

# **ControlSpace® SP-24 Editor Software User's Guide**

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## Introduction

ControlSpace® SP-24 Editor software provides access to all signal processing functions within the Bose SP-24 sound processor. Using the SP-24 Editor software you can define signal processing parameters and store them as custom Scenes while either on or offline. The SP-24 Editor software is also used to update the ControlSpace SP-24 sound processor's firmware and Bose loudspeaker equalization database.



The ControlSpace SP-24 sound processor is only configured using the SP-24 Editor software. It is not possible to configure the SP-24 sound processor using the ControlSpace Designer™ software.

## Additional Resources

Additional information on the use and configuration of the ControlSpace SP-24 sound processor can be found at <http://pro.bose.com>.

Application questions can be directed to the [Bose system electronics users' forum](#).



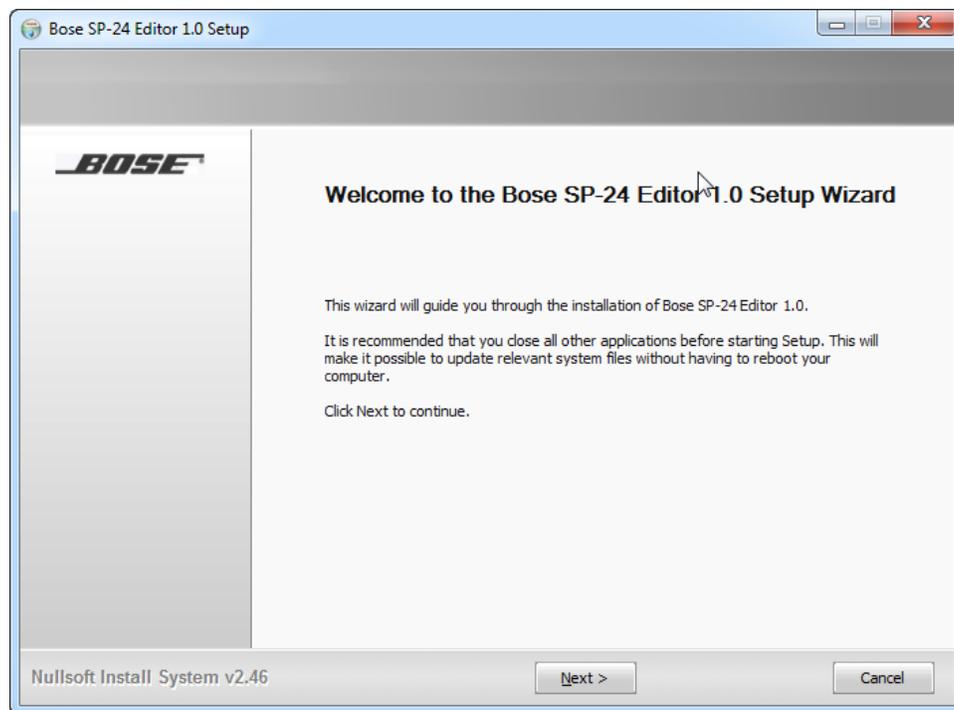
# Getting Started

## Minimum System Requirements

- Microsoft® Windows® XP Professional, Service Pack 2 (or later)
- Microsoft Windows 7 (Professional or Ultimate)
- Intel® Pentium® 4 - 850 MHz processor (or better)
- Minimum screen resolution of 1280x768
- 512 MB RAM
- 100 MB disk space available

## Software Installation

1. Double-click on SP-24\_Setup.exe to install the software.



*Fig. 1.1- Application Installer Dialog*

2. Click Next to begin installation.
3. Follow the prompts to install the SP-24 Editor software onto your computer.
4. Click **Finish** when installation is complete

