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PSR1212 Digital Matrix Mixer



Installation & Operation Manual

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PSR1212 Installation and Operation Manual
ClearOne Part No. 800-155-001 Jan 2007(Rev. 7.1)

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PSR1212 Installation and Operation Manual

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CHAPTER 1: Introduction

Product overview

Congratulations on purchasing the PSR1212, a highly advanced twelve-by-twelve digital matrix mixer with audio processing. It utilizes an internal macro language and 32 user-definable presets to quickly adapt to a variety of sound reinforcement and room-combining applications in auditoriums, stadiums, theatres, gymnasiums, hotel/convention centers, conference rooms, training rooms, and boardrooms.

The PSR1212 facilitates local and remote PC setup and diagnostics, logic outputs, and automatic gated microphone operation. Gating parameters for microphone inputs can be individually customized, 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 through the RS-485 port.

The PSR1212 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 PSR1212's audio response to optimize the audio quality and fidelity in a wide variety of venues.

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 PSR1212s to be connected and controlled as a single unit, allowing microphone coverage in applications requiring up to 64 mics.

The PSR1212's Macro Pro™scripting language allows the unit to function without the need for an external controller. However, it can be easily interfaced to the ClearOne Control Panel or XAP IR Remote via either of the two RS-485 ports. The unit can also interface with a PC or external controller through the RS-232 port.

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New Features

- **Virtual references.** The PSR1212 now features four user-definable virtual references. These references can use multiple signals as the PA Adapt reference point without sacrificing an analog output.
- **Front panel gain and mute control.** Now gain and mute adjustments can be made from the front panel. Using these controls allows you to make quick volume and mute changes without connecting through G-Ware.
- **Safety Mute.** The new Safety Mute button on the main G-Ware toolbar allows you to mute all outputs with one simple click if feedback or audio problems occur during the configuration process.
- **Preset and Macro Passwords.** You can now password protect your presets and macros to prevent unauthorized changes.
- **Clear Matrix.** This new button on the Matrix Screen makes it easy to clear all cross point cells in the matrix. Simply click the button and confirm the action.
- **RAMP serial command.** The new RAMP serial command (see page 119) gives you greater control over gain adjustments. You can specify the rate at which the gain increases and decreases as well as the target level.

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Professional Services Group

If you need any additional information on how to install, set up, or operate your system, please contact us at one of the locations listed below. We welcome and encourage your comments so we can continue to improve our products and serve your needs.

ClearOne Communications ~ 5225 Wiley Post Way, Suite 500
Salt Lake City, Utah 84116

Technical Support

Telephone: 1.800.283.5936(USA) or 1.801.974.3760
Fax: 1.801.977.0087
E-mail: tech.support@clearone.com
Web site: www.clearone.com

Sales and Customer Service

Telephone: 1.800.945.7730 (USA) or 1.801.975.7200
Fax: 1.800.933.5107 (USA) or 1.801.977.0087
E-mail: sales@clearone.com

ClearOne Communications EuMEA GmbH

Leonhardstr. 16-18, D-90443 Nuremberg, Germany
Telephone: +49 911 955159-0
Fax: +49 911 955159-10
E-mail: global@clearone.com

Product Registration

Please register your PSR1212 online by visiting ClearOne Technical Support at **www.clearone.com.** When your product is properly registered, ClearOne Communications is better able to serve you should you require technical assistance. Registration information is also used to notify you of upgrades and new product information.

Product Returns

All product returns require a return authorization (RA) number. Please contact ClearOne Technical Support before attempting to return your PSR1212 unit.

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Unpacking

Ensure that the following items were received with your shipment:

! ClearOne is not responsible for product damage incurred during shipment. You must make claims directly with the carrier. Inspect your shipment carefully for obvious signs of damage. If the shipment appears to be damaged, retain the original boxes and packing material for inspection by the carrier. Contact your carrier immediately.

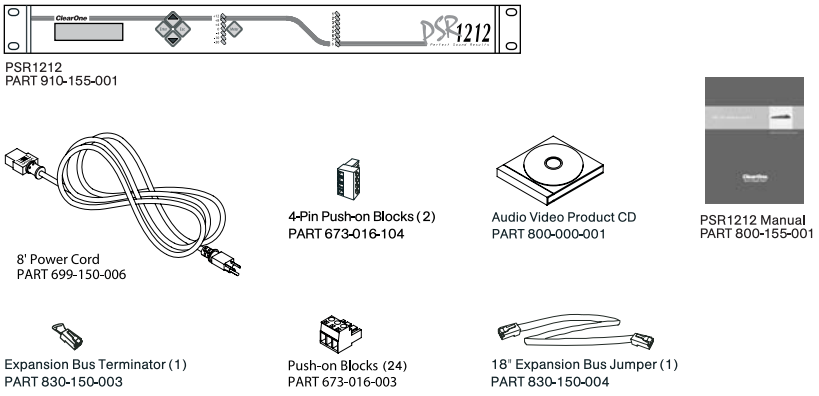


Figure 1.1. Equipment included with PSR1212 unit

Controls and Connections

Front panel

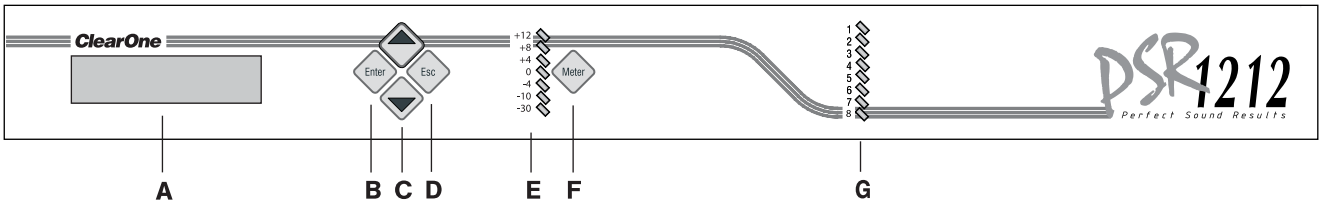


Figure 1.2. Front panel controls

— Front panel buttons are also used to enter the front panel passcode. See page 26 for more details.

A. **LCD.** This display is for PSR1212 setup in conjunction with the four associated front-panel buttons [B, C, and D]. Baud rate and flow control must be configured from the front panel; see the LCD Menu Tree on page 13 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.

B. **Enter.** This button is used when programming the PSR1212 via the LCD window. To move deeper in the menu or execute a selected parameter, press the Enter button.

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C. ⇕These buttons scroll up and down through vertical programming options within a specific PSR1212 programming parameter or increases/decreases a numeric value.

D. **Esc.** This button 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 [C], you can select it with the Enter button [B] to modify it. Then, you can step out of the menu with the Esc button.

E. **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 PSR1212.

F. **Meter.** Takes you directly to the Meter branch of the PSR1212's LCD menu tree.

G. **LED 1–8.** These LEDs indicate Inputs 1–8 gate status.

Rear panel

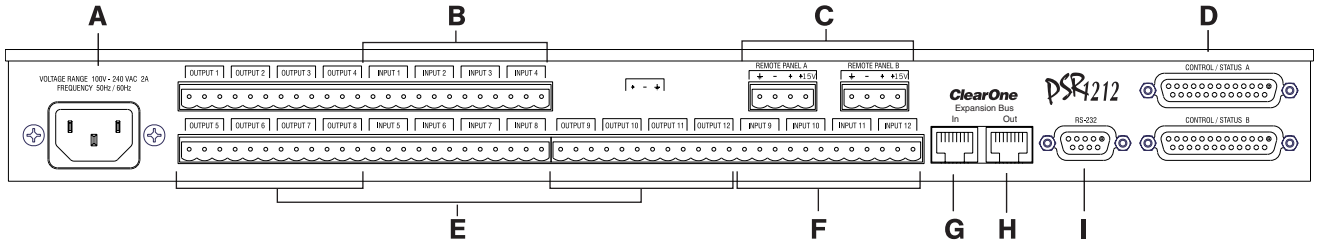


Figure 1.3. Rear panel connections

A. **Power.** This power module accommodates power ranging from 100–240VAC, 50/60Hz. The module uses an IEC-type connector. No switching is required.

B. **Inputs 1–8.** These Phoenix block connectors 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, 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 32. For electrical specifications, see Appendix A: Specifications.

C. **RS-485 Remote Panel A/B Port.** These four-pin Phoenix connector ports allow you to control the PSR1212 with the ClearOne Control Panel or XAP IR Remote Control.

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Power is supplied through the RS-485 ports to the remote Control Panels from the PSR1212. 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 89 for maximum cable run distances when using ClearOne Control Panels.

D. **Control/Status Ports A and B**. These two female DB-25 connector are used to connect control devices to the PSR1212. The control devices have access to the command set for the PSR1212 and can be used for common functions such as volume control, muting, preset change, room combining, etc. Devices can be connected to either port.

For instructions on how to program the control and status pins, see the GPIO section on page 75. 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.

E. **Outputs 1–12.** These three-pin Phoenix connectors are for connection of twelve line-level balanced outputs with three-pin Phoenix connectors. These outputs are typically used for connection to VCRs, tape recorders, amplifiers, and other audio devices. These outputs can be configured to contain any combination of gated and non-gated inputs. The nominal output level is 0dBm.

F. **Inputs 9–12.** These Phoenix connectors 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.

G-H. **Expansion Bus In/Out.** This RJ-45 connector is part of the expansion bus (E-bus), which allows up to eight PSR1212 or XAP 800/400 units and up to 16 XAP TH2 units to be networked together. The E-bus consists of two buses: one for control, the other for passing audio and mic information (see Control bus, page 7). Using Cat 5 twisted-pair cable, you can separate adjoining units up to 80 feet (24 meters). See the diagram on page 11.

I. **RS-232.** This female DB-9 serial port is for interconnection between the PSR1212 and a PC, modem, or other external control device. For serial protocol, see Appendix B: Connector Pinouts.

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Networking

Expansion bus

The digital mix-minus expansion bus (RJ-45 LAN) is used to connect up to eight PSR1212s (or XAP 800/400s and 16 XAP TH2 units), where the total number of microphone inputs does not exceed 64. The maximum distance between interconnected PSR1212 or XAP 800/400 units is 80 feet (24 meters). Connecting a XAP TH2 must not increase the cable length between two PSR1212s, XAP 800s and/or XAP 400s beyond 80 feet. ClearOne recommends that category five twisted-pair (10BaseT LAN) cable be used.

— The latency or propagation delay is <1ms.

The expansion bus (E-bus) allows audio routing between destinations on the E-bus network. The E-bus contains 12 independent digital audio buses labeled 0–Z which can route mic or line level inputs in any combination across the E-bus network. The 0–Z buses are divided into two groups (0–R and S–Z) based on their capabilities and default settings. The E-bus also contains four PA adapt reference buses, four global gating buses, and one control bus.

- **0–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 PSR1212s. All gated 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.
- **PA Adapt Reference buses.** These buses allow an input from a PSR1212 to reference an output on another linked PSR1212 or XAP 400/800. See PA Adapt and AEC Reference on page 37 for more information.
- **Global Gating Groups A–D buses.** These mix-minus buses are defined as microphone gating groups which support first-mic priority, maximum number of mics, etc. and work across all linked units. Unlike the audio buses, they contain only mic status and gate parameters. See page 39 for more information about gating groups.
- **Control bus.** The control bus is an independent channel from the E-bus's audio channel; it uses a different pair of wires on the same E-bus cable. This allows control information to pass even if the units are not using the audio link. The PSR1212 supports the full set of commands through the control bus.

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Operational Requirements

Power

The PSR1212 automatically accommodates voltage requirements of 100–240VAC, 50/60Hz, 15W.

Equipment placement

The PSR1212 units are designed for installation in a standard 19-inch equipment rack. You can also purchase side panels for desktop placement. See Appendix D for a list of accessories.

Environmental

The PSR1212 can be safely operated in a room with varying temperatures between 32 ° F/0 ° C and 110 ° F/43 ° C.

G-Ware requirements

ClearOne's G-Ware software requires the following minimum system configuration:

- Minimum RAM requirement is determined by the operating system

Windows 95 OSR2	64MB
Windows 98	64MB
Windows ME	64MB
Windows NT	64MB
Windows 2000	128MB
Windows XP	256MB

- PII 200MHz (or AMD equal) or higher processor
- 8MB Video Card
- 1024x768 (16 bit) High Color monitor
- Internet Explorer 4
- 20MB of free hard disk space
- RS-232 COM port
- CD-ROM drive

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CHAPTER 2: Installation

The PSR1212 is designed for easy installation and setup. All connections are made through rear-panel connectors. This chapter provides instructions on making hardware connections, creating an expansion bus network, assigning device ID numbers, selecting the mixer mode, and using the front panel LCD menus.

Hardware Setup

The diagram below illustrates the typical connections that are made for a PSR1212 system.

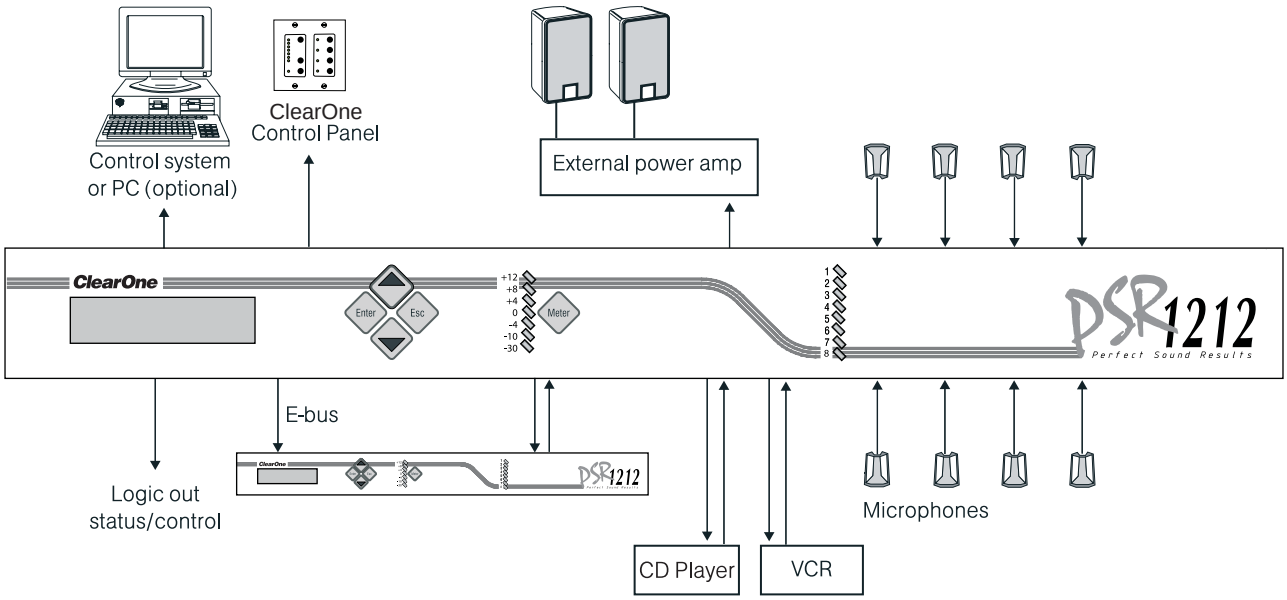


Figure 2.1. PSR1212 installation diagram

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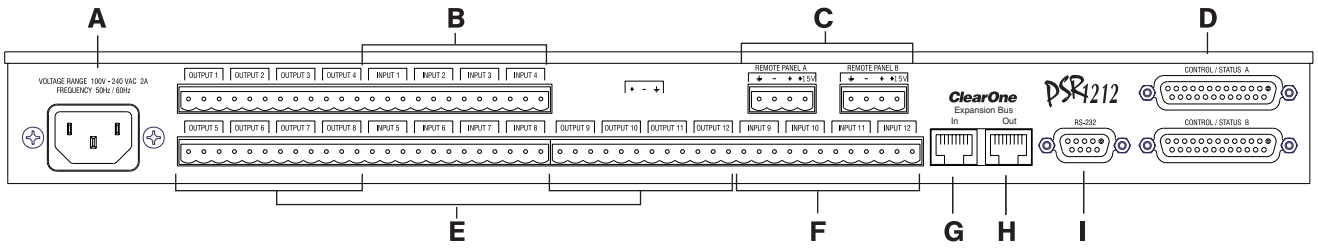


Figure 2.2. PSR1212 rear-panel connectors

To connect the unit

1. Place the unit in a standard 19-inch rack and attach it securely.

2. If you are using a custom controller for control and status, plug it into the DB-25 Control/Status A or B port [D].

   If you are using an external RS-232 controller, connect it to the RS-232 port [I].

3. Wire the inputs and outputs to the PSR1212 using the provided three-terminal Phoenix push-on connectors. These connectors are designed for easy wiring; simply insert the desired wire into the appropriate connector opening and tighten down the top screw.

   - Inputs 1–8 [B] Mic or line level inputs
   - Inputs 9–12 [F] Line level inputs only
   - Outputs 1–12 [E] Line level outputs

4. If you are using a ClearOne Control Panel or XAP IR Remote, wire it to the RS-485 port [C] using one of the provided four-terminal Phoenix push-on connectors.

5. Plug in the PSR1212 to complete the installation. The power output [A] will operate at any level between 100–240VAC and 50–60Hz.

If you are installing only one PSR1212 and are not connecting it to any other XAP or PSR1212 units, you have completed the hardware installation.

— The three terminals in the Phoenix connector correspond with the rear-panel audio contacts (from left to right): + (positive), – (negative), and ② (ground).

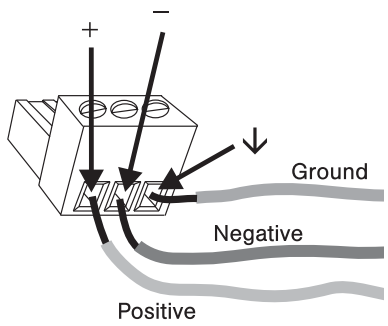


Figure 2.3. Phoenix push-on connector

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Networking Units

Expansion bus connections

Using the Expansion Bus ports (RJ-45), you can connect up to eight PSR1212s or XAP 800/400s and 16 XAP TH2 units, where the total number of microphone inputs does not exceed 64. Make connections between units in daisy-chain fashion using the short RJ-45 jumper. If your units are further apart, use category five twisted-pair cable.

The maximum distance between interconnected PSR1212 or XAP 800/400 units is 80 feet (24 meters). Expansion bus cable length is calculated between PSR1212s and XAP 800s/400s.

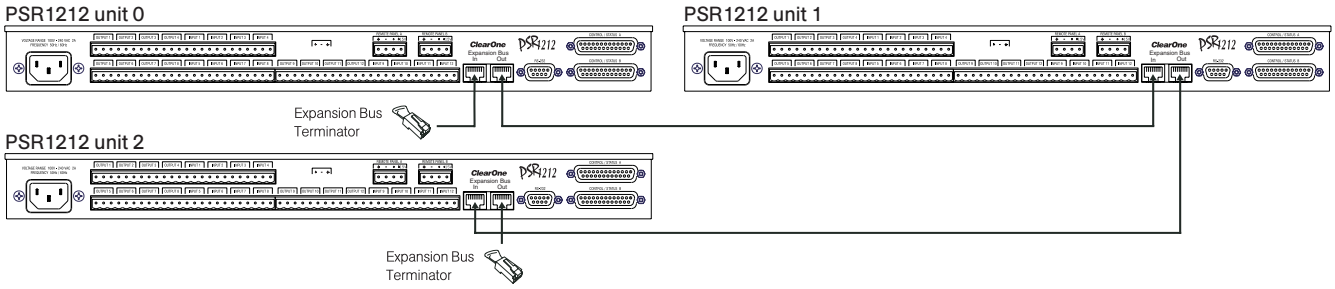


Figure 2.4. E-bus connection diagram

To create an expansion bus network

1. Plug the expansion bus terminator in the **Expansion Bus In** connector of the first unit in the network.

2. Connect the RJ-45 jumper cable (or Cat 5 twisted pair cable) to the **Expansion Bus Out** connector of the first unit in the network and **Expansion Bus In** connector of the second unit. Continue connecting units in the same fashion.

3. Plug the expansion bus terminator in the **Expansion Bus Out** connector on the final unit to complete the network connections.

   If the E-bus network is not connected properly, the front panel LEDs will flash on the units that are physically connected to the network. To correct the problem, check for broken connections and reconnect the expansion bus cables.

— If connecting to other units, make sure the first unit in your E-bus network is a PSR1212 or XAP 800/400 instead of a XAP TH2.

— RS-232 system-wide con-trol can be provided by any PSR1212 or XAP 800/ 400 unit in the network.

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— If the same device ID is assigned to more than one unit on the E-bus network, the Meter LED "+12" will flash red and the Mic LEDs "1," "2," "4," and "8" will flash green on the affected units. To correct the problem, change the device ID on one of the conflicting units.

Device IDs

Once your expansion bus connections are made (and if you have more than one PSR1212 at a site), you need to set up a unique expansion bus device ID number—a network address—for each PSR1212 on the network. As shipped from the factory, all PSR1212s are set to device ID 0.

To assign device IDs

1. Press the front-panel **Enter** button, then scroll through the menu until the **System** menu is visible.
2. Press **Enter**, then scroll through the menu until **Device ID** is visible.
3. Press **Enter**, then scroll through the eight (0–7) options. When the desired device ID is visible, press **Enter** to select it. (You can also set the device ID in the Unit Properties window of G-Ware software. See page 25.)
4. Repeat this process for each PSR1212 on the expansion bus network.

— You can also use G-Ware to select a mixer mode. See page 25.

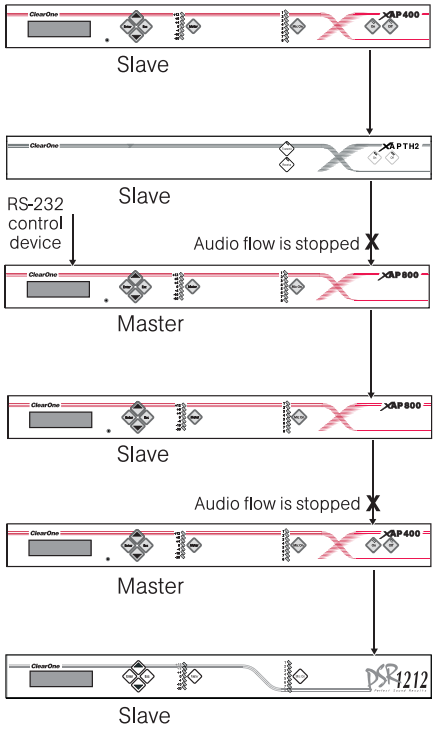


Figure 2.5. E-bus network with master units

Mixer mode

There are two mixer mode settings: slave (default) and master. A master unit is not required in a networked system and in most installations, all units will be slaves. Master units ignore audio from upstream units. This prevents audio from being received from units above the master unit in the network. However, global control of the system is still maintained by whichever PSR1212 or XAP 400/800 unit is connected to a control device through its RS-232 or RS-485 ports. Control is not affected by master/slave designations.

In Figure 2.5, the third unit in the network is a master. It prevents the audio from the first and second units from being passed down the network chain. Likewise the second master unit in the network will not pass on the audio from the unit before it. The third unit provides system-wide control through a connection to its RS-232 port.

To select a mixer mode

1. Press the front panel **Enter** button and scroll through the menu until System menu is visible. Press **Enter** to select the menu.
2. Scroll through the System menu and select **Mixer Mode**.
3. Select the mixer setting you want to use.
   Repeat for additional units.

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LCD Programming

The PSR1212's front panel is intuitive to operate, thanks to its simple interface: a 2x16 character LCD, menu buttons, and a peak-level LED bar meter. Although most of the PSR1212's features are programmed with G-Ware software (see page 23), the front panel can be used for simple adjustments and meter monitoring.

When power is applied to the PSR1212, the LCD panel will first read INITIALIZING. If an error is displayed, contact technical support. When initialization is complete, "PSR1212" is displayed on the top line and "Unit 0" is displayed on the bottom line.

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

LCD menu tree

The menu tree features five 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.

— Pressing Esc at the top of the tree does nothing.

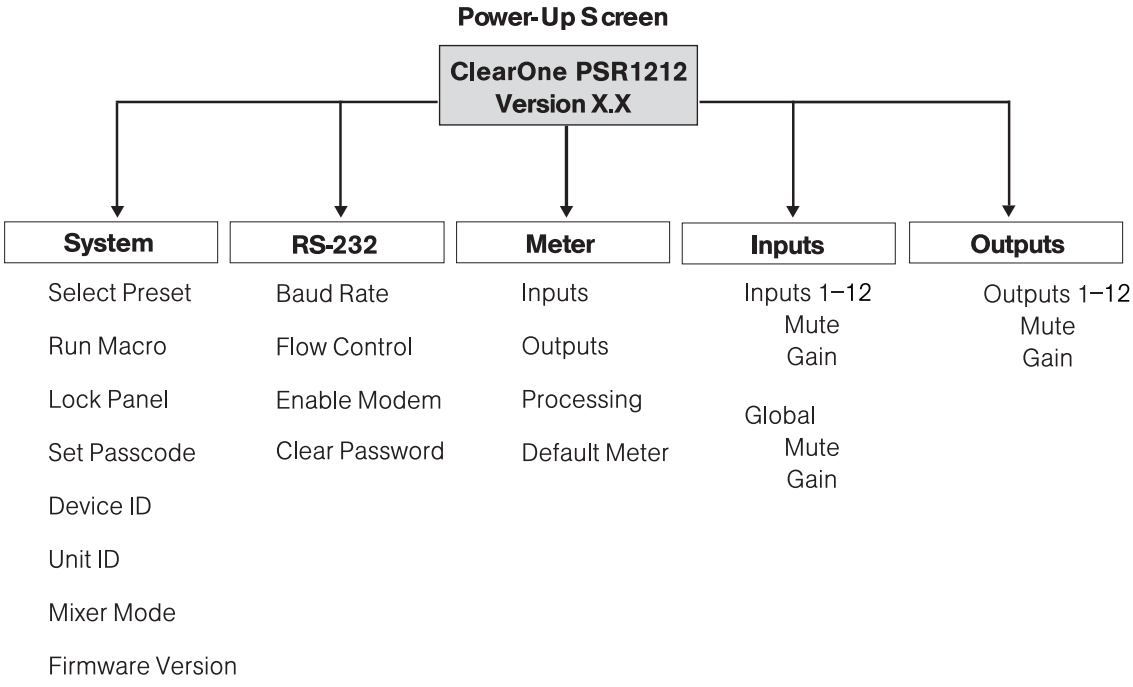


Figure 2.6. LCD menu tree

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The five main menus are: System, RS-232, Meter, Inputs, and Outputs. All submenu items are arranged under these menus. Use the Enter button to select items and the s and tbuttons to scroll through menus and submenus. When the last menu item is reached, the display scrolls back to the beginning of the list. The Esc button allows you to back out of the menus.

To adjust a parameter

1. Scroll to the parameter you want to adjust. Press Enter to select the parameter. The parameter will flash when selected.
2. Adjust the value with the s and tbuttons. As the value is adjusted, the parameter is updated immediately.
3. 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.

System menu

There are eight system-level parameters (see Figure 2.6): Select Preset, Run Macro, Lock Panel, Set Passcode, Device ID, Unit ID, Mixer Mode, and Firmware Version.

Select Preset

The Select Preset menu item allows for one of 32 preprogrammed presets to be selected for PSR1212 use. To select a preset, scroll through the numbered presets (1–32) until the desired preset is visible, then press Enter to run the preset.

Run Macro

The Run Macro menu item allows you to execute a macro. To select a macro, scroll through the numbered macros (1–255) until the desired macro is visible, then press Enter to run the macro.

Lock Panel

The front panel can be locked to prevent unauthorized adjustments to the PSR1212. To lock the front panel, use the s/tbuttons to select Lock Panel from the System menu, and press Enter. Lock Panel selections are Off, On, or On at Timeout. Press Enter to enable your selection.

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To unlock the front panel, attempt to adjust a parameter. The PSR1212 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 ssssEnter.

— 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.

Set Passcode

Once the PSR1212 is unlocked, the passcode can be changed. Before the PSR1212 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 26 for more information.

Device ID

The PSR1212's device ID is set from this menu. There are eight device ID selections to choose from (0–7). Select the network position you want to use. Within a single site, you must assign different device ID numbers for each PSR1212 unit. See Device IDs, page 12.

Device	Type	ID
PSR1212	4	0–7
XAP 800	5	0–7
XAP TH2	6	0–F
XAP 400	7	0–7

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 PSR1212 unit and cannot be changed.

Mixer Mode

This setting allows you to set to master or slave mode. See page 12 for details.

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: Baud Rate, Flow Control, Enable Modem, and Clear Password.

Baud Rate

This parameter allows you to set the PSR1212's baud rate to 9.6kbps, 19.2kbps, 38.4kbps, or 57.6kbps. Default is 38.4kbps. Select the baud rate you want to use, then press Enter.

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— ClearOne recommends that you leave Flow Control enabled.

Flow Control (hardware)

The PSR1212 uses the RTS and CTS pins on the RS-232 port to regulate the transmission and reception of data. You can enable or disable flow control on the front panel of unit and select the flow control type in the Site Properties window of G-Ware (see page 23). If you select On (default) from the front panel menu, select Hardware as the flow control type in the Site Properties window. If you disable flow control on the front panel, select None in the Site Properties window. When None is selected, the PSR1212 ignores flow control, making the connected external control device ensure that data is not lost. Software flow control (Xon/Xoff) is supported by the XAP/PSR units and is used only with a pass-through device, such as a modem.

