

# XAP 800



## Audioconferencing System



## Installation & Operation Manual

**Gentner**

Perfect Communication through Technology, Service, and Education.®

**XAP 800 Installation and Operation Manual**  
**Gentner Part No. 800-151-101**  
**June 2001 (Rev. 1.0)**

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# 1 Introduction

## Product Overview

Congratulations on purchasing the XAP 800, a highly advanced twelve-by-twelve digital matrix mixer with Distributed Echo Cancellation®, noise cancellation, and audio processing. It uses an internal macro language and 32 user-definable presets to quickly adapt to a variety of teleconferencing and sound reinforcement applications such as distance learning, teletraining, telemedicine, courtrooms, conference rooms, boardrooms, hotels, and houses of worship.

In its most simple form, the XAP 800 is a mic mixing matrix. As such, all mic-mixing parameters can be customized and any input or combination of inputs can be routed to any output or combination of outputs. This allows great flexibility in accommodating a variety of applications and requirements.

The XAP 800 features numerous functions which greatly enhance its performance and flexibility. For example, it can gate mics on and off when the sound within a mic's acceptance pattern reaches a certain level. In addition, Gentner's proprietary Distributed Echo Cancellation® makes decisions for each mic individually, based on each mic's specific conditions. Also, the XAP 800 functions with a network architecture which allows up to eight XAP 800s and up to 16 XAP TH1s to be linked and operate as a single system.

The XAP 800 monitors each mic independently, observing ambient levels and making decisions based on each mic's environment. Thus, the input for a mic located in a highly reverberant part of a conference room is gated, mixed, and processed to compensate for the changes in that area and reduce echo and noise. This improves audio quality and decreases the possibility of feedback.

The XAP 800 facilitates local and remote PC setup and diagnostics, logic outputs, and automatic gated mic operation. Mic inputs can be individually customized to gate on and off as you wish, while automatic gain control keeps the overall sound level consistent. Eight of the 12 channels can be configured as an automatic microphone mixer.

All microphone mixing parameters can be customized and any combination of inputs can be routed to any combination of outputs, with attenuation adjustments at each cross point. This allows flexibility in accommodating different applications and customer requirements.

Adjustments in routing, level, and other functions can be made through presets activated through a closure on the rear panel, an RS-232 serial interface, or a control panel on the Expansion Bus data channel.

The XAP 800 features eight audio processing blocks, each with 15 filters. Each filter can be configured as a parametric equalizer, high pass, low pass, CD horn, high shelving, low shelving, all pass, or crossover. This allows you to tailor the XAP 800's audio response to optimize the audio quality and fidelity characteristics of a wide variety of sound reinforcement systems.

The GPIO (general purpose input/output) allows switching among any of 32 user-stored presets. This gives you real-time flexibility to meet a variety of audio reinforcement requirements.

Network-based interconnectivity allows up to eight XAP 800s to be connected and controlled as a single unit, allowing microphone coverage in applications requiring up to 64 mics.

The XAP 800's Macro Pro™ scripting language allows the unit to function without the need for an external controller. However, it can be easily interfaced to an external controller or PC via one of the two RS-485 ports or through the RS-232 port.

If you have questions about the installation or use of the XAP 800 which aren't answered in this manual, please contact us at:

**Phone:** 1.800.283.5936 (USA) or 1.801.974.3760

**Fax:** 1.800.933.5107 (USA) or 1.801.977.0087

**Internet:** [www.gentner.com](http://www.gentner.com)

**E-mail:** [tech2@gentner.com](mailto:tech2@gentner.com)

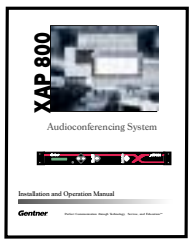


# 2 Installation and Setup

## Unpacking



XAP 800 Part No. 910-151-101



XAP 800 Manual  
Part No. 800-151-101



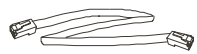
Audio Video Products  
CD  
Part No. 800-000-001



Phoenix 3-Pin  
Push-On Blocks (x24)  
Part No. 673-016-003



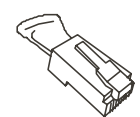
Phoenix 4-Pin  
Push-On Blocks (x2)  
Part No. 673-016-104



18-inch Expansion Bus  
Jumper (x1)  
Part No. 830-150-004



AC  
Power Cord  
Part No. 699-150-006



Expansion Bus Terminator (x1)  
Part No. 830-150-003

**Equipment included with XAP 800 unit**

Check to ensure that the equipment shown above was received with your shipment. Inspect the shipment for damage. Gentner Communications is not responsible for product damage incurred during shipment. You must make claims directly with the carrier.

For instructions on how to install the unit and make connections, refer to Installation on page 7.

## Front Panel

The XAP 800's front-panel controls (see Figure 1) perform the following functions described below.

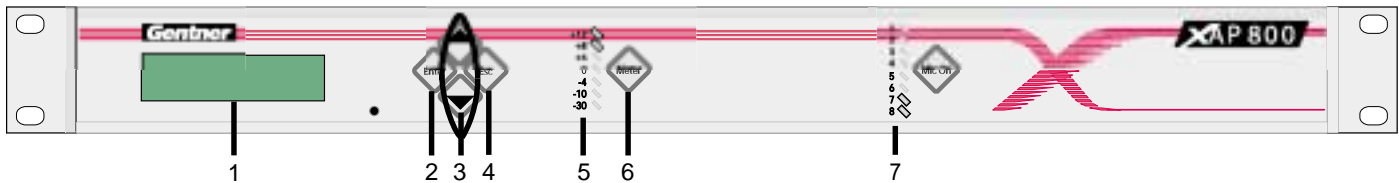


Figure 1. Front Panel



**All front panel buttons are also used to enter the front panel pass code. See Security (page 11) for more details.**

1. LCD This display is for XAP 800 setup in conjunction with the four associated front-panel buttons [2, 3, and 4]. **Baud rate and flow control must be configured from the front panel; see the LCD Menu Tree on page 10 for the location of these in the menu system.** Other functions accessed via the front-panel include system options, RS-232 configuration, troubleshooting, and level readings.

2. Enter This button is used when programming the XAP 800 via the LCD window. To move deeper in the menu or execute a selected parameter, press the Enter button.

3. ▲/▼ These buttons scroll up and down through vertical programming options within a specific XAP 800 programming parameter or increases/decreases a numeric value.

4. ESC This button, when used in programming the XAP 800 with the LCD window, steps you out of a selected parameter or moves you up one level in the menu. When a parameter has been displayed with the arrow buttons [3], you can select it with the ENTER button [2] to modify it. Then, you can step out of the menu with the ESC button.

5. LED Meter This assignable, peak-level LED bar meter is used to display the audio level of an input, output, or processing channel of the XAP 800.

6. Meter Takes you directly to the Meter branch of the XAP 800's LCD menu tree.

7. LED 1-8 These LEDs indicate Inputs 1-8 gate status.

## Rear Panel

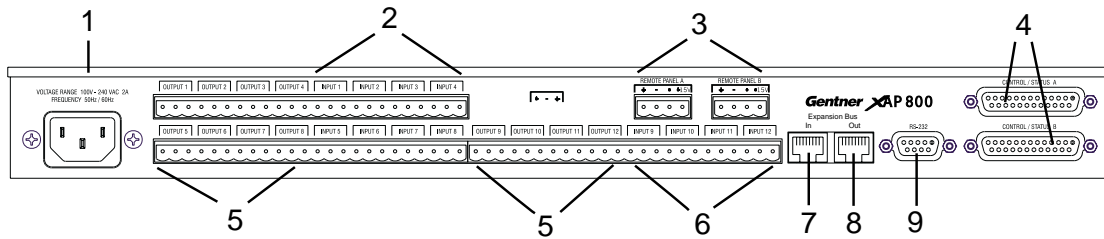


Figure 2. Rear Panel

**1. Power** This power module (see Figures 2 and 3) accommodates power ranging from 100–240VAC, 50/60Hz. The module uses an IEC-type connector. No switching is required.

**2. Inputs 1-8** These Phoenix™ block connectors (see Figures 2 and 4) are for connection of eight mic-level or line-level (selectable) inputs. These connectors are typically used for mics, but can be configured for use with VCRs, CD players, XAP TH1, etc. These inputs can be mixed in any gated or non-gated combination and routed to any of the 12 outputs. Default input level is -55dBu. For more information about input adjustments, see page 37. For electrical specifications, see Appendix A: Specifications.

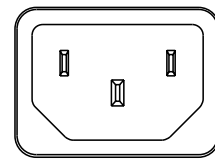


Figure 3. Power Plug

**3. RS-485 Remote Panel A/B Port** These four-pin Phoenix connector ports (see Figures 2 and 5) allow you to control the XAP 800 with the Gentner Control Panel.

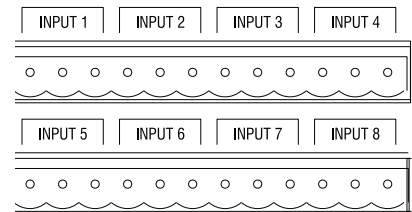


Figure 4. Inputs 1-8

Power is supplied through the RS-485 ports to the remote Control Panels from the XAP 800. This power is limited to a total of 300mA at 15 volts for each connector. Over-current protection is provided on the +15V pins to prevent damage in the event of shorting. External power can be provided to control devices when more current is required. See page 88 for maximum cable run distances when using Gentner Control Panels.

**4. Control/Status Ports A and B** These two female DB25 connectors (see Figures 2 and 6) are for connecting control devices to the XAP 800. The control devices have access to the command set for the XAP 800 and can be used for common functions such as volume control, muting, preset change, room combining, etc. Devices can be connected to either port.

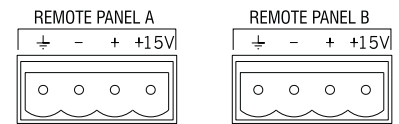


Figure 5. RS-485 Remote Panel A/B Ports

For instructions on how to program the control and status pins, see the GPIO section on page 61. The default settings allow control and status of inputs, outputs, volume, and presets. These pins are active low. The 32 presets can also be activated via these connectors. For pinout and default information, see Appendix B.

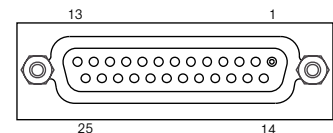


Figure 6. Control/Status Ports A and B

**5. Outputs 1-12** These three-pin Phoenix connectors (see Figures 2, 7, and 8) is for connection of eight line-level balanced outputs with three-pin Phoenix connectors. These outputs are typically used for connection to

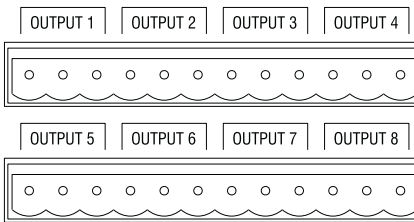


Figure 7. Outputs 1-8

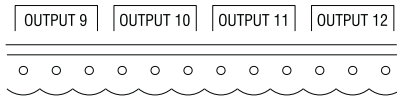


Figure 8. Outputs 9-12

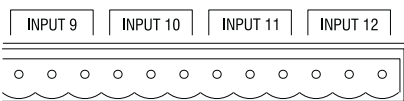


Figure 9. Inputs 9-12

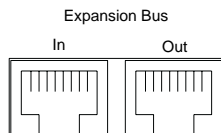


Figure 10. Expansion Bus Connectors

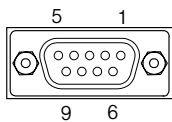


Figure 11. RS-232 Port

VCRs, tape recorders, amplifiers, codecs, phone hybrids, and other audio devices. These outputs may be configured to contain any combination of gated and non-gated inputs. The nominal output level is 0dBm.

**6. Inputs 9-12** These Phoenix connectors (see Figures 2 and 9) are for connection of up to four line-level inputs. These are typically used for connection of VCRs, tape players, CD players, and other audio sources. They can be routed to any output or multiple outputs. Nominal level is 0dBu.

**7. Expansion Bus In** This RJ-45 connector (see Figures 2 and 10) is used for connecting additional XAP 800 units. The first XAP 800 unit in the local Expansion Bus network must have the EXPANSION BUS IN connector terminated with an Expansion Bus terminator. The first XAP 800's EXPANSION BUS OUT connector is attached to the EXPANSION BUS IN connector on the next XAP 800, forming a daisy-chain network. See the diagram on page 8.

**8. Expansion Bus Out** This RJ-45 connector (see Figures 2 and 10) is used for connecting additional XAP 800 units. The last XAP 800 in the local Expansion Bus network must have the EXPANSION BUS OUT connector terminated with an Expansion Bus terminator. The first XAP 800's EXPANSION BUS OUT connector is attached to the EXPANSION BUS IN connector on the next XAP 800, forming a daisy-chain network. See the diagram on page 8.

**9. RS-232** This female DB9 serial port (see Figures 2 and 11) is for interconnection between the XAP 800 and a PC, modem, or other custom remote controller. For serial protocol, see Appendix B: Connector Pinouts.

### Expansion Bus Networking

This digital mix-minus bus allows audio routing between destinations on the Expansion Bus network. It contains 12 independent digital audio buses labeled O-Z and four PA adapt/acoustic echo cancellation reference buses. Each audio bus can route mic or line-level inputs in any combination across the Expansion Bus network. These buses are divided into two groups—O-R buses and S-Z buses—based on their capabilities and default settings.

**O-R Buses** These four audio buses are defaulted as the mic mix buses; they can communicate the NOM count and mic mixing parameters across the network to other XAP 800s. All mics are routed to the 0 bus by default.

**S-Z Buses** These eight buses are defaulted as auxiliary mix buses. They are used to route auxiliary audio, such as from a CD player or VCR, to and from other units on the network. These buses are also used as mic mix buses when NOM count is not required.

Also, there are four global mixer groups (A-D). They support first-mic priority, maximum number of mics, etc., and work across all linked XAP 800s. Unlike the audio buses, they contain only mic status and gate parameters. All gated mics are default routed to the A mixer.

Global Mixer Groups A-D These mix-minus buses are defined as microphone mixer groups which support first-mic priority, maximum number of mics, etc. and work across all linked XAP 800s. Unlike the audio buses, they contain only mic status and gate parameters. All mics are assigned to the A mixer group by default.

PA Adapt/Acoustic Echo Cancellation Reference Buses E1-E4 Allows an input from a XAP 800 to reference an output on another linked XAP 800. See PA Adapt and AEC Reference on page 43 for more information.

**Network Requirements**

The Expansion Bus (RS-485 LAN) lets you connect up to eight XAP 800s. The maximum distance between interconnected Gentner units is 80 feet (24 meters). Gentner recommends that category five twisted-pair (10BaseT LAN) cable be used.

**Equipment Placement**

The XAP 800 is designed to mount in a 19" (48.26cm) equipment rack. Do not block the ventilation holes. With a desktop kit, it can be adapted for tabletop use.

**Environmental Requirements**

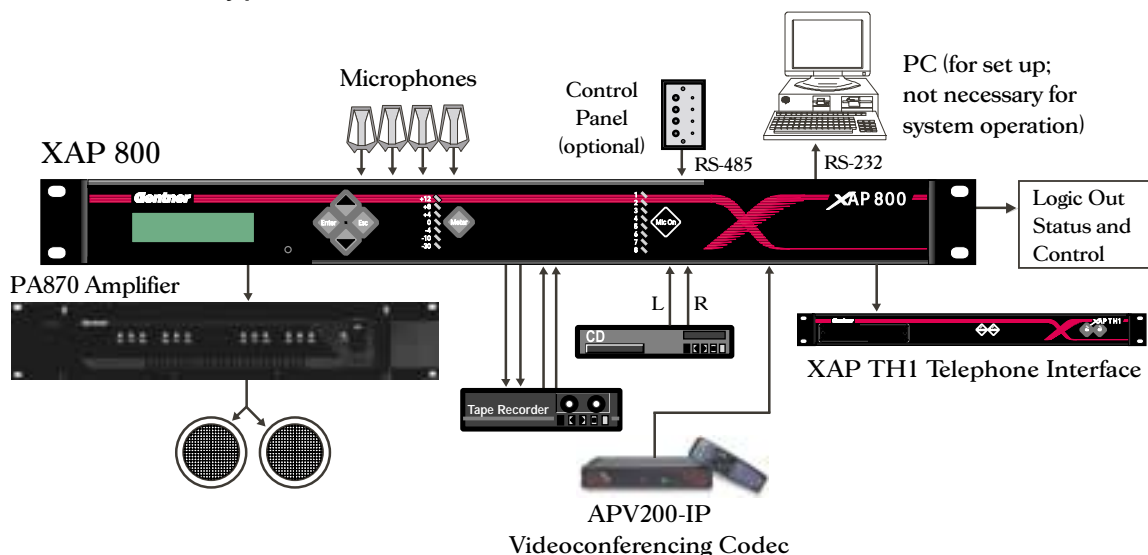
The XAP 800 can be safely operated in a room with varying temperatures between 32° F (0° C) and 110° F (43° C).

**Installation**

Follow the step-by-step instructions on the following pages to install your XAP 800(s).

A complete XAP 800 installation example is shown below.

**XAP 800 Typical Installation**




### Step 1—Rear Panel Connections

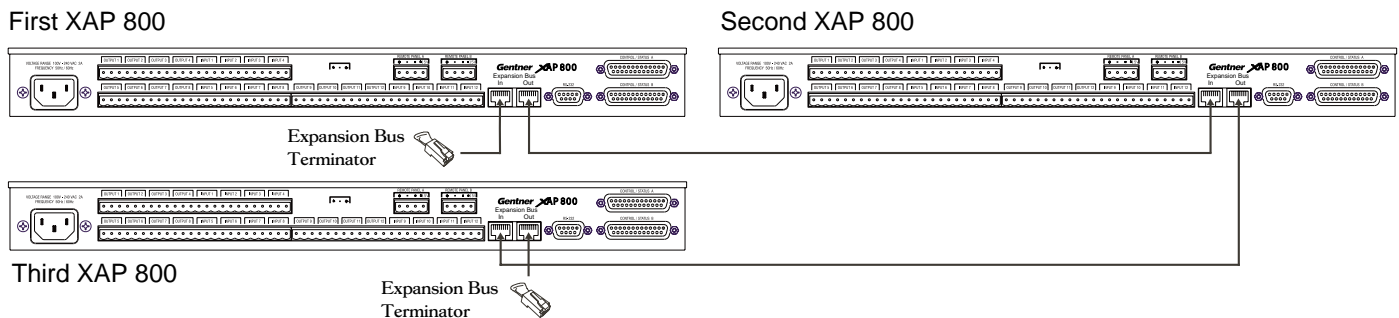
Review the equipment placement and environmental requirements sections (page 7) before installing the unit. Also, refer to the Rear Panel section (page 5) to make all the equipment connections necessary for your particular application.

### Step 2—Expansion Bus Connections

Begin by placing the XAP 800s in their proper locations. The Expansion Bus In and Expansion Bus Out RJ45 connectors (see Figure 2) on the back panels are designed for connecting multiple XAP 800 units. Expansion Bus connections between units are made in a daisy-chain fashion using category five twisted-pair cable.

The first Gentner unit in the chain (see diagram below) must have the Expansion Bus In connector terminated with an Expansion Bus terminator.

 **If networked XAP 800s are stacked vertically, connect them using the short RJ-45 jumper. When networking between XAP 800s, Gentner Communications recommends that category five twisted-pair (10BaseT LAN) cable be used. The maximum cable run between XAP 800 units is 80 feet (24 meters).**



**Expansion Bus Network Connections**

 **An Expansion Bus network will allow interconnection of up to eight XAP 800 units.**

The first XAP 800's Expansion Bus Out connector is then attached to the Expansion Bus In connector on the next XAP 800 in the chain.

The last XAP 800 unit's Expansion Bus Out connector is terminated with an Expansion Bus terminator.

The LEDs will flash if there is a device ID conflict. Each XAP 800 on the network should have a unique device ID (see Step 3 – Device ID).

If the error is in the Expansion Bus connection, the front panel LEDs will flash on the units that are not physically connected to the network. To correct the problem, check for broken connections and reconnect the Expansion Buses.

### Step 3—Device ID

Once your physical Expansion Bus is established (and if you have more than one XAP 800 at a site), you need to set up unique Expansion Bus Device ID numbers for each XAP 800 on the network. As shipped from the factory, all XAP 800s default as Device ID 0.

To set Device ID numbers for each XAP 800 unit, press the front-panel Enter button, then scroll through the menu until the System menu is visible. Press Enter, then scroll through the menu until Device ID is visible. Press Enter, then scroll through the eight (0–7) options. When the desired Device ID is visible, press Enter to select it.

Repeat this process for each XAP 800 on the Expansion Bus network.

### Step 4—Mixer Mode

Once you establish the physical Expansion Bus network and unique Expansion Bus Device ID numbers for each networked XAP 800, set the Mixer Mode.

There are two Mixer Mode settings: slave (default) and master. The slave setting is used in most circumstances. Master is used to split audio on a linked XAP 800 system; global control of the system is still maintained with the first XAP 800 unit in the system. For example, if you wanted to block audio flow between units three and five in a five-unit linked system, you would set the Mixer Mode setting on the third unit to master.

To choose the mixer mode, press the front panel Enter button, then scroll through the menu until the system menu is visible. Press Enter, then scroll through the menu until Mixer Mode is visible. Press Enter, then scroll to the desired option. Press Enter again to select it.

Repeat this process for each XAP 800 on the Expansion Bus network.



**If the same DEVICE ID is assigned to more than one unit on the Expansion Bus network, Meter LED “+12” will flash red and Mic LEDs “1,” “2,” “4,” and “8” will flash green on the affected units. To correct the problem, it is necessary to change the DEVICE ID on one of the conflicting units.**

## LCD Programming



**G-Ware software is required to complete system setup.**

The XAP 800's front panel is intuitive to operate, thanks to its simple interface: a 2x16 character LCD, menu buttons (described previously), and a peak-level LED bar meter. Most of the XAP 800's features are programmed with G-Ware software. See Chapter 3: XAP 800 G-Ware Software for more information.

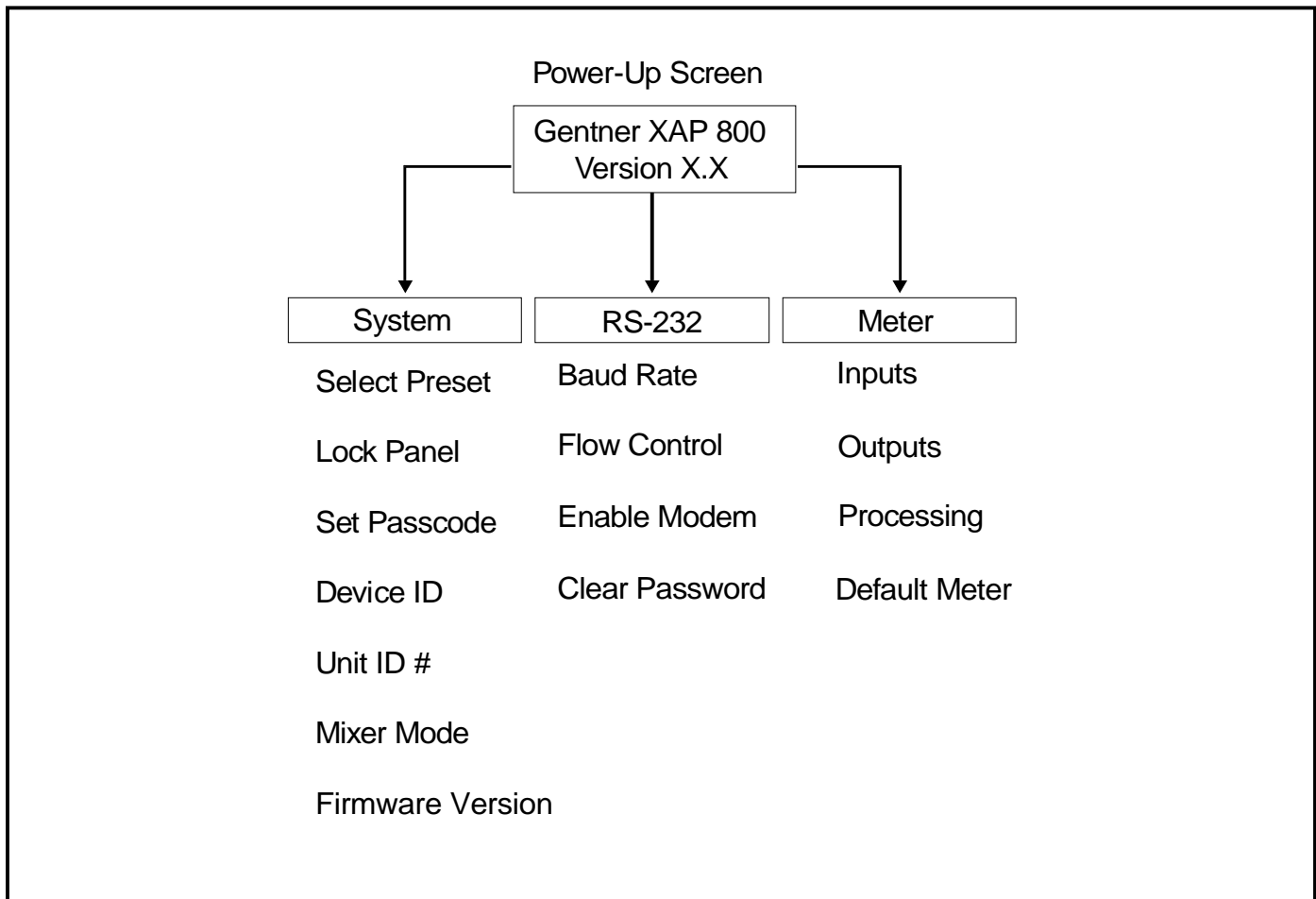
When power is applied to the XAP 800, the LCD panel will first read INITIALIZING. If an error is displayed, contact technical support. When initialization is complete, "XAP 800" is displayed on the top line and "Unit 0" is displayed on the bottom line.



**Pressing ESC at the top of the tree does nothing.**

### Menu Tree

The menu tree features three main menus, each with submenus. These branches typically end when an adjustable parameter or viewable value is reached. The diagram below shows the LCD menu tree.



LCD Menu Tree



The three main menus are: System, RS-232, and Meter. All submenu items are arranged under these menus. Use the ENTER button to descend into a menu and its submenus and ESC to ascend back out. Use the ▲ and ▼ buttons to select between items within a specific menu or submenu group. When the last menu item is reached, the display scrolls back to the beginning of the list, and vice-versa. Holding down an ▲/▼ button increases the scrolling repeat rate.

To adjust a parameter, first verify that the LCD shows the parameter flashing. If the parameter is not flashing, it cannot be adjusted until ENTER is pressed. If the parameter is flashing, adjust the value with the ▲ and ▼ buttons. As the value is adjusted, the parameter is updated immediately. To store the new value, press ENTER. To discard the change and revert back to the old value, press ESC. If the METER button is pressed while a parameter is being adjusted, the LCD will switch to the Meter menu.

Parameters that toggle between two values (or are a list of values) will wrap around. Holding down an ▲/▼ button longer than two seconds will engage a faster repeat rate through menu items.

**Security**

There are two aspects to XAP 800 security (see the System-Level LCD Parameters figure at right): locking the front panel and the passcode.

Lock Panel

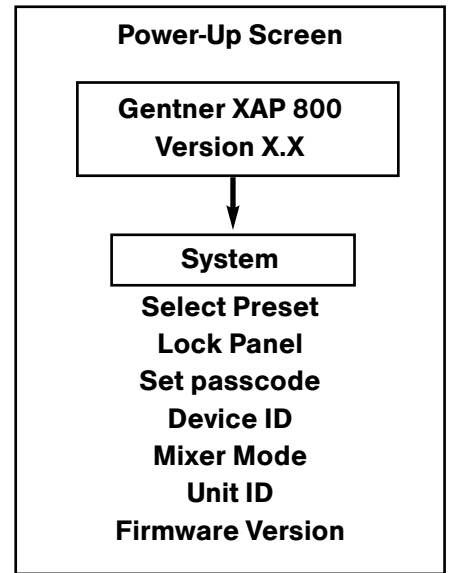
Locking. The front panel may be locked to prevent unauthorized adjustments to the XAP 800. To lock the front panel, use the ▲/▼ buttons to select the System menu, then press ENTER. Then scroll through the menu items to select LOCK PANEL and press ENTER. Select ON and press ENTER again.

Unlocking. To unlock the front panel, attempt to adjust a parameter. The XAP 800 will prompt for the passcode. Upon entering the fifth character (if entered correctly), the front panel will unlock. The default passcode for all boxes is ▲▲▼▼ENTER.

Set passcode

Once the XAP 800 is unlocked, the passcode may be changed. Before the XAP 800 will allow passcode changes, the new passcode must be entered, then re-entered to validate the new passcode.

The front panel passcode can also be set (and reset) within G-Ware. See page 24 for more information.



System-Level LCD Parameters



**Menu items can still be scrolled through when the panel is locked. However, settings cannot be entered until the panel is unlocked with the appropriate passcode.**

### **System Menu**

There are seven system-level parameters (see System-Level LCD Parameters figure on previous page): Select Preset, Lock Panel, Set passcode, Device ID, Mixer Mode, Unit ID, and Firmware Version. The latter two are read only; they cannot be changed.

#### Select Preset

The SELECT PRESET menu item allows for one of 32 preprogrammed presets to be selected for XAP 800 use. These preset configurations can be easily loaded via serial commands to the RS-232 port. For example, the XAP 800 may be set up for different room microphone configurations (i.e. Preset 1 for a two-mic presentation, Preset 2 for an eight-mic conference, Preset 3 for a three-mic priority panel discussion with 20 mics for audience questions, etc.). To select a preset, scroll through the numbered presets (1-32) until the desired preset is visible, then press ENTER. The preset will immediately be loaded into the XAP 800 memory for active use.

#### Device ID

The XAP 800's device ID is set from this menu. There are eight device ID selections to choose from (0–7). Select the network position you wish to use. Within a single site, you must designate different device ID numbers for each XAP 800 unit. See Step 3—Device ID, page 9.

#### Unit ID

The UNIT ID menu selection allows you to access the read-only address set at the factory. This unique ID number identifies your particular XAP 800 unit and cannot be changed.

#### Firmware Version

This menu selection allows you to view which firmware version is being used. This information cannot be changed.

**RS-232 Menu**

There are four submenus under the RS-232 Menu (see figure at right): Baud Rate, Flow Control, Enable Modem, and Clear Password.

Baud Rate

This parameter allows you to set the XAP 800's baud rate to 9.6kbps, 19.2kbps, 38.4kbps, or 57.6 kbps. Default is 38.4kbps. Select the baud rate you wish to use, then press ENTER.

Flow Control (hardware)

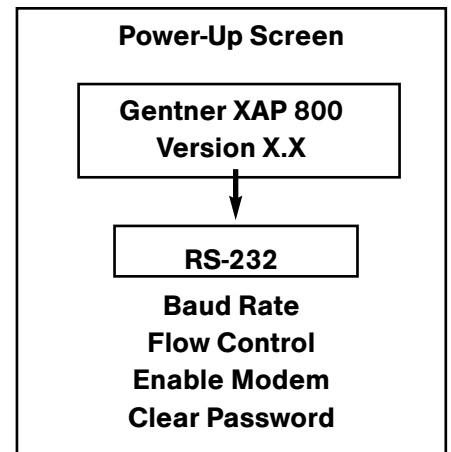
The Flow Control options are On and Off. The XAP 800 will use the RTS and CTS pins on the port to regulate the transmission and reception of data. When None is selected, the XAP 800 ignores flow control, making the connected device ensure that data is not lost. Software flow control (Xon/Xoff) is not provided. Default is On.

Modem Mode

This parameter configures the RS-232 port for connection of a modem. When On is selected, the XAP 800 will send an initialization string to the modem on power-up and require a password before data transfer is allowed through the port. When Off is selected, the password is disabled and the port is left in a passive mode. Default is Off.

The modem configuration must be performed as follows:

1. Forced connect speed must match that of the XAP 800.
2. Echo must be turned off.
3. Response mode must be turned off (i.e., no OK messages, Ring, etc.).
4. Auto answer must be enabled.
5. Caller must select the baud rate of the local XAP 800 for the mode rate.



RS-232-Level LCD Parameters



**Gentner recommends that you enable Flow Control.**



**The modem initialization string can only be set via the MINIT serial command (see page 144) or the G-Ware™ software. It cannot be set through the front panel LCD.**

Clear Password

This parameter allows you to erase the serial port password in case it has been forgotten. Select YES to keep the current password or NO to erase it. Press ENTER to enable your selection.

**Meter Menu**

There are four submenus under the Meter Menu (see Meter-Level LCD Parameters figure at left): Inputs, Outputs, Processing, and Default Meter. The Meter menu selects what is shown on the front panel LCD and peak-level LED display. Both displays show peak level indications. Use the ▲ and ▼ buttons to select the Meter menu, then scroll through the options and press ENTER when you reach the desired option. For more information about the LCD and LED displays, see page 8 and the information below.

Inputs

This submenu allows you to select which input (1-12) you want to monitor on the LCD and LED display. Scroll to the input you wish to monitor, then press ENTER.

Outputs

This submenu allows you to choose which output (1-12) you want to monitor on the LCD and LED display. Scroll to the output you wish to monitor, then press ENTER.

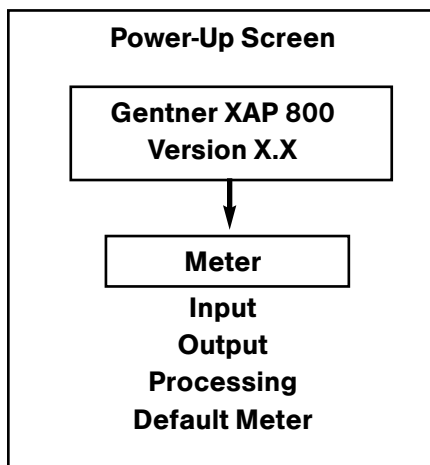
Processing

This submenu allows you to choose which processing channel (A-H) you want to monitor on the LCD and LED display. Scroll to the output you wish to monitor, then press ENTER.

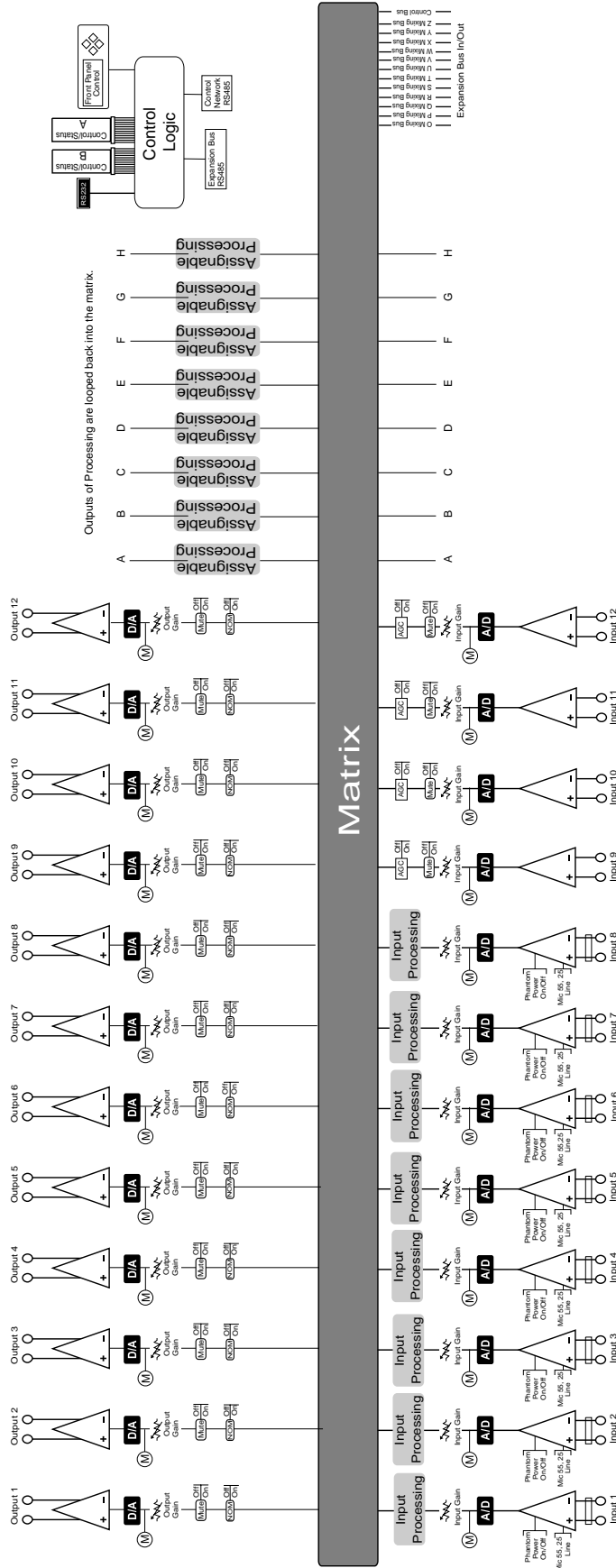
Default Meter

This submenu determines what is displayed on the LED meter when a meter is not specifically selected elsewhere in the Meter menu. The default can be set to monitor the input, output, or processing channel you choose.

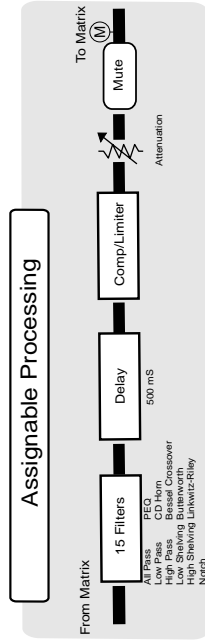
On page 15 is a Meter Reference Point diagram. It shows where the meter pick-up points are in the signal path through the XAP 800.



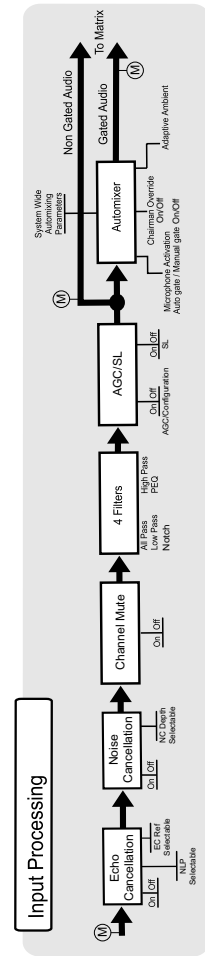
**Meter-Level LCD Parameters**



Outputs of Processing are looped back into the matrix.



**(M)** = Meter Reference Point



**Meter Reference Point Diagram**

A complete set of worksheet templates for configuring various XAP 800 functions are located in the XAP 800 White Paper document on the AP Products CD provided.

## Operation

The XAP 800 is operated with G-Ware software. A few parameters can be changed through the LCD panel on the front of the unit, as discussed in the LCD Programming section (page 10).

A remote controller can be used to operate the XAP 800, but is not necessary.