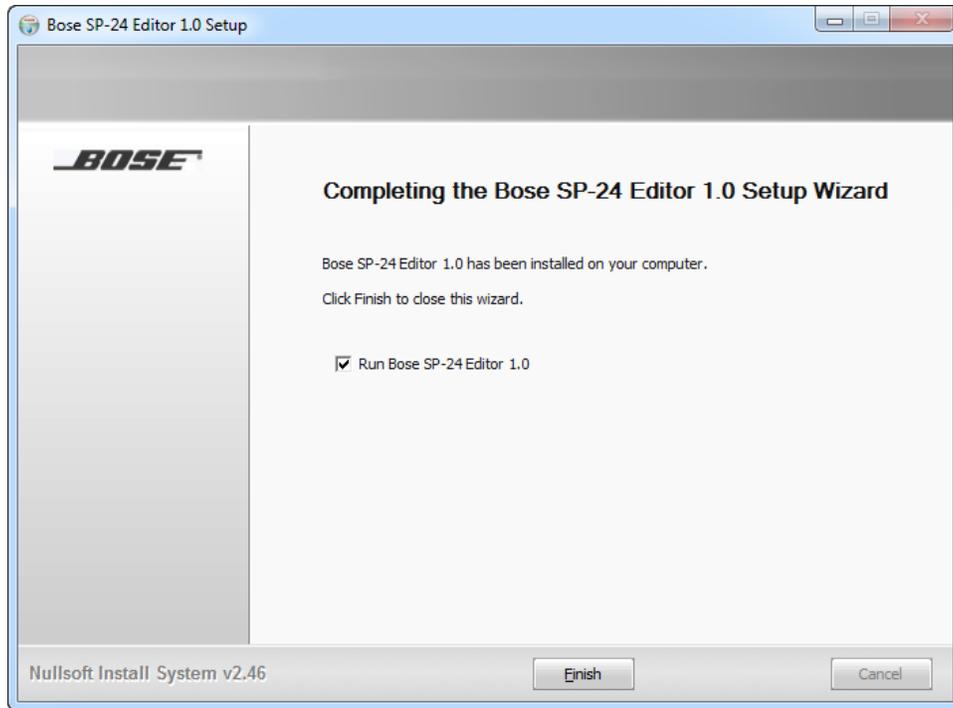


Fig. 1.2- Bose SP-24 Editor 1.0 Setup

## Device Connections

The SP24 Editor software communicates with the hardware via a standard USB connection, using the standard human interface device, (HID), USB controller. Once a connection is initiated between the PC and hardware the device will be recognized and added to the list of available devices.

Once the processor is connected to the PC via USB, and is powered on, it can be accessed and controlled using the SP24 Editor software.

- 1) Establish a USB connection between the SP-24 and the PC. Make sure the SP-24 is powered on, and recognized by the PC.

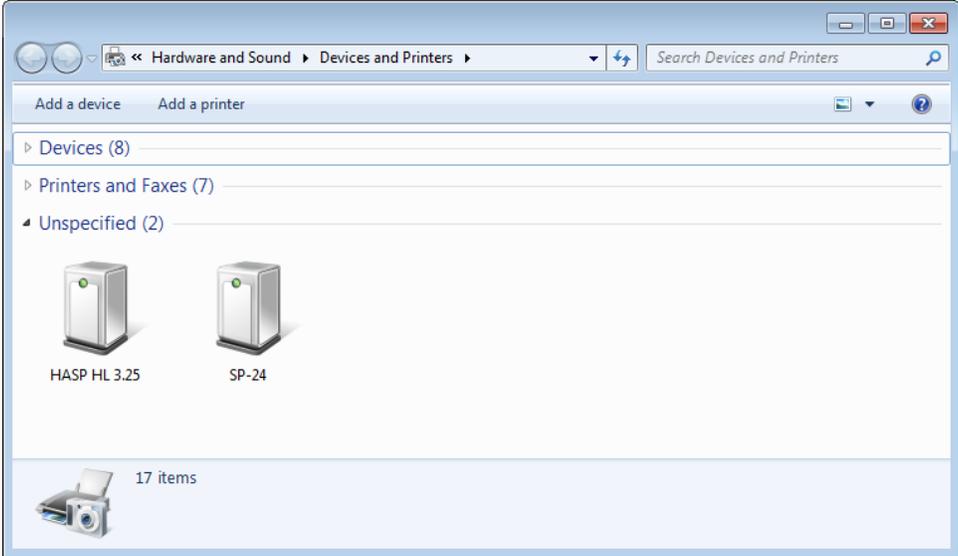


Fig. 1.3- Devices and Printers panel

- 2) Launch the PC Editor Software
  - a. The SP 24 processor is automatically detected and a connection is established.

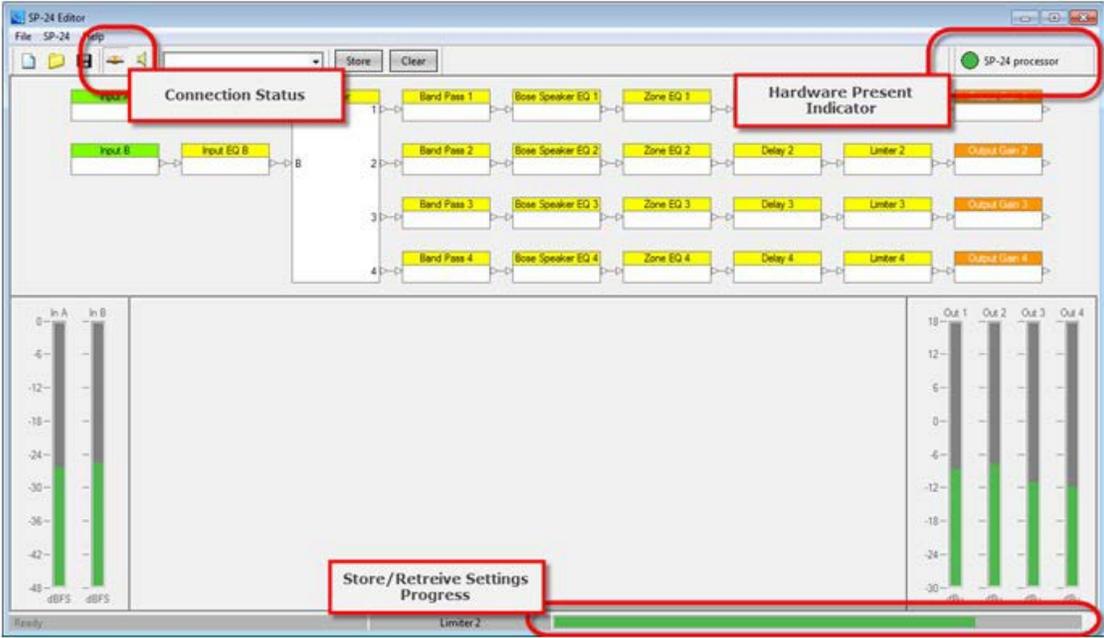


Fig. 1.4- SP-24 Editor Software Connection

- 3) You are now connected to the SP-24 sound processor and can configure the processor for operation.