To avoid communication errors, ClearOne strongly recommends that you connect all DB-9 pins and enable flow control when connecting to a PC.

— The modem initialization string can be set only via the MINIT serial command (see page 113 or the G-Ware software). It cannot be set through the front panel LCD.

Enable Modem

This parameter configures the RS-232 port for connection of a modem. When On is selected, the PSR1212 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 (default) is selected, the password is disabled.

To use the PSR1212 with a modem

1. Match the baud rate of the modem to that of the PSR1212.
2. Turn off Serial Echo on the modem.
3. Turn off the modem's response mode (e.g., no OK messages, ring, etc.).
4. Enable auto-answer on the modem.

— You can set the modem password using the MPASS serial command (see page 114) or in G-Ware (see page 26).

Clear Password

This parameter allows you to erase the serial port (modem) 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: Inputs, Outputs, Processing and Default Meter. The meter selection determines what is shown on the front panel peak-level LED display. When the meter is selected in the LCD menu tree, the LCD displays peak level indications as well. Use the s and tbuttons to select the Meter menu, then scroll through the options and press Enter when you reach the desired option.

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Inputs

Select which input (1–12) you want to monitor on the LCD and LED display. Scroll to the input, then press Enter. The meter displayed is the post-gain meter.

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 want 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 want 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 is Output 12.

The Meter Reference Point diagram on page 19 shows the meter pick-up points (Ⓜ) in the PSR1212 signal path.

Inputs menu

There are two submenus under the Inputs menu: Mute and Gain. To access these submenus you must first select the input. Choose from Inputs 1–12 or Global. Use the s and tbuttons to select the Inputs menu, then scroll through the options and press Enter when you reach the desired option.

Mute

This submenu allows you to turn mute on or off (default) for the selected input.

Gain

This submenu allows you to adjust the gain for the selected input. Use the s and t buttons to increase or decrease gain.

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Outputs menu

There are two submenus under the Outputs menu: Mute and Gain. To access these submenus you must first select the output. Choose from Outputs 1–12. Use the s and tbuttons to select the Outputs menu, then scroll through the options and press Enter when you reach the desired option.

Mute

This submenu allows you to turn mute on or off (default) for the selected output.

Gain

This submenu allows you to adjust the gain for the selected output. Use the s and t buttons to increase or decrease gain.

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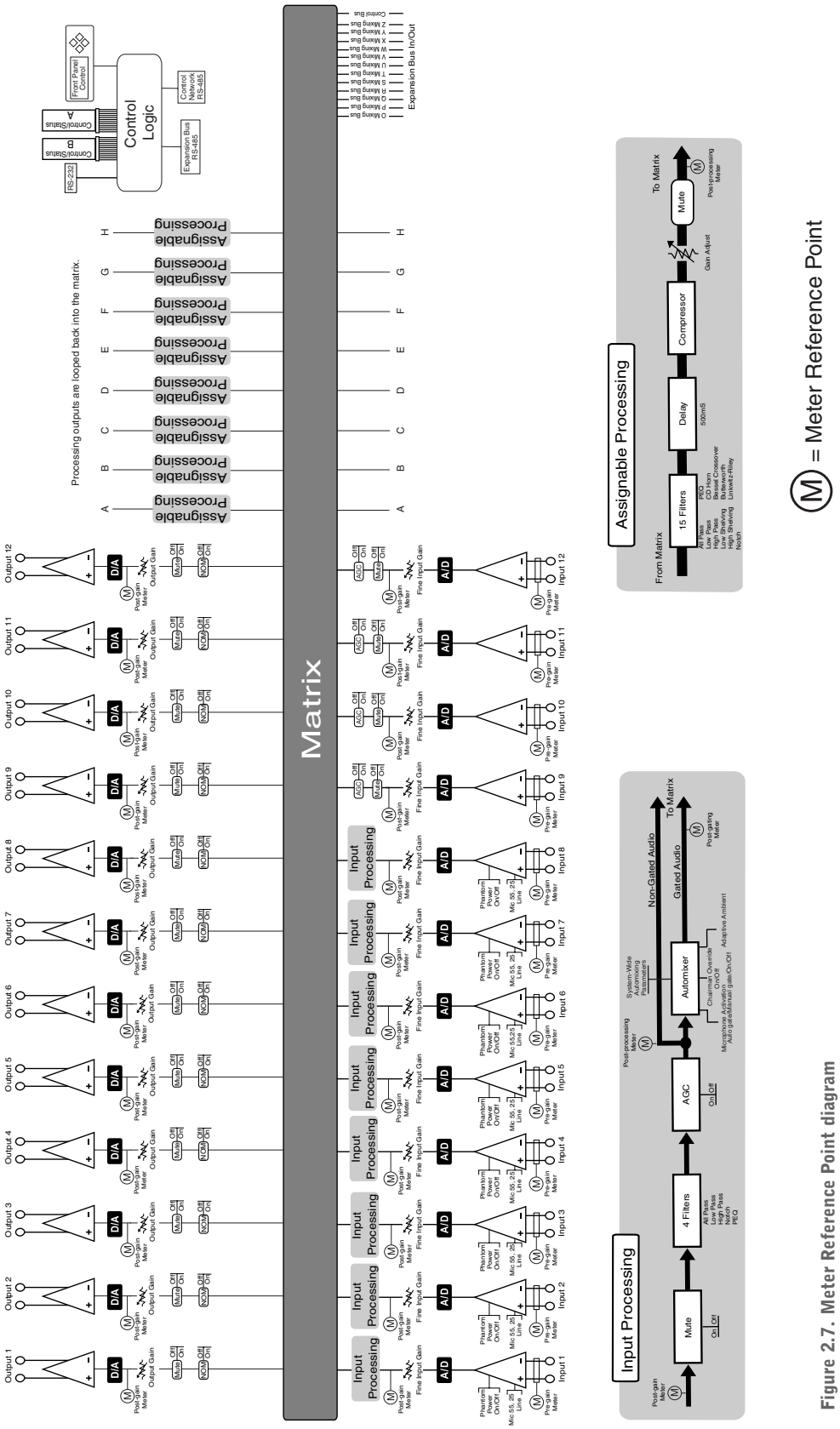
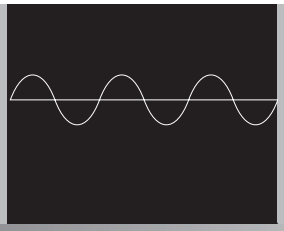


Figure 2.7. Meter Reference Point diagram

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CHAPTER 3: System Configuration



ClearOne's G-Ware software provides an easy interface for configuring and controlling your PSR1212. While some configuration can be done using the front panel LCD menus, G-Ware is required to complete the custom configuration of your audio conferencing system. If you are using the default settings, no configuration is necessary.

This chapter describes how to install G-Ware and create a site. It also describes all configurable parameters of your system. These descriptions are designed to be used as a guide as you make adjustments for your particular installation. It is not necessary to configure all parameters.

G-Ware Requirements

ClearOne's G-Ware software requires the following minimum system configuration:

- Minimum RAM requirement is determined by the operating system

Windows 95 OSR2	64MB
Windows 98	64MB
Windows ME	64MB
Windows NT	64MB
Windows 2000	128MB
Windows XP	256MB

- PII 200MHz (or AMD equal) or higher processor
- 8MB Video Card
- 1024x768 (16 bit) high color monitor
- Internet Explorer 4
- 20MB of free hard disk space
- RS-232 COM port
- CD-ROM drive

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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. You can access the Disk Copy program in the following ways:

- After installing G-Ware, go to the Windows® Start menu, select Programs, then ClearOne G-Ware, then **Create Install Floppy Disks**.

  – or –

- In the G-Ware section of the Audio Video Product CD, click on Install Now. Choose **Create Installation Floppy Disks** from the G-Ware setup menu.

Installing G-Ware

To install G-Ware

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 ClearOne Welcome window opens. Click the **Software** tab and select **G-Ware**.

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

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

3. Select **Install G-Ware** from the setup menu. 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.

5. Follow the onscreen instructions. You must restart your computer once installation is complete.

— 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.



Figure 3.1. Desktop icon

The G-Ware Program Folder is now added to your Start menu. You can start

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Site Setup

Creating a new site

New site files are created through the Site Properties window in G-Ware. A site file contains all information about a particular installation including all unit settings and properties. It also provides G-Ware with the necessary information to communicate with the site hardware using your PC. Open G-Ware by double clicking the desktop icon or by selecting G-Ware from the Start menu.

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

To create a new site

1. Open the Site Properties window by selecting **New Site** from the **File** menu or by clicking the **New Site** button on the toolbar.



Figure 3.2. New Site button

2. In the Site tab, enter the site name, author, company, location, room, and description, using the Tab key or mouse to select each field.

3. Click the **Comm** tab. Select the COM port, baud rate, and flow control you want to use. ClearOne recommends that you leave Flow Control set to Hardware. The Software setting is not supported by PSR/XAP units and is typically used with modems.

— **You can enable flow control using the PSR1212's front panel controls. See page 23.**

4. If you plan to use a modem, select **Use Modem** and enter the phone number, initialization string, and reset string.

5. Click the **Security** tab. Enter the site password in the **Site Password** box. Click **File Access Password** to create a password for the Site File.



Figure 3.3. Site Properties, Site tab

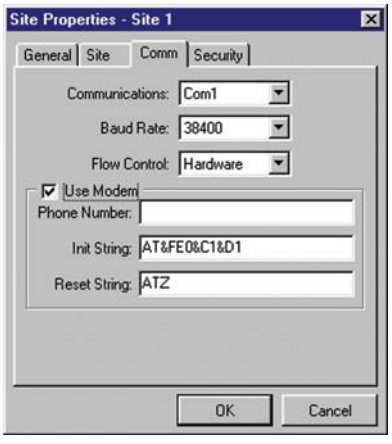


Figure 3.4. Site Properties, Comm tab



Figure 3.5. Site Properties, Security tab

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Adding a PSR1212

You can add a PSR1212(s) to your site file by connecting to your site and using G-Ware to automatically create icons for the detected units. Or, you can work offline and manually add the unit(s) to the site file and connect to the site at a later time. To open an existing site file, click the Open Site File button or select Open Site from the File menu.



Figure 3.6. Open Site File button

To auto-detect units



Figure 3.7. Connect button

1. Click the **Connect** button on the G-Ware toolbar or select **Connect** from the Connect Menu.

2. Choose **Sync to Unit(s)**. G-Ware will automatically create icons for the new units it detects on the network and place them in the Site pane. See Figure 3.11.

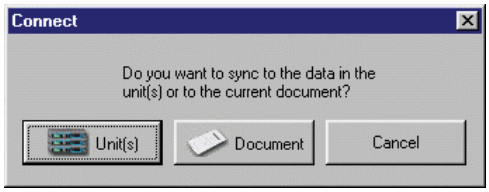


Figure 3.8. Connection choices

Note: When connecting to your site, you can choose to sync to Unit(s) or Document. If you sync to the Unit(s), you will overwrite your G-Ware site file with the current settings of the unit(s). If you sync to the Document, you will overwrite the settings in your units with the settings you have saved in the site file. Choosing to sync to Document will also create icons for any new units.

To manually add units



Figure 3.9. Add Unit to Current Site

1. If you are working offline, click the **Add** button on the G-Ware toolbar. This opens the Add Unit window.

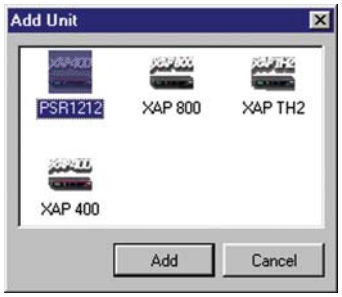


Figure 3.10. Add Unit window

2. Select the PSR1212 icon and click **Add**.

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Configuring Unit Properties

Using the Unit Properties window, you can configure the unit's communication and security properties in addition to general unit properties such as name and type. The Unit Properties window automatically opens when you manually add a unit to the site. You can also right-click the unit icon in the site pane and click Unit Properties.



Figure 3.11. Unit icons in Site Pane with Unit menu displayed

To configure Unit Properties

1. Type a descriptive **Unit Name** in the space provided. The Unit Identification and Firmware Version will be supplied by the unit when a connection is made.

2. If you have already established a connection with the site, the Device ID will be assigned. Otherwise, select the **Device ID** that matches the ID you assigned the unit via the front-panel LCD menu.

   Device IDs ensure the software will sync up with the proper unit when there are multiple PSR1212s on a network.

3. Select the **Unit Type** (default is slave). See page 12 for more information.

4. Select an input, output, or processing channel to be the **Default Meter** on the front panel meter LED when a channel is not specifically selected.

5. Select the **Meter Refresh Rate**, which determines how quickly the PSR1212 updates meter information (default is 100ms; range is 50–1000ms).

6. Click the **Comm** tab. The Baud Rate and Flow Control settings are supplied by the unit when a connection is made. These settings are changed using the Site Properties window (see page 23).

7. Set the **Serial Echo** (default On) and the **Serial Mode** (default Text).

   Serial Echo echos back commands sent over the PSR1212 network. The serial mode determines the format in which the commands return—text or binary. The mode defaults to Binary when G-Ware is connected and to Text when disconnected. Contact technical support for instructions on using Binary mode.

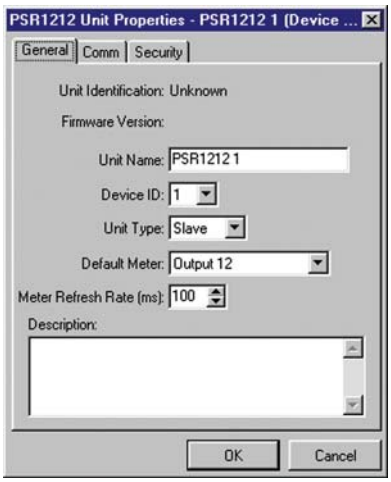


Figure 3.12. Unit Properties, General tab

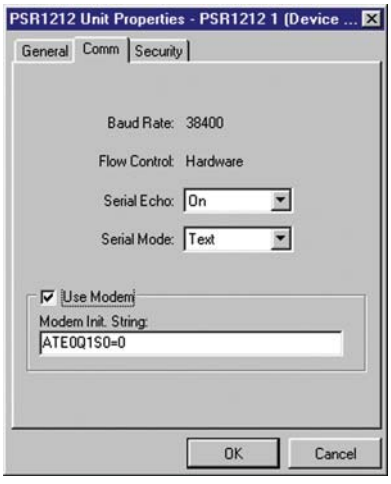


Figure 3.13. Unit Properties Comm tab

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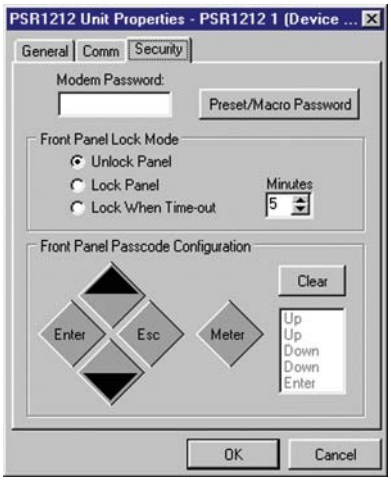


Figure 3.14. Unit Properties Security tab

8. If a modem is connected to the PSR1212 unit, select **Use Modem** and enter the initialization string. Click **OK**; the PSR1212 will initialize the modem.

9. Click the **Security** tab. Create a modem password. The password will be required before control of the system through remote modem access is allowed. The default modem password is a carriage return.

10. Preset/Macro Password enables you to password protect your individual presets and macros. To create a password, click **Preset/Macro Password**.

    Creating a Preset/Macro Password does not automatically lock all presets or macros. Presets are locked in the Preset Configuration Mode. See page 54 for more information. Macros are locked in the Macro Editor. Presets and Macros that are locked do not require the password to be run. However, the password is required to make changes.

11. Select the Front Panel Lock Mode.

    - **Unlock Panel** leaves the front panel controls unlocked.
    - **Lock Panel** locks the front panel immediately.
    - **Lock When Timeout** locks the front panel after it is inactive for the specified number of minutes. The range is from 0–15 minutes; 5 minutes is the default.

    When locked, the front panel can be accessed only after entering the proper passcode (sequence of button presses) or by unlocking the panel using G-Ware.

12. To create a passcode for the front panel, click **Clear** to clear the default sequence. Then click any sequence of the five front panel buttons. Your choices will be displayed in the column on the right. When you are finished, click **OK** to enable your selections.

You will need to repeat these steps for all PSR1212 units on your network.

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G-Ware Screens

G-Ware has three modes: Configuration, Preset, and Macro Recorder. Configuration is used to configure the unit and is the default mode. The Preset and Macro modes are discussed in Chapter 4: Advanced Configuration. You can switch between modes by clicking on the corresponding toolbar button. The current mode is displayed on the status bar.



Figure 3.15. Configuration, Preset, and Macro toolbar buttons.

There are two main configuration screens, the Flow Screen and the Matrix Screen. All unit configuration and audio routing is accessed through these screens.

Flow Screen

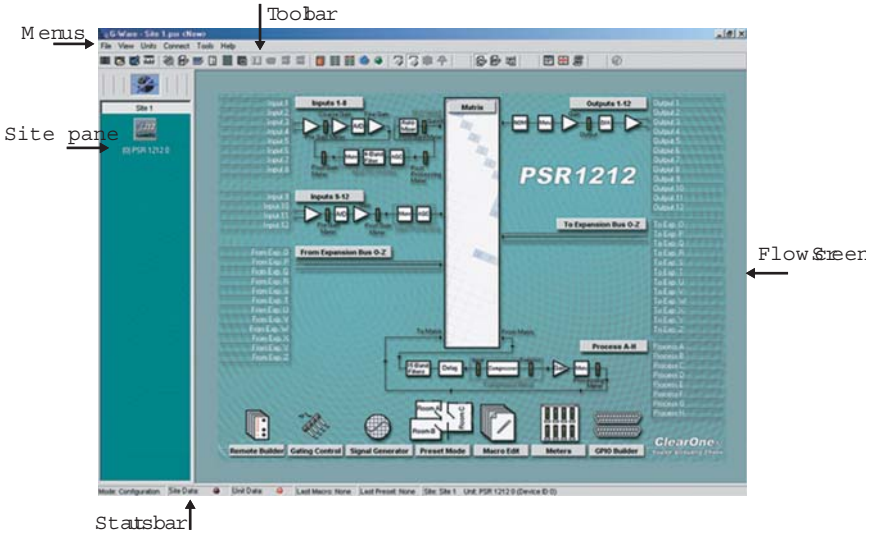


Figure 3.16. G-Ware Flow Screen

The G-Ware Flow Screen is the main access window for G-Ware's features and functions. Using the menus and toolbar at the top of the screen, you can access general configuration windows. Unit specific configurations are accessed through the buttons and labels on the Flow Screen itself. If you have multiple units, click on the unit icon in the Site pane to access that particular unit's Flow Screen.

The Flow Screen shows a detailed block diagram of the path of the audio signal, presenting a graphical explanation of each stage of audio processing. Mic and line inputs, outputs, expansion buses, and processing block configuration windows can all be accessed from this screen. The PSR1212 Flow Screen has seven icons and buttons at the bottom of the Flow Screen which open the following unit programs: Remote Builder, Gating Control, Signal Generator, Preset Mode, Macro Editor, Meters, and GPIO Builder.

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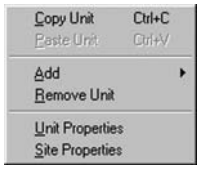


Figure 3.17. Unit shortcut menu



Figure 3.18. Inputs 1–8 shortcut menu

Copying and pasting settings

G-Ware has shortcut menus which appear when you right-click a selection or program window in G-Ware. These shortcut menus provide quick access to options such as Print, Copy, and Paste that pertain only to that selection or screen region. Using the Copy and Paste commands, you can copy and paste unit data such as a single setting or the entire unit's settings depending on which window you are in. For example, if you are in the Inputs 1–8 window, using the shortcut menu will allow you to copy and paste all of the input settings to other inputs. You can also use keyboard shortcuts (Ctrl+C and Ctrl+V) to copy and paste settings. If you want to apply all settings of a selected input to the rest of the inputs, select Apply to All.

Safety Mute



Figure 3.19. Safety Mute

The Safety Mute feature in G-Ware enables you to mute all outputs if feedback or audio problems occur during the configuration process. To use Safety Mute, click the Safety Mute button on the G-Ware toolbar. Then find and correct the cause of the problem. Click the Safety Mute button again to unmute the outputs.

Status bar

There are two status lights at the bottom of the G-Ware window representing the unit and the site. The lights illuminate in various colors to indicate current status.

- **Solid green.** The item being configured is synchronized with the hardware.
- **Solid red.** The information being configured is saved in the software offline.
- **Flashing red.** The information is not saved or there is no hardware connection.
- **Solid yellow.** Communications are pending.
- **Flashing yellow.** 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. See page 73 for more information.

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Matrix Screen

The Matrix Screen is used to route audio to one or more destinations (outputs, expansion bus, or processing). Any number of connections to outputs can be made in the matrix. The Matrix Screen can also be used to access the Input, Output, and Processing configuration windows by clicking on the buttons along the top and left sides of the routing matrix.

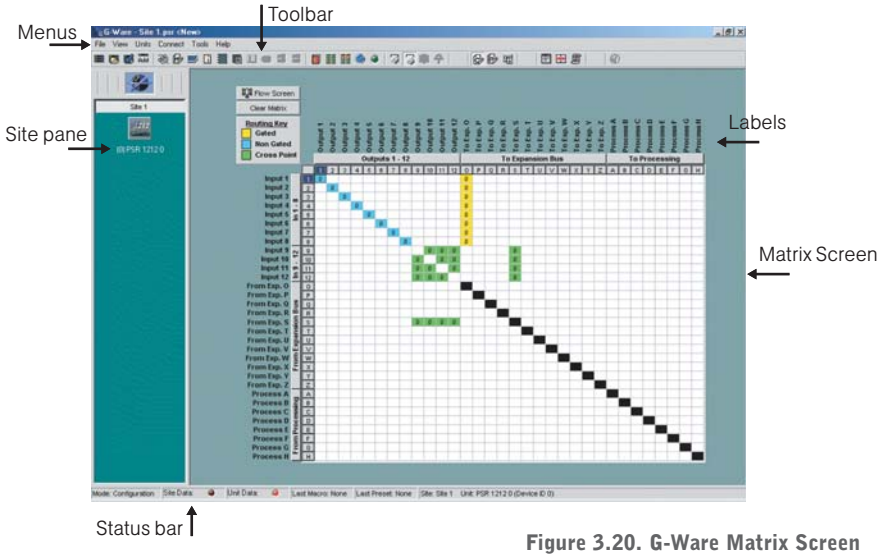


Figure 3.20. G-Ware Matrix Screen

A colored cell in the routing matrix marks the intersection or cross point of the routing from input to output. The color of the cross point cell identifies the input type: yellow = gated mic input, blue = non-gated mic input, and green = all other inputs. The amount of attenuation is also shown in the cross point cell. Black cell are restricted routing paths which prevent E-bus and Processing channels from being routed back to themselves.

The numbers and letters along the top and left side of the matrix show the cross point coordinates. The input number or letter and the output number or letter will be highlighted blue for the selected cross point.

All inputs and outputs are labeled to make it easier to identify channels. Clicking on a label will open a labels window where you can change the channel labels.

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Audio Routing

Audio is routed in the Matrix Screen (see Figure 3.20 on previous page). To access the Matrix Screen, click on the Matrix button on the Flow Screen. To return to the Flow Screen, click the Flow Screen button.

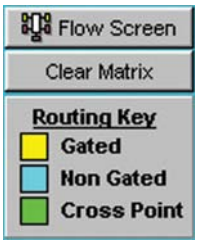


Figure 3.21. Matrix Routing

The PSR1212 routing matrix has 32 possible input sources and 32 output destinations, with level control at each cross point. Any input or combination of inputs can be routed to any output or any combination of outputs. To clear the matrix, click the Clear Matrix button located above the Routing Key.

To route an input, click in the routing matrix at the intersection between the input and the output. A mic input can be designated as gated (yellow) or non-gated (blue) by clicking repeatedly in the cross point. All other input cross points will be colored green.

— If you click the Clear Matrix button, you will clear all cross points in the routing matrix.

Expansion bus 0–Z routing

Audio on any PSR unit in the E-bus network can be placed on the bus or taken off the bus and routed to any destination within the unit. The PSR1212 has 12 digital mix-minus buses:

- 0–R buses are defaulted as the mic mix buses and can communicate the NOM count. Gated mics are default routed to the 0 bus.
- S–Z buses are defaulted as the auxiliary mix buses. They are used to carry auxiliary audio such as that from VCRs and CD players. These buses are used as mic mix buses when NOM count is not required.

Process A–H routing

There are eight processing blocks on the PSR1212 (Processing A–H). With these processing channels, you can apply filters, EQ, or other processing settings to an input or a group of inputs which can then be routed to a single output or group of outputs. See page 47 for more information on processing settings.



Figure 3.22. Cross Point shortcut menu

Cross point attenuation

Right-click on a cross point to open the Cross Point shortcut menu. Click Cross Point Enter to open the Cross Point Attenuation Dial window.

Click the s and tbuttons or click on the green indicator and rotate the dial with the mouse to adjust the attenuation to the desired level (or enter the

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numerical value directly in the window). The attenuation range is from 0 to -60dB. Click Close to exit. Note that the level control you have selected for the cross point is indicated numerically in the cross point cell.

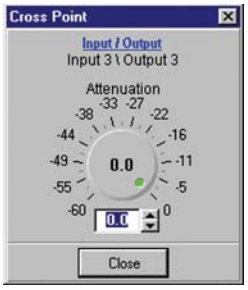


Figure 3.23. Cross Point window

The Cross Point shortcut menu also allows you to copy and paste the current Cross Point configuration, including attenuation, to other cross points. You can copy a single cell or the entire matrix using the shortcut menu options. To copy and paste a cross point to multiple cross points, press Ctrl+C to copy (or right-mouse click). Then press Ctrl+V while holding down the left-mouse button and drag the mouse over the cross points to which you want to copy the settings.

Matrix report

When you finish audio routing, you can print a detailed report of the matrix using the Print Matrix option on the shortcut menu (see Figure 3.22).

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

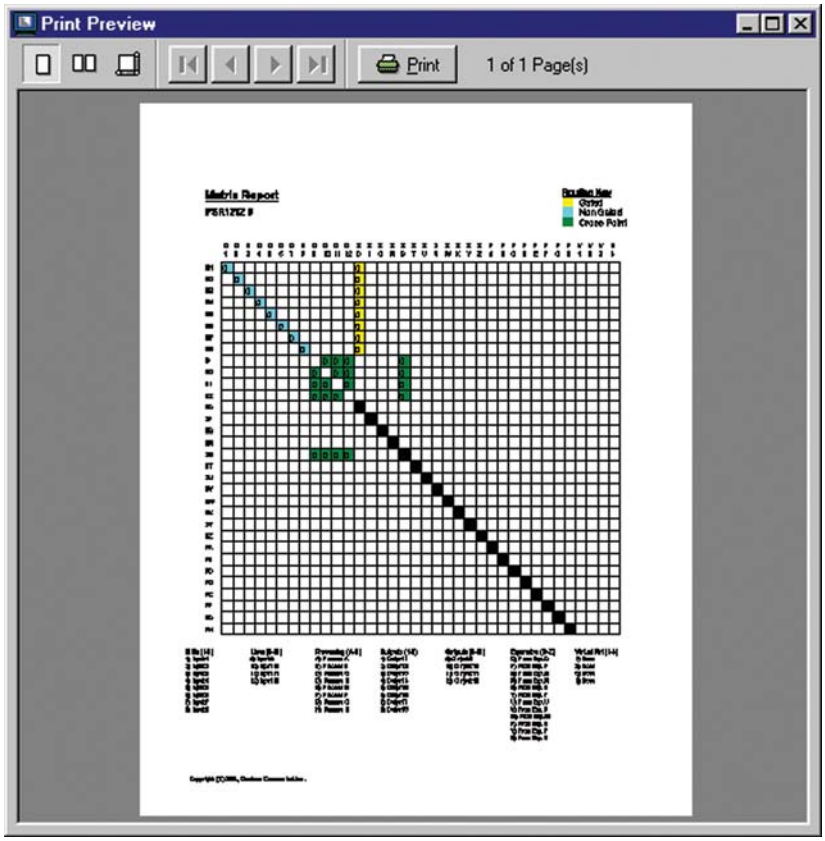


Figure 3.24. Matrix Report window

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Inputs and Outputs

Inputs 1–8

Inputs 1–8 accept either microphone (-55, -25dB) or line level (0dB)

To open the Inputs 1–8 configuration window, click the Inputs 1–8 button on the Flow Screen. The In 1–8 button on the Matrix Screen will also open this window. These inputs are balanced and support both mic and line levels.

