PowerShare Editor User's Guide

Version 1.0

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Introduction

The PowerShare Editor software provides access to all the signal processing functions available within the Bose® PowerShare amplifier series. Use the PowerShare Editor software to define signal processing parameters and store configured signal processing chains as PowerShare Project files (.psp) while the amplifier is online or offline. You can also use the PowerShare Editor software to update the PowerShare amplifier's firmware and the Bose loudspeaker equalization database.

Additional Resources

Additional information on the use and configuration of PowerShare amplifiers can be found at pro.Bose.com.

Application questions can be directed to the Bose Pro user's forum at proforum.Bose.com.

Install PowerShare Editor

Minimum System Requirements

The following are the minimum system requirements for the PowerShare Editor software:

- Microsoft Windows 7 (Professional or Ultimate)
- Microsoft Windows 8
- Microsoft Windows 10
- Intel® Pentium® 4 850Mhz processor (or better)
- Minimum screen resolution of 1280x768
- 512 MB RAM
- 100 MB disk space available

Installation Steps

To install the PowerShare Editor software:

1. Double-click on **setup.exe** to launch the PowerShare Editor Setup Wizard.

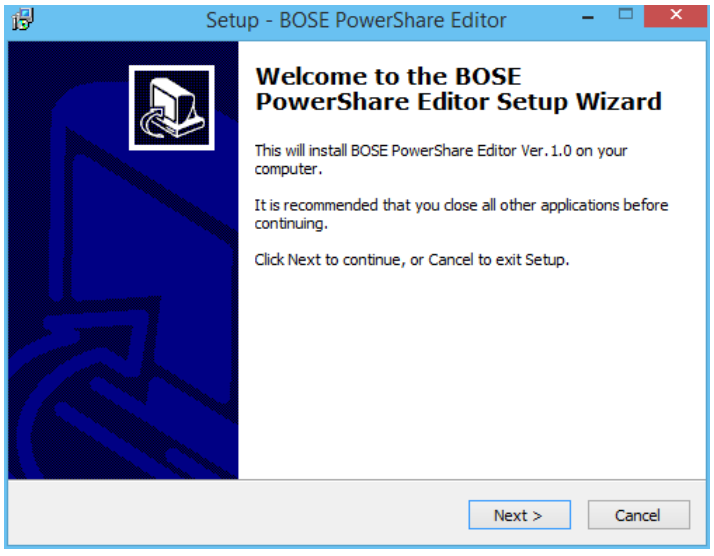


Figure: PowerShare Editor Setup Wizard - Begin Installation

2. Click **Next** to begin installation.

3. Follow the prompts to install the PowerShare Editor software onto your computer.
4. Click **Finish** when installation is complete. Check the box if you want to launch PowerShare Editor immediately upon exiting the setup wizard.

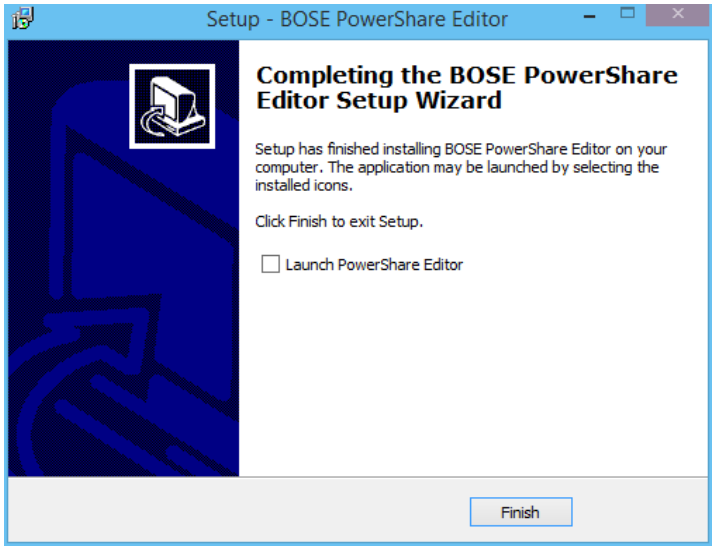


Figure: PowerShare Editor Setup Wizard - Installation Complete

Windows Display Configuration

For optimal viewing of the PowerShare Editor Software, set the Windows Display Size to 100%. Access the Windows display settings by navigating to **Control Panel > Display** in Windows Explorer.

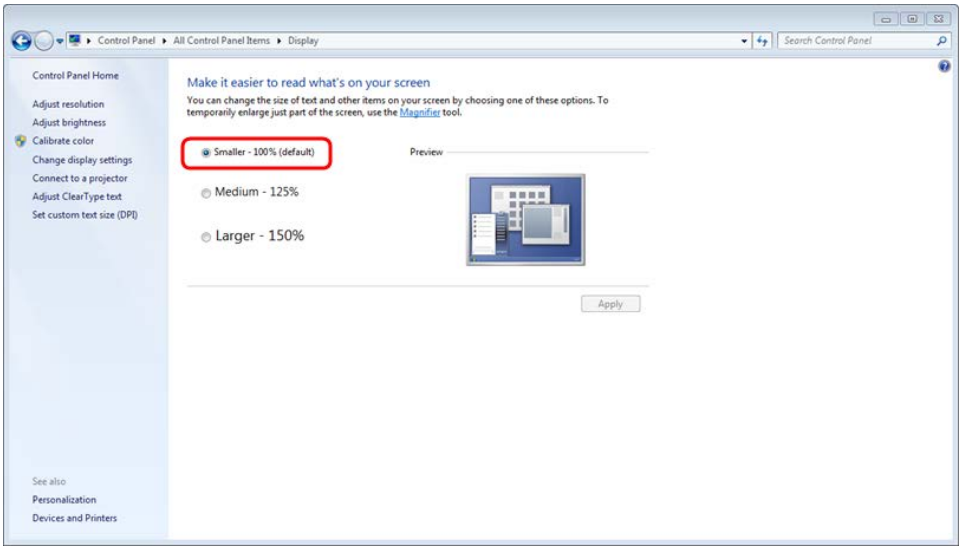


Figure: Windows Control Panel > Display

Configure the Amplifier Hardware

The position of the **CONFIG** DIP switch on the rear panel of the amplifier determines whether the signal processing parameter settings are configured using the PowerShare Editor software or the rear panel EQ dials.

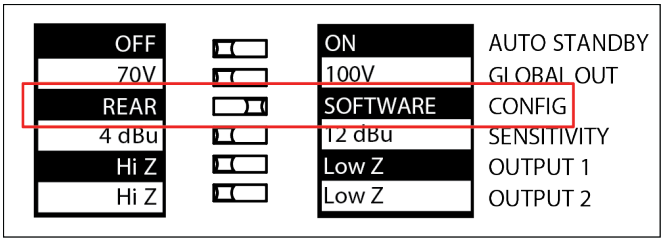


Figure: PowerShare PS602 DIP Switches

To configure the amplifier using the PowerShare Editor software, set the **CONFIG** DIP switch to **SOFTWARE**. In this mode, the amplifier ignores the EQ dial settings on the rear panel and instead uses the settings uploaded to the amplifier from the software. You can disconnect the amplifier from the PC when setup is complete, and the amplifier will retain the settings.

If you use the PowerShare Editor software to configure the amplifier, and then change the **CONFIG** DIP switch setting to **REAR**, the amplifier loads the EQ dial settings instead. Any other settings configured using the software return to their default states. However, the software settings are not erased from the amplifier's memory: If the DIP switch is changed back to **SOFTWARE**, all of the software settings are automatically reloaded.

To configure the amplifier using the rear panel EQ dials, set the **CONFIG** DIP switch to **REAR**. If you configure the amplifier using the rear EQ dials, and then change the DIP switch setting to **SOFTWARE**, the amplifier configuration reverts to the settings most recently uploaded to the amplifier from the software. If the amplifier has never been configured using the software, then all settings return to their default state. If the DIP switch is then changed back to **REAR**, the EQ dial settings are restored.

For more information about configuring the amplifier using the rear panel EQ dials, see the PowerShare Installation and Operating Guide at pro.Bose.com.

Connect the Amplifier

The PowerShare Editor software communicates with the amplifier using a standard USB connection and a standard USB-controlled human interface device (HID).

To establish a connection between the software and the amplifier:

1. Connect the amplifier to the PC using a USB cable.
2. Turn on the amplifier.
3. Confirm that the PC recognizes the amplifier by locating the device in **Control Panel > Hardware and Sound > Devices and Printers**.

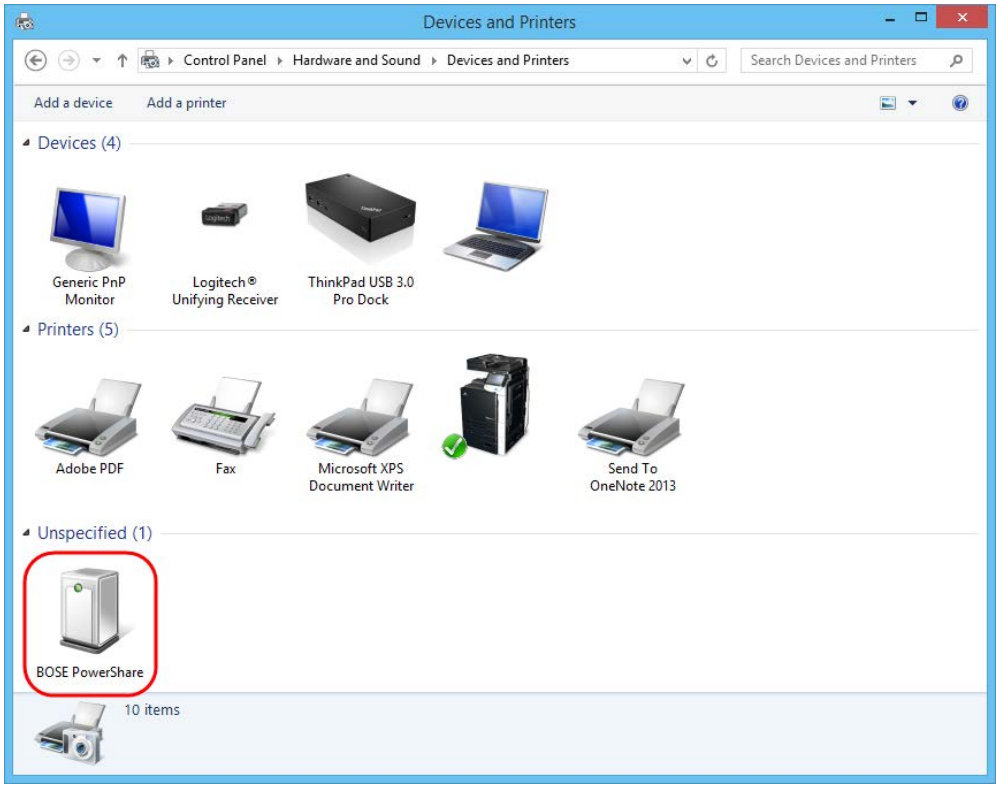


Figure: Windows Control Panel - Devices and Printers

4. Launch the PowerShare Editor software. The software automatically detects the amplifier and establishes a connection. It also displays the device type, firmware version, and a green "Connected" icon to the right of the toolbar.