# 3 XAP 800 G-Ware Software

## Pre-Installation Information

G-Ware software must operate on computer equipment that meets the following minimum requirements:

### Operational Requirements

Operating system: Windows 95® OSR 2.1/98/2000/NT

### PC Hardware Requirements

Pentium 200MHz

20MB free hard drive space

PCI or AGP video card with 2MB RAM (minimum); 4MB RAM recommended

Video monitor with 800x600 video resolution, 256 colors, and 16-bit color depth (minimum); 1024x768 video resolution recommended

RS-232 COM port

CD-ROM drive

Mouse

## Creating Floppy Disk Copies

Depending upon the computer equipment you have available, you might need to install G-Ware software from floppy disks rather than the included CD. To do this, a Disk Copy program is provided in G-Ware that allows you to transfer G-Ware to floppy disks. You will need a PC with a CD-ROM drive to make the transfer. After installing G-Ware on the CD-ROM-equipped computer (see Installation Procedure on page 18), you can access the Disk Copy program in the following way:

After installing G-Ware, go to the Windows® Start menu, select Programs, then Gentner G-Ware, then Create Install Floppy Disks. Follow the on-screen prompts to complete creation of the floppy disks.

## Installation Procedure



To select an alternate destination directory, click **Browse** and use the **Choose Directory** window to find the desired location. Click **OK** to return to the previous window.

1. Boot the PC to the Windows operating system. Ensure that all other programs or applications are closed. Insert the Audio and Video Products CD into the CD-ROM drive.

If the Autorun feature is enabled on the PC, the Gentner Welcome window opens. Click the **Software** tab to continue setup. Two drop-down tabs appear—AP-Ware and G-Ware. Click the G-Ware tab.

If the Autorun window does not open, open the Windows Start menu and choose Run. Type "<drive>:\gentner.exe" where <drive> is the letter of the CD-ROM drive (e.g., D:\gentner.exe).

2. At the G-Ware window, click **Install G-Ware** near the bottom of the window.

3. The InstallShield Wizard opens, and guides you through the Welcome and License Agreement windows. At the Choose Destination Location window, choose the directory where G-Ware will be installed. We recommend that you use the default directory.

4. Click **Next** or **Yes** to move to proceed through the windows that follow or **No** or **Cancel** to end the installation process. You must enter a serial number at the User Information screen if one is not automatically inserted.



Choose Destination Location Window



5. The Select Program Folder window shows which Program Folder starts the G-Ware software.



Select Program Folder Window

6. Click **Next**. The Install Summary window shows the current install settings.

7. Click **Next** to begin installation. After a few moments, a window appears indicating that installation is complete.

8. You must restart your computer to finalize the installation process. You can restart now or wait until later. Click **Finish** to complete the installation procedure.

The G-Ware Program Folder is now installed in your Start menu.

## G-Ware Software Configuration

### G-Ware Main Screen

G-Ware is the configuration software for the XAP 800. Virtually every parameter of the XAP 800's operation is programmed with G-Ware.

When you complete the software installation described on the previous pages, launch G-Ware by going to the Start menu, selecting Gentner G-Ware, then G-Ware - Main Program. The G-Ware Main Screen (shown below) appears.



G-Ware Main Screen



G-Ware Communicator Icon

Note the G-Ware Communicator software icon next to the clock at the bottom right-hand corner of the screen.

## Create New Site

You should begin G-Ware configuration of your XAP 800 by clicking on the **Create New Site** button. This opens the Site Properties – New Site/General Tab window. The **General** tab is selected. Note that a default File Name and Path appear, and that nothing appears next to the Created and Modified fields.

To establish a file name and path, click **OK**, then select **Save As** from the File menu. This opens the Save As window, where you enter a file name and path. Click **Save**, then select **Site Properties** from the File menu. The Site Properties—New Site/General Tab window reappears, with the File Name and Path you've chosen. Note that the Created and Modified fields reflect the date and time you saved this information.



Whenever a mouse click is indicated in this manual, it refers to the left mouse button unless otherwise indicated.



Create New Site Button



Site Properties – New Site/General Tab Window



G-Ware will allow a maximum of four sites to remain open at a time. If you have established more than four sites, you will be able to select only four site icons at a time for use.

Next, select the **Site** tab. Enter the site name, author, company, location, room, and description, using the Tab key or mouse to select each field.



Site Properties – New Site/Site Tab Window

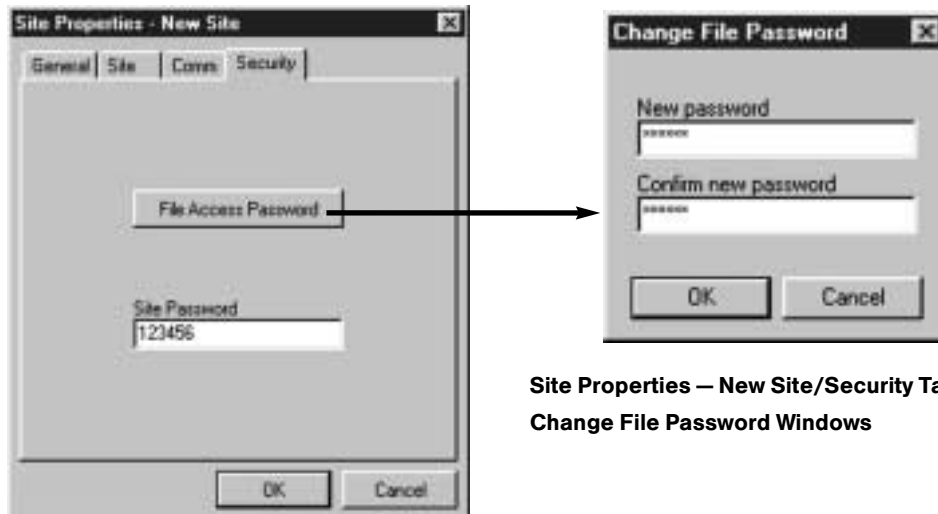
Next, click the **Comm** (Communications) tab. Select which COM port, baud rate, and flow control you wish to use (Gentner recommends that you leave Flow Control set to Hardware). Ensure that the appropriate connections are made on the rear of the XAP 800. If you plan to use a modem, select the Use Modem box and enter the phone number, initialization string, and reset string. If you wish to configure the XAP 800 for Panja operation, select the Use Panja box and choose which Panja port you wish to use.

Site Properties — New Site/Comm Tab Window



When entering and confirming a password in the **Change File Password** window, it is represented with asterisks to maintain security.

Select the Security tab. If you wish to enter a modem password, enter it in the Modem Password field. If you wish to set a file password, click **Change File Password**. Enter the password in both fields of the Change File Password window and click **OK**.



Site Properties — New Site/Security Tab and Change File Password Windows

Click **OK** to confirm the settings you've entered in the Site Properties — New Site window.

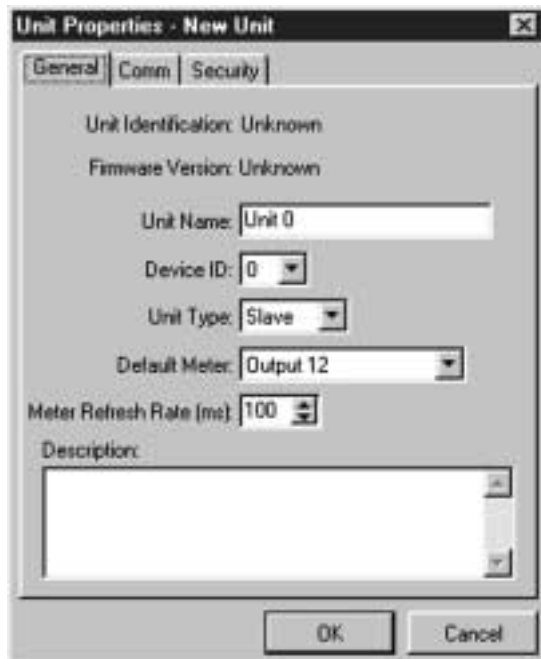
## Adding a XAP 800 Unit to a Site

The next step is to add a XAP 800 unit to the site setup you've created. This step also applies to adding a Gentner PSR1212, using the corresponding PSR1212 toolbar button.

In the G-Ware Main Screen, click the **Add XAP 800 Unit to Current Site** button. This opens the Unit Properties – New Unit window.



Add XAP 800 Unit to Current Site Button



Unit Properties – New Unit/General Tab Window

Note that the **General** tab is selected. Enter the Unit Name you wish to use for the unit. Next, select the **Device ID** (default is 0). If you're using two or more networked units, enter the appropriate number the XAP 800 unit will be in the sequence.

Then, select the **Unit Type** (default is slave) and **Default Meter** (default is Output 12) settings you wish to use.

Next, select the **Meter Refresh Rate**, which determines how quickly the XAP 800 updates meter information (default is 100ms, range is 50-1000ms).

Next, click the **Comm** tab.



**For most applications, you should set the Unit Type to Slave. The Master setting is used to split audio on a linked XAP 800 system; global control of the system is still maintained through the first XAP 800 unit in the system.**

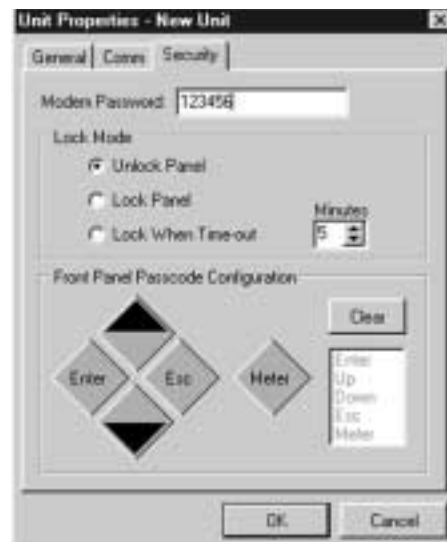


Unit Properties — New Unit/Comm Tab

**The Baud Rate and Flow Control must be configured from the front panel of the XAP 800 unit.** If you have already done this, these two parameters will display in the Unit Properties—New Unit/Comm tab window. See the LCD Menu Tree on page 10 for the location of the Baud Rate and Flow Control in the LCD menu structure. Set the Serial Echo (default is On) and Serial Mode (default is Text) you wish to configure. The Serial Echo feature enables the XAP 800 to echo back the commands you send over the XAP 800 network. The serial mode determines the format in which the commands return—text or binary. Note that the serial echo defaults to Binary when G-Ware is connected to a unit. It defaults back to Text when G-Ware is disconnected.

If a modem is connected to the XAP 800 unit, select the **Use Modem** box and enter the initialization string. Click **OK**; the XAP 800 will initialize the modem.

Next, click on the **Security** tab.

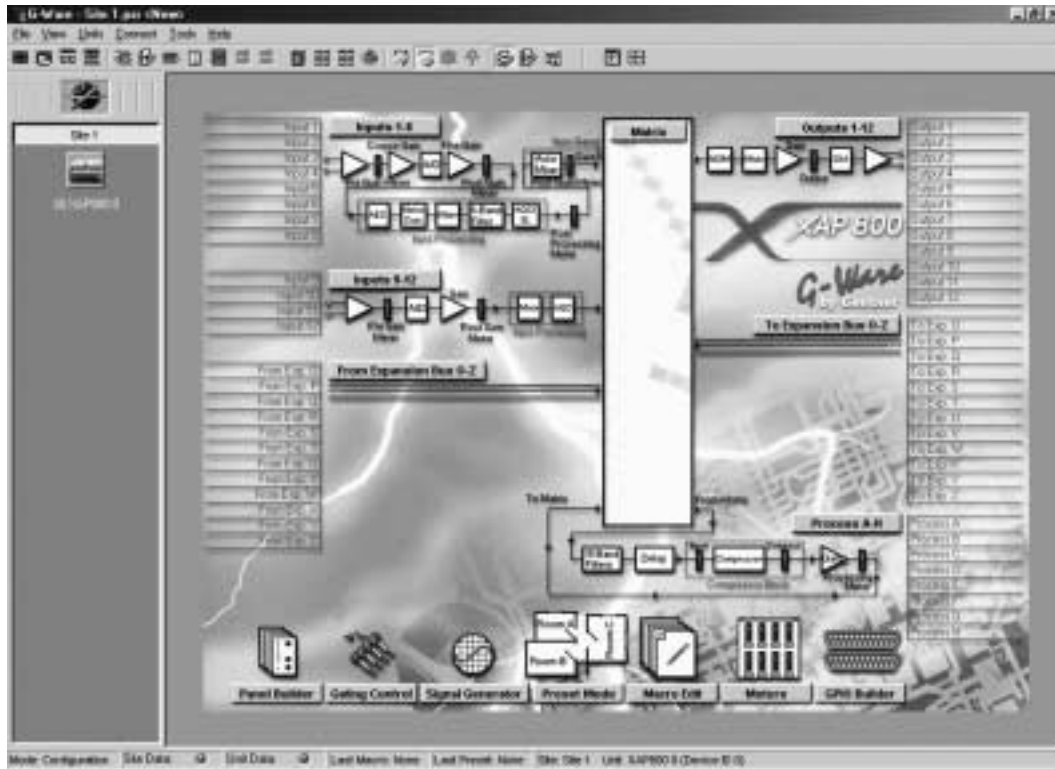


Unit Properties — New Unit/Security Tab

Enter the modem password you wish to use, then select the panel's time out lock mode and minutes (how many minutes of standby until the unit locks). The range is from 0-15 minutes; 5 minutes is the default. If the unit is in the "Lock When Timed Out" mode, the XAP 800's panel will lock if no panel buttons are depressed during the designated amount of time. If it is in the "Lock Panel" mode, it is locked immediately. When locked, the front panel can be accessed only after entering the proper front panel button sequence (described below) or unlocking the panel using G-Ware.

Next, click any sequence of the five front panel buttons displayed. Your choices will be displayed in the column on the right. Click **Clear** if you wish to reset your choices. When you are finished, click **OK** to enable your selections.

This completes the initial unit properties configuration. The G-Ware Flow Screen window will now be displayed (see page 25).



G-Ware Flow Screen

### G-Ware Flow Screen

The G-Ware Flow Screen is the main access window for G-Ware's features and functions. Simply move the cursor over the button you wish to select or label you wish to edit, then click.

When you click on a button, the window for the selected item opens while leaving the G-Ware Flow Screen open in the background. The exception is when you select Matrix. This opens the G-Ware Configuration Matrix window and closes the G-Ware Flow Screen window. Click the Flow Screen button in the Matrix window to return to the G-Ware Flow Screen.

We recommend that you become familiar with G-Ware's menus and toolbar button functions before proceeding to configure the software. A description of these menus and toolbar buttons appears on the following pages.

## Pull-Down Menus



File Menu

G-Ware's pull-down menus provide easy access to the software's functions and features. Several menu items can also be accessed directly with the toolbar buttons. Below is a description of each menu.

### File Menu

**New Site** opens the Site Properties—New Site window. This window can also be opened with the Create New Site toolbar button. See page 21 for more information.

**Open Site** opens the Open Site window. This window can also be opened with the Open Site File toolbar button. See page 29 for more information.

**Close Site** closes the site currently open.

**Save** saves a site in its current state of configuration.

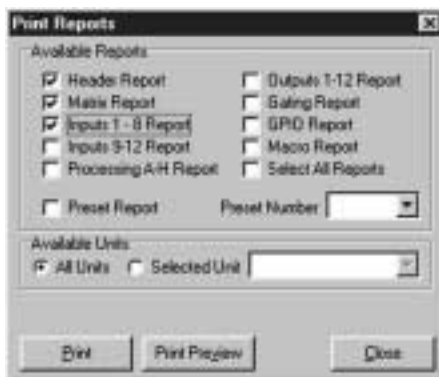
**Save As** opens the Save As window. This allows you to choose or establish a location to store a G-Ware site file.

**Site Properties** opens the Site Properties—Site 1 window. This window allows you to configure site and security parameters. See page 21 for more information.

**Print** opens the Print Reports window. Here, you can select a variety of G-Ware configuration reports to print. Select the item(s) you wish to print, then click **Print Preview** to view a preview of the report or **Print** to print the report(s).

**1 XAP 800 Site 1.psr, 2 XAP 800 Site 2.psr**, etc. are sites created in G-Ware, and are named whatever names you have assigned to them. You can select them from the File menu.

**Exit** closes G-Ware software. If you have not made changes to a site, the program closes. If you have made changes, a Warning window opens, asking you if you wish to save changes. If you click **Cancel**, the exit process stops and you are returned to the software.



Print Reports Window

### View Menu

**In 1-8** displays the Inputs 1-8 window. This window can also be opened with the In 1-8 button on the matrix. See page 37 for more information.



**In 9-12** displays the Inputs 9-12 window. This window can also be opened with the In 9-12 button on the matrix. See page 46 for more information about these inputs.

**Outputs 1-12** displays the Outputs 1-12 window. This window can also be opened with the Outputs 1-12 button on the matrix. See page 54 for more information about the outputs.

**Processing** opens the Processing window. This window can also be opened with the From Processing button on the matrix. See page 48 for more information about From Processing.

**Gating Control** opens the Gating Controls window. It can be opened with the Gating Controls toolbar button. See page 59 for more information.

**Macro Edit** opens the Macro Editor window. This window can also be opened with the Macro Editor button on the toolbar. See page 65 for more information about the Macro Editor.

**GPIO Builder** opens the GPIO Builder window. This window can also be opened with the GPIO Builder toolbar button. See page 61 for more information about the GPIO Builder.

**Panel Builder** opens the Control Panel Builder window. This window can be opened with the Control Panel Builder toolbar button. See page 62 for more information about the Control Panel Builder.

**Command Strings** opens the Command Strings window, where you enter command strings through the RS-232 port to execute functions such as increasing volume.

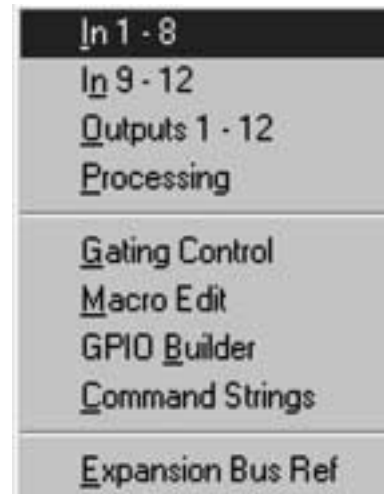
**Expansion Bus Ref** opens the Define PA Adapt/AEC Expansion Bus Ref window. This window can also be opened from within the PA Adaptive and AEC Reference section of the software. See pages 43-44 for more information.

## Units Menu

**Add** opens the Unit Properties—New Unit window so you can add a XAP 800 unit to a site. This window can also be opened with the Add XAP 800 Unit to Current Site toolbar button. See page 23 for more information about adding a XAP 800 unit to a site.

**Remove Unit** removes a XAP 800 unit from a site.

**Unit Properties** opens the Unit Properties—Unit 1 (or the name you have given to the unit) window. This window is used for adjusting parameters for a unit that has already been configured. Note that the parameters in this



View Menu



Units Menu

window, including those of the General, Comm, and Security tabs, are identical to the Unit Properties—New Unit window. See page 23 for more information about how to adjust these parameters.

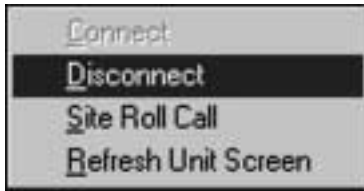
### Connect Menu

**Connect** connects G-Ware to the site directly or via a modem. However, you must first set the appropriate parameters in the Site Properties window before doing this. See page 21 for more information.

**Disconnect** disconnects G-Ware from the site.

**Site Roll Call** sends a query over the Expansion Bus and connects new units to the network.

**Refresh Unit Screen** refreshes the information on the screen, based on the current configuration of the unit.



Connect Menu

### Tools Menu

**Gating** opens the Gate View window, which can also be opened with the Gate View toolbar button. See Gate View on page 66 for information.

**Meters** opens the Meter Views window. This window can also be opened with the Meter View toolbar button. See Meter Views on page 67 for more information.

**Signal Generator** opens the Signal Generator window. This window can also be opened with the Signal Generator toolbar button. See Signal Generator on page 67 for more information.

**Execute Preset** opens the Execute Preset window, where you select the saved preset you wish to run, then click **Execute**.

**Run Macro** opens the Run Macro window. Here, you select which macro you wish to run. Then click **Run** to initiate the macro.

**Compare Utility** opens the Document Compare Utility window. This window allows you to compare information between two XAP 800 sites, two units, or a site and a unit. See page 69 for more information.

**Message Log** opens the Message Log window, which displays messages indicating successful or unsuccessful site connection and all errors. The Message Log displays error information automatically.

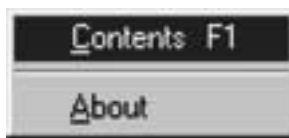


Tools Menu

### Help Menu

**Contents F1** opens the G-Ware Help File, where you can search for information via a table of contents, index, or search.

**About** opens a window displaying G-Ware version information.



Help Menu

## Copy Menu (Right Mouse Click)

In most areas of G-Ware software, right-clicking the mouse opens the Copy Menu. There are various versions of this menu, which are customized to help you configure G-Ware based on where you are in the application.

For example, the version shown at left allows you to copy and paste settings and sites, as well as add or remove units from a site. It also opens the Unit Properties window (see page 23) and Site Properties window (page 21).

Once the Copy Menu is open, use the left mouse button to select the function you wish to use.



Copy Menu

## Toolbar Buttons

The G-Ware toolbar features several buttons which provide immediate access to key G-Ware functions and enhance your ability to configure G-Ware quickly.

### Create New Site Button

The first button on the G-Ware toolbar is the Create New Site button. This opens the Site Properties—New Site/General Tab window. New site creation is covered in detail starting on page 21.



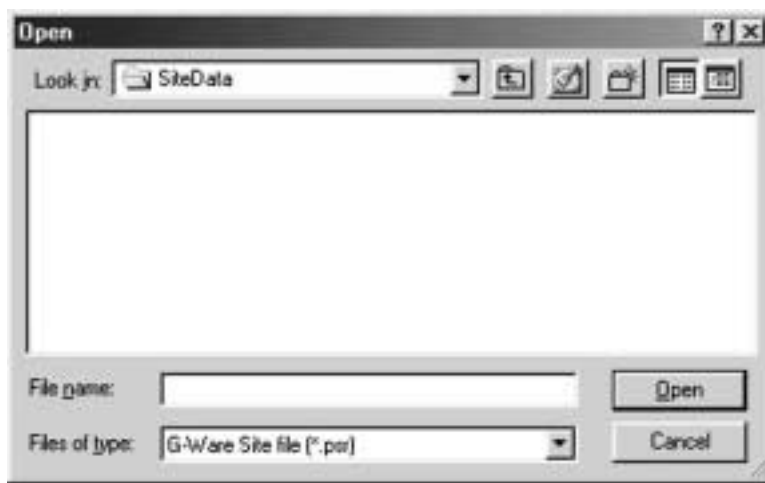
Create New Site Button

### Open Site File Button

Next is the Open Site File button. This button opens the Open Site window, which allows you to open a particular site file.



Open Site File Button



Open Site Window

You can access stored files through a folder or a file name search.



**Add PSR1212 Unit to Current Site Button**

### **Add PSR1212 Unit to Current Site Button**

The Add a PSR1212 to a Site button opens the Unit Properties—New Unit window. This is where you configure device ID and modem settings for the Gentner PSR1212, if you are using one in this system. Adding a unit to a site is covered in detail on page 23.



**Add XAP 800 Unit to Current Site Button**

### **Add XAP 800 Unit to Current Site Button**

The Add a XAP 800 to a Site button opens the Unit Properties—New Unit window, where you configure device ID and modem settings. Adding a unit to a site is covered in detail on page 23.



**Gating Control Button**

### **Gating Control Button**

The **Gating Control** button opens the Gating Control window. This is where you set parameters for internal and global XAP 800 mixers. The Gating Controls window can also be accessed by clicking the **Gating Control** button on the Preset Configuration Sidebar window. This section is covered on page 59.



**Macro Editor Button**

### **Macro Editor Button**

The **Macro Editor** allows you to add new commands and remove commands from existing macros. This function is described on page 65.



**GPIO Builder Button**

### **GPIO Builder Button**

The **GPIO** (general purpose input/output) **Builder** button opens the GPIO window, where you can assign commands for the control/status pins. This gives you real-time flexibility to meet a variety of conferencing requirements. See page 61 for more information.



**Control Panel Builder Button**

### **Control Panel Builder Button**

The **Control Panel Builder** button opens the Control Panel Builder window, where you can program the operation of the Control Panel. See page 62 for more information.

## Command Strings Button

The **Command Strings** button opens the Command String window, where you enter command strings through the RS-232 port to execute functions such as increasing volume.



Command Strings Button

## Execute a Preset Button

The Execute a Preset button opens the Execute Preset window, where you select the saved preset you wish to run. Then click **Execute** to run the preset.



Execute a Preset Button

## Run a Macro Button

The **Run a Macro** button opens the Run Macro window. Here, you select which macro you wish to run. Then click **Run** to initiate the macro. See the Macro Mode section on page 63 for information about creating macros.



Run a Macro Button

## Define Expansion Bus Ref Button

The **Define Expansion Bus Ref** button opens the Define PA Adapt/AEC Expansion Bus Reference window. This window allows you to set the PA adaptive and acoustic echo cancellation reference for a particular Expansion Bus. This window also becomes accessible when configuring specific parameters in the PA Adaptive Reference section of the Gate configuration window. See pages 43-44 for more information.



Define Expansion Bus Ref Button

## Gating Button

The **Gating** button opens the Gate View window, which allows you to view gating activity at each mic input. See page 66 for more information.



Gating Button

## Meters Button

The **Meters** button opens the Meter Views window, which allows you to monitor the level of any input, output, or processing signal of the XAP 800. See page 67 for more information.



Meters Button



**Signal Generator Button**

### **Signal Generator Button**

The **Signal Generator** button opens the Signal Generator window. The signal generator allows the XAP 800 to generate test audio signals for sound system calibration. See page 67 for more information.



**Connect to Site Button**

### **Connect to Site Button**

The **Connect to Site** button connects G-Ware to the site directly or via a modem. However, you must first set the appropriate parameters in the Site Properties window before doing this.



**Disconnect From Site Button**

### **Disconnect from Site Button**

The **Disconnect from Site** button disconnects G-Ware from the site.



**Site Roll Call Button**

### **Site Roll Call Button**

The **Site Roll Call** button sends a query over the Expansion Bus and connects new units to the network.



**Refresh Unit Screen Button**

### **Refresh Unit Screen**

The **Refresh Unit Screen** refreshes the information on the screen, based on the current configuration of the unit.



**C Button**

### **C, P, and M Buttons**

These buttons select the Configuration, Preset, and Macro modes.

See page 34 for more information about the Configuration Mode.



**P Button**

See page 57 for more information about the Preset Mode.

See page 63 for more information about the Macro Mode.



**M Button**

### **Message Log Button**

The **Message Log** button opens the Message Log window, which displays messages indicating successful or unsuccessful site connection and all errors. When error messages are generated, the Message Log opens automatically to display them.



**Message Log Button**

### **Compare Utility Button**

The **Compare Utility** button opens the Document Compare Utility window. This window allows you to sample and compare configuration information between two XAP 800 sites, two XAP 800 units, or a site and a unit. See page 69 for more information.

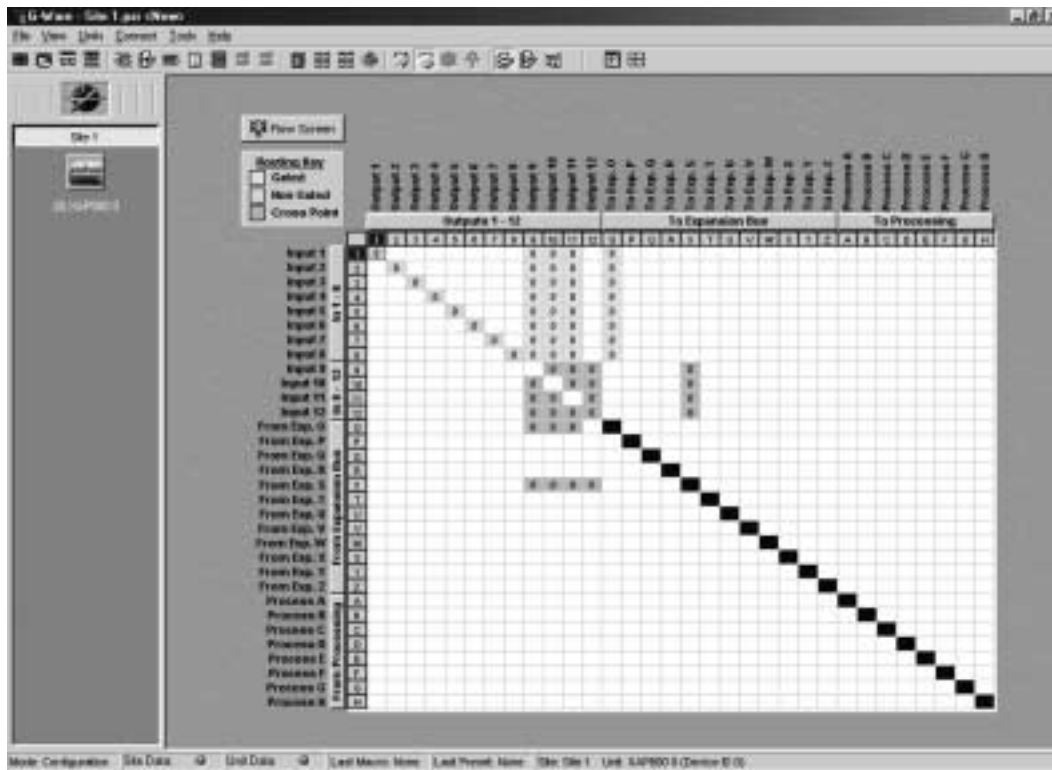


**Compare Utility Button**

## G-Ware Matrix

Click the Matrix button on the G-Ware Flow Screen. This opens the G-Ware Configuration matrix window.

The G-Ware Configuration window is where you configure the routing and adjustment of inputs, outputs, Expansion Buses, and processing buses. Note that the C (for Configuration) button in the toolbar is selected.



**G-Ware Configuration Matrix Window**

**Unit Data Light:** This indicator illuminates in many windows of G-Ware to indicate the status of the particular XAP 800 unit selected. It displays various colors, based on the conditions listed below.

**Site Data Light:** This indicator illuminates various colors to indicate the status of a system of linked XAP 800 units, based on the conditions listed below.

**Solid Green:** When the item being configured is synchronized with the hardware.

**Solid Red:** When the information being configured is saved in the hardware.

**Flashing Red:** When the information is not saved or there is no hardware connection.

**Solid Yellow:** When communications are pending.

**Flashing Yellow:** When there is a communication error. In this instance, you should disconnect from the unit and reconnect. The Message Log will indicate the error that occurred.



Note the yellow gated, blue non-gated, and green cross point boxes in the Routing Key box (matrix area). Repeated clicking on any box in the matrix (except the black boxes) alternately highlights the box as selected for the following configurations: yellow (gated; Inputs 1-8 only), blue (non-gated; Inputs 1-8 only), and green (cross point), depending on what can be configured in a particular area of the matrix.

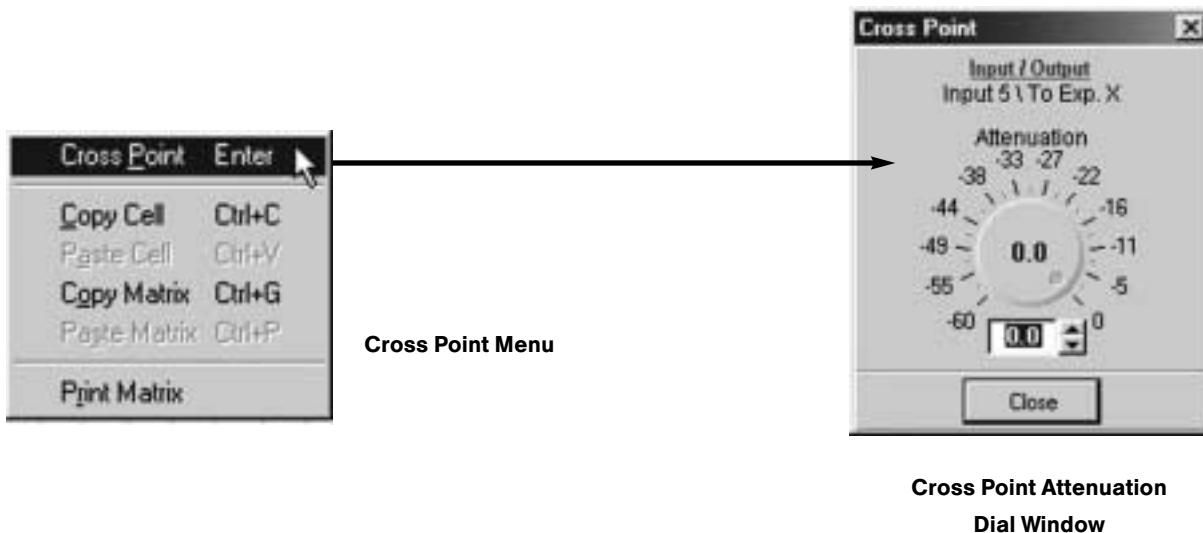
Referencing the input, output, Expansion Bus, and processing bus intersections on the X and Y axes of the matrix, proceed to configure the gating, non-gating, and cross point routing parameters.



As you move the cursor over the Input, Expansion Bus, Processor, and Output labels, note that the cursor becomes a hand. Click on any of these buttons to open a function or labels window where you can assign names for each parameter.

## Cross Point Attenuation

Right-click on a box within the matrix to open the Cross Point menu. Click Cross Point Enter to open the Cross Point Attenuation Dial window.



Click the ▲ and ▼ buttons or click on the green indicator and rotate the dial with the mouse to adjust the attenuation to the level you desire (or enter the numerical value directly in the window). The attenuation range is from 0 to -60dB. Click **Close** to exit.

By right-clicking the mouse, the Cross Point menu also allows you to copy and paste the current Cross Point configuration, including the attenuation adjust setting, to other cross points.

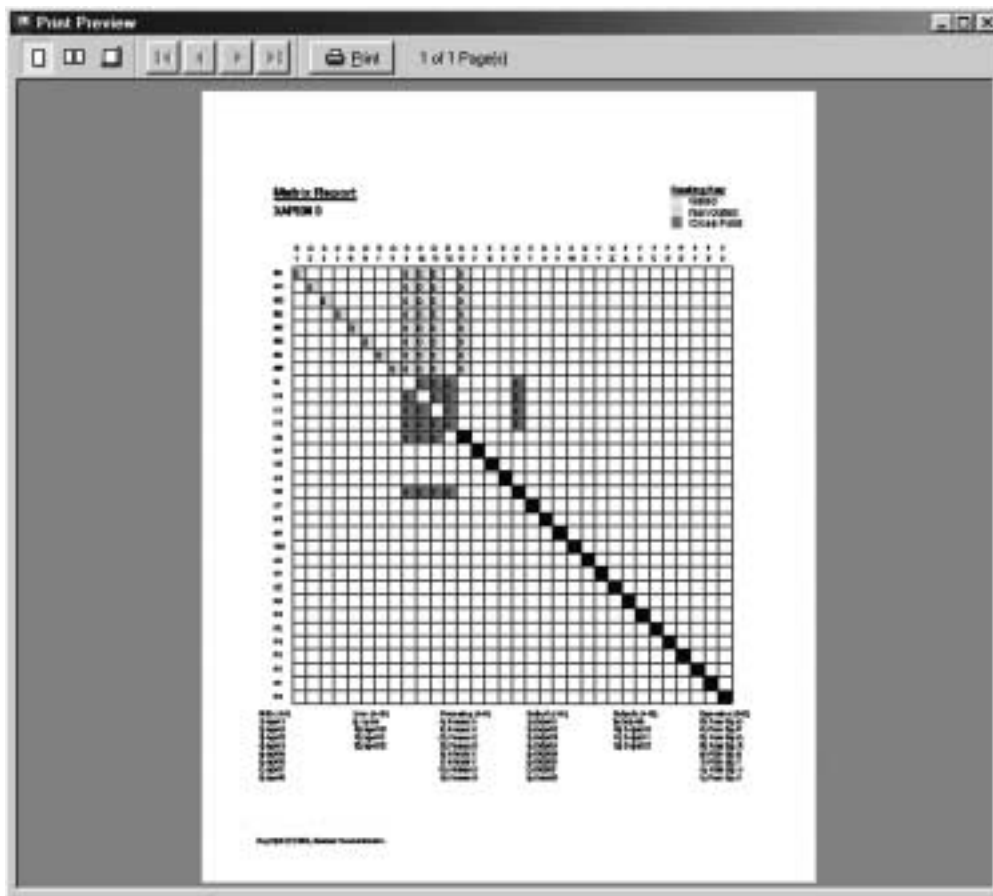


## Matrix Report

When you finish configuring a matrix in G-Ware, you can print a detailed report of the matrix by right-clicking in the Routing Key to open the Cross Point Menu, then selecting Print Matrix. This opens the Matrix Report window.

The Matrix Report window displays all matrix cross point information. Click the Print icon button to print the report.

Cross Point Menu — Print Matrix Selection



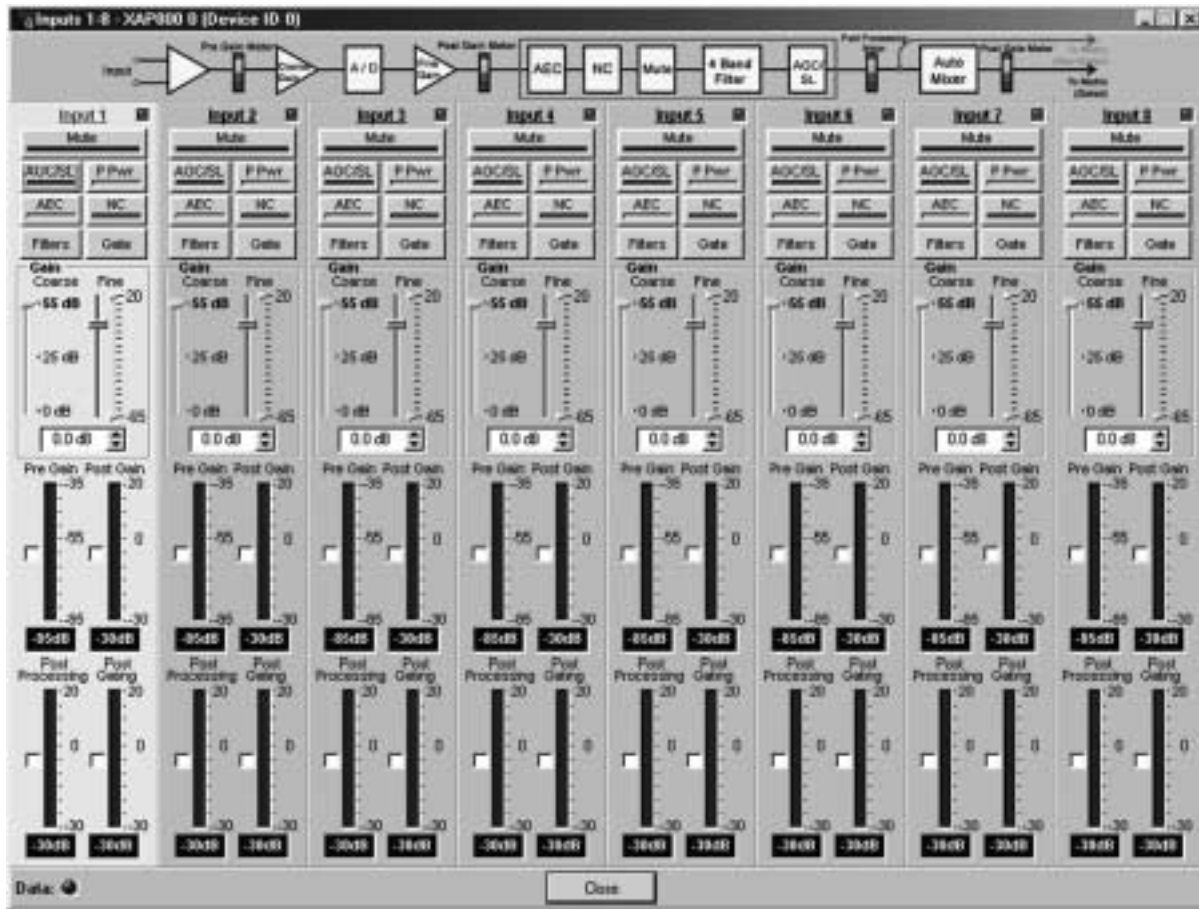
Matrix Report Window

### Inputs 1-8 Configuration

To configure inputs 1-8, click the **In 1-8** button on the matrix screen or **Inputs 1-8** on the Flow Screen. This opens the Inputs 1-8 configuration window.

|         |   |   |
|---------|---|---|
| Input 1 | 1 | 0 |
| Input 2 | 2 | 0 |
| Input 3 | 3 |   |
| Input 4 | 4 |   |
| Input 5 | 5 |   |
| Input 6 | 6 |   |
| Input 7 | 7 |   |
| Input 8 | 8 |   |

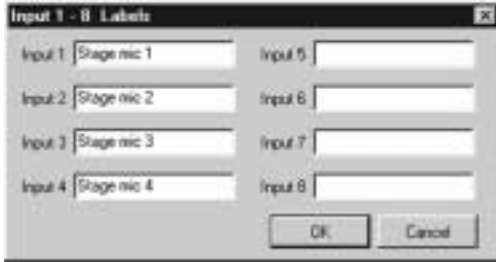
G-Ware Configuration Matrix Window, In 1-8 Button



Click a blank area in the Input 1-8 panel area to adjust the parameters for this channel (clicking where it says "Input 1" opens the label-naming window).