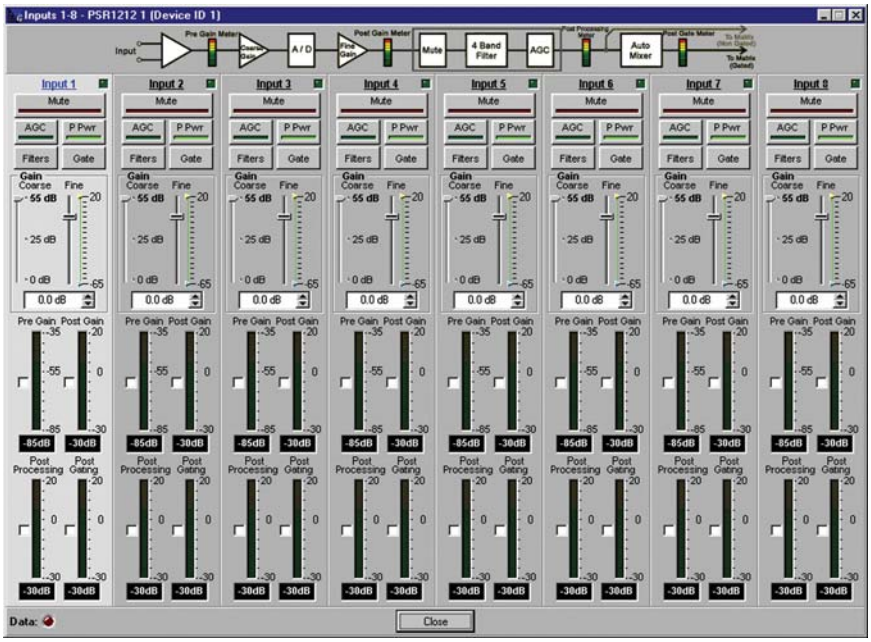


Figure 3.25. Inputs 1–8 configuration window

To select an input channel, click a blank area in the input pane. If you click on the input label, a secondary window will open allowing you to rename the input. The background color for the selected input channel will be light gray. The many configurable properties of mic inputs are defined in this section.

Mute



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

AGC



AGC toggles on and off the automatic gain control. AGC keeps softer and louder input audio to a consistent level. It does this by attempting to adjust the signal to a fixed +4dB target level. If the signal level and the +4dB target level both fall within the AGC's 12dB range, the AGC achieves the +4dB target level. If the signal level is more than 12dB away from the +4dB target level, the AGC sets the level

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12dB closer to the target. AGC occurs after the gain and filter settings in the audio signal path. AGC default is Off.

P Pwr (Phantom Power)



Phantom Power toggles the phantom power on and off. Phantom power is an auxiliary power source to power certain types of microphones. The PSR1212's phantom power voltage is 24VDC. Default is On.

Filters

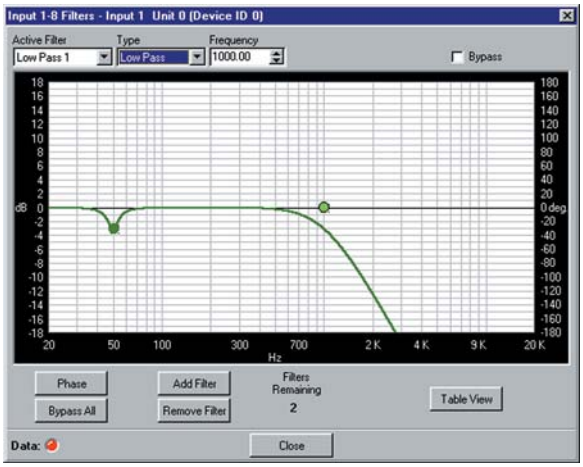


Figure 3.26. Inputs 1–8 Filters window



The Filter button on the selected input in the Inputs 1–8 window opens the Filter Graph setup window. Each mic/line input has four configurable filters that can be used as filters or equalizers. By default, they are not enabled and the filter types are not defined. Below is a description of each feature in the window.

Active Filter

Active Filter selects among filters on the graph. Note that no filters exist until you click Add Filter (see Figure 3.26).

Type

Use the Type list to select from the following input filters: All Pass, High Pass, Low Pass, Notch, and PEQ. G-Ware features other filters which are configured in the Processing section of the software (see page 47).

- **All Pass.** Frequency range is 20Hz to 20kHz with resolution to 1Hz or four places (whichever is larger).
- **High Pass.** Selectable frequency cutoff is 20Hz to 20kHz, in 1Hz increments. Rolloff is 12dB/octave. Level is fixed at 0dB.

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- **Low Pass.** Selectable frequency cutoff is 20Hz to 20kHz in 1Hz increments. Rolloff is 12dB/octave. Level is fixed at 0dB.
- **Notch.** Center frequency range is 20Hz to 20kHz with resolution to 1Hz or four places (whichever is larger). Bandwidth is from .05 to 5 octaves in .01 octave increments. Level is fixed at -80dB.
- **PEQ (parametric equalizer).** Center frequency range is 20Hz to 20kHz with resolution to 1Hz or 4 places (whichever is larger). Bandwidth is .05 to 5 octaves in .01 octave increments. Level range is -15 to +15dB in 0.5dB increments.

Frequency. Use Frequency to select the center frequency (in Hertz) for the filter you are configuring. Range is from 20Hz to 20kHz. Default is 1kHz.

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

Q, or Quality factor. 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 PSR1212.

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

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

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

Bypass All. Bypass All bypasses all filters.

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

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

Table View

Table View toggles between the Graph and the Table views of the Inputs 1-8 Filter window. The Table view displays the selected filter settings in table format. You can configure filters from this view as well as in the graph view.

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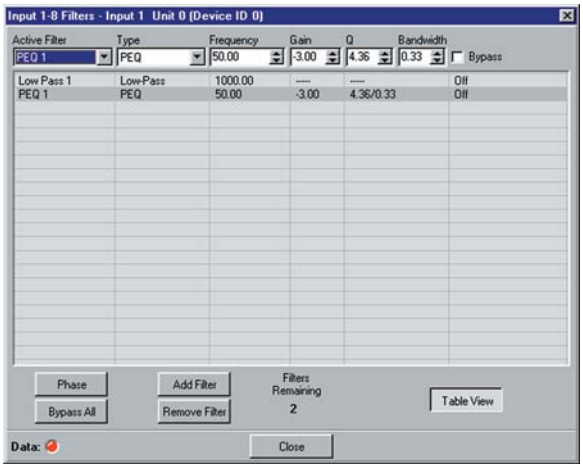


Figure 3.27. Filter Graph window, table view

To configure filters

1. In either the graph or table view, select the filter type from the **Type** list.

   Note that the configurable filter parameters displayed depend on the selected filter type.

2. Click **Add Filter** to add a filter to the graph or table.

3. Configure filter parameters using the previously described lists. If you are using the graph view, you can click on the node and drag it to the location you desire on the graph.

4. Click **Close** to exit.

Gate



The PSR1212 has unique gating parameters which control microphone activation. The Gate button on the selected input in Inputs 1–8 window opens the Gate configuration window where you can establish the gating parameters for the input.

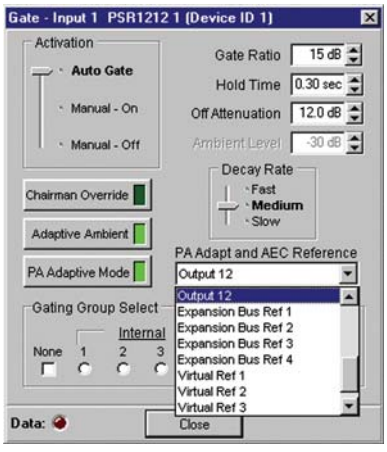


Figure 3.28. Gate window

Activation

There are three mic activation settings: Auto Gate, Manual On, and Manual Off.

- **Auto Gate** determines mic gating based on the input level and gating settings for the gating group the input is assigned to. It contributes to and is affected by all gating group settings such as NOM, chairman override, etc.
- **Manual On** activates the mic, provided it does not exceed max NOM requirements of the gating group that the input is assigned to. It is included in the NOM count.
- **Manual Off** deactivates the mic.

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Chairman Override

Chairman Override provides gating priority for this mic input over any other mic input within the same gating control (mixer) 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

Adaptive Ambient adjusts the ambient reference level as noise and room conditions change. When adaptive ambient is on, the mic channel monitors the ambient noise level on the input and adjusts the ambient level reference automatically. This means that the gate threshold level automatically increases or decreases based on background noise. If Adaptive Ambient is turned off, the input will use the fixed ambient level specified in the Ambient Level box as its gating reference. Default is on.

PA Adaptive Mode

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—provided that their voices are louder than the loudspeaker audio. 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.

Gate Ratio

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

Hold Time determines how long the channel stays gated on after the audio is below the threshold. The hold time range is from .1 to 8.0 seconds. Default is .3 seconds.

Off Attenuation

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

Ambient Level is available only if the Adaptive Ambient feature isn't enabled. Use

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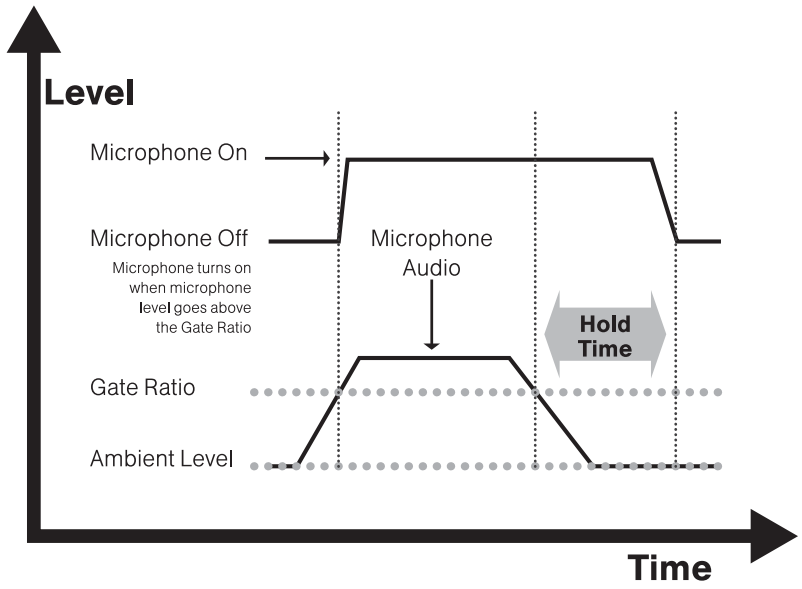


Figure 3.29. PSR1212 automixing gate functions

Ambient Level if you want to specify a fixed reference point rather than one that adjusts for background noise. The range is from -80 to 0dB. Default is Off.

Decay Rate

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

PA Adapt and AEC Reference

When using the PA Adaptive mode, the output that carries this information, i.e. the reference output, must be defined. Select the reference output from the PA Adapt and AEC Reference list. Any one of the 12 outputs, four expansion bus references, or four virtual references can be selected.

If you select an **expansion bus reference**, the Define PA Adapt/AEC Expansion Bus Ref window opens so you can identify which expansion bus output you want to use as the PA reference. You can also open this window from the toolbar.



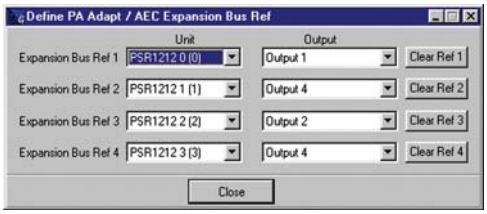


Figure 3.30. PA Adapt/AEC window and toolbar button

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Figure 3.31. Virtual Reference toolbar button

If you select a **virtual reference**, the Virtual Reference window will open. You can also open this window from the G-Ware toolbar.

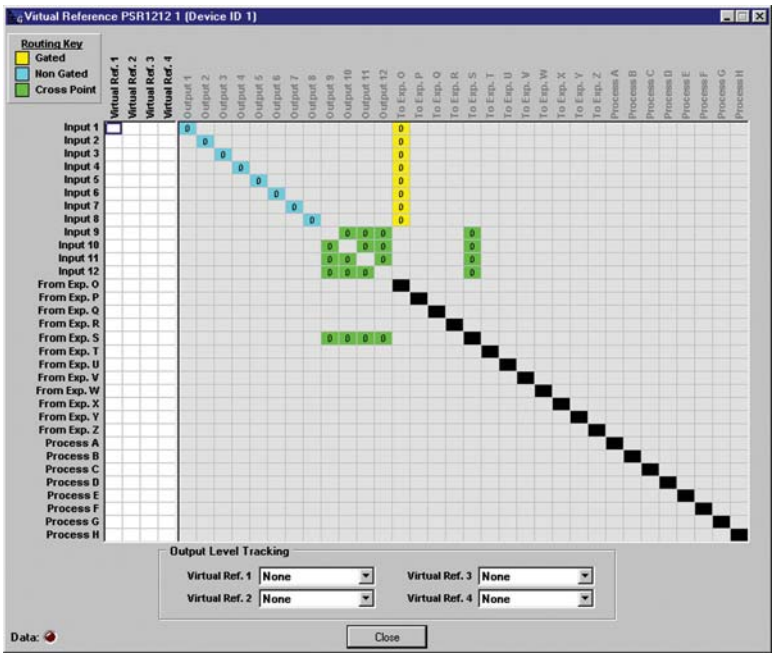


Figure 3.32. Virtual Reference window.

Use this window to select which signals will be included in each of the four Virtual Reference points. The routing matrix portion of this window cannot be edited. Virtual references are used when you need to reference multiple outputs. For example, if you have multiple zones in a boardroom or large meeting room, you might want the mics to reference two zones. By using a virtual reference, PA Adapt will be able to reference both signals. This means you don't need to use a dedicated output to combine signals.

To create a virtual reference

1. Select the input signals you want included in each virtual reference by clicking the cross points.

2. Because AEC requires a physical output reference to track output gain changes, you need to select an output reference for AEC to function properly with a virtual reference. Use the lists at the bottom of the window to select which output you want AEC to use to track gain changes.

3. Click **Close** to exit the window.

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Gating Group Select



Figure 3.33. Gating Group Select pane

In addition to specifying gating characteristics for each mic input, you can assign the inputs to a gating group for greater flexibility and control. When inputs are assigned to a gating group, the gating information from the inputs is used to control how the entire mixer behaves.

The PSR1212 features four internal gating groups (Internal 1–4) and four global gating groups across the expansion bus (Global A–D). Microphones can be used in only one gating group at a time. If an input is not assigned to a gating group, that mic's gate properties are independent and have no effect on any other gating group. When gating groups span two or more units (global gating groups), the settings must be the same for each unit attached to the global gating group. Mic inputs are routed to Global Group A by default.

To assign a gating group

- Select the Internal or Global group the mic input will belong to or select None.

To configure gating group settings

1. Click the **Gating Control** button on the toolbar. This opens the Gating Controls window.



Figure 3.34. Gating Control button



Figure 3.35. Gating Controls window

2. Select the **Max # of Mics** (default is 4).

   This sets the maximum number of microphones that can be gated on at any one time within a gating group. For internal groups, the maximum number of mics can be from 1 to 8. For global groups the maximum number of mics will vary depending on how many mic inputs are assigned to the gating group (up to 64). You can also select All for the global groups—which means all mics could gate on.

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3. Leave **1st Mic Priority** selected (default) to enable this feature; otherwise, clear the selection to disable it. ClearOne recommends leaving this setting on.

   This setting helps maintain maximum audio intelligibility by allowing only one mic to gate on to a participant's voice. 1st Mic Priority allows more than one microphone to be activated at the same time—it simply restricts mics from gating on to the same audio source. It does this by determining the audio level received by all mics when the first mic is gated on. This audio level is then used as the ambient level for the gating group. If this feature is disabled, usually two or more microphones gate on when only one person speaks.

4. Select last-mic operation from the **Last Mic Mode** list. There are two options for Internal groups: Last On and Off. If you are configuring Global groups, you can select from the mic inputs assigned to the Global group in addition to Last On and Off.

   Last On leaves the mic that was activated last full on until another mic input is gated on. The Input setting allows you to select which mic input the PSR1212 leaves on when all mics gate off. In a boardroom or meeting room application, this feature can be used to specify the chairperson's mic as the last mic on. If Off is selected, all mics will gate off when no audio is present.

5. Click the Gating Group label to change the group names.

Gain

The Coarse and Fine sliders on the selected input on the Inputs 1–8 window are used to match the level settings for microphone inputs and to adjust input volume level.

- Set the Coarse gain to 55dB for a mic input, 25dB for active equipment that requires an input between mic and line level, or 0dB for a line level input.
- Use the Fine gain slider to adjust input volume level. You can also enter the level directly in the 0.0dB box.

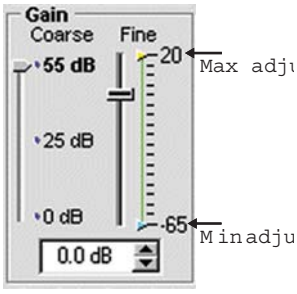


Figure 3.36. Gain adjustment

Min/Max limits

Use the yellow and blue upper and lower limit arrows on the Fine gain scale to create minimum and maximum gain level limits. These limits apply only when using relative gain commands; absolute gain commands can exceed the min and max limits. Min/Max limits apply to all serially connected control devices and prevent users from adjusting levels beyond the min/max levels, provided relative gain

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commands are used.

Optimizing 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, 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 PSR1212 maximizes the signal-to-noise ratio without clipping the signal.

Meters

There are four meters on each mic/line input to assist with setup and level control. Select the meter check box to enable the meter. All input meters are peak-level.

Pre Gain

Pre Gain meter indicates the input's level before gain adjustments. Meter range is from -85 to -35dB when 55dB gain is selected; -55 to -5dB when 25dB gain is selected; and -65 to 20dB when 0dB gain is selected.

Post Gain

Post Gain meter shows the input's level after gain adjustments have been made. Meter range is from -30 to +20dB.

Post Processing

Post Processing meter indicates the level at the gating point after the signal has passed through input processing. It reflects the post-AGC signal. Meter range is from -30 to +20dB.

Post Gating

Post Gating meter shows audio level after it has passed through the gating parameters. Meter range is from -30 to +20dB.

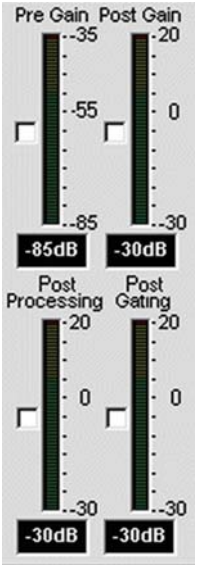


Figure 3.37. Mic input meters

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Inputs 9–12

The PSR1212 supports four line level only inputs for auxiliary audio sources such as VCRs and CD players. To open the Inputs 9–12 configuration window, click the Inputs 9–12 button on the Flow Screen. The In 9–12 button on the Matrix Screen will also open this window. These non-gated inputs are balanced. The nominal input level is 0dBu.

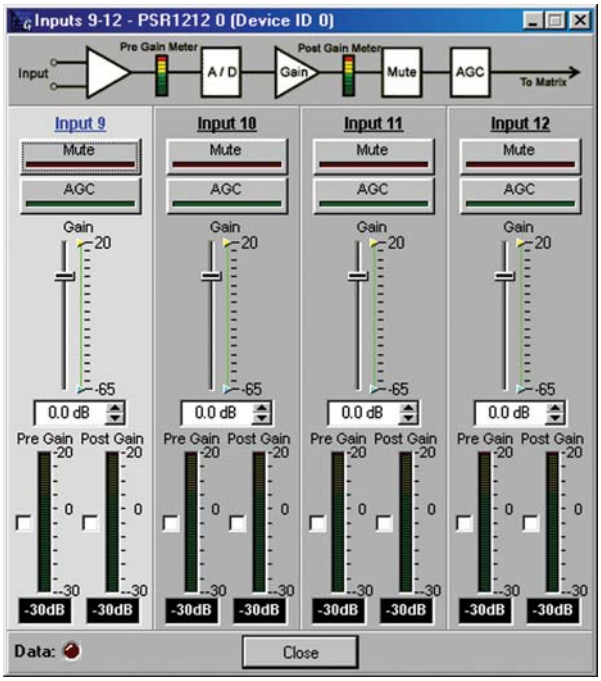


Figure 3.38. Inputs 9–12 Configuration window

To select an input channel, click a blank area in the input pane. If you click on the input label, a secondary window will open allowing you to rename the input. The background color for the selected input channel will be light gray. The configurable properties of these inputs are defined in this section.

Mute



Mute mutes the input channel. The light on the button illuminates red when Mute is activated. Default is off (unmuted).

AGC



AGC toggles on and off the automatic gain control. AGC keeps softer and louder input audio to a consistent level. The button light illuminates green when AGC is enabled.

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Gain

The Gain slider on the selected input in the Inputs 9–12 window is used to adjust input volume level.

- Use the Gain slider to adjust input volume level. You can also enter the level directly in the decibel box below the gain scale.

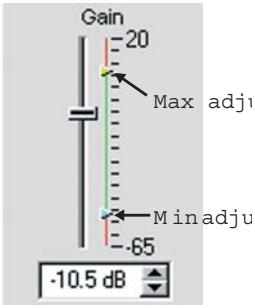


Figure 3.39. Gain adjust on line level input

Min/Max limits

Use the yellow and blue upper and lower limit arrows on the Gain scale to create minimum and maximum gain level limits. These limits apply only when using relative gain commands; absolute gain commands can exceed the min and max limits. Min/Max limits apply to all serially connected control devices and prevent users from adjusting levels beyond the min/max levels, provided relative gain commands are used.

Optimizing 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, 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 Post Gain 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 PSR1212 maximizes the signal-to-noise ratio without clipping the signal.

Meters

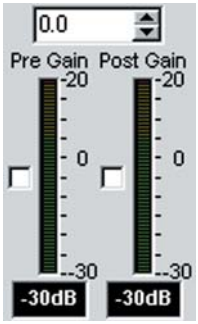


Figure 3.40. Gain meters

Pre Gain

Pre Gain meter indicates the input's level before gain adjustments have been made. Meter range is from -30 to +20dB.

Post Gain

Post Gain meter shows the input's level after gain adjustments have been made. Meter range is from -30 to +20dB.

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Outputs 1–12

The PSR1212 has 12 line level outputs for sending audio to recorders or amplifiers. To open the Outputs 1–12 configuration window, click the Outputs 1–12 button on the Flow Screen. The Outputs 1–12 button on the Matrix Screen will also open this window.

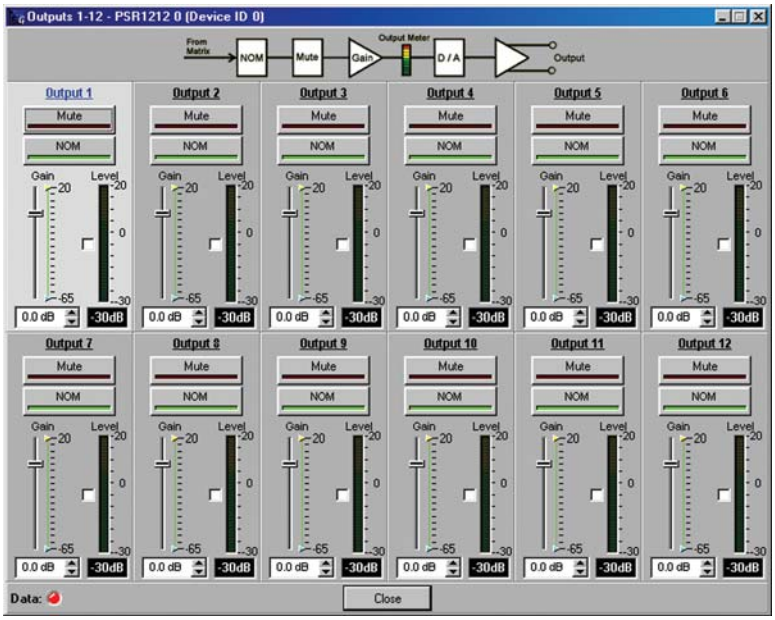


Figure 3.41. Outputs 1-12 configuration window

These line level outputs are balanced. The nominal output level is 0dBu. The outputs can adjust from -65 to 20dBu.

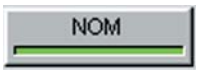
To select an output channel, click a blank area in the output pane. If you click on the output label, a secondary window will open allowing you to rename the output. The background color for the selected output channel will be light gray. The configurable properties of these outputs are defined in this section.

Mute



Mute mutes the output channel. The light on the button illuminates red when Mute is activated. Default is off (unmuted).

NOM



NOM (constant gain) maintains a constant output level as inputs routed to the output are gated on and off. The PSR1212 reduces the output gain (at the output) for mics based on the number of mics gated on and routed to that output. When using NOM over the expansion bus, only the first four audio channels (O, P, Q, and R) support

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passing NOM information. Enable **NOM** if you want to place this output in a constant gain mode. Default is on. When enabled, the NOM button light illuminates green.

Gain

The Gain slider on the selected output in the Outputs 1–12 window is used to adjust output gain level.

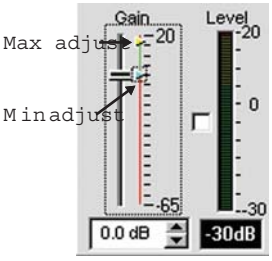


Figure 3.42.
Output gain adjust

- Use the Gain slider to adjust output volume level. You can also enter the level directly in the decibel box. If you select any level below -60dB, the signal will be muted. The Level meter, when enabled, shows the signal level when a signal is present.

Min/Max limits

Use the yellow and blue upper and lower limit arrows on the Gain scale to create minimum and maximum gain level limits. These limits apply only when using relative gain commands; absolute gain commands can exceed the min and max limits. Min/Max limits apply to all serially connected control devices and prevent users from adjusting levels beyond the min/max levels, provided relative gain commands are used.

Optimizing output gain structure

How you adjust an output's gain directly affects sound quality. The optimal output 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 output level properly, place a signal on the output at the maximum level it will generate. Adjust the output gain until the peak level of the input, as shown on the Level 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 PSR1212 maximizes the signal-to-noise ratio without clipping the signal.

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Expansion Buses

— Routing of audio to the expansion buses is done in the Matrix Screen. See page 30. For information on setting up an expansion bus network, see page 11.

From Expansion Bus O–Z

Click the From Expansion Bus O–Z button on the Flow Screen to open the From Expansion Bus Labels window. You can also access this window from the Matrix Screen.

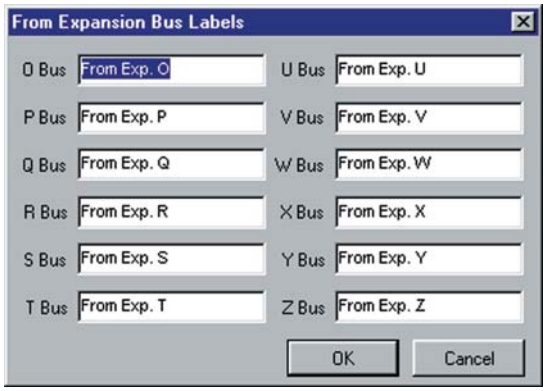


Figure 3.43. From Expansion Bus Labels window

- Enter the names you want to use for each expansion bus, then click OK to save the information and close the window.

To Expansion Bus O–Z

Click the To Expansion Bus O–Z button on the Flow Screen to open the To Expansion Bus Labels window. You can also access this window from the Matrix Screen.

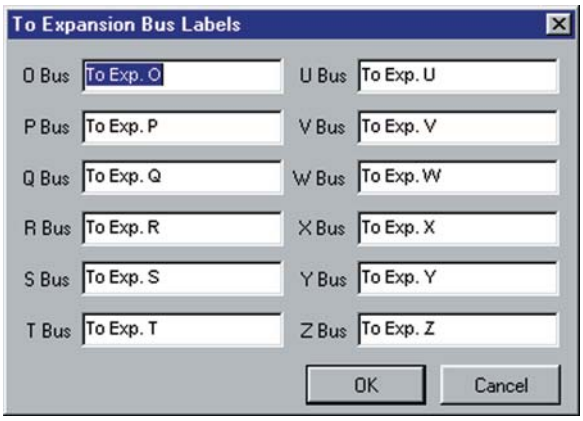


Figure 3.44. To Expansion Bus Labels window

- Enter the names you want to use for each expansion bus, then click OK to save the information and close the window.

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Processing

Processing A–H

There are eight processing blocks in the PSR1212, each with filters, compressors, and delay to provide pinpoint audio configurations. To open the Processing configuration window, click the Processing A–H button on the Flow Screen. The To and From Processing buttons on the Matrix Screen will also open this window.

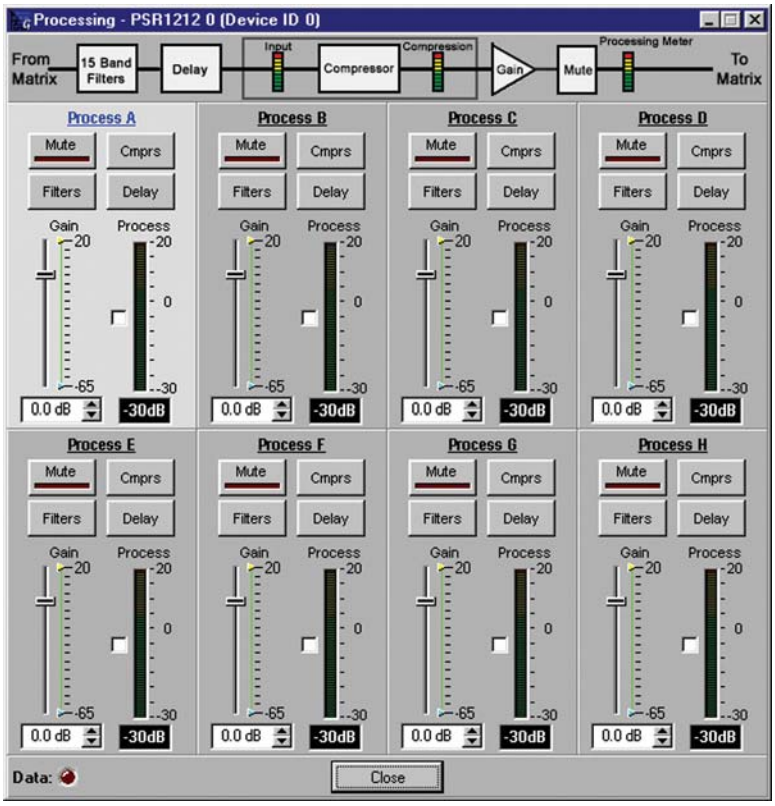


Figure 3.45. Processing window

To select a processing block, click a blank area in the Process pane. If you click on the Process label, a secondary window will open, allowing you to rename the processing block. The background color for the selected processor will be light gray. The configurable properties of these processors are defined in this section.