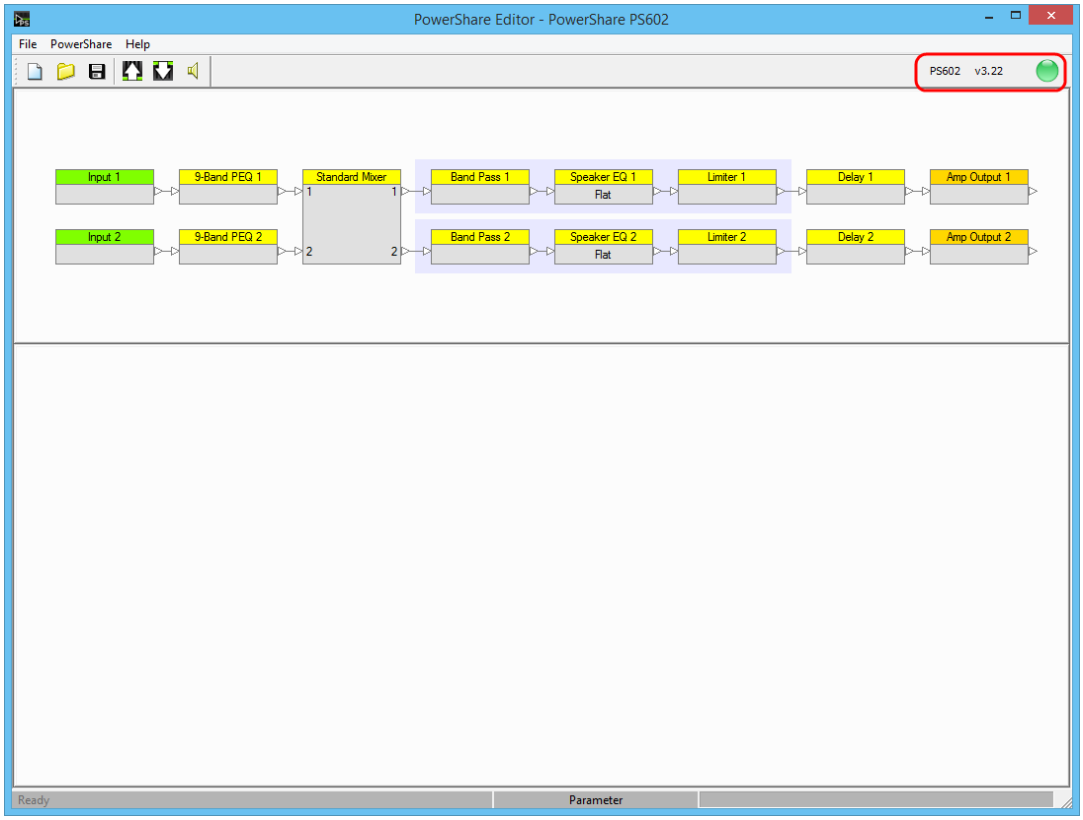


Figure: Connection Indicators in PowerShare Editor

5. When the device detection dialog box appears, select from the following options:

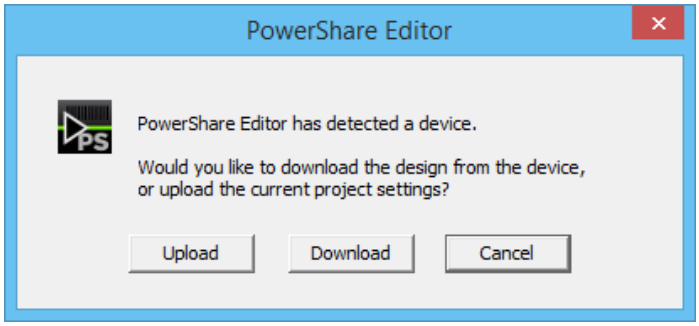


Figure: Device Detection Dialog Box

- **Upload** - Upload parameter settings from PowerShare Editor software interface to the amplifier.
- **Download** - Download parameter settings from the amplifier and load them into the PowerShare Editor software interface.
- **Cancel** - Keep the amplifier and the software interface in their current settings.

Note: If no device is found, the software shows a red "Disconnected" icon instead of a green "Connected" icon to the right of the toolbar, and the device detection dialog box does not appear. You can still use the PowerShare Editor software to create a configuration for the amplifier offline, and then upload the settings to the amplifier when it is connected.

Work with PowerShare Editor

Work with Project Files

PowerShare Editor Project (.psp) files allow you to create, save, and open configurations of signal processing parameters using the PowerShare Editor software, and then upload the settings to the connected amplifier.

Create a New Project

You can create a new project when working either online (with an amplifier connected to the PC) or offline (without an amplifier connected to the PC).

To create a new project while working online, select **File > New**. The PowerShare Editor software automatically displays the signal processing map that is appropriate for the connected amplifier (two inputs and two outputs for the PowerShare PS602 and PS602P, or four inputs and four outputs for the PS604).

To create a new project while working offline, select **File > New**. The PowerShare Editor prompts you to select the amplifier model for the project, and displays the signal processing map that is appropriate for the selected amplifier.

Open an Existing Project

To open an existing PowerShare Editor Project (.psp) file, select **File > Open**. You can open and edit a previously-saved project when working either online or offline.

Save a Project

To save the current parameters as a PowerShare Editor Project (.psp) file, select **File > Save**. To save the current parameters as a PowerShare Editor Project file with a new name, select **File > Save As...** and specify the file name in the dialog box. You can save a project file when working either online or offline.

Upload and Download Settings From the Amplifier

When an amplifier is online, you can download the parameter settings from the amplifier into the software by clicking **Download from Amp**. This retrieves the most recent parameter settings uploaded to the amplifier from the software, and populates the block control panels with this information. If no parameter settings have been uploaded into the amplifier, then it retrieves the default settings. It does not retrieve any parameters set using the rear panel EQ dials. This function is only available when working online.

After configuring the signal processing parameters in the software, click **Upload to Amp** to upload the parameter settings to the connected amplifier. This overwrites any parameters previously uploaded to the amplifier from the software. This function is only available when working online.

Adjust Parameter Settings

The primary component of the PowerShare Editor software interface is the Signal Processing Map. Click on the blocks in the map to display their control panel and adjust their settings. See "Software Interface Overview" on page 13 for more information.

Note: Adjusting the parameter settings in the software interface does not automatically change the settings in the amplifier. Click **Upload to Amp** to upload the parameter settings to the connected amplifier.

Upgrade and Downgrade Firmware

Upgrade Amplifier Firmware

If an amplifier is connected to the PowerShare Editor software, the version number of the firmware on the amplifier is displayed to the right of the toolbar.

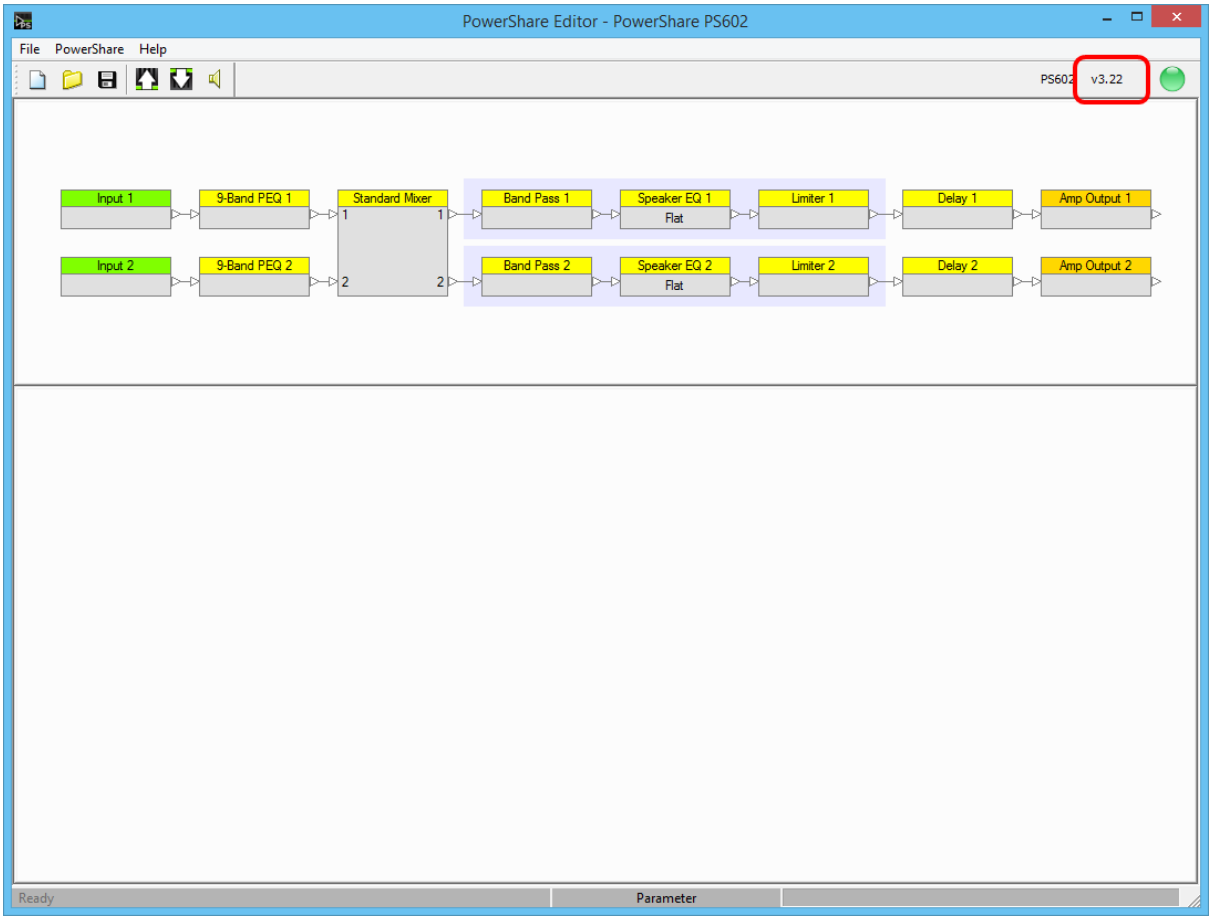


Figure: Current Firmware Version Display

The PowerShare amplifier firmware is stored in the directory **C:\Program Files (x86)\Bose\PowerShare Editor\Firmware**. Firmware updates are periodically available at pro.Bose.com. When a firmware update is made available online, download the file and place it in the firmware directory.

When PowerShare Editor finds a firmware version in the directory that is newer than the firmware on the connected amplifier, a prompt appears to update it:

1. Click **Yes** to launch the **Firmware Update** dialog.

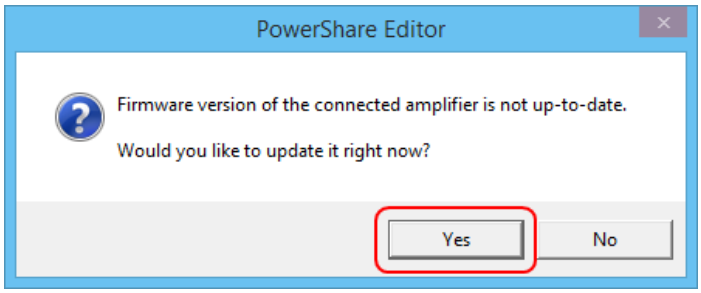


Figure: Firmware Update Prompt

2. When the **Firmware Update** dialog appears, click **Update firmware** to begin the firmware update process.

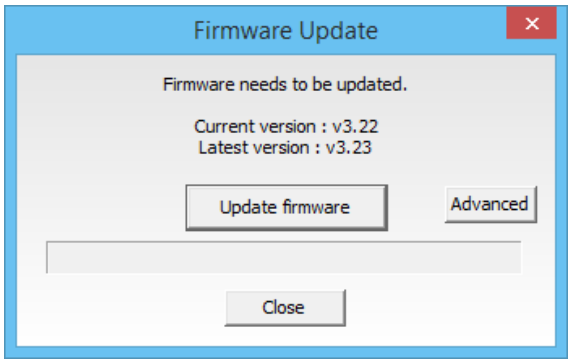


FIgure: Firmware Update Dialog

3. **Caution:** Do not turn off the amplifier while the firmware is updating.

