

Crestron **CNX-AUDIO-6PAK**

Six-Zone Audio Package

Operations & Installation Guide



CRESTRON

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Six-Zone Audio Package: CNX-AUDIO-6PAK

Description

The Crestron Home Six-Zone Audio package (herein known as the CNX-AUDIO-6PAK) offers simple intuitive configuration of plug-and-play hardware and Crestron software. It is packaged and priced specifically to provide the user with a complete six-zone home audio solution.

The CNX-AUDIO-6PAK is also available as an international version. All of the features are identical with the exceptions of the international AC power requirements and power cord and the unit nomenclature of the amplifier. Throughout this guide, all references to CNX-AUDIO-6PAK apply to the CNXI-AUDIO-6PAK as well, except where noted.

The CNX-AUDIO-6PAK is anchored by the popular Crestron CNMSX-AV control system and the new CNAMPX-12x60 Multi-Channel Power Amplifier. The new CNAMPX-12x60 provides 12 channels of amplification with power specifications of 60 Watts per channel (WPC) at 8 ohms, 90 WPC into 4 ohms and 220 WPC bridged at 8 ohms.

The complete list of hardware components includes:

- CNMSX-AV, control system
- CNAMPX-12x60, multi-channel amplifier (domestic model) or CNAMPXI-12x60, multi-channel amplifier (international model)
- CNX-PAD8, audio distribution processor
- CN-WP12FW-6, 12-button function keypad (quantity 6 CN-WP12FWs per pak)
- CNHBLOCK, multi-type network distribution block.
- CNXIRP, Cresnet Infrared Emitter (quantity 4 per pak)

Another member of the CNX-AUDIO-6PAK is the Crestron Audio Six-Pack CD, which contains among other software, the Audio Six-Pack Wizard. This Wizard provides an easy four-step configuration of the entire six-zone audio system.

Hardware Setup

Identity Code

Every equipment and user interface within the network requires a unique identity code (NET ID). These codes are assigned a two-digit hexadecimal number from 03 to FE. For your convenience, all hardware devices in the CNX-AUDIO-6PAK have been assigned unique NET IDs. However, the six keypads are zone specific. Be sure to install the given user interface into the appropriate room as defined in the Crestron Audio Six-Pack Wizard. The room/NET ID key is as follows:

- Room 1 contains keypad with NET ID = 4C
- Room 2 contains keypad with NET ID = 52
- Room 3 contains keypad with NET ID = 53
- Room 4 contains keypad with NET ID = 54
- Room 5 contains keypad with NET ID = 55
- Room 6 contains keypad with NET ID = 56

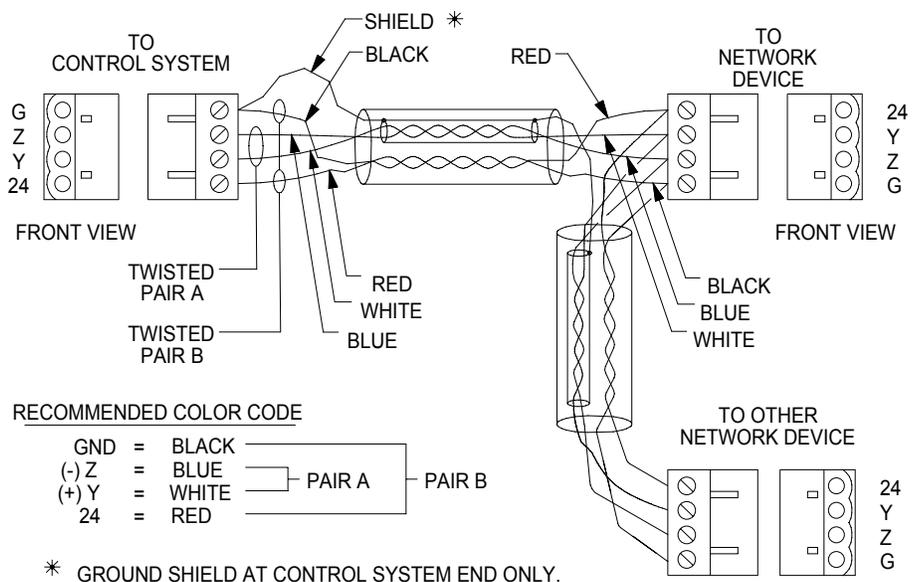
Network Wiring

Refer to the network wiring diagram on the next page when making all network connections between the hardware devices of the CNX-AUDIO-6PAK.