Mute

Mute mutes the processor. The light on the button illuminates red when Mute is activated. Default is off (unmuted).



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Cmprs (compressor)



Cmprs opens the Compressor Setup window (see Figure 3.46). With the compressor you can change the gain transfer characteristics of the signal path and control the dynamics of a signal.

When the signal exceeds the threshold level, gain reduction occurs at the rate specified by the reduction ratio. The attack time determines how aggressively the compressor reacts to increases in level. The release time controls how aggressively the compressor reacts to reductions in level. Select the Enable Compressor check box to activate the compressor.

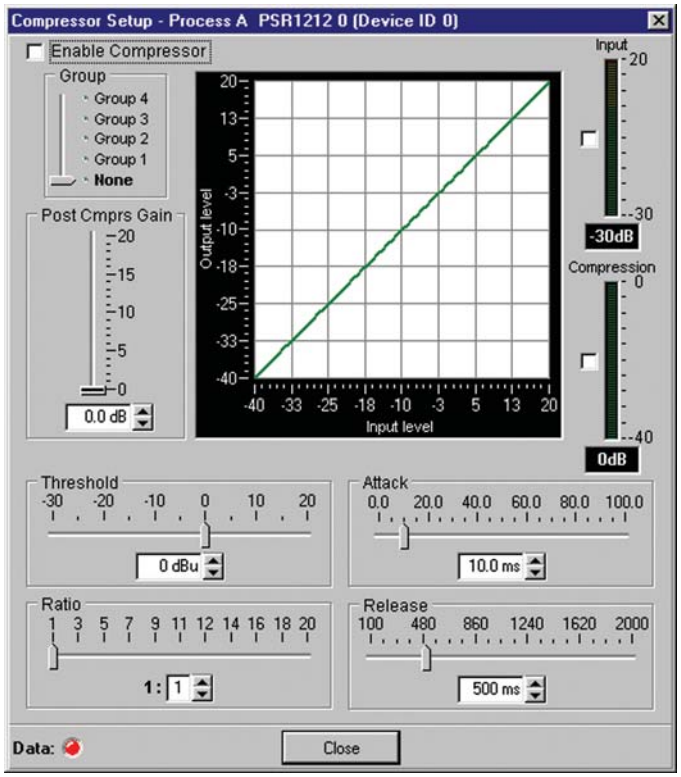


Figure 3.46. Compressor Setup window

Group

— Compressors and compressor groups can be established only within the PSR1212 unit being configured, i.e., they cannot be configured from a single point across multiple units.

Use the slider to assign this compressor to a compressor group. The default is 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, 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 PSR1212 unit; a group cannot use compressors from multiple PSR1212 units.

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Post Compressor Gain Adjust the compressor gain with the gain slider or by using the s and tbuttons. The graph reflects the input/output decibel levels with the gain setting you select.

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

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

Attack Attack determines how quickly compression is enabled. It is calibrated in milliseconds. The range is 0 to 100ms in .5ms steps. Default is 10ms.

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

Input meter This peak meter shows the level of the signal as it enters the compressor.

Compression meter This peak meter shows the instantaneous compression value at a given time.

Filters

The Filter button on the selected Processing channel 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.



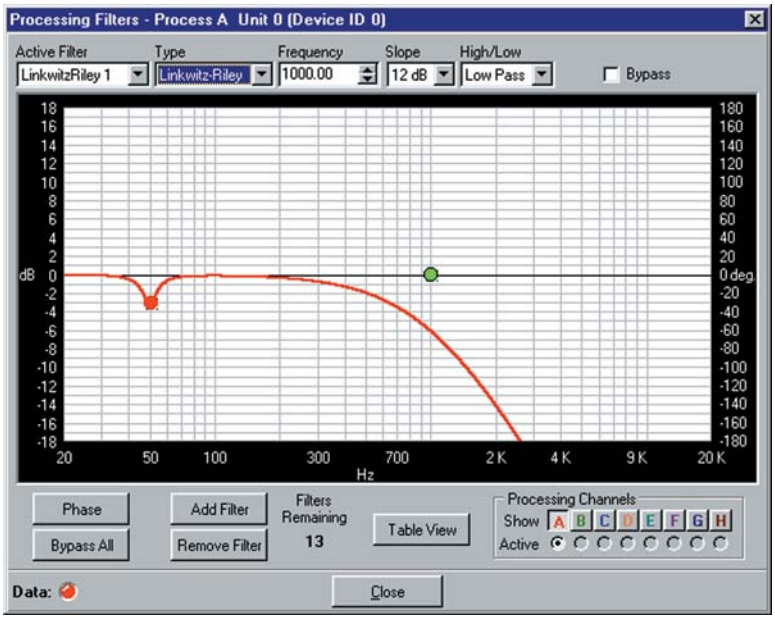


Figure 3.47. Processing Filters window

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The frequency response and phase vs frequency of the total transfer function of all filters is displayed in the window. Each filter can be disabled without affecting the filter settings. All filters can also be disabled using a single command. By default, they are not enabled and the filter types are not defined. Below is a description of each feature in the window.

Active Filter

The Active Filter displays the filter that is applied to the processing channel.

Type

Select the filter type from the Type list. Note that the configurable filter parameters displayed depend on the selected filter type. You can use these parameters 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 want 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

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

Bypass

Bypass All bypasses all filters.

Add Filter

Add Filter adds a filter to the graph.

Remove Filter

This removes the selected filter from the graph.

Table View

Table View toggles between the graph view and the 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

The Processing Channels section 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 want to modify; it appears in bold on the graph.

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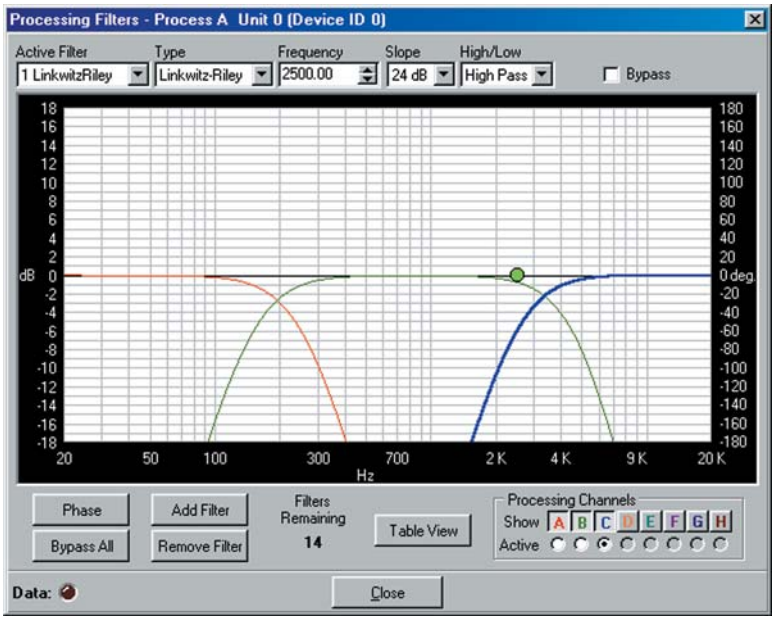


Figure 3.48. Low/Mid/High Loudspeaker Driver configuration

Refer to the figure above. 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.

Delay

Click Delay to open the Delay configuration window. Delay calibrates the amount of signal delay introduced, based on the length (the distance between the source and audience) and temperature you enter.



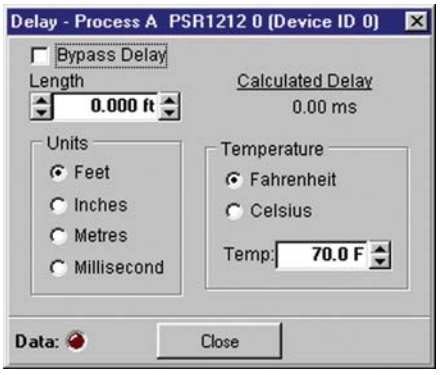


Figure 3.49. Delay window

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. You can set up to 500ms of delay.

— If you don't want delay added to the signal, select the Bypass Delay box.

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

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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 PSR1212. Propagation delay is an example. This delay is caused by operations such as the conversion of the signal between analog and digital formats.

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

Gain

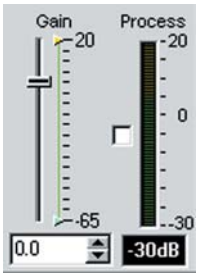


Figure 3.50. Process gain adjust and meter

Gain establishes the gain level for this channel. Select a level between -65 and 20dB. If you select any level below -60dB, the signal will be muted. The **Process** meter, when enabled, shows the signal level when a signal is present.

Min/Max limits

Use the yellow and blue upper and lower limit arrows on the Gain scale to create minimum and maximum gain level limits. These limits apply only when using relative gain commands; absolute gain commands can exceed the min and max limits. Min/Max limits apply to all serially connected control devices and prevent users from adjusting levels beyond the min/max levels, provided relative gain commands are used.

Optimizing process gain structure

How you adjust the processing gain directly affects sound quality. The optimal 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 processing gain level properly, place a signal on the output at the maximum level it will generate. Adjust the gain until the peak level of the input, as shown on the Process 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 PSR1212 maximizes the signal-to-noise ratio without clipping the signal.

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CHAPTER 4: Advanced Configuration

Presets

Overview

For many audio conferencing applications, a great deal of system flexibility is needed to meet the challenges presented by changing meeting or conference room requirements. These requirements might include changes in muting, audio sources, room orientation, or room combining. And ideally, these changes are made instantaneously—without interrupting or affecting any meetings in progress.

Using presets enables you to accommodate these changing room requirements quickly and efficiently. When you create a preset, you are essentially creating a single room configuration option. Presets can be programmed with a variety of routing, level, gating, delay, filter, and compression settings to meet specific application requirements. You can change every unit parameter or a select few depending on your room needs. PSR1212 presets are unique in the sense that they operate independently of other presets in the unit. When a preset is run, only the selected inputs/outputs are changed—all other settings in other presets remain unchanged and are not reset. This means you can change audio routing and configuration settings in a room without affecting settings in other rooms (such as gain). You can create up to 32 presets for the PSR1212.

Presets can be executed in a variety of different ways including the Execute Preset utility in G-Ware, the front panel controls of the PSR1212, RS-232 external control devices, RS-485 control devices (ClearOne Control Panel and XAP IR Remote), logic in/out, and contact closure. You can also create macros which can run multiple presets. These options give you tremendous flexibility when designing your installations and will be described in more detail in this chapter.

— Presets are used only within the local PSR1212 unit. However, if a preset is part of a macro, it can be activated on a networked PSR1212 unit.

Creating Presets

Presets are created in G-Ware using the Preset mode. To switch to Preset Mode, click the Preset Mode button on the toolbar or the Preset Mode button on the Flow Screen. The Preset Mode window (see Figure 4.2) consists of the Preset Configuration Pane (left side of the window), the G-Ware menus and toolbar (although most options are not available because they do not apply to presets), and the Preset Matrix Screen. There is no Flow Screen in Preset Mode since all configurable settings can be accessed from the Matrix Screen.



Figure 4.1. Preset Mode toolbar button

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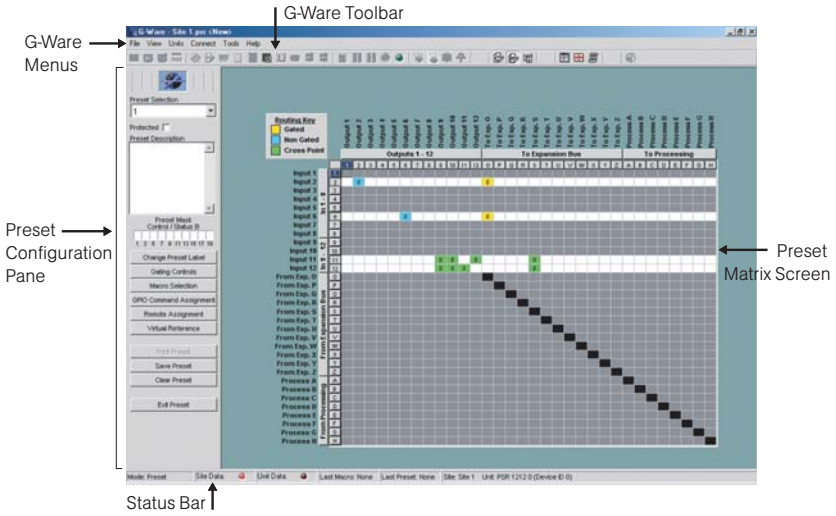


Figure 4.2. Preset Mode

Matrix Screen

The Matrix Screen in the Preset Mode is very similar to the Matrix Screen in Configuration Mode. All Input, Output, and Processing windows can be accessed by clicking on their respective buttons. You can also create custom labels by clicking on the current labels.

The routing matrix is grayed out because no routing changes have been made. When you click on the number or letter of an input, the row becomes active and you can change the routing, gate status, and cross point attenuation. All parameters for the selected input will be saved in the preset including routing. Also, the parameters for any outputs with a cross point in the selected row will be saved. Input rows that are not selected remain gray, or masked, and will not be affected when the preset is run.

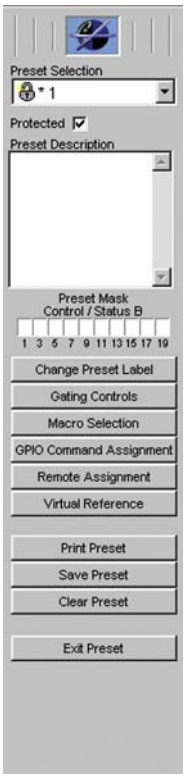


Figure 4.3. Preset Configuration pane

Preset Configuration pane

The Preset Configuration pane is used to create preset properties such as number, name, and description as well as create custom preset controls, assign the preset to a gating group, select macros, and configure virtual references.

Preset Selection. Use the Preset Selection list to assign a number to the preset you are creating or to select an existing preset for editing.

Protected. Select the Protected check box to lock your preset. Locked presets are indicated by a padlock icon. Presets that are locked do not require the password to be run. However, the password is required to make changes to the preset. The preset password is set in the Unit Properties window; see page 26.

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Preset Description. Use the Preset Description box for entering information about the preset. This description is stored in the site file, not the unit.

Preset Mask Control/Status B. With Preset Mask Control Status B you can require an active high (H) or active low (L) contact on a control pin (1–19 odd numbers) or combination of several contacts in order to run the preset.

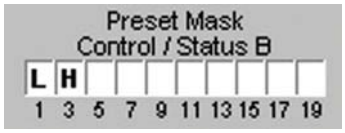


Figure 4.4. Preset Mask Control/Status B

A typical use for Preset Mask Control Status B is a room combining application which uses automatic partitions with sensors or triggers which set the pin to high (H) when the partition is closed and to low (L) when the partition is open. For example, if pin 1 is connected to the first partition and Pin 3 is connected to the second partition, then the Preset Mask Control Status B settings shown in Figure 4.4 will activate the preset when the first partition is open and the second partition is closed.

Change Preset Label. Change Preset Label opens the Change Preset Labels window, where you can create a short description (label) for the preset.

Gating Controls. The Gating Controls button opens the Gating Controls window, where you can select and configure gating groups for this preset. See page 39 for more information about gating groups.

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 want to use with this preset, then click OK to save changes. See page 61 for more information about creating macros.

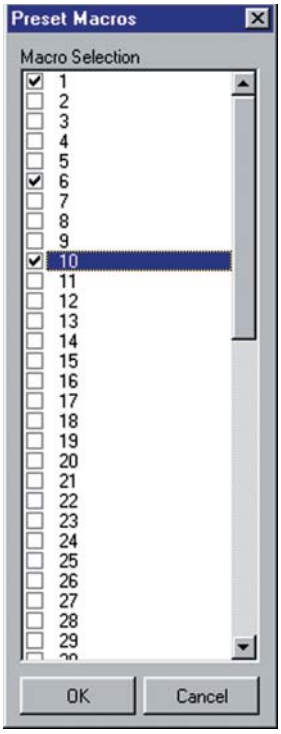


Figure 4.5. Preset Macros Window

GPIO Command Assignment. This opens the GPIO Builder window. With the GPIO builder, you can configure pin assignments for the Control/Status port A. The Use in Preset option is available only when you open the GPIO Builder from the Preset mode and allows you to create customized pin assignments for each preset. If you open GPIO Builder from the toolbar while in Configuration Mode, or from the Flow Screen, you will not have the Use in Preset option. See Chapter 6: Control for instructions on configuring pin assignments.

Remote Assignment. This opens the Remote Builder window. With the Remote builder, you can configure the XAP IR Remote Control and the ClearOne Control Panels. The Use in Preset selection box is available only when you open the Remote Builder from the Preset Mode and allows you to create customized control for the current preset. If you open Remote Builder from the toolbar while in Configuration Mode, or from the Flow Screen, you will not have the Use in Preset option. See Chapter 6: Control for instructions on configuring the XAP IR Remote.

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Virtual Reference. The Virtual Reference button opens the preset Virtual Reference window. Using the Virtual Reference window, you can select which signals will be used by the four Virtual Reference points in this preset configuration. The only input rows which will be shown in this window are the input rows which are active in the Preset Matrix Screen. The routing matrix (right pane) in this window is read-only. Use the Virtual Reference portion of the window to select input channels for Virtual Refs. 1–4.

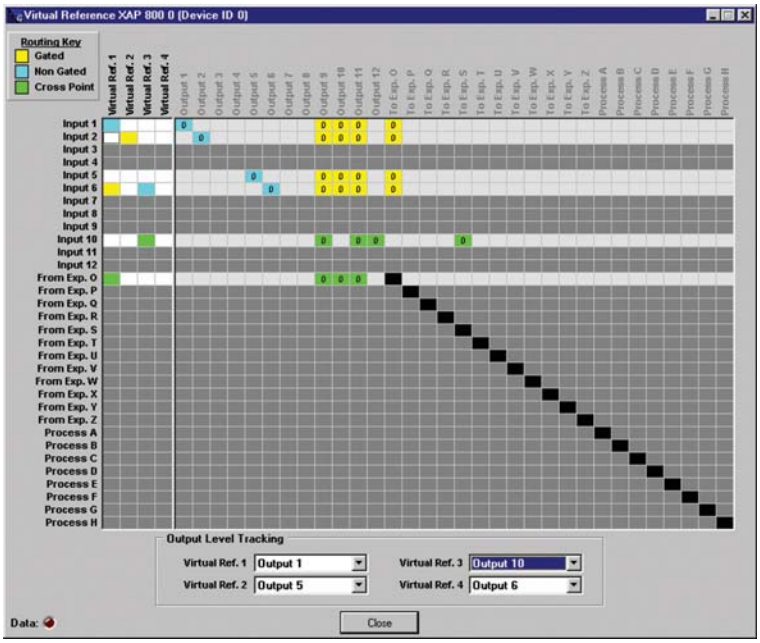


Figure 4.6. Assigning virtual references to the preset

As with the standard (non-preset) Virtual Reference configuration, you will need to select an output from the Output Level Tracking lists for each Virtual Reference you configure. See page 38 for more information on creating Virtual References.

Print Preset. Print Preset opens a Print Preview window and allows you to print a copy of your preset settings. The preset must be saved before it can be printed.

Save Preset. Saves the current preset.

Clear Preset. Clears current preset settings.

Exit Preset. Returns you to the Matrix screen in the Configuration mode.

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To create a preset

1. From the **Preset Selection** list, select the number of the preset you will be configuring. Enter a description of the preset in the Preset Description box.
2. If you want to password protect this preset, click **Protected**. See page 26 for information on creating the preset password.
3. Configure the routing matrix and make cross point attenuation adjustments.
4. Configure input, output, and processing channel settings as needed. See Chapter 3: System Configuration for specific instructions on unit settings.
5. Click **Gating Controls** to set up gating parameters for the preset.
6. Make GPIO or Remote assignments as needed.
7. Click **Virtual Reference** if you need to create Virtual References specific to the preset.
8. When you have finished configuring the preset, click **Save Preset** to save the settings. Click **Exit Preset** to exit Preset Mode.

Storage space

In a realistic preset configuration scenario, it is highly unlikely that you would reach the storage capacity of the unit. In the event that 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.

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Running presets

Presets can be run from G-Ware or the front panel controls on the PSR1212. You can also program external control devices (such as AMX or Crestron, ClearOne Control Panels, XAP IR Remote, and GPIO devices) or use macros to run presets. See Chapter 6: Control for more information on creating custom control.

To run a preset using G-Ware



Figure 4.7. Execute Preset toolbar button

1. Select the **Execute Preset** button on the G-Ware toolbar.
2. Select the preset you want to execute from the **Preset** list.

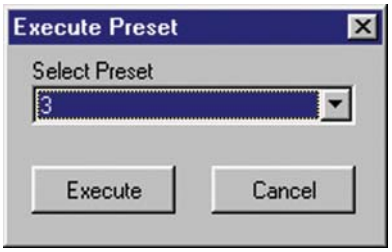


Figure 4.8. Execute Preset window

3. Click **Execute** to run the preset and close the window.

To run a preset using front panel control

1. From the System Menu, scroll to **Select Preset** and press **Enter**.
2. Scroll to the preset number you want to run and press **Enter**.

Running multiple presets simultaneously

To run multiple presets at the same time, you need to create macros (see page 61). A macro is a series of commands which can be executed from G-Ware or by using any external control device. Typically you will create a macro for each configuration or group of presets you want to run at the same time. This ability to run multiple presets is critical in applications such as room combining. However, not only do you need to be able to run multiple presets simultaneously, you also need to be able to change presets without affecting other presets.

— It is also possible to assign states to presets when creating Remote Panel, serial, or GPIO control. However, unless you create macros, you will be able to run only one preset at a time.

In order for this to happen, the system needs to know which presets have been run and shouldn't be rerun and which ones are ready to run. You supply the system with this information by setting the state (or flag) of the preset when creating the command line in the macro. The three options are:

0 = to set the state to off
1 = to execute the preset and set the state to on
2 = to execute the preset and set the state to off

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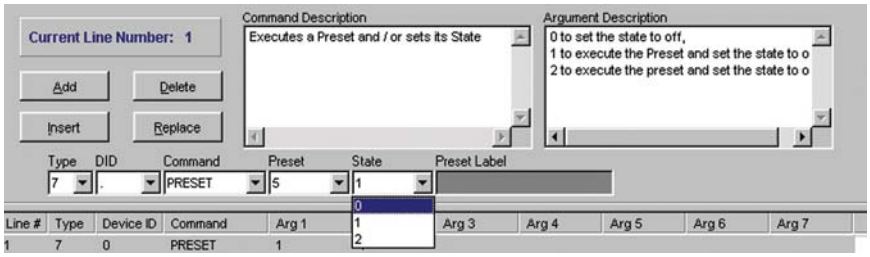


Figure 4.9. Assigning a state to a preset command in the Macro Editor

If a preset is flagged as "On," nothing will happen when the preset is executed again because the system knows it has already been run. This prevents any manual adjustments that are made during the course of the meeting (gain, muting, etc.) from being lost.

Room combining example

In the room combining scenario depicted in Figure 4.10, there are four possible room configurations using six presets (P1–P6). In order to change configurations without disturbing meetings in progress, a macro must be created for each configuration that tells the system what to do with each of the six presets.

— You can also create a macro to set all preset flags to 0 which ensures all presets are ready to run again.

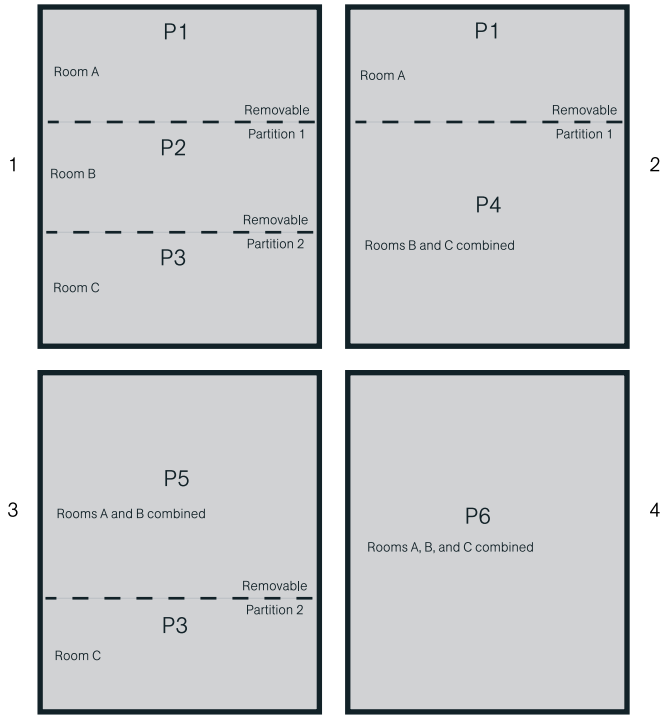


Figure 4.10. Room combining diagram

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Device	Type	ID
PSR1212	4	0–7
XAP 800	5	0–7
XAP TH2	6	0–F
XAP 400	7	0–7

The four macros (one for each configuration) are set up as follows:

Configuration 1

Type	DID	Command	Preset	State
4	0	Preset	1	1
4	0	Preset	2	1
4	0	Preset	3	1
4	0	Preset	4	0
4	0	Preset	5	0
4	0	Preset	6	0

Configuration 2

Type	DID	Command	Preset	State
4	0	Preset	1	1
4	0	Preset	2	0
4	0	Preset	3	0
4	0	Preset	4	1
4	0	Preset	5	0
4	0	Preset	6	0

Configuration 3

Type	DID	Command	Preset	State
4	0	Preset	1	0
4	0	Preset	2	0
4	0	Preset	3	1
4	0	Preset	4	0
4	0	Preset	5	1
4	0	Preset	6	0

Configuration 4

Type	DID	Command	Preset	State
4	0	Preset	1	0
4	0	Preset	2	0
4	0	Preset	3	0
4	0	Preset	4	0
4	0	Preset	5	0
4	0	Preset	6	1

When the room is in Configuration 1, running the Configuration 2 macro will change the presets to the following states:

- P1 does not change because the flag is already set (1)
- P2 and P3 clear their states (0) so they can be run
- P4 runs and sets its state to on (1) which prevents other presets from rerunning it
- P5 and P6 clear their states (0) so they can be run

When the room is in Configuration 3, running the Configuration 1 macro will change the presets to the following states:

- P1 and P2 run and set their state to on (1) which prevents other presets from rerunning them
- P3 does not change because the flag is already set (1)
- P4, P5, and P6 clear their states (0) so they can be run

For more detailed information on creating macros, see the Macros section on the next page.

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Macros

A macro is a series of commands which can be run from G-Ware, the front panel controls, or by using any external control device. Macros streamline the operation of the PSR1212, allowing you to make quick configuration changes and, as previously discussed, making it possible to execute multiple presets simultaneously (see pages 58–60). Macros can also contain commands that are executed on other XAP units. See pages 95–96 for a list of commands which can be used in macros.

The PSR1212 is designed to support up to 255 macros, with an average of 150 command lines each. In the unlikely event that you exceed G-Ware's capacity, you will be notified with a warning that indicates the command line at which memory is exceeded.

Creating macros

There are two ways to create macros in G-Ware: the Macro Recorder, which records your onscreen selections, and the Macro Editor, which allows you to directly create command lines. The Macro Editor is also used to edit macros created using the Macro Recorder.

To create a macro using Macro Recorder

1. Click the **Macro Recorder** button on the G-Ware toolbar. The Macro Record window opens and the mode is changed to Macro on the status bar.



Figure 4.11. Macro Recorder toolbar button

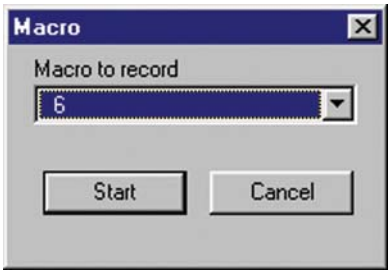


Figure 4.12. Macro Record start window



Figure 4.13. Macro Record stop window

— When you select an existing macro as the macro to record, the new recording is appended to the end of the existing macro.