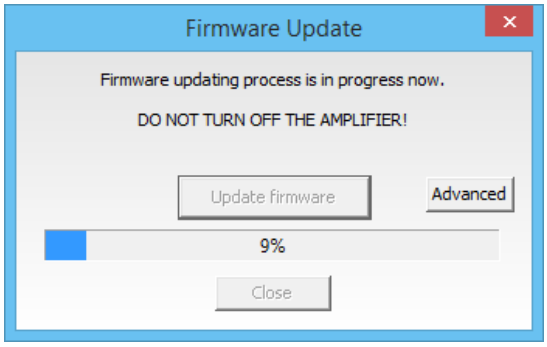


Figure: Firmware Update in Progress

4. Once the firmware is successfully updated, click **Close**.

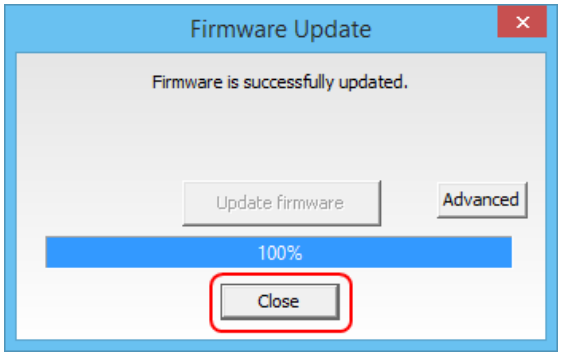


Figure: Firmware Update Complete

Downgrade Amplifier Firmware

To downgrade the firmware version on a connected amplifier:

1. Select **PowerShare > Firmware Update** in the menu bar.
2. Click **Advanced** in the **Firmware Update** dialog:

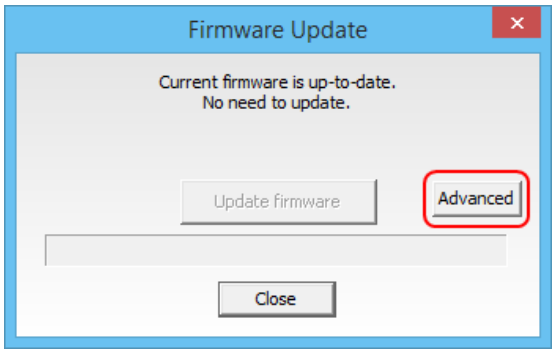


Figure: Firmware Update Dialog

3. Select the desired firmware version from the list and click **Update firmware**.

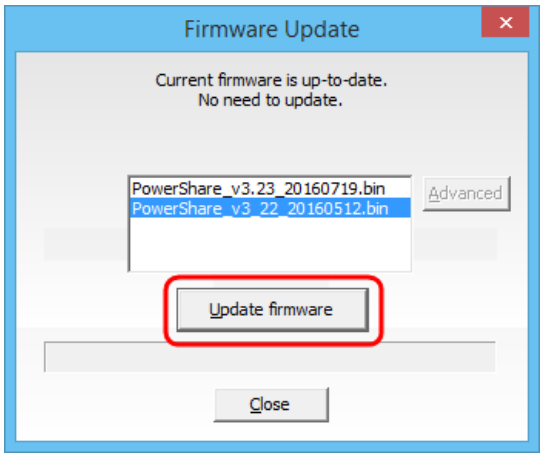


Figure: Update Firmware Option

By default, the firmware files are stored in the directory **C:\Program Files (x86)\Bose\PowerShare Editor\Firmware**. Any firmware versions stored in this directory will appear in the list.

Software Interface Overview

The PowerShare Editor software interface consists of two primary components:

- Signal Processing Map [1]
- Processing Control Panel [2]

Additional functions are available within the application menus and tool bar.

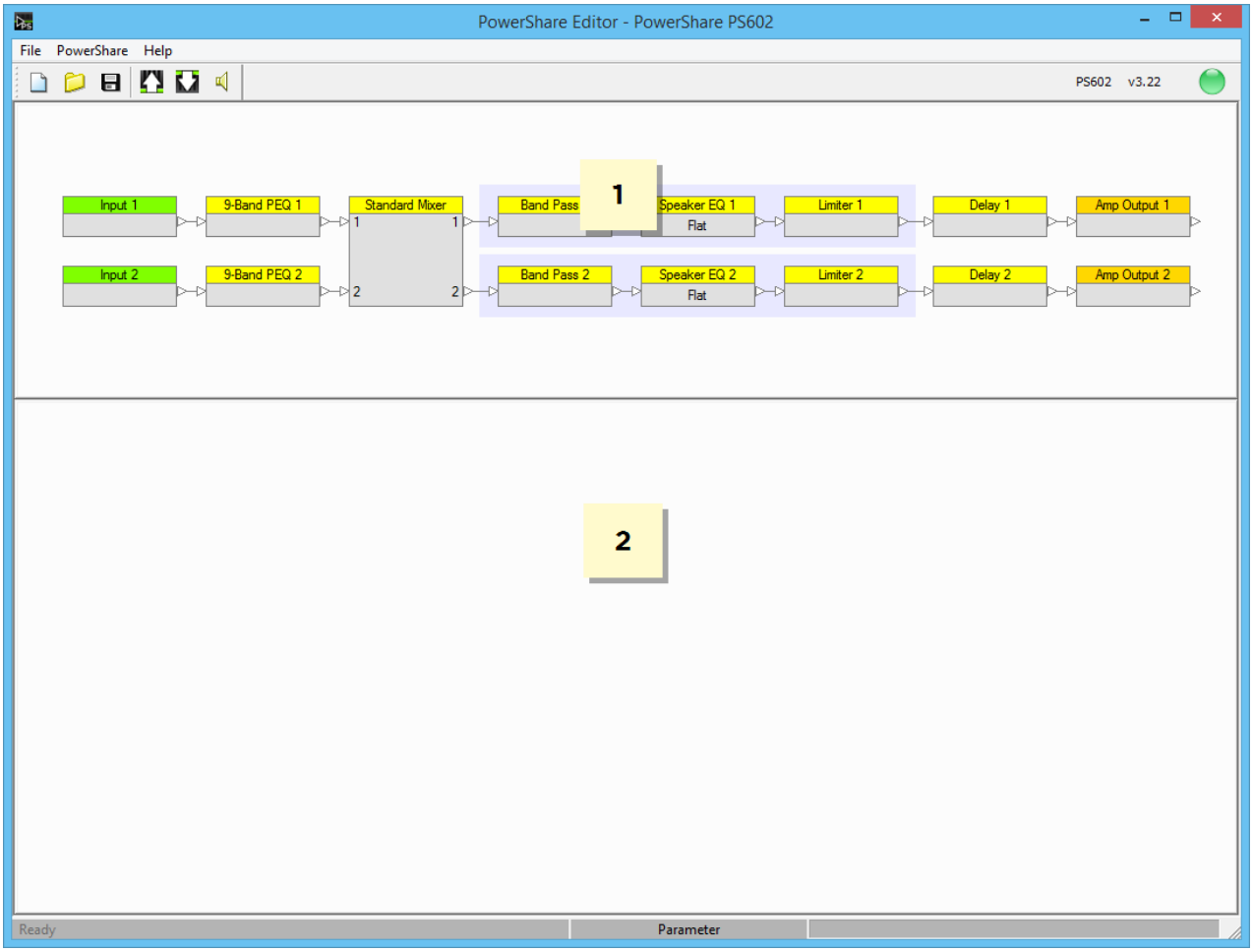


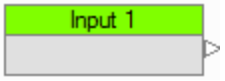
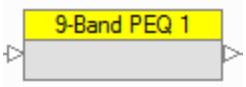
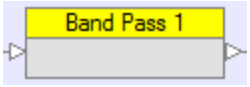
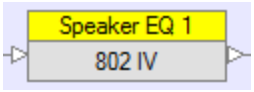
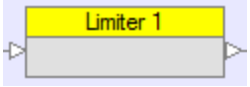
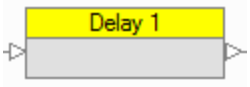
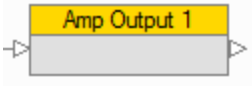
Figure: PowerShare Editor Software Interface

Software Interface Components

Signal Processing Map

The **Signal Processing Map** is the primary component within the software interface, and displays the available signal processing functions within the PowerShare amplifier. The wiring of individual processing blocks represents the signal flow within the amplifier. To configure an individual processing function, select its block in the Signal Processing Map. This displays its control panel within the Processing Control Panel of the software interface.

The following blocks and options are available within the Signal Processing Map:

Block	Function	Map	Right-Click Options
Input	Represent input signal.		N/A
9-Band Equalizer (PEQ)	Adjust PEQ per channel. The default setting is flat for all bands, for each channel.		Copy Parameters Paste Parameters
Standard Mixer	Route any inputs to any outputs. The default setting routes each input to its corresponding output. The standard mixer block is 2x2 for the PS602 and PS602P amplifiers, and 4x4 for the PS604 amplifier.		N/A
Band Pass Crossover	Set high-pass and low-pass filters, per channel. The default setting is flat.		Copy Parameters Paste Parameters
Bose® Loudspeaker Equalization	Set the EQ by choosing any FreeSpace, Panaray, RoomMatch Utility, or F1 Passive Bose loudspeaker, with associated limiter settings, per channel. The default setting is flat.	 Displays current Bose loudspeaker PEQ setting	Copy Parameters Paste Parameters
Output Signal Limiter	Set V Peak and V RMS limiters. Values are automatically loaded when a loudspeaker is selected in the Bose Loudspeaker PEQ block. Values are adjustable.		Copy Parameters Paste Parameters
Signal Delay	Set output channels 1 and 2 with up to 50 ms of delay. The default setting is 0 ms delay. Delay is available on channels 1 and 2 only for all amplifier models.		Copy Parameters Paste Parameters
Output Polarity	Set each output to non-inverted or inverted polarity.		Copy Parameters Paste Parameters

Processing Control Panel

The **Processing Control Panel** displays the control functions of the selected signal processing block. If no processing function is selected, the Control Panel is empty.