Inputs 1-8 Configuration Window

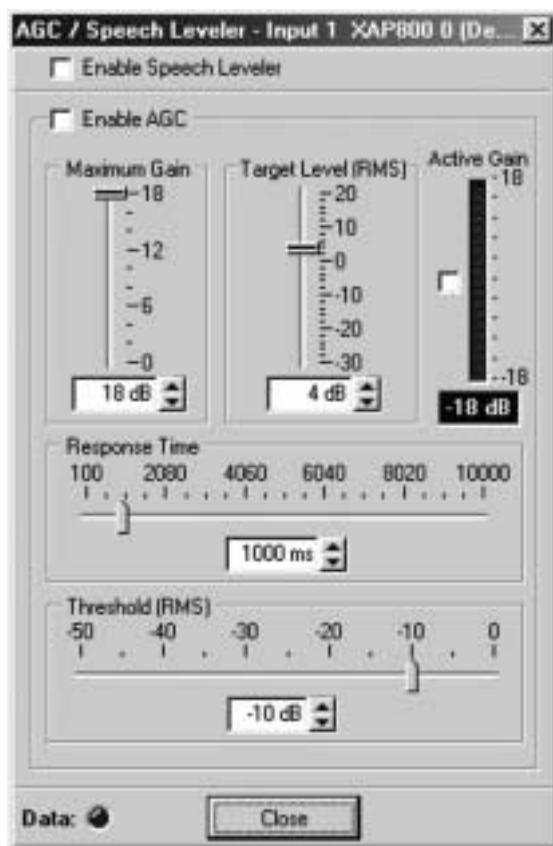
Note that the background color for Input 1 becomes light gray and the label color changes from black to blue. Also, note the Gate Indicator in the upper right-hand corner of the pane. This indicator turns green whenever this input is gated on.



**Input 1-8 Labels Window**

Move the cursor to the blue Input 1 label and click. This opens the Input 1-8 Labels window. Proceed to name each input. When you are finished configuring these inputs, click **OK**.

**Mute** mutes the input channel. The light on the button illuminates red when Mute is activated. Default is Off.



**AGC/Speech Leveler Window**

**AGC/SL** opens the Automatic Gain Control/Speech Leveler window.

The Speech Leveler targets speech audio and equalizes the audio levels of someone who is speaking close to a mic and someone who is speaking from farther away. Leave the Speech Leveler disabled if the channel is being used to pass non-speech audio such as music.

AGC adjusts softer and louder input audio to a consistent level that you select (the target level). Set the target level first, then apply the amount of maximum gain you wish the automatic gain control to use. AGC occurs after the gain and filter settings in the audio signal path.

The Active Gain meter reflects the overall gain at any given moment. Click the white box next to the meter to enable it.

The Response Time adjustment determines the total AGC engage/disengage response time. The Threshold determines the decibel level at which you wish the AGC to engage. Setting the threshold toward the higher end of the scale (near 0) reduces background noise to a greater degree. Both the Response Time and Threshold are RMS.



**All meters in G-Ware are peak meters. The target level and threshold controls in the AGC/SL window reflect RMS values.**

The Speech Leveler and AGC defaults are Off.

**P Pwr (Phantom Power)** toggles the phantom power on and off. Phantom power is an auxiliary power source to power certain types of microphones. The XAP 800's phantom power voltage is 24VDC. Default is On.

**AEC** opens the Acoustic Echo Canceller window. To enable the acoustic echo canceller, click Enabled, then select the PA Adapt/AEC Reference output you wish to use. If you select an Expansion Bus reference, the Define PA Adapt/AEC Expansion Bus Ref window opens so you can identify which Expansion Bus and output you wish to use as the AEC's reference.

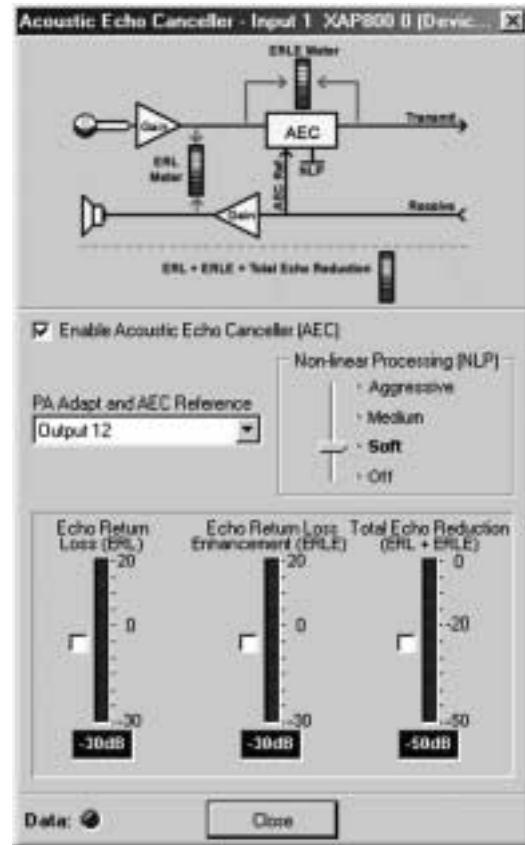
The Non-linear Processing (NLP) feature increases the power of echo cancellation for difficult acoustical environments. NLP features four settings: Soft (6dB), Medium (12dB), Aggressive (18dB), and Off. Use NLP with care; corresponding trade-offs can include suppression and half-duplex operation. Default is Soft.

The Echo Return Loss (ERL) meter shows the echo return loss (room loss), in decibels.

The Echo Return Loss Enhancement (ERLE) meter shows the echo return loss enhancement (electronically-removed echo), in decibels.

The Total Echo Reduction meter shows the total ERL and ERLE reduction, in decibels.

The acoustic echo cancellation default is On.



Acoustic Echo Canceller Window

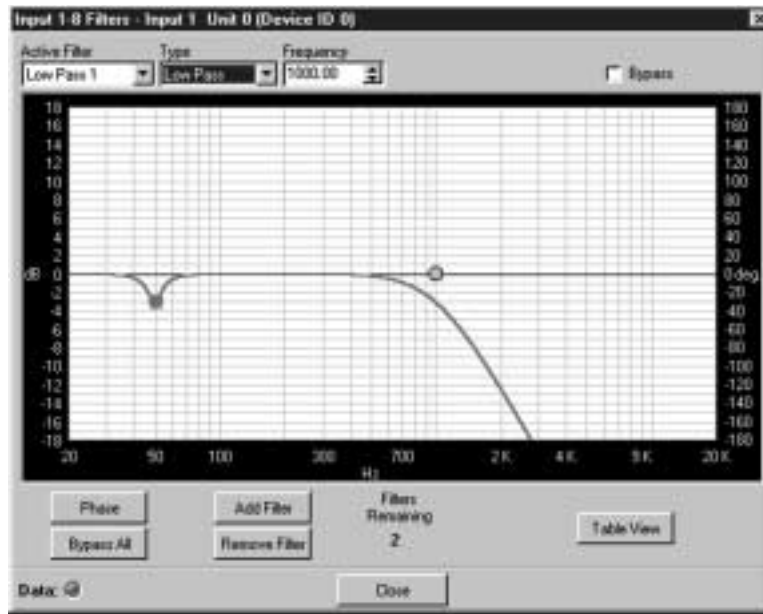
**NC** opens the Noise Canceller window. The noise canceller enhances speech clarity by attenuating the amount of background noise in the signal.

To use noise cancellation, click Enable Noise Canceller, then adjust the Cancellation Depth to the setting which provides the best combination of low noise and maximum speech clarity. The attenuation depth can be set in 1dB increments from 6dB to 15dB. Default is 6dB.

The noise canceller default is Off.



Noise Canceller Window



**Inputs 1-8 Filters Window**

### Inputs 1-8 Filters

To configure the filters for Inputs 1-8, click **Filter**. The Filter Graph setup window appears. Below is a description of each feature in the window.

**Active Filter** selects among filters on the graph. Note that no filters exist until you click Add Filter (see below) to add filters to the graph.

**Type** selects among the following input filters: all pass, high pass, low pass, notch, and PEQ. G-Ware features other filters, but they are configured in the Processing section of the software (see page 48).

**Frequency** selects the center frequency (in Hertz) for the filter you are configuring. Range is from 20Hz to 20kHz. Default is 1000Hz.

**Gain** adjusts the gain value from -18 to 18dB, in .5dB steps. Default is 0dB.

**Q**, or Quality factor, selects the ratio of the center frequency divided by the bandwidth. Q reflects an inverse relationship to the bandwidth, and adjusts from .02:1 to 40:1 on the XAP 800.

**Bandwidth** establishes the difference between the upper and lower points of a filter's audio passband.

The **Bypass** box, when selected, bypasses the selected filter.

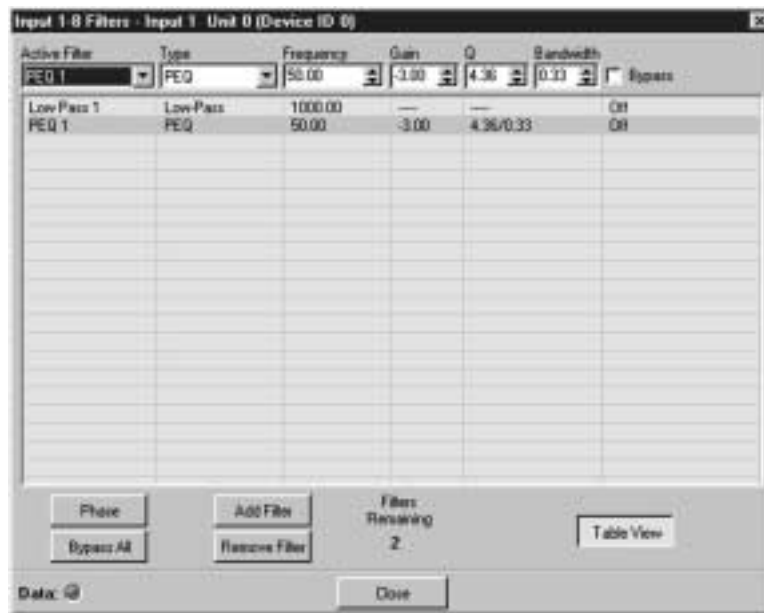
**Phase** generates—on the graph—the phase relationship of the graphed frequency response.

**Bypass All** bypasses all filters.

**Add Filter** adds a filter to the graph, centered at 1kHz and 0dB.

**Remove Filter** removes the selected node from the graph.

The **Table View** button toggles between the Filter Graph and the Filter Table views of the Inputs 1-8 Filter window. The Filter Table view displays the active filter, filter type, center frequency, gain, Q, and bandwidth parameters of the graph window, but in a table format. You can modify these settings in the Filter Table view. You can configure filters from this view as well as the graph view. Click **Table View** again to return to the Filter Graph view.



Filter Table Window

### Filter Configuration

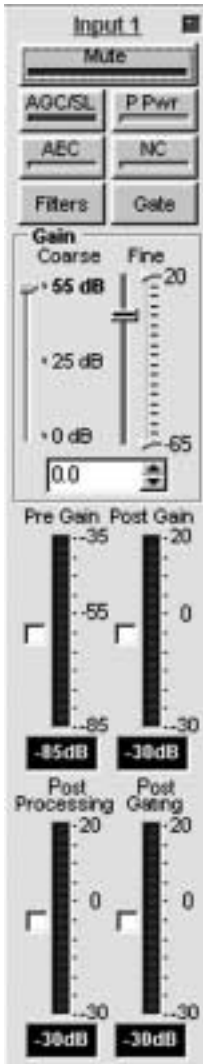
In either the graph or table view windows, select the filter type (Type pull-down menu) you wish to use. Note that your selection determines whether or not the Gain, Q, and Bandwidth menus are selectable.

To begin, click **Add Filter** to add a filter to the graph or table. In either the graph or table view, you can then configure filter parameters with the pull-down menus along the top. Or, in the graph view, you can click on the node and drag it to the location you desire on the graph.

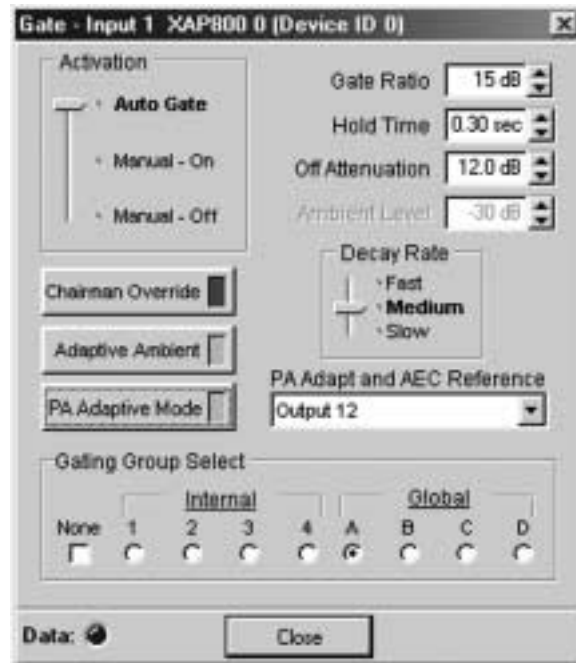
When you finish configuring filters, click **Close** to exit.

### Inputs 1-8 Gating Parameters

Next, click **OK** to establish the gating parameters you wish to use for the input. The Gate configuration window appears.



Input 1 Configuration



Gate Configuration Window

First, use the mouse to move the **Activation** selector to **Auto Gate**, **Manual-On**, or **Manual-Off**. Then, click **Chairman Override**, **Adaptive Ambient**, or **PA Adaptive Mode** if you wish to enable them; below are descriptions of each feature.

**Auto Gate** prevents a mic from gating on until audio is present at the mic. The XAP 800 determines to gate the mic on or off based on the gate ratio, hold time, off attenuation, and ambient levels you set in the Gate configuration window. Auto Gate is the Activation default setting.

**Manual On** activates a mic until it is manually deactivated.

**Manual Off** deactivates a mic until it is manually activated.

**Chairman Override** provides gating priority for this mic input and any other mic inputs within the same gating control groups. When a mic with Chairman Override enabled gates on, all mics which don't have Chairman Override enabled will gate off. Default is Off.



**Adaptive Ambient** routes this input through the adaptive ambient portion of the gating control groups, which monitors the varying ambient noise level in the room and changes the threshold level at which the microphone gates on. For example, if you turn on a projector in a conference room setting, the ambient level increases. Adaptive Ambient increases the microphone gate threshold to prevent mics from gating on from the projector noise. Default is On.

**PA Adaptive Mode** uses loudspeaker audio level on a specified output as the new ambient level when audio is present at the power amplifier. This prevents loudspeaker audio from gating on the mic, while still allowing people in the room to gate on microphones as they speak. For example, you might decide to play background music from a CD player during a presentation. PA Adapt Mode allows you to use the output routed from the CD player as the ambient reference to prevent the CD player's audio from gating on microphones. An output must be specified as the PA Adaptive Reference for each mic in the system. Default is On.

Next, set the **Gate Ratio**, **Hold Time**, **Off Attenuation**, and **Ambient Level** in the appropriate fields by using the ▲/▼ buttons or by highlighting each field with the cursor and typing in the appropriate number. Then select the **Decay Rate** and which **PA Adaptive Reference** output you wish to use. Refer to the descriptions of these features below.

**Gate Ratio** specifies how much louder the audio level must be above the ambient level before the channel gates on. The gate ratio range is from 0 to 50dB. Default is 15dB.

**Hold Time** determines how long the channel stays gated on after the audio is no longer present. The hold time range is from .1 to 8.0 seconds. Default is .3 seconds.

**Off Attenuation** sets the amount of level reduction applied to a channel when it is gated off. The range is from 0 to 50dB. Default is 12dB.

**Ambient Level** manually sets the background noise level upon which the XAP 800 bases gating protocols. This is used only if the Adaptive Ambient feature isn't used. The range is from -80 to 0dB. Default is Off.

**Decay Rate** determines how fast a channel gates off after the hold time expires. Default is Medium.

**PA Adapt and AEC Reference** determines which (speaker) output is used as a reference for this input. If you select an output located




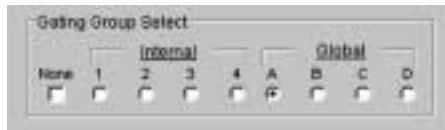
**The PA Adapt Reference and AEC Reference are the same for each channel. For example, if you change the PA Adapt Reference for a channel, you will also make the same change to that channel's AEC Reference.**

elsewhere on an Expansion Bus system, the Define PA Adapt Expansion Bus Reference window appears. From this window, select the unit and output you desire. See PA Adaptive Mode on page 43 for more information.

Define PA Adapt/AEC Expansion Bus Ref Window



Clicking  on the G-Ware toolbar also opens the Define PA Adapt Expansion Bus Reference window.



Gating Group Select Pane

At the bottom of the Gate configuration window is the **Gating Group Select** pane. This is where you select the gating group to which you want to assign this input channel. Select None if you don't want to assign a gating group.

When you are finished making entries, click **Close** to save your entries and exit this window. Click **Close** again to exit the Gate window.

Returning to the Inputs 1-8 Configuration window, continue to configure Input 1 by setting the **Gain**, using the **Coarse** and **Fine** sliders or entering the appropriate number in the field shown. The setting you select will depend upon the type of input you are using.

Notice the yellow and green upper and lower limit arrows on the Fine slider scale. Adjust these to establish minimum and maximum gain levels for the input. The limits you set affect all relative gain commands you establish for the input.

### Gain Structure

How you adjust an input's gain directly affects sound quality. The optimal input gain setting is one which is adjusted as high as possible above the noise floor without introducing clipping. **Clipping can cause distortion which can damage amplifiers and loudspeakers.**

To adjust the input level properly, open the Input 1-8 window and select the input for which you wish to adjust gain. Place a signal on the input at the **maximum** level it will generate. Adjust the input gain until the peak level of the input, as shown on the Input meter, just begins to enter the red (clipping) zone, then reduce the gain slightly until peaks no longer

climb into the red zone. This setting will ensure that the XAP 800 maximizes the signal-to-noise ratio without clipping the signal.

Adjust the green and yellow minimum and maximum arrow sliders on the Fine gain control to establish upper and lower gain limits for this input.

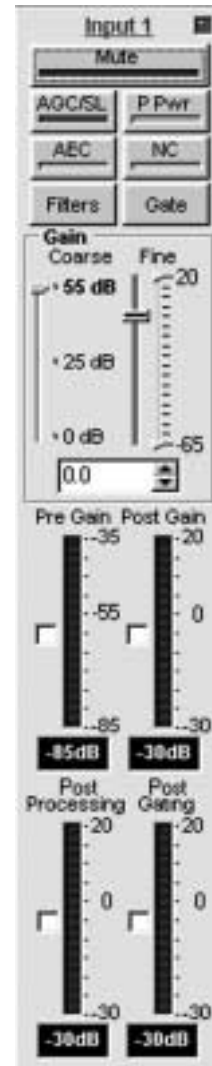
**Pre-Gain Meter** indicates the input's level before gain.

**Post-Gain Meter** shows the input's post-gain level.

**Post-Processing Meter** indicates the level of attenuation up to the gating point in the system. It reflects the post-AGC signal.

**Post-Gating Meter** shows post-gating level.

**All meters are peak-level meters.**



Input 1 Configuration

### Copying and Pasting Settings

Right-clicking anywhere in the window opens the Copy menu, which allows you to copy and paste all of the input settings to other inputs. To do so, select the settings, click **Copy**, then select the input you wish to apply the settings to. Then right-click and select **Paste**. If you wish to copy all settings of an input to the rest of the inputs, select **Apply to All**.



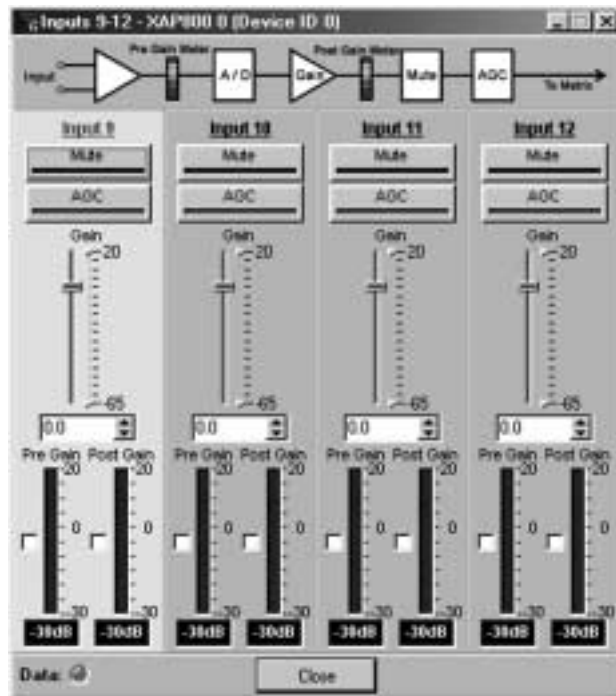
Copy Menu

## Inputs 9-12 Configuration

Configure Inputs 9-12 by clicking **In 9-12** in the G-Ware Configuration matrix window.

|          |           |    |
|----------|-----------|----|
| Input 9  | In 9 - 12 | 9  |
| Input 10 |           | 10 |
| Input 11 |           | 11 |
| Input 12 |           | 12 |

G-Ware Configuration Matrix Window, In 9-12 Button



Input 9-12 Configuration Window

Select the input you wish to modify, then configure each parameter. These controls operate the same as those for Inputs 1-8, including the procedure for labeling each input. However, note that there are no phantom power, filter, gate, or coarse gain controls. Also, there are no gated or non-gated meters. The AGC button opens the AGC window. Note that there is no speech leveler function.

Adjusting the input gain levels for these inputs is the same as for Inputs 1-8. Notice the yellow and green upper and lower limit arrows on the Gain slider scale. Adjust these to establish minimum and maximum gain limits for the input. The limits you set affect the relative gain commands you establish for the input. See Gain Structure on page 44 for information about how to set the input gain.

Right-clicking anywhere in the window opens the Copy menu, which allows you to copy and paste all of the Input 9 settings, for example, to other inputs. To do so, click **Copy**, then select the input you wish to apply the settings to. Then right-click and select **Paste**. If you wish to copy all settings of an input to the rest of the inputs, select **Apply to All**.

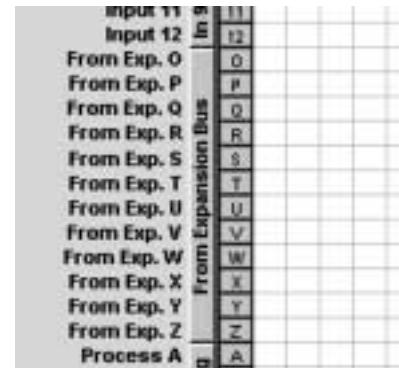
When you finish configuring Inputs 9-12, click **Close** to exit the Input 9-12 configuration window.



Copy Menu

### From Expansion Bus Labeling

Click the From Expansion Bus button in the G-Ware Configuration matrix window. This opens the From Expansion Bus Labels window.



From Expansion Bus Labels Button, G-Ware Configuration Matrix Window

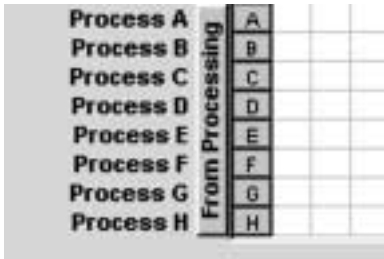


From Expansion Bus Labels Window

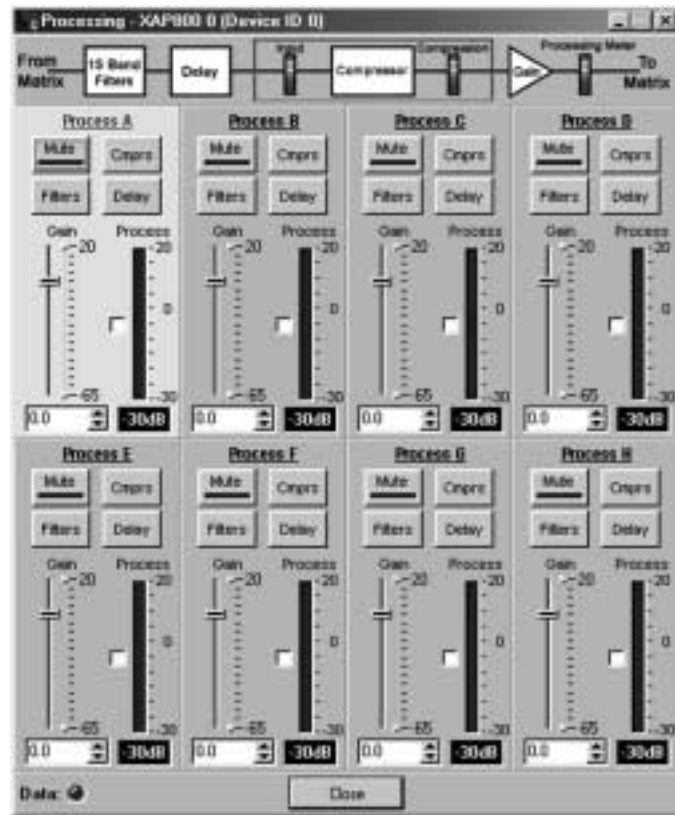
Enter the names you wish to use for each Expansion Bus, then click **OK** to save the information and return to the G-Ware Configuration matrix window.

## From Processing Configuration

Begin by clicking **From Processing** in the G-Ware Configuration matrix window. The Processing configuration window appears. Click the channel in the upper-left corner to begin configuring this processor.



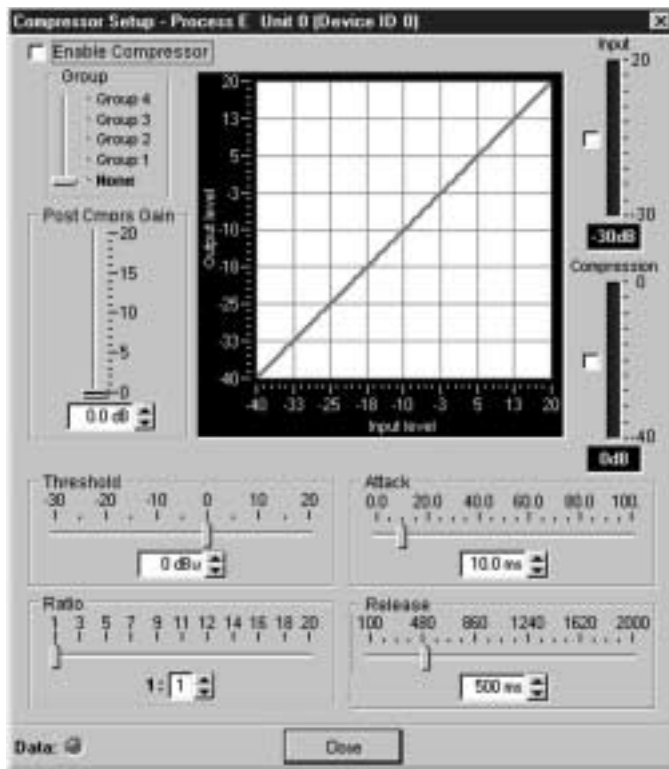
From Processing Button



Processing Configuration Window

## Compressor Configuration

Select a processor. Click **Mute** if you wish to mute the processor. Click **CMPRS** (Compressor) to open the Compressor setup window.



Compressor Setup Window

To enable the compressor, select the box next to Enable Compressor.

If you wish to assign this compressor to a compressor group, slide the Group control to the appropriate group. If you don't want to assign this compressor to a group, select **None**.

When you assign a compressor to a compressor group—such as a group of three, configured for bass, midrange, and treble—the compressors will monitor each other. When one compressor channel compresses and is in a group with other compressor buses, all compressors in the group compress together. When configured properly, this results in a smooth audio response throughout the frequency range, with no bass, midrange, or treble dropouts. A given compressor group must be configured for a single XAP 800 unit; a group cannot use compressors from multiple XAP 800 units.

Next, adjust the gain of the compressor with the **Gain** slide control or by using the ▲ and ▼ buttons. Note how the graph reflects the input/output decibel levels with the gain setting you select.

The **Threshold**, **Ratio**, **Attack**, and **Release** controls are for configuring how the compressor engages and disengages within the processor. Following are descriptions of each control.



**Compressors and compressor groups can be established only within the XAP 800 unit being configured, i.e., they cannot be configured from a single point across multiple units.**

**Threshold** determines the level at which the compressor begins to operate. The range is from -30 to +20dB. Default is 0dBu.

**Ratio** changes the rate of compression applied to the input signal as the signal exceeds the threshold level. The range is 1:1 to 1:20dB. Default is 1:1.

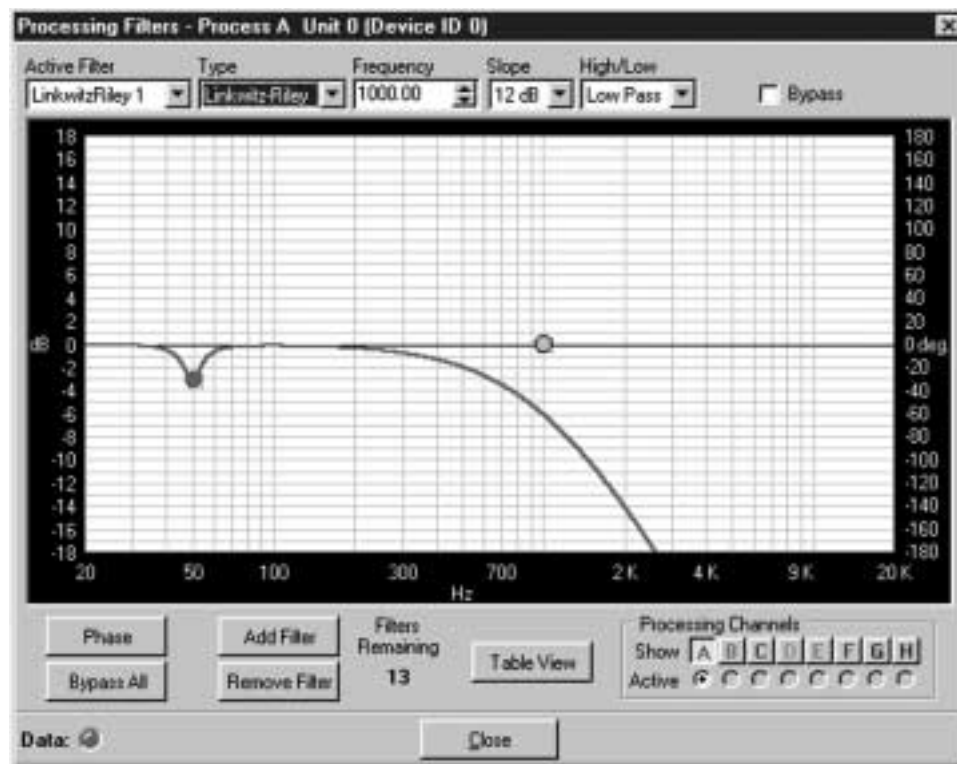
**Attack** determines how quickly compression is enabled. It is calibrated in milliseconds. The range is .5 to 100ms in .5ms steps. Default is 10ms.

**Release** determines how quickly compression is disabled. The range is 100ms to 2 seconds, in 5ms increments. Default is 500ms.

When you are finished, click **Close** to return to the Processor Setup window.

### Filter Configuration

The **Filter** button opens the Processing Filters window. Here, you can configure all filters available in G-Ware: all pass, Bessel, Butterworth, CD horn, high pass, high shelving, Linkwitz-Riley, low pass, low shelving, notch, and PEQ.



Processing Filters Window



To begin, click **Add Filter**. This adds a filter to the graph.

Select the filter **Type** in the Type drop-down menu. Note that the other menus change, depending on which filter you select. You can use these menus to customize the filter, or use the mouse to click and drag the node on the graph to a location that reflects the changes you wish to make.

You can continue to add filters to the graph, and track their relationships to each other to design a system with the sound characteristics necessary for good audio.

**Phase** plots the phase response of the frequency response of the selected filter.

**Bypass All** bypasses all filters.

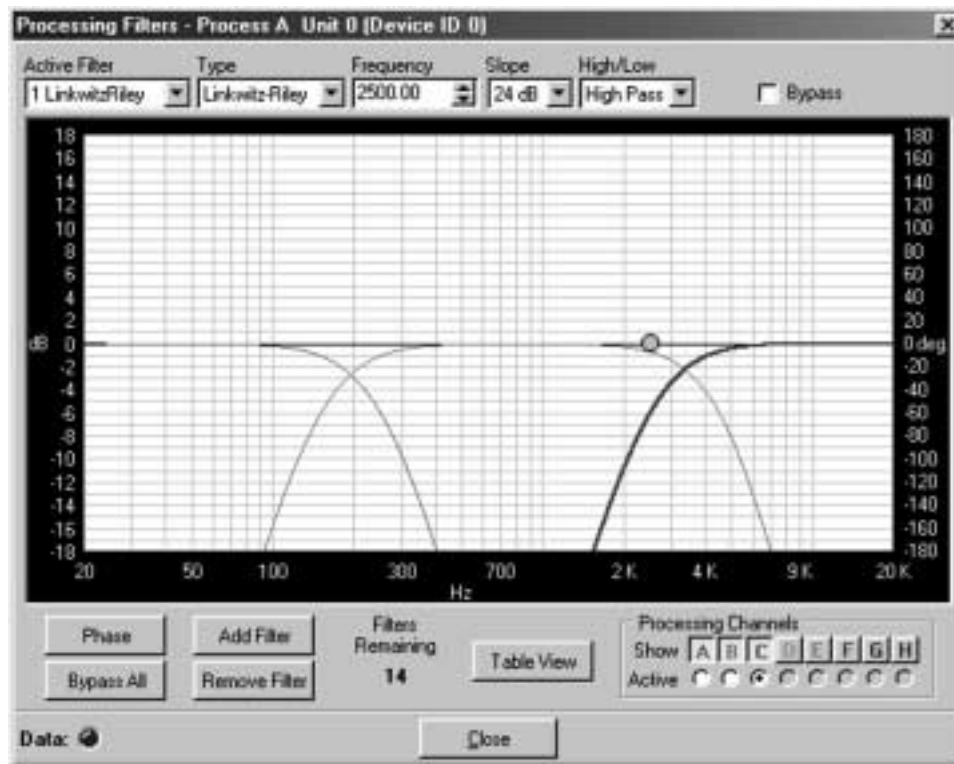
**Add Filter** adds a filter to the graph.

**Remove Filter** removes the selected filter from the graph.

**Table View** toggles between the Processing Filters Window graph view and the Processing Filters Window table view. The table view allows you to configure filters in a table format rather than on the graph, and provides an easy way to check filter status.

**Processing Channels** allows you to display the graphs of various processing channels together, so you can view and easily modify filter and equalizer settings throughout the frequency range. Click the respective letter to place a processor in the graph. Click the Active processor you wish to modify; it appears in bold on the graph.

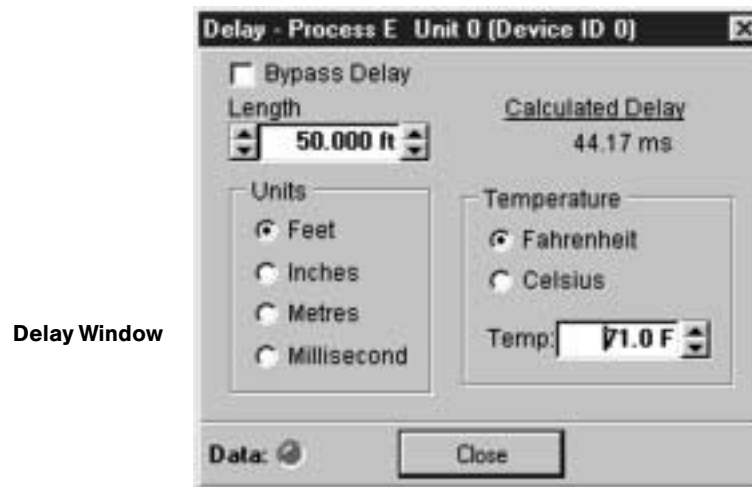
Refer to the example shown in the Low/Mid/High Loudspeaker Driver window on page 52. Note that as you create filters across several processing channels, you can observe their crossover points and general shape of the frequency response. In this case, several Linkwitz-Riley filters are being created across three processing channels to establish a balanced frequency response from low-frequency, midrange, and high-frequency transducers.



Low/Mid/High Loudspeaker Driver Window

### Processor Delay Configuration

**Delay** opens the Processor Delay configuration window.



Delay Window

The Delay calibrates the amount of signal delay introduced, based on the length (the distance between the source and audience) and temperature you input. For example, different speaker drivers within a speaker enclosure might be located different distances from the listening area because of design constraints within the box.

Introducing an appropriate amount of delay to the forward-mounted driver(s) re-establishes the acoustical alignment necessary for proper sound imaging in a room. The same principle of introducing delay applies to separate speaker enclosures located various distances from the listening area.

Other types of delay to consider when establishing delay parameters are delays which occur naturally as a result of processing operations within the XAP 800. Propagation delay is an example. This delay is caused by operations such as the conversion of the signal between analog and digital formats. Another type of delay, processing delay, is caused by compressor activation and various input/output routing. See Appendix A: Specifications (page 81) for propagation and processing delay amounts.