2. Select the macro number from the Macro to Record list, then click **Start**.
3. Make any routing and input/output configuration changes (such as gain adjustments, mute, etc.) to be included in the macro. Make these changes the same way you made changes in Configuration mode (see Chapter 3: System Configuration for more information).
4. Click **Stop** in the Macro Record window in the upper right-hand corner of the screen. This stops the macro recording and opens the Macro Editor

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To create a macro using Macro Editor



Figure 4.14.
Macro Editor button

1. Click the **Macro Editor** button in the G-Ware toolbar to open the Macro Editor.

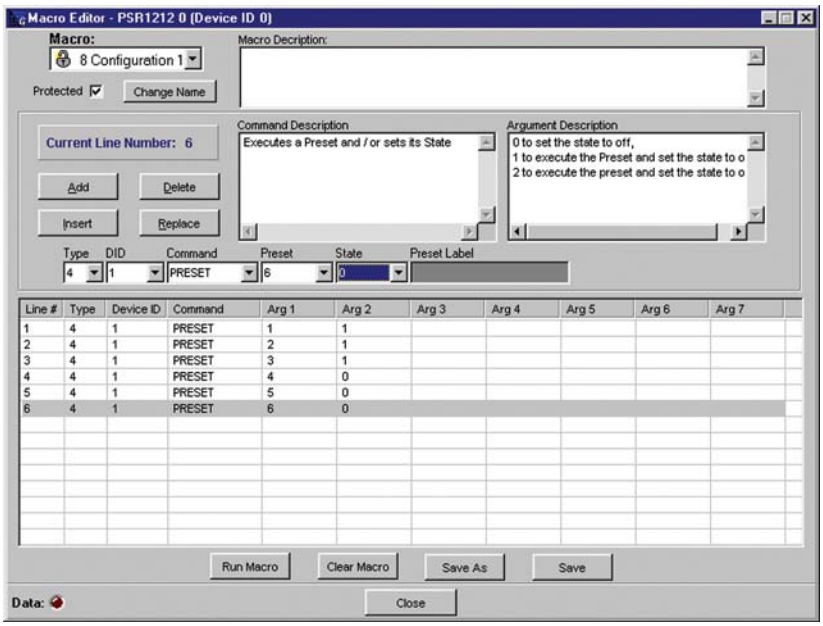


Figure 4.15. Macro Editor window

2. Select the **Macro** (from 1 to 255) you are creating from the Macro list. Numbers that are already assigned to macros will be marked with an asterisk.

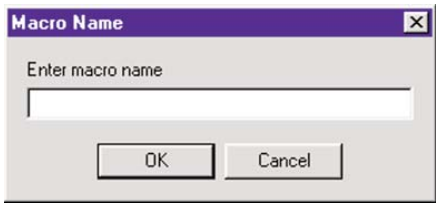


Figure 4.16 Macro Name window

3. Select the **Protected** check box to lock your macro. Locked macros are indicated by a padlock icon. Macros that are locked do not require the password to be run. However, the password is required to make changes to the macro. The macro password is the same as the preset password and is set in the Unit Properties window; see page 26.

4. Click **Change Name** to create a more descriptive name for the macro which is displayed in addition to the macro number (limit 20 characters).

5. Type any notes pertaining to the macro in the Macro Description box.

6. Select the **Device Type** and **ID** from their respective lists.

Device	Type	ID
PSR1212	4	0–7
XAP 800	5	0–7
XAP TH2	6	0–F
XAP 400	7	0–7

7. Select the **Command** from the Command list. When you select a command, a description of it appears in the Command Description box.

8. Select the command parameters from the argument lists. The parameters that are available depend on the command selected. When you select an argument, a description of it appears in the Argument Description box.

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9. Click **Add** to place the command into the macro. The command line now appears in the command line table.

   You can now create another command line for the macro or save the completed macro.

Editing macros

With the Macro Editor, you can add, edit, or remove command lines in the macro. If you used the Macro Recorder to create a macro, the Macro Editor opens automatically. Otherwise, click the Macro Editor toolbar button.

To edit a macro

1. Select the macro from the **Macro** list.
2. Click **Change Name** to edit the macro label.
3. Double-click the command line you want to edit. The Current Line Number displays the selected command line.
4. Make changes to the command or arguments by selecting options from the drop-down lists.
5. Click **Replace** to overwrite the old command line with the new changes.
6. Click **Save** or **Save As** to save the macro.

To delete a macro

- Click **Clear Macro** to delete the entire macro.
- Click **Delete** to delete the selected command line.

To add or insert a command line

- Click **Add** to place the current command line into the next available row in the command line table.
- Click **Insert** to insert the current command line into the row directly above the currently selected command line in the table.

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Running macros

Macros can be run from G-Ware or the front panel controls on the PSR1212. You can also run a macro using external control devices (see Chapter 6: Control for more information).

To run a macro using G-Ware



Figure 4.17. Run Macro toolbar button

1. Select the **Run Macro** button on the G-Ware toolbar.
2. Select the macro from the **Select Macro** list.

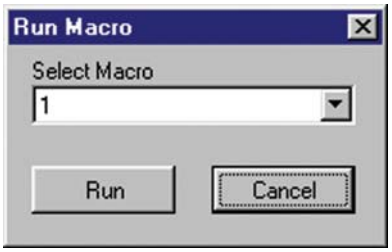


Figure 4.18. Run Macro window

3. Click **Run** to run the macro and close the window.

To run a macro using front panel control

1. From the System Menu, scroll to **Select Macro** and press **Enter**.
2. Scroll to the number of the macro you want to run and press **Enter**.

To run a macro using the Select panel or GPIO

- Use the macro command. See Chapter 6: Control for more details.

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CHAPTER 5: Operation

G-Ware features several tools designed to assist you as you install your PSR1212 Digital Matrix Mixer including Signal Generator, Document Compare, Print Reports, Copy and Paste, and Message Log. G-Ware also provides Gate Views and Meters so you can quickly monitor or troubleshoot your system. This chapter describes how to use these utility programs and monitoring views in G-Ware.

Utilities

Signal Generator



Figure 5.1. Signal Generator Button

The Signal Generator window allows you to generate test audio signals to check signal paths, gain settings, etc. The Signal Generator can generate pink noise, white noise, and tone.

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

- **Pink Noise.** Pink noise is 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.** White noise is an audio test signal which is distributed evenly throughout a given frequency range.
- **Tone.** Selecting Tone activates the tone configuration portion of the window. The tone is a sine wave with less than .03% distortion.

The test signals created by the signal generator are assigned to a particular input; this allows you to verify the operation of the processor settings you have selected.

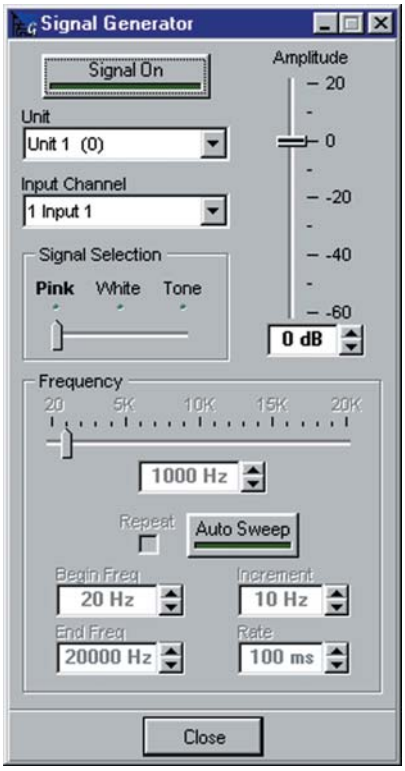


Figure 5.2. Signal Generator window

To use pink or white noise

1. Select the PSR1212 **Unit** and **Input Channel** you want to use.
2. Use the **Amplitude** control to select the amplitude (volume) of the signal you want to use. The amplitude range is from -60 to +20dB. Default is 0dB.
3. Select **Pink** (default) or **White**.
4 Click **Signal On** to generate the noise signal on the selected input. Click Signal On again to terminate the noise signal.

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To use tone

1. Select the PSR1212 **Unit** and **Input Channel** the signal will be generated on.
2. Select **Tone.**
3. Using the **Frequency** slider, select a specific tone frequency. You can also enter the frequency in the box directly below the Frequency slider.

   – or –

   Use the **Auto Sweep** button to sweep a range of frequencies. Select the **Begin Frequency**, the **End Frequency**, the **Increment**, and the **Rate**.

   Auto Sweep provides the ability to move the frequency of the tone generator from a low frequency to a high frequency at a specified rate. Click Auto Sweep to begin the frequency sweep. The Frequency slide control and readout reflect the progress of the Auto Sweep. Auto Sweep stops at the last frequency in the sweep range upon completion of the sweep. Or you can click the button at any time to stop the sweep. Sweep range is 20Hz–20kHz; increment range is 10Hz–20kHz, and the rate range is 10ms–2000ms. Default is 100ms. Select **Repeat** if you want Auto Sweep to continue in cycles.
4. Click **Signal On** to generate the tone. Click **Signal On** again to terminate the noise signal.

Document Compare Utility



Figure 5.3. Compare Utility button



Figure 5.4. You can also open the Document Compare Utility from the Start menu

The Document Compare Utility samples and compares configuration information between two sites. These can exist as actual sites/units or as documents (site files) that are saved to your computer. It shows you where differences are between the two and allows you to copy and paste settings between them. Open the Compare Utility by clicking on the Compare Utility toolbar button.

To compare site files

1. Click the **Browse** button at the right of the Site 1 Document Name. This opens the Open window.
2. Select the first site file you want to compare. To compare the settings in a connected site, click on the G-Ware Connections tab and select the unit or site.
3. When you have made a selection, click **Refresh** to update the status of the unit, site, or connection. Then click **Open**.

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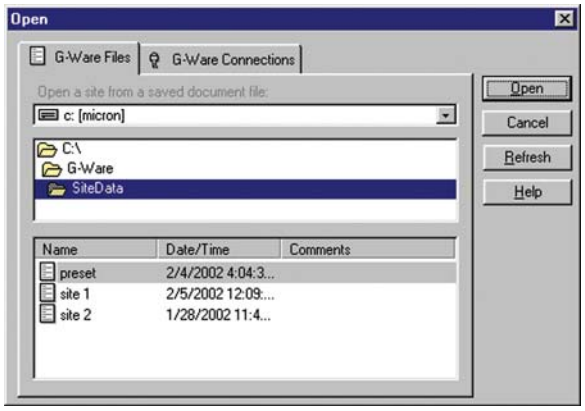


Figure 5.5. Open window

4. Repeat steps 1–3 to select the second second unit, site, or file for comparison.

   When you click Open, 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.

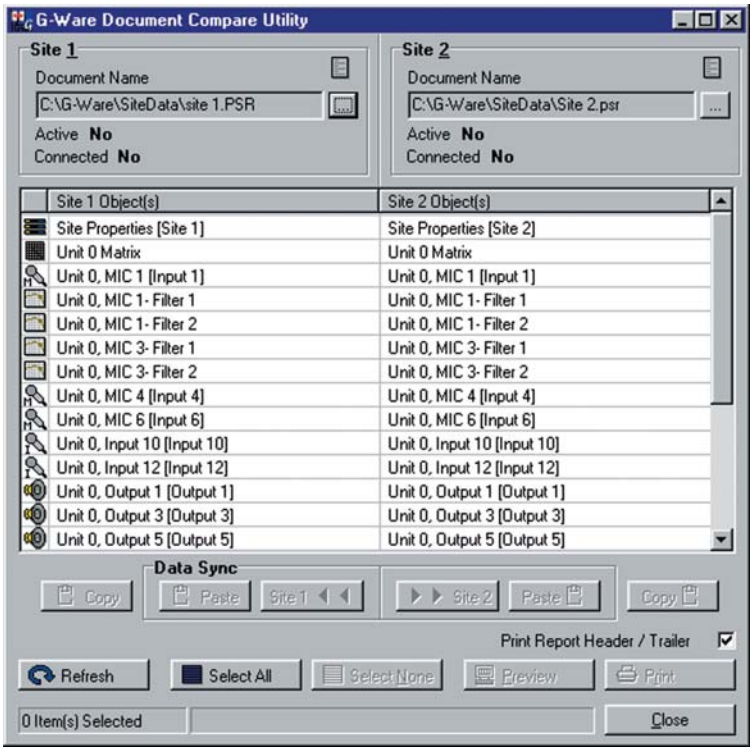


Figure 5.6. Document Compare Utility showing two PSR1212 sites. The items listed in the Site 1 and Site 2 columns show where the differences are found.

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

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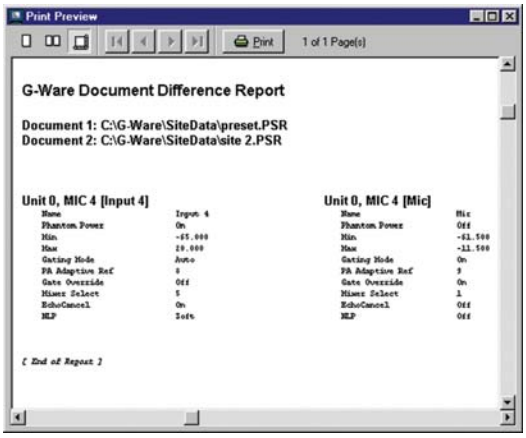


Figure 5.7. Print Preview window

6. 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.

7. When you finish viewing or printing the report, close the **Print Preview** window to return to the Document Compare Utility.

Copying settings

When two sites are compared, the **Copy to Site, Paste,** and **Copy** buttons at the bottom of the window become selectable.

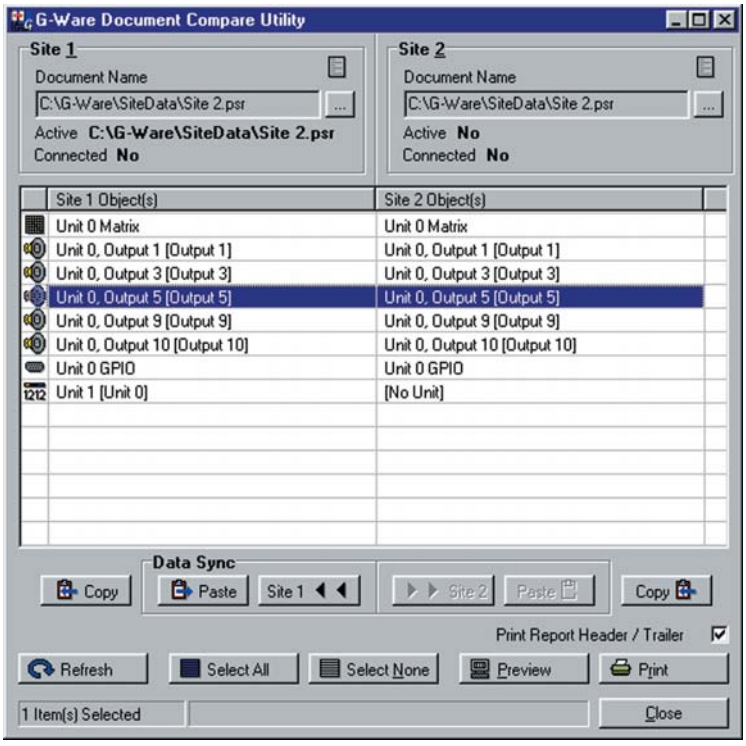


Figure 5.8. Document Compare window

— Print the comparison for a detailed list of differences between the two sites.

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In the window shown in Figure 5.8, clicking the **Site 1** button transfers the selected settings from a line selected in the Site 2 column to the corresponding line in the Site 1 column. 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.

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

- 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.

Print Reports

The Print Reports utility allows you to print a variety of configuration reports. To open the Print Reports utility, select Print from the File menu.

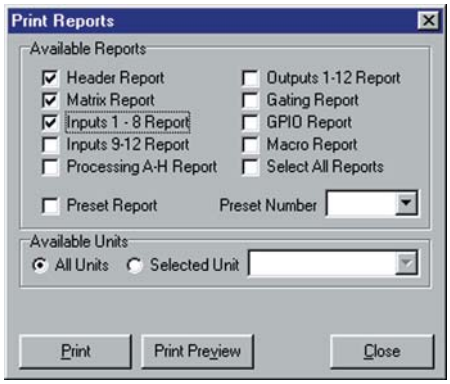


Figure 5.9. Print Reports window

Select the item(s) you want to print, then click Print Preview to view a preview of the report or Print to print the report(s). For example, you could select Inputs 1–8 Report to print a copy of the settings you've established for Inputs 1–8.

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— **Make a note of the baud rate selected in the Site Properties window before opening the G-Ware Firmware Utility.**

GFirm Firmware Utility

To make it easy to upgrade your unit when new firmware enhancements are released, G-Ware features a built-in firmware upgrade utility. Before upgrading firmware, save a copy of your site files and verify that the flow control setting on the unit (RS-232 menu on front panel LCD) is enabled. Also, make sure flow control is set to Hardware in the G-Ware (Site Properties).



Figure 5.10. GFirm button

To upgrade firmware

1. Connect the unit to the PC using a straight-through 9-pin serial cable.

2. Open the G-Ware Firmware Utility by clicking on the **GFirm** toolbar button.

— **If the GFirm toolbar button is not on the G-Ware toolbar, you need to install the current G-Ware release. You can download G-Ware from the ClearOne web site at www.clearone.com.**

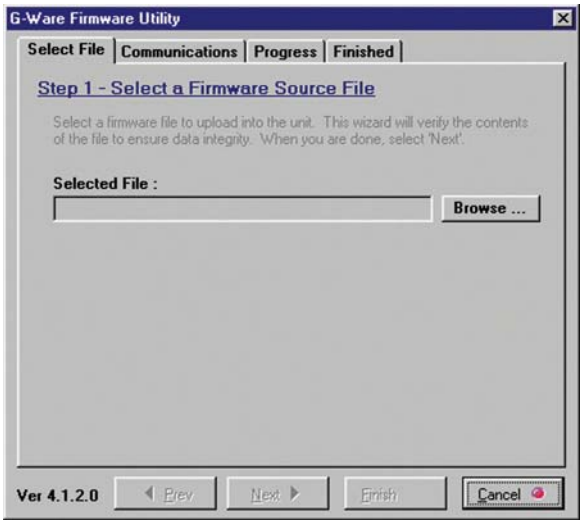


Figure 5.11. G-Ware Firmware Utility

3. Click **Browse** to access a list of available firmware updates. Select the file that matches the type of unit you are upgrading and click Open.

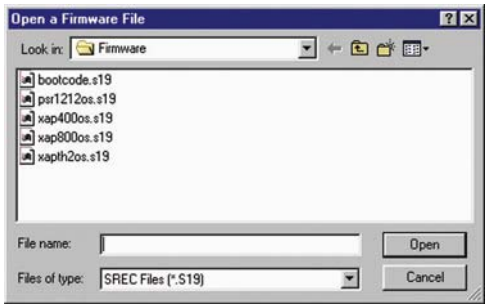


Figure 5.12. Available firmware files

4. The selected firmware file will self verify and display the message Verified, **OK**. If the file information matches your unit and the file is verified, click **Next** to advance to the Communications tab.

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5. Select the **PC COM port** you are using for the upgrade. Select the **Baud Rate** that matches the baud rate in the Site Properties window.

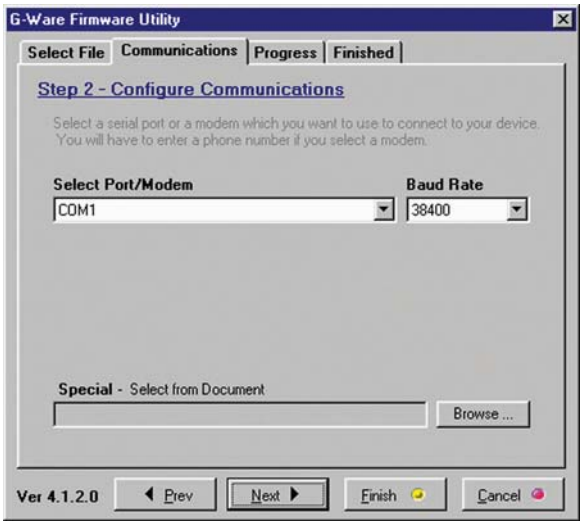


Figure 5.13. Selecting baud rate

6. Click **Next**. If the upgrade requires you to save your site files, a warning message will display. You will need to exit the G-Ware Firmware Utility, sync to the units with G-Ware, and save the site file(s) if you have not done so already. Click **Yes, Continue** to begin firmware upload.

7. The Progress tab displays the status of the firmware upgrade. Do not interrupt the procedure. The process begins by erasing flash sectors and then uploading the firmware file.

8. If the process fails, do not use the Start Over button. Close GFirm instead and verify you are using a 9-pin straight-through serial cable and that baud rate and flow control are configured properly. Restart GFirm and return to step one of this procedure.

9. When the upgrade is complete, the Finished tab appears. Check the front panel of unit and verify the proper firmware version for your unit is now displayed. If you have no more units to upgrade, you can now close the GFirm program.

   If updating multiple units, move the RS-232 connection to the next unit and click **Start Over** to continue.

10. After upgrading the firmware on all units, restore expansion bus connections.

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G-Ware Switcher

G-Ware Switcher allows you to alternate between different G-Ware software versions that are installed on the same PC.

For example, if you need to upgrade the firmware on your ClearOne unit(s), G-Ware Switcher allows you to easily switch to an earlier version of G-Ware (such as 3.5), save the site files, and then switch to a later version (4.5) to upgrade the firmware.

Prior to the 4.5 release, the older version of G-Ware had to be removed before the new version could be installed.

Before using G-Ware Switcher

1. Load G-Ware 3.5 in a unique directory (path), as shown in Figure 5.14. Do not select "Add Icon to Desktop" when you are asked if you want to do so during the installation process.

2. Load G-Ware 4.5 in a unique directory (path), as shown in Figure 5.15. Do not select "Add Icon to Desktop" when you are asked if you want to do so during the installation process.

   You are now ready to use G-Ware Switcher.

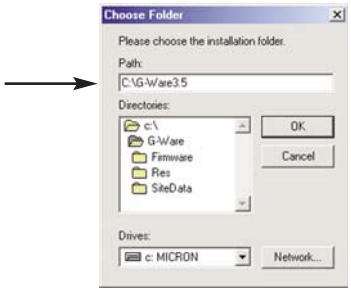


Figure 5.14. Creating a directory for G-Ware 3.5

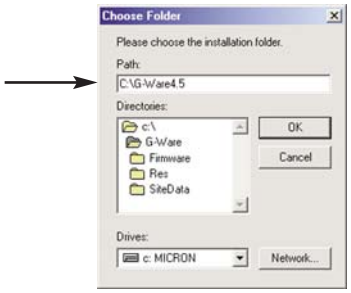


Figure 5.15. Creating a directory for G-Ware 4.5

To use G-Ware Switcher

1. Launch G-Ware Switcher from the Windows Start menu by selecting Programs, ClearOne G-Ware, and then G-Ware Switcher.

   The G-Ware Switcher Utility Window opens. G-Ware Switcher automatically searches the PC for G-Ware software versions and displays them in the window.

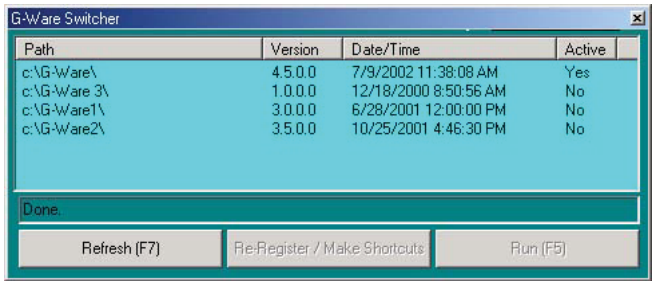


Figure 5.16. G-Ware Switcher

2. Select the G-Ware version you want to use.

3. If the selected G-Ware version is active (if **Yes** appears in the Active column for the version you want to run), click **Run** to launch it.

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If the selected G-Ware version is not active, click **Re-Register/Make Shortcuts** to re-register the version so it becomes active. Then click **Run** to launch it.

If you have installed a version of G-Ware that isn't displayed in the G-Ware Switcher window, click **Refresh**. G-Ware Switcher will locate and display the version.

Copy and paste settings

In most areas of G-Ware software, right-clicking the mouse opens a shortcut menu. The options on this menu change depending on which window you are in.

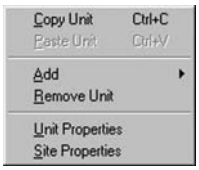


Figure 5.17. Shortcut menu

The version shown at left allows you to copy and paste unit settings and sites, as well as add or remove units from a site. For example, to copy unit settings to another unit, place the cursor in the blue area of the Flow Screen, then right-click to open the shortcut menu. Select Copy Unit. Next, open (or add) another unit, then right-click in the Flow Screen of the second unit to open the shortcut menu. lick Paste Unit. This copies the properties of the first unit to the second one.

Message Log

The Message Log automatically displays messages indicating successful or unsuccessful site connection and all errors. To open the Message Log, click the Message Log toolbar button or select Message Log from the Tools menu.



Figure 5.18. Message Log button

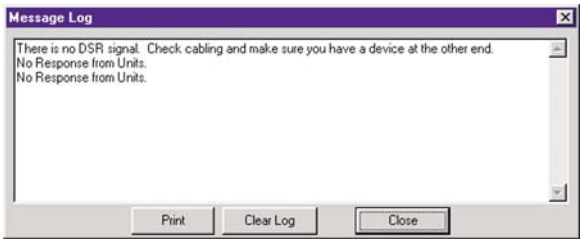


Figure 5.19. Message Log window

Monitoring Views

Gate View



Figure 5.20. Gating button

The Gating button opens the Gate View window, which allows you to view gating activity at each mic input on each unit in your site. Select Enabled to observe unit gating information. 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.

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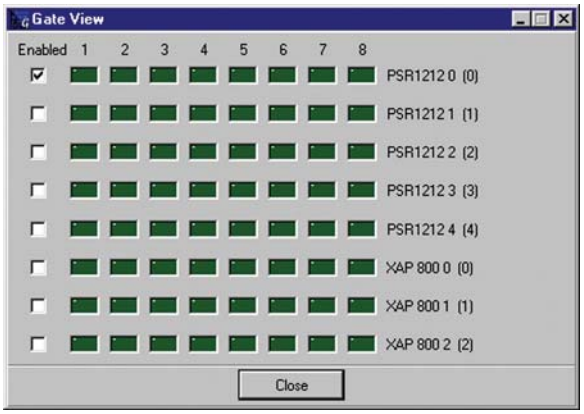


Figure 5.21. Gate View window

Meter Views



Figure 5.22. Meters button

The Meter Views window allows you to monitor the level of any input, output, or processing signal of the PSR1212. You can monitor the same parameter on multiple inputs (or outputs or processing channels) for comparison or you can monitor an entire signal flow from input to output. Click the Meters button on the G-Ware toolbar to open this window.

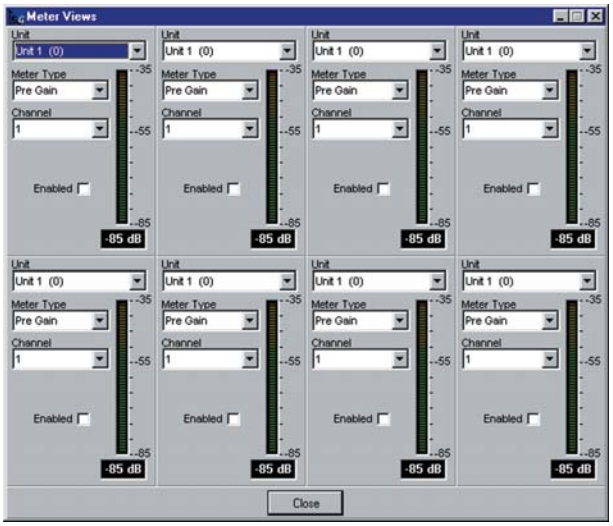


Figure 5.23. Meter Views window

To configure Meter Views

1. Select the **unit number**, **meter type**, and **channel** you want 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 PSR1212.
2. Enable the meter by clicking the adjacent **Enabled** box.
3. When you have finished making changes, click **Close** to exit the window.

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There are many ways to control your PSR1212 and other networked units. This chapter explains how to set up control for Control/Status A port using GPIO Builder, XAP IR Remote and ClearOne Control Panel using Remote Builder, and RS-232 port.

GPIO Builder

Control/Status A

GPIO stands for general-purpose input/output. The GPIO Builder is used to establish the pin assignments for the 16 user definable pins on Control/Status Port A. These pins 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. The default pin assignments are listed on page 85. You can open GPIO Builder from the Flow Screen or the G-Ware toolbar.

To program control/status pins

1. Select the **Control/Status A** pin you want to configure.

   The current (default) pin assignment is displayed in the Active (Low)/Inactive (High) Command box.

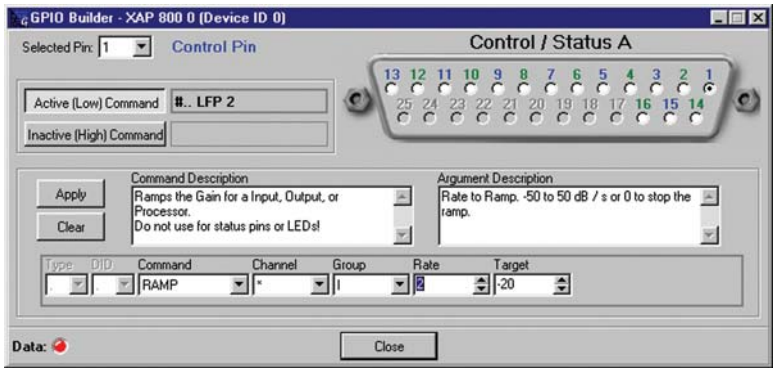


Figure 6.1. GPIO Builder Window

2. Select the **Device Type** and **ID** from their respective lists.

3. Select the **Command** from the Command list. When you select a command, a description of it appears in the Command Description box.

4. Select the command parameters from the argument lists. The parameters that are available depend on the command selected. When you select an argument, a description of it appears in the Argument Description box.

5. Click **Apply** to apply the changes you have made to the selected pin. Or, click **Clear** to clear any programming for the pin.