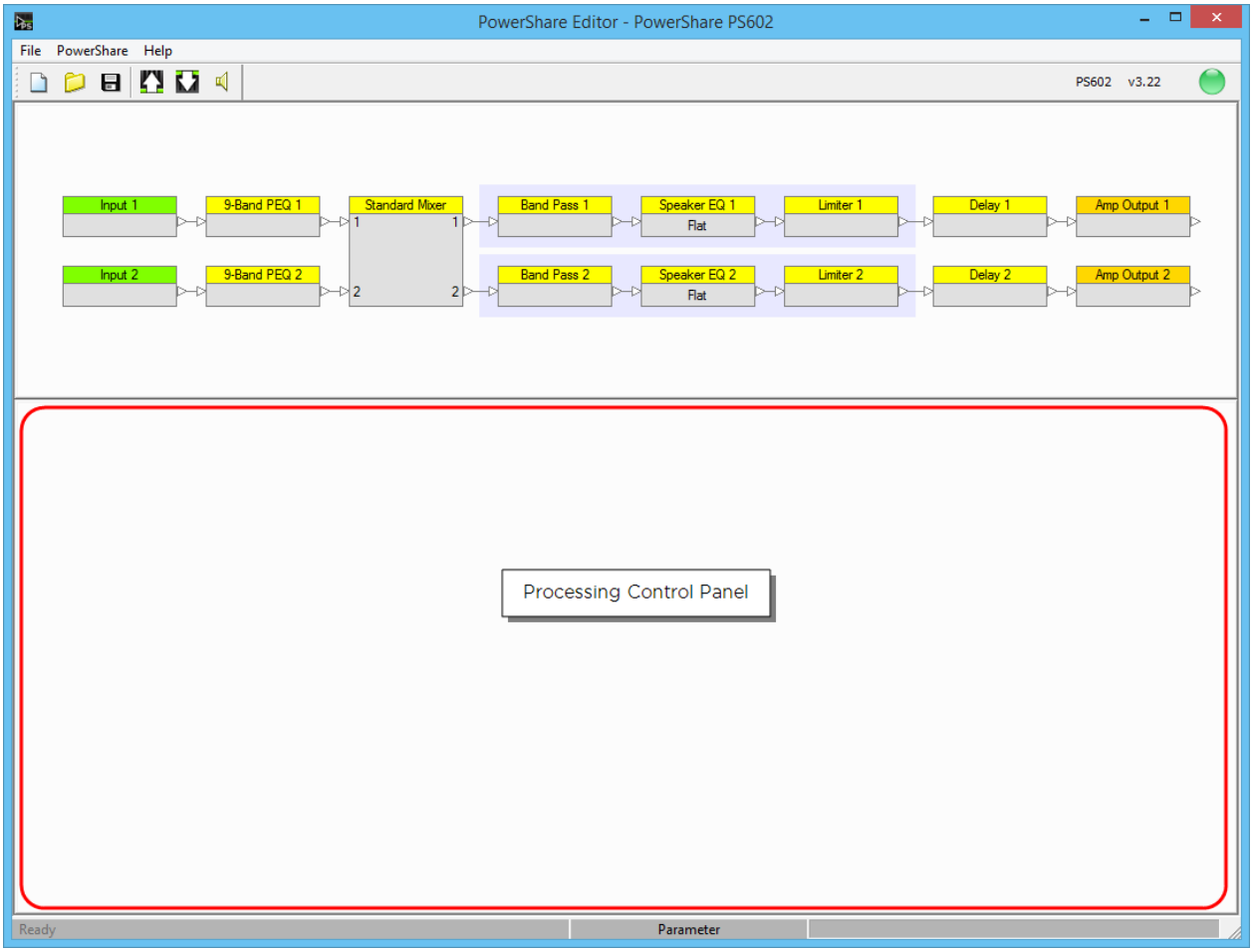
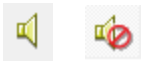
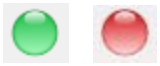


Figure. PowerShare Editor Processing Control Panel

Toolbar Reference

The application toolbar provides quick access to the most common functions within the PowerShare Editor software.

Toolbar Item		Function
New		Create a new project file with all signal processing parameter settings restored to their default values.
Open		Launch the File Open dialog box to open an existing PowerShare Editor Project (.psp) file from the local hard drive.
Save		Save the current signal processing parameter settings to the local hard drive as a PowerShare Editor Project (.psp) file.
Upload To Amp		Upload the signal processing parameter settings from the software interface to the amplifier.

Toolbar Item		Function
Download From Amp		Download the signal processing parameter settings stored in the amplifier to the software interface.
Mute/Unmute		Mute or unmute audio output. This function is available only when connected to the amplifier.
Hardware Connection Indicator		Green light indicates an amplifier is actively connected to the PC. Red light indicates no amplifier is connected to the PC.

Menu Reference

The PowerShare Editor menu bar offers three menus: File menu, PowerShare menu, and Help menu.

File Menu

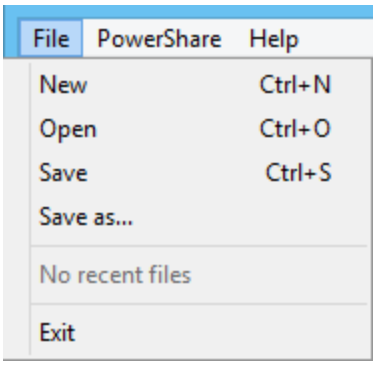


Figure: File Menu with No Recently-Used Files

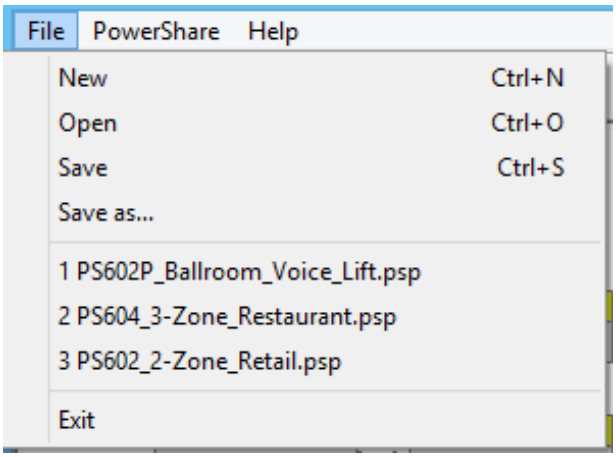


Figure: File Menu Displaying Recently-Used Files

Menu Item	Function
New	Create a new project file with all signal processing parameter settings restored to their default values.
Open	Open an existing PowerShare Editor Project (.psp) file from the local hard drive.
Save	Save the current signal processing parameter settings to the local hard drive as a PowerShare Editor Project (.psp) file.
Save as...	Save the current signal processing parameter settings as a PowerShare Editor Project (.psp) file with a new name.
Most Recently Used	Display the most recently used PowerShare Editor files, up to a maximum of 10 files.
Exit	Exit the PowerShare Editor.

PowerShare Menu

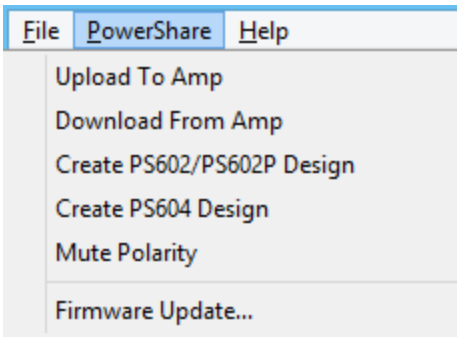


Figure: PowerShare Menu

Menu Item	Function
Upload To Amp	Upload the signal processing parameter settings from the software interface to the amplifier.
Download From Amp	Download the signal processing parameter settings stored in the amplifier to the software interface.
Create PS602/PS602P Design	Create a design configuration for a PS602 or PS602P amplifier. Loads a 2-channel block diagram that you can configure and save to a file for future upload to an amplifier. You can use this option even if you do not have an amplifier currently connected to the software.
Create PS604 Design	Create a design configuration for a PS604 amplifier. Loads a 4-channel block diagram that you can configure and save to a file for future upload to an amplifier. You can use this option even if you do not have an

Menu Item	Function
	amplifier currently connected to the software.
Mute Polarity	Establish the polarity for the **Mute** contacts on the rear panel of the amplifier. The default setting is **Normally Open (NO)**, which indicates that the mute contacts are normally open, and a short across the mute contacts mutes all amplifier outputs. Use this menu option to reverse the mute switch polarity to **Normally Closed (NC)**, which indicates that the mute contacts are normally closed, and an open across the mute contacts will mute all amplifier outputs. **Note:** The Mute Polarity option is only available when the amplifier **CONFIG** DIP switch is set to **SOFTWARE**. If the **CONFIG** DIP switch is set to **REAR**, then the mute polarity is **Normally Open (NO)** regardless of the software setting.
Firmware Update...	Update the amplifier firmware.

Help Menu

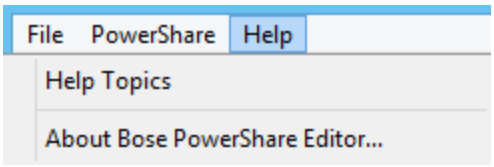


Figure: Help Menu

Menu Item	Function
Help Topics	Display the PowerShare Editor software help.
About Bose PowerShare Editor...	Display information about the Bose PowerShare Editor software, including the product name and firmware version of the connected amplifier.

Signal Processing Functions

The PowerShare power amplifier uses a fixed signal processing architecture that includes the following functions:

- 9-band input parametric EQ (PEQ) (1 per input channel)
- Input/Output routing using a 2x2 or 4x4 standard mixer
- Band pass crossover using high-pass and low-pass filters (1 per output channel)
- Bose loudspeaker EQ (1 per output channel)
- Signal limiter (1 per output channel)
- Signal delay (1 each for output channels 1 and 2)
- Output polarity control

Edit the signal processing parameters by clicking on a block in the signal processing chain diagram. The selected block is highlighted in the signal chain and its control panel opens below the block diagram for editing.

9-Band Equalizer (PEQ)

Each input channel has a 9-band parametric equalizer (PEQ) located before the mixer in the chain. Click the **9-Band PEQ** block for each channel to display its control panel and adjust the settings. The 9-band PEQ can operate in either parametric or graphic mode. By default, all bands are set to a flat response for each channel.

To display the EQ settings loaded into an amplifier that is currently connected and online, click the **Download from Amp** button in the toolbar. The software does not display EQ values set using the dials on the rear panel of the amplifier.

Parametric EQ Mode

The Parametric EQ mode is the default operating mode for each block. Use this mode to control the frequency, Q factor or bandwidth, and gain of each filter stage.

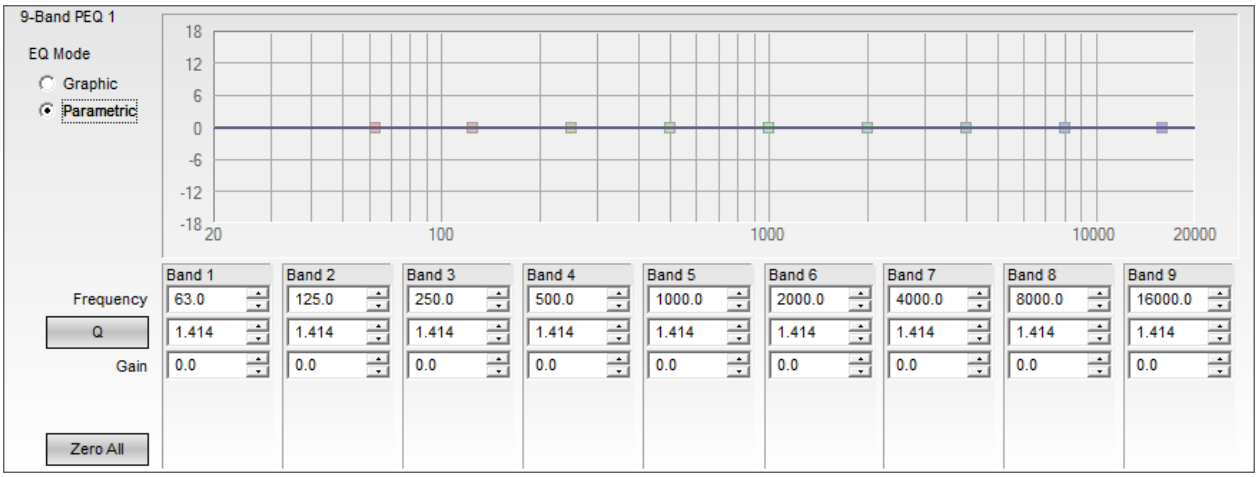


Figure: 9-Band PEQ Control Panel in Parametric Mode

The following controls and functions are available in Parametric Mode:

- **EQ Mode** – Select between Graphic and Parametric EQ modes.
- **Response Graph** – Display the overall EQ response and the response curve of individual filter bands.