When you are finished making changes in the Delay window, click **Close** to return to the Processor window.

The Input meter indicates the input level into the compressor. The Compression meter shows the level out of the compressor.

You can copy and paste these settings to other processors by right-clicking to access the Copy menu.

To name the processors, click **Labels** at the bottom of the window or double-click on the label (or right-click to open the Copy menu, then click **Labels**). This opens the Processor Labels window.

After naming each processor, click **OK** to save changes and exit back to the From Processor configuration window.

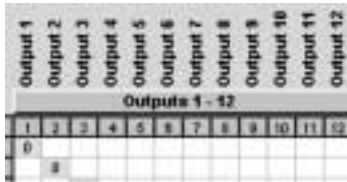
If you are finished making changes in the From Processor configuration window, click **Close** to exit back to the G-Ware Configuration matrix window.



**If you don't want delay introduced to the signal, click the Bypass Delay box.**



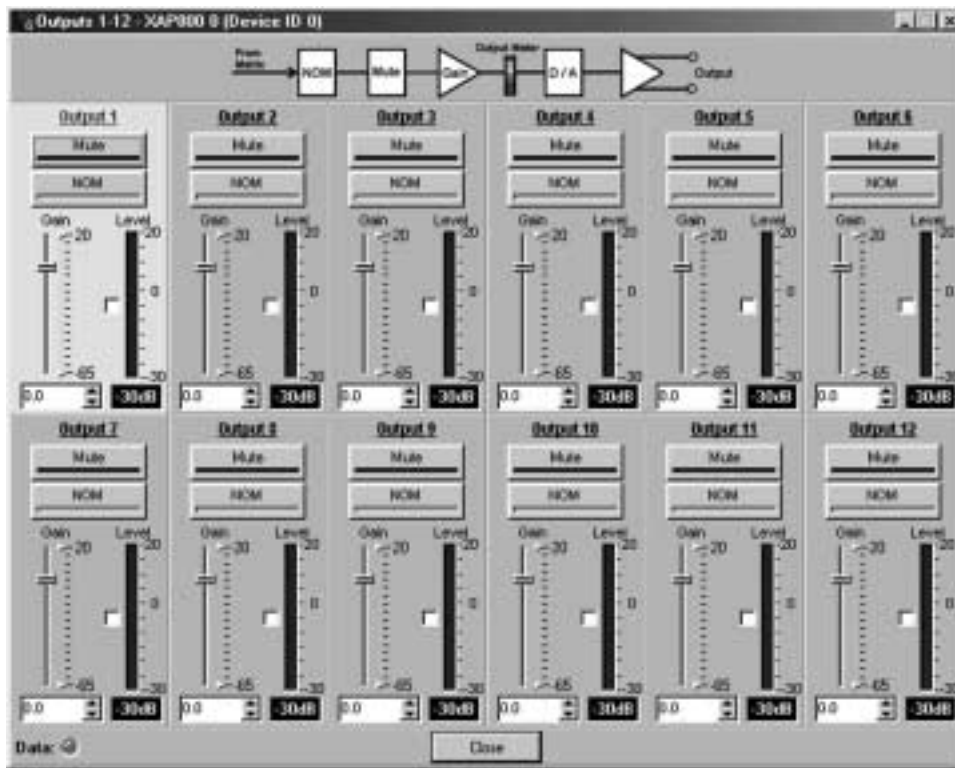
**The Calculated Delay reading reflects any changes you make in the distance and temperature fields.**



G-Ware Configuration Matrix Window,  
Outputs 1-12 Button

## Outputs 1-12 Configuration

At the G-Ware Configuration matrix window, click **Outputs 1-12**. This opens the Outputs 1-12 configuration window.



Outputs 1-12 Configuration Window

Select Output 1. Then, enable **Mute** if you wish to mute this output. Default is Off.

**NOM** (constant gain) maintains a constant gain level as inputs routed to the output are gated on and off. Enable **NOM** if you wish to place this output in a constant gain mode. Default is Off.

**Gain** establishes the gain level for this output. Select a level between -65 and 20dB.

The **Level Meter**, when enabled, shows the signal level when a signal is present.

### Copying and Pasting Settings

If you wish to copy and paste the settings for Output 1 to other outputs, right-click to open the Copy menu and proceed to copy and paste to the outputs you wish. To name each output, click **Labels** to access the Output Labels window. Click **OK** when you are finished. Then, click **Close** to return to the G-Ware Configuration matrix window.

### To Expansion Bus Labels

Next, click **To Expansion Bus** to open the To Expansion Bus Labels window. Proceed to name each Expansion Bus. Names up to 20 characters long can be entered in each field.



To Expansion Bus Labels Window

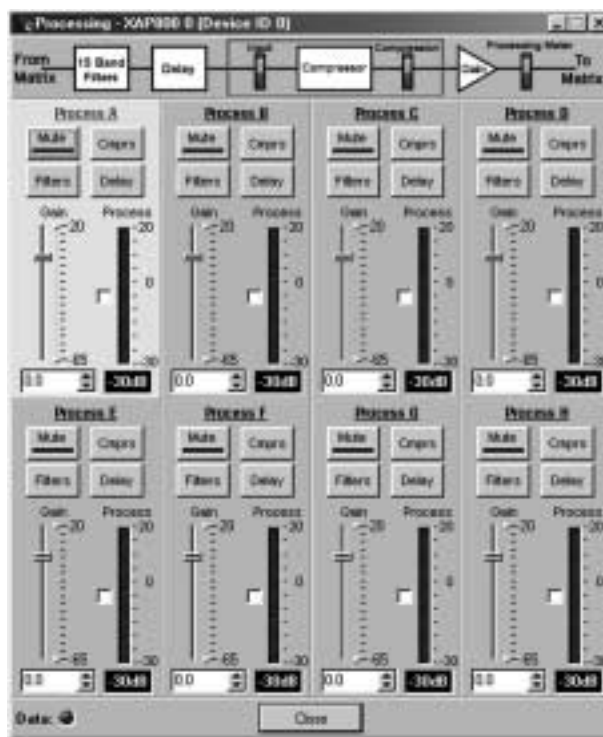
When you finish, click **OK** to save the information and return to the G-Ware Configuration matrix window.

### To Processing Configuration

Click **To Processing**. This opens the To Processing Configuration window. Note that the To and From Processing buttons access the same window. Configure these settings as described in the From Processor section.

Click **Close** to return to the G-Ware Configuration matrix window.

The G-Ware software is now set up for operation. See Chapter 4 for advanced G-Ware operation.



To Processor Configuration Window



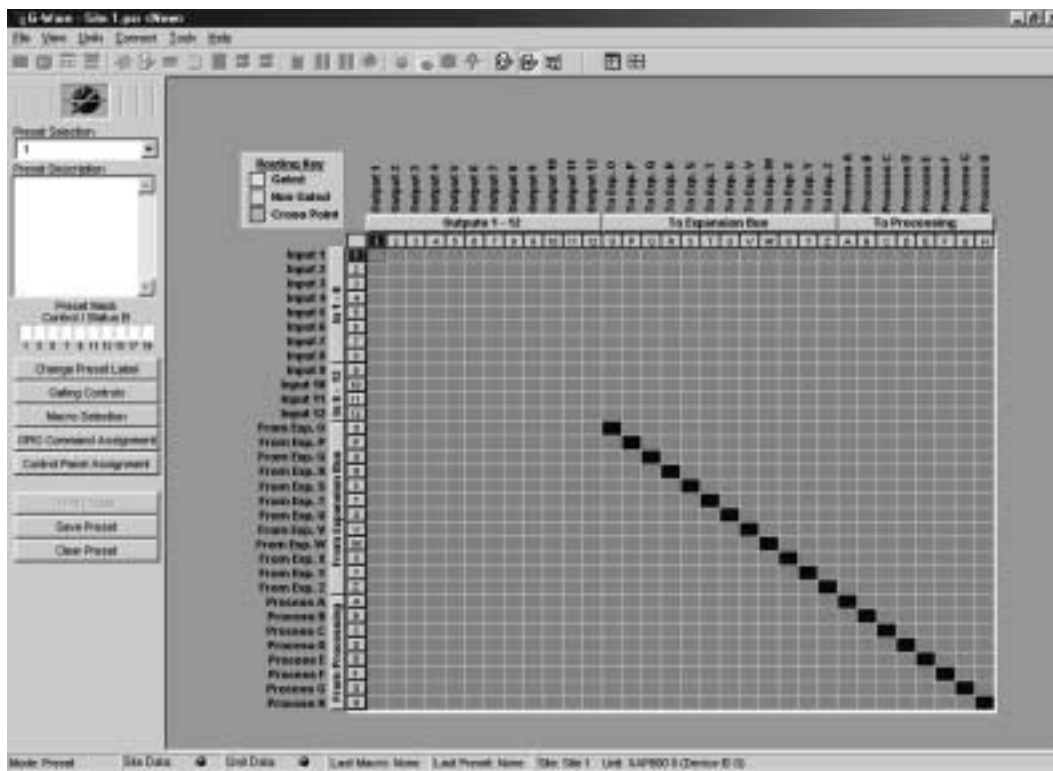
# 4 Advanced Operation

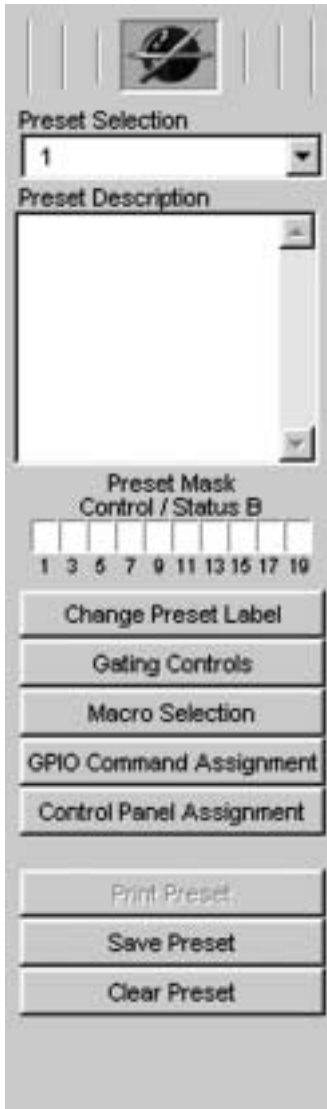
## Preset Mode

G-Ware includes advanced operational features which allow you to tailor the system to meet a wide variety of needs—instantly. The first of these features covered here is the Preset Matrix configuration.

Click the **P** (Preset Mode) button on the top of the G-Ware Matrix. The G-Ware Preset Configuration window appears.

Preset Configuration Window





Preset Configuration Pane



**Stand-alone presets are configurable only for use within the local XAP 800 unit. However, if a preset is part of a macro, another macro can be used to activate that preset in another XAP 800 unit.**

The Preset Configuration window is used for establishing presets to enable you to make programming changes on the fly. It writes the gate, non-gate, and cross point settings, as well as any input, output, or processing parameters associated with the cross points, into a Preset memory. You can establish up to 32 presets, and switch between them to accommodate changes in room configuration or audio source(s)—instantly.

A good way to think of presets is to consider each one as a single room configuration. A preset does not indicate the state of the XAP 800 unit; it represents a self-contained group of customized parameters that operates independently of other operations in the unit. This means you can use different presets for separate sound venues simultaneously without conflicts.

In the Preset mode, the Routing Key is grayed out because no cross points within the matrix are selectable with the cursor at this point. However, buttons 1-12, O-Z, and A-H down the left side of the matrix can be selected. Also, the Input, Output, Expansion Bus, and Processing buttons can be selected.

Begin preset configuration by selecting which preset to configure in the Preset Configuration pane. Next, configure the Preset Routing Key by establishing the routing parameters in the matrix.

The number of cross points you select for a preset can be affected by the number of nested macros you configure for the preset. If you exceed the preset storage space, G-Ware will alert you when you try to save the preset. You will be asked to reduce the number of cross point changes or the number of macros in the preset. As a general rule, if you make cross point changes to three-fourths of the matrix, you can establish a maximum of 128 nested macros for a given preset.

Click the number (1, 2, 3, etc.) or letter (O, P, Q, etc.) of each input, Expansion Bus, and processor you wish to place in your first preset. Note that each row selected becomes white. These highlighted areas reflect the gate, non-gate, and cross point settings you established in the G-Ware Configuration Routing Key. You can customize these settings by clicking the boxes you wish to change. As with the G-Ware Configuration matrix, you can right-click on a box to open the Cross Point menu, allowing you to set the attenuation level.

When you finish configuring the routing parameters, click the **In 1-8** button and set the Mute, AGC/SL, AEC, Filter, and other controls, as described in the G-Ware Configuration section. Also configure the other input, output, Expansion Bus, and processing parameters for the Preset Matrix as described in the G-Ware Configuration section.

When you have established Preset 1, click **Save Preset** to save the settings.



## Preset Configuration Pane

The Preset Configuration pane, to the left of the Preset matrix (see graphic on page 58), allows preset programming of the DB25 Control/Status Ports A and B on the rear of the XAP 800 unit, as well as provides options for running and saving presets.

### Preset Selection

Beginning at the top of the window, the Preset Selection menu allows you to select which preset you wish to make changes to.

### Preset Description

Use the Preset Description window for entering information about the preset.

### Preset Mask Control/Status Port B Configuration

The Preset Mask allows you to enable each Command/Status Port B pin with either an active high (H), active low (L), or off (left blank) status.

A typical application using the Preset Mask is a group of conference rooms with removable partitions between them. For the first partition, an automatic switch would be connected between Pin 1 and the partition (or, a manual switch would be connected to Pin 1 and be located on the wall near the partition). You would configure the Preset Mask Pin 1 setting to H (high) for when the partition is closed, and L (low) for when the partition is opened. This would trigger different presets based on the room-combining needs of each situation. See the description of Preset Mask Control in the Application Example on page 75 for more information.

The **Change Preset Label** button opens the Change Preset Labels window, where you can name or rename each preset. Click **Close** to save changes and return to the Preset Configuration pane.

**Gating Controls** opens the Gating Controls window. This window displays three parameters for each of four internal and four global gating groups. The three parameters are Max # of Mics, First Mic Priority, and Last Mic Mode.

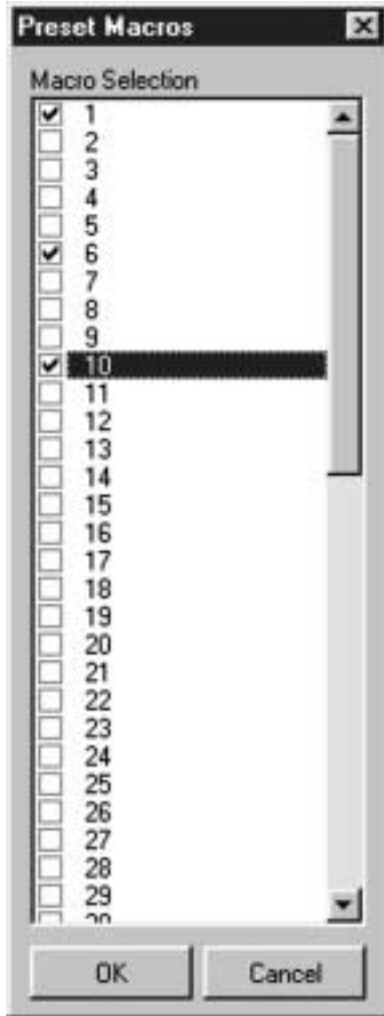


Gating Controls Window



When accessed with the Gating Control toolbar button , the Gating Controls window does not feature Use in Preset boxes, and all items are immediately selectable.

**Max # of Mics** sets the maximum number of microphones that can be gated On at any one time. This range can be set from one to eight microphones or Off. To set the maximum number of microphones, scroll through the number range (one through eight) in the pull-down menu and select the desired number. Default is 4.



Preset Macros Window

**First Mic Priority** helps maintain maximum audio intelligibility by only allowing one microphone to gate on when one person is speaking. Gentner recommends leaving this setting On. When turned Off, usually two or more microphones gate on when only one person speaks. However, when this parameter is turned on, one person will usually be able to gate on only one microphone. It does this by determining the audio level received by all microphones when the first microphone is gated on. This audio level is then used as the ambient level for all other mics. This mode can be enabled or disabled by clicking the box.

**Last Mic Mode** selects between three modes of last-mic operation: Last On, Mic 1 and Off. Last On leaves the microphone that was activated last full On until another microphone input is gated On. The Mic 1 setting allows the XAP 800 to revert back to a mic 1 input when all microphones gate off. The default setting for mic mode is Off. To select one of the last-mic mode options, access the pull-down menu and select the mode you wish.

To enable a particular internal or external mixer for use in a preset, select the **Use in Preset** box above it.

To name each mixer, click **Labels** at the bottom of the window to open the Mixer Labels window. Enter a name for each mixer, then click **OK** to save changes and return to the Mixer Control window.

When you have finished making changes in the Mixer Control window, click **Close** to save changes and return to the Preset Configuration pane.

### Macro Selection

The **Macro Selection** button opens the Preset Macros window, where you assign specific macros to the preset you're creating. Select the macros you wish to use with this preset, then click **OK** to save changes and return to the Preset Configuration pane. See Macro Mode on page 63 for more information about establishing macros.

### Preset GPIO Builder/GPIO Command Assignment

GPIO stands for general-purpose input/output. The GPIO Builder is where you establish the pin assignments for Control/Status Port A. These pins are used to provide control via contact closure and status via open collector functions in the unit. Note that the pins numbered in blue are command pins; the pins numbered in green are status pins.

Click the **GPIO Builder** button in the Preset Configuration pane (or the button in the G-Ware toolbar). The Preset GPIO Builder window appears.



Preset GPIO Builder Window

Using the mouse, select the Control/Status A pin(s) for which you wish to set commands. Select the Use in Preset box for each one you wish to use in the preset.

Note that the Active (Low) Command pane reflects the default command string for the pin selected. To make changes to the command string, enter them directly in the Active Command pane or select the desired parameters in the pull-down menus along the bottom of the window.

When you select a different command in the Command menu, the other pull-down menus change to reflect changeable parameters.

The **Command Description** and **Argument Description** panes reflect command and argument information. You can modify this information in the panes as desired.

**Apply** applies the changes you have made to the selected pin. **Clear** resets the window to default parameters.

Click **Close** to save changes and return to the Preset Selection pane.



**GPIO commands can be configured only for the local XAP 800 unit.**



**Pins 17-25 are not user-definable. See Appendix B for Control/Status Port A pinout information.**

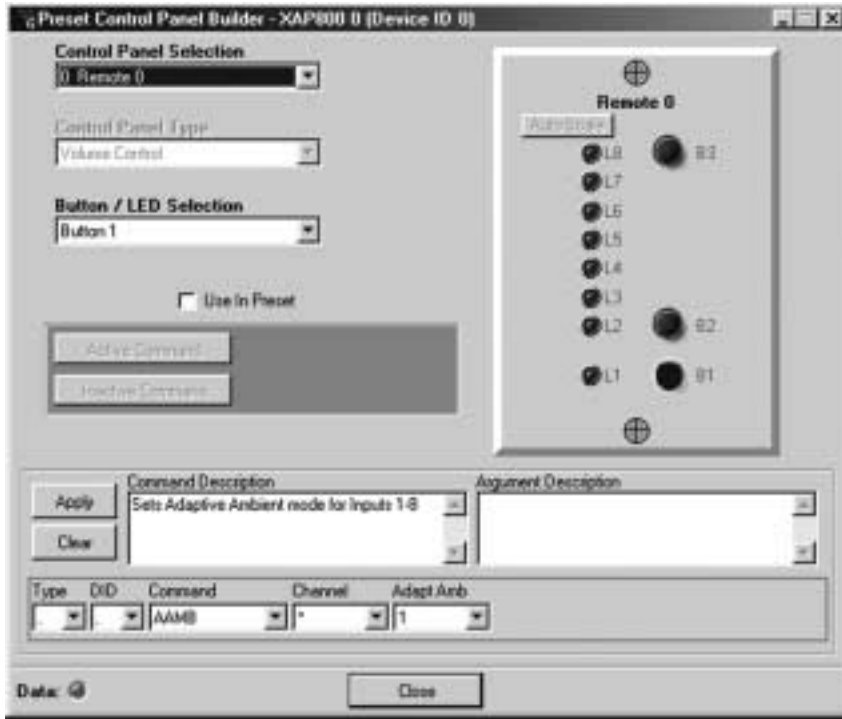


**Odd-numbered pins are control pins. Even-numbered pins are status pins.**

### Control Panel Builder

The Control Panel Builder window is for configuring the optional Gentner Control Panel. The Control Panel is an interface module that provides remote control of volume, mute, presets, and macros for the XAP 800. The Control Panel can be configured within the context of establishing presets or independently of presets.

Click the **Control Panel Assignment** button in the Preset Configuration pane (or the button in the G-Ware toolbar in the Configuration Matrix mode). The Control Panel Builder window appears.



Control Panel Builder Window



**The control panel buttons can be customized to meet a variety of venue requirements through selection of the wide variety of commands available in the Command menu.**

Use the Button/LED Selection menu to configure the button or LED for which you wish to set command descriptions or actions. Note that you can also click on the LED or button in the panel depiction to make your selection. Depending on the command you select, each Control Panel button can respond like a momentary or latching button.

The default numbers on the left of the Volume Control Panel's LEDs represent attenuation levels in decibels. To change a level, click on the LED and then select or enter the change in the Gain menu at the bottom of the window. You can also set the upper and lower limits of attenuation you desire (on LEDs L2 and L8) and then click **Auto Scale**, which automatically assigns values to LEDs L3-L7 on a distributed scale. The Select Control Panel can be similarly configured.

Use the Control Panel Selection menu to select the Control Panel you're configuring.

If you opened the Control Panel Builder with the toolbar button, the **Change Name** button is visible. Click it to change or assign the panel's name.

Next, select the Control Panel Type. The Volume Control is designed for volume control. The Select Control is designed for source selection or configuration control. Notice that the Control Panel represented on the right side of the window changes to reflect each control panel as it is selected.

If you opened the Control Panel Builder from the Preset Configuration pane, the Use in Preset box appears below the Button/LED Selection menu. This box allows you to use specific button and/or LED settings within a preset you're establishing without altering how the remaining buttons and LEDs are configured.

Next, select the Unit Type, Device, and Command you wish to use from the menus at the bottom of the window. Other menus specific to the command will appear so you can tailor the command to meet the requirements of your system and venue.

Note that the Command Description pane shows the description for the command you have selected. Click the **Apply** button to apply the selected command to the Active or Inactive command button.

If you opened the Control Panel Builder with the toolbar button, the Active Command and Inactive Command buttons are selectable. Click the Active Command or Inactive Command button to set the command for operation when the button is active or inactive. If you opened the Builder with the Control Panel Assignment button (Preset Configuration mode), clicking Use in Preset activates the Active Command and Inactive Command buttons so you can configure commands for an active or inactive state for a given preset.

The Argument Description pane reflects argument information.

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The remaining buttons in the Preset Configuration pane do the following:

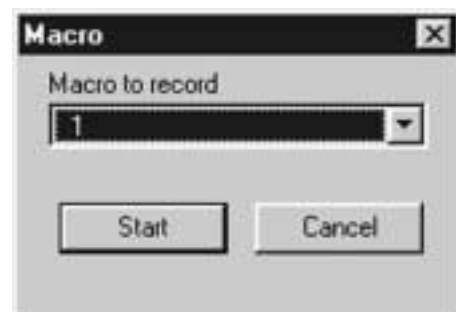
The **Print Preset** button in the Preset Configuration Pane prints the currently-selected preset. Note that a preset must be saved before it can be printed.

The **Save Preset** button saves the current preset to G-Ware.

The **Clear Preset** button clears the current preset from G-Ware.

## Macro Mode

The Macro Mode lets you establish macros—lists of commands—in G-Ware software. Macros streamline the operation of the XAP 800, allowing you to make quick configuration changes once the XAP 800 unit is running a given preset. For example, you can use a macro to change the volume level of speakers in various areas of an arena when a particular preset is used. Macros can also contain commands on other XAP 800 units. See Serial Commands on page 90 for a list of commands which can be used in macros.

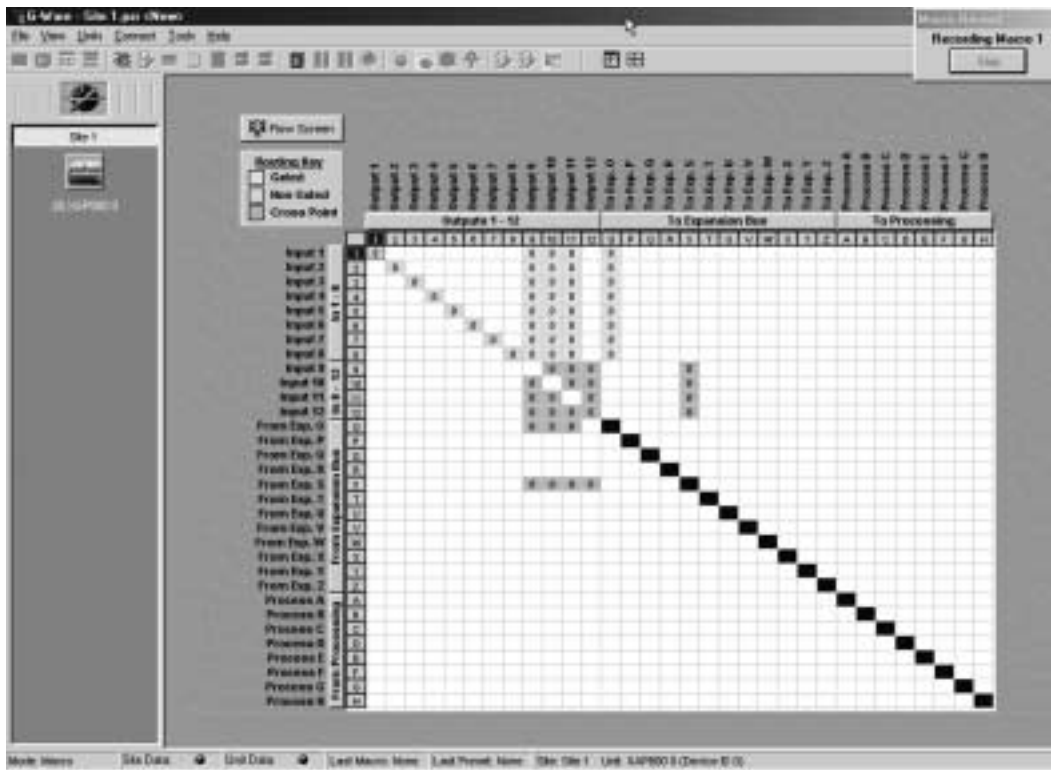


Macro Record Window

Each macro you create can be stored and executed whenever desired. Up to 255 macros can be configured, with an average of 150 commands per macro. If you exceed G-Ware's capacity, you will be notified with a warning upon saving a macro. The warning will indicate the command line at which memory is exceeded. This warning also displays during the macro record function if memory is exceeded while recording a macro.

To begin creating a macro, click the **M** button on the G-Ware toolbar. The Macro Record window opens.

Select the Macro to Record you wish to edit, then click **Start**. The G-Ware Macro matrix window appears. Note the Macro Record window in the center of the screen.



G-Ware Macro Window



**When you record to a saved macro, the new recording is appended to the end of the saved macro.**

Proceed to configure the routing information on the Routing Key that you wish to establish for this macro (see the G-Ware Configuration Matrix section on page 34 for information about how to configure the matrix). When you finish, click **Stop** in the small Macro Record window in the upper right-hand corner of the screen. This stops the macro recording and opens the Macro Editor window.

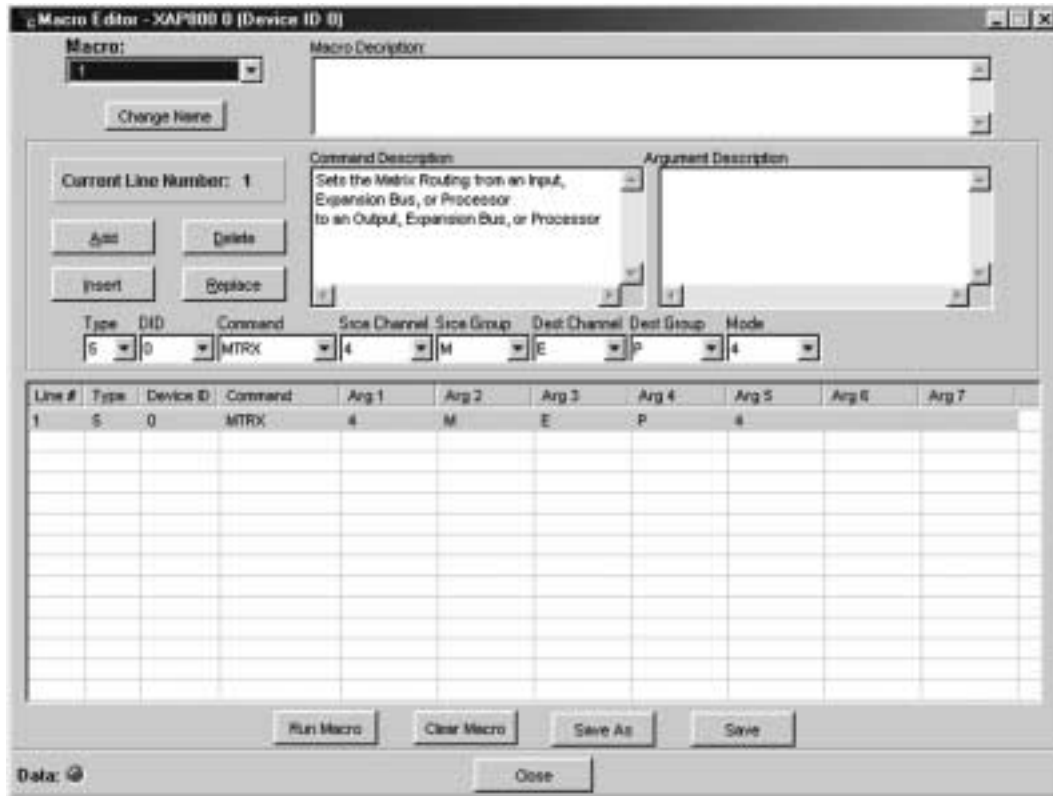
The macro you just created displays in the Macro Editor window. If you wish to edit the macro, do so as described in the Macro Editor section on page 65.

**Macro Editor**

The Macro Editor allows you to add and remove commands from existing macros. To edit a macro, click the **Macro Editor** button in the G-Ware toolbar. The Macro Editor window appears.



**Macro Editor Button**



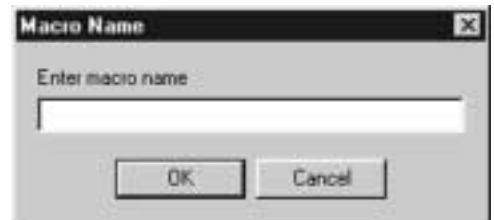
**Macro Editor Window**

Begin by selecting the macro you wish to edit in the Macro pull-down menu at the top of the window. If you wish to establish or change the name of a macro at this point, click **Change Name** to open the Macro Name window. Enter the new macro name, then click **OK**. This saves the new name in the Macro pull-down menu and returns the software to the Macro Editor window.

Next, select the Line # of the command you wish to edit by double-clicking it (note that the line you select is indicated in the Current Line Number box). This puts the command line in the pull-down menus for editing. Proceed to edit the macro. If you wish to delete it, click **Delete**. Or, edit the Command Description in the field provided. Add information to the Macro Description and Argument Description fields as desired.

**Add** places the current macro into the next available Line #.

**Insert** places the current macro into the Line # above the one currently selected.



**Macro Name Window**

**Delete** removes the selected macro.

**Replace** replaces the selected macro with the one you're editing.

You can also move commands simply by clicking on them and dragging them to the location you desire.

Note that the pull-down menus below the **Insert** and **Replace** buttons change to reflect editable variables for each command you select in the Command menu. Also, when you select one of the command variables, the Argument Description field displays the description. Use these menus to tailor the macro to suit the requirements of your application(s).

**Run Macro** runs the selected macro so you can check for problems. The macro must be saved before you can run it (see Save As and Save below).



**An asterisk (\*) appears before the name of a saved macro.**

**Clear Macro** erases the macro from the window.

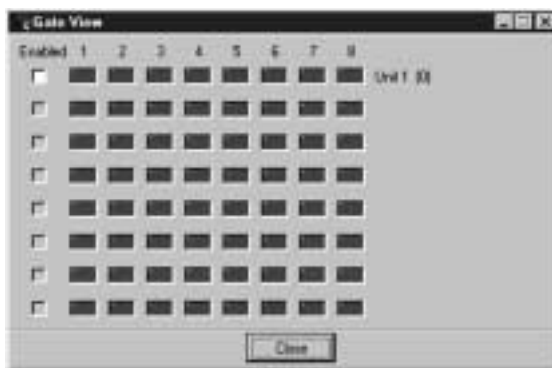
**Save As** opens the Save Macro window. Here, you select which macro number you wish to use. Then click **Save**, which saves the macro and returns G-Ware to the G-Ware matrix window.

**Save** saves the macro changes you have made.

**Close** returns G-Ware to the G-Ware matrix window.

## Gate View

The **Gating** button opens the Gate View window, which allows you to view gating activity at each mic input.



Gate View Window



Gating Button

Select the **Enabled** box for each XAP 800 unit you wish to observe input gating information for. Note that the window shows gating activity only for units which have been added to G-Ware. The gate indicator for each input is dark green in the gate-off condition and light green if the input is gated on. Click **Close** to save the settings and exit.

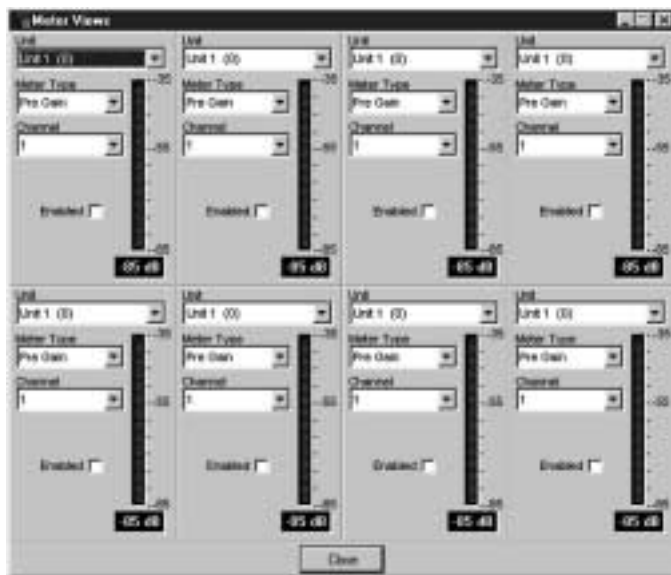


## Meter Views

The **Meter Views** window allows you to monitor the level of any input, output, or processing signal of the XAP 800. Click the **Meters** button on the G-Ware toolbar to open this window.



Meters Button



Meter Views Window

To enable a meter, click the adjacent **Enabled** box, then set the unit number, meter type, and channel you wish to use. Note that you can configure the meters such that you can monitor the same input signal as it makes its way through various stages in the XAP 800.

When you have finished making changes, click **Close** to return to the G-Ware Configuration window.

## Signal Generator

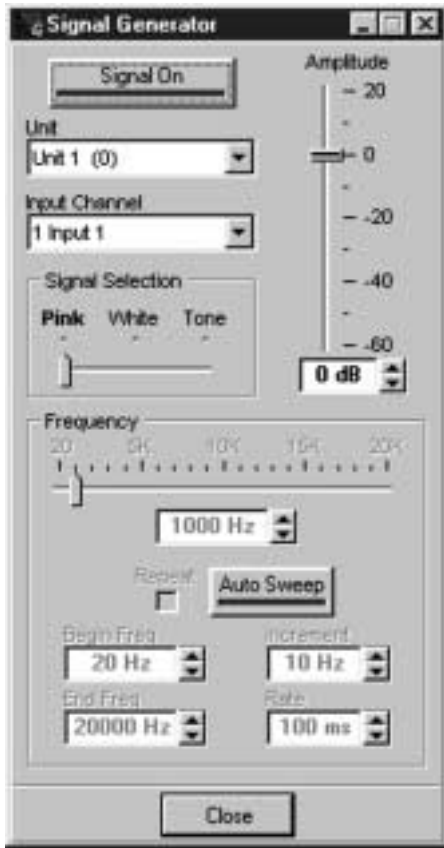
The Signal Generator window allows you to generate test audio signals for sound system calibration. Click the **Signal Generator** toolbar button to open this window.



Signal Generator Button



The Signal Generator window can also be opened by selecting Signal Generator from the Tools menu.



Signal Generator Window

The signal generator creates test audio signals for sound system calibration. The test signal is assigned to a particular input, and allows you to verify the operation of the processor settings you have selected.

Begin by selecting the XAP 800 Unit and Input Channel you wish to use. Next, use the **Amplitude** control to select the amplitude (volume) of the signal you wish to use. The amplitude range is from -60 to +20dB. Default is 0dB.

### Signal Selection

Next, select Pink (default), White, or Tone for the type of reference audio you wish the XAP 800 to generate on the selected input.

If you select Pink or White, click **Signal On** to generate the noise signal. Click **Signal On** again to terminate the noise signal.

**Pink Noise**—An audio test signal containing all the frequencies in a given audio spectrum, with equal energy in each octave. Pink Noise is the default signal.

**White Noise**—An audio test signal which is distributed evenly throughout a given frequency range.

**Tone**—Activates the tone configuration portion of the window.

If you select Tone, and you wish to use a single tone for reference, configure the tone generator by selecting the frequency of the tone you want generated with the slide control. Or, enter the frequency in the window next to the Auto Sweep button. Then click **Signal On** to generate the tone. Click **Signal On** again to terminate the noise signal.


If you wish the tone generator to automatically sweep through a designated frequency range, set the Begin Frequency, End Frequency, Increment (of frequencies sampled), and Rate (of the sweep) in the appropriate fields. Then click **Auto Sweep**, which begins the frequency sweep. Note that the Frequency slide control and readout reflect the progress of the Auto Sweep function. Click **Auto Sweep** again to stop the frequency sweep. Auto Sweep turns off automatically upon completion of the sweep. The sweep range is 20Hz–20kHz, and the increment range is 10Hz–20kHz. The rate range is 10ms–2000ms. Default is 100ms.

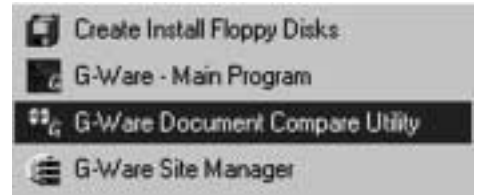
Select the **Repeat** box if you want Auto Sweep to continue in cycles.

Click **Close** to return to the G-Ware Configuration window.