# ControlSpace® SP-24 Editor Software User's Guide

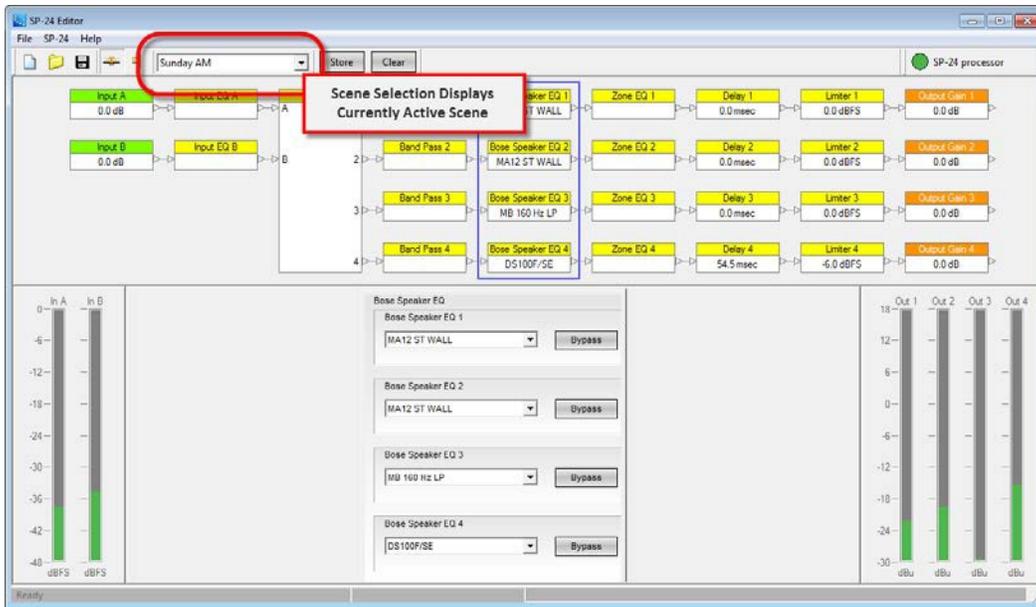


Fig. 1.5- SP-24 Editor interface

# Software Interface

## User Interface: SP-24 Editor

### Overview

To begin, launch the SP-24 editor software by choosing Start > All Programs > Bose > SP24 Editor.

The SP-24 Editor user interface consists of three primary components:

- Signal Processing Map (1)
- Input/Output Meters (2)
- Processing Control Panel (3)

Additional functions are available within the application menus and tool bar, but these three elements serve as the primary application interface.