Each filter band may be manually adjusted using the filter's grab handle.

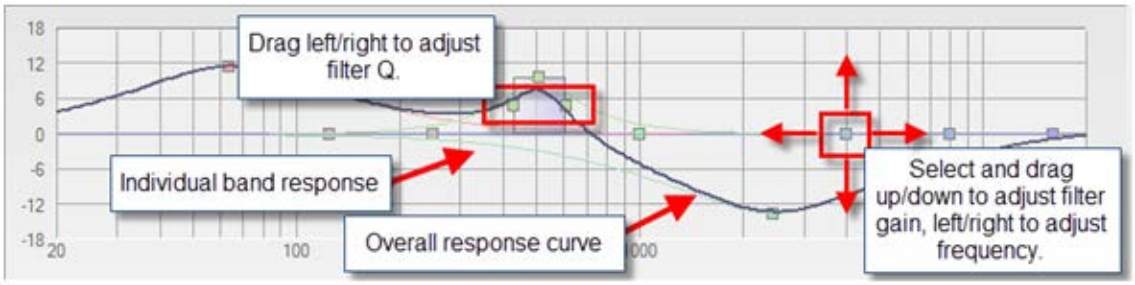


Figure: Filter Manipulation in Parametric Mode

- **Frequency** – Enter the desired center frequency for the filter. The available range is from 20 Hz to 20,000 Hz (20 kHz), in 1.0 Hz increments.
- **Q/BW** – Toggle between entering the filter width as Q Factor or Bandwidth values. The label on the button indicates the units. The available range for Q is from 0.1 to 10.0, with a default value of 1.414. The available range for Bandwidth is 0.1 to 10.0, with a default value of 1.000.
- **Gain** – Enter the gain for each band numerically, or adjust using the up and down arrows. The available range for gain is +/-18 dB, in 0.1 dB increments.
- **Zero All** - Reset all Gain values to 0 dB.

Graphic EQ Mode

The graphic EQ mode is the optional operating mode for each block. Each of the 9 filter bands operates at a fixed octave-band center.

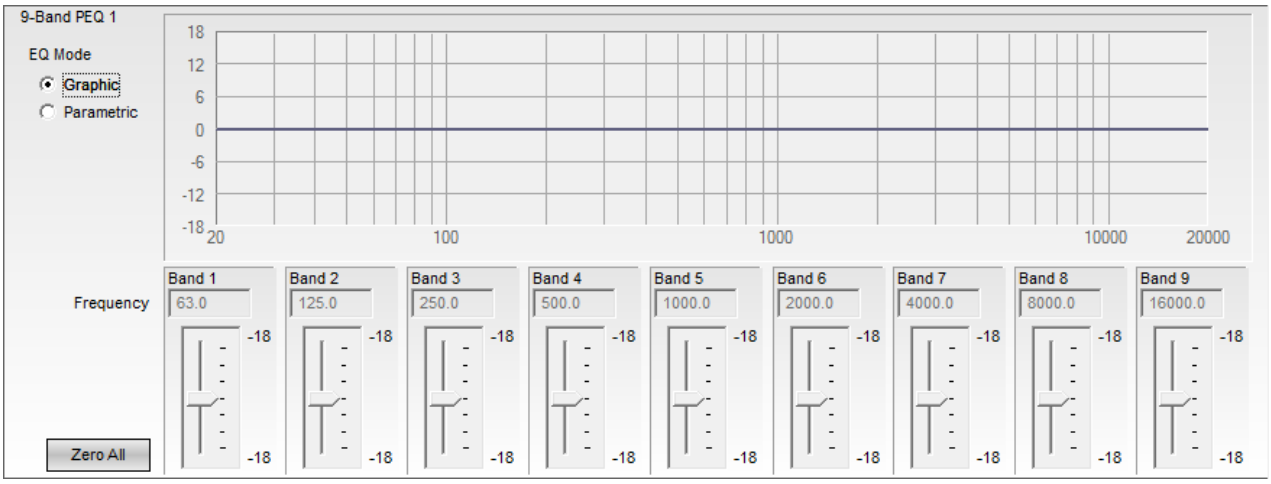


Figure: 9-Band PEQ Control Panel in Graphic Mode

The following controls and functions are available in Graphic Mode:

- **EQ Mode** – Switch between Graphic and Parametric EQ mode.
- **Response Graph** – Display the overall EQ response and the response curve of individual bands. Adjust the gain on each band using the filter's grab handle. The center frequency and bandwidth of the bands are fixed in Graphic EQ mode; to adjust the bands, use Parametric EQ mode.

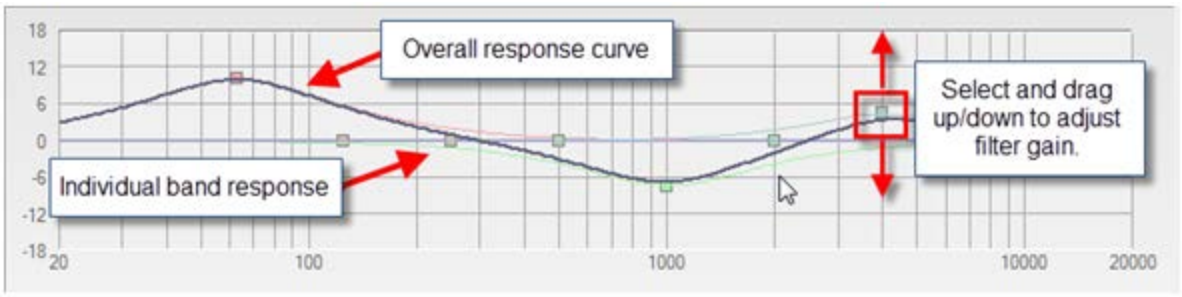


Figure: Filter Manipulation in Graphic Mode

- **Gain Slider** – Adjust the gain by +/-18 dB using the slider, in 1 dB increments.
- **Zero All** - Reset all gain sliders to 0 dB.

Note: If you set gain values in Graphic EQ mode, and then switch to Parametric EQ mode, the control panel retains these values. If you set gain values in Parametric EQ mode, and then switch to Graphic EQ mode, the control panel resets all the gain values to 0 dB.

Standard Mixer

The **Standard Mixer** block assigns input channels to output channels. The default setting routes each input to its corresponding output. For example, Input 1 is routed to Output 1, Input 2 is routed to Output 2, and so on. A purple active cell indicates a connection between the input indicated by the row label and the output indicated by the column label.

For the PowerShare PS602 and PS602P amplifiers, the signal processing chain includes a 2x2 standard mixer. Click on the standard mixer block to display the control panel for the block.

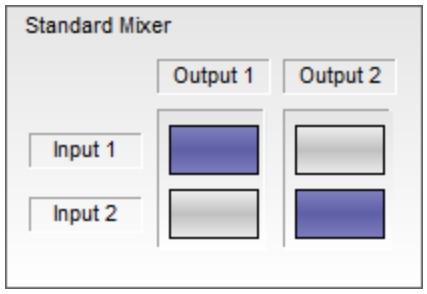


Figure: PS602/PS602P Standard Mixer Default State

Click the cells within the standard mixer to create audio paths from an input (or inputs) to an output (or outputs). Any combination of active cells is allowed. For example, the following figure illustrates a configuration that routes Input 1 to both Output 1 and Output 2.

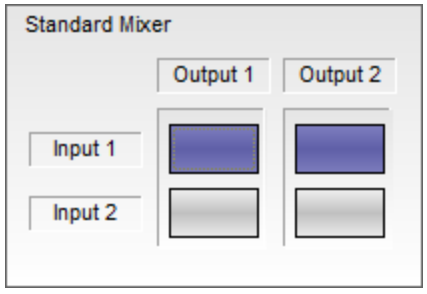


Figure: PS602/PS602P Standard Mixer with Alternate Routing

For the PowerShare PS604 amplifier, the signal processing chain includes a 4x4 standard mixer. Click on the standard mixer block to display the control panel for the block.

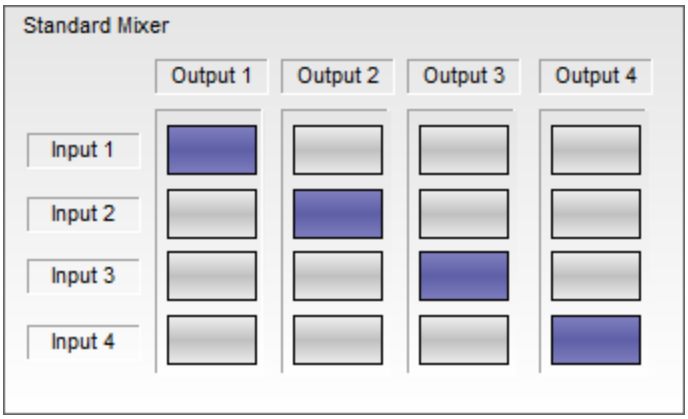


Figure: PS604 Standard Mixer Default State

Click the cells within the standard mixer to create audio paths from an input (or inputs) to an output (or outputs). Any combination of active cells is allowed. For example, the following figure illustrates a configuration that routes Input 1 to Output 1 and Output 2; Input 2 to Output 3; and Input 3 to Output 4.

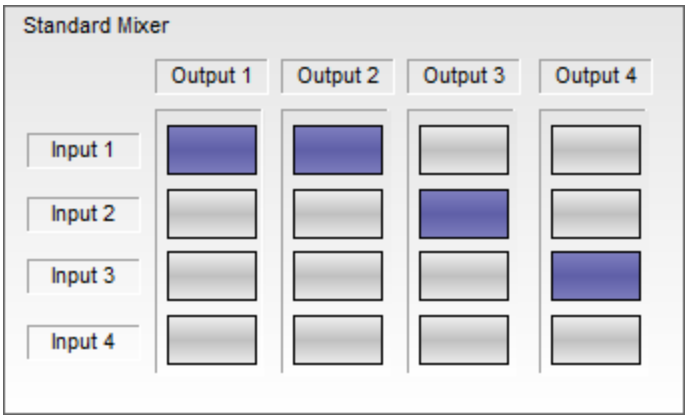


Figure: PS604 Standard Mixer with Alternate Routing

You can also use the standard mixer to sum stereo inputs (for example, where the left channel is routed to Input 1 and the right channel is routed to Input 2) to mono outputs.

For the PS602 and PS602P amplifiers, route a summed stereo input to two mono outputs by configuring the standard mixer as follows:

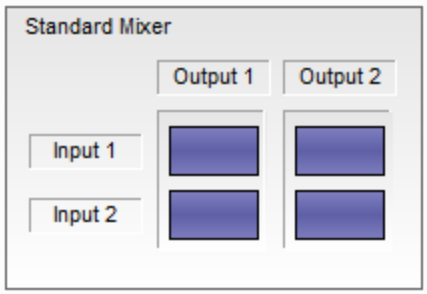


Figure: PS602/PS602P Standard Mixer Configured for Stereo Summed to Mono

For the PS604 amplifiers, route a summed stereo input to four mono outputs by configuring the standard mixer as follows:

Figure: PS604 Standard Mixer Configured for Stereo Summed to Mono

Band Pass Crossover

The band pass crossover block provides high-pass filters (HPF) and low-pass filters (LPF) for each output channel in the signal processing chain.