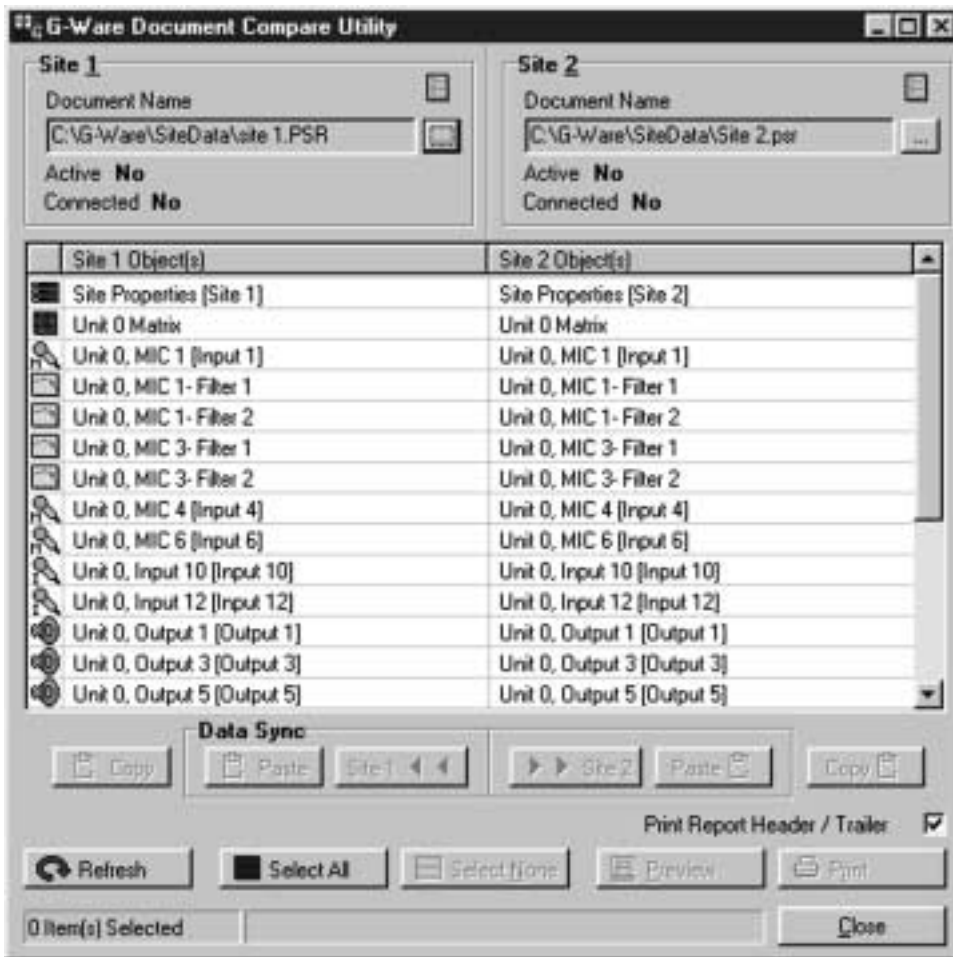
### G-Ware Document Compare Utility

The G-Ware Document Compare Utility samples and compares configuration information between two XAP 800 sites, two XAP 800 units, or a site and a unit. These can exist as actual sites/units or as documents saved to your computer. It shows you where differences are between the two and allows you to copy and paste settings between them.

To launch the utility, click the Compare Utility toolbar button.  The Compare Utility window appears.




Gentner G-Ware Menu (Windows Start/Programs/Gentner G-Ware menu)

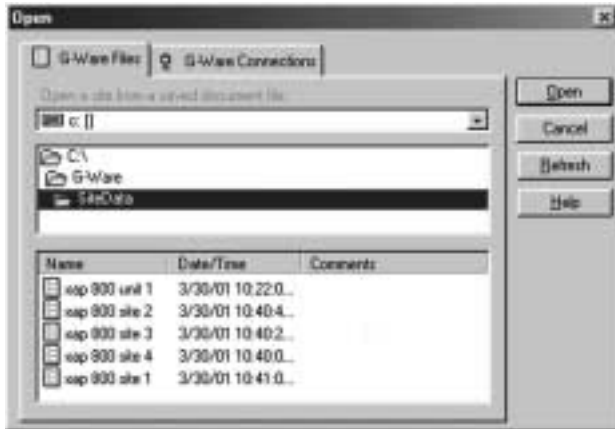


The Document Compare Utility can also be opened by selecting G-Ware Document Compare Utility from the Gentner G-Ware menu in the Programs section of the Windows® Start menu.

Compare Utility Window 1

The Compare Utility window above shows two XAP 800 sites being compared for differences. The items listed in the white Site 1 and Site 2 table show where the differences are.

To compare differences between sites or units, click the Find File button  at the right end of the Site 1 Document Name pane. This opens the G-Ware Open window (see page 70).



G-Ware Open Window

In the G-Ware Open window, you can select files to compare through the G-Ware Files tab or select connected units or sites through the G-Ware Connections tab. When you have made a selection, click **Refresh** to update the status of the unit, site, or connection. Then click **Open**.

Repeat this process with the Site 2 Find File button to select the second unit, site, or document for comparison.

When you make your selection and click **Open** in the Site 2 Open window, G-Ware automatically compares information from the selected items and displays a table of parameters which differ (note that the actual differences are not displayed at this point). This process can take a minute or two.



Print Preview Window

To view the difference(s) between two sources on a single parameter, select the line in the table you wish to examine, then click **Preview**. This opens the Print Preview window, which shows what the differences are.

To print the report, click **Print** (you can also click **Print** in the Compare Utility window to print the report). The other buttons in this window allow you to tailor the view of the report and browse sequentially through each page.

When you finish viewing or printing the report, close the Print Preview window.

Note that in Document Compare Utility Window 2 (below), the **Copy to Site**, **Paste**, and **Copy** buttons underneath the table are selectable.



Copy to Site 1 Button

These buttons become selectable only when two sites or units—actually connected or existing in G-Ware—are being compared. In the example shown below, clicking **Site 1** transfers settings from a line selected in the Site 1 panel to the corresponding line in the Site 1 panel. The **Copy** button copies the settings of the Site/Line above it, allowing you to paste (with the **Paste** button) settings to another site, unit, or even to a particular G-Ware parameter, such as an input.



Document Compare Window 2

The remaining buttons in the Document Compare window do the following:

The **Refresh** button updates the connection status to site(s) or unit(s).

**Select All** selects everything in the Site 1/Site 2 table.

**Select None** deselects anything highlighted in the table.

Click **Close** to exit the Document Compare Utility.

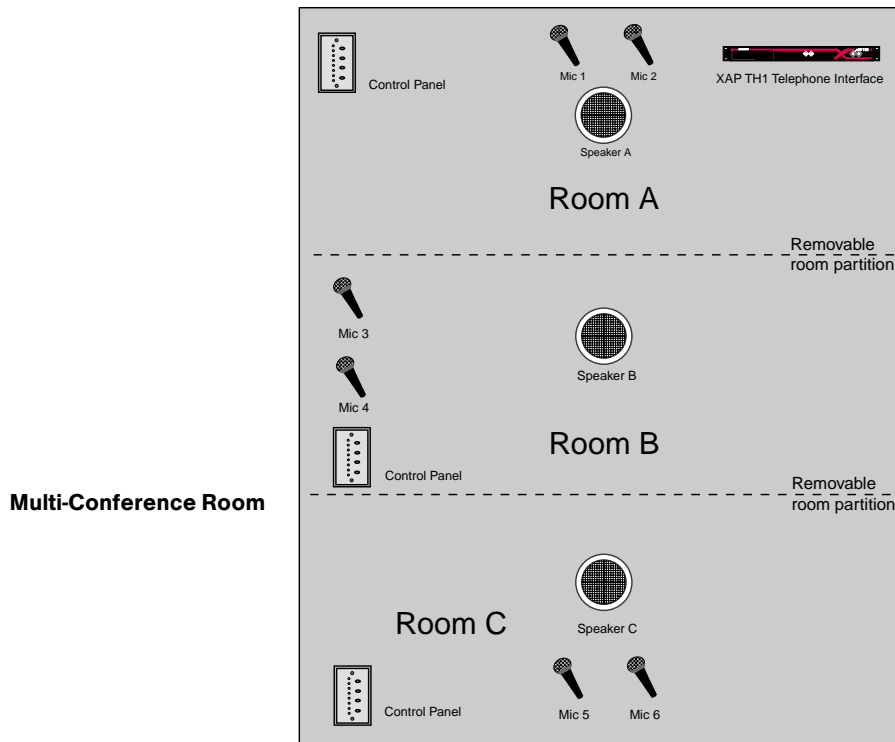
# 5 Application Example

## Multi-Conference Room Combining Application

The XAP 800 can be adapted to a wide variety of teleconferencing applications, including high-end corporate boardrooms, training rooms, distance learning, and conference rooms. This chapter shows you how to set up a XAP 800 in a multi-conference room-combining system, a typical application that uses many of the XAP 800's powerful features.

A multi-conference room application requires a well-designed room-combining system whose sound system must adapt quickly to a variety of meeting scenarios. This is necessary to accommodate the changing needs of the group(s) throughout a meeting session or series of sessions.

By configuring the presets on the XAP 800, the system can be quickly reconfigured in a way that accommodates the changing of room configurations in some meeting areas without disturbing meetings in other rooms where no room configuration changes are necessary. The XAP 800's presets operate independently; using various presets simultaneously in separate sound venues does not present problems.



The Multi-Conference Room diagram above shows three rooms with removable partitions separating the rooms. The XAP 800 can be pre-set to route microphone audio to one room or any combination of rooms. For example, say all three rooms are closed off for separate meetings; you can configure a preset to route the microphone audio only to the speaker in the same room, with microphone gating properties applied as desired. Then, say the divider between Rooms A and B is removed for a combined meeting. You can use a preset that gates off microphones 3 and 4, while the audio from microphones 1 and 2 are routed to all speakers in Rooms A and B—while retaining the settings for the ongoing meeting in Room C. Later, when all partitions are removed for a final group meeting, you can use a preset that gates on only microphones 1 and 2, but routes audio to all speakers.

The use of other audio sources can be configured using the XAP 800's parametric equalizers and filters to enhance audio quality. For example, a XAP TH1 Telephone Interface or APV200-IP video codec could be used in each room for audio- or videoconferencing capabilities (note the XAP TH1 in the diagram above).

After you have installed the XAP 800 unit and software, and made the necessary connections, follow the steps below to set up the XAP 800 for this application.

### **Step 1. Establish a XAP 800 Site**

In G-Ware software, establish a new XAP 800 site and then add the XAP 800 to the site, as described on pages 21-24.



## Step 2. Configuration

Click the **C** (Configuration Mode) button on the G-Ware toolbar to configure the matrix parameters. Establish the routing (including cross point), input, output, Expansion Bus, and processing bus settings. Set the echo canceller reference points as needed for mic inputs. See G-Ware Matrix on page 34 for more information.

## Step 3. Presets

A multi-conference room application involving several adjoining meeting rooms separated by removable partitions presents numerous technical challenges. These challenges include rerouting audio quickly when room configurations change—without disturbing the audio routing of an ongoing meeting in a room which does not require a reconfiguration. These challenges are easily solved through the use of presets.

For purposes of the XAP 800, presets should be thought of as independent single-room configurations. A preset does not indicate the current state of the XAP 800 unit; it represents a self-contained group of customized parameters that functions independently of other operations in the unit. This means you can use different presets for separate sound venues simultaneously without conflicts.

To establish presets for this scenario, click the **P** (Preset Mode) button in the G-Ware toolbar. Proceed to establish six presets for various room-combining situations, as described on the following pages and depicted in the Room-Combining Scenarios diagram on page 76. **An alternate way of configuring preset commands (to be executed through the serial port rather than using the GPIO) is described on page 79.**

### Preset Sidebar Window

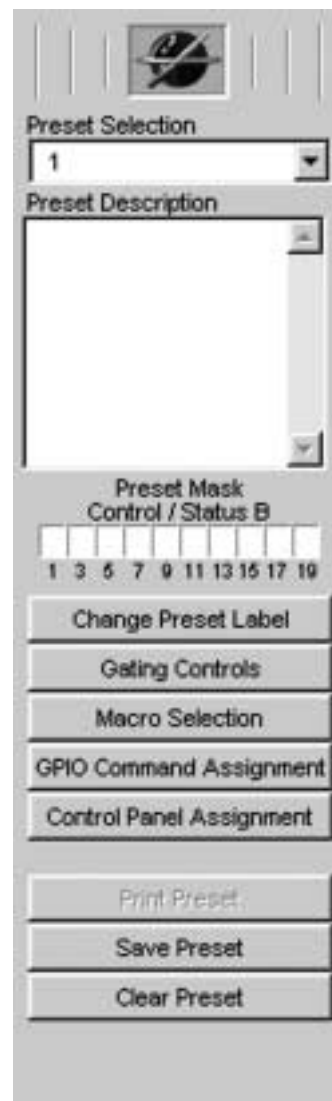
When you click the **P** button in the toolbar, the Preset Configuration window opens, with the Preset Sidebar window appearing on the left side.

#### Preset 1

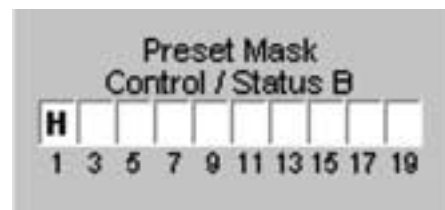
In the Preset Sidebar window, select 1 in the **Preset Selection** menu to begin configuring Preset 1.

The **Preset Mask Control/Status B** panel is used for setting the Port B pin assignments according to the preferences you wish to use. Port B allows you to enable and disable presets remotely from a contact closure switch or button.

Before you set the Preset Mask assignments for Preset 1, refer to the Room Combining Scenarios diagram on page 76. Note that there are six different room-combining possibilities in the scenario. You will eventually need to create six presets, based on the requirements of each. For Preset 1, refer to P1 (Room A) in the diagram.



Preset Configuration Sidebar Window

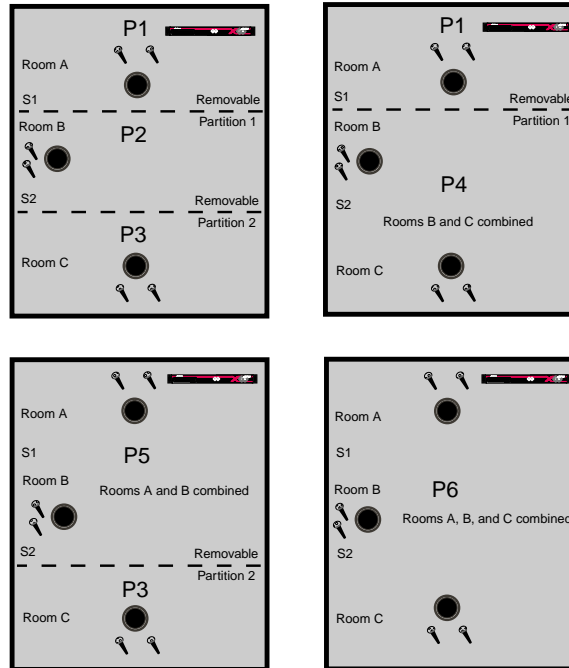


Pin Assignment for Preset 1



**P1, P2, etc. represent pre-sets established for each room in the system. S1 and S2 represent switches 1 and 2 for the wall partitions.**

### Room-Combining Scenarios



To accommodate all six configurations, two removable wall partitions are used. For Preset 1 (P1), Removable Partition 1 is connected, via Switch 1 (an automatic switch), to Pin 1 of the Control/Status Port B. The automatic switch enables/disables presets depending on if the partition is open or closed. Or, you can use a manual switch, connected to Pin 1 and located on the wall near the partition. The Gentner Control Panel is ideal for this. Click the Preset Mask Pin 1 setting to H (high) for when the partition is closed, and L (low) for when the partition is open. This enables/disables Preset 1 based on the position of the partition.

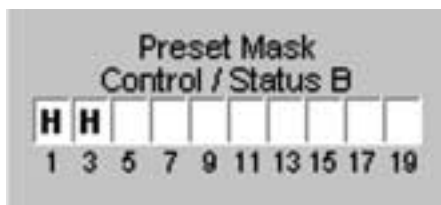
Room A contains Microphones 1 and 2, as well as Speaker 1 and a XAP TH1 telephone interface. In the Preset Configuration matrix, route the appropriate inputs to the appropriate output, such that Mics 1 and 2 route to Speaker 1 or the XAP TH1. Set other cross point and gating parameters as desired in the matrix. See Preset Mode on page 57 for more information about how to set these parameters.

Continue configuring Preset 1 by establishing the Change Preset Label, Mixer Controls, etc. as desired in the Preset Sidebar window. These functions are described in detail in the Preset Mode section, starting on page 57.

#### Preset 2

Begin by selecting 2 in the Preset Selection menu.

Preset 2, which is for Room B, is set up much like Preset 1 is, with some key differences. For Preset 2, Switch 1 (Preset Mask) is still set to High



Pin Assignment for Preset 2

because the first partition is still closed. Switch 2, which would be used for Removable Partition 2, would be controlled through Pin 3. In this case, it would be set to High because the partition is closed.

Room B uses Microphones 3 and 4, as well as Speaker 2. Set the appropriate routing parameters in the Preset configuration matrix.

Continue configuring Preset 2 by establishing the Change Preset Label, Mixer Controls, etc. as desired in the Preset Sidebar window.

#### Preset 3

Select 3 in the Preset Selection menu.

Preset 3, which is for Room C, requires the Preset Mask Pin 3 to be set to High, as Partition 2 is closed. Note that Pin 1 and Switch 1 are irrelevant (and therefore not used) for Preset 3.

Room C uses Microphones 5 and 6, as well as Speaker 3. Set the appropriate routing parameters in the Preset Configuration matrix.

Continue configuring Preset 3 by establishing the Change Preset Label, Mixer Controls, etc. as desired in the Preset Sidebar window.

#### Preset 4

Select 4 in the Preset Selection menu.

For Preset 4, Rooms B and C are combined. In this case, Preset Mask Pin 1 is set to High because Partition 1 between Rooms A and B is closed. Pin 3 is set to Low because Partition B is open.

When Rooms B and C are combined, you will want to gate off the mics in either Room B or C and route one or both of the other two mics to Speakers 2 and 3. Make the appropriate routing and gating changes in the Preset configuration matrix to do this. Note that Preset 1 in Room A is unaffected; an ongoing meeting in that room is not disturbed when Preset 4 is activated.

Continue configuring Preset 1 by establishing the Change Preset Label, Mixer Controls, etc. as desired in the Preset Sidebar window.

#### Preset 5

Select 5 in the Preset Selection menu.

For Preset 5, Rooms A and B are combined. In this case, Preset Mask Pin 1 is set to Low because Partition 2 between Rooms A and B is open. Pin 3 is set to High because Partition B is closed.

| Preset Mask Control / Status B |   |   |   |   |    |    |    |    |    |
|--------------------------------|---|---|---|---|----|----|----|----|----|
| H                              |   |   |   |   |    |    |    |    |    |
| 1                              | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 |

Pin Assignment for Preset 3

| Preset Mask Control / Status B |   |   |   |   |    |    |    |    |    |
|--------------------------------|---|---|---|---|----|----|----|----|----|
| H                              | L |   |   |   |    |    |    |    |    |
| 1                              | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 |

Pin Assignment for Preset 4

| Preset Mask Control / Status B |   |   |   |   |    |    |    |    |    |
|--------------------------------|---|---|---|---|----|----|----|----|----|
| L                              | H |   |   |   |    |    |    |    |    |
| 1                              | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 |

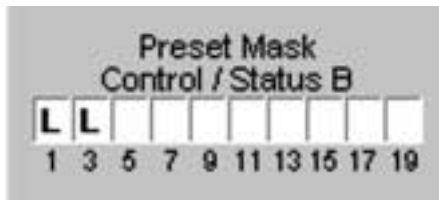
Pin Assignment for Preset 5

When Rooms A and B are combined, you will want to gate off the mics in either Room A or B, and route one or both of the other two mics to Speakers 1 and 2. Make the appropriate routing and gating changes in the Preset Configuration matrix to do this. Note that Preset 3 in Room C is unaffected; an ongoing meeting in that room is not disturbed when Preset 5 is activated.

Continue configuring Preset 5 by establishing the Change Preset Label, Mixer Controls, etc. as desired in the Preset Sidebar window.

#### Preset 6

Select 6 in the Preset Selection menu.



**Pin Assignment for Preset 6**

Preset 6 is for an all-rooms combined scenario. This requires Pins 1 and 3 to both be set to Low, as both partitions are open.

If the “front” of the combined room is in Room A, gate off Mics 3-6 in the other rooms and route audio to all speakers via the Preset Configuration matrix.

#### **Step 4. Save and Check**

After you finish configuring the presets, you can save them by clicking Save Preset.

#### **Step 5. Macros**

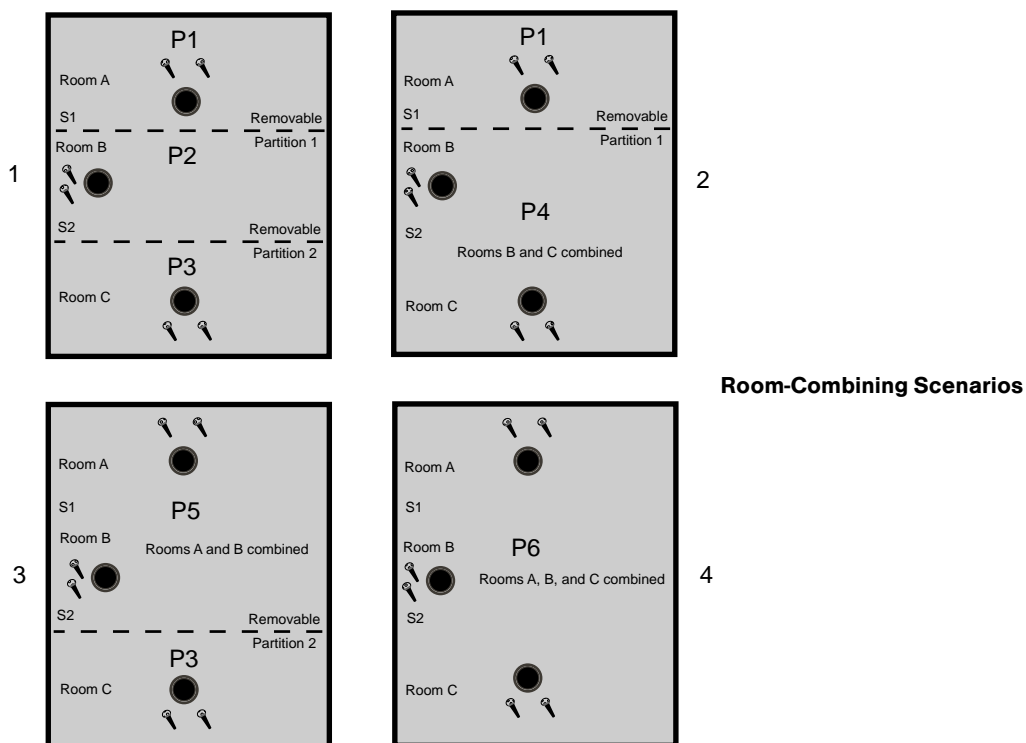
When you have finished establishing the presets, Click **M** in the G-Ware toolbar to configure or edit the macros you wish to use. See Macro Mode on page 63 for more information.

A Room Preset/Configuration worksheet is provided on page 86.

## Executing Presets Through the RS-232 Serial Port

You can configure presets such that one or more will remain on continuously without interruption while other presets change to accommodate changing room configurations. This is accomplished by tailoring the Preset Execution/Reporting command (see page 156).

Referring to the Room-Combining Scenarios diagram below, note that if you want to switch from Configuration 1 (upper-left box) to Configuration 2, you would most likely want P1 (preset 1) to remain on continuously without resetting and rerunning again. This is because manual adjustments to gating, muting, etc. might have been made in the P1 preset room during a meeting in progress, and you don't want to reset the preset to its original settings at that moment.



The same rule would apply for P3 if you were switching between Configurations 1 and 3—you would want P3 to remain on without interruption.

To set up presets this way, set the argument commands based on the following:

- 0 sets the preset state to Off.
- 1 executes the preset and sets the state to On.
- 2 executes the preset and sets the state to Off.

Therefore, you would establish the arguments for Configuration 1 as follows:

```
#50 Preset 1 1      #50 Preset 4 0
#50 Preset 2 1      #50 Preset 5 0
#50 Preset 3 1      #50 Preset 6 0
```

For Configuration 2, you would establish the arguments as follows:

```
#50 Preset 1 1      #50 Preset 4 1
#50 Preset 2 0      #50 Preset 5 0
#50 Preset 3 0      #50 Preset 6 0
```

For Configuration 3, you would establish the arguments as follows:

```
#50 Preset 1 0      #50 Preset 4 0
#50 Preset 2 0      #50 Preset 5 1
#50 Preset 3 1      #50 Preset 6 0
```

For Configuration 4, you would establish the arguments as follows:

```
#50 Preset 1 0      #50 Preset 4 0
#50 Preset 2 0      #50 Preset 5 0
#50 Preset 3 0      #50 Preset 6 1
```

Note that P1 is set to On in both Configurations 1 and 2, so that when you switch between them, P1 will not be executed again (because it is already running). When changing to Configuration 1 from Configuration 3 or Configuration 4, P1 will execute because it was set to Off in 3 and 4.

You would build these preset commands into macros for on-the-fly execution. See Macro Mode on page 63 for information about how to create macros.

# A

# Appendices

## Appendix A: Specifications

G-Ware (setup/diagnostics software)

Dimensions (WxHxD):

17<sup>1</sup>/<sub>4</sub>" x 2<sup>3</sup>/<sub>4</sub>" x 10<sup>1</sup>/<sub>4</sub>" (43.8 x 7.0cm x 26.0)

Weight:

4.5kg dry

5.9kg shipping

Power Requirements:

Auto-adjusting power module

Fuse: 2 amp, 250VAC, slow-blow type

Input Range:

100-240VAC; 50/60Hz

Power Consumption:

30W, typical

95 BTU/Hr

Phantom Power:

24V, input selectable

Audio Performance

Frequency Response: 20Hz to 20kHz

Noise: (EIN 20Hz to 20kHz) -125dB

THD: <0.003%

Dynamic Range: >100dB

Audio Functions

Filters: All pass; low pass; high pass; low shelving; high shelving; notch;

PEQ; CD horn EQ; and Bessel, Butterworth, and Linkwitz-Riley

crossovers; compressors; matrix mixer w/crosspoint level control;

automatic gain control; and automatic microphone mixer.

Signal Delay: Adjustable up to 500ms. G-Ware calculates distances.

#### Propagation Delays

Input 1-8 to Output: 2.15ms (gated/non-gated)

If AEC is activated: 18ms

If NLP is activated: 18ms

If NC is activated: 18ms

Non-gated Input 9-12 to Output: 1.04ms

Expansion Bus: 50ms

Sampling: 24-bit, 48kHz

Maximum Input Level: 20dB

Maximum Output Level: 20dB

#### Meters

G-Ware Software: Peak-Level

Front Panel: Peak-Level

#### Mic/Line Inputs:

Connector: Removable terminal block; balanced, bridging

Impedance: 7kOhms

#### Line Inputs:

Connector: Removable terminal block; nominal adjustable, balanced, bridging

Impedance: >20kOhms

#### Line Outputs:

Connector: Removable terminal block; nominal level adjustable, balanced

Impedance: 50 Ohms

#### Expansion Bus Requirements:

Cat 5 twisted-pair (10BaseT LAN)

Maximum distance between units: 80 feet (24 meters)

#### Other Connectors:

RS-232: DB9 female (DCE) 9,600/19,200/38,400/57,600 baud

Control/Status A: DB25 female

Inputs A: active low (pull to ground)

Outputs A: Open collector, 20V max, 40mA each

Control/Status B: DB25 female

Inputs B: active low (pull to ground)

Outputs B: Open collector, 20V max, 40mA each (2)

#### Operating Temperature:

32 - 100°F / 0 - 38°C

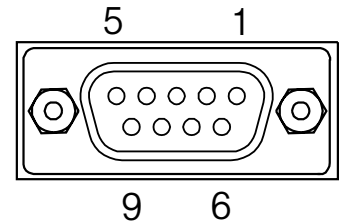
Approvals: FCC Part 15, CSA NRTL/C, CE



# Appendix B: Connector Pinouts

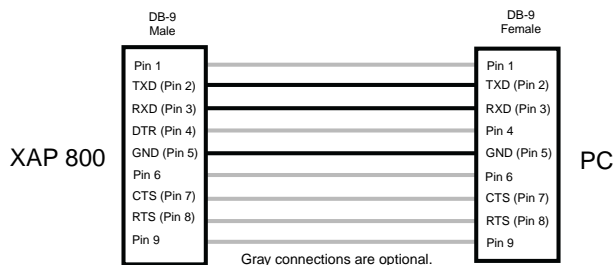
**Table 1: RS-232 COM DCE Port Pinout (female)**

| Pin Number | Control | Pin Number | Control       |
|------------|---------|------------|---------------|
| 1          | DCD     | 6          | DSR           |
| 2          | TXD     | 7          | CTS           |
| 3          | RXD     | 8          | RTS           |
| 4          | DTR     | 9          | No connection |
| 5          | Ground  |            |               |



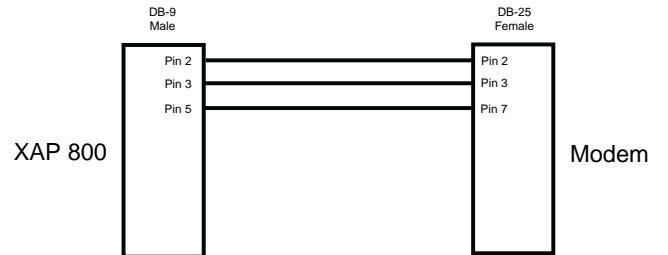
**RS-232 Connector**

DB-9 Pinout for XAP 800-PC Connection Example



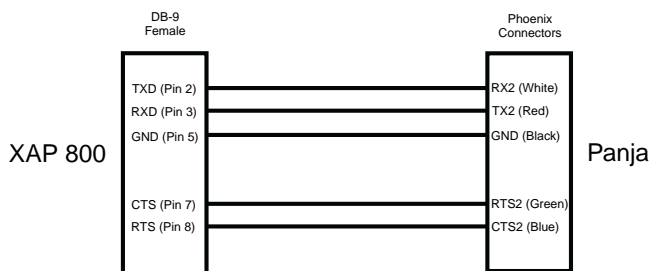
**XAP 800 to PC RS-232 Connections**

DB-25/DB-9 Pinout for XAP 800-Modem Connection



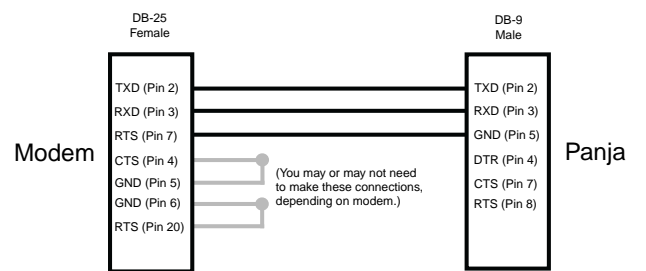
**XAP 800 to Modem RS-232 Connections**

DB-9 Pinout for XAP 800-Panja Connection Example



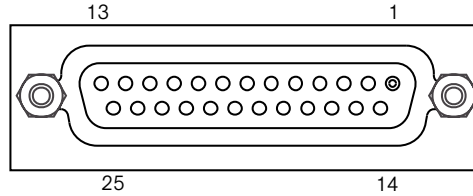
**XAP 800 to Panja RS-232 Connections**

DB-25/DB-9 Pinout for Panja-Modem Connection



**Modem to Panja RS-232 Connections**

Control/Status Ports A, B

**Table 2: Control/Status A Port Pinout (female)**

| Pin Number | User Definable* | Status | Momentary/Latching | Default Description          |
|------------|-----------------|--------|--------------------|------------------------------|
| 1          | Yes             | C      | M                  | Lock front panel toggle      |
| 2          | Yes             | S      |                    | Status of front panel lock   |
| 3          | Yes             | C      | M                  | Mute all mics toggle         |
| 4          | Yes             | S      |                    | Status of mute all mics      |
| 5          | Yes             | C      | M                  | Mute Output 9 toggle         |
| 6          | Yes             | S      |                    | Status of Output 9 mute      |
| 7          | Yes             | C      | M                  | Mute Output 10 toggle        |
| 8          | Yes             | S      |                    | Status of Output 10 mute     |
| 9          | Yes             | C      | M                  | Mute Output 11 toggle        |
| 10         | Yes             | S      |                    | Status of Output 11 mute     |
| 11         | Yes             | C      | M                  | Mute Output 12 toggle        |
| 12         | Yes             | S      |                    | Status of Output 12 mute     |
| 13         | Yes             | C      | M                  | Volume Up D Output 1 (1dB)   |
| 14         | Yes             | S      |                    | Not programmed               |
| 15         | Yes             | C      | M                  | Volume Down D Output 1 (1dB) |
| 16         | Yes             | S      |                    | Not programmed               |
| 17         | No              | S      |                    | Mic #1 Gate Status           |
| 18         | No              | S      |                    | Mic #2 Gate Status           |
| 19         | No              | S      |                    | Mic #3 Gate Status           |
| 20         | No              | S      |                    | Mic #4 Gate Status           |
| 21         | No              | S      |                    | Mic #5 Gate Status           |
| 22         | No              | S      |                    | Mic #6 Gate Status           |
| 23         | No              | S      |                    | Mic #7 Gate Status           |
| 24         | No              | S      |                    | Mic #8 Gate Status           |
| 25         | No              | Ground |                    | Ground                       |

**Table 3: Control/Status B Port Pinout**

| Pin Number | User Definable* | Status | Latching | Default Description            |
|------------|-----------------|--------|----------|--------------------------------|
| 1          | No              | C      | L        | Preset select bit              |
| 2          | No              | S      | L        | Preset select status for Pin 1 |
| 3          | No              | C      | L        | Preset select bit              |
| 4          | No              | S      | L        | Preset select status for Pin 3 |
| 5          | No              | C      | L        | Preset select bit              |
| 6          | No              | S      | L        | Preset select status for Pin 5 |

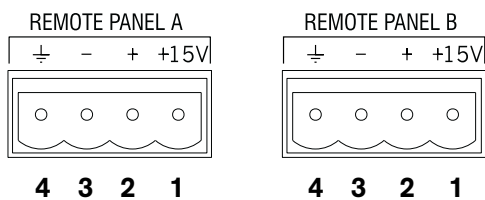
| Pin Number | User Definable* | Status | Momentary/Latching | Default Description             |
|------------|-----------------|--------|--------------------|---------------------------------|
| 7          | No              | C      | L                  | Preset select bit               |
| 8          | No              | S      | L                  | Preset select status for Pin 7  |
| 9          | No              | C      | L                  | Preset select bit               |
| 10         | No              | S      | L                  | Preset select status for Pin 9  |
| 11         | No              | C      | L                  | Preset select bit               |
| 12         | No              | S      | L                  | Preset select status for Pin 11 |
| 13         | No              | C      | L                  | Preset select bit               |
| 14         | No              | S      | L                  | Preset select status for Pin 13 |
| 15         | No              | C      | L                  | Preset select bit               |
| 16         | No              | S      | L                  | Preset select status for Pin 15 |
| 17         | No              | C      | L                  | Preset select bit               |
| 18         | No              | S      | L                  | Preset select status for Pin 17 |
| 19         | No              | C      | L                  | Preset select bit               |
| 20         | No              | S      | L                  | Preset select status for Pin 19 |
| 21         | No connection   |        |                    |                                 |
| 22         | No connection   |        |                    |                                 |
| 23         | No              | -      |                    | +5VDC 100mA                     |
| 24         | No              | -      |                    | +5VDC 100mA                     |
| 25         | No              | -      |                    | Ground                          |

**\*Control/Status Pinout Note:**

The first 16 pins on the Control/Status Port A are programmable via the G-Ware software.

**Table 4: RS-485 Remote Control Port Pinout (for Remote Panel A and B connectors)**

| Pin Number | Control                                |
|------------|--|
| 1          | +15VDC 300 mA (over-current protected) |
| 2          | Data+                                  |
| 3          | Data-                                  |
| 4          | Ground                                 |



**RS-485 Remote Control Ports**



## Appendix C: Control Panel Installation

The optional Control Panels are available as the Volume Control Panel, designed for remote volume control; and the Select Control Panel, for remote source selection. Either fits inside a standard electrical wall box\*.

The unit connects to either the Remote Panel A or B Phoenix connector of the XAP 800, and works by triggering the execution of programmed commands from the XAP 800. Each button on the control panel is programmable to execute a single command or a series of commands. Button function is programmed using G-Ware software that comes with the XAP 800 (see Control Panel Builder on page 62 for more information).

Each Control Panel button can be programmed to respond like a momentary or latching button. A command can be programmed to activate or deactivate a particular function.

**Step 1** Ensure you received a fascia plate; a Control Panel assembly with mounting bracket and two RS-485 Phoenix™ four-pin connectors; two connector terminator blocks; a faceplate; two flat HD screws; two pan-head screws; and an electrical wall box. Refer to Figures 3, 4, and 5 for depictions of these parts. If any parts are missing, please contact Gentner.

**Step 2** Set the Control Panel DIP switches so each panel has a unique address recognized by the XAP 800. DIP switch settings follow a binary protocol, using switches 1-4. Refer to Figure 2 for proper DIP switch settings. If you set an invalid address, all LEDs on the Control Panel will illuminate. **Set switch 8 to ON if you are using just one Control Panel; if you are using more than one Control Panel with a given rear-panel Remote Panel Phoenix connector, set ONLY the LAST Control Panel's DIP switch 8 to ON (multiple Control Panels on a XAP 800 Remote Panel connector must be connected daisy-chain style).** Switches 5-7 are nonfunctional.

Up to 12 Control Panels can be used with a XAP 800—up to six Control Panels on each of the Remote Panel A and B rear-panel connectors. See the distance chart on the next page for maximum distances.

**Step 3** Turn off the XAP 800 unit if it is on.

**Step 4** Plug a connector terminator block into one of the XAP 800's Remote Panel connectors. Next, connect a Cat 5 twisted-pair cable to the connector terminator block. Referring to Figure 3, use one twisted wire pair for the center - and + connections (pins 2 and 3) and the other twisted pair for the ground and +15V connections (pins 1 and 4). Failure to do so can result in incorrect control and status due to crosstalk.



**This equipment must be installed according to applicable local electrical codes.**

This equipment complies with the requirements of the European guidelines: 89/336/EEC "Electromagnetic Compatibility" and 93/68/EEC "Electrical operating material for use within specific voltage limits."

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

\*The Gentner Control Panel must not be used with an AC power switch or plug in the same box.



Figure 1. Dip switches

|    | Dip Switch |     |     |     |
|----|------------|-----|-----|-----|
|    | 1          | 2   | 3   | 4   |
| 0  | On         | On  | On  | On  |
| 1  | Off        | On  | On  | On  |
| 2  | On         | Off | On  | On  |
| 3  | Off        | Off | On  | On  |
| 4  | On         | On  | Off | On  |
| 5  | Off        | On  | Off | On  |
| 6  | On         | Off | Off | On  |
| 7  | Off        | Off | Off | On  |
| 8  | On         | On  | On  | Off |
| 9  | Off        | On  | On  | Off |
| 10 | On         | Off | On  | Off |
| 11 | Off        | Off | On  | Off |

Figure 2. Dip switch settings

Route the other end of the cable through the back of the electrical wall box. Plug the other connector terminator block into either Phoenix connector on the Control Panel, then connect the Cat 5 cable to it, observing the twisted-pair procedure described previously. Ensure proper wiring; cross connections can cause damage to the XAP 800 unit and Control Panel.