— If you want to create pin assignments specific to a preset, you will need to open the GPIO Builder from the Preset Configuration pane (see page 55) and select Use in Preset.

— GPIO commands can be configured only for the local PSR1212 unit.

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Remote Builder

The Remote Builder window is used to configure the optional XAP IR Remote Control and ClearOne Volume and Select Control Panels. These control devices are connected to Remote Panel A or Remote Panel B—the RS-485 connectors. If you want to create custom control assignments for presets, open the Remote Builder from the Preset Configuration pane and select the Use in Preset option.



Figure 6.2. Remote Builder button on Flow Screen



Figure 6.3. Remote Builder toolbar button

XAP IR Remote

The XAP IR Remote provides remote control of volume and mute for a PSR system. You can connect up to two XAP IR Remote Controls—one to each RS-485 port. See the XAP IR Remote user manual for more information. The XAP IR Remote has five programmable buttons and one programmable LED. You can customize your XAP IR Remote using the Remote Builder. To open the Remote Builder, click the Remote Builder button on the Flow Screen (or the button in the G-Ware toolbar).

— If you want to program different button assignments for use in a preset, you will need to open the Remote Builder from the Preset Configuration pane (see page 55) and select Use in Preset.

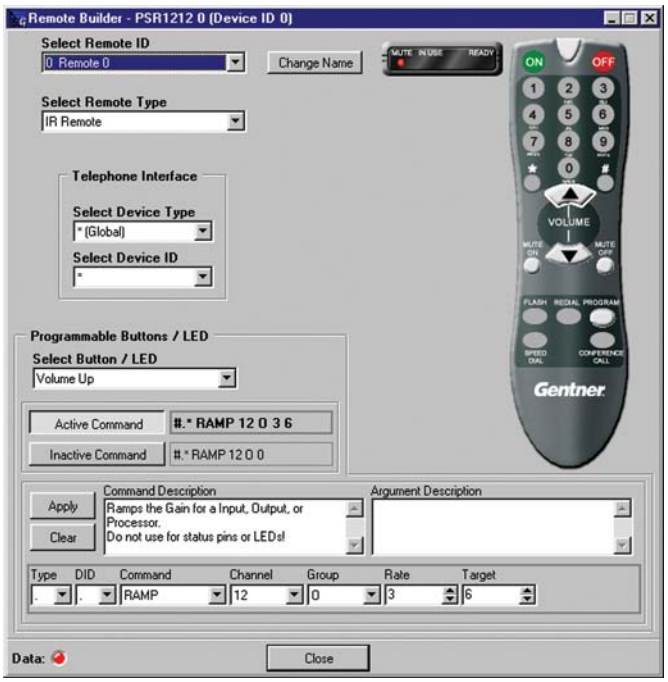


Figure 6.4. Remote Builder

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To program the XAP IR Remote

1. Select an **ID** number for the remote from the Select Remote ID list.
2. Click **Change Name** to create a more descriptive name for the remote which is displayed in addition to the remote number (limit 20 characters).
3. Select **IR Remote** (default) from the Select Remote Type list.
4. In the Telephone Interface section, select the **Device Type** and **ID** of the unit (XAP 400 or XAP TH2) that you want the XAP IR remote to use when making and receiving calls. The default settings are ** which will select any telco device found on the network. If you have multiple telco devices in your network, you must specify which unit will be used to make and receive calls.
5. Select the button or LED you want to program from the **Select Button/LED** list. You can also select the button or LED by clicking directly on the picture of the remote. (Selectable buttons are colored white.)
6. Click the **Active Command** or **Inactive Command** button to set the command for operation when the button is active or inactive.
7. Select the **Device Type**, **ID**, and **Command** from their respective lists. When you select a command, a description of it appears in the Command Description box.
8. Select the command parameters from the argument lists. The parameters that are available depend on the command selected. When you select an argument, a description of it appears in the Argument Description box.
9. Click the **Apply** button to apply the command to the selected Active or Inactive command button. Or, click **Clear** to clear any programming.

— Up to five control panels and one IR remote can be connected to each of the RS-485 ports. In addition to selecting the ID number in the software, you will also need to use the DIP switches on the IR receiver to assign the Device ID. See the XAP IR Remote manual for more information.

Device	Type	ID
PSR1212	4	0–7
XAP 800	5	0–7
XAP TH2	6	0–F
XAP 400	7	0–7

ClearOne Control Panels

ClearOne Control Panels are convenient wall panels which provide control over the PSR1212 audio conferencing system. There are two Control Panel models: Volume and Select. You can connect up to six Control Panels in daisy chain fashion to each RS-485 port. See Appendix C for more information. The Control Panel buttons are programmed using the Remote Builder. You can open the Remote Builder using the Remote Builder button on the Flow Screen or the Remote Builder button on the G-Ware toolbar.

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— **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.**

— **Up to six control panels (or five control panels and one IR remote) can be connected to each of the RS-485 ports. In addition to selecting the ID number in the software, you will also need to use the DIP switches on the control panel to assign the Device ID. See Appendix C: Control**

— **If you want to program different button assignments for use in a preset, you will need to open the Remote Builder from the Preset Configuration pane (see page 55) and select Use in Preset.**

To program the Volume panel

1. Select an **ID** number for the remote from the Select Remote ID list.
2. Click **Change Name** to create a more descriptive name (limit 20 characters) for the remote which is displayed in addition to the remote number in the Select Remote ID list. The name is also updated on the graphic label.

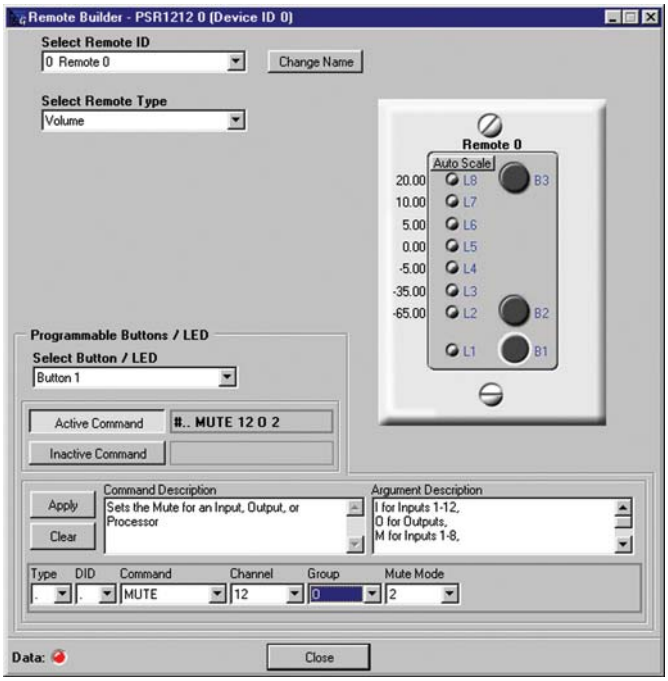


Figure 6.5. Volume Panel selected in the Remote Builder

3. From the Remote Type list, select **Volume**. The Control Panel graphic will change to match your selection.
4. Select the button or LED you want to program from the **Button/LED Selection** list. You can also select the button or LED by clicking directly on the picture of the Volume panel.

   The default numbers on the left of the Volume panel LEDs represent gain levels in decibels. To change a level, click on the LED and then select the level from the Gain list at the bottom of the window. You can also set the upper and lower limits of gain on LEDs L2 and L8 and then click Auto Scale, which automatically assigns values to LEDs L3-L7 on a distributed scale.
5. Click the **Active Command** or **Inactive Command** button to set the command for operation when the button is active or inactive.

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6. Select the **Device Type**, **ID**, and **Command** from their respective lists. When you select a command, a description of it appears in the Command Description box.

7. Select the command parameters from the argument lists. The parameters that are available depend on the command selected. When you select an argument, a description of it appears in the Argument Description box.

8. Click the **Apply** button to apply the command to the selected Active or Inactive command button. Or, click **Clear** to clear programming.

To program the Select panel

1. Select an **ID** number for the remote from the Select Remote ID list.

2. Click **Change Name** to create a more descriptive name (limit 20 characters) for the remote which is displayed in addition to the remote number in the Select Remote ID list. The name is also updated on the graphic label.

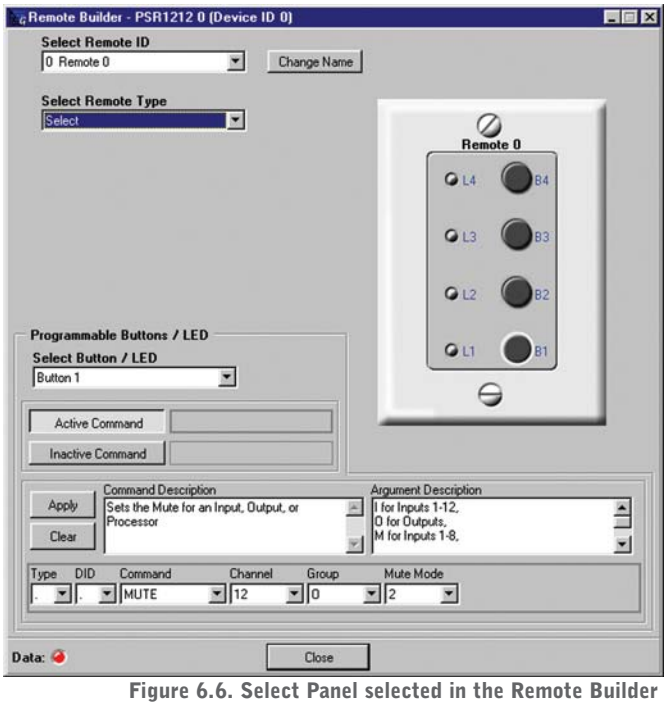


Figure 6.6. Select Panel selected in the Remote Builder

3. From the Remote Type list, select **Select**. The Control Panel graphic will change to match your selection.

4. Select the button or LED you want to program from the **Button/LED Selection** list. You can also select the button or LED by clicking directly on the picture of the Select panel.

— If you want to program different button assignments for use in a preset, you will need to open the Remote Builder from the Preset Configuration pane (see page 55) and select Use in Preset.

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5. Click the **Active Command** or **Inactive Command** button to set the command for operation when the button is active or inactive.

6. Select the **Device Type**, **ID**, and **Command** from their respective lists. When you select a command, a description of it appears in the Command Description box.

7. Select the command settings from the argument lists. The options that are available depend on the command selected. When you select an argument, a description of it appears in the Argument Description box.

8. Click the **Apply** button to apply the command to the selected Active or Inactive command button. Or, click **Clear** to clear programming.

RS-232 Port

Remote Modem Access

You can access the unit remotely through a modem connected to the serial port. To enable this feature, configure the port for modem mode.

When in modem mode, the serial port will send an initialization string to the modem upon entering the mode or upon power-up of the unit. You program the initialization string in Site Properties window in G-Ware. Typical configurations you set with the initialization string include setting a fixed baud rate for the unit and setting up auto-answer parameters.

— The modem password is created in the Unit Properties window (see page 26) or by using the MPASS serial command (see page 114).

You must enter a password before you can control the system this way. The default password is blank (a carriage return). You can change it to any combination of letters and/or numbers up to 12 characters. It is not case-sensitive.

When you establish a valid serial connection with the unit in modem mode, the unit will wait for a carriage return. When you have entered a carriage return, the system will prompt you to enter the password. If there is no activity for five minutes on the serial port while in modem mode, the unit will re-prompt for the password.

Serial commands

Serial commands can be passed through the PSR1212 RS-232 port using Hyper Terminal, touch panels, or other compatible remote control devices. To learn more about serial commands, see Appendix E.

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Command strings

By creating command strings, you can use your PSR1212 to control equipment such as lighting, projectors, and room dividers as well as other ClearOne products. A command string is passed to the connected device via the PSR1212's RS-232 port. You can create up to eight customized serial command strings (limit 80 characters each) in the Command Strings window. To open the Command Strings window, click the Command Strings toolbar button.



Figure 6.7. Command Strings toolbar button

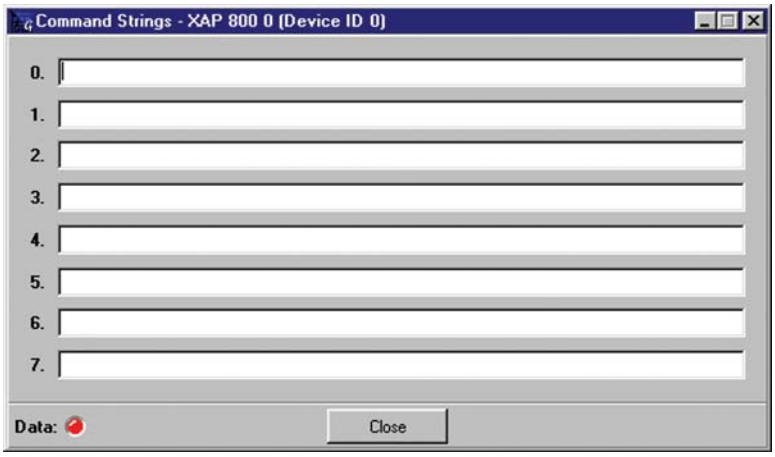


Figure 6.8. Command Strings window

To create a command string

- Type the serial command string (limit 80 characters) in one of the eight locations. The command string will support special characters. See list at right.

Special characters

\a = alert
\b = backspace
\f = formfeed
\n = new line
\r = carriage return
\t = horizontal tab
\v = vertical tab
\\ = backslash

To run a command string

- Use any external control device (e.g. Control Panel, GPIO control) to run the STRING serial command.

  – or –

- Incorporate the STRING command into a macro which can be run from G-Ware, the front panel, or any external control device.

For information on creating macros, see page 61. For information on GPIO builder, see page 75. For information on Control Panels, see page 77.

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Appendix A: Specifications

Dimensions (LxDxH)
17.25" x 10.25" x 1.25"
43.8 x 26 x 4.5 cm

Weight
7 lb/4.5 kg dry
12 lb/5.9 kg shipping

Operating Temperature
32–100° F/0–38° C

Humidity
15% to 80%, non-condensing

Power Input Range
Auto-adjusting
100–240VAC; 50/60Hz

Power Consumption
30W typical

Expansion Bus In/Out
Proprietary Network
RJ-45 (2), 115.2kbps, 110kž impedance
Category five twisted-pair cable
80' (24 meters) maximum cable length between any two PSR1212s, XAP 800s or XAP 400s

RS-232
DB-9 female
9,600 /19,200/38,400 (default)/57,600 baud rate; 8 bits, 1 stop, no parity
Hardware flow control on (default)/off

Control/Status
DB-25 female A/B (2)
Inputs A/B: active low (pull to ground)
Outputs A/B: Open collector, 40VDC max, 40mA each
+5VDC pins (2) (300mA over-current protected)

Remote Panels A/B
4-pin push-on terminal block
RS-485 proprietary protocol
Cat five twisted-pair cable
1 pair data, 1 pair power and ground
+15VDC (300mA over-current protected)

Mic/Line Inputs 1-8
Push-on terminal block, balanced, bridging
Impedance: 5kž
Nominal Level: adjustable -55dBu, -25dBu, 0dBu
Maximum Level: -35dBu, -5dBu, +20dBu
Phantom Power: 24V, selectable

Line Inputs 9-12
Push-on terminal block, balanced, bridging
Impedance: >10kž
Nominal Level: 0dBu
Maximum Level: 20dBu

Outputs 1-12
Push-on terminal block, balanced
Impedance: 50ž
Nominal Level: 0dBu
Maximum Level: 20dBu

Audio Performance
Conditions: Unless otherwise specified all measurements are performed with a 22Hz to 22kHz BW limit (no weighting).
Frequency Response: 20Hz to 20kHz ±1dB
Noise (EIN): -126dBu, 20kHz BW, max gain, Rs=150ž
THD+N: <0.02%
SNR: 80dB re 0dBu, (A-weighted)
Dynamic Range: 100dB (A-weighted)
Crosstalk <-91dB re 20dBu @ 20kHz channel to channel

Approvals
FCC, CSA, IC, CE, NOM, ACA, SABS, JATE

Assignable Processing Blocks
Filters:
- All pass
- Low pass
- High pass
- Low shelving
- High shelving
- Parametric EQ
- Notch
- CD Horn

Crossovers:
- Bessel
- Butterworth
- Linkwitz-Riley
- Compressor
- Delay adjustable up to 500ms

Matrix Mixing Parameters
32x32 matrix
12 analog in/out
12 expansion bus in/out
8 assignable processing blocks in/out

Auto Mixer Parameters
Number of Open microphones (NOM)
PA Adaptive Mode
First Mic Priority Mode
Last Mic Mode
Maximum # of Mics Mode
Ambient Level
Gate Threshold Adjust
Off Attenuation Adjust
Hold Time
Decay Rate

Microphone Input Configuration
Input Gain Adjust
Mic or Line Level
Phantom Power on/off
Filters
- All Pass
- Low Pass
- High Pass
- Notch
- PEQ

Mute on/off
Chairman Override on/off
AGC on/off

Auto Gate/Manual Gate
Adaptive Ambient on/off

Set-up Software

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Appendix B: Pinouts

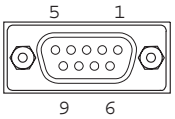


Figure B.1. RS-232 connector

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		

! ClearOne recommends that all nine pins be connected to avoid

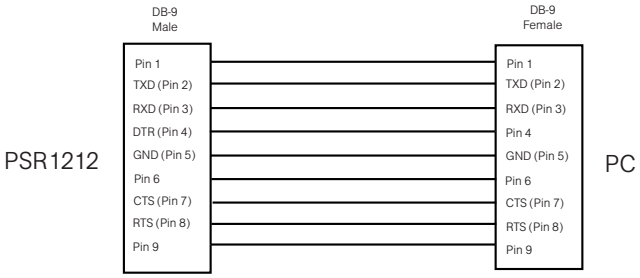


Figure B.2. PSR1212 to PC RS-232 connections

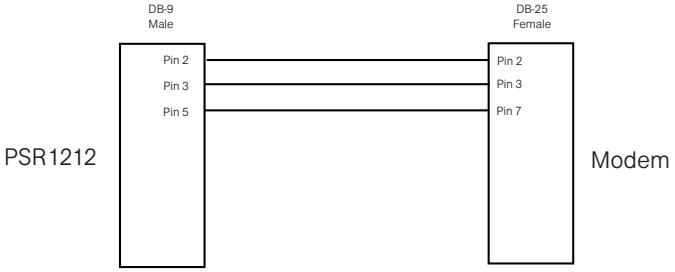


Figure B.3. PSR1212 to Modem RS-232 Connections

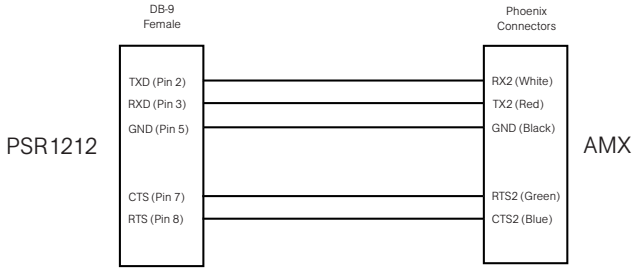


Figure B.4. PSR1212 to AMX RS-232 Connections

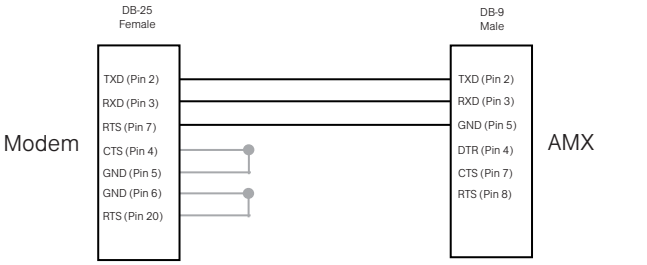


Figure B.5. Modem to AMX RS-232 Connections

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Control/Status connectors

The Control/Status connections are provided on two DB-25 connectors. These connectors are labeled Control/Status A and Control/Status B and contain different types of pins. The inputs on these connectors are internally pulled high and are activated by connecting the pin to ground. The outputs are open collectors, which are open when inactive and grounded when active. This allows the PSR1212 to control and be controlled by a wide variety of external devices, including relays, lamps, switches, and other equipment. Control pins on Control/Status A are momentary while control pins on Control/Status B are latching.

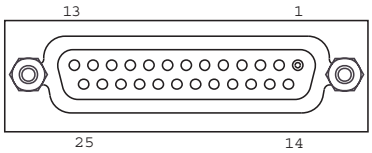


Figure B.6. Control/Status Ports A, B

Control/Status A Port Pinout (female)

Pin	Definable	Type	Default Description
1	Yes	Control	Lock front panel toggle
2	Yes	Status	Status of front panel lock
3	Yes	Control	Mute all mics toggle
4	Yes	Status	Status of mute all mics
5	Yes	C	Mute Output 9 toggle
6	Yes	S	Status of Output 9 mute
7	Yes	C	Mute Output 10 toggle
8	Yes	S	Status of Output 10 mute
9	Yes	C	Mute Output 11 toggle
10	Yes	S	Status of Output 11 mute
11	Yes	C	Mute Output 12 toggle
12	Yes	S	Status of Output 12 mute
13	Yes	C	Volume Up D Output 1 (1dB)
14	Yes	S	Not programmed
15	Yes	C	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

— The first 16 pins on the Control/Status Port A can be programmed using G-Ware software.

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Control/Status B port pinout

Pin	Definable*	Type	Default Description
1	No	C	Preset select bit
2	No	S	Preset select status for Pin 1
3	No	C	Preset select bit
4	No	S	Preset select status for Pin 3
5	No	C	Preset select bit
6	No	S	Preset select status for Pin 5
7	No	C	Preset select bit
8	No	S	Preset select status for Pin 7
9	No	C	Preset select bit
10	No	S	Preset select status for Pin 9
11	No	C	Preset select bit
12	No	S	Preset select status for Pin 11
13	No	C	Preset select bit
14	N	S	Preset select status for Pin 13
15	No	C	Preset select bit
16	No	S	Preset select status for Pin 15
17	No	C	Preset select bit
18	No	S	Preset select status for Pin 17
19	No	C	Preset select bit
20	No	S	Preset select status for Pin 19
21	No connection		
22	No connection		
23	No	-	+5VDC, 300mA
24	No	-	+5VDC, 300mA
25	No	-	Ground

Control/Status A and B: DB-25 female

Inputs A and B: active low (pull to ground)

Outputs A and B: Open collector, 40V max, 40mA each

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RS-485 Remote Panel A and B connectors

Pin	Description
1	+15VDC, 300mA (over-current protected)
2	Data +
3	Data –
4	Ground

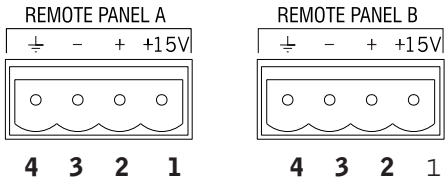


Figure B.7. RS-485 Remote Control Ports

Set connector pinout

Pin	Description	Pin	Description
1	To pin 6 of SET RJ-11C	4	Tip
2	To pin 5 of SET	5	To pin 2 of LINE
3	Ring	6	To pin 1 of LINE RJ-11C

Line connector pinout

Pin	Description	Pin	Description
1	To pin 6 of LINE RJ-11C	4	Ring
2	To pin 5 of LINE	5	To pin 2 of SET
3	Tip	6	To pin 1 of SET RJ-11C

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Appendix C: Control Panel

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

The Volume Control Panel and Select Control Panel connect to either the Remote Panel A or B connector of the PSR1212, XAP 800, or XAP 400 and works by triggering the execution of programmed commands from the XAP/PSR unit. 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 (see the XAP or PSR user manual). Each Control Panel fits inside a standard electrical wall box and must be installed according to local electrical codes.

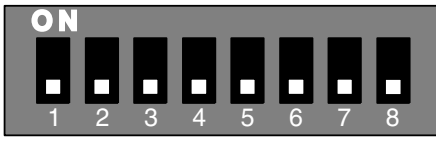


Figure C.1. DIP switches

Control Panel Number	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 C.2. DIP switch settings

Connecting the Control Panel

1. Ensure you received a facia 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 (shown in Figures C.5 and C.6). If any parts are missing, please contact ClearOne.

2. Using DIP switches 1–4, assign a unique ID to the Control Panel. Refer to Figure C.2 for proper DIP switch settings. If you set an invalid address, all LEDs on the Control Panel will illuminate.

3. Set DIP switch 8 to the on position if you are using just one Control Panel. If you have more than one Control Panel daisy-chained to the same Remote Panel connector, set **only** the **last** Control Panel's DIP switch 8 to on. Switches 5-7 are nonfunctional.

4. Turn off the XAP/PSR unit (unplug the unit).

5. Wire each end of a Cat. 5 cable to a connector terminator block. 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 correctly wire the connector can result in damage to the unit.

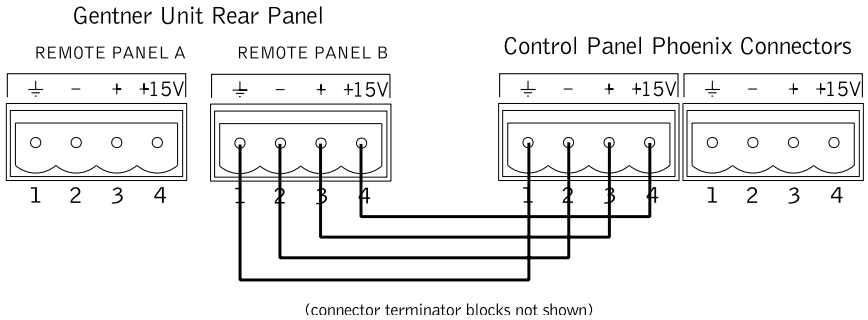


Figure C.3. Wiring the Control Panels

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6. Connect one connector terminator block to the Remote Panel on the XAP/PSR unit. Route the other end of the cable through the back of the electrical wall box and connect the terminator block to the Control Panel.

7. To use a second Control Panel, connect it to the unused Remote Panel connector on the XAP/PSR unit or the unused connector on the first Control Panel. You can daisy-chain up to six Control Panels to each Remote Panel connector. Total cable run depends on the number of Control Panels used. The distance information in the table at left is based on Cat. 5 cable with a nominal resistance of 27ž per 1,000 feet (305 meters). All distances refer to total cable runs from a single Remote Panel connector. For information about extending beyond 800 feet (244 meters) total with six Control Panels, call Technical Support at 1-800-283-5936.

8. As shown in Figures C.5 and C.6, use the supplied pan-head screws to install the Control Panel PCB assembly to the electrical wall box.

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

10. Mount the faceplate over the rubber switch pads, using the two flat HD screws.

— Control Panel Assembly Dimensions (both versions): 1.8"/4.6cm W x 4.125" /10.5cm L (not including faceplate or electrical box).