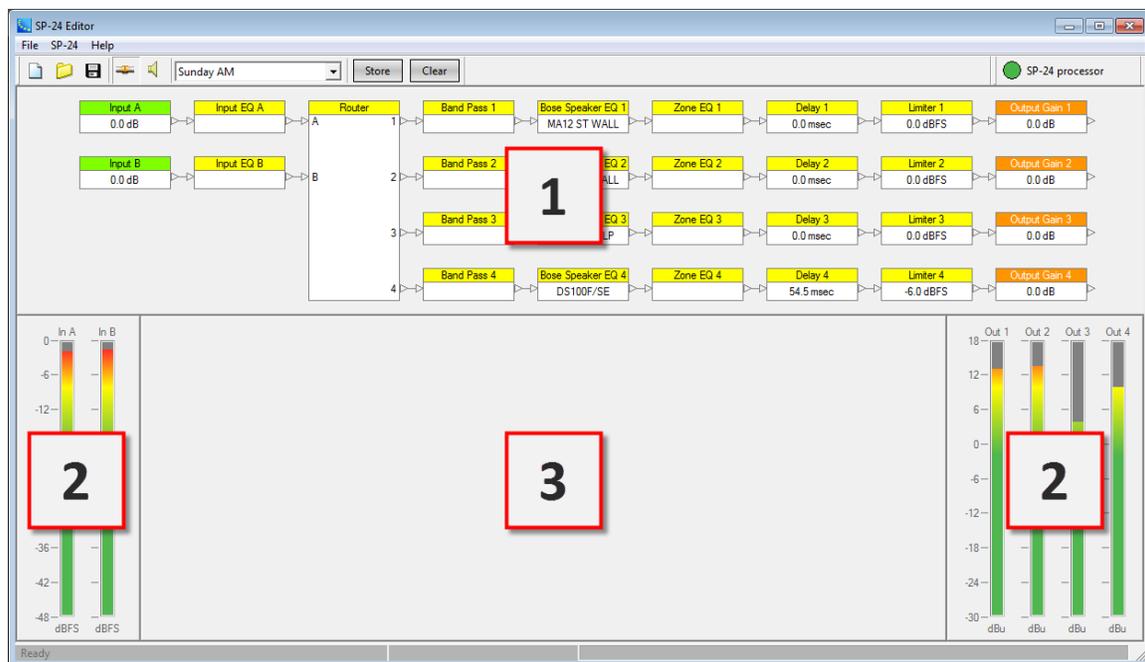


Fig. 2.1- User interface

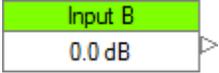
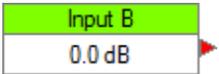
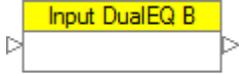
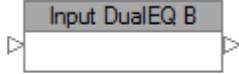
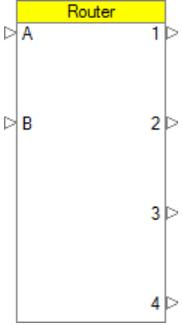
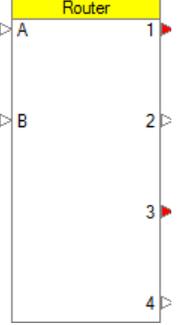
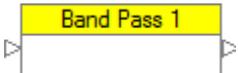
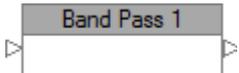
## User Interface Components

### Signal Processing Map

The Signal Processing Map is the primary component within the application interface, and displays the available signal processing functions within the SP-24 processor. The wiring of individual processing blocks represents the signal flow of

the unit. To configure an individual processing function select its icon in the Signal Processing Map. You can then access its control panel within the Processing Control Panel section (3) of the application interface.

Within the Signal Processing Map, the status of the individual signal processing block is indicated using the following methods:

| Block Type                            | Active State   | Inactive State   | Right-click Options  |
|---------------------------------------|--|--|--|
| <p><b>Input &amp; Output</b></p>      |  <p>Current signal level displayed within block</p> |  <p>Output Muted</p> | <ul style="list-style-type: none"> <li>Copy Parameters</li> <li>Paste parameters</li> <li>Mute/Unmute</li> </ul>   |
| <p><b>Input &amp; Zone DualEQ</b></p> |   |                    | <ul style="list-style-type: none"> <li>Copy Parameters</li> <li>Paste Parameters</li> <li>Bypass/Enable</li> </ul> |
| <p><b>Router</b></p>                  |   |                    | <p>N/A</p>   |
| <p><b>Band Pass</b></p>               |   |                    | <ul style="list-style-type: none"> <li>Copy Parameters</li> <li>Paste Parameters</li> <li>Bypass/Enable</li> </ul> |

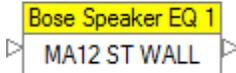
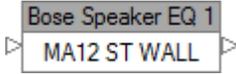
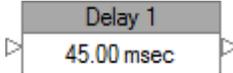
|                                       |   |  |   |
|---------------------------------------|---|--|---|
| <p><b>Bose Loudspeaker Preset</b></p> |  <p>Current Bose Loudspeaker EQ setting displayed within block</p> |  | <p>Copy Parameters<br/>Paste Parameters<br/>Bypass/Enable</p> |
| <p><b>Signal Delay</b></p>            |  <p>Current Signal Delay setting displayed within block</p>        |  | <p>Copy Parameters<br/>Paste Parameters<br/>Bypass/Enable</p> |
| <p><b>Signal Limiter</b></p>          |  <p>Current signal limiter threshold displayed within block</p>    |  | <p>Copy Parameters<br/>Paste Parameters<br/>Bypass/Enable</p> |

Table 1: Methods used to indicate the status of the individual signal processing block

### Input and Output Meters

The input and output signal levels are displayed to the left and right of the Processing Control Panel section. Input signal meters represent the signal level in dBFS as scaled by the Max Input Level setting. Output signal level meters represent the output signal level of the processor in dBu.

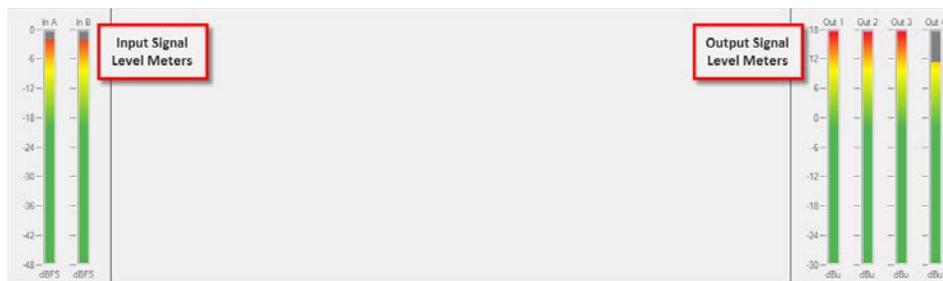


Fig. 2.2- Input and Output meters

### Processing Control Panel

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

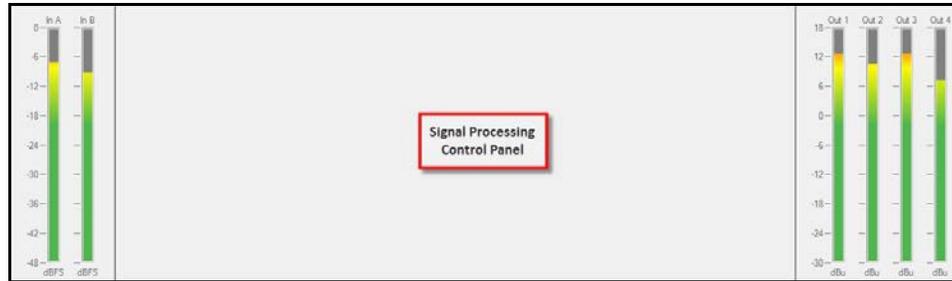


Fig. 2.3- Processing Control Panel

## Toolbar Reference

The application toolbar provides quick access to the most common functions within the SP-24 Editor software.