If you are using a second Control Panel, you can connect it to the unused Remote Panel connector on the XAP 800 or the unused connector on the first Control Panel. You can daisy-chain up to six Control Panels from each XAP 800 Remote Panel connector. **Do not wire more than one Control Panel directly to a XAP 800 Remote Panel connector**; use the daisy-chain method for additional panels. Total Control Panel system cable run depends on the number of Control Panels used. The distance information in the table below is based on Cat 5 cable with a nominal resistance of 27 Ohms per 1,000 feet. All distances refer to total cable runs from a single XAP 800 Remote Panel connector. For information about extending beyond 800 feet (total) with six Control Panels, call Technical Support at 1-800-283-5936 or 1-801-974-3760.

**Step 5** As shown in Figures 4 and 5, use the supplied pan-head screws to install the Control Panel PCB assembly to the electrical wall box.

**Step 6** To install the facia plate, position it over the conductive rubber switch pads on the PCB assembly, as shown in Figures 4 and 5.

**Step 7** Mount the faceplate over the rubber switch pads, using the two flat HD screws.

| # of Control Panels | Maximum Distance*   |
|---------------------|---------------------|
| 1                   | 3,000 ft/914 meters |
| 2                   | 2,500 ft/762 meters |
| 3                   | 1,600 ft/488 meters |
| 4                   | 1,200 ft/366 meters |
| 5                   | 1,000 ft/305 meters |
| 6                   | 800 ft/244 meters   |

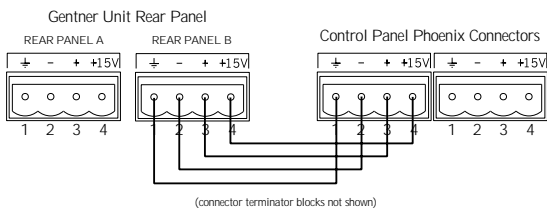


Figure 3. RS-485 Phoenix Connector

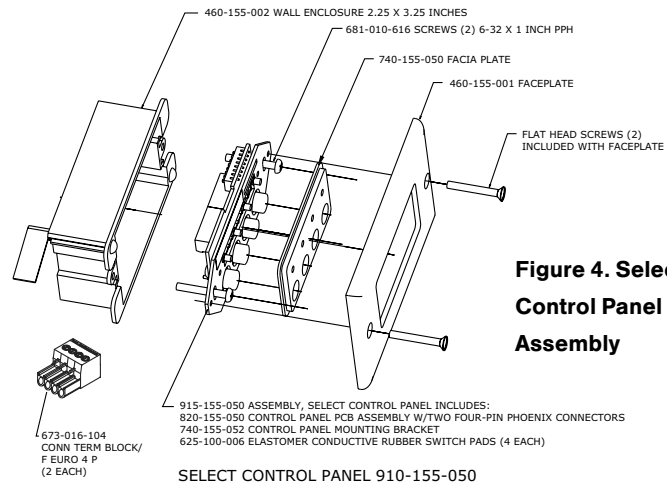


Figure 4. Select Control Panel Assembly

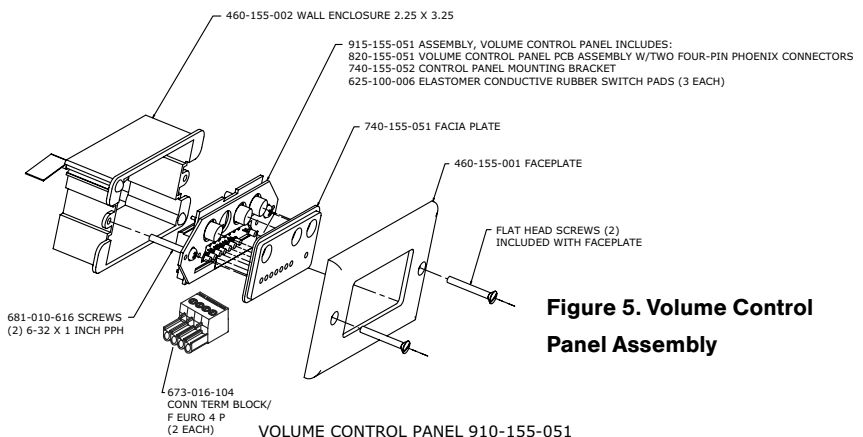


Figure 5. Volume Control Panel Assembly

## Appendix D: Accessories

| <b>Accessory</b>         | <b>Gentner Part Number</b>                            |
|--------------------------|---|
| Tabletop Omni Microphone | 910-103-160 (with cable)                              |
| Tabletop Uni Microphone  | 910-103-161 (with cable)                              |
| Tabletop Omni Microphone | 910-103-162 (black button)/910-103-163 (white button) |
| Tabletop Uni Microphone  | 910-103-164 (black button)/910-103-165 (white button) |
| Delta Microphone         | 910-103-340   |
| Acc. Kit, Side Trim      | 860-150-002   |
| Wall Mount Speaker       | 910-103-010   |
| Select Control Panel     | 910-155-050   |
| Volume Control Panel     | 910-155-051   |

## Appendix E: Serial Port Commands

The XAP 800 accepts serial commands through the serial port. The commands are then channeled along the Expansion Bus network to all interconnected XAP 800 units. The following commands pertain only to the XAP 800.

RS-232 serial port protocol is 9,600, 19,200, 38,400 (default), or 57,600 baud; 8 bits, 1 stop bit, no parity.

The structure of serial commands is as follows:

# (indicating the start of a command line), device ID, command, then any additional options in the order that they appear in the command descriptions on the following pages.

Commands can be either UPPER CASE or lower case. Return values are always in upper case. In order for a command to be recognized by the serial port, the command must be terminated by a carriage return.

For example, a command to disable Automatic Gain Control for Mic 2 on a XAP 800 device "0" would have the command line: #50 AGC 2 M 0. In this command line, 5=XAP 800, 0=unit 0, AGC=command, 2=channel, M= mic group, 0=off state. If a command calls for a "null" value, leave a blank in the command line (for example, "#50 AGC 2 M" would return the current AGC state of Mic 2 on device 50).

## XAP 800 Serial Commands

| Command    | Function   | Command   | Function   |
|------------|--|-----------|--|
| AAMB*†     | Selects/reports Adapt Ambient setting            | LVLRRATE  | Sets the level report rate for the unit                |
| AEC        | Selects/reports acoustic echo canceller setting  | MACRO*†   | Executes macro or reports last macro executed          |
| AGC*†      | Enables/disables AGC                             | MASTER*†  | Reports the mode of the unit                           |
| AGCSET     | Selects/reports AGC settings on inputs           | MAX*      | Changes/rpts max gain sttng for in, out, prcs block    |
| AMBLVL*†   | Selects/reports Ambient Level                    | MDMODE    | Enables/disables modem mode                            |
| BAUD       | Sets/reports RS-232 port baud rate               | MIN*      | Changes/rpts min gain sttng for in, out, prcs block    |
| CGROUP *†  | Selects/reports compressor group setting         | MINIT     | Sets/reports modem initialization string of serial prt |
| CHAIRO*†   | Selects/reports chairman override setting        | MINMAX    | Changes/reports min and max gain for in, out, proc     |
| COMPRESS*  | Sets/reports compressor on audio proc. chnl.     | MLINE*†   | Selects/reports coarse gain adj. on inputs 1-8         |
| COMPSEL*†  | Selects/reports comprsr activity for procs.      | MMAX*†    | Selects/reports max # mics for each mic gating grp     |
| DECAY*†    | Sets/reports decay rate                          | MPASS     | Sets password setting when using modem mode            |
| DELAY*†    | Sets/reports delay rate                          | MTRX*     | Selects/reports matrix routing of an input to output   |
| DELAYSEL*† | Selects/reports processor channel delay          | MTRXLVL*  | Selects/reports matrix level at the cross point        |
| DFLTM      | Sets/reports default meter                       | MUTE*†    | Sets/reports mute status                               |
| DID        | Selects/reports device ID                        | NCD*†     | Selects/rpts noise canc. amount for each mic chnl      |
| DSPVER     | Reports DSP firmware version                     | NCSEL*†   | Selects/reports noise canc. on/off for each mic chnl   |
| FILTER*    | Selects/reports inpt/proc channel filter setting | NLP*†     | Selects/reports non-linear proc. for each mic chnl     |
| FILTSEL*†  | Enables/disables filters on inpt/proc channel    | NOM*†     | Selects/reports the NOM setting on output channels     |
| FLOW       | Selects/reports flow control of serial port      | OFFA*†    | Selects/reports Off Atten. mode for inputs 1-8         |
| FMP*†      | Sets/rpts 1st Mic Prior. for mic gating group    | PAA*†     | Selects/reports PA Adapt mode for specified input      |
| FPP        | Sets/reports current pass code setting           | PP†       | Selects/reports phantom power setting                  |
| GAIN*†     | Changes/reports gain for in, out, or proc        | PRESET*†  | Executes preset or reports last executed preset        |
| GATE       | Reports gate status of channels 1-8              | PRGSTRING | Sets/reports a programmed string                       |
| GHOLD*†    | Selects/reports hold time setting                | REFSEL*†  | Selects/rpts outpts for mic(s) for PA adapt mode       |
| GMODE*†    | Selects/reports gating mode setting              | SERECHO   | Selects/reports the serial echo of the RS-232 port     |
| GOVER*†    | Selects/reports gating override setting          | SERMODE   | Selects/reports the serial mode of the RS-232 port     |
| GRATIO*†   | Selects/reports gate ratio setting               | SIGGEN*   | Selects/reports signal generator activation            |
| GREPORT    | Selects/reports gate status report frequency     | SIGTOUT   | Sets the signal generator time out for the unit        |
| GRPSEL*†   | Selects/rpts input gating group assignments      | SLVL*†    | Selects/reports mic auto level setting                 |
| LABEL      | Selects/reports label of channel specified       | STRING*†  | Sends the specified string out the serial port         |
| LFP†       | Sets/reports status of front panel access        | TOUT      | Selects/reports the title screen inactivity time-out   |
| LMO*†      | Selects/reports Last Mic On mode                 | UID       | Reports unit ID  |
| LVL        | Reports in, out, or processor level              | VER       | Reports unit version                                   |
| LVLREPORT  | Selects/reports level status                     |           |  |

\* Command available for macro use.

† Command available for Control Panel use.



## Error Codes

The following are error messages and their explanations:

|          |  |
|----------|--|
| ERROR 1  | Memory error. The box is out of internal memory. Power cycle the unit.   |
| ERROR 2  | No command found. A command was not found in the string.   |
| ERROR 3  | Unknown response. Connect with current G-Ware to upgrade dictionary.   |
| ERROR 4  | Not implemented. The command was not implemented.  |
| ERROR 5  | Argument error. The command has an argument that is out of range.  |
| ERROR 6  | Unknown command. The command is unknown to this unit.  |
| ERROR 7  | Bad checksum. The binary command's checksum is wrong.  |
| ERROR 8  | Preset or macro invalid. A preset or macro failed to program because it is too large or because its command list contained an invalid command. |
| ERROR 10 | Queue error. The internal command queue is full. Enable flow control and use all five pins on the serial port.                                 |
| ERROR 11 | Command too big. The binary command is too large.  |

Note: Commands can be upper or lower case. Also, extra spaces or tabs between arguments in text commands is allowed. For a command to be recognized by the serial port, the command must be terminated with a carriage return.

The command string will then be explained (where necessary), followed by the returned values and (where necessary) an example.

## Conventions

This definition uses the following typographic conventions used in this document:

| <u>Convention</u> | <u>Description</u>   |
|-------------------|--|
| <X>               | Parameters enclosed in < > indicate and mandatory parameter.   |
| [X]               | Parameters enclosed in [ ] indicate and optional parameter.  |
| 1-8               | Parameters separated by a - indicate a range between the values.   |
| 4,7,9             | Parameters separated by a , indicate a list of available values.   |
| MREF              | Words in uppercase bold indicate command text.   |
| DEVICE            | Indicates the device type and device number on the Expansion Bus network. It is composed of a device type character and a device number. The device type for the XAP 800 is always 4 and the device number will always be 0 - 7. |

## Command Summary

Two formats of commands are available in the XAP 800: Text and Binary. All commands are supported in a binary format and are intended to be used with the software provided with the unit. Commands that are primarily used to control the unit are available in text format to support easy interfacing with an external control system such as those provided by Crestron or Panja.

The RS-232 Serial Port Protocol is 9,600, 19,200, 38,400 (default), or 57,600 baud; 8 bits, 1 stop bit, no parity.

### General Binary Command Form Description

The XAP 800 product accepts serial commands through the RS-232 serial port. The commands are then channeled along the Expansion Bus network to all interconnected XAP 800 products. The commands provide the same control as the LCD menu structure, plus many other additional controls.

The RS-232 Serial Port Protocol is 9,600, 19,200, 38,400 (default), or 57,600, baud; 8 bits, 1 stop bit, no parity.

The XAP 800 accepts the commands outlined in the Command table. The binary command structure is defined in Hexadecimal. The structure of serial commands is as follows: <Header><Argument 1>[ARGUMENT N] – in binary format without characters or spaces.

#### Word 0 (32 bits)

| <u>Command Type</u> | <u>Port</u> | <u>Flags</u> |
|---------------------|-------------|--------------|
| 0x50                | 16 bits     | 8 bits       |

#### Word 1 (32 bits)

| <u>Type ID</u> | <u>Device ID</u> | <u>Command ID</u> |
|----------------|------------------|-------------------|
| 8 bits         | 8 bits           | 16 bits           |

#### Word 2 (32 bits)

| <u>Word Count</u> | <u>Check Sum</u> |
|-------------------|------------------|
| 16 bits           | 16 bits          |

The port bits are arranged as follows:

| <b>Bit</b> | <b>Port</b>             |
|------------|-------------------------|
| 15 (msb)   | Serial (RS-232)         |
| 14         | Expansion Bus           |
| 13         | Front Panel             |
| 12         | Command Execution       |
| 11         | Wall Unit               |
| 10         | GPIO                    |
| 9 – 1      | Reserved (must be zero) |
| 0 (lsb)    | Reserved (must be zero) |

The flag bits are arranged as follows:

| <b>Bit</b> | <b>Port</b>             |
|------------|-------------------------|
| 7 (msb)    | Response                |
| 6          | Query                   |
| 5          | Absolute                |
| 4 - 1      | Reserved (must be zero) |
| 0 (lsb)    | Reserved (must be zero) |

When the Response bit is set, the unit will return a response only to the port that generated the command unless that port is the serial port, in which case no response is sent at all.

When the Query bit is set, the unit will report the current state of the command. It will not execute the command.

When the Absolute bit is set, the value portion of the command is interpreted to be absolute to the current value. When cleared, the value portion of the command is interpreted to be a relative setting. For example, if the current value of the gain for a specific group and channel is -20dB and a gain command for that group and channel is sent as 5 with the absolute bit cleared, the gain would change to -15dB. If the same command were sent with the absolute bit set, the gain would change to 5dB.

The Type ID and Device ID have the following definitions:

| Type ID | Unit type | Device ID Range |
|---------|-----------|-----------------|
| 0x5     | XAP 800   | 0x0 - 0x7, 0xff |
| 0x4     | PSR1212   | 0x0 - 0x7, 0xff |

If the number 0xff is placed in the Type ID or Device ID fields, the command is to apply to all units or all devices respectively. For example a command with the Type ID of 5 and a Device ID of 0xff would mean that the command is to be applied to all XAP 800 units. A command with a Type ID of 0xff and a Device ID of 6 would mean that the command is to be applied to all #6 devices of all unit types.

The Command ID is a unique number identifying the command. These IDs are specified in the detail section for each command.

The word count is the number of 32-bit words that follow the header—that is the number of arguments.

The checksum calculation is the checksum of the entire command, both header and all arguments. The calculation formula is the unsigned sum of all 16-bit words in the command.

The ARGUMENT(s) are also 32-bit words. Their contents are command dependent and are specified in the detail section for each command. All of the fields in the argument for a binary command are required. There are no optional fields in a binary command.

As part of the argument, floating-point numbers are represented as a signed or unsigned integer with an implied decimal point before the next to last digit. For example, the number 1234 in the binary command field would be interpreted as 12.34. The field can be either 16 or 32 bits long, but always has this implied decimal point. Whether the number is to be interpreted as signed or unsigned is indicated in the specific command definition. For example, a command to enable Phantom Power on Mic 1 (Input

channel #1) on XAP 800 device "5" would have the following three words on the command line: (data shown in hex format)

Word 0: 40000000

Word 1: 05050025

Word 2: 00010020

Word 3: 01030001

### General Text Command Form Description

The RS-232 Serial Port Protocol is 9,600, 19,200, 38,400 (default), or 57,600 baud; 8 bits, 1 stop bit, no parity.

The XAP 800 accepts the commands outlined in the Serial Commands table. The structure of serial commands is as follows:

# (indicates the start of a command line), Unit ID, Device ID, Command, then any additional options in the order that they appear in the command descriptions on the following pages. Commands can be either UPPER CASE or lower case. Return values are always in upper case. For a command to be recognized by the serial port, the command must be terminated by a carriage return.

For example, a command to disable mute for Mic 2 (input channel 2) on XAP 800 device "0" would have the command line: #50 MUTE 2 I 0. In this command line, 5=XAP 800, 0=unit 0, MUTE=command, 2=channel 2, I=input channel, 0=off state.

If a command calls for a "null" value, leave a blank in the command line (for example "#50 MUTE 2 I" would return the current mute state of Mic 2 on device 50).

### Designations

The following tables define the relationship between alpha and numeric representations. Text commands use the alpha designation and binary commands use the numeric. In addition, different groups have different allowable channel ranges.

**Table 1. Group and Channels**

| Group         | Alpha | Numeric | Channel Range |
|---------------|-------|---------|---------------|
| Inputs        | I     | 1       | 1-12          |
| Outputs       | O     | 2       | 1-12          |
| Mic Input     | M     | 3       | 1-8           |
| Gating Group  | G     | 4       | 1-8           |
| Processing    | P     | 5       | 1-8           |
| Ambient       | A     | 6       | 1-8           |
| Line Inputs   | L     | 7       | 9-12          |
| Expansion Bus | E     | 8       | 1-16          |
| Unit          | U     | 9       | 0             |
| GPIO          | Y     | 10      | 0             |
| Matrix        | X     | 11      | 0             |
| Wall plates   | W     | 12      | 0             |
| Presets       | S     | 13      | 1-32          |
| Macros        | C     | 14      | 1-255         |
| Unknown       | N     | 0       | N/A           |

If a channel has a numeric value of 0xff or an alpha value of '\*', the command is to be applied to all channels. For example, a group value of 0x3 and a channel value of 0xff would mean that the command is to be applied to all channels of group 3 (mic inputs).

**Table 2. Gating Channel Definitions**

| Alpha | Numeric |
|-------|---------|
| 1     | 1       |
| 2     | 2       |
| 3     | 3       |
| 4     | 4       |
| A     | 5       |
| B     | 6       |
| C     | 7       |
| D     | 8       |

**Table 3. Processing Channel Definitions**

| Alpha | Numeric |
|-------|---------|
| A     | 1       |
| B     | 2       |
| C     | 3       |
| D     | 4       |
| E     | 5       |
| F     | 6       |
| G     | 7       |
| H     | 8       |

**Table 4. Expansion Bus Audio Channel Definitions**

| <b>Alpha</b> | <b>Numeric</b> |
|--------------|----------------|
| O            | 1              |
| P            | 2              |
| Q            | 3              |
| R            | 4              |
| S            | 5              |
| T            | 6              |
| U            | 7              |
| V            | 8              |
| W            | 9              |
| X            | 10             |
| Y            | 11             |
| Z            | 12             |

**Table 5. Expansion Bus Reference Channel Definitions**

| <b>Alpha</b> | <b>Numeric</b> |
|--------------|----------------|
| 1            | 13             |
| 2            | 14             |
| 3            | 15             |
| 4            | 16             |

## Acoustic Echo Canceller Enable/Disable

### DESCRIPTION:

This command selects/reports the setting of acoustic echo canceller.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 98

ARGUMENT SIZE: 1 WORD

ARGUMENT FORM:

| Name: | Channel                | Group            | Value            |
|-------|------------------------|------------------|------------------|
| Size  | 8 bits                 | 8 bits           | 16 bits          |
| Type  | Unsigned integer       | Unsigned integer | Unsigned integer |
| Range | See Group and Channels | 3                | 0 – 2            |
| Unit  | N/A                    | N/A              | N/A              |

### RETURN VALUES:

Unit will return the updated state of the last selection in the same form as the command.

### TEXT FORM DETAILS

COMMAND FORM: [DEVICE] AEC <Channel> [Value]

Where:

DEVICE: See General Text command form Description

**AEC** Text Command

Channel See M in Group and Channels

Value

|      |                          |
|------|--------------------------|
| 0    | Echo canceller off       |
| 1    | Echo canceller on        |
| 2    | Echo canceller to toggle |
| Null | return the current mode  |

### RETURN VALUES

Unit will return the updated state of the last selection in the same form as the command.

**If**

Echo canceller is set to be on for input channel 1

**Command returns**

DEVICE AEC 1 1

## Adaptive Ambient Mode

### DESCRIPTION:

This command selects/reports the setting of adaptive ambient.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 1

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel  | Group            | Value            |
|-------|--|------------------|------------------|
| Size  | 8 bits   | 8 bits           | 16 bits          |
| Type  | Unsigned integer                                     | Unsigned integer | Unsigned integer |
| Range | See Mic Input in Group and Channels (Table 1, p. 95) | 3 (Mic input)    | 0-2              |
| Units | N/A  | N/A              | N/A              |

### RETURN VALUES:

Unit always returns the last executed adaptive ambient selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> AAMB <Channel> [Value]

Where:

DEVICE: See General Text command form Description

**AAMB** Text Command

Channel See Mic input in Group and Channels (Table 1, page 95)

Value

|      |                            |
|------|----------------------------|
| 0    | adaptive ambient off       |
| 1    | adaptive ambient on        |
| 2    | adaptive ambient to toggle |
| Null | return the current mode    |

### RETURN VALUES

The command will return the updated condition of adaptive ambient in the same format as the command.

**If**

### Command Returns

Adaptive ambient is to be set on channel 1      DEVICE AAMB 1 1



## Ambient Level Adjust

### DESCRIPTION:

This command selects/reports the setting of the ambient level.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 3

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel  | Group            | Value        |
|-------|--|------------------|--------------|
| Size  | 8 bits   | 8 bits           | 16 bits      |
| Type  | Unsigned integer                                 | Unsigned integer | Signed Float |
| Range | See Mic Input in Group Channels (Table 1, p. 95) | 3(Mic)           | -80.0 to 0   |
| Units | N/A  | N/A              | dB           |

### RETURN VALUES:

Unit always returns the last executed ambient level on selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> AMBLVL <Channel> [Value]

Where:

|               |  |                          |
|---------------|--|--------------------------|
| DEVICE:       | See General Text command form Description              |                          |
| <b>AMBLVL</b> | Text Command   |                          |
| Channel       | See Mic Input in Group and Channels (Table 1, page 95) |                          |
| Value         | -80.0 to 0   | Ambient level in dB      |
|               | Null   | return the current level |

### RETURN VALUES

The command will return the updated condition of ambient level in the same format as the command.

#### If

The ambient level of channel 1 is -50 dB

#### Command Returns

DEVICE AMBLVL 1 -50

## Automatic Gain Control

### DESCRIPTION:

This command selects/reports the setting of automatic gain control.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 2

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel                                      | Group             | Value            |
|-------|--|-------------------|------------------|
| Size  | 8 bits                                       | 8 bits            | 16 bits          |
| Type  | Unsigned integer                             | Unsigned integer  | Unsigned integer |
| Range | See Group and Channels<br>(Table 1, page 95) | 1, 3, 7 (I, M, L) | 0 – 2            |
| Unit  | N/A  | N/A               | N/A              |

### RETURN VALUES:

Unit always returns the last executed automatic gain control selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> AGC <Channel> <Group> [Value]

Where:

DEVICE: See General Text command form Description

**AGC** Text Command

Channel Depends on Group. See Group and Channels (Table 1, page 95)

Group I, M, L, See Group and Channels

Value

|      |                                  |
|------|----------------------------------|
| 0    | automatic gain control off       |
| 1    | automatic gain control on        |
| 2    | automatic gain control to toggle |
| Null | return the current mode          |

### RETURN VALUES

The command will return the updated condition of the automatic gain control in the same format as the command.

**If**

Automatic gain control is set to be on for input channel 1

**Command Returns**

DEVICE AGC 1 I 1

## Automatic Gain Control Adjust

### DESCRIPTION:

This command selects/reports the settings of the Automatic Gain Control on the input channels.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1><Argument 2>

COMMAND ID: 96

ARGUMENT SIZE: 3 words

ARGUMENT FORM:

| Name:          | Channel              | Group            | Threshold      | Target         |
|----------------|----------------------|------------------|----------------|----------------|
| Size           | 8 bits               | 8 bits           | 8 bits         | 8 bits         |
| Type           | Unsigned integer     | Unsigned integer | Signed integer | Signed integer |
| Range          | See Group and Chnnls | 1, 3, 7          | -50 – 0        | -30 - 20       |
| Unit           | N/A                  | N/A              | dB             | dB             |
| <b>Attack</b>  | <b>Gain</b>          |                  |                |                |
| 16 bits        | 16 bits              |                  |                |                |
| Unsigned Float | Unsigned Float       |                  |                |                |
| 0.1 – 10.0     | 0 – 18               |                  |                |                |
| Seconds        | DB                   |                  |                |                |

### RETURN VALUES:

Unit will return the updated state of the last selection in the same form as the command.

### TEXT FORM DETAILS

COMMAND FORM [DEVICE]AGCSET<Channel><Group>  
[Threshold Target Attack Gain]

Where:

DEVICE: See General Text command form Description

**AGCSET** Text Command

Channel See Group and Channels

Group I, M, L

Threshold -50 to 0 Select the threshold value  
Null Return current settings

Target -30 to 20 Select the target between -30 and 20

Attack 0.1 to 10.0 Select the attack time between 0.1s and 10s in 0.1s intervals

Gain 0.0 to 18.0 Select the gain between 0 and 18 dB

### RETURN VALUES

Unit will return the updated state of the last selection in the same form as the command.

**If**

The AGC on channel 1 is set to have a threshold of -5,  
target of 5, attack time of 2s, and a gain of 18dB.

**Command returns**

DEVICE AGCSET 1 I -5 5 2 18

## Baud Rate

### DESCRIPTION:

This command selects/reports the baud rate of the serial port on the unit.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 4

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Value                     |
|-------|---------------------------|
| Size  | 32 bits                   |
| Type  | Unsigned integer          |
| Range | 9600, 19200, 38400, 57600 |
| Unit  | baud                      |

### RETURN VALUES:

Unit always returns the last executed baud rate selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> BAUD [Value]

Where:

DEVICE: See General Text command form Description

**BAUD** Text Command

Value

|       |                              |
|-------|------------------------------|
| 9600  | Select baud rate of 9,600    |
| 19200 | Select baud rate of 19,200   |
| 38400 | Select baud rate of 38,400   |
| 57600 | Select baud rate of 57,600   |
| null  | Return the current baud rate |

### RETURN VALUES

The command will return the updated condition of baud rate in the same format as the command.

| If                                     | Command Returns   |
|--|-------------------|
| Baud rate is selected to be 38400      | DEVICE BAUD 38400 |
| Baud rate of current unit is returned. | BAUD              |

38,400 is the default baud rate.

## Chairman Override Mode

### DESCRIPTION:

This command selects/reports the setting of chairman override.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 6

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel  | Group            | Value            |
|-------|--|------------------|------------------|
| Size  | 8 bits   | 8 bits           | 16 bits          |
| Type  | Unsigned integer   | Unsigned integer | Unsigned integer |
| Range | See Mic Input<br>in Group and Channels<br>(Table 1, page 95) | 3 (Mic input)    | 0 - 2            |

### RETURN VALUES:

Unit always returns the last executed chairman override selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> CHAIRO <Channel> [Value]

Where:

|               |  |
|---------------|--|
| DEVICE:       | See General Text command form Description              |
| <b>CHAIRO</b> | Text Command   |
| Channel       | See Mic Input in Group and Channels (Table 1, page 95) |
| Value         |  |
| 0             | select chairman override off                           |
| 1             | select chairman override on                            |
| 2             | select chairman override to toggle                     |
| Null          | return the current mode                                |

### RETURN VALUES

The command will return the updated condition of chairman override in the same format as the command.

#### If

Chairman override is set to be on for channel 1

#### Command Returns

DEVICE CHAIRO 1 1

## Compression Select

### DESCRIPTION:

This command selects/reports the compressor activation of each assignable processing channel.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 8

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel   | Group            | Value            |
|-------|---|------------------|------------------|
| Size  | 8 bits  | 8 bits           | 16 bits          |
| Type  | Unsigned integer  | Unsigned integer | Unsigned integer |
| Range | See Processing in Group and Channels (Table 1, page 95) | 5 (processing)   | 0 - 2            |

### RETURN VALUES:

Unit always returns the last executed compressor selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> COMPSEL <Channel> [Value]

Where:

DEVICE: See General Text command form Description

**COMPSEL** Text Command

Channel See Processing in Group and Channels

Value

0 Parameter to disable the compression on specified channel

1 Parameter to enable the compression on specified channel

2 Parameter to toggle the compression on specified channel

Null Parameter to return the current state

### RETURN VALUES

The command returns the current or updated compressor selection of the channel

If

Compressor selection for channel A is enabled

**Command Returns**

DEVICE COMPSEL A 1

## Compressor Adjust

### DESCRIPTION:

This command selects/reports the setting of the compressor on audio processing channels.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1><Argument 2>

COMMAND ID: 7

ARGUMENT SIZE: 3 words

ARGUMENT FORM:

| Name: | Channel  | Group          | Threshold    | Ratio          | Attack         | Release      | Gain         |
|-------|--|----------------|--------------|----------------|----------------|--------------|--------------|
| Size  | 8 bits   | 8 bits         | 8 bits       | 8 bits         | 16 bits        | 16 bits      | 32 bits      |
| Type  | Unsigned intgr                                 | Unsigned intgr | Signed intgr | Unsigned intgr | Unsigned Float | Unsgnd intgr | Unsgnd float |
| Range | See Processing<br>in Group and Channels, p. 95 | 5 processing   | -30 – 20     | 1 - 20         | 0 – 100.0      | 100 - 2000   | 0 - 20       |
| Unit  | N/A  | N/A            | N/A          | N/A            | milliseconds   | milliseconds | dB           |

### RETURN VALUES:

Unit always returns the last executed compressor adjustment in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM <DEVICE>COMPRESS<Channel> [Threshold Ratio Attack Release Gain]

Where:

|                |   |
|----------------|---|
| DEVICE:        | See General Text command form Description                         |
| <b>COMPRES</b> | Text Command  |
| Channel        | See Processing in Group and Channels (Table 1, page 95)           |
| Threshold      |   |
| 30 to 20       | Select the threshold value  |
| Null           | Return current compression  |
| Ratio          |   |
| 1-20           | Select the ratio between 1 and 20                                 |
| Attack         |   |
| 0 to 100       | Select the attack time between 0ms and 100ms in 0.5ms intervals   |
| Release        |   |
| 100 to 2000    | Select the release time between 100ms and 2000ms in 5ms intervals |
| Gain           |   |
| 0 to 20        | Select the post gain between 0 and 20dB                           |

### RETURN VALUES

The command will return the updated condition of the compressor in the same format as the command.

#### If

The compressor on channel A is set to have a threshold of 5, ratio of 5, attack time of 20ms, a release time of 200ms, and a gain of 0

#### Command Returns

DEVICE COMPRESS A 5 5 20.00 200 0.00

## Compressor Group Select

### DESCRIPTION:

This command selects/reports the setting of the compressor group on each assignable processing channel.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 5

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel   | Group            | Value            |
|-------|---|------------------|------------------|
| Size  | 8 bits  | 8 bits           | 16 bits          |
| Type  | Unsigned integer  | Unsigned integer | Unsigned integer |
| Range | See Processing in Group and Channels (Table 1, page 95) | (processing)     | 0 - 4            |

### RETURN VALUES:

Unit always returns the last executed compressor group selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> CGROUP <Channel> [Value]

Where:

DEVICE: See General Text command form Description

**CGROUP** Text Command

Channel See Processing in Group and Channels (Table 1, page 95)

Value

|             |                                  |
|-------------|----------------------------------|
| Value =0    | select compressor group disabled |
| Value =1    | select compressor group 1        |
| Value =2    | select compressor group 2        |
| Value =3    | select compressor group 3        |
| Value =4    | select compressor group 4        |
| Value =Null | return the current mode          |

### RETURN VALUES

The command will return the updated condition of compressor group in the same format as the command.

**If**

Assignable processing channel A

is desired to be in the compressor group 2

**Command Returns**

DEVICE CGROUP A 2



## Decay Adjust

### DESCRIPTION:

This command selects/reports the setting of the decay rate for a specified input.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 9

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel  | Group            | Value            |
|-------|--|------------------|------------------|
| Size  | 8 bits   | 8 bits           | 16 bits          |
| Type  | Unsigned integer                                       | Unsigned integer | Unsigned integer |
| Range | See Mic Input in Group and Channels (Table 1, page 95) | 3 (Mic input)    | 1 – 3            |

### RETURN VALUES:

Unit always returns the last executed decay rate selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> DECAY <Channel> [Value]

Where:

|              |  |
|--------------|--|
| DEVICE:      | See General Text command form Description              |
| <b>DECAY</b> | Text Command   |
| Channel      | See Mic Input in Group and Channels (Table 1, page 95) |
| Value        |  |
| 1            | set decay rate to slow                                 |
| 2            | set decay rate to medium                               |
| 3            | set decay rate to fast                                 |
| Null         | return the current decay rate                          |

### RETURN VALUES

The command will return the updated condition of decay rate in the same format as the command.

| If                                  | Command Returns  |
|-------------------------------------|------------------|
| The decay rate of channel 1 is slow | DEVICE DECAY 1 1 |

## Delay Select

### DESCRIPTION:

This command selects/reports the delay activation of each assignable processing channel.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 69

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel   | Group            | Value            |
|-------|---|------------------|------------------|
| Size  | 8 bits  | 8 bits           | 16 bits          |
| Type  | Unsigned integer  | Unsigned integer | Unsigned integer |
| Range | See Processing in Group and Channels (Table 1, page 95) | (processing)     | 0 - 2            |

### RETURN VALUES:

Unit always returns the last executed delay selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: [DEVICE] DELAYSEL <Channel> [Value]

Where:

|                 |   |
|-----------------|---|
| DEVICE:         | See General Text command form Description               |
| <b>DELAYSEL</b> | Text Command  |
| Channel         | See Processing in Group and Channels (Table 1, page 95) |
| Value           |   |
| 0               | Parameter to disable the delay on specified channel     |
| 1               | Parameter to enable the delay on specified channel      |
| 2               | Parameter to toggle the delay on specified channel      |
| Null            | Parameter to return the current state                   |

### RETURN VALUES

The command returns the current or updated delay selection of the channel

If

Delay selection for channel A is enabled

**Command Returns**

DEVICE DELAYSEL A 1

## Default Meter

### DESCRIPTION:

This command selects/reports the setting of the default meter.

The position values are:

| Alpha | Numeric | Level position                                 |
|-------|---------|--|
| I     | 1       | input level                                    |
| A     | 2       | after gain adjustment, but before filter       |
| N     | 3       | after filter but before gate (non-gated level) |
| G     | 4       | after gate (gated level)                       |

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 11

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel                | Group                      | Position         | Group                  | Value      |
|-------|------------------------|----------------------------|------------------|------------------------|------------|
| Size  | 8 bits                 | 8 bits                     | 16 bits          |                        |            |
| Type  | Unsigned integer       | Unsigned integer           | Unsigned integer |                        |            |
| Range | See Group and Channels | 1, 2, 3, 7<br>(I, O, M, L) |                  | 1 (ch1-8)<br>(ch 9-12) | 1-4<br>1-2 |
|       |                        |                            |                  | 2                      | 1-2        |
|       |                        |                            |                  | 3                      | 1-4        |
|       |                        |                            |                  | 7                      | 1-2        |

### RETURN VALUES:

Unit always returns the last executed default meter selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> DFLTM [Channel] [Group Position]

Where:

|              |   |
|--------------|---|
| DEVICE:      | See General Text command form Description                     |
| <b>DFLTM</b> | Text Command  |
| Channel      | See Group and Channels (Table 1, page 95)                     |
| Group        | 'I', 'O', 'M', 'L'. See Group and Channels (Table 1, page 95) |
| Position     | Position in the channel of the meter. See the tables above.   |

### RETURN VALUES

The command will return the updated condition of the default meter in the same format as the command.

#### If

Default meter is selected for input channel 1 position 2

#### Command Returns

DEVICE DFLTM 1 I A

## Delay Adjust

### DESCRIPTION:

This command selects/reports the setting of delay adjust on the assignable processing channels.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 10

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel   | Group            | Value          |
|-------|---|------------------|----------------|
| Size  | 8 bits  | 8 bits           | 16 bits        |
| Type  | Unsigned integer  | Unsigned integer | Unsigned Float |
| Range | See Processing in Group and Channels (Table 1, page 95) | 5 (processing)   | 0.0 – 500.00   |
| Unit  | N/A   | N/A              | milliseconds   |

### RETURN VALUES:

Unit always returns the last executed delay selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> DELAY <Channel> [Value]

Where:

DEVICE: See General Text command form Description

**DELAY** Text Command

Channel See Processing in Group and Channels (Table 1, page 95)

Value

0.00 to 500.00

delay in milliseconds

Null

return the current delay in milliseconds

### RETURN VALUES

The command will return the updated condition of the delay in the same format as the command.

#### If

Delay is set to be 140ms on audio processing channel A

#### Command Returns

DEVICE DELAY A 140

**Device ID****DESCRIPTION:**

This command selects/reports the device ID.

**BINARY FORM DETAILS**

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 12

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| <b>Name:</b> | <b>Value</b>     |
|--------------|------------------|
| Size         | 32 bits          |
| Type         | Unsigned integer |
| Range        | 0 - 7            |

**RETURN VALUES:**

Unit always returns the last executed device ID selection in the same form as above.

**TEXT FORM DETAILS**

COMMAND FORM: <DEVICE> DID [Value]

Where:

DEVICE: See General Text command form Description

**DID** Text Command

Value

0-7 device ID

Null return the current device ID

**RETURN VALUES**

The command will return the unit ID in the same format as the command.