Four-Wire Network Connector

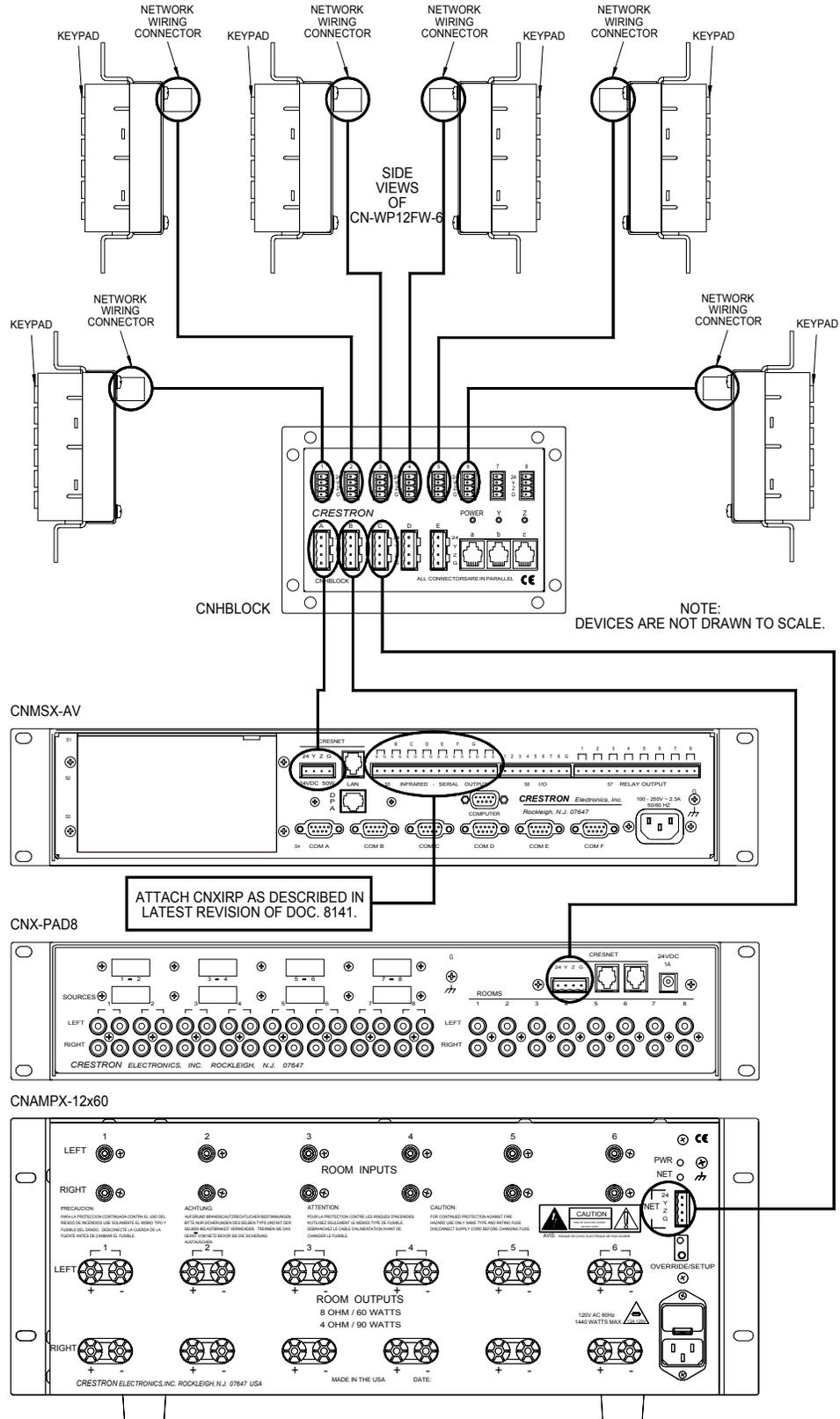
The four-wire network cable is used to power Crestron devices. Before making any four-wire network connections, refer to the network interconnection after this paragraph and the cautions that follow.

Recommended Network Cable, Liberty Wire Reference: Cresnet



CAUTION: Possible equipment damage if miswired.

Network Wiring



NOTE: Do not power up system until all wiring is verified. Care should be taken to ensure data (Y,Z) and power (24,G) connections are not crossed. Data "Y" was data "+". Data "Z" was data "-".

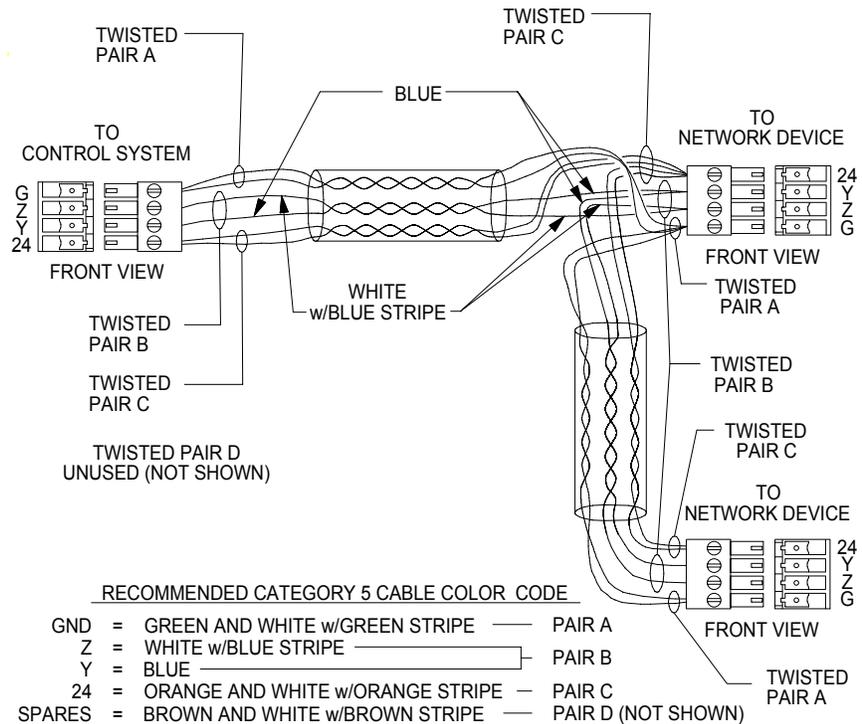
NOTE: The cable consists of 1-#18 AWG twisted pair, tinned copper 1-#22 AWG twisted pair with shield, tinned copper. There are six twists per foot per pair. The jacket is teal color and labeled "CRESNET" every two feet. Liberty Wire carries the cable (reference: CRESNET) and it is available in plenum or non-plenum versions.

NOTE: A CNTBLOCK, network terminal block, is recommended for testing purposes and convenience of wiring.

CAT 5 Wiring

CAT 5 wiring is also used to power Crestron devices. Before making any CAT 5 connections, refer to the network interconnection after this paragraph and the cautions that follow.

CAT 5 Interconnect Drawing



CAUTION: Possible equipment damage if miswired.

NOTE: Do not power up system until all wiring is verified. Care should be taken to ensure data (Y,Z) and power (24,G) connections are not crossed.

NOTE: To calculate maximum CAT 5 cable length, use the following equation:

$$L = 3000/PF$$

where L = maximum cable length (feet)

PF = total power factor for equipment on run (watts).