Click on a **Band Pass** block within the signal processing map to access the band pass crossover control panel for the corresponding output. The default setting for both High Pass and Low Pass is Flat (no filters implemented). The Flat response covers 20 Hz to 20 kHz when the DIP switch of the corresponding Output (located on the rear panel of the amplifier) is set to **Low Z**, and 50 Hz to 20 kHz when the DIP switch is set to **Hi Z**.

If you specify Bose loudspeakers in the **9-Band Speaker EQ** block, the software automatically loads the appropriate crossover settings into the **Band Pass** block.

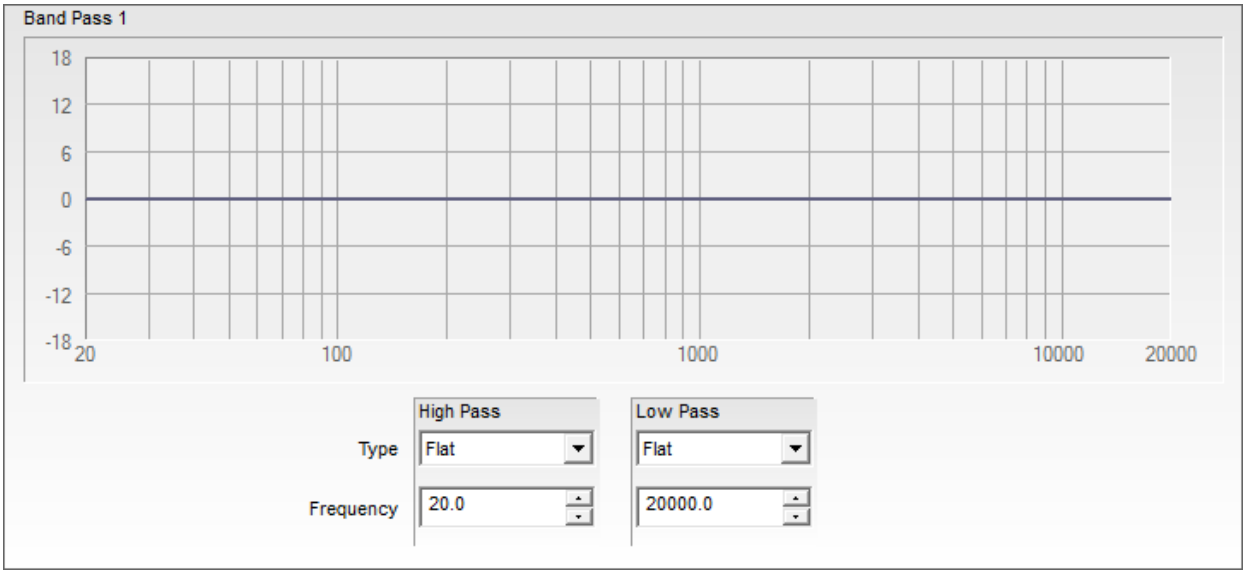


Figure: Band Pass Control Panel

The following controls are available within the **Band Pass** block:

- **Response Graph** – Display the response curve of the High Pass and Low Pass filter settings.
- **High Pass Filter Type** – Apply the specified filter type to the low frequency cut off of the crossover. Available filter types are Butterworth, Bessel, and Linkwitz-Riley. Alternatively, set the filter type to Flat.
- **High Pass Frequency** – Define the corner frequency of the filter. Input a value in the field, or use the up and down arrows. The frequency field supports a range of 20 Hz to 20 kHz when the corresponding Output DIP switch on the rear panel of the amplifier is set to **Low Z**, or 50 Hz to 20 kHz when set to **Hi Z**, in increments of 0.1 Hz.
- **Low Pass Filter Type** – Apply the specified filter type to the high frequency cut off of the crossover. Available filter types are Butterworth, Bessel, and Linkwitz-Riley. Alternatively, set the filter type to Flat.
- **Low Pass Frequency** – Define the corner frequency of the filter. Input a value in the field, or use the up and down arrows. The frequency field supports a range of 20 Hz to 20 kHz when the corresponding Output DIP switch on the rear panel of the amplifier is set to **Low Z**, or 50 Hz to 20 kHz when set to **Hi Z**, in increments of 0.1 Hz.

Bose® Loudspeaker Equalization

Each output signal processing chain includes a dedicated Bose® loudspeaker EQ stage. Select any one of the **Speaker PEQ** blocks to display the combined control panel for all loudspeaker EQs.

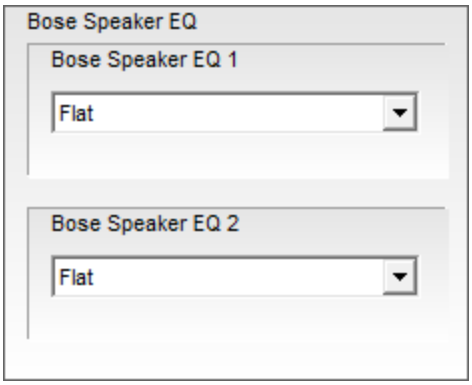


Figure: Bose Speaker PEQ Control Panel for 2-Output Amplifiers

The following controls are available in the Speaker PEQ block:

- **Bose Speaker EQ (channel)** – For each output channel, select the appropriate Bose loudspeaker EQ from the drop-down list.

The drop-down list contains all Bose® FreeSpace®, Panaray®, RoomMatch® Utility, and F1 Passive loudspeakers. Alternatively, select Flat EQ response. The frequency range for Flat response is 20 Hz to 20 kHz when the corresponding Output DIP switch on the rear panel of the amplifier is set to **Low Z**, and 50 Hz to 20 kHz when set to **Hi Z**.

In addition to EQ values, when you select a loudspeaker from the drop-down menu, the software automatically sets appropriate V Peak, and V RMS values in the **Limiter** block. These built-in settings are updated as part of the firmware updates, and are updated as new Bose loudspeakers become available.

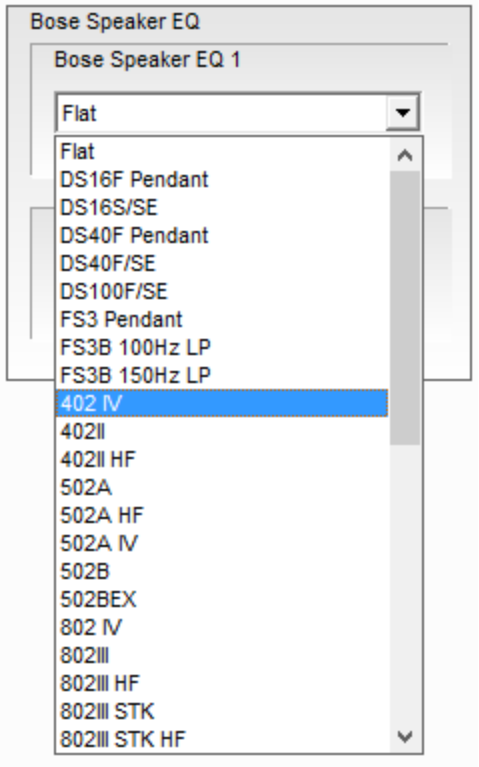


Figure: Bose Speaker PEQ Drop-Down Menu

Output Signal Limiter

Each output signal processing stage includes a signal limiter. Click on a **Limiter** block within the signal processing map to access the signal limiter control panel for the corresponding output.

If you specify a Bose loudspeaker for the output channel in the **Speaker PEQ** block, then the software automatically loads the appropriate V Peak and V RMS values for the selected loudspeaker into the **Limiter** block. If you select a Flat response in the **Speaker PEQ** block, then the software loads the default limiter settings for each channel. The default values depend on the setting of the **OUTPUT** and **GLOBAL OUT** DIP switches for the corresponding channel.

When the **OUTPUT** DIP switch is set to **Low Z**, the default limiter values are as follows:

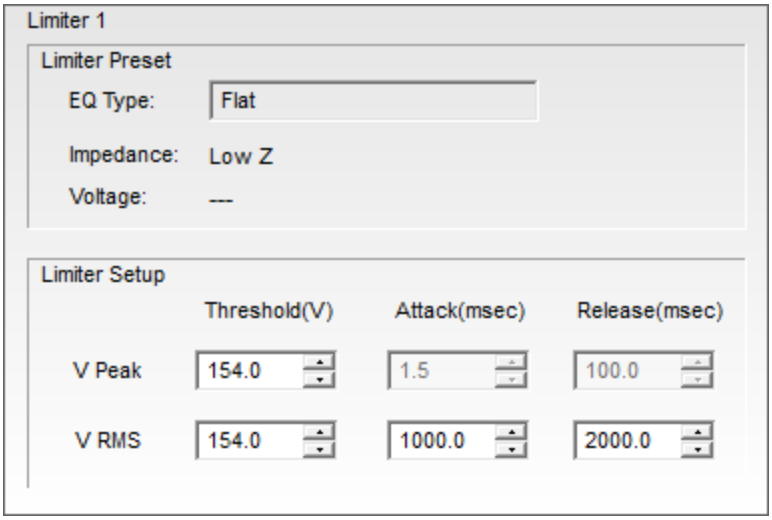


Figure: Limiter Control Panel with Default Settings for Low Z Output Channel

When the **OUTPUT** DIP switch is set to **Hi Z** and the **GLOBAL OUT** DIP switch is set to **70V**, the default limiter values are as follows:

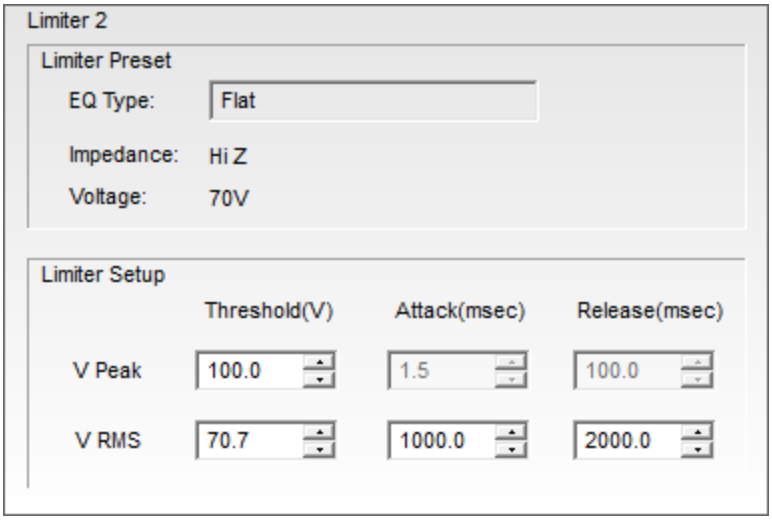


Figure: Limiter Control Panel with Default Settings for Hi Z / 70V Output Channel

When the **OUTPUT** DIP switch is set to **Hi Z** and the **GLOBAL OUT** DIP switch is set to **100V**, the default limiter values are as follows:

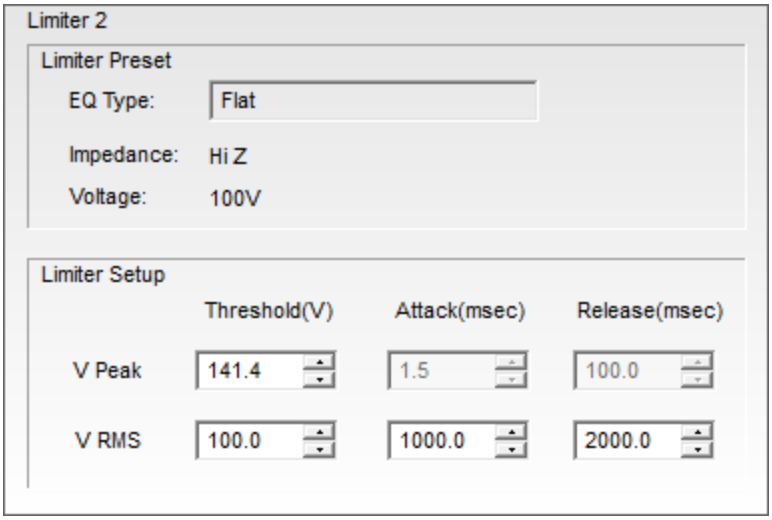


Figure: Limiter Control Panel with Default Settings for Hi Z / 100V Output Channel

The following information displays within the **Limiter** block for each output channel:

- **EQ Type** - Displays the EQ type specified in the corresponding Speaker EQ block
- **Impedance** - Loudspeaker impedance, as specified by the corresponding **OUTPUT** DIP switch on the rear panel of the amplifier. This value can be Hi Z or Low Z.
- **Voltage** - Loudspeaker voltage capability, as set by the **GLOBAL OUT** DIP switch on the rear panel of the amplifier. This value can be 70V or 100V.