**If** **Command Returns**

The device ID is 0 DEVICE DID 0

## Filter

### DESCRIPTION:

This command selects/reports the setting of filters on input and audio processing channels.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1><Argument 2>[ Argument 3]

COMMAND ID: 14

ARGUMENT SIZE: 3 words

ARGUMENT FORM:

| Name: | Channel            | Group                    | Node                      | Type             |
|-------|--------------------|--------------------------|---------------------------|------------------|
| Size  | 8 bits             | 8 bits                   | 8 bits                    | 8 bits           |
| Type  | Unsigned integer   | Unsigned integer         | Unsigned integer          | Unsigned integer |
| Range | See Grp and Chnrls | 3, 5<br>(Mic Processing) | Grp 3: 1-4<br>Grp 5: 1-15 | 1-11             |

| Name:       | Frequency   | Gain/Slope  | Bandwidth/SubType  |
|-------------|---|---|--|
| Size        | 32 bits   | 16 bits   | 16 bits  |
| Type        | Unsigned Float  | Float   | Unsigned Float   |
| Range/value | Types 1-6 8-11,<br><br>20-20,000<br>Type 7<br>500-5,000 | <b>Type</b> <b>Range</b><br>1-3 N/A<br>4-5 -15 to +15 dB<br>6 -15 to +15 dB<br>7 N/A<br>8-9 12, 18, 24 dB/octave<br>10 12, 24 dB/octave<br>11 N/A | <b>Type</b> <b>Range</b><br>1-3 N/A<br>4-5 N/A<br>6 .05 to 5.0<br>7 N/A<br>8-10 2=low pass<br>3=high pass<br>11 0.05 to 5.00 |
| Units       | Hz  | dB/dB per octave  |  |

### RETURN VALUES:

Unit always returns the last executed input filter selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM:

<DEVICE> FILTER <Channel> <Group> <Node> [Type Frequency Gain Bandwidth]

Where:

DEVICE: See General Text command form Description

**FILTER** Text Command

Channel See Group and Channels (Table 1, page 95)

Groups 'M', 'P' See Group and Channels (Table 1, page 95)

Node

1-4 node of a Mic input filter

1-15 node of an audio processing filter

(filter serial command descriptions on next page)

## Type

|      |                             |
|------|-----------------------------|
| 0    | None                        |
| 1    | select All Pass             |
| 2    | select Low Pass             |
| 3    | select High Pass            |
| 4    | select Low Shelving         |
| 5    | select High Shelving        |
| 6    | select Parametric Equalizer |
| 7    | select CD Horn              |
| 8    | Bessel Crossover            |
| 9    | Butterworth Crossover       |
| 10   | Linkwitz-Riley Crossover    |
| 11   | Notch = -80                 |
| Null | return the current mode     |

Frequency      Parameter to select the corner frequency (Hz) of the filter

| Type      | Range     |
|-----------|-----------|
| 0         | N/A       |
| 1-6, 8-11 | 20-20,000 |
| 7         | 500-5,000 |

## Gain

| Type  | Range               |
|-------|---------------------|
| 1 - 3 | N/A                 |
| 4-5   | -15 to +15 dB       |
| 6     | -15 to +15 dB       |
| 7     | N/A                 |
| 8-9   | 12, 18, 24dB/octave |
| 10    | 12, 24dB/octave     |
| 11    | -80; nonadjustable  |

## Bandwidth

| Type  | Range                         |
|-------|-------------------------------|
| 1 - 3 | N/A                           |
| 4 - 5 | N/A                           |
| 6     | .05 to 5.00                   |
| 7     | N/A                           |
| 8-10  | 2 = low pass<br>3 = high pass |
| 11    | .05 to 5.00                   |

**RETURN VALUES**

The command will return the updated condition of the filter in the same format as the command.

**If**

the filter of input channel 1 node 1  
is not known and it is set as a low pass filter at 200Hz.

<DEVICE> FILTER 1 M 1

The filter of audio processing channel B node 2 is set  
for low shelving at 3K with a gain of -10dB

The filter of input channel 3 node 3 is set to be a PEQ  
with center frequency of 5K BW of 1 octave and gain  
of -15dB

The filter of audio processing channel 2 node 2 is a CD horn  
with center frequency of 4K

The filter of all audio processing channels node 3 is a high  
pass Linkwitz-Riley crossover with corner frequency of  
12K and slope of 24dB/octave

**Command Returns**

DEVICE FILTER 1 M 1 2 200

DEVICE FILTER B P 2 4 3000 -10

DEVICE FILTER 3 M 3 6 5000 -15 1.00

DEVICE FILTER B P 2 7 4000

DEVICE FILTER \* P 3 10 12000 24 3



## Filter Select

### DESCRIPTION:

This command turns on and off the filters on input and audio processing channels.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 68

ARGUMENT SIZE: 1 words

ARGUMENT FORM:

| Name: | Channel                                   | Group                 | Node                                       | Type                                 |
|-------|---|-----------------------|--|--------------------------------------|
| Size  | 8 bits                                    | 8 bits                | 8 bits                                     | 8 bits                               |
| Type  | Unsigned intgr                            | Unsigned integer      | Unsigned integer                           | Unsigned integer                     |
| Range | See Group and Channels (Table 1, page 95) | 3, 5 (Mic Processing) | Grp 3: 1-4<br>Grp. 5: 1-15<br>0xFF for all | 0 for Off<br>1 for On<br>2 to toggle |

### RETURN VALUES:

Unit always returns the last executed filter selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM:

<DEVICE> FILTSEL <Channel> <Group> <Node><On/Off>

Where:

|                |  |
|----------------|--|
| DEVICE:        | See General Text command form Description          |
| <b>FILTSEL</b> | Text Command                                       |
| Channel        | See Group and Channels (Table 1, page 95)          |
| Group          | 'M', 'P' See Group and Channels (Table 1, page 95) |
| Node           |  |
| 1-4, *         | node of a Mic input filter (* for all)             |
| 1-15, *        | node of an audio processing filter (* for all)     |
| Type           |  |
| 0,1,2          | 0 for Off, 1 for On, 2 to Toggle                   |

### RETURN VALUES

The command will return the updated condition of the filter in the same format as the command.

## First Mic Priority Mode

### DESCRIPTION:

This command selects/reports first Mic priority mode for a gating group.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 16

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel                                      | Group            | Value            |
|-------|--|------------------|------------------|
| Size  | 8 bits                                       | 8 bits           | 16 bits          |
| Type  | Unsigned integer                             | Unsigned integer | Unsigned integer |
| Range | See Group<br>and Channels (Table 1, page 95) | 4                | 0 - 2            |

### RETURN VALUES:

Unit always returns the last executed first Mic priority selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> FMP <Channel> [Value]

Where:

DEVICE: See General Text command form Description

**FMP** Text Command

Channel See Gating Group in Group and Channels (Table 1, page 95)

Value

0 select first Mic priority mode to be disabled

1 select first Mic priority mode to be enabled

2 select first Mic priority mode to toggle

Null return the current mode

### RETURN VALUES

The command will return the updated condition of the first Mic priority mode in the same format as the command.

#### If

First Mic priority mode is enabled for gating group A

First Mic priority mode is disabled for gating group A

#### Command Returns

DEVICE FMP A 1

DEVICE FMP A 0

## Flow Control

### DESCRIPTION:

This command selects/reports the flow control of the serial port on the unit. Hardware flow control is implemented using DTR and DSR.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>  
 COMMAND ID: 15  
 ARGUMENT SIZE: 1 word  
 ARGUMENT FORM:  
     **Name:** <Value>  
     Size 32 bits  
     Type Unsigned integer  
     Range/value 0 - 2

### RETURN VALUES:

Unit always returns the last executed flow control selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM <DEVICE> FLOW [Value]

Where:

|             |   |
|-------------|---|
| DEVICE:     | See General Text command form Description |
| <b>FLOW</b> | Text Command                              |
| Value       |   |
| 0           | disable flow control                      |
| 1           | enable hardware flow control              |
| 2           | to toggle flow control on/off             |
| Null        | return the current flow control setting   |

### RETURN VALUES

The command will return the updated condition of flow control in the same format as the command.

| If  | Command Returns |
|---|-----------------|
| Flow control is disabled                  | DEVICE FLOW 0   |
| Flow control is set to hardware (DTR/DSR) | DEVICE FLOW 1   |

## Front Panel passcode

### DESCRIPTION:

This command sets and reports the current passcode setting for the unit. Each character in the password represents a button on the front panel. See button assignment table below. When the user is requested to unlock the front panel, they must press the buttons in the sequence of the stored password.

### BUTTON ASSIGNMENT TABLE:

#### Value Button represented

|   |                   |
|---|-------------------|
| 1 | Up arrow button   |
| 2 | Enter button      |
| 3 | ESC button        |
| 4 | Down arrow button |
| 5 | Meter button      |

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1><Argument 2>

COMMAND ID: 17

ARGUMENT SIZE: 2 words

ARGUMENT FORM:

| Name  | Char1 | Char2 | Char3                          | Char4 | Char5 | Reserved   |
|-------|-------|-------|--------------------------------|-------|-------|------------|
| Size  |       |       | — — — — 8 bits each — — — —    |       |       | 24         |
| Type  |       |       | — — — Unsigned Integer — — — — |       |       | Unsgnd Int |
| Range |       |       | — — — — 1-4 — — — —            |       |       | 0          |

### RETURN VALUES:

Unit always returns new value of passcode in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> FPP <char1> <char2> <char3> <char4> <char5>

Where:

|               |   |
|---------------|---|
| DEVICE:       | See General Text command form Description         |
| <b>FPP</b>    | Text Command                                      |
| char1 - char5 |   |
| 1 - 4         | See button assignment table above for description |
| CLEAR         | Parameters to clear the passcode                  |
| Null          | parameter to return current passcode              |

### RETURN VALUES

The command returns the current or updated condition of the front panel passcode.

| If   | Command Returns  |
|--|------------------|
| Front panel passcode is set to UP, UP, DOWN, DOWN, ENTER | DEVICE FPP 11442 |

## Gain Adjustment

### DESCRIPTION:

This command changes or reports back the input gain for an input, output or assignable processing block.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 18

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel                                  | Group                            | Value         |
|-------|--|----------------------------------|---------------|
| Size  | 8 bits                                   | 8 bits                           | 16 bits       |
| Type  | Unsigned integer                         | Unsigned integer                 | Signed Float  |
| Range | See Group and Chnnls<br>(Table 1, p. 95) | 1, 2, 3, 5, 7<br>(I, O, M, P, L) | -99.9 to 99.9 |
| Unit  | N/A                                      | N/A                              | dB            |

### RETURN VALUES:

Unit always returns the value of gain adjustment command in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> GAIN <Channel> <Group> [Value A/R]

Where:

|             |   |
|-------------|---|
| DEVICE:     | See General Text command form Description                         |
| <b>GAIN</b> | Text Command  |
| Channel     | See Group and Channels (Table 1, page 95)                         |
| Group       | 'I', 'O', 'M', 'P', 'L' See Group and Channels (Table 1, page 95) |
| Value       |   |
|             | X=99 to 99 ** Parameter to set the gain                           |
|             | X= Null Parameter to return the current gain                      |
| A/R         |   |
|             | X=R Parameter to indicate relative                                |
|             | X=A Parameter to set the gain to an absolute value                |
|             | X= Null Parameter will default to R (relative)                    |

\*\* Note: Values indicate entry range only. Actual internal range of the gain stage is from -65 to 20. Absolute values will be limited to the internal gain range and values below -65 will mute the channel.

### RETURN VALUES

The command returns the current or updated condition of the gain adjustment command.

#### If

If the gain is to be lowered by 3dB on input channel 2 and the actual gain is at -3dB,  
send device gain 2 I-3 R

The gain is to be set to 12dB on output channel 4

#### Command Returns

DEVICE GAIN 2 I-6 A

DEVICE GAIN 4 O 12 A

## Gate Hold Time Adjust

### DESCRIPTION:

This command selects/reports the setting of hold time.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 20

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel  | Group            | Value          |
|-------|--|------------------|----------------|
| Size  | 8 bits   | 8 bits           | 16 bits        |
| Type  | Unsigned integer   | Unsigned integer | Unsigned Float |
| Range | See Mic input in<br>Group and Channels<br>(Table 1, page 95) | 3 (Mic input)    | .10 to 8.00    |

### RETURN VALUES:

Unit always returns the last executed hold time selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> GHOLD <Channel> [Value]

Where:

|              |  |  |
|--------------|--|--|
| DEVICE:      | See General Text command form Description              |  |
| <b>GHOLD</b> | Text Command   |  |
| Channel      | See Mic input in Group and Channels (Table 1, page 95) |  |
| Value        | 0.10-8.00  | select hold time of 0.10 to 8.00 seconds |
|              | Null   | return the current hold time             |

### RETURN VALUES

The command will return the updated condition of the hold time in the same format as the command.

#### If

Hold time is set for 1 second on channel 1

#### Command Returns

DEVICE GHOLD 1 1.00

## Gate Status

### DESCRIPTION:

This command reports the gate status of channels 1-8. This command is read only.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 19

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

|              |   |
|--------------|---|
| <b>Name:</b> | <Value>   |
| Size         | 32 bits   |
| Type         | Unsigned integer  |
| Range        | bits 7 – 0 represent gate on status for Mic inputs 8 – 1 respectively |

|              |              |              |              |              |
|--------------|--------------|--------------|--------------|--------------|
| <u>Bit 7</u> | <u>Bit 6</u> | <u>Bit 5</u> | <u>Bit 4</u> | <u>Bit 3</u> |
| Mic in 8     | Mic in 7     | Mic in 6     | Mic in 5     | Mic in 4     |
| <u>Bit 2</u> | <u>Bit 1</u> | <u>Bit 0</u> |              |              |
| Mic in 3     | Mic in 2     | Mic in 1     |              |              |

### RETURN VALUES:

Unit always returns the last executed gate status selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM <DEVICE> GATE

Where:

DEVICE: See General Text command form Description

**GATE** Text Command

### RETURN VALUES

The command will return the updated condition of the signal presence status of line inputs 9-12 and gate status of channels 1-8. Represented as a hex number.

| If                               | Command Returns |
|----------------------------------|-----------------|
| Channels 1 and 2 are gated on    | DEVICE GATE 03  |
| Channels 1 and 3 are gated on    | DEVICE GATE 05  |
| Channels 1, 4 and 7 are gated on | DEVICE GATE 49  |

## Gate Ratio Adjust

### DESCRIPTION:

This command selects/reports the setting of the gate ratio.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 23

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel   | Group            | Value            |
|-------|---|------------------|------------------|
| Size  | 8 bits  | 8 bits           | 16 bits          |
| Type  | Unsigned integer  | Unsigned integer | Unsigned integer |
| Range | See Mic Input in<br>Group and Channels (Table 1, page 95) | 3 (Mic input)    | 0-50             |
| Unit  | N/A   | N/A              | dB               |

### RETURN VALUES:

Unit always returns the last executed gate ratio selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> GRATIO <Channel> [Value]

Where:

|               |  |
|---------------|--|
| DEVICE:       | See General Text command form Description              |
| <b>GRATIO</b> | Text Command   |
| Channel       | See Mic Input in Group and Channels (Table 1, page 95) |
| Value         |  |
| 0-50          | Parameter to set gate ratio (dB)                       |
| Null          | Parameter to return the current gate ratio (dB)        |

### RETURN VALUES

The command will return the updated condition of the gate ratio in the same format as the command.

| If                                  | Command Returns    |
|-------------------------------------|--------------------|
| The gate ratio of channel 1 is 15dB | DEVICE GRATIO 1 15 |



## Gate Reporting

### DESCRIPTION:

This command selects/reports the gate status.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 25

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| <b>Name:</b> | <b>Mode</b>                     |
|--------------|---------------------------------|
| Size         | 32 bits                         |
| Type         | Unsigned integer                |
| Range        | 0-2                             |
| Unit         | 0 = Off<br>1 = On<br>2 = Toggle |

### RETURN VALUES:

Unit always returns the current gate status reporting frequency in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> GREPORT <Mode>

Where:

|                |   |
|----------------|---|
| DEVICE:        | See General Text command form Description |
| <b>GREPORT</b> | Text Command                              |
| Mode           | 0 = Off, 1 = On, 2 = Toggle               |

### RETURN VALUES

The command will return the updated condition of the gate status reporting in the same format as the command.

| <b>If</b>                   | <b>Command Returns</b> |
|-----------------------------|------------------------|
| The gate status is reported | DEVICE GREPORT 1       |

## Gating Group

### DESCRIPTION:

This command selects/reports which gating group each input is assigned. There can only be one selection per input.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 35

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name  | Channel  | Group            | Value   |
|-------|--|------------------|---|
| Size  | 8 bits   | 8 bits           | 16 bits   |
| Type  | Unsigned integer                                 | Unsigned integer | Unsigned integer  |
| Range | See Mic in Group and Channels (Table 1, page 95) | 3 (Mic)          | 1 – 8<br>See Gating Group in Group and Channels (page 95) |

### RETURN VALUES:

Unit always returns the last executed gating group selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> GRPSEL <Channel> [Value]

Where:

DEVICE: See General Text command form Description

**GRPSEL** Text Command

Channel See Mic in Group and Channels (Table 1, page 95)

Value See Gating Group in Group and Channels (Table 1, page 95). If the value is null, the current state is returned.

### RETURN VALUES

The command returns the current or updated gating group selection of the channel

| If  | Command Returns   |
|---|-------------------|
| Gating group selection for channel 1 is A | DEVICE GRPSEL 1 A |

## Gating Mode

### DESCRIPTION:

This command selects/reports the setting of gating mode.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 21

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name  | Channel>   | Group            | Value            |
|-------|--|------------------|------------------|
| Size  | 8 bits   | 8 bits           | 16 bits          |
| Type  | Unsigned integer                                       | Unsigned integer | Unsigned integer |
| Range | See Mic input in Group and Channels (Table 1, page 95) | 3 (Mic input)    | 1-3              |

### RETURN VALUES:

Unit always returns the last executed gating mode selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> GMODE <Channel> [Value]

Where:

|              |  |
|--------------|--|
| DEVICE:      | See General Text command form Description              |
| <b>GMODE</b> | Text Command   |
| Channel      | See Mic Input in Group and Channels (Table 1, page 95) |
| Value        |  |
| 1            | select gating mode to auto                             |
| 2            | select gating mode to manual on                        |
| 3            | select gating mode to manual off                       |
| Null         | return the current mode                                |

### RETURN VALUES

The command will return the updated condition of the gating mode in the same format as the command.

| If                                       | Command Returns  |
|--|------------------|
| Gating mode is set for auto on channel 1 | DEVICE GMODE 1 1 |

## Gating Override

### DESCRIPTION:

This command selects/reports the setting of gating override.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 22

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel   | Group            | Value            |
|-------|---|------------------|------------------|
| Size  | 8 bits  | 8 bits           | 16 bits          |
| Type  | Unsigned integer  | Unsigned integer | Unsigned integer |
| Range | See Mic Input in<br>Group and Channel<br>(Table 1, page 95) | 3 (Mic input)    | 0-2              |

### RETURN VALUES:

Unit always returns the last executed gating override selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> GOVER <Channel> [Value]

Where:

DEVICE: See General Text command form Description

**GOVER** Text Command

Channel See Mic Input in Group and Channels (Table 1, page 95)

Value

|      |  |
|------|--|
| 0    | select gating override to off (does contribute)    |
| 1    | select gating override to on (does not contribute) |
| 2    | toggle gating override                             |
| Null | return the current mode                            |

### RETURN VALUES

The command will return the updated condition of the gating mode in the same format as the command.

**If**

### Command Returns

Gating override is set for on for channel 1

DEVICE GOVER 1 1

## Label

### DESCRIPTION:

This selects/reports the label of the specific channel identified in the unit.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1><Argument 2>...[Argument n]

COMMAND ID: 26

ARGUMENT SIZE: 5 words

ARGUMENT FORM:

| Name: | Channel                                | Group   | Input/Output to Matrix |                             |
|-------|--|---|------------------------|-----------------------------|
| Size  | 8 bits                                 | 8 bits  | 16                     |                             |
| Type  | Unsigned integer                       | Unsigned integer  | Unsigned integer       |                             |
| Range | See Grps and Chnns<br>(Table 1, p. 95) | 1, 2, 3, 4, 5, 7, 8,<br>9, 12-14<br>(I, O, M, X, P, L,<br>E, U, S, C) | <b>Group</b>           | <b>Value</b>                |
|       |  |   | 1-7, 9-15              | 0                           |
|       |  |   | 8                      | 0 for Input<br>1 for Output |

| Name  | Char 1 – Char 20 |
|-------|------------------|
| Size  | 8 bits each      |
| Type  | Unsigned integer |
| Range | 0 – 255          |

### RETURN VALUES:

Unit always returns the label command in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM:

<DEVICE> LABEL <Channel><Group>[In/Out String]

Where:

|              |  |
|--------------|--|
| DEVICE:      | See General Text command form Description  |
| <b>LABEL</b> | Text Command   |
| Channel      | See Group and Channels (Table 1, page 95)  |
| Group        | 'I', 'O', 'M', 'G', 'P', 'L', 'E', 'U', 'W', 'S', 'C'  |
| In/Out       | For Expansion Bus groups specifies input to the matrix or output from matrix. For other groups this parameter is not used. |
| String       | String of up to 20 characters representing the label text. NULL to query and CLEAR to clear the label.                     |

### RETURN VALUES

The command will return the label in the same format as the command.

#### If

The label for input channel 3 is "Gentner Mic"

The label for the unit is Room 1

#### Command Returns

DEVICE LABEL 3 I Gentner Mic

DEVICE LABEL Ø U Room 1

## Last Mic On Mode

### DESCRIPTION:

This command selects/reports last Mic on mode for the specified gating group. There can be only one selection per gating group.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 28

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel                                      | Group            | Value            |
|-------|--|------------------|------------------|
| Size  | 8 bits                                       | 8 bits           | 16 bits          |
| Type  | Unsigned integer                             | Unsigned integer | Unsigned integer |
| Range | See Group and Channels<br>(Table 1, page 95) | 4                | 0 – 8, 0x00ff    |

### RETURN VALUES:

Unit always returns the last executed last Mic on selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> LMO <Channel> [Value]

Where:

DEVICE: See General Text command form Description

**LMO** Text Command

Channel See Gating Group in Group and Channels (Table 1, page 95)

Value

Value =0 Parameter to select last Mic mode to be disabled

Value =1-8 Parameter to select last Mic mode to be enabled on a specified channel between 1 – 8

Value =\* Parameter to select last Mic mode to be last Mic

Value =Null Parameter to return the current mode

### RETURN VALUES

The command will return the updated condition of the last Mic mode in the same format as the command.

#### If

Last Mic mode is enabled for gating group A as last Mic

Last Mic mode is disabled for gating group A

#### Command Returns

DEVICE LMO A \*

DEVICE LMO A 0

## Level

### DESCRIPTION:

This command reports the level of an input, output, processing block or ambient level. This command is read only. The position values are:

| Alpha | Numeric | Level position for groups 1 (ch. 1-8) & 3      | Level position for groups 1 (ch. 9-12) & 7 | Level pos. for grp 2  | Level position for group 5       |
|-------|---------|--|--|-----------------------|----------------------------------|
| I     | 1       | input level                                    | input level                                | input level           | level into processor             |
| A     | 2       | after gain adjustment, before filter           | input level after gain adjustment          | level after gain adj. | amount of compression            |
| N     | 3       | after filter but before gate (non-gated level) | N/A  | N/A                   | level after compressor & filters |
| G     | 4       | after gate (gated level)                       | N/A  | N/A                   | N/A                              |
| R     | 5       | echo return loss                               | N/A  | N/A                   | N/A                              |
| E     | 6       | echo return loss enhancement                   | N/A  | N/A                   | N/A                              |
| T     | 7       | ERL + ERLE                                     | N/A  | N/A                   | N/A                              |
| D     | 8       | impulse duration (tail time)                   | N/A  | N/A                   | N/A                              |
| C     | 9       | AGC  | AGC  | N/A                   | N/A                              |

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1><Argument 2>

COMMAND ID: 29

ARGUMENT SIZE: 2 words

ARGUMENT FORM:

| Name: | Channel                                 | Group                                   | Position                | <Value>                      |
|-------|---|---|-------------------------|------------------------------|
| Size  | 8 bits                                  | 8 bits                                  | 16 bits                 | 32 bits                      |
| Type  | Unsigned integer                        | Unsgnd intgr                            | Unsigned integer        | Float                        |
| Range | See Grp and Chnls<br>(Table 1, page 95) | 1, 2, 3, 5, 6, 7,<br>(I, O, M, P, A, L) | Group<br>Value          | -60 to +20<br>measured in dB |
|       |   |   | 1 (Ch 1-8)<br>(Ch 9-16) | 1-9<br>1-2, 9                |
|       |   |   | 2                       | 1-2                          |
|       |   |   | 3                       | 1-9                          |
|       |   |   | 5                       | 1-3                          |
|       |   |   | 6                       | 0                            |
|       |   |   | 7                       | 1-2, 9                       |

### RETURN VALUES:

Unit always returns the last executed LVL selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> LVL <Channel> <Group> [Position Value]

Where:

|            |  |
|------------|--|
| <DEVICE>:  | See General Text command form Description            |
| <b>LVL</b> | Text Command   |
| Channel    | See Group and Channels (Table 1, page 95)            |
| Group      | 'I', 'O', 'M', 'P', 'A', 'L'                         |
| Position   | Position in audio channel. See position table above. |
| Value      | Returned level value measured in dB                  |

**RETURN VALUES**

The command will return the updated level of the selection in the same format as the command was issued. All return gain values are absolute and reflect the actual internal gain.

**If**

The level of Input 9 is desired

The level of the non-gated Input 3 is desired

**Command Returns**

DEVICE LVL 9 I I -10

DEVICE LVL 3 I N -6



## Level Report

### DESCRIPTION:

This command selects level status reporting.

The position values are:

| Alpha | Numeric | Level position for groups 1 (ch. 1-8) & 3      | Level position for groups 1 (ch. 9-12) & 7 | Level pos. for grp 2  | Level position for group 5       |
|-------|---------|--|--|-----------------------|----------------------------------|
| I     | 1       | input level                                    | input level                                | input level           | level into processor             |
| A     | 2       | after gain adjustment, before filter           | input level after gain adjustment          | level after gain adj. | amount of compression            |
| N     | 3       | after filter but before gate (non-gated level) | N/A  | N/A                   | level after compressor & filters |
| G     | 4       | after gate (gated level)                       | N/A  | N/A                   | N/A                              |
| R     | 5       | echo return loss                               | N/A  | N/A                   | N/A                              |
| E     | 6       | echo return loss enhancement                   | N/A  | N/A                   | N/A                              |
| T     | 7       | ERL + ERLE                                     | N/A  | N/A                   | N/A                              |
| D     | 8       | impulse duration (tail time)                   | N/A  | N/A                   | N/A                              |
| C     | 9       | AGC  | AGC  | N/A                   | N/A                              |

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1><Argument 2>

COMMAND ID: 30

ARGUMENT SIZE: 2 words

ARGUMENT FORM:

| Name: | Channel                                    | Group                                   | Position  | Mode   |
|-------|--|---|---|--|
| Size  | 8 bits                                     | 8 bits                                  | 16 bits   | 32 bits  |
| Type  | Unsigned integer                           | Unsigned intgr                          | Unsigned intgr  | Ungnd integer  |
| Range | See Grp and Channels<br>(Table 1, page 95) | 1, 2, 3, 5, 6, 7,<br>(I, O, M, P, A, L) | <b>Group</b><br>1 (Ch1-8)<br>(Ch 9-16)<br>2<br>3<br>5<br>6<br>7 | <b>Value</b><br>0-2<br>1-9<br>1-2<br>1-9<br>1-3<br>0<br>1-2, 9 |

### RETURN VALUES:

Unit always returns the current level reporting frequency in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> LVLREPORT <Channel> <Group> [Position Mode]

Where:

|                  |  |
|------------------|--|
| DEVICE:          | See General Text command form Description            |
| <b>LVLREPORT</b> | Text Command   |
| Channel          | See Group and Channels (Table 1, page 95)            |
| Group            | 'I', 'O', 'M', 'P', 'A', 'L'                         |
| Position         | Position in audio channel. See position table above. |
| Mode             |  |
| 0                | Delete level from list of levels to be reported      |
| 1                | Add specified level to list of levels to be reported |
| 2                | Toggle   |

**RETURN VALUES**

The command will return the updated condition of the level reporting in the same format as the command.

**If**

The level of the non gated Input 3 is to be reported

**Command Returns**

DEVICE LVLREPORT 3 I N 1

## Level Report Rate

### DESCRIPTION:

Sets the level report rate for the unit and activates/deactivates level repeating.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 60

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name  | Value   |
|-------|---|
| Size  | 32 bits   |
| Type  | Unsigned Int  |
| Range | 0 to stop reporting but leave statuses set, 1 to stop reporting and clear all report statuses, 50 – 1000ms (one meter (lvl) repeated every 50-1000ms) |

### RETURN VALUES:

Unit will return the updated state of the last selection in the same form as the command.

### TEXT FORM DETAILS

COMMAND FORM DEVICE LVLRRATE [Value]

Where:

DEVICE: See General Text command form Description

**LVLRRATE** Text Command

Value 0 to stop reporting but leave statuses set, 1 to stop reporting and clear all report statuses, 50 – 1000ms

### RETURN VALUES

Unit will return the updated state of the last selection in the same form as the command.

### Example

#50 Lvlrrate 100 repeats a meter every 100ms.

## Lock Front Panel

### DESCRIPTION:

This command sets and reports the status of front panel access for the unit. When the unit is locked, access is not allowed to the unit until the unit is unlocked either by a serial command or by entering in the front panel password.

### ARGUMENT TABLE:

| Value | Action              |
|-------|---------------------|
| 0     | Unlock Panel        |
| 1     | Lock panel          |
| 2     | Toggle value        |
| 3     | Lock when timed out |

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 27

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name:       | <Value>          |
|-------------|------------------|
| Size        | 32 bits          |
| Type        | Unsigned integer |
| Range/value | 0 - 3            |

### RETURN VALUES:

Unit always returns the current state in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> LFP [Value]

Where:

DEVICE: See General Text command form Description

**LFP** Text Command

Value:

Value = 0-3 See argument table for description

Value = Null Parameter to return current passcode

### RETURN VALUES

The command returns the current or updated condition of the Front panel lock.

| If                      | Command Returns |
|-------------------------|-----------------|
| Front panel is unlocked | DEVICE LFP 0    |

## Macro Execution/Reporting

### DESCRIPTION:

This command executes a specified macro or reports the last macro executed. There are 255 macros that can be specified.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 31

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name:       | Value            |
|-------------|------------------|
| Size        | 32 bits          |
| Type        | Unsigned integer |
| Range/value | 1 – 255          |

### RETURN VALUES:

Unit always returns the last executed macro in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM <DEVICE> MACRO <Value>

Where:

DEVICE: See General Text command form Description

**MACRO** Text Command

<Value>

1-255 Value to execute user macros

### RETURN VALUES

The command will return the macro that is to be executed and then execute the macro after completion of the macro.

NOTE: The response indicates execution of the macro, but does not indicate that each command within the macro was executed.

## Master

### DESCRIPTION:

This command reports the mode of the unit. The mode can be Master or Slave.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 32

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

|              |                  |
|--------------|------------------|
| <b>Name:</b> | <Value>          |
| Size         | 32 bits          |
| Type         | Unsigned integer |
| Range/value  | 1, 2             |

### RETURN VALUES:

Unit always returns the master command in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> MASTER <Value>

Where:

|               |   |
|---------------|---|
| DEVICE:       | See General Text command form Description |
| <b>MASTER</b> | Text Command                              |
| Value         |   |
| 1             | select master unit                        |
| 2             | select slave unit                         |
| Null          | return the current mode of the unit       |

### RETURN VALUES

The command will return the mode of the unit in the same format as the command.

**If** **Command Returns**

Selection is for a single unit      DEVICE MASTER 1

## Matrix

### DESCRIPTION:

This command selects/reports the matrix routing of an input to an output. The values allowed are:

| Alpha | Numeric | Description                    |
|-------|---------|--------------------------------|
| 0     | 0       | Cross point disabled           |
| 1     | 1       | Cross point enabled            |
| 2     | 2       | Cross point toggle             |
| N     | 3       | Non- Gated (Mic ch. 1 –8 only) |
| G     | 4       | Gated (Mic ch. 1 – 8 only)     |

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1><Argument 2>

COMMAND ID: 39

ARGUMENT SIZE: 2 words

ARGUMENT FORM:

| Name: | SrcChannel                            | SrcGroup                         | Dest Channel                          | Dest Group           | Value            |
|-------|---------------------------------------|----------------------------------|---------------------------------------|----------------------|------------------|
| Size  | 8 bits                                | 8 bits                           | 8 bits                                | 8 bits               | 32 bits          |
| Type  | Unsigned integer                      | Unsigned intgr                   | Unsigned integer                      | Unsigned integer     | Unsigned integer |
| Range | See Grp and Chnls<br>(Table 1, p. 95) | 1, 3, 5, 7, 8<br>(I, M, P, L, E) | See Grp and Chnls<br>(Table 1, p. 95) | 2, 5, 8<br>(O, P, E) | See Above Table  |

### RETURN VALUES:

Unit always returns the last executed MTRX selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM:

<DEVICE> MTRX < SrcChannel > < SrcGroup > < Dest Channel > <Dest Group> [Value]

Where:

|              |  |
|--------------|--|
| DEVICE:      | See General Text command form Description                                    |
| <b>MTRX</b>  | Text Command   |
| SrcChannel   | See Group and Channels (Table 1, page 95)                                    |
| SrcGroup     | 'I', 'M', 'P', 'L', 'E' See Group and Channels (Table 1, page 95)            |
| Dest Channel | See Group and Channels (Table 1, page 95)                                    |
| SrcChannel   | 'O', 'P', 'E' See Group and Channels (Table 1, page 95)                      |
| Value        | See table at beginning of command. A value of null returns the current mode. |

### RETURN VALUES

The command will return the updated condition of the MTRX information in the same format as the command.

#### If

The cross point of Input 9 is selected to be present on Output 4

The gated audio of Input 1 is selected to be present on Expansion Bus W

#### Command Returns

DEVICE MTRX 9 I 4 O 1

DEVICE MTRX 1 I W E G

## Matrix Attenuation Adjust

### DESCRIPTION:

This command selects/reports the matrix level at the cross point.

\*\* Note: Values indicate entry range only. Actual internal range of the gain stage is from -60 to 0 and absolute values will be limited to the internal gain range. Absolute levels below -60 will mute the gain stage.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1><Argument 2>

COMMAND ID: 40

ARGUMENT SIZE: 2 words

ARGUMENT FORM:

| Name: | SrcChannel                                 | SrcGroup                         | Dest Channel                             | Dest Group           | Value  |
|-------|--|----------------------------------|--|----------------------|--|
| Size  | 8 bits                                     | 8 bits                           | 8 bits                                   | 8 bits               | 32 bits  |
| Type  | Unsigned integer                           | Unsigned intgr                   | Unsigned integer                         | Unsgnd intgr         | Signed Float   |
| Range | See Group and Chnlns<br>(Table 1, page 95) | 1, 3, 5, 7, 8<br>(I, M, P, L, E) | See Grp and Chnlns<br>(Table 1, page 95) | 2, 5, 8<br>(O, P, E) | -99 to 99<br>use absolute/<br>relative flag in<br>header |

### RETURN VALUES:

Unit always returns the last executed MTRXLVL selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM:

<DEVICE> MTRXLVL <SrcChannel> <SrcGroup> <Dest Channel> <Dest Group> [Value A/R]

Where:

DEVICE: See General Text command form Description

**MTRXLVL** Text Command

SrcChannel See Group and Channels (Table 1, page 95)

SrcGroup 'I', 'M', 'P', 'L', 'E' See Group and Channels (Table 1, page 95)

Dest Channel See Group and Channels (Table 1, page 95)

SrcChannel 'O', 'P', 'E' See Group and Channels (Table 1, page 95)

Value Selects the amount of attenuation at cross point in dB. If null command returns current attenuation

A/R

X=R parameter to indicate relative

X=A parameter to set the gain to an absolute value

X=NULL parameter will default to R (relative)

### RETURN VALUES

The command will return the updated level of the matrix for the selected source and destination in the same format as the command was issued. All return gain values are absolute and reflect the actual internal gain in the matrix.

If

Input 9 and Output 9 cross point level is desired (level was previously set to -10dB)

Input 3 and Expansion Bus W cross point level is desired to be -6dB

**Command Returns**

DEVICE MTRXLVL 9 I 9 O -10

DEVICE MTRXLVL 3 I W E -6



## Maximum Gain Setting

### DESCRIPTION:

This command changes or reports back the maximum gain setting for an input, output or assignable processing block.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 125

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel                | Group            | Value        |
|-------|------------------------|------------------|--------------|
| Size  | 8 bits                 | 8 bits           | 16 bits      |
| Type  | Unsigned integer       | Unsigned integer | Signed Float |
| Range | See Group and Channels | 1, 2, 3, 5, 7    | -65.00–20.00 |
| Unit  | N/A                    | N/A              | DB           |

### RETURN VALUES:

Unit will return the updated state of the last selection in the same form as the command.

### TEXT FORM DETAILS

COMMAND FORM: DEVICE MAX <Channel> <Group> [Value]

Where:

DEVICE: See General Text command form Description

**MAX** Text Command

Channel See Group and Channels (Table 1, page 95)

Group I, O, M, P, L

Value

-65.00 – 20.00

Parameter to set the maximum gain setting

Null

Parameter to return the current setting

### RETURN VALUES

Unit will return the updated state of the last selection in the same form as the command.

#### If

The maximum gain setting on input channel 2 is 10 dB

#### Command Returns

DEVICE MAX 2 I 10

## Maximum Number of Microphones

### DESCRIPTION:

This command selects/reports the maximum number of microphones for each gating group.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 37

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name  | Channel                                   | Group            | Value            |
|-------|---|------------------|------------------|
| Size  | 8 bits                                    | 8 bits           | 16 bits          |
| Type  | Unsigned integer                          | Unsigned integer | Unsigned integer |
| Range | See Group and Channels (Table 1, page 95) | 4                | 0 - 8            |

### RETURN VALUES:

Unit always returns the last executed maximum number of microphones selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> MMAX <Channel>[Value]

Where:

DEVICE: See General Text command form Description

**MMAX** Text Command

Channel See Group and Channels (Table 1, page 95)

Value

0 select maximum number of microphones to unlimited

1-8 select maximum number of microphones to 1-8

Null return the current maximum number of microphones

### RETURN VALUES

The command will return the updated condition of the maximum number of microphones in the same format as the command.

#### If

MMAX is 4 for gating group A

MMAX is unlimited for gating group A

#### Command Returns

DEVICE MMAX A 4

DEVICE MMAX A 0

## Mic/Line Adjust

### DESCRIPTION:

This command selects/reports the setting of coarse gain adjustment on the input channels 1-8. The three settings are 0dB, 25dB, and 55dB.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 36

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel  | Group            | Value            |
|-------|--|------------------|------------------|
| Size  | 8 bits   | 8 bits           | 16 bits          |
| Type  | Unsigned Integer                                 | Unsigned Integer | Unsigned integer |
| Range | See Mic in Group and Channels (Table 1, page 95) | 3 (Mic)          | 0-2              |

### RETURN VALUES:

Unit always returns the last executed coarse gain adjustment selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> MLINE <Channel>[Value]

Where:

|              |   |
|--------------|---|
| DEVICE:      | See General Text command form Description         |
| <b>MLINE</b> | Text Command                                      |
| Channel      | See Mic in Group and Channels (Table 1, page 95)  |
| Value        |   |
| 1            | select coarse gain adjustment to 55dB             |
| 2            | select coarse gain adjustment to 25dB             |
| 0            | select coarse gain adjustment to 0dB (Line Level) |
| Null         | return the current coarse gain adjustment         |

### RETURN VALUES

The command will return the updated condition of the coarse gain adjustment in the same format as the command. If the command sent changes the state for that channel, the new updated state is returned.