Audio Source Wiring

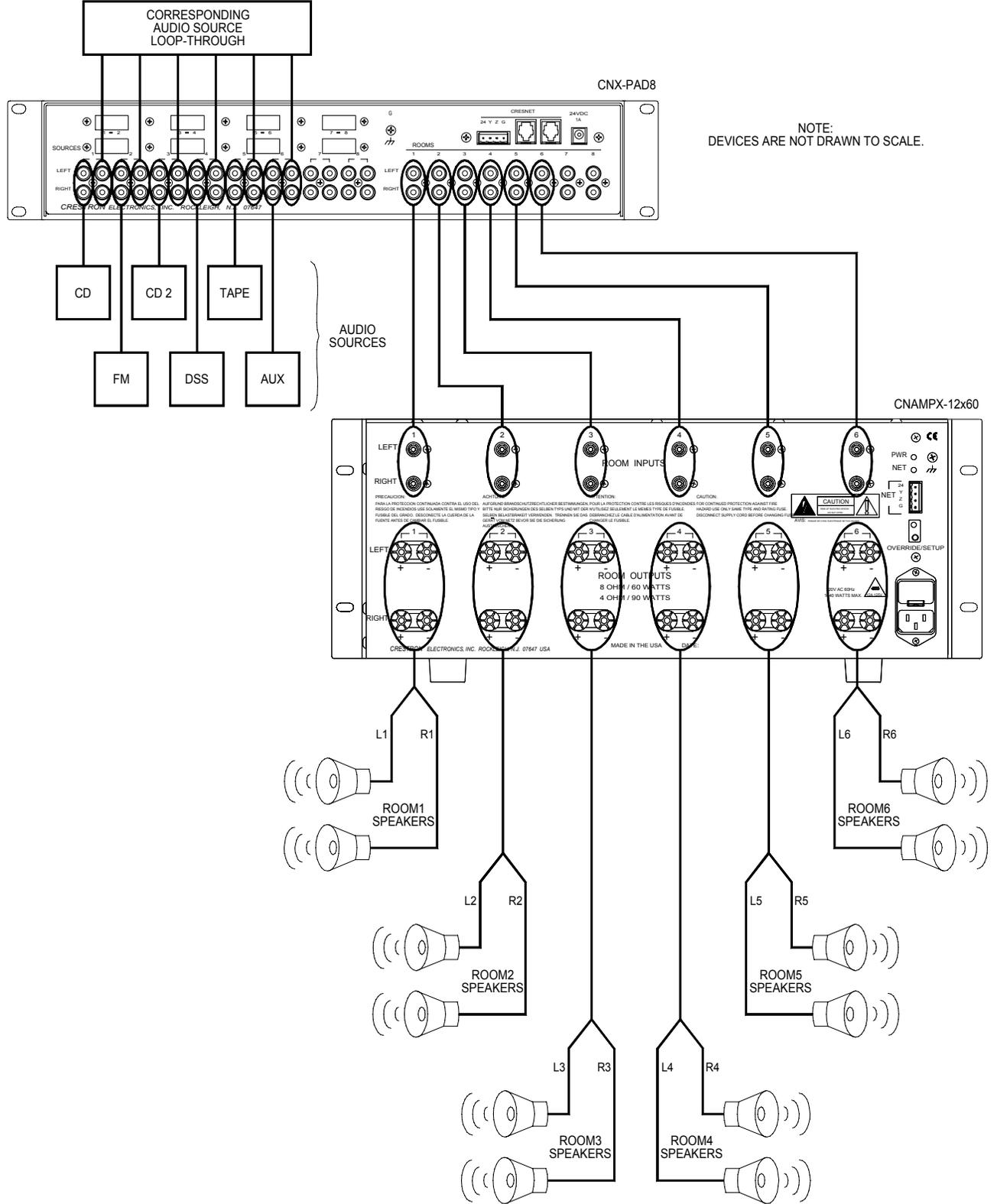
NOTE: Use good quality shielded interconnects between source equipment, CNX-PAD8, and CNAMPX-12x60 to minimize noise. Wire gauge depends on length of run.

Refer to the audio source-wiring diagram on the next page when making audio connections between the hardware devices of the CNX-AUDIO-6PAK and the sources.

Advanced Wiring

If the intent is to use the CNX-AUDIO-6PAK in a configuration other than its basic design, refer to the individual device Operations Guides when making these "advanced" wiring connections.

Audio Wiring



Software Setup

Software System Requirements

The PC where the contents of the Crestron Audio Six-Pack CD are installed should meet these system requirements.

Minimum Required PC Configuration

Windows 98/NT/2000: 333MHz Pentium II with 64MB RAM
Display Setting of "256 Colors"

Recommended PC Configuration

Windows 98/NT/2000: 700MHz Pentium 4 with 128MB RAM
Display Setting of "High Color (16 bit)" or higher

Installation

Insert the Crestron Audio Six-Pack CD into the PC's CD-ROM drive and select **Run** from the Windows start menu. Type the letter for the CD-ROM drive and **:Setup**.

There are certain versions of SIMPL Windows, VisionTools Pro-e, and the Crestron Database required to successfully operate with the Wizard. The minimum required versions are available from the Crestron Audio Six-Pack CD. The versions are:

SIMPL Windows v1.61.08 or later

VT Pro-e v2.3.1.9 or later

Crestron Database v15.4.0 or later

The latest software versions can also be obtained from the What's New page (APPBUILD link) or Downloads page (APPBUILD Library) of the Crestron website (www.crestron.com).