# 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 C.4. Control panel distance chart

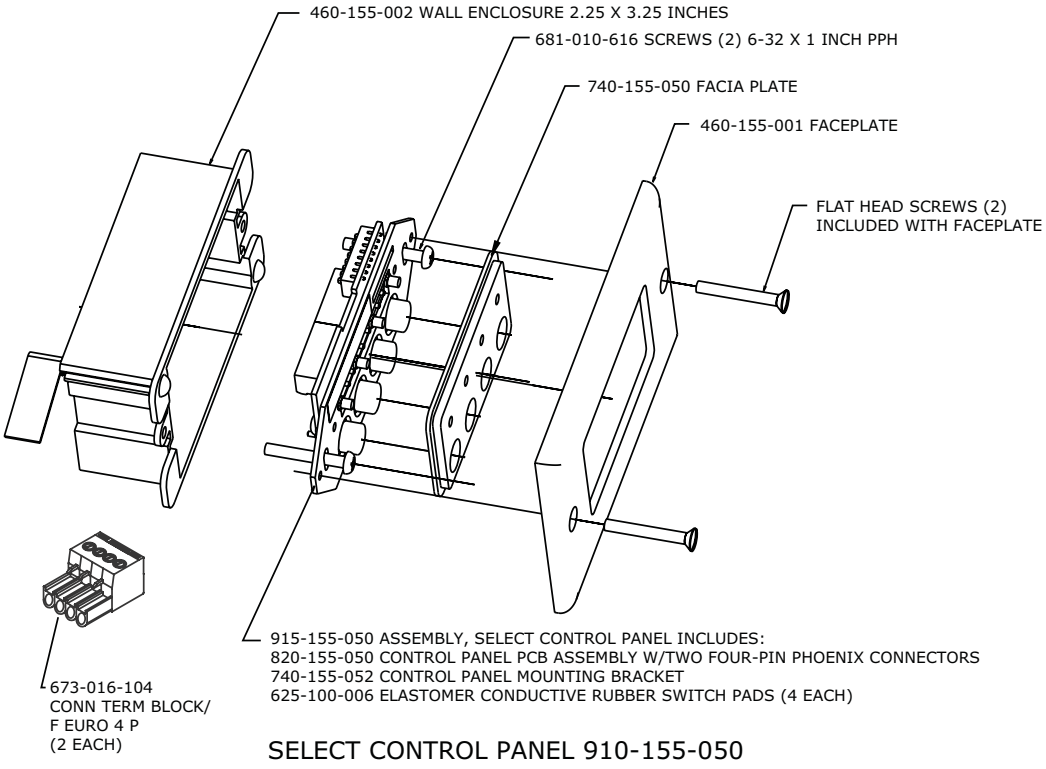


Figure C.5. Select Control Panel Assembly

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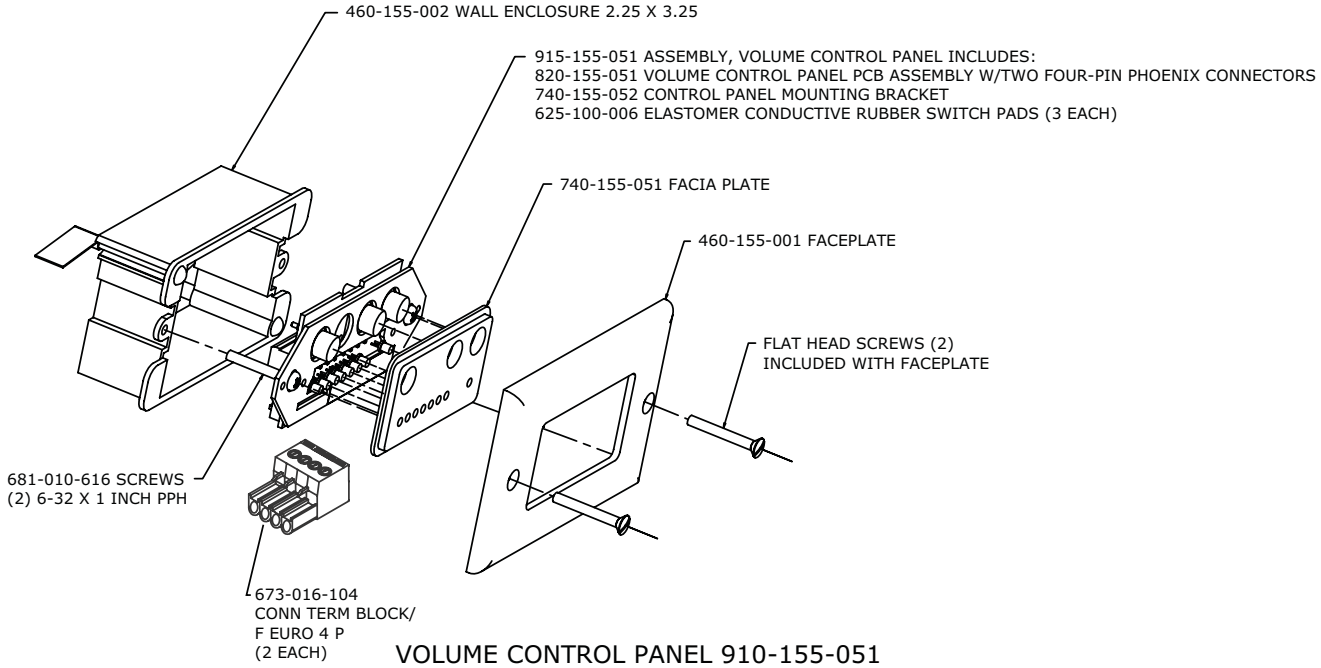


Figure C.6. Volume Control Panel Assembly

CE 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.

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Appendix D: Accessories

Accessory	ClearOne Part Number
Tabletop Omni Microphone	910-103-160 (with cable)
Tabletop Uni Microphone	910-103-161 (with cable)
Button Omni Microphone	910-103-162 (black button)/910-103-163 (white button)
Button 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
XAP IR Remote	910-170-150

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Appendix E: Serial Commands

The PSR1212 accepts serial commands through the serial port or the expansion bus. The commands in this manual pertain only to the PSR1212. RS-232 serial port protocol is 9,600, 19,200, 38,400 (default), or 57,600 baud; 8 bits, 1 stop bit, no parity.

Conventions

The following typographic conventions are used in this document to describe the different serial commands. Use the Command structure section and the examples as a guide when creating your serial commands.

Convention	Description
<X>	Parameters enclosed in < > indicate a mandatory parameter.
[X]	Parameters enclosed in [ ] indicate an 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.
EREF	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 PSR1212 is always 4 and the device ID will always be 0–7, or * (to select all PSR units).

Command structure

Commands can be either UPPER CASE or lower case. Also, extra spaces or tabs between arguments in text commands are allowed. 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.

The structure of serial commands is as follows: #DEVICE **COMMAND** [X] [X]

#	indicates the start of a command line
DEVICE	represents the device type and device number
COMMAND	is the command text
[X] [X]	represents any additional options in the order that they appear in the command descriptions that follow

Example

A command to disable automatic gain control for Mic 2 on a PSR1212 device "0" will have the command line: #40 AGC 2 M 0. In this command line, 4=PSR1212, 0=unit 0, AGC=command, 2=channel, M=Mic Input group, 0=off state. If a command calls for a "null" value, leave a blank in the command line. For example, "#40 AGC 2 M" will return the current AGC state of Mic 2 on device 50.

Command responses will have a carriage return line feed. Example: #40 AGC 2 M 0 carriage return line feed.

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Groups and channels

If a channel has an alpha value of "*", the command is to be applied to all channels. For example, a group value of M and a channel value of * would mean that the command is to be applied to all channels of group M (mic inputs). The following table show the alpha representations for the different groups and the channels that are available for each product.

	Group	XAP 800/PSR1212 Channel Range	XAP TH2 Channel Range	XAP 400 Channel Range
Inputs	I	1–12		1–8
Outputs	O	1–12		1–9 (9 is power amp)
Mic Input	M	1–8		1–4
Gating Group	G	1–4, A–D		1–4, A-D
Processing	P	A–H		A–D
Ambient	A	1–8		1–4
Line Inputs	L	9–12		5–8
Expansion Bus	E	O–Z		O–Z
Unit	U	0	0	0
GPIO	Y	0	0	0
Matrix	X	0		0
Wall plates	W	0–11		0–11
Presets	S	1–32		1–32
Macros	C	1–255		1–255
Unknown	N			
Transmit	T	1		1
Receive	R	1		1
Virtual Reference	B	1–4		1–4

Type and device IDs

Type ID	Unit type	Device ID range
4	PSR1212	0–7
5	XAP 800	0–7
6	XAP TH2	0–F
7	XAP 400	0–7

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Meter type definitions

Alpha	Level position for Mics	Level position for Line Inputs	Level position for Outputs and Telco Transmits	Level Position for Processors	Level Position for Telco Receives
I	Input level	Input level	Input level	Level into processor	Input Level
A	Level after gain adjustment, but before filter	Level after gain adjustment	Level after gain adjustment	Amount of compression	Level after gain adjustment
N	Level after filter but before gate (non-gated level)	N/A	N/A	Level after compressor and filters	N/A
G	Level after gate (gated level)	N/A	N/A	N/A	N/A
R	Echo Return Loss	N/A	N/A	N/A	Telco Echo Return Loss
E	Echo Return Loss Enhancement	N/A	N/A	N/A	Telco Echo Return Loss Enhancement
T	ERL + ERLE	N/A	N/A	N/A	TERL + TERLE
D	Impulse Duration (Tail Time)	N/A	N/A	N/A	N/A
C	AGC	AGC	N/A	N/A	AGC
Y	Pre AGC RMS meter	Pre AGC RMS meter	N/A	N/A	Pre AGC RMS meter
Z	Post AGC RMS meter	Post AGC RMS meter	N/A	N/A	Post AGC RMS meter

Serial command error codes

Error number	Text message	Explanation/Solution
1	Memory error	The box is out of internal memory. Power cycle the box.
2	No command found	A command was not found in the string.
3	Unknown command response	A command was executed on a different device type that this box cannot display. The command dictionary needs to be updated.
4	Not implemented	The command is not implemented.
5	Argument error	The command had an argument that was out of range.
6	Unknown command	The command is unknown to this unit.
7	Bad checksum	The binary command's checksum is wrong.
8	Preset of macro invalid	A preset or macro failed to program because it is too large or because its command list contained an invalid command.
10	Queue error	The internal command queue is full. Enable flow control and use all five pins on the serial port.
11	Command too big	The binary command is too large.
12	Unit is locked	Unlock the unit with the proper password.

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PSR1212 Serial commands

Command	Function
AAMB	Selects/reports adapt ambient setting
AGC	Enable/disables AGC
AMBLVL	Selects/reports ambient level
BAUD	Selects/reports the baud rate of the serial port
CGROUP	Selects/reports compressor group setting
CHAIRO	Selects/reports chairman override setting
COMPRESS	Sets/reports compressor on audio processing channel
COMPSEL	Selects/reports compressor activity for processor
DECAY	Sets/reports decay rate
DELAY	Sets/reports delay rate
DELAYSEL	Selects/reports processor channel delay
DFLTM	Sets/reports default meter
DID	Selects/reports device ID
FILTER	Selects/reports input/processor channel filter setting
FILTSEL	Enables/disables filters on input/processor channel
FLOW	Selects/reports the flow control of the serial port
FMP	Sets/reports 1st Mic Priority for mic gating group
FPP	Sets/reports current passcode setting
GAIN	Changes/reports gain for in, out, or process.
GATE	Reports gate status of channels 1–8
GHOLD	Selects/reports hold time setting
GMODE	Selects/reports gating mode setting
GOVER	Selects/reports gating override setting
GRATIO	Selects/reports gate ratio setting
GREPORT	Selects/reports gate status report frequency
GRPSEL	Selects/reports input gating group assignments
LABEL	Selects/reports label of specified channel
LFP	Sets/reports status of front panel access
LMO	Selects/reports Last Mic On mode

Command	Function
LOCK	Selects/reports the state of the preset and macro lock. When on, the lock prevents presets and macros that have been flagged from being altered in any way.
LOCKPRST	Selects/reports whether the lock is applied to a preset or macro. If a preset or macro has the lock applied, it can be changed only if the unit is unlocked with the password.
LOCKPWD	Selects/reports the password for the preset/macro lock. This can be changed only if the unit is unlocked.
LVL	Reports in, out, or processor level
LVLREPORT	Selects/reports level status
LVLRRATE	Sets the level report rate for the unit
MACRO	Executes macro or reports last macro executed
MASTER	Reports the mode of the unit
MAX	Changes/reports max gain setting for in, out, processor block
MDMODE	Enables/disables the modem mode for the unit
MIN	Changes/reports minimum gain setting for in, out, processor block
MINIT	Sets/reports modem initialization string of serial port
MINMAX	Changes/reports min and max gain from in, out, processor block
MLINE	Selects/reports coarse gain adjustments on Inputs 1–8
MMAX	Selects/reports max # of mics for each mic group
MPASS	Sets passcode setting when using modem mode
MTRX	Selects/reports matrix routing of an in. to out.
MTRXLVL	Selects/reports matrix level at the cross point
MUTE	Sets/reports mute status

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Command	Function
NOM	Selects/reports NOM setting on output channels
OFFA	Selects/reports off attenuation mode for Inputs 1–8
PAA	Selects PA adapt mode for specified input
PP	Selects/reports phantom power setting
PRESET	Executes preset or reports last executed preset
PRGSTRING	Sets/reports a programmed string
RAMP	Start/stops the gain ramp for an input, output, or assignable processing block
REFSEL	Selects/reports PA adapt mode for mic outputs
REFSET	Selects/reports the output the reference channel tracks

Command	Function
SERECHO	Selects/reports the serial echo of the RS-232
SERMODE	Selects/reports the serial mode of the RS-232
SFTYMUTE	Selects/reports the state of the safety mute. When on, the safety mute holds all outputs in a muted state.
SIGGEN	Selects/reports signal generator activation
SIGTOUT	Sets the signal generator time out for the unit
STRING	Executes a string for the RS-232 port
TOUT	Selects/reports the title screen inactivity time out
UID	Reports unit ID (read only)
VER	Reports unit version (read only)

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AAMB - Adaptive Ambient Mode

This command selects/reports the setting of adaptive ambient.

Command form: DEVICE **AAMB** <Channel> <Group> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
AAMB	Command form
Channel	Range 1–8 (Selects input)
Group	M (Selects mic group)
Value	0 = Off, 1 = On, 2 = Toggle, Null to query in text

Device	Type	ID
PSR1212	4	0–7
XAP 800	5	0–7
XAP TH2	6	0–F
XAP 400	7	0–7

Example: #41 AAMB 2 1 On PSR1212 unit 1 (**#41**), adaptive ambient (**AAMB**) for mic channel 2 (**2**) is set on (**1**).

AGC - Automatic Gain Control

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

Command form: DEVICE **AGC** <Channel> <Group> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
AGC	Command form
Channel	See Groups and Channels on page 93
Group	1,3,7 (I,M,L)
Value	0 = Off, 1 = On, 2 = Toggle, Null to query in text

Example: #44 AGC 1 M 0 On PSR1212 unit 4 (**#44**), the automatic gain control (**AGC**) on mic (**M**) channel **1** is set to off (**0**).

AMBLVL - Ambient Level Adjust

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

Command form: DEVICE **AMBLVL** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
AMBLVL	Command form
Channel	Range 1–8 (selects input channel)
Value	-80.0 to 0 (sets ambient level in dB), Null to return current level

Example: #43 AMBLVL 1 -30 On PSR1212 unit 3 (**#43**), the ambient level (**AMBLVL**) for mic input **1** is set to -**30**dB.

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BAUD - Baud Rate

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

Command form: DEVICE **BAUD** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
BAUD	Command form
Value	9600, 19200, 38400, 57600 (Null to query in text)

Example: #46 BAUD 38400 On PSR1212 unit 6 (**#46**), the baud rate (**BAUD**) for the RS-232 port is set to 38,400 (**38400**).

CGROUP - Compressor Group Select

Device	Type	ID
PSR1212	4	0–7
XAP 800	5	0–7
XAP TH2	6	0–F
XAP 400	7	0–7

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

Command form: DEVICE **CGROUP** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
CGROUP	Command form
Channel	range A–H (selects processing channel)
Value	0 = none, 1 = compressor group 1, 2 = compressor group 2, 3 = compressor group 3, 4 = compressor group 4, null to return the current mode

Example: #42 CGROUP A 2 On PSR1212 unit 2 (**#42**), the compression group (**CGROUP**) for processing channel **A** is **2**.

CHAIRO - Chairman Override Mode

This command selects/reports the setting of chairman override.

Command form: DEVICE **CHAIRO** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
CHAIRO	Command form
Channel	Range 1–4 (selects mic input)
Value	0 = Off, 1 = On, 2 = Toggle, Null to return current state

Example: #47 CHAIRO 3 1 On PSR1212 unit 7 (**#47**), chairman override (**CHAIRO**) for mic channel **3** is set on (**1**).

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COMPRESS - Compressor Adjust

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

Command form DEVICE **COMPRESS** <Channel> [Threshold] [Ratio] [Attack] [Release] [Gain]

Argument details

Name	Description	Units
Device	0–7 or * to select all units	
COMPRESS	Command form	
Channel	Range A–H (selects processing channel)	
Threshold	-30 to 20, Null to return current value	dB
Ratio	1 to 20	
Attack	0.00 to 100.00 (select in .5ms intervals)	ms
Release	100 to 2000 (select in 5ms intervals)	ms
Gain	0.00 to 20.00	dB

Example: #41 COMPRESS A 6 5 25 250 3 On PSR1212 unit 1 (**#41**), the compression (**COMPRESS**) within processing channel **A** is set to have a threshold of **6**dB, a ratio of 5:1 (**5**), an attack time of **25**ms, a release time of **250**ms, and a gain of **3**dB.

COMPSEL - Compression Select

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

Command form: DEVICE **COMPSEL** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
COMPSEL	Command form
Channel	Range A–H (selects processing channel)
Value	0 = Off, 1 = On, 2 = Toggle, Null returns current state

Example: #40 COMPSEL A 1 On PSR1212 unit 0 (**#40**), the compression (**COMPSEL**) within processing channel **A** is set on (**1**).

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DECAY - Decay Adjust

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

Command form: DEVICE **DECAY** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
DECAY	Command form
Channel	Range 1–8 (selects mic input)
Value	1 = Slow, 2 = Medium, 3 = Fast, Null to return current state

Example: #43 DECAY 1 3 On PSR1212 unit 3 (**#43**), the decay rate (**DECAY**) for mic channel **1** is set to fast (**3**).

Device	Type	ID
PSR1212	4	0–7
XAP 800	5	0–7
XAP TH2	6	0–F
XAP 400	7	0–7

DELAY - Delay Adjust

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

Command form: DEVICE **DELAY** <Channel> [Value]

Argument details

Name	Description	Units
Device	0–7 or * to select all units	
DELAY	Command form	
Channel	A–H (select processing channel)	
Value	0.00 to 500 (selects delay)	ms
	Null to return current state	

Example: #46 DELAY A 200 On PSR1212 unit 6 (**#46**) the delay (**DELAY**) for processing channel **A** is set to **200**ms.

DELAYSEL - Delay Select

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

Command form: DEVICE **DELAYSEL** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
DELAYSEL	Command form
Channel	A–H (select processing channel)
Value	0 = Off, 1 = On, 2 = Toggle, Null to return current state

Example: #44 DELAYSEL A 1 On PSR1212 unit 4 (**#44**) the delay (**DELAYSEL**) within processing channel **A** is enabled (**1**).

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DFLTM - Default Meter

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

Command form: DEVICE **DFLTM** [Channel] [Group] [Position]

Argument details

Name	Description
Device	0–7 or * to select all units
DFLTM	Command form
Channel	1–12
Group	I = Inputs, O = Outputs, M = Mic Inputs, L= Line Inputs
Position	I, A, N, G, as applicable for group (see Meter Type definitions, page 94)

Example: #45 DFLTM 8 O A On PSR1212 unit 5 (**#45**), the default meter (**DFLTM**) is set to output (**O**) **8** after the gain adjustment (**A**).

DID - Device ID

This command selects/reports the device ID.

Command form: DEVICE **DID** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
DID	Command form
Value	0–7 (select device ID)

Example: #47 DID 0 On PSR1212 unit 7 (**#47**), the device ID (**DID**) is set to **0**.

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FILTER - Filter Adjust

This command selects/reports the setting of filters.

Command form: DEVICE **FILTER** <Channel> <Group> <Node> [Type] [Frequency] [Gain] [Bandwidth]

Argument details

Name	Description
Device	0–7 or * to select all units
FILTER	Command form
Channel	See Groups and Channels, page 93
Group	See Groups and Channels, page 93
Node	1–4 (selects mic input filter) 1–15 (selects processing channel filter)

Name	Description	Units
Type	0 = None, 1 = All Pass, 2 = Low Pass, 3 = High Pass, 4 = Low Shelving, 5 = High Shelving, 6 = Parametric Equalizer, 7 = CD Horn, 8 = Bessel Crossover, 9 = Butterworth Crossover, 10 = Linkwitz-Riley Crossover, 11 = Notch, Null to return the current mode	
Frequency	0 for Null (Type 0)	Hz
	20 to 20,000 (Type 1–6, 8–11)	Hz
	500 to 5,000 (Type 7)	Hz
Gain	0 for Null (Type 0–3, 7, 11)	dB
	-15.00 to 15.00 (Type 4–6)	dB per octave
	12, 18, 24 (Type 8–9)	dB per octave
	12, 24 (Type 10)	dB per octave
	-80 nonadjustable (Type 11)	
Bandwidth	0 to Null (Type 0–5, 7)	
	.05–5.00 (Type 6, 11)	
	2 = low pass, 3 = high pass (Type 8–10)	

Device	Type	ID
PSR1212	4	0–7
XAP 800	5	0–7
XAP TH2	6	0–F
XAP 400	7	0–7

Examples

#40 FILTER 1 M 3 2 200 On PSR1212 unit 0 (**#40**) the filter (**FILTER**) for mic (**M**) channel **1**, node **3** is set as a low-pass filter (**2**) at **200**Hz.

#41 FILTER B P 2 4 3000 -10 On PSR1212 unit 1 (**#41**) the filter (**FILTER**) for processing (**P**) channel **B**, node **2**, is set as a low shelving (**4**) filter at **3000**Hz and a gain of **-10**dB.

#42 FILTER 3 M 2 6 5000 -15 1.00 On PSR1212 unit 2 (**#42**), the filter (**FILTER**) for mic (**M**) channel **3**, node **2**, is set as a PEQ (**6**) with a center frequency of **5000**Hz, a bandwidth of **1.00**, and a gain of **-15**dB.

#43 FILTER B P 2 7 4000 On PSR1212 unit 3 (**#43**), the filter (**FILTER**) for processing (**P**) channel **B**, node **2**, is set as a CD Horn (**7**) at a frequency of **4000**Hz.

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FILTSEL - Filter Select

This command turns on and off the filters on input and audio processing channels.
Command form: DEVICE **FILTSEL** <Channel> <Group> <Node> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
FILTSEL	Command form
Channel	See Groups and Channels, page 93
Group	M = Mic Inputs, P = Processing Channels
Node	1-4, or * for all (selects mic input filter)
	1-15, or * for all (selects processing channel filter)
Value	0 = Off, 1 = On, 2 = Toggle, Null to return current state

Example: #44 FILTSEL B P 2 1 On PSR1212 unit 4 (**#44**), the filter (**FILTSEL**) on processing (**P**) channel **B**, node **2**, is set to on (**1**).

FLOW - Flow Control

This command selects/reports the flow control of the serial port on the unit.
Hardware flow control is implemented using DTR and DSR.
Command form: DEVICE **FLOW** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
FLOW	Command form
Value	0 = Off, 1 = On, 2 = Toggle, Null to return current state

Example: #46 FLOW 1 On PSR1212 unit 6 (**#46**), the flow control (**FLOW**) to the RS-232 port is set to on (**1**).

FMP - First Mic Priority Mode

This command selects/reports first Mic priority mode for a gating group.
Command form: DEVICE **FMP** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
FMP	Command form
Channel	1–4, A–D (selects gating group)
Value	0 = Off, 1 = On, 2 = Toggle, Null returns the current mode

Example: #45 FMP A 1 On PSR1212 unit 5 (**#45**), the first mic priority mode (**FMP**) for gating group **A** is set to on (**1**).

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FPP - Front Panel Passcode

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.

Command form: DEVICE **FPP** <char1><char2><char3><char4><char5>

Button assignment

Value	Button represented
1	Up arrow button
2	Enter button
3	ESC button
4	Down arrow button
5	Meter button

Argument details

Name	Description
Device	0–7 or * to select all units
FPP	Command form
Char 1–5	1–5 (see button assignments) CLEAR will clear the passcode Null will return current passcode

Example: #45 FPP 12345 On PSR1212 unit 5 (**#45**), the front panel passcode (**FPP**) is set to Up Arrow (**1**), Enter (**2**), Esc (**3**), Down Arrow (**4**), Meter (**5**).

GAIN - Gain Adjustment

— 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.

This command changes or reports back the input gain for a channel.

Command form: DEVICE **GAIN** <Channel> <Group> [Value A/R]

Argument details

Name	Description
Device	0–7 or * to select all units
GAIN	Command form
Channel	See Groups and Channels, page 93
Group	I = Inputs, O = Outputs, M = Mic Inputs, P = Processing Channels, L = Line Inputs
Value	-99 to 99 *, Null to return the current gain
A/R	A = Absolute, R = Relative, Null = Relative

Example: #41 GAIN 4 O 12 A On PSR1212 unit 1 (**#41**), the **GAIN** for Output (**O**) **4** is set to **12**dB absolute (**A**).

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GATE - Gate Status

This command reports the gate status of mics. This command is read only.

Command form: DEVICE **GATE**

Argument details

Name	Description
Device	0–7 or * to select all units
GATE	Command form

The command will return the gate status of mic inputs 1–8 in hexadecimal.

Example:

If	Hex # returned	Hexadecimal Description							
		Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
		Mic 8	Mic 7	Mic 6	Mic 5	Mic 4	Mic 3	Mic 2	Mic 1
Mics 1 and 2 are gated on	0 3	0	0	0	0	0	0	1	1
Mics 1 and 3 are gated on	0 5	0	0	0	0	0	1	0	1
Mics 1, 4, and 7 are gated on	4 9	0	1	0	0	1	0	0	1
Mics 3–6 and 8 are gated on	B C	1	0	1	1	1	1	0	0
		First digit				Second digit			

GHOLD- Gate Hold Time Adjust

This command selects/reports the setting of hold time.

Command form: DEVICE **GHOLD** <Channel> [Value]

Argument details

Name	Description	Units
Device	0–7 or * to select all units	
GHOLD	Command form	
Channel	See Groups and Channels, page 93	
Value	0.10-8.00	S
	Null to return the current hold time	

Example: #40 GHOLD 1 .3 On PSR1212 unit 0 (**#40**), the hold time (**GHOLD**) for mic channel **1** is 300ms (**.3**).

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GMODE - Gating Mode

This command selects/reports the setting of gating mode.

Command form: DEVICE **GMODE** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
GMODE	Command form
Channel	1–8 (select mic input)
Value	1 = auto, 2 = manual on, 3 = manual off, Null= current mode

Example: #45 GMODE 1 2 On PSR1212 unit 5 (**#45**), mic channel **1** is set to a gating mode (**GMODE**) if manual on (**2**).

Device	Type	ID
PSR1212	4	0–7
XAP 800	5	0–7
XAP TH2	6	0–F
XAP 400	7	0–7

GOVER - Gating Override

This command selects/reports the setting of gating override.

Command form: DEVICE **GOVER** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
GOVER	Command form
Channel	1–8 (select mic input)
Value	0 = Off, 1 = On, 2 = Toggle, Null = current mode

Example: #46 GOVER 1 0 On PSR1212 unit 6 (**#46**), the gating override (**GOVER**) on mic channel **1** is set to off (**0**).

GRATIO - Gate Ratio Adjust

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

Command form: DEVICE **GRATIO** <Channel> [Value]

Argument details

Name	Description	Units
Device	0–7 or * to select all units	
GRATIO	Command form	
Channel	1–8 (select mic input)	
Value	0 to 50	dB
	Null to return current ratio	

Example: **#42 GRATIO 1 15** On PSR1212 unit 2 (**#42**), the gate ratio (**GRATIO**) for mic channel **1** is set to **15**dB.

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GREPORT - Gate Report

This command selects/reports the gate status.

Command form: DEVICE **GREPORT** <Value>

Argument details

Name	Description
Device	0–7 or * to select all units
GREPORT	Command form
Value	0 = Off, 1 = On, 2 = Toggle

Example: #43 GREPORT 1 On PSR1212 unit 3 (**#43**), the gate reporting (**GREPORT**) is set to on (**1**).

— **Gate report sends a report on every gate change. If no mics are gated on, the report will be sent every 10 seconds.**

GRPSEL - Gating Group Select

This command selects/reports which gating group each input is assigned. There can be only one selection per input.

Command form: DEVICE **GRPSEL** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
GRPSEL	Command form
Channel	1–8 (selects mic input)
Value	1–4, A–D (selects gating group), Null to return current value

Example: #44 GRPSEL 1 A On PSR1212 unit 4 (**#44**), mic channel **1** is assigned to gating group (**GRPSEL**) **A**.

LABEL - Label

This selects/reports the label of the specific channel identified in the unit.

Command form: DEVICE **LABEL** <Channel><Group>[In/Out] [String]

Argument details

Name	Description
Device	0–7 or * to select all units
LABEL	Command form
Channel	See Groups and Channels, page 93
Group	I, O, M, G, P, L, E, U, W, S, C (see page 93)
In/Out	0 = Output, 1 = Input (For expansion bus groups only)
String	String of up to 20 characters representing the label text. Null to query and CLEAR to clear the label

Example: #47 LABEL 1 M WIRELESS On PSR1212 unit 7 (**#47**), the label (**LABEL**) for mic (**M**) channel **1** is **WIRELESS**.

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LFP - Lock Front Panel

This command sets and reports front panel access for the unit. When the unit is locked, access is not allowed to the unit until the unit is unlocked.
Command form: DEVICE **LFP** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
LFP	Command form
Value	0 = Unlock Panel, 1 = Lock Panel, 2 = Toggle Value, 3 = Lock when timed out

Example: #44 LFP 1 The PSR1212 unit 4 (**#44**), front panel (**LFP**) is locked (**1**).

LMO - Last Mic On Mode

This command selects/reports last Mic on mode for the specified gating group.
Command form: DEVICE **LMO** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
LMO	Command form
Channel	See Groups and Channels, page 93
Value	0 = Last Mic Mode disabled 1–8 = Select Last Mic mode on specified channel * = Last mic to stay on, Null to return the current mode

Example: #40 LMO A 0 On PSR1212 unit 0 (**#40**), the Last Mic Mode (**LMO**) for gating group **A** is disabled (**0**).

LOCK - Preset and Macro Lock

This command selects/reports the state of the preset and macro lock. When on, the lock prevents flagged presets and macros from being altered in any way.
Command form: DEVICE **LOCK** [Value][Password]

Argument details

Name	Description
Device	0–7 or * to select all units
LOCK	Command form
Value	0 = Off, 1 = On, 2 = Toggle
Password	Needs to be entered only when changing the lock. For security, this value is not returned.

Example: #41 LOCK 1 'password" On PSR1212 unit 1 (**#41**), any presets or macros that have been flagged with the LOCKPRST command will be locked (**LOCK**) and password protected (**1**) with the macro/preset **password** (LOCKPWD).

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LOCKPRST - Apply the lock to a preset or macro

Selects/reports whether the lock is applied to a preset/macro. If a preset/macro has the lock applied, it can be changed only if unlocked with the password.
Command form: DEVICE **LOCKPRST** <Channel><Group>[Value]

Argument details

Name	Description
Device	0–7 or * to select all units
LOCKPRST	Command form
Channel	1–32 (Preset) or 1–255 (Macro)
Group	S = Preset, C = Macro
Value	0 = Off, 1 = On, 2 = Toggle, Null = Query (value is returned only if unit is unlocked)

Example: #42 LOCKPRST 5 S 1 On PSR1212 unit 2 (**#42**), preset 5 (**5 S**) will be protected (**1**) whenever the lock option is enabled.