| Toolbar Item        |   | Function  |
|---------------------|---|---|
| <b>New Scene</b>    |  | Resets all signal processing parameters to their default                                      |
| <b>Open Scene</b>   |  | Launches the File Open dialog so a new Scene may be opened and applied to the SP-24 processor |
| <b>Save Scene</b>   |  | Saves the current signal processing parameters as a Scene to the local hard drive             |
| <b>Go Online</b>    |  | Toggles the online/offline state of the hardware  |
| <b>Go Offline</b>   |  | Toggles the online/offline state of the hardware  |
| <b>Mute/ Unmute</b> |  | Controls audio output (This function is only available when connected to the SP-24.)          |

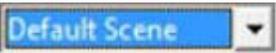
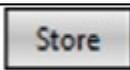
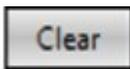
|   |   |   |
|---|---|---|
| <p><b>Scene Select</b></p>              |  | <p>Displays the currently active Scene, and provides access to the each of the four Scene Banks</p> <p>(This function is available only when connected to the SP-24.)</p> |
| <p><b>Store Scene</b></p>               |  | <p>Stores the current hardware settings to one of the four Scene Banks</p> <p>(This function is only available when connected to the SP-24.)</p>                          |
| <p><b>Clear Scene</b></p>               |  | <p>Clears the selected (one of the four Scene Banks) Scene</p> <p>(This function is only available when connected to the SP-24.)</p>                                      |
| <p><b>Hardware Preset Indicator</b></p> |  | <p>Indicates that an SP-24 is actively connected to the PC</p>  |

Table 2: Functions available in the Toolbar

## Menu reference

The SP-24 Editor menu bar offers three main menus: **File** menu, **SP-24** menu and **Help** menu.

### The File Menu

Refer Fig. 2.4 and Table 3 for detail information on the **File** menu.

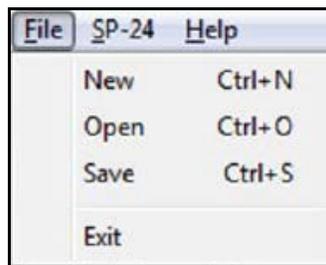


Fig. 2.4- The **File** menu

| Menu Item | Function |
|-----------|----------|
|-----------|----------|

|             |   |
|-------------|---|
| <b>New</b>  | Creates a new SP-24 Editor Scene file (.scn). (selecting this item while online will cause the currently active Scene to be replaced with a set of default settings.) |
| <b>Open</b> | Opens an existing file located on the local hard drive  |
| <b>Save</b> | Saves the current signal processing parameters as a Scene   |

Table 3: File menu- menu items with respective functions

### The SP-24 menu

Refer Fig. 2.5 and Table 4 for detail information on the **SP-24** menu.

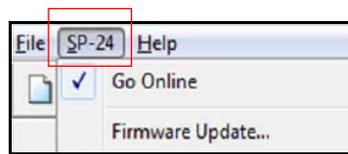


Fig. 2.5- The **SP-24** menu

| Menu Item              | Function   |
|------------------------|--|
| <b>Go Online</b>       | Toggles the online/offline state of the hardware.<br>(Check mark- appears as an indicator when Online with an SP-24) |
| <b>Firmware Update</b> | Updates the firmware within the SP-24 hardware   |

Table 4: SP-24 Menu- menu items with respective functions

### The Help menu

Refer Fig. 2.6 and Table 5 for detail information on the **Help** menu.

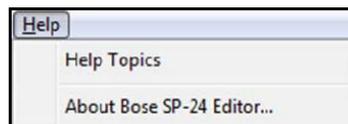


Fig. 2.6- The **Help** menu

| Menu Item | Function |
|-----------|----------|
|-----------|----------|

|                                |   |
|--------------------------------|---|
| <b>Help Topics</b>             | Displays the SP-24 Editor online help   |
| <b>About Bose SP-24 Editor</b> | Displays information about Bose SP-24 Editor software like the current firmware version of the hardware |

*Table 5: Help Menu- menu items with respective functions*



# Configuring the SP-24 Processor

## Signal Processing Functions

### Input Level Control

The Input Level control provides access to the analog sensitivity and digital input gain controls. Input Level controls are accessed by selecting either of the two Input Level signal processing blocks within the Signal Processing Map.