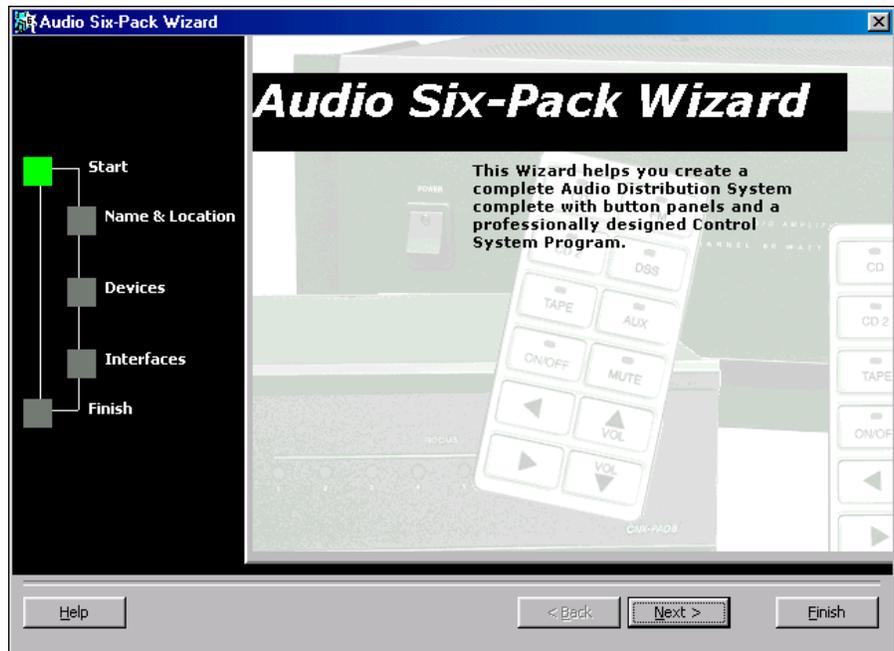
Four Step Configuration

Use the easy four-step configuration of the Crestron Audio Six-Pack Wizard to complete the six-zone audio system. Refer to the on-line and context-sensitive (F1) help, if assistance is needed.

Start Audio Six-Pack Wizard

Open the Audio Six-Pack Wizard and begin with the screen shown on the next page.

Start Screen

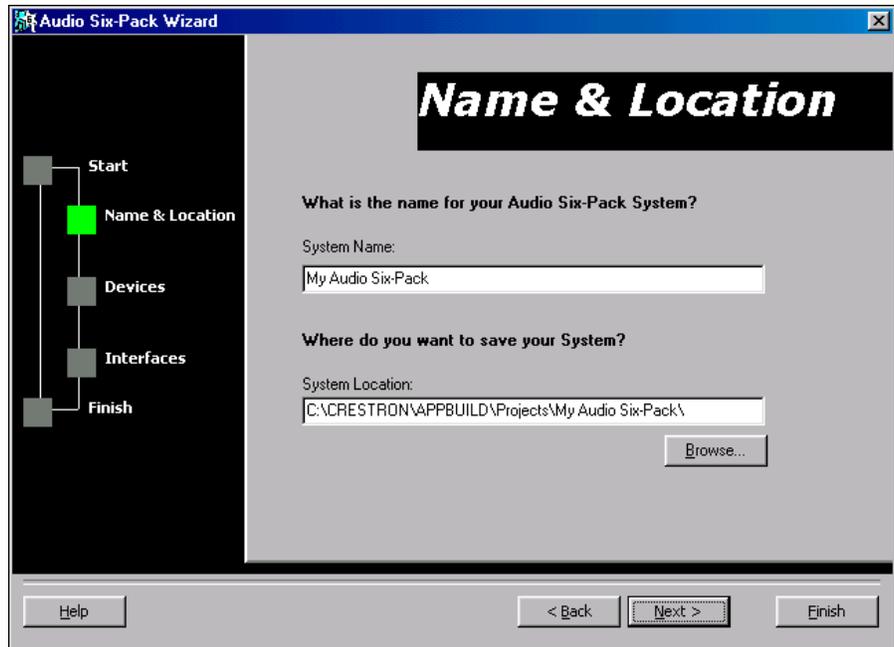


To move onto the first step in the configuration of the audio system, click on the **Next>** button or click on the square in the left column entitled **"Name & Location"**. Advance through the Wizard steps using either of these methods.

Step 1: Name the System

From the next screen, shown below, enter a name in the *System Name*: field. This name will be assigned to all application files (Audio Six-Pack Wizard, SIMPL Windows, and VT Pro-e) for the system. In the second field, enter a location to save all files that are created using the Wizard.

Name the System

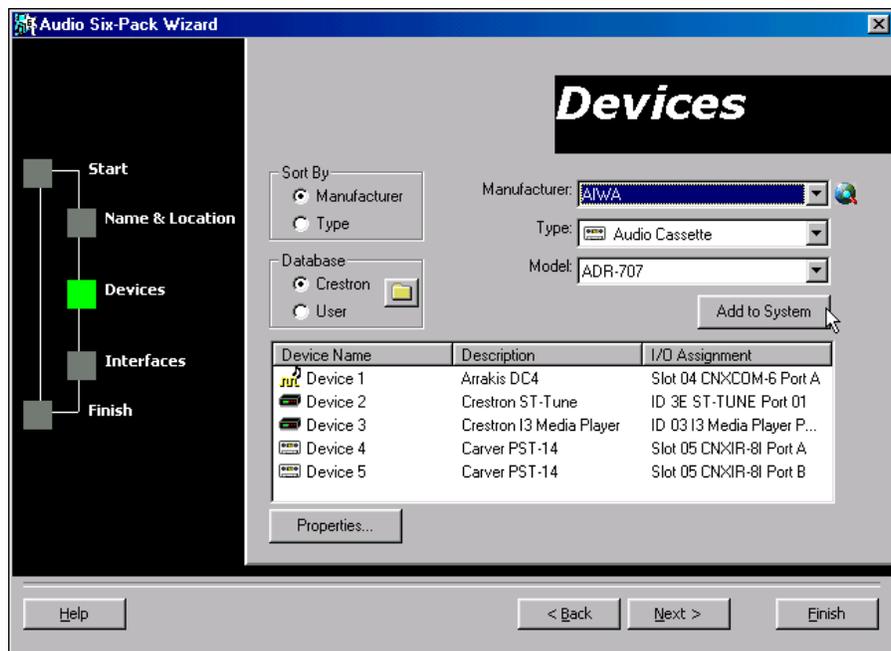


Step 2: Add Sources

The Crestron Database contains information collected about devices that have, at one time, been programmed into a Crestron system. The User Database is a place to store information about devices not yet supported by Crestron.