### If

Coarse gain is set to be 55dB on input channel 1

### Command Returns

DEVICE MLINE 1 1

## Minimum Gain Setting

### DESCRIPTION:

This command changes or reports back the minimum gain setting for an input, output or assignable processing block.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 124

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel                | Group            | Value        |
|-------|------------------------|------------------|--------------|
| Size  | 8 bits                 | 8 bits           | 16 bits      |
| Type  | Unsigned integer       | Unsigned integer | Signed Float |
| Range | See Group and Channels | 1, 2, 3, 5, 7    | -65.00–20.00 |
| Unit  | N/A                    | N/A              | DB           |

### RETURN VALUES:

Unit will return the updated state of the last selection in the same form as the command.

### TEXT FORM DETAILS

COMMAND FORM: DEVICE MIN <Channel> <Group> [Value]

Where:

DEVICE: See General Text command form Description

**MIN** Text Command

Channel See Group and Channels (Table 1, page 95)

Group I, O, M, P, L

Value

-65.00 – 20.00

Parameter to set the minimum gain setting

Null

Parameter to return the current setting

### RETURN VALUES

Unit will return the updated state of the last selection in the same form as the command.

#### If

The minimum gain setting on input channel 2 is –10 dB

#### Command Returns

DEVICE MIN 2 I –10

## Minimum and Maximum Gain Setting

### DESCRIPTION:

This command changes or reports back the minimum and maximum gain setting for an input, output or assignable processing block.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 128

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name  | Channel                | Group            | Minimum        | Maximum        |
|-------|------------------------|------------------|----------------|----------------|
| Size  | 8 bits                 | 8 bits           | 16 bits        | 32 bits        |
| Type  | Unsigned integer       | Unsigned integer | Signed Float   | Signed Float   |
| Range | See Group and Channels | 1, 2, 3, 5, 7    | -65.00 – 20.00 | -65.00 – 20.00 |
| Unit  | N/A                    | N/A              | DB             | DB             |

### RETURN VALUES:

Unit will return the updated state of the last selection in the same form as the command.

### TEXT FORM DETAILS

COMMAND FORM: DEVICE MINMAX <Channel> <Group> [Minimum Maximum]

Where:

DEVICE: See General Text command form Description

**MINMAX** Text Command

Channel See Group and Channels

Group I, O, M, P, L

Minimum

-65.00 – 20.00 Parameter to set the minimum gain setting

Null Parameter to return the current settings

Maximum

-65.00 – 20.00 Parameter to set the maximum gain setting

### RETURN VALUES

Unit will return the updated state of the last selection in the same form as the command.

#### If

The minimum gain setting on input channel 2 is -10 dB and the maximum is 10 dB

#### Command Returns

DEVICE MINMAX 2 I -10 10

## Modem Initialization String

### DESCRIPTION:

This command sets/reports the modem initialization string of the serial port when in modem mode.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1><Argument 2>...<Argument 10>

COMMAND ID: 34

ARGUMENT SIZE: 20 32-bit words (80 8-bit characters)

ARGUMENT FORM: each word of form

| Name: | Char1 | Char2                    | Char3 | Char4 |
|-------|-------|--------------------------|-------|-------|
| Size  |       | — — 8 bits each — —      |       |       |
| Type  |       | — — Unsigned Integer — — |       |       |
| Range |       | — — 0 – 0xff — —         |       |       |

### RETURN VALUES:

Unit always returns the last executed modem initialization string in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> MINIT [String]

Where:

|                         |  |
|-------------------------|--|
| DEVICE:                 | See General Text command form Description  |
| <b>MINIT</b>            | Text Command   |
| String                  |  |
| String =1-80 characters | Parameter to select string characters to be sent to the modem when the unit is initialized |
| String=CLEAR            | Parameter to clear the modem initialization string   |
| String =Null            | Parameter to report the current string   |

### RETURN VALUES

The command will return the updated state in the same form as the command.

## Modem Mode

### DESCRIPTION:

This command enables or disables the modem mode for the unit. When the modem mode is enabled, the modem initialization string is sent out the serial port and the serial port now requires a password before a command is processed. After five minutes of serial inactivity the passcode will be requested to continue serial activity.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 33

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name:       | Value            |
|-------------|------------------|
| Size        | 32 bits          |
| Type        | Unsigned integer |
| Range/value | 0 - 2            |

### RETURN VALUES:

Unit always returns the last executed modem mode in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> MDMODE [Value]

Where:

DEVICE: See General Text command form Description

**MDMODE** Text Command

Value

|      |                                 |
|------|---------------------------------|
| 0    | select modem mode to off        |
| 1    | select modem mode to on         |
| 2    | toggle modem mode state         |
| Null | report current modem mode state |

### RETURN VALUES

The command will return the updated condition of MDMODE in the same format as the command.

| If                    | Command Returns |
|-----------------------|-----------------|
| Modem mode is enabled | DEVICE MDMODE 1 |

## Modem Password

### DESCRIPTION:

This command sets the current password setting for the unit when using modem mode. The password must be entered in twice.

### BINARY FORM DETAILS

COMMAND FORM: <Header> <Argument 1> <Argument 2> <Argument 3>

COMMAND ID: 38

ARGUMENT SIZE: 3 32-bit words ( 12 8-bit char)

ARGUMENT FORM: 3 words, each of the format:

| Name: | Char1            | Char1            | Char1            | Char1            |
|-------|------------------|------------------|------------------|------------------|
| Size  | 8 bits           | 8 bits           | 8 bits           | 8 bits           |
| Type  | Unsigned Integer | Unsigned Integer | Unsigned Integer | Unsigned Integer |
| Range | 0 – 0xff         | 0 – 0xff         | 0 – 0xff         | 0 – 0xff         |

### RETURN VALUES:

Unit always returns the last executed modem password in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> MPASS [String]

Where:

DEVICE: See General Text command form Description

**MPASS** Text Command

String

String =0-12 characters

Parameter to select up to 12 string characters as the modem password

String=CLEAR

Parameter to clear the current password

String =Null

Parameter to report the current password

### RETURN VALUES

Once the command is given, the unit responds by echoing back the command, followed by "RE-ENTER PASSWORD" string. The command must then be re-entered exactly as entered previously. Then, the command will be echoed back, followed by an "OK," indicating that the password has been changed.



## Mute

### DESCRIPTION:

This command selects/reports the setting of mute on input, output or processing channels.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 41

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name:       | Channel                              | Group            | Value            |
|-------------|--------------------------------------|------------------|------------------|
| Size        | 8 bits                               | 8 bits           | 16 bits          |
| Type        | Unsigned integer                     | Unsigned integer | Unsigned integer |
| Range/value | See Grp and Chnls<br>(I, O, M, P, L) | 1, 2, 3, 5, 7    | 0-2              |

### RETURN VALUES:

Unit always returns the last executed mute selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> MUTE <Channel> <Group> [Value]

Where:

|             |  |
|-------------|--|
| <DEVICE>:   | See General Text command form Description                          |
| <b>MUTE</b> | Text Command   |
| Channel     | See Group and Channels (Table 1, page 95)                          |
| Group       | 'I', 'O', 'M', 'P', 'L'. See Group and Channels (Table 1, page 95) |
| Value       |  |
| 0           | select mute off  |
| 1           | select mute on   |
| 2           | select mute to toggle  |
| Null        | return the current mode  |

### RETURN VALUES

The command will return the updated condition of mute in the same format as the command.

| If                                       | Command Returns   |
|--|-------------------|
| Mute is set to be on for input channel 1 | DEVICE MUTE 1   1 |

## Noise Cancellation Depth Adjust

### DESCRIPTION:

This command selects/reports the setting of the noise cancellation amount for each microphone channel.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 97

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel                | Group            | Value            |
|-------|------------------------|------------------|------------------|
| Size  | 8 bits                 | 8 bits           | 16 bits          |
| Type  | Unsigned integer       | Unsigned integer | Unsigned integer |
| Range | See Group and Channels | 3                | 6 – 15           |

### RETURN VALUES:

Unit will return the updated state of the last selection in the same form as the command.

### TEXT FORM DETAILS

COMMAND FORM: [DEVICE] NCD <Channel> <Value>

Where:

DEVICE: See General Text command form Description

**NCD** Text Command

Channel See M in Group and Channels

Value

|        |  |
|--------|--|
| 6 - 15 | Set Noise cancellation from 6 to 15 dB |
| Null   | Return the current mode                |

### RETURN VALUES

Unit will return the updated state of the last selection in the same form as the command.

**If**

Noise cancellation on channel 1 is set to 10 dB

**Command returns**

<DEVICE> NC 1 10

## Noise Cancellation Select

### DESCRIPTION:

This command selects/reports the setting of the Noise Cancellation for each microphone channel.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 126

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel                | Group            | Value            |
|-------|------------------------|------------------|------------------|
| Size  | 8 bits                 | 8 bits           | 16 bits          |
| Type  | Unsigned integer       | Unsigned integer | Unsigned integer |
| Range | See Group and Channels | 3                | 0 – 2            |

### RETURN VALUES:

Unit will return the updated state of the last selection in the same form as the command.

### TEXT FORM DETAILS

COMMAND FORM: [DEVICE] NCSEL <Channel> <Value>

Where:

DEVICE: See General Text command form Description

**NCSEL** Text Command

Channel See M in Group and Channels

Value

|      |                            |
|------|----------------------------|
| 0    | Enable Noise Cancellation  |
| 1    | Disable Noise Cancellation |
| 2    | Toggle Noise Cancellation  |
| Null | Return the current mode    |

### RETURN VALUES

Unit will return the updated state of the last selection in the same form as the command.

**If**

Noise cancellation on channel 1 is enabled

**Command returns**

<DEVICE> NCSEL 1 1

## Non-Linear Processing Adjust

### DESCRIPTION:

This command selects/reports the setting of the Non-linear processing for each microphone channel.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 99

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel                | Group            | Value            |
|-------|------------------------|------------------|------------------|
| Size  | 8 bits                 | 8 bits           | 16 bits          |
| Type  | Unsigned integer       | Unsigned integer | Unsigned integer |
| Range | See Group and Channels | 3                | 0 - 2            |

### RETURN VALUES:

Unit will return the updated state of the last selection in the same form as the command.

### TEXT FORM DETAILS

COMMAND FORM: [DEVICE] NLP <Channel> <Value>

Where:

DEVICE: See General Text command form Description

**NLP** Text Command

Channel See M in Group and Channels

Value

|      |  |
|------|--|
| 0    | select Non-linear processing to OFF        |
| 1    | select Non-linear processing to Soft       |
| 2    | select Non-linear processing to Medium     |
| 3    | select Non-linear processing to Aggressive |
| Null | return the current mode                    |

### RETURN VALUES

Unit will return the updated state of the last selection in the same form as the command.

**If**

Non linear processing on channel 1 is set to soft

**Command returns**

<DEVICE> NLP 1 1

## Number of Open Microphones Mode

### DESCRIPTION:

This command selects/reports the setting of Number of Open Microphones (NOM) on output channels.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 42

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name  | Channel   | Group            | Value            |
|-------|---|------------------|------------------|
| Size  | 8 bits  | 8 bits           | 16 bits          |
| Type  | Unsigned integer                                  | Unsigned integer | Unsigned integer |
| Range | See Output in Grp and Chnls<br>(Table 1, page 95) | 2 (output)       | 0 - 2            |

### RETURN VALUES:

Unit always returns the last executed NOM selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> NOM <Channel> [Value]

Where:

|            |   |
|------------|---|
| DEVICE:    | See General Text command form Description           |
| <b>NOM</b> | Text Command  |
| Channel    | See Output in Group and Channels (Table 1, page 95) |
| Value      |   |
| 0          | select NOM off                                      |
| 1          | select NOM on                                       |
| 2          | select NOM to toggle                                |
| Null       | return the current mode                             |

### RETURN VALUES

The command will return the updated condition of NOM in the same format as the command.

| If                                       | Command Returns |
|--|-----------------|
| NOM is set to be on for output channel 1 | DEVICE NOM 1 1  |

## Off Attenuation Mode

### DESCRIPTION:

This command selects/reports the off attenuation mode of input channels 1-8.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 43

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name  | Channel   | Group            | Value          |
|-------|---|------------------|----------------|
| Size  | 8 bits  | 8 bits           | 16 bits        |
| Type  | Unsigned integer                                | Unsigned integer | Unsigned float |
| Range | See Mic in Grp and Chnnls<br>(Table 1, page 95) | 3 (Mic)          | 0.0 – 60.0     |

### RETURN VALUES:

Unit always returns the last executed off attenuation selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> OFFFA <Channel> [Value]

Where:

|              |  |
|--------------|--|
| <DEVICE>:    | See General Text command form Description        |
| <b>OFFFA</b> | Text Command                                     |
| Channel      | See Mic in Group and Channels (Table 1, page 95) |
| Value        |  |
| 0-60         | select off attenuation level (dB)                |
| Null         | return the current off attenuation level         |

### RETURN VALUES

The command will return the updated condition of the off attenuation level in the same format as the command.

| If   | Command Returns   |
|--|-------------------|
| Off attenuation mode for channel 1 is set for 15dB | DEVICE OFFFA 1 15 |
| Off attenuation mode for channel 1 is set for 0dB  | DEVICE OFFFA 1 0  |

## PA Adaptive Mode

### DESCRIPTION:

This command selects/reports PA adaptive mode for the specified mixer. There can be only one selection per mixer.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 44

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel  | Group            | Value            |
|-------|--|------------------|------------------|
| Size  | 8 bits   | 8 bits           | 16 bits          |
| Type  | Unsigned integer                               | Unsigned integer | Unsigned integer |
| Range | See Mic in Grp and Chnns<br>(Table 1, page 95) | 4 (Mic)          | 0 - 2            |

### RETURN VALUES:

Unit always returns the last executed PA adaptive selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> PAA <Channel> [Value]

Where:

|            |  |
|------------|--|
| <DEVICE>:  | See General Text command form Description        |
| <b>PAA</b> | Text Command                                     |
| Channel    | See Mic in Group and Channels (Table 1, page 95) |
| Value      |  |
| 0          | select PA adaptive mode to be disabled           |
| 1          | select PA adaptive mode to be enabled            |
| 2          | select PA adaptive mode to toggle                |
| Null       | return the current mode                          |

### RETURN VALUES

The command will return the updated condition of the PA adaptive mode in the same format as the command.

| If                                | Command Returns |
|-----------------------------------|-----------------|
| PA adaptive is enabled for Mic 1  | DEVICE PAA 1 1  |
| PA adaptive is disabled for Mic 1 | DEVICE PAA 1 0  |

## PA Reference Select

### DESCRIPTION:

This command selects/reports which output is used for each mic as a reference for power amp adaptation mode. There can be only one selection per mixer.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 48

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel  | Group            | Value   |
|-------|--|------------------|---|
| Size  | 8 bits   | 8 bits           | 16 bits   |
| Type  | Unsigned integer                                 | Unsigned integer | Unsigned integer  |
| Range | See Mic in Group and Channels (Table 1, page 95) | 2, 8<br>(O, E)   | 0; see Group and Channels (p. 95)<br>E: see Expansion Bus Reference Channels Group and Channels (p. 95) |

### RETURN VALUES:

Unit always returns the last executed REFSEL selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> REFSEL < Reference Channel >< Reference Group > [Channel]

Where:

|                 |  |
|-----------------|--|
| <DEVICE>:       | See General Text command form Description  |
| <b>REFSEL</b>   | Text Command   |
| Channel         | See Mic in Group and Channels (Table 1, page 95)   |
| Reference Group | 'O', 'E'. See Group and Channels (Table 1, page 95)  |
| Reference Value | O: see Group and Channels (Table 1, page 95)<br>E: see Expansion Bus Reference channels in Group and Channels (Table 1, page 95) |

### RETURN VALUES

The command will return the updated condition of the REFSEL mode in the same format as the command.

| If   | Command Returns     |
|--|---------------------|
| REFSEL is set for output channel 1 for Mic 1 | DEVICE REFSEL 1 O 1 |



## Phantom Power

### DESCRIPTION:

This command selects/reports the setting of phantom power.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 45

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Channel   | Group            | Value            |
|-------|---|------------------|------------------|
| Size  | 8 bits  | 8 bits           | 16 bits          |
| Type  | Unsigned integer                                    | Unsigned integer | Unsigned integer |
| Range | See Mic in Group and Channels<br>(Table 1, page 95) | 3 (Mic)          | 0 - 2            |

### RETURN VALUES:

Unit always returns the last executed phantom power selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> PP <Channel> [Value]

Where:

|           |  |
|-----------|--|
| <DEVICE>: | See General Text command form Description        |
| <b>PP</b> | Text Command                                     |
| Channel   | See Mic in Group and Channels (Table 1, page 95) |
| Value     |  |
| 0         | select phantom power off                         |
| 1         | select phantom power on                          |
| 2         | select phantom power to toggle                   |
| Null      | return the current phantom power mode            |

### RETURN VALUES

The command will return the updated condition of the phantom power in the same format as the command.

| If  | Command Returns |
|---|-----------------|
| Phantom power is set to be on for channel 1 | DEVICE PP 1 1   |

## Preset Execution/Reporting

### DESCRIPTION:

This command selects/reports the state of a preset.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 46

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name  | Channel   | Group                  | Value            |
|-------|---|------------------------|------------------|
| Size  | 8 bits  | 8 bits                 | 16 bits          |
| Type  | Unsigned integer  | Unsigned integer       | Unsigned integer |
| Range | 0 to set to none<br>0 with Query to find last Preset Ran<br>(If query and not zero, will query the state of that channel) | See Group and Channels | 13<br>0 – 2      |

### RETURN VALUES:

Unit will return the updated state of the last selection in the same form as the command.

### TEXT FORM DETAILS

COMMAND FORM: DEVICE PRESET <Channel> [Value]

Where:

DEVICE: See General Text command form Description

**PRESET** Text Command

Channel NULL to Query Last Preset; See Preset in Group and Channels

Value

|      |   |
|------|---|
| 0    | Set the preset state to off                 |
| 1    | Execute the preset and set the state to on  |
| 2    | Execute the preset and set the state to off |
| Null | Return the current preset state             |

### RETURN VALUES

Unit will return the updated state of the last selection in the same form as the command.

**If** **Command Returns**

Preset 1's state is active (on)    DEVICE PRESET 1 1

## Program String

### DESCRIPTION:

This command sets/reports a programmed string.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1><Argument 2>...<Argument 11>

COMMAND ID: 47

ARGUMENT SIZE: 21 32-bit words (1 ID word + 80 8-bit characters)

ARGUMENT FORM: each word of form

| Name: | ID:              | Char1 | Char2                    | Char3 | Char4 |
|-------|------------------|-------|--------------------------|-------|-------|
| Size  | 32 bits          |       | — —8 bits each — —       |       |       |
| Type  | Unsigned integer |       | — — Unsigned Integer — — |       |       |
| Range | 0 - 7            |       | — — 0 - 0xff — —         |       |       |

### RETURN VALUES:

Unit always returns the specified program string in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> PRGSTRING <ID> [String]

Where:

|                         |  |
|-------------------------|--|
| DEVICE:                 | See General Text command form Description  |
| <b>PRGSTRING</b>        | Text Command   |
| ID                      | string identifier 0 - 7  |
| String                  |  |
| String =1-80 characters | Parameter to select string characters to be sent when the execute string command is issued |
| String= CLEAR           | Parameter to clear the current string  |
| String= Null            | Parameter to report the current string   |

### RETURN VALUES

The command will return the specified program string

| If                        | Command Returns         |
|---------------------------|-------------------------|
| Program string #3 is MUTE | DEVICE PRGSTRING 3 MUTE |

## Serial Echo

### DESCRIPTION:

This command selects/reports the serial echo of the RS-232 port.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 50

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Value            |
|-------|------------------|
| Size  | 32 bits          |
| Type  | Unsigned integer |
| Range | 0 – 2            |

### RETURN VALUES:

Unit will return the updated state of the last selection in the same form as the command.

### TEXT FORM DETAILS

COMMAND FORM: DEVICE SERECHO [Value]

Where:

DEVICE: See General Text command form Description

**SERECHO** Text Command

Value

|      |                            |
|------|----------------------------|
| 0    | Select serial echo to off  |
| 1    | Select serial echo to on   |
| 2    | Toggle the serial echo     |
| Null | Return current serial echo |

### RETURN VALUES

Unit will return the updated state of the last selection in the same form as the command.

#### If

Serial echo is to be set to echo all ports

#### Command Returns

DEVICE SERECHO 1

## Serial Mode

### DESCRIPTION:

This command selects/reports the serial mode of the RS-232 port.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 51

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name: | Value            |
|-------|------------------|
| Size  | 32 bits          |
| Type  | Unsigned integer |
| Range | 1 - 2            |

### RETURN VALUES:

Unit always returns the last executed serial mode selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> SERMODE [Value]

Where:

<DEVICE>: See General Text command form Description

**SERMODE** Text Command

Value

|      |                              |
|------|------------------------------|
| 1    | select serial mode as text   |
| 2    | select serial mode as binary |
| Null | return current serial mode   |

### RETURN VALUES

The command will return the updated condition of the serial mode in the same format as the command.

#### If

Serial mode is to be set for text

#### Command Returns

DEVICE SERMODE 1

## Signal Generator

### DESCRIPTION:

This command selects/reports of the signal generator activation.

### BINARY FORM DETAILS

COMMAND FORM: <Header> <Argument 1> <Argument 2> <Argument 3>

COMMAND ID: 52

ARGUMENT SIZE: 3 words

ARGUMENT FORM:

| Name: | Channel                                    | Group                | Type           | Amplitude    | Frequency  |
|-------|--|----------------------|----------------|--------------|--|
| Size  | 8 bits                                     | 8 bits               | 16 bits        | 32 bits      | 32 bits  |
| Type  | Unsigned Integer                           | Unsigned Intgr       | Unsigned Intgr | Signed Float | Unsigned Float                                   |
| Range | See Group and Chnnls<br>(Table 1, page 95) | 1, 3, 7<br>(I, M, L) | 0-3            | -60 to +20   | <b>Type</b> <b>Range</b><br>1-2 0<br>3 20-20,000 |
| Unit  | N/A  | N/A                  | N/A            | dB           | Hz   |

### RETURN VALUES:

Unit always returns the last signal generator activation in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM

<DEVICE> SIGGEN <Channel> <Group> [Type Amplitude Frequency]

Where:

|               |   |
|---------------|---|
| <DEVICE>:     | See General Text command form Description                                 |
| <b>SIGGEN</b> | Text Command  |
| Channel       | Null to return current setting; See Group and Channels (Table 1, page 95) |
| Group         | 'I', 'M', 'L'   |
| Type          |   |
| 0             | Turn signal generator off   |
| 1             | select pink noise generator   |
| 2             | select white noise generator  |
| 3             | select tone generator   |
| Amplitude     |   |
| -60 to +20    | amplitude in dB; NULL for type 0  |
| Frequency     |   |
| 20 to 20,000  | frequency in Hz (only needed when using tone generation)                  |

### RETURN VALUES

The command will return the updated condition of the last signal generator activation in the same format as the command.

| If   | Command Returns        |
|--|------------------------|
| Signal Gen is Pink noise for microphone channel 1 with level of 20dB | DEVICE SIGGEN 1 M 1 20 |

## Signal Generator Time Out

### DESCRIPTION:

Sets the signal generator time out for the unit.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 123

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| Name  | Value                                      |
|-------|--|
| Size  | 32 bits                                    |
| Type  | Unsigned Integer                           |
| Range | 0 to disable the time out, 1 to 30 minutes |

### RETURN VALUES:

Unit will return the updated state of the last selection in the same form as the command.

### TEXT FORM DETAILS

COMMAND FORM DEVICE SIGTOUT [Value]

Where:

|                |   |                         |
|----------------|---|-------------------------|
| DEVICE:        | See General Text command form Description |                         |
| <b>SIGTOUT</b> | Text Command                              |                         |
| Value          | 0   | Disable time out        |
|                | 1 – 30                                    | Set time out in min     |
|                | Null                                      | Return the current rate |

### RETURN VALUES

Unit will return the updated state of the last selection in the same form as the command.

## Speech Level Control Enable/Disable

### DESCRIPTION:

This command selects/reports the setting of speech level control for a microphone.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 13

ARGUMENT SIZE: 1 WORD

ARGUMENT FORM:

| Name: | Channel                | Group            | Value            |
|-------|------------------------|------------------|------------------|
| Size  | 8 bits                 | 8 bits           | 16 bits          |
| Type  | Unsigned integer       | Unsigned integer | Unsigned integer |
| Range | See Group and Channels | 3                | 0 – 2            |
| Unit  | N/A                    | N/A              | N/A              |

### RETURN VALUES:

Unit will return the updated state of the last selection in the same form as the command.

### TEXT FORM DETAILS

COMMAND FORM: [DEVICE] ALC <Channel> [Value]

Where:

DEVICE: See General Text command form Description

**SLVL** Text Command

Channel See M in Group and Channels

Value

|      |                                |
|------|--------------------------------|
| 0    | Speech Level Control off       |
| 1    | Speech Level Control on        |
| 2    | Speech Level Control to toggle |
| Null | Return the current mode        |

### RETURN VALUES

Unit will return the updated state of the last selection in the same form as the command.

**If**

Speech Level Control is set to be on for input channel 1

**Command returns**

DEVICE SLVL 1 | 1



## String Execution

### DESCRIPTION:

This command sends the specified string out the serial port.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 53

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| <b>Name:</b> | <b>Value</b>     |
|--------------|------------------|
| Size         | 32 bits          |
| Type         | Unsigned integer |
| Range/value  | 0 - 7            |

### RETURN VALUES:

Unit always returns ID of the string in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM <DEVICE> STRING [Value]

Where:

|               |   |
|---------------|---|
| DEVICE:       | See General Text command form Description |
| <b>STRING</b> | Text Command                              |
| Value         |   |
| 0 - 7         | String to execute                         |
| Null          | Parameter to return last executed string  |

### RETURN VALUES

The command will return the last string executed. If the command executed a string, the string that was executed is returned.

## Time Out Select

### DESCRIPTION:

This command selects/reports the inactivity time out before returning to the unit title screen.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 54

ARGUMENT SIZE: 1 word

ARGUMENT FORM: <Value>

| Name: | Value            |
|-------|------------------|
| Size  | 32 bits          |
| Type  | Unsigned integer |
| Range | 1 – 15 (minutes) |

### RETURN VALUES:

Unit always returns the last executed timeout selection in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM: <DEVICE> TOUT [Value]

Where:

DEVICE: See General Text command form Description

**TOUT** Text Command

Value

|      |                                    |
|------|------------------------------------|
| 0    | select disable unit time out       |
| 1-15 | select time out of 1 to 15 minutes |
| Null | return the current mode            |

### RETURN VALUES

The command will return the updated condition of time out in the same format as the command.

**If** **Command Returns**

Time out is set to 3 minutes      DEVICE TOUT 3

**Unit ID****DESCRIPTION:**

This command reports the unit ID. This command is read only.

**BINARY FORM DETAILS**

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 55

ARGUMENT SIZE: 1 word

ARGUMENT FORM:

| <b>Name</b> | <b>Value</b>     |
|-------------|------------------|
| Size        | 32 bits          |
| Type        | Unsigned integer |
| Range       | 0 – 0xffffffff   |

**RETURN VALUES:**

Unit always returns the last executed unit ID selection in the same form as above.

**TEXT FORM DETAILS**

COMMAND FORM: <DEVICE> UID [Value]

Where:

|            |   |
|------------|---|
| DEVICE:    | See General Text command form Description |
| <b>UID</b> | Text Command                              |
| Value      | UID of box in hex                         |

**RETURN VALUES**

The command will return the unit ID in the same format as the command.

**If Command Returns**

UID DEVICE UID XXXXXXXX

## Version

### DESCRIPTION:

This command reports the version of the unit. This command is read only.

### BINARY FORM DETAILS

COMMAND FORM: <Header><Argument 1>

COMMAND ID: 56

ARGUMENT SIZE: 2 words

ARGUMENT FORM:

| Name        | Char 1-8                |
|-------------|-------------------------|
| Size        | 8 bits each             |
| Type        | Unsigned integer        |
| Range/value | version string mm.mm.rr |

### RETURN VALUES:

Unit always returns the version command in the same form as above.

### TEXT FORM DETAILS

COMMAND FORM <DEVICE> VER [Value]

Where:

DEVICE: See General Text command form Description

**VER** Text Command

Value command issued with null, command returns the current version in the form MM.mm.rr where MM is major version  
mm is minor version  
rr is release ID

### RETURN VALUES

The command will return the version in the same format as the command.

| If  | Command Returns |
|-----|-----------------|
| VER | DEVICE VER X.X  |

# Glossary

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## Glossary

**Acoustic Echo Cancellation** A process in which acoustical echo is removed from a signal.

**Adaptive Ambient** This portion of the mixer monitors the varying ambient noise level in the room and changes the threshold level at which a microphone gates on.

**Ambient Level** The manually-set background noise level upon which the XAP 800 bases gating protocols. Used only if the Adaptive Ambient feature isn't used.

**Ambient Noise** The existing room-level noise, such as that caused by ventilation systems, paper shuffling, and background chatter.

**Amplitude Plot** A plot of amplitude (-18 to 18dB) vs frequency (20Hz to 20kHz) on a logarithmic scale.

**Attack** This signal parameter determines how quickly compression is enabled. It is calibrated in milliseconds.

**Attenuation** A reduction of signal amplitude.

**Audio Processor** A device that modifies an audio signal in response to certain requirements.

**Automatic Gain Control (AGC)** Automatically increases or decreases audio gain to maintain a consistent audio level.

**Automatic Gating** Automatically gates microphones on or off based on input levels and other parameters programmed into the XAP 800.

**Bandwidth** The difference between the lower and upper 3dB endpoints of an audio band. Also, the range or differences between the limiting frequencies of a continuous frequency band.

**Baud Rate** Data speed in bits per second.

**Chairman Override** Provides gating priority for all microphones selected for the chairman override group. When a mic in this group gates on, all microphones not included in this group gate off.

**Clipping** A condition in which a signal levels off at a predetermined level. Clipping is usually caused by overdriving a signal, and can result in distortion.

**Compression** An induced reduction in the dynamic range of part or all of an audio signal. Compression is usually used to tailor the frequency response of a signal and to protect individual loudspeaker components from the damaging effects of transients.

**Constant Directivity Horn Equalizer (CD Horn EQ)** Horn drivers commonly used in arrays in arenas and auditoriums have an inherent 6dB/octave high frequency rolloff. The XAP 800's CD Horn EQ compensates for this characteristic.

**Crossover** A device that passes designated frequency segments of an audio signal to various loudspeaker elements in a sound system.

**Crossover, Bessel** A crossover using a low-pass filter design characterized by a linear phase response. This results in a constant time delay throughout the passband.

**Crossover, Butterworth** A crossover using a low-pass filter design characterized by a maximally flat magnitude response. This results in no amplitude ripple in the passband.

**Crossover, Linkwitz-Riley** A fourth-order crossover consisting of a cascaded second-order Butterworth low-pass filter. Offers a vast improvement over the Butterworth crossover and is the de facto standard for professional audio active crossovers.

**Decay Rate (slow, medium, fast)** Programs how quickly the audio level is attenuated once a channel has been gated off.

**DSP** Digital signal processor.

**Echo Canceller Reference** The output or Expansion Bus reference the echo canceller uses to remove echo.

**Expansion Bus** Consists of two RJ-45 connectors on the rear panel of the XAP 800. An Expansion Bus allows multiple XAP 800s to be networked together using category five twisted-pair (10BaseT LAN) cable.

**Filter** A device that passes and blocks audio signals based on requirements of the system.

**Filter, All Pass** A filter that provides only phase shift or phase delay without appreciably changing the magnitude characteristic. The filter produces a flat amplitude response. It is useful in custom crossover applications to compensate for speaker driver deficiencies.

**Filter Display** A group of nodes plotted on a logarithmic scale. The XAP 800's filter display can be accessed through the Inputs 1-8, From Processing, or To Processing windows.

**Filter, High Pass** A filter that passes high signal frequencies while attenuating low frequencies.

**Filter, High Shelving** Provides boosting or attenuation of frequencies above a designated frequency. The transition between the spectrum above and below the designated frequency occurs at a fixed 6dB/octave rate.

**Filter, Low Pass** A filter that passes low frequencies while attenuating high frequencies.

**Filter, Low Shelving** Provides boosting or attenuation of frequencies below a designated frequency. The transition between the spectrum above and below the designated frequency occurs at a fixed 6dB/octave rate.

**First Mic Priority** Increases the audio level required to gate on additional microphones after the first mic is on. This helps ensure that only one mic gates on when a person speaks.

**Gain** The amount a signal is increased over a given reference, typically 0. Normally specified in dB (decibels). On the XAP 800, gain is adjustable from -65 to 20dB in .5dB increments.

**Gain Structure** The configuration of parameters which define gain adjustment of a signal. The optimal input gain setting is one which is adjusted as high as possible above the noise floor without introducing clipping.

**Gate Ratio** Specifies how much louder the microphone audio level must be above the ambient sound level before a microphone gates on.

**GPIO (general purpose input/output)** The Control/Status Ports A and B on the rear of the XAP 800 unit.

**G-Ware Software** The XAP 800's setup and configuration software.

**Hold Time** The length of time that a microphone remains on after the voice (input) level drops below the gate ratio. This prevents the microphone from gating off during brief pauses in speech.

**Last On Mode** Sets the last-activated mic to Last On, Mic 1-8, or Off. The Last On setting leaves the last-activated mic gated on until another mic input gates on.

**Macro** A computer command consisting of a sequence of other commands.

**Macro Mode** The section of G-Ware that allows you to customize and execute macro commands for a XAP 800 unit or network.

**Manual Gating** Provides the ability to gate a microphone on or off manually.

**Matrix Mixer** A mixer that allows routing of any input or combination of inputs to an output or any combination of outputs. In the case of the XAP 800, the matrix mixer permits level control at each cross point in the matrix.

**Maximum Number of Mics/Filibuster** Sets the maximum number of mics that can be gated on simultaneously.

**Microphone Activation** A condition in which a microphone is gated on.

**Microphone Mixing** A scenario where microphone inputs are combined and used as a group.

**Microphone 1 Mode** Reverts mic assignment to a designated mic when all mics gate off.

**Mute** A condition in which an audio signal is attenuated below the audible threshold.

**Noise Cancellation** A process through which ambient noise is removed from a signal.



**Number of Open Mics (NOM)/Constant Gain Mode** Adjusts the output level based on the number of mics gated on and routed to an output.

**Off Attenuation** The amount of level reduction a microphone is given when the microphone is not gated on.

**PA Adaptive Mode** The XAP 800 recognizes how much loudspeaker audio is picked up by the microphones and then uses this level as the new ambient level when audio is present at the power amplifier. This prevents loudspeaker audio from gating ON a microphone, while still allowing people in the room to gate ON microphones as they speak.

**PA Adaptive Reference** This G-Ware setting determines which output (typically for a loudspeaker) is used as a reference for an input.

**Paging Zone** A subset of a paging system. Intended to isolate paging system outputs to specific geographical areas.

**Parametric Equalizer (PEQ)** A multi-band variable equalizer with control of gain, center frequency, and bandwidth. A properly configured PEQ enables the XAP 800 to offset speaker or room acoustic deficiencies.

**Phantom Power** Power supplied by the XAP 800 to power most condenser microphones. The XAP 800 provides 24 volts of phantom power. This feature can be switched off for devices not requiring phantom power.

**Phase Plot** A plot of phase angle (-180 to 180 degrees) vs frequency (20Hz to 20kHz) on a logarithmic scale.

**Pink Noise** An audio test signal containing all the frequencies in a given audio spectrum, with equal energy in each octave.

**Preset** One of 32 configurable memories in the XAP 800. A preset can be programmed with a variety of routing, level, gating, delay, filter, and equalizer settings to meet specific application requirements.

**Q** Quality factor. It is the ratio of the center frequency divided by the bandwidth. Q reflects an inverse relationship to the bandwidth, and adjusts from .02:1 to 40:1 on the XAP 800.

**Ratio** The amount of compression applied to the output signal compared with the input signal as the signal exceeds the threshold level.

**Release** Release is a parameter which determines how quickly compression is released after the input signal drops below the threshold.

**Reverberation** Reflections of sound waves in a room or other acoustical venue.

**Serial Command** A bit description designed to execute an instruction or command.

**Signal Delay** Used for acoustically aligning speakers in an audio system to provide balanced sound throughout the room.

**Signal Generator** A device for generating a reference tone for sound system calibration purposes.

**Speech Leveler** A processing control that equalizes the audio levels of someone who is speaking close to a mic and someone who is speaking from farther away.

**Table View** Displays the numerical values of the filter parameters for all nodes of the active filter display.

**Threshold** The upper or lower level at which a signal processing mechanism begins or terminates operation.

**White Noise** Acoustical noise with equal energy throughout a given frequency range.

## Warranty, Compliance, and Safety Information

### Warranty

Gentner Communications Corporation (Manufacturer) warrants that this product is free of defects in both materials and workmanship. Should any part of this equipment be defective, the Manufacturer agrees, at its option, to:

A. Repair or replace any defective part free of charge (except transportation charges) for a period of one year from the date of the original purchase, provided the owner returns the equipment to the Manufacturer at the address set forth below. No charge will be made for parts or labor during this period;

B. Furnish replacement for any defective parts in the equipment for a period of one year from the date of original purchase. Replacement parts shall be furnished without charge, except labor and transportation.

This Warranty excludes assembled products not manufactured by the Manufacturer whether or not they are incorporated in a Manufacturer product or sold under a Manufacturer part or model number.

#### THIS WARRANTY IS VOID IF:

A. The equipment has been damaged by negligence, accident, act of God, or mishandling, or has not been operated in accordance with the procedures described in the operating and technical instructions; or,

B. The equipment has been altered or repaired by other than the Manufacturer or an authorized service representative of the Manufacturer; or,

C. Adaptations or accessories other than those manufactured or provided by the Manufacturer have been made or attached to the equipment which, in the determination of the Manufacturer, shall have affected the performance, safety or reliability of the equipment; or,

D. The equipment's original serial number has been modified or removed.

NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE, APPLIES TO THE EQUIPMENT, nor is any person or company authorized to assume any warranty for the Manufacturer or any other liability in connection with the sale of the Manufacturer's products.

Manufacturer does not assume any responsibility for consequential damages, expenses, or loss of revenue or property, inconvenience, or interruption in operation experienced by the customer due to a malfunction in the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period.

In case of unsatisfactory operation, the purchaser shall promptly notify the Manufacturer at the address set forth below in writing, giving full particulars as to the defects or unsatisfactory operation. Upon receipt of such notice, the Manufacturer will give instructions respecting the shipment of the equipment, or such other matters as it elects to honor this warranty as above provided. This warranty does not cover damage to the equipment during shipping and the Manufacturer assumes no responsibility for such damage. All shipping costs shall be paid by the customer.

This warranty extends only to the original purchaser and is not assignable or transferable.

Gentner Communications Corporation  
1825 Research Way  
Salt Lake City, Utah 84119

### **FCC Part 15 Compliance**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense.

Changes or modifications not expressly approved by Gentner Communications Corporation could void the user's authority to operate the equipment.



This equipment complies with the requirements of the EU guidelines:  
89/336/EEC "Electromagnetic Compatibility"  
73/23/EEC "Electrical operating material for use within specific voltage limits"

Conformity of the equipment with the above guidelines is attested by the CE mark.

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

### **Safety Information**

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

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