LOCKPWD - Set preset/macro password

Selects/reports the password for the preset/macro lock. This can be changed only if the unit is unlocked.
Command form: DEVICE **LOCKPWD** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
LOCKPWD	Command form
Value	1–12 characters Null = Query (value is returned only if unit is unlocked)

Example: #43 LOCKPWD mypassword On PSR1212 unit 3 (**#43**), the macro/preset password (**LOCKPWD**) is set to **mypassword**.

LVL - Level

This command reports the level. This command is read only.
Command form: DEVICE **LVL** <Channel> <Group> [Position] [Value]

Argument details

Name	Description	Units
Device	0–7 or * to select all units	
LVL	Command form	
Channel	See Groups and Channels, page 93	
Group	See Groups and Channels, page 93	
Position	See Meter Type Definitions, page 94	
Value	-99.99 to 99.99 Sent with Null in text, value returned	dB

Example: #41 LVL 8 L I 3 The level (**LVL**) received from PSR1212 unit 1 (**#41**) for line level (**L**) Input **8** at the Input stage (**I**) is **3**dB.

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LVLREPORT - Level Report

This command selects level status reporting.

Command form: DEVICE **LVLREPORT** <Channel> <Group> [Position] [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
LVLREPORT	Command form
Channel	See Groups and Channels, page 93
Group	See Groups and Channels, page 93
Position	See Meter Type Definitions, page 94
Value	0 = Off (Delete level from list of levels to be reported)
	1 =On (Add specified level to list of levels to be reported)
	2 = Toggle

Device	Type	ID
PSR1212	4	0–7
XAP 800	5	0–7
XAP TH2	6	0–F
XAP 400	7	0–7

Example: #42 LVLREPORT 8 L I 1 On PSR1212 unit 2 (**#42**), the level (**LVLREPORT**) of line level (**L**) input **8** at the input stage (**I**) is to be added (**1**) to the report.

LVLRRATE - Level Report Rate

Sets the level report rate for the unit and activates/deactivates level repeating.

Command form: DEVICE **LVLRRATE** [Value]

Argument details

Name	Description	Units
Device	0–7 or * to select all units	
LVLRRATE	Command form	
Value	0 = Turn off reporting but leave current list	
	1 = Turn off reporting and clear the list	
	50 to 1000 = Set Rate (1 meter every x ms)	ms
	Null to return current value	

Example: #43 LVLRRATE 100 On PSR1212 unit 3 (**#43**), the level report rate (**LVLRRATE**) is set to **100**ms.

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MACRO - Macro Execution/Reporting

This command executes a specified macro or reports the last macro executed. There are 255 macros that can be specified.
Command form: DEVICE **MACRO** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
MACRO	Command form
Value	1-255 Value to execute user macros

Example: #45 MACRO 1 On PSR1212 unit 5 (**#45**), Macro (**MACRO**) **1** is run.

— **The response indicates execution of the macro, but does not indicate that each command within the macro was executed.**

MASTER - Expansion Bus Master Mode

This command reports the mode of the unit. The mode can be Master or Slave.
Command form: DEVICE **MASTER** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
MASTER	Command form
Value	1 = Master, 2 = Slave, Null = Current mode of the unit

Example: #46 MASTER 2 On PSR1212 unit 6 (**#46**), the **MASTER** mode is set to slave (**2**).

MAX - Maximum Gain Setting

This command changes or reports back the maximum gain setting for an input, output or assignable processing block.
Command form: DEVICE **MAX** <Channel> <Group> [Value]

— **This setting will affect all relative gain adjustments.**

Argument details

Name	Description	Units
Device	0–7 or * to select all units	
MAX	Command form	
Channel	See Groups and Channels, page 93	
Group	I, O, M, P, L	
Value	-65.00 to 20.00	dB
	Null to return the current setting	

Example: #41 MAX 2 M 10 On PSR1212 unit 1 (**#41**), the maximum (**MAX**) relative gain setting for mic (**M**) channel **2** is **10**dB.

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MDMODE - Modem Mode

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.

Command form: DEVICE **MDMODE** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
MDMODE	Command form
Value	0 = Off, 1 = On, 2 = Toggle, Null = current modem mode state

Example: #47 MDMODE 1 On PSR1212 unit 7 (**#47**), the modem mode (**MDMODE**) is on (**1**).

MIN - Minimum Gain Setting

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

Command form: DEVICE **MIN** <Channel> <Group> [Value]

Argument details

Name	Description	Units
Device	0–7 or * to select all units	
MIN	Command form	
Channel	See Groups and Channels, page 93	
Group	I, O, M, P, L	
Value	-65.00 to 20.00	dB
	Null to return the current setting	

Example: #44 MIN 2 M -10 On PSR1212 unit 4 (**#44**), the minimum (**MIN**) relative gain setting for mic (**M**) channel **2** is **-10**dB.

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MINIT - Modem Initialization String

This command sets/reports the modem initialization string of the serial port when in modem mode.

Command form: DEVICE MINIT [String]

Argument details

Name	Description
Device	0–7 or * to select all units
MINIT	Command form
String	1-80 characters (select string characters to be sent to the modem when the unit is initialized CLEAR = clears the modem initialization string Null = Current string

Example: #46 MINIT ATZ On PSR1212 unit 6 (**#46**), the modem initialization string (**MINIT**) is **ATZ**.

MINMAX - Minimum and Maximum Gain Setting

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

Command form: DEVICE **MINMAX** <Channel> <Group> [Minimum] [Maximum]

Argument details

Name	Description
Device	0–7 or * to select all units
MINMAX	Command form
Channel	See Groups and Channels
Group	I, O, M, P, L
Minimum	-65.00 to 20.00, Null to return current settings
Maximum	-65.00 – 20.00

Example: #45 MINMAX 2 M -12 10 On PSR1212 unit 5 (**#45**), the minimum and maximum (**MINMAX**) relative gain settings for mic (**M**) channel **2** are **-12**dB and **10**dB respectively.

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MLINE - Mic/Line Adjust

This command selects/reports the setting of coarse gain adjustment on the input channels 1-8. The three settings are 0dB, 25dB, and 55dB.
Command form: DEVICE **MLINE** <Channel>[Value]

Argument details

Name	Description
Device	0–7 or * to select all units
MLINE	Command form
Channel	1–8 (selects mic inputs)
Value	0 = 0dB (line level), 1 = 55dB, 2 = 25dB, Null = current level

Example: #43 MLINE 1 2 On PSR1212 unit 3 (**#43**), the mic/line (**MLINE**) setting for input **1** is 25dB (**2**).

Device	Type	ID
PSR1212	4	0–7
XAP 800	5	0–7
XAP TH2	6	0–F
XAP 400	7	0–7

MMAX - Maximum Number of Microphones

This command selects/reports the maximum number of microphones for each gating group.
Command form: DEVICE **MMAX** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
MMAX	Command form
Channel	1–4, A-D (gating groups)
Value	0 = Unlimited, 1–8 = Maximum number of mics Null = Current maximum number of microphones

Example: #42 MMAX A 4 On the PSR1212 unit 2 (**#42**), the max number of mics (**MMAX**) in gating group **A** that are allowed to gate on at any one time is **4**.

— 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.

MPASS - Modem Password

This command sets the current password setting for the unit when using modem mode. The password must be entered in twice.
Command form: DEVICE **MPASS** [String]

Argument details

Name	Description
Device	0–7 or * to select all units
MMAX	Command form
String	0-12 characters, CLEAR = to clear the current password Null to report the current password

Example: #40 MPASS CLEARONE On PSR1212 unit 0 (**#40**), the modem password (**MPASS**) is set to **CLEARONE**.

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MTRX - Matrix

This command selects/reports the matrix routing of an input to an output.

Command form: DEVICE **MTRX** <SRC CHNL> <SRC GRP> <DEST CHNL> <DEST GRP> [Value]

SRC = source
DEST = destination
CHNL = channel
GRP = group

Argument details

Name	Description
Device	0–7 or * to select all units
MTRX	Command form
SRC CHNL	See Groups and Channels, page 93
SRC GRP	I, M, P, L, E
DEST CHNL	See Groups and Channels, page 93
DEST GRP	O, P, E
Value	0 = Cross point off
	1 = Cross point on (not valid for mic sources)
	2 = Cross point toggle (not valid for mic sources)
	3 = Non-gated (mic sources only)
	4 = Gated (mic sources only)
	Null = Current mode

Example: #47 MTRX 1 M 4 0 4 On PSR1212 unit 7 (**#47**), mic (**M**) channel **1** is routed (**MTRX**) as gated (**4**) to output (**0**) **4**.

MTRXLVL - Matrix Attenuation Adjustment

This command selects/reports the matrix level at the cross point.

Command form: DEVICE **MTRXLVL** <SRC CHNL> <SRC GRP> < DEST CHNL> <DEST GRP> [Value] [A/R]

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.

Argument details

Name	Description	Units
Device	0–7 or * to select all units	
MTRXLVL	Command form	
SRC CHNL	See Groups and Channels, page 93	
SRC GRP	I, M, P, L, E	
DEST CHNL	See Groups and Channels, page 93	
DEST GRP	O, P, E	
Value	-99.99 to 99.99	dB
	Null = Current mode	
A/R	A = Absolute	
	R = Relative, Null = Relative	

Example: #40 MTRXLVL 1 M 4 0 -6 On PSR1212 unit 0 (**#40**), cross point attenuation (**MTRXLVL**) at the point of mic (**M**) **1** and output (**0**) **4** is **-6**dB.

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MUTE - Mute

This command selects/reports the setting of mute on input, output or processing channels.
Command form: DEVICE **MUTE** <Channel> <Group> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
MUTE	Command form
Channel	See Groups and Channels, page 93
Group	I, O, M, P, L
Value	0 = Off, 1 = On, 2 = Toggle, Null = current mode

Example: #41 MUTE 2 M 1 On PSR1212 unit 1 (**#41**), the mute (**MUTE**) for mic (**M**) channel **2** is on (**1**).

NOM - Number of Open Microphones Mode

This command selects/reports the setting of Number of Open Microphones (NOM) on output channels. Command form: DEVICE **NOM** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
NOM	Command form
Channel	1–12 (select output)
Value	0 = Off, 1 = On, 2 = Toggle, Null = Current mode

Example: #45 NOM 2 1 On PSR1212 unit 5 (**#45**), the number of open microphones (**NOM**) attenuation for output **2** is on (**1**).

OFFA - Off Attenuation Mode

This command selects/reports the off attenuation mode of input channels 1–8.
Command form: DEVICE **OFFA** <Channel> [Value]

Argument details

Name	Description	Units
Device	0–7 or * to select all units	
OFFA	Command	
Channel	1–8 (select mic input)	
Value	0–60 (select off attenuation level)	dB
	Null to return the current off attenuation level	

Example: #46 OFFA 1 12 On PSR1212 unit 6 (**#46**), the off attenuation (**OFFA**) for mic channel **1** is **12**dB.

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PAA - PA Adaptive Mode

This command selects/reports PA adaptive mode for the specified mixer. There can be only one selection per mixer.
Command form: DEVICE **PAA** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
PAA	Command
Channel	1–8 (select mic input)
Value	0 = Off, 1 = On, 2 = Toggle, Null = Current mode

Example: #47 PAA 1 0 On PSR1212 unit 7 (**#47**), the PA adaptive mode (**PAA**) on mic channel **1** is disabled (**0**).

PP - Phantom Power

This command selects/reports the setting of phantom power.
Command form: DEVICE **PP** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
PP	Command
Channel	1–8 (select mic input)
Value	0 = Off, 1 = On, 2 = Toggle, Null = Current mode

Example: #41 PP 2 1 On PSR1212 unit 1 (**#41**), the phantom power supply (**PP**) for mic channel **2** is enabled (**1**).

PRESET - Preset Execution/Reporting

This command selects/reports the state of a preset.
Command form: DEVICE **PRESET** <Channel> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
PRESET	Command
Channel	1–32 (select preset)
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 = Returns the current preset state

Example: #42 PRESET 5 1 On PSR1212 unit 2 (**#42**), preset (**PRESET**) **5** will execute and set the state to on (**1**).

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PRGSTRING - Program String

This command sets/reports a programmed string.

Command form: DEVICE **PRGSTRING** <ID> [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
PRGSTRING	Command
ID	0 – 7 (string location)
Value	1–80 Characters
	CLEAR = Clear current value
	Null = Current value

Example: #43 PRGSTRING 2 MUTE On PSR1212 unit 3 (**#43**), string location **2** is programmed (**PRGSTRING**) with **MUTE**.

Supported special characters

\a = alert

\b = backspace

\f = formfeed

\n = new line

\r = carriage return

\t = horizontal tab

\v = vertical tab

\\ = backslash

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RAMP – Ramp Gain Adjustment

This command starts/stops the gain ramp for an input, output, or assignable processing block. There is no query for this command.
Command form: DEVICE **RAMP** <Channel><Group><Rate>[Target]

Argument details

Name	Description	Unit
Device	0–7 or * to select all units	
RAMP	Command	
Channel	See Groups and Channels, page 93	
Group	I, O, M, L, P, T, R (1, 2, 3, 5, 16, 17)	
Rate	-50 to 50	dB/s
	If value = 0. the ramp will stop	
	If value < 0, the gain will ramp down	
	If value > 0, the gain will ramp up	
Target	-65 to 20	dB
	If null in text, the ramp will use the channel's maximum and minimum for a target	

Example: #47 RAMP 5 L 6 12 On PSR1212 unit 7 (#47), the gain (RAMP) on Line Input 5 will increase at a rate of 6dB/sec until the 12dB point is reached.

REFSEL - PA/AEC Reference Select

This command selects/reports which output is used for each mic as a reference for power amp adaptation mode and acoustic echo cancellation where applicable. There can be only one selection per mixer.
Command form: DEVICE **REFSEL** <Channel> [Ref. Group] [Ref. Channel]

Argument details

Name	Description
Device	0–7 or * to select all units
REFSEL	Command
Channel	1–8 (select mic input)
Ref. Group	0 = Output, E = Expansion bus
Ref. Channel	1–9, O–Z (select output or E-bus channel)

Example: #40 REFSEL 1 O 8 On PSR1212 unit 7 (**#40**), the PA/AEC reference **REFSEL** for mic channel **1** is output (**O**) **12**.

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REFSET - Reference channel setup

This command selects/reports the output the reference channel tracks.
Command form: DEVICE **REFSET** <Channel> <Group>[Value]

Argument details

Name	Description
Device	0–7 or * to select all units
REFSET	Command
Channel	1–4 (select Virtual Reference number)
Group	1–9 (select output channel to track)
Value	0 = none

Example: #43 REFSET 2 4 On PSR1212 unit 3 (**#43**), virtual reference (**2**) will track gain changes made on output channel 4.

Device	Type	ID
PSR1212	4	0–7
XAP 800	5	0–7
XAP TH2	6	0–F
XAP 400	7	0–7

SERECHO - Serial Echo

This command selects/reports the serial echo of the RS-232 port.
Command form: DEVICE **SERECHO** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
SERECHO	Command
Channel	See Groups and Channels, page 93
Value	0 = Off, 1 = On, 2 = Toggle, Null = Current state

Example: #44 SERECHO 1 On PSR1212 unit 4 (**#44**), the serial echo (**SERECHO**) of the RS-232 port is set to on (**1**).

— If the serial mode is changed, the terminal will not see a response from the unit, nor will the unit respond to commands until the new status is matched by the terminal.

SERMODE - Serial Mode

This command selects/reports the serial mode of the RS-232 port.
Command form: DEVICE **SERMODE** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
SERMODE	Command
Value	1 = Text, 2 = Binary, Null = Current mode

Example: #45 SERMODE 1 On PSR1212 unit 5 (**#45**), the RS-232 port serial mode (**SERMODE**) is set to text (**1**).

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SFTYMUTE - Safety mute

Selects/reports the state of the safety mute. When on, the safety mute holds all outputs on the selected unit in a muted state. It is used primarily for troubleshooting G-Ware.

Command form: DEVICE **SFTYMUTE** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
SFTYMUTE	Command
Value	0 = Off, 1 = On, 2 = Toggle, Null = Current state

Example: #42 SFTYMUTE 1 On PSR1212 unit 2 (**#42**), safety mute (**SFTYMUTE**) is enabled (**1**).

SIGGEN - Signal Generator

This command selects/reports of the signal generator activation.

Command form: DEVICE **SIGGEN** <Channel> <Group> [Type] [Amplitude] [Frequency]

Argument details

Name	Description
Device	0–7 or * to select all units
SIGGEN	Command
Channel	See Groups and Channels, page 93
Group	I, M, L
Type	0 = Off, 1 = Pink, 2 = White, 3 = Tone, Null = Current state
Amplitude	-60 to +20 amplitude in dB; NULL for type 0
Frequency	20 to 20,000 frequency in Hz (needed only when using tone generation)

Example: #46 SIGGEN 1 M 2 0 On PSR1212 unit 6 (**#46**), the signal generator (**SIGGEN**) is set to input at mic (**M**) channel **1** with white noise (**2**) at **0**dB.

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SIGTOUT - Signal Generator Time Out

Sets the signal generator time out for the unit.
Command form: DEVICE **SIGTOUT** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
SIGGEN	Command
Value	0 = Off, 1–30 = Set time out minutes, Null = Current rate

Example: #47 SIGTOUT 15 On PSR1212 unit 7 (**#47**), the signal generator time out (**SIGTOUT**) is set to **15** minutes.

STRING - String Execution

— The serial command to create a string is PRGSTRING (Program String). See page 118.

This command sends the specified string out the serial port.
Command form: DEVICE **STRING** [ID]

Argument details

Name	Description
Device	0–7 or * to select all units
STRING	Command
ID	0 – 7
	Null to query last string in text

Example: #41 STRING 3 On PSR1212 unit 1 (**#41**), the **STRING** programmed into location **3** will be sent out the RS-232 port.

TOUT - Time Out Select

This command selects/reports the inactivity time out before returning to the unit title screen.
Command form: DEVICE **TOUT** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
TOUT	Command
Value	0 = Off, 1–15 (select time out in minutes)
	Null = Current mode

Example: #42 TOUT 5 On PSR1212 unit 2 (**#42**), the front panel of the unit will time out (**TOUT**) after **5** minutes.

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UID - Unit ID

This command reports the unit ID. This command is read only.
Command form: DEVICE **UID** [Value]

Argument details

Name	Description	Units
Device	0–7 or * to select all units	
UID	Command	
Value	Null to return value	Hexadecimal

Example: #43 UID B465F991 The unit ID number (**UID**) received from PSR1212 unit 3 (**#43**), is **B456F991**.

VER - Version

This command reports the firmware version of the unit. This command is read-only.
Command form: DEVICE **VER** [Value]

Argument details

Name	Description
Device	0–7 or * to select all units
VER	Command
Value	Null to return value

Example: #44 VER 1.0.0 The version of the firmware (VER) programmed into PSR1212 unit 4 (#44), is 1.0.0.

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Appendix F: Warranty

ClearOne Communications, Inc. (Manufacturer) warrants that this proc
free of defects in both materials and workmanship. For full warranty
and coverage, refer to the ClearOne website at www.clearone.com.

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Appendix G: Compliance

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 ClearOne Communications, Inc. 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"

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 may not cause harmful 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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Glossary

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 PSR1212 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 Time 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.

Audio routing The process of routing input signals (Mics 1–8, Inputs 9-12, From E-bus, From Processing) to output destinations (Output 1–12, To E-bus, To Processing) in the Matrix screen.

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 PSR1212.

Auxiliary audio Audio that comes from line level audio sources such as video codecs, XAP TH2s, and CD players.

Bandwidth The difference between the lower and upper 3dB end points of an audio band. Also, the range or differences between the limiting frequencies of a continuous frequency band.

Baud Rate The number of signal transitions per second, or the clock rate of the serial bit stream in hertz. Given 7 or 8 bits for data plus start and stop, the approximate ASCII character transmission rate is one-tenth the baud rate.

Chairman Override Provides gating priority for chairman override enabled microphones within the same gating group. When a mic with chairman override gates on, all mics which don't have chairman override enabled and are in the same gating group will gate off.

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Clipping A condition in which a signal level exceeds the maximum level a circuit can handle. This is usually caused by improper gating parameters and gain settings. It causes distortion and typically leads to listener fatigue and accelerated failure of loudspeaker drivers.

Compression An induced reduction in the dynamic range of part or all of an audio signal. Compression is usually used to protect individual loudspeaker components from the damaging effects of transients.

Compressor The compressor is part of the processing settings and allows you to change the gain transfer characteristics of the signal path and to control the dynamics of the signal.

Configuration mode Configuration mode is the default mode in G-Ware and is used for system setup. It provides access to the Matrix and Flow Screens. See also Preset mode and Macro mode.

Control bus Part of the expansion bus, the control bus passes control information to the units. Control is not affected by master/slave settings and will continue to function even if the units are not using the audio channels.

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 PSR1212'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.

- **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.
- **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.
- **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.

Cross point The intersection between an input and an output in the routing matrix. Cross point cells are colored according to input type.

Cross point attenuation The process of attenuating audio level at the cross point. Audio can be attenuated from 0 to 60dB.

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Decay Rate (slow, medium, fast) Determines how fast a channel gates off after hold time expires. Default is medium.

Default meter The input/output displayed on the front panel LED meter when a input/output meter is not specifically selected elsewhere.

Delay A setting in the Processing window. Delay calculates the amount of signal delay (up to 500ms) based on the distance between audio source and audience and the temperature.

Device ID A number which identifies the unit when multiple units of the same device type are connected in an E-bus network. Because up to eight PSR1212s can be used in the same network, the device ID range is 0–7.

Device Type A number which identifies the type of unit. For example, a PSR1212 is device type 5.

DSP Digital signal processor.

Expansion bus Consists of two RJ-45 connectors on the rear panel of the PSR1212. An expansion bus allows multiple PSR1212s to be networked together using category five twisted-pair (10BaseT) cable.

Expansion bus reference One of the PA adapt reference options. The expansion bus reference allows you to reference an output on a networked unit.

Filter A device that passes and blocks audio signals based on user-definable requirements of the system.

- **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 for matching the delay of two processing channels with different delays.
- **High Pass** A filter that passes high signal frequencies while attenuating low frequencies. The gain or loss
- **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. The gain or loss above the corner frequency is adjustable to +/–15dB.
- **Low Pass** A filter that passes low frequencies while attenuating high frequencies.
- **Low Shelving** Provides boosting or attenuation of frequencies below a designated frequency. The transition between the spectrum above and below

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the designated frequency occurs at a fixed 6dB/octave rate. The gain or loss below the corner frequency is adjustable to +/- 15dB.

Filter Display A group of nodes plotted on a logarithmic scale. The PSR1212's filter display can be accessed through the Inputs 1-8, From Processing, or To Processing windows.

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.

Flow control The regulation of the transmission and reception of data.

Flow Screen The Flow Screen is the main access window for G-Ware features and unit configuration. It also shows a detailed block diagram of the audio signal—presenting a graphical explanation of each stage in the signal path.

Gain The amount a signal is increased over a given reference, typically 0. Normally specified in dB (decibels). On the PSR1212, gain is adjustable from -65 to 20dB (85dB range) in .5dB increments.

Gain Structure The configuration of parameters which define gain adjustment of a signal. The optimal input gain setting is one which provides both an adequate signal-to-noise ratio and reasonable headroom.

Gate The activation and deactivation of microphones.

- **Auto** The microphone will gate on according to the input level, assigned gating parameters, and gating group.
- **Manual On** The microphone will gate on unless it exceeds the NOM requirements of the gating group.
- **Manual Off** The microphone is deactivated.

Gate Ratio Specifies how much louder the microphone audio level must be above the ambient sound level before a microphone gates on.

Gating controls The gating parameters that are assigned to a gating group: Maximum Number of Mics, First Mic Priority, and Last Mic Mode.

Gating groups A set of gating parameters which can be applied to local microphones (Internal 1–4) or to microphones connected to other units on the network (Global A–D). Gating groups provide greater flexibility and control of mics.

Global gating bus Part of the expansion bus, these four mix-minus buses pass mic status and gate parameter information such as First Mic Priority and Max NOM.

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GPIO (general purpose input/output) The Control/Status A and B ports on the PSR1212 unit. The GPIO Builder is used to program Control/Status A pins.

G-Ware Software The PSR1212'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 can be used to prevent the microphone from gating off during brief pauses in speech.

Last Mic 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 series of user-created instructions, stored within the unit, which can be executed from an RS-232 command or contact closure.

Macro Mode The G-Ware mode that allows you to customize and execute macro commands for a PSR1212 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 PSR1212, the matrix mixer permits level control at each cross point in the matrix.

Matrix Screen The Matrix Screen facilitates the routing of any input to any output or combination of outputs.

Maximum Number of Mics 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 situation in which audio from mics on different signal lines are mixed together. All mic signals can be mixed to one signal line, any or all outputs, or mixed into separate groups. Mic signals can also be processed together or individually.

Microphone 1 Mode Reverts mic assignment to a designated mic when all mics gate off.

Min/Max adjust The yellow and blue upper and lower limit arrows on gain scales are used to create minimum and maximum gain level limits. These limits apply only when using relative gain commands; absolute gain commands can exceed the min and max limits. Min and max limits apply to all serially connected control devices and prevent users from adjusting levels beyond the min/max levels provided relative gain commands are used.

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Mixer mode The mixer mode has two settings: master and slave. Mixer mode can be configured from the front panel or in the Unit Properties window.

Mute A condition in which an audio signal is attenuated below the audible threshold.

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.

O–R buses These four audio buses communicate NOM count and mic mixing parameters.

Off Attenuation The amount of level reduction a microphone is given when the microphone is not gated on.

PA Adaptive Mode The PSR1212 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 Adapt Reference This G-Ware setting determines which output (typically for a loudspeaker) is used as a reference for an input.

PA Adapt Reference bus This bus carries reference information, making it possible for an input to reference an output on another linked unit.

Parametric Equalizer (PEQ) A multi-band variable equalizer with control of gain, center frequency, and bandwidth. A properly configured PEQ enables the PSR1212 to offset loudspeaker or room acoustic deficiencies.

Passwords The PSR1212 features several passwords to protect system configuration.

- **Front panel** The front panel password prevents a user from changing settings in the front panel LCD menus. The password can be set from the front panel or through G-Ware.
- **Macro** The macro password is created in the Unit Properties window and makes it possible to lock certain macros. A locked macro can be run without the password. However, a password must be entered to edit the macro.
- **Modem** The modem password can be created serially using the MPASS command or through G-Ware in the Unit Properties window. The password is required to allow remote modem access.

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- **Preset** The preset password is created in the Unit Properties window and makes it possible to lock certain presets. A locked preset can be executed without the password. However, a password must be entered to edit the preset.
- **Site file (File Access)** The site file password is set in the Site Properties window and will lock the site file. Users must enter the password in order to open the site file.

Phantom Power Power supplied by the PSR1212 to power most condenser microphones. The PSR1212 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 PSR1212. A preset can be programmed with a variety of routing, level, gating, delay, filter, and equalizer settings to meet specific application requirements.

Preset Mask Defines whether a contact closure activates on a low or high signal on the rear panel of the unit.

Preset Mode Preset mode is used to create presets and is accessed from the G-Ware toolbar.

Processing blocks There are four processing blocks or channels (A–H) in the PSR1212 each with 15 filters, delay, and a compressor for pinpoint audio configuration. A single input or group of inputs can be routed through a processing block and then routed to an output or multiple outputs.

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 PSR1212.

Ratio The amount of compression applied to the output signal compared with the input signal as the signal exceeds the threshold level.

Release time Release is a parameter which determines how quickly compression is released after the input signal drops below the threshold.

Reverberation A diffused acoustic energy field fed and maintained by sound reflections from the room surfaces.

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S–Z buses These eight buses are defaulted as auxiliary mix buses. They are used to route auxiliary audio to and from other units on the network. These buses are also used as mic mix buses when NOM count is not required.

Serial Command A bit description designed to execute an instruction or command.

Serial mode The serial mode determines the format in which serial commands return text or binary. The mode defaults to Binary when G-Ware is connected and to Text when disconnected. Contact technical support for instructions on using Binary mode.

Signal Delay Used for:

- Compensating for physical placement of multiple drivers in a cluster—to align points of acoustic origin in the same plane.
- Ensuring matching arrival times at listeners from multiple loudspeaker drivers.
- Using the Haas effect to maintain localization of the source, even with a distributed system.

Signal Generator A device for generating a reference tone for sound system calibration purposes.

Site file A site file is a file created by G-Ware which is saved on your computer. The site file contains all information about a particular installation including all unit settings and properties. It also provides G-Ware with the necessary information to communicate with the site hardware using your PC.

Site properties The Site Properties window opens when you select New Site from the File menu or click on the New Site button on the toolbar. It allows you to enter information about the site as well as configure the communication and security settings.

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.

Unit properties The Unit Properties window opens when you add a new unit to the site. It allows you to enter information about the unit as well as configure the communication and security settings.

Virtual reference Virtual references are echo cancellation reference points. Multiple signals can be included in each of the four virtual references, thus allowing

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you to reference multiple signals without sacrificing an analog output. You can open the Virtual Reference window from the G-Ware toolbar or from the Acoustic Echo Cancellation window.

White Noise Acoustical noise with equal energy throughout a given frequency range.

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