The Devices screen of the Audio Six-Pack Wizard allows the user to select all the audio sources in the system that need to be controlled. The Wizard has access to either the Crestron or User Database. Make a choice by selecting the correct *Database* button, as shown in the screen below. A source can be added by first selecting how to search for it. Decide how to sort the devices by selecting either the *Manufacturer* or *Type* button from the *Sort By* area.

Add Sources



Use the pull-down arrows to select the *Manufacturer*, *Type*, and *Model* of each source in the system. Once the three parameters are selected for a single source, click the **Add to System** button to automatically enter the source into the list at the bottom of the screen.

Notice that the Wizard keeps a running list of each source. The list includes the device name, a description of the source, and the I/O assignment. Continue to add sources by repeating the procedure in the previous paragraph.

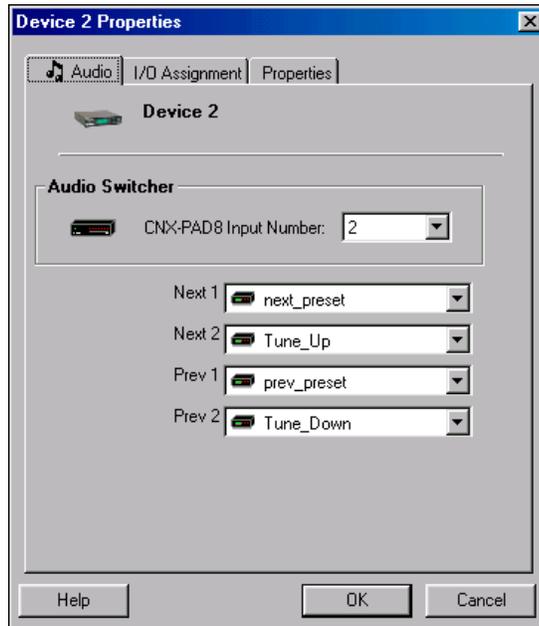
It is possible to assign properties to each source. Double click on an item from the list of sources or alternatively, double click on the source or right click the source, then select **Properties**. The "Device # Properties" window appears with up to three tabs of its own: Audio, I/O Assignment, and Properties. The pound symbol (#) in the title of the window indicates the number assigned to the actual device.

Audio Properties

The Audio tab of the "Device # Properties" window, as shown after this paragraph, identifies the name of the source device and reveals the predetermined input number to the CNX-PAD8. The input number to the audio switcher can be changed. This window also displays a list of possible commands, which are selectable as well. The four commands are mapped to two fixed buttons on the function keypad: left and right arrow. To execute the Next 1 command the user presses the right arrow button; to execute the Next 2 command the user presses and holds the right arrow button. Similarly, to execute the Prev 1 command the user presses the left arrow button; for Prev 2, the user presses and holds the left arrow button. Click the **OK** button to apply

and save any changes made and close the window. The **Cancel** button closes the window without saving any changes that have been made.

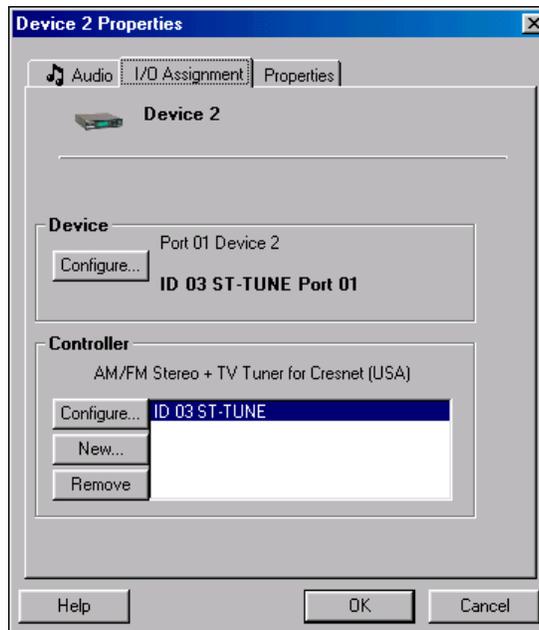
"Device # Properties" Window – Audio Tab



I/O Assignment Properties

The I/O Assignment tab of the "Device # Properties" window, shown after this paragraph, enables a change of the port assignment for the source as well as the controlling device. Click the **OK** button to apply and save any changes made and close the window. The **Cancel** button closes the window without saving any changes that have been made.

"Device # Properties" Window – I/O Assignment Tab



The *Device* area displays all control information about the currently selected device, specifically it reveals how this device is connected to the control system. Click on the **Configure** button to modify how this device is connected to the control system.

For example, a CD might automatically be assigned to port C of an IR card. To place this device on port D, simply click the **Configure** button, select the Port Assignment tab from the "Device Settings" window, and choose a new port assignment.

The *Controller* area displays all control information about the device that controls the currently selected device. For example, if the selected device is an IR controlled CD, the controller may be an IR card such as the CNXIR-8. The top line of text displays a description of this controlling device. The list box shows all controllers to which the current device may be assigned. There are three buttons to modify the contents of the list box.

- Click the **Configure** button to modify the controller location in the control system.
- Click the **New** button to add a controller to the list assuming a valid controller is available.
- Click the **Remove** button to remove the currently selected controller from the list. Some controllers (i.e., built-in cards) cannot be removed.