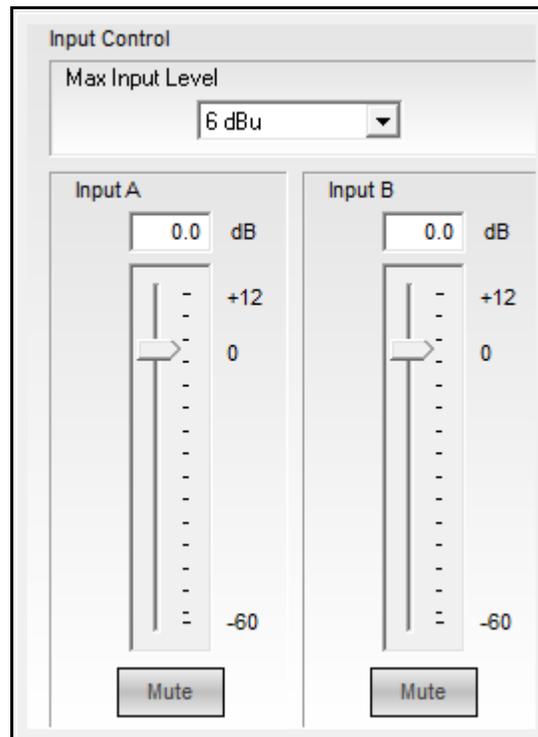


Fig. 3.1- Input Control Panel

**Input Level** – This adjustment is in the analog domain, pre analog-to-digital conversion. Select the desired maximum input level, in dBFS, that matches the maximum output level capability of the source (as indicated in the manufacturer's documentation). Sources that exceed +18 dBFS should have their output signals regulated as to not overload the input of the SP-24 Sound Processor.

**Input Gain Value** – Permits direct text entry of desired input signal level in dBFS. Range of adjustment matches and tracks the input gain slider.

**Input Gain Slider** – Adjusts the input signal level delivered to the next gain stage. The range of adjustment is from -60 to +12 dBFS. This adjustment point is in the digital domain, post analog to digital conversion.

**Mute** – Silences the signal and disables audio from passing to the next gain stage in the design. When Mute is enabled, the control panel button is Red.

## Router

The router assigns the A and B inputs to each of the four output channels. Each output may accept input A, input B or mono sum of Input A+B.

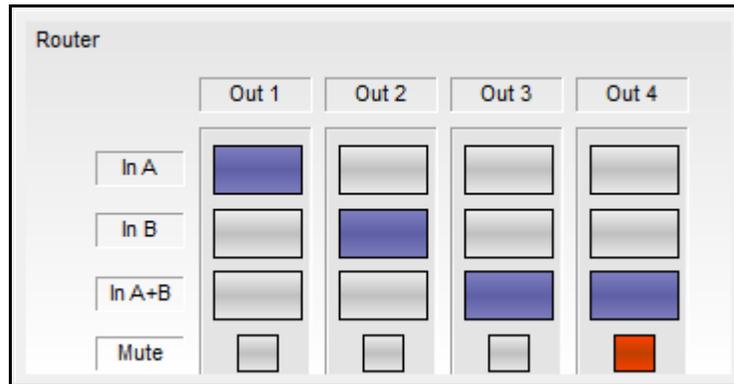


Fig. 3.2- SP-24 Router Control Panel

Within the Router control panel the following functions are available:

**Route Input A to Output n** – Selecting input A for any of the four output channels routes input A to the selected output.

**Route Input B to Output n** – Selecting input B for any of the four output channels routes input B to the selected output.

**Route Inputs A+B to Output n** – Selecting inputs A+B for any of the four output channels will route a mono sum of inputs A+B to the selected output. When operating in this mode a 6 dB attenuation is applied to the output of the router to balance the output level between single and summed channel.

## Input/Output 9-Band DualEQ

Each input and output signal processing chain includes a 9-band DualEQ, which can be operated as a 9-band graphic equalizer, or as a 9-band parametric equalizer.

### Graphic EQ Mode

The graphic EQ mode is the default operating mode for each Input/Output DualEQ. Each of the nine filter bands operates at a fixed octave-band center, and gain for each band is available using the gain slider controls.

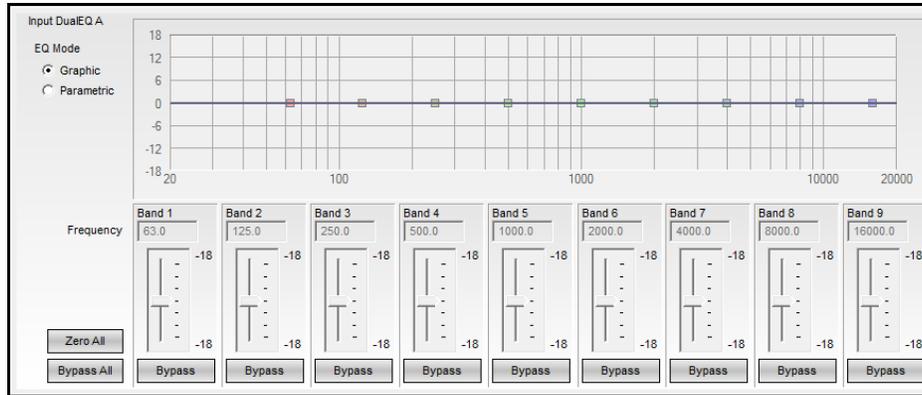


Fig. 3.3- DualEQ

The following controls and functions are available in the graphic EQ mode:

**DualEQ Mode** – is used to select between Graphic and Parametric EQ mode

**Response Graph** – Displays the overall EQ response, and the response curve of individual filter bands. Each filter band can be manually adjusted using the filter's grab handle.

