, 2, 3 etc if there is a system loaded into the NEXIA's. If it is a single device system, the only device number will be 1.

If an NEXIA does **not** have a system loaded into it, you can set the IP Address via the RS-232 port. Example: **SET 0 IPADDR 192.168.1.101**<LF>. If there is no NEX file in the NEXIA, and the command is typed correctly, NEXIA will send back a '+OK' response. You will need to power cycle the NEXIA for the new IP Address to take effect. As stated above, NEXIA will output the IP Address when powered up, or you can use the GET IPADDR command mentioned above.

### Reset

In rare instances it may become necessary to reset the NEXIA device. A reset can be accomplished through the device maintenance screen, and this is the desired method for a reset. However, there is a reset command available via the RS-232 port. Simply type: **CLEAR 0 DEVCONFIG**<LF> and the device will be reset.

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