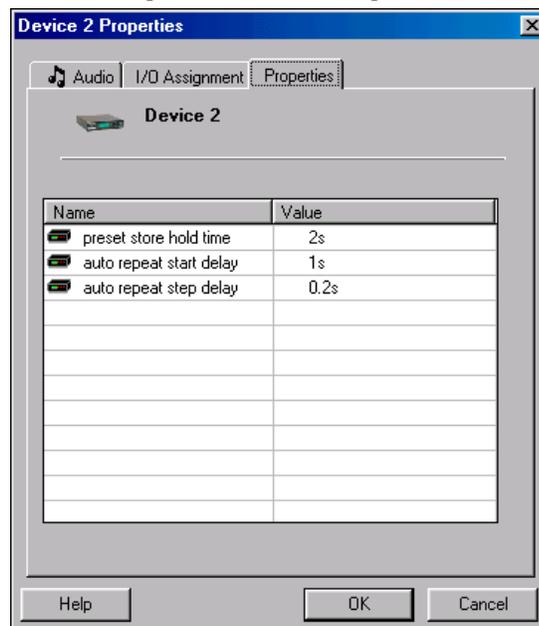
NOTE: Expert users can always modify any of the device properties directly in SIMPL Windows, after the program is generated.

Properties

The Properties tab of the "Device # Properties" window, shown after this paragraph, lists a set of values for specified functions. Crestron recommends that the default values are used, but the programmer is free to alter them. Click the **OK** button to apply and save any changes made and close the window. The **Cancel** button closes the window without saving any changes that have been made.

NOTE: This tab is not available for all devices.

"Device # Properties" Window – Properties Tab



Step 3: Add Rooms

The CNX-AUDIO-6PAK is designed to permit control of up to eight devices from up to six rooms. If the intent is to control more than eight devices or control seven or more devices from a single room, the designer should consider using the Application Builder to supplement the Audio Six-Pack Wizard or use the Application Builder solely.

The top six buttons on the function keypad are pre-configured for source selection, where by default the first button (on the top left of the panel) selects Device 1, the second button (top right) selects Device 2, the third, Device 3 and so forth. In applications with less than six devices, the extra source selection buttons will have no function assignment. In those applications with seven or eight devices, the extra devices will have no source selection buttons in certain rooms of the system. Use this step to determine which of the available sources can be selected from a given room.

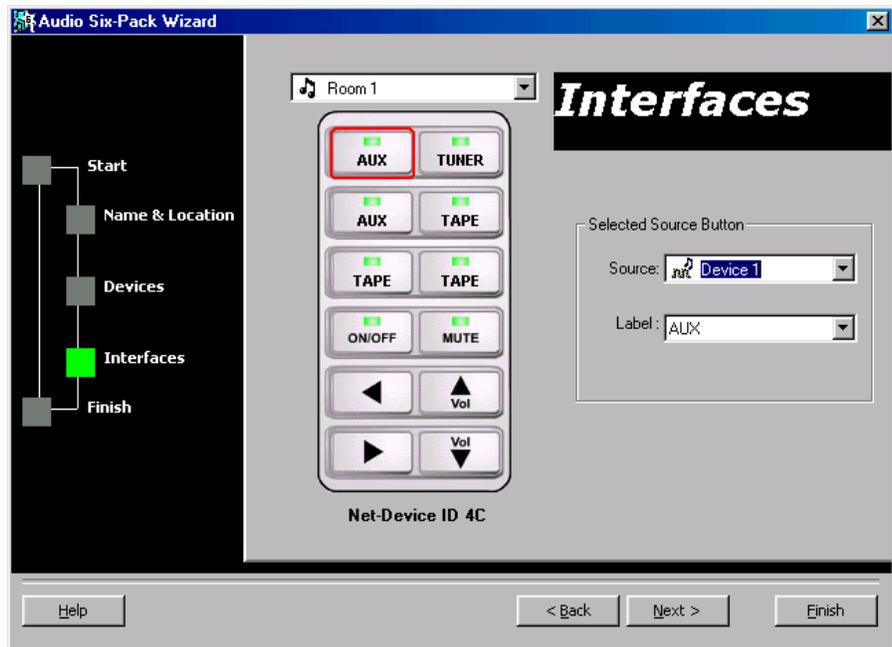
The CNX-AUDIO-6PAK is designed to provide control from up to six locations. The Interfaces screen of the Wizard allows the user to assign source control from each of the six rooms. From the pull-down above the user interface on the screen, as shown after this paragraph, choose a room. The top six buttons of the keypad need to be assigned to override the default settings. Move the cursor over one of the buttons and notice that the perimeter of the button changes to a blue color. Selection of a button changes the perimeter color to red and enables the *Selected Source Button* area of the screen. Select an available source from the *Source:* field and assign a label for the button on the keypad. Select another room and repeat the process.

NOTE: The keypad has standard source selector switch caps installed and a kit of custom switch caps is also supplied with the CNX-AUDIO-6PAK. Instructions for installing the custom switch caps or re-arranging the standard switch caps is provided in the latest revision of the CN-WP12F and CN-WP12N Operations Guide (Doc. 5788).

NOTE: The lower six buttons on the keypad are fixed.

NOTE: The Net ID of each user interface is room specific and shown beneath the user interface on the screen.