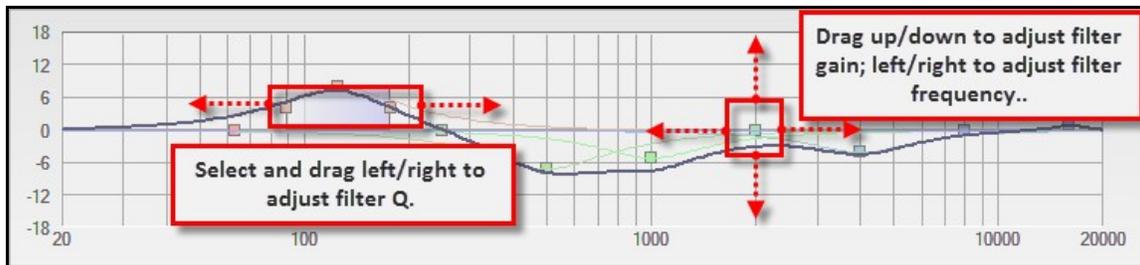


Fig. 3.4- Response Graph

**Filter Gain Slider** – is used to adjust the filter gain by +/-18 dB

**Bypass** – is used to Bypass the filter stage

**Bypass All** – is used to Bypass all filter stages

### Parametric EQ Mode

The Parametric EQ mode is the optional operating mode for each Input/Output DualEQ. In this mode, control over the Frequency, Q and Gain of each filter stage is available.

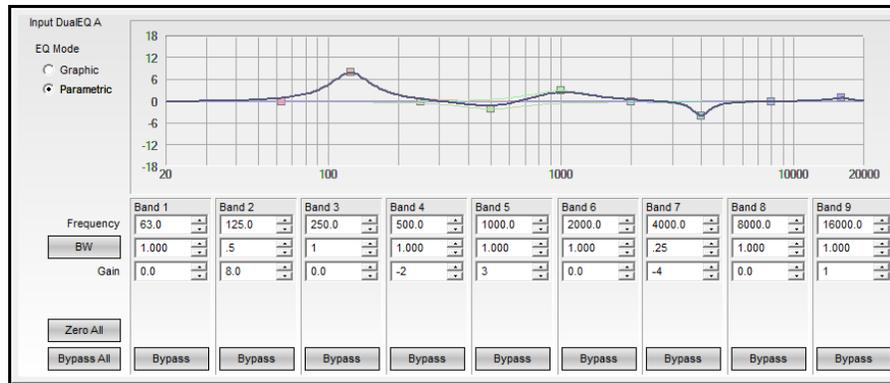


Fig. 3.5- Parametric EQ Mode

In parametric EQ mode the following controls and functions are available:

**DualEQ Mode** – is used to select between Graphic and Parametric EQ mode

**Response Graph** – Displays 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.

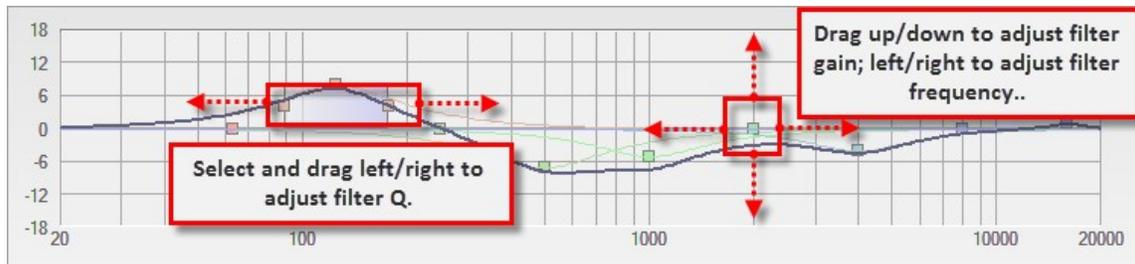


Fig. 3.6- Filter manipulation in parametric mode

**Frequency** – Enter the desired center frequency for the filter

**Bandwidth/Q** – Select the BW/Q to switch between entering the filter width as bandwidth or Q

**Filter Gain Slider** – Adjust the filter gain by +/-18 dB

**Bypass** – Bypass the filter stage

**Bypass All** – Bypass all filter stages

### Band Pass Crossover

The Band Pass Crossover function provides a single mono crossover for the output signal processing chain.

To access the Band Pass Crossover control panel, select the block within the signal processing map. The default state of the Band Pass Crossover has no filters implemented in order to provide a flat initial response.

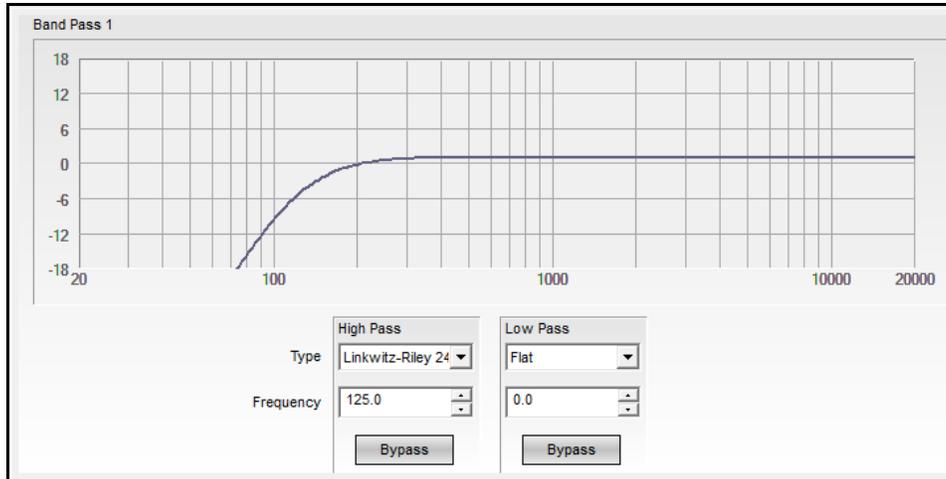


Fig. 3.7- Band Pass Crossover

The following controls are available within the crossover block:

**Response Graph** – Displays the response curve of the High and Low Pass filter settings.

**Loudspeaker Preset** – When a Bose loudspeaker EQ preset, which contains a high/low pass section, is applied via the front panel, the selection in the band type reads 'Preset Specific.'

**High Pass Filter Type** – Affects the low frequency cut off of the crossover. Available filter types are Butterworth (1st, 2nd, 3rd, 4th, 6th and 8th order), Bessel (1st, 2nd, 3rd, 4th, 6th and 8th order), and Bessel (2nd, 4th, 6th and 8th order).

**High Pass Frequency** – Defines the corner frequency of the filter.

**High Pass Bypass** – When active the high pass filter is bypassed.

**Low Pass Filter Type** – Affects the high frequency cut off of the crossover. Available filter types are Butterworth (1st, 2nd, 3rd, 4th, 6th and 8th order), Bessel (1st, 2nd, 3rd, 4th, 6th and 8th order), and Bessel (2nd, 4th, 6th and 8th order).

**Low Pass Frequency** – Defines the corner frequency of the filter.

**Low Pass Bypass** – When active the low pass filter is bypassed.

## BOSE® Loudspeaker Equalization

Each output signal processing chain includes a dedicated Bose loudspeaker EQ stage. Selecting any one of the four loudspeaker EQ blocks will cause the combined control panel for all loudspeaker EQs to be displayed.

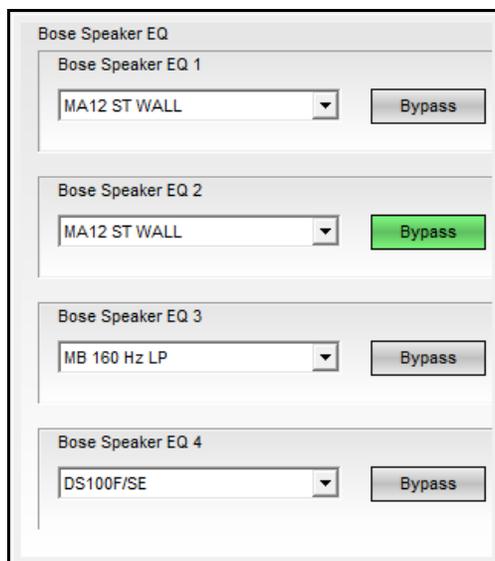


Fig. 3.8- EQ Control panel

**Bose® EQ Preset (channel)** – Use the Loudspeaker EQ drop down control to select the desired Bose professional loudspeaker product EQ.

**Bypass** – Bypasses the loudspeaker EQ stage for the selected channel.

The following Bose loudspeaker equalization curves are available within the SP-24 sound processor.

| FreeSpace® Products | Panaray® Products | LT Products | Legacy EQ Curves |
|---------------------|-------------------|-------------|------------------|
| DS16 F/S/SE         | 402II             | LT6400      | 402-I            |
| DS16F PNDT          | 502A              | LT9400      | 502BEX           |
| DS40F/SE            | 502B              | LT3202      | 802-II           |
| DS40F PNDT          | 802III            | LT4402      | 802-II ST        |
| DS100F/SE           | 802III ST         | LT9402      | LT3202-I         |
| DS100F PNDT         | MA12 Wall         | LT9702      | LT3202-I Cluster |
| FS3 100Hz LP        | MA12 Free         | LT6403      | LT4402-I         |
| FS3 150Hz LP        | MA12 ST WALL      | LT9403      | LT4402-I Cluster |
|                     | MA12 ST FREE      |             | LT9702-I         |

|  |                |  |                  |
|--|----------------|--|------------------|
|  | MA12EX         |  | LT9702-I Cluster |
|  | MA12EX Free    |  | AWCS             |
|  | MA12EX ST      |  | FS1B100Hz LP     |
|  | MA12EX ST Free |  | FS1B Surface     |
|  | MB 100 Hz LP   |  | FS1B Flush       |
|  | MB 160 Hz LP   |  | FS360 Hard       |
|  | MB 200 Hz LP   |  | FS360 Soft       |
|  | MB 250 Hz LP   |  | FS360 Deck       |
|  | MB 280 Hz LP   |  | Model 8          |
|  |                |  | Model 32         |

### Signal Delay

Up to 170 milliseconds of signal delay may be applied to each of the four output stages. Selecting any one of the four delay blocks will cause the combined control panel for all output channel delays to be displayed. To adjust the signal delay of an individual channel using the Delay Graph, select the loudspeaker icon for the desired channel and drag it to the required signal delay setting.