The following controls are available within the **Limiter** block for each output channel:

- **V Peak** – Enter the Threshold (V) value numerically, or use the up and down arrows. Only the Threshold is adjustable; the Attack is set to 1.5 msec, and the Release is set to 100 msec.
- **V RMS** – Enter the Threshold (V), Attack (msec), and Release (msec) values numerically, or use the up and down arrows.

Note: If you change the **GLOBAL OUT** or **OUTPUT** DIP switch settings while an amplifier is connected to the PowerShare Editor software, the default values that appear in the software's **Limiter** block control panel update automatically. However, the settings stored on the amplifier **DO NOT** update automatically! After changing the DIP switch setting, you must click **Upload to Amp** to push the new limiter settings from the software to the connected amplifier.

If an amplifier is connected to the PC, PowerShare Editor detects DIP switch change and displays the following prompt to upload the new settings. Click **Upload** to upload the new parameter settings to the amplifier.

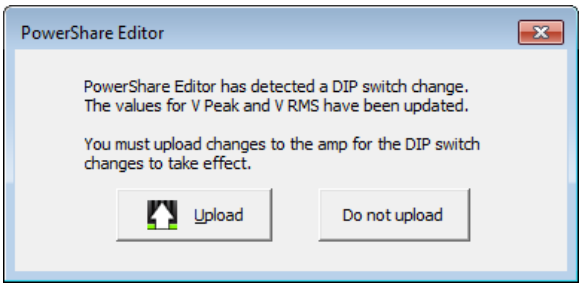


Figure: Upload Prompt for Amplifier DIP Switch Changes

Signal Delay

Up to 50 milliseconds of signal delay can be applied independently to Output 1 and Output 2, in increments of 0.1 milliseconds. Click on either **Signal Delay** block in the signal processing chain to display the combined control panel for both output channels.

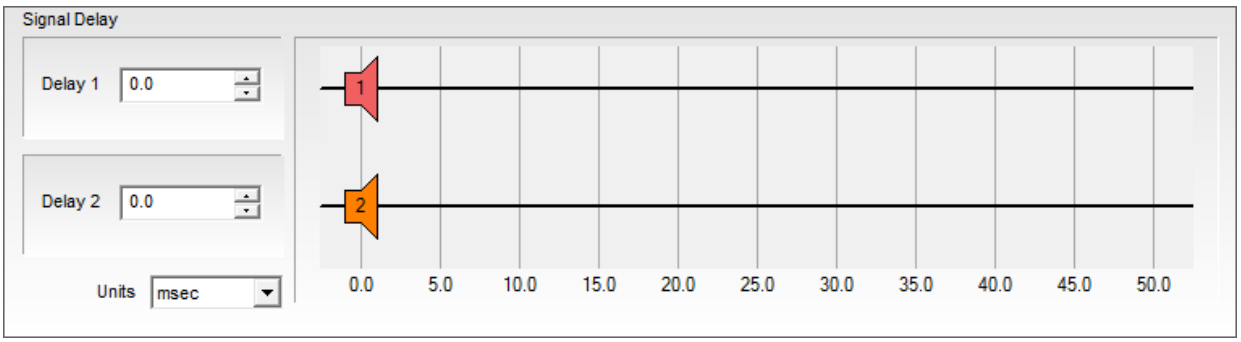


Figure: Signal Delay Control Panel

The following controls are available within the **Signal Delay** block:

- **Delay (channel)** – Enter the amount of signal delay to be applied to the channel. Signal delay units are determined using the **Units** drop-down menu. The range of acceptable values for delay depends on the selected units. The default value is 0.0 (no delay).
- **Units** – Select the appropriate scale for determining signal delay by choosing milliseconds (msec), feet, or meters from the drop-down menu. The default units are milliseconds (msec).
- **Delay Graph** – Set the signal delay by clicking the desired channel's loudspeaker icon and dragging it to the desired signal delay setting. The loudspeaker's position within the graph represents the amount of signal delay applied to the channel. The scale and maximum values are determined based on the specified units.

Note: Delay is only available for Output 1 and 2, even for amplifiers that have four output channels, such as the PS604.

Output Polarity

Each output channel includes an output polarity inversion option. Click on any of the **Amp Output** blocks to display the combined output polarity control panel.

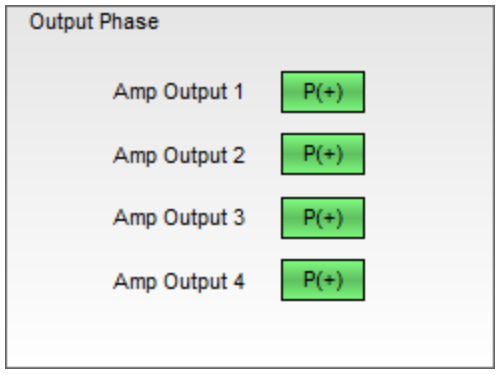


Figure: Amp Output Control Panel

The following control is available within the **Amp Output** block:

- **Amp Output (channel)** - Click the green **P(+)** box next to the desired output channel to invert the polarity of that channel to **P(-)**. The default state of each channel is **P(+)** (non-inverted).

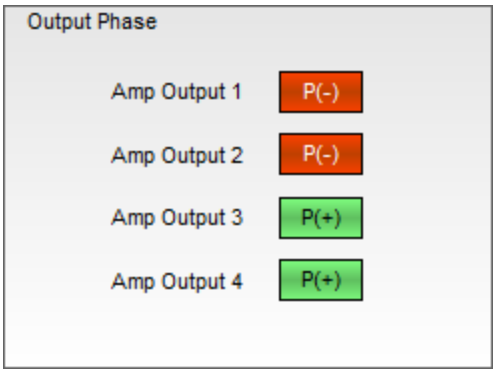


Figure: Amp Output with Outputs 1 and 2 Polarity Inverted

Application Examples

The following sections illustrate three common application examples for the PowerShare power amplifiers and the PowerShare Editor software settings used to configure the installations.

Additional information about each of these examples can be found in the PowerShare Application Guide, available for download at pro.Bose.com.

- **Two-Zone Retail Establishment.** This permanent installation uses a PowerShare PS602 power amplifier to route music from a single sound source to two zones in a retail establishment - the retail floor and the stockroom.
- **Ballroom Voice-Lift.** This temporary installation uses a PowerShare PS602P power amplifier to provide voice-lift from a wireless microphone to a ballroom.
- **Three-Zone Restaurant.** This permanent installation uses a PowerShare PS604 power amplifier to route music from a single sound source to three zones inside a restaurant - the dining room, the patio, and the restrooms.

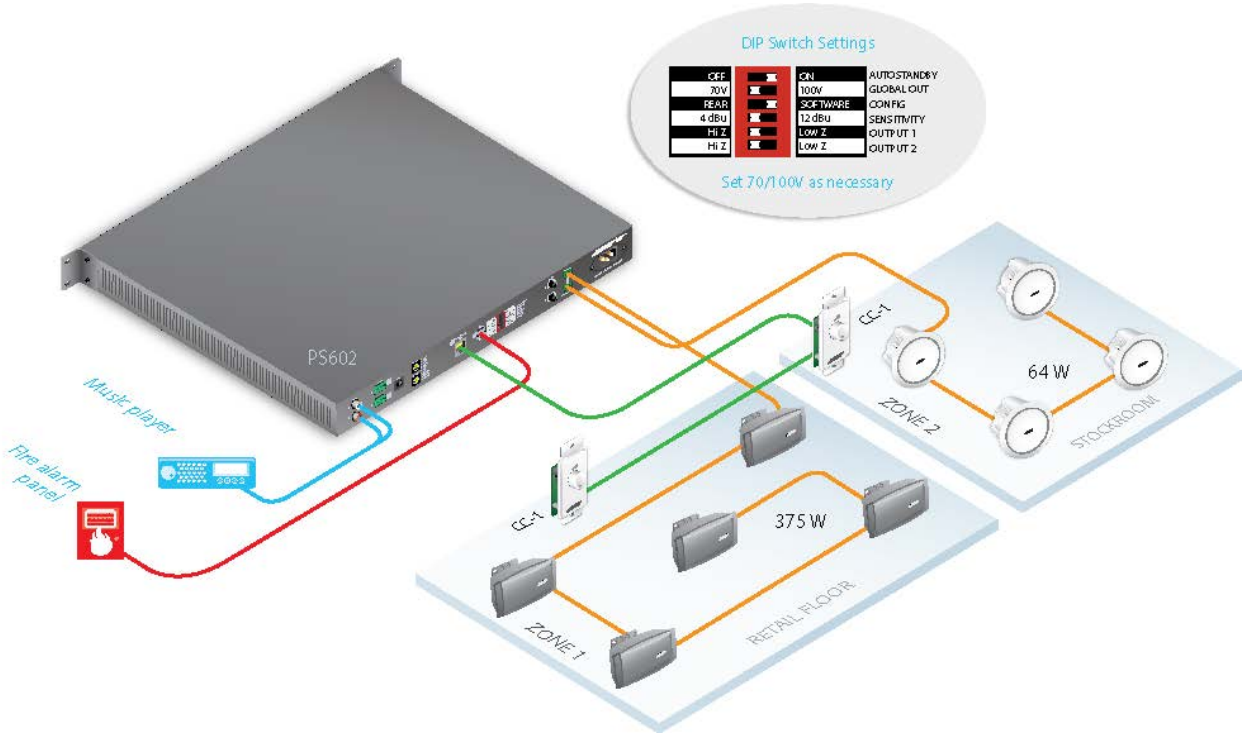
Two-Zone Retail Establishment Example

The following example illustrates a permanent two-zone installation in a retail establishment. This design uses a PowerShare PS602 power amplifier to route music from a single sound source to two independently-controlled zones: The retail floor and the stockroom.