Add Rooms

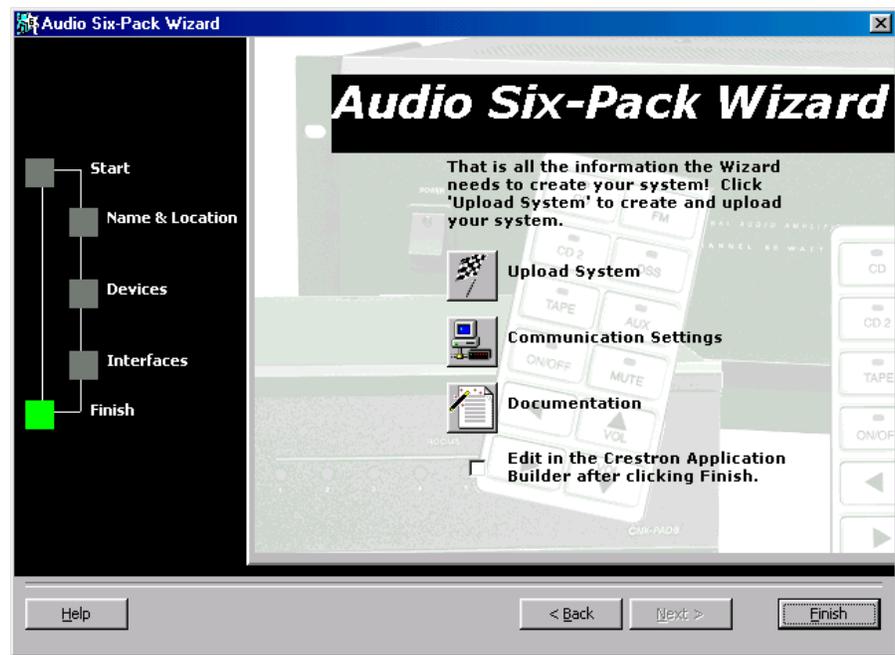


The switch caps on the lower six buttons on the keypad are fixed and cannot be altered. These include the On/Off button, Volume Up and Down, and Mute. The left and right arrow buttons are for the standard Next and Prev commands, as assigned in the Audio tab of the "Device # Properties" window, as described in "Step 2: Add Sources" on page 9.

Step 4: Upload the System

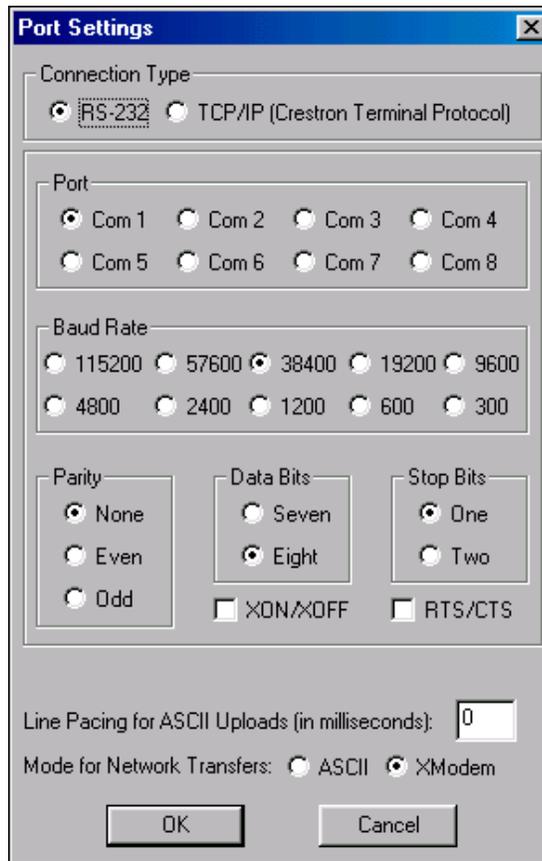
The Finish screen provides the final steps to building the logic for the system. This involves creating and compiling the SIMPL Windows program and uploading it to the control system. The completed SIMPL Windows program is saved in .smw format in the system's Program folder and contains all the logic that enables communication between the control system, button panels, controlled devices and other CNX-AUDIO-6PAK hardware.

Finish Screen



Before uploading the system, it is probably a good idea to verify the communication preferences. The PC running the Wizard should be connected to the front **COMPUTER** port of the CNMSX-AV via a straight through 9-pin cable. Only then can all system programs be uploaded. Select the **Communication Settings** button to open the "Port Settings" window, as shown below. Notice that TCP/IP connection is an option. However, a CNXENET+ card (not part of the CNX-AUDIO-6PAK) is required for Ethernet connections.

Verify Port Settings



The **Documentation** button on the final screen of the Wizard displays an HTML report of the entire system including devices and their respective locations. These reports are a great troubleshooting tool.

The **Edit in Crestron Application Builder** button is available for those users that surpass the basic intent of the CNX-AUDIO-6PAK. The options are numerous, but possibilities include:

- Add more zones
- Add a numeric keypad
- Add a CT/LC-1000 touchpanel as a user interface
- Add a wireless touchpanel as a user interface
- Add a CNXTA to the CNMSX-AV for intercom use.

If the Application Builder is to be used, check the **Edit in Crestron Application Builder** button and click **Finish**, then modify the system as desired. However, note that once the system is saved in the Application Builder, the Audio Six-Pack Wizard can no longer be used to open the file.

When communication between the PC and the control system has been established, click the **Upload System** button from the final screen of the Wizard. The "System Creation" window displays its progress as the Wizard creates and compiles the SIMPL Windows program. Then click **Continue** to proceed to the next and final action, uploading the program to the control system. After the transfer, click **Yes** to load the program into the permanent memory of the control system. Then click **Finish** to exit the Wizard.

System Operation

This section describes how to use the function keypad to operate a Crestron audio distribution system.

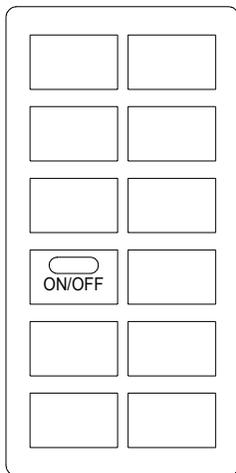
NOTE: These keypads are standard Crestron network devices and as such do not have any functionality built-in. Instead, the program loaded into the CNMSX-AV governs their operation. If you choose to use these keypads without using the devices called out in the CNX-AUDIO-6PAK, the programmer must determine how they operate.

The keypad provides on/off functionality, volume and mute control, source selection and control, and priority override.

On/Off Button

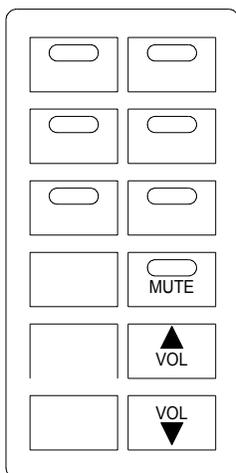
The On/Off button performs five distinct actions, based on when and how it is pressed.