Design Requirements

- Asymmetrical zone wattage
- Wall-mounted volume control per zone
- One audio source: a music player
- Emergency muting by the fire alarm panel

For more information about this setup, see the PowerShare Application Guide available at pro.Bose.com.



Inputs

Device	Mode
Music Player	Stereo

Outputs

Amp	Zones	Mode	Loudspeakers	Z	Power/Ch
PS602P	2	Mono	(15) DS 100 @ 25 W	Hi Z	375 W
			(4) DS 16 @ 16 W	Hi Z	64 W

Control

Level	Source
CC-1 Remote	Music Player
CC-1 Remote	

PowerShare Editor Software Settings

Standard Mixer

Configure the **Standard Mixer** block to sum stereo Inputs 1 and 2 to mono, and route both inputs to Outputs 1 and 2.

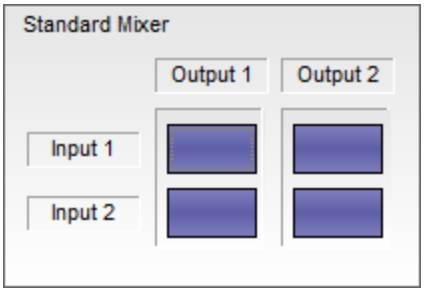


Figure: Standard Mixer Configuration

Bose Loudspeaker EQ

Configure the **Bose Speaker EQ** block by setting Speaker EQ 1 to DS100F/SE and Speaker EQ 2 to DS16S/SE.

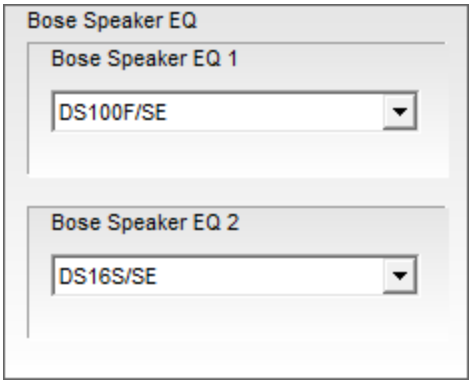


Figure: Bose Loudspeaker EQ Configuration

Three-Zone Restaurant Example

The following example illustrates a permanent three-zone installation in a restaurant. This design uses a PowerShare PS604 power amplifier to route music from a single sound source to three independently-controlled zones: The dining room, the patio, and the restrooms.

Requirements

- Asymmetrical zone wattage
- Two different loudspeaker types in one zone
- Same audio in three zones
- Wall-mounted volume control in each zone
- One audio source: a music player
- Emergency muting by the fire alarm panel

For more detailed information about this setup, see the PowerShare Application Guide available at pro.Bose.com.

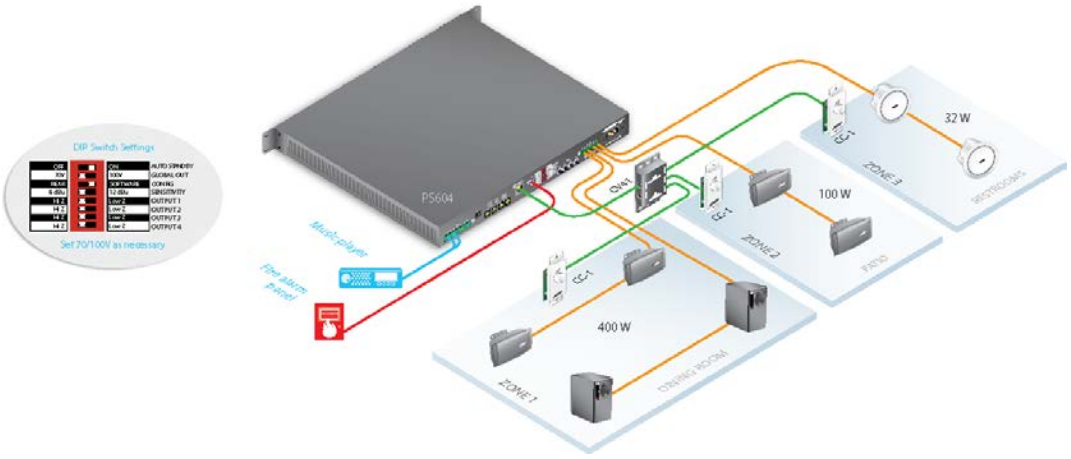


Figure: Hardware Configuration for Three-Zone Restaurant Example

Inputs

Device	Mode
Music Player	Stereo

Outputs

Amp	Zones	Mode	Loudspeakers	Z	Power/Ch
PS604	3	Mono	(5) DS 40 @ 40 W	Hi Z	200 W
			(2) FS3B @ 100 W	Hi Z	200 W
			(4) DS 100 @25 W	Hi Z	100 W
			(4) DS 16 @ 8 W	Hi Z	32 W

Control

Level	Source
CC-1 Remote (Dining)	Music Player
CC-1 Remote (Patio)	
CC-1 Remote (Restrooms)	

PowerShare Editor Software Settings

Standard Mixer

Configure the **Standard Mixer** block to sum stereo Inputs 1 and 2 to mono, and route both inputs to Outputs 1, 2, 3, and 4.

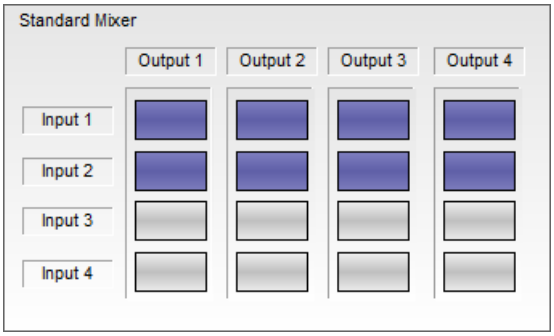


Figure: Standard Mixer Configuration

Bose Loudspeaker EQ

Configure the **Bose Speaker EQ** block by setting Speaker EQ 1 to DS40F/SE, Speaker EQ 2 to FS3B, Speaker EQ3 to DS100F/SE, and Speaker EQ4 to DS16S/SE.

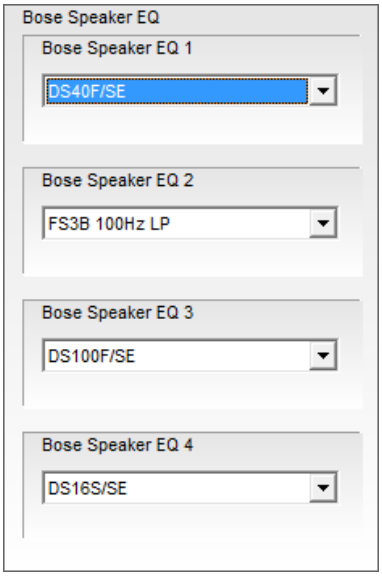


Figure: Bose Speaker EQ Configuration

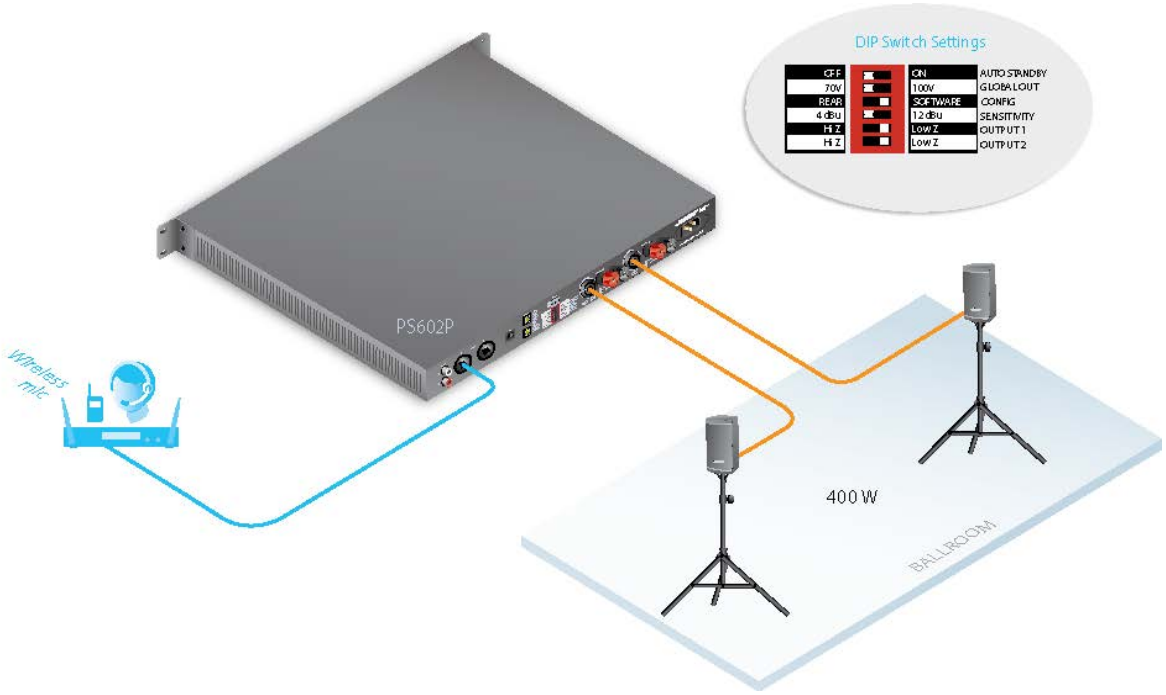
Ballroom Voice-Lift Example

The following example illustrates a portable installation in a ballroom. This design uses a PowerShare PS602P power amplifier to provide voice-lift from a single wireless microphone.

Design Requirements

- Temporary setup for voice-lift
- User access to volume control
- One audio source: a wireless microphone

For more detailed information about this setup, see the PowerShare Application Guide available at pro.Bose.com.



Inputs

Device	Mode
Wireless Mic	Mono

Outputs

Amp	Zones	Mode	Loudspeakers	Z	Power/Ch
PS602P	1	Mono	(1) RMU108	Lo Z	200 W
			(1) RMU108	Lo Z	200 W

Control

Level	Source
PS602P Front Panel	N/A
PS602P Front Panel	

PowerShare Editor Software Settings

Standard Mixer

Configure the **Standard Mixer** block to route mono Input 1 to Outputs 1 and 2.

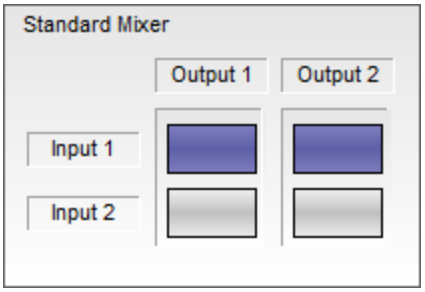


Figure: Standard Mixer Configuration

Bose Loudspeaker EQ

Configure the **Bose Speaker EQ** block by setting Speaker EQ 1 and 2 to RMU108

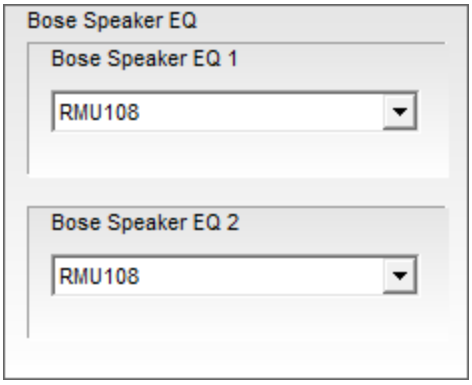


Figure: Bose Speaker EQ Configuration