- **Room On:** Press/release while room is off.
- **Room Off:** Press/release while room is on.
- **All Rooms Off:** Press/hold until room shuts off.
- **Sleep Mode On:** Press/hold until LEDs flash.
- **Sleep Mode Off:** Press/release while in sleep mode.

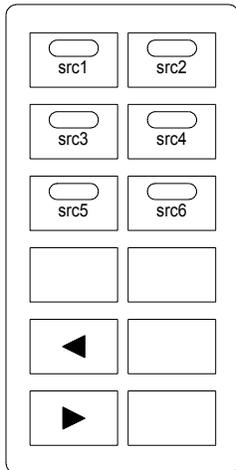


Volume and Mute Buttons

- **Mute Button:** Press to toggle volume mute on and off. LED blinks when volume is muted.
- **Volume Up/Down Buttons:** Control room volume level. LED of selected source blinks when volume level is adjusted.



Source Selection and Control



- **Source Selection Buttons (src1 through src6):** These buttons select the source for listening/control in the given room.

A solid LED indicates that the source is selected and can be controlled. A blinking LED indicates that a source is in use by another room and cannot be controlled. Refer to "Priority Override" on page 16 for an exception.

If a source is selected and has a solid LED, pressing the button again issues the NEXT1 command to that device.

- **Previous/Next Buttons:** These buttons control the selected source (unless the source LED is blinking, refer to "Priority Override" on page 16).

Press and release the Prev/Next buttons to send the PREV1/NEXT1 commands to the selected source. Press and hold the Prev/Next buttons to send the PREV2/NEXT2 commands to the selected source.

To change the NEXT and PREV commands for a given device, refer to the "Audio Properties" subsection of "Step 2: Add Sources" on page 9 for details.

Priority Override

The source button LEDs blink if another room has control priority over the selected source. This means that this room can listen to the source, but cannot control it.

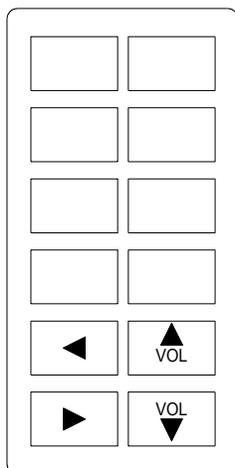
If another room has control over the current source, control can be taken from the other room by pressing and holding the source button for about two seconds.

Audio Configuration

The function keypads provide additional functionality for configuring both the room and source settings. Room settings include properties such as bass, treble, and balance, and only affect the room from which they are adjusted. Source settings are the input gain on the CNX-PAD8 for each source, allowing the volume level of each source to be normalized relative to one another. Adjusting the input gain for a source affects the volume of that source in all rooms.

Under normal operation, the keypads operate as described in "System Operation" on page 15. In order to adjust the room or source settings, the appropriate mode, as described in the following subsections, must be entered.

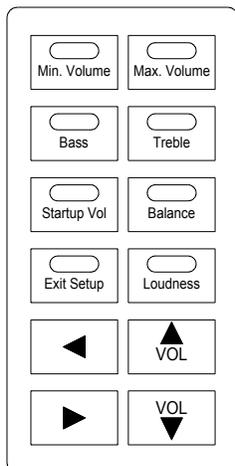
Setup Modes



- **Enter Room Setup Mode:** Press both Volume Up and Down buttons simultaneously to enter *Room Setup Mode*.
- **Enter Source Setup Mode:** Press both Next and Prev buttons simultaneously to enter *Source Setup Mode*.

NOTE: Once a setup mode is entered, additional settings can influence operation.

Room Setup Mode Operation

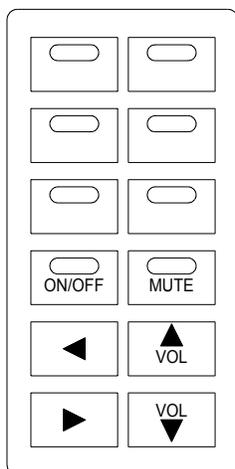


- **Source Selection Buttons:** These buttons select one of six properties to adjust. Once selected, use the Volume Up/Down or Prev/Next buttons to adjust the level.

Press and hold a button to set that property back to its default level.

- **On/Off Button:** This button's LED blinks rapidly to indicate *Room Setup Mode* activity. Press this button to exit *Room Setup Mode*.
- **Prev/Next Buttons:** Adjust the currently selected property left/right.
- **Mute Button:** Toggles loudness on and off. LED illuminates if loudness is currently on.
- **Volume Up/Down Buttons:** Adjust the currently selected property up/down.

Source Setup Mode Operation



- **Source Selection Buttons:** These buttons select the sources assigned to them in "standard" mode. Use the Volume Up/Down buttons to adjust the input gain for that source.
- **On/Off Button:** This button's LED blinks rapidly along with the Mute button to indicate *Source Setup Mode* activity. Press this button to exit *Source Setup Mode*.
- **Prev/Next Buttons:** These buttons have no functionality in this mode.
- **Mute Button:** This button's LED blinks rapidly along with the On/Off button to indicate *Source Setup Mode* activity.
- **Volume Up/Down Buttons:** Adjust the input compensation of the currently selected source.

Problem Solving

Troubleshooting

Refer to the troubleshooting tables in each of the individual device Operations Guides to resolve trouble situations. If further assistance is required, please contact a Crestron customer service representative by calling:

- In the US and Canada, call Crestron's corporate headquarters at 1-888-CRESTRON [1-888-273-7876] or 1-201-767-3400.
- In Europe, call Crestron International at +32-15-50-99-50.
- In Asia, call Crestron Asia at +852-2341-2016.
- In Latin America, call Crestron Latin America at +5255-5093-2160.
- In Australia, call Crestron Pacific at +613-9480-2999.

For local support from exclusive Crestron factory-trained personnel in New Zealand call Amber Technologies at +649-410-8382.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the CNX-AUDIO-6PAK, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

The Downloads page of the Crestron website (www.crestron.com) directs the reader to the location and description of each update. Check the site periodically for update availability and its subjective value.

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Operations & Installation Guide – DOC. 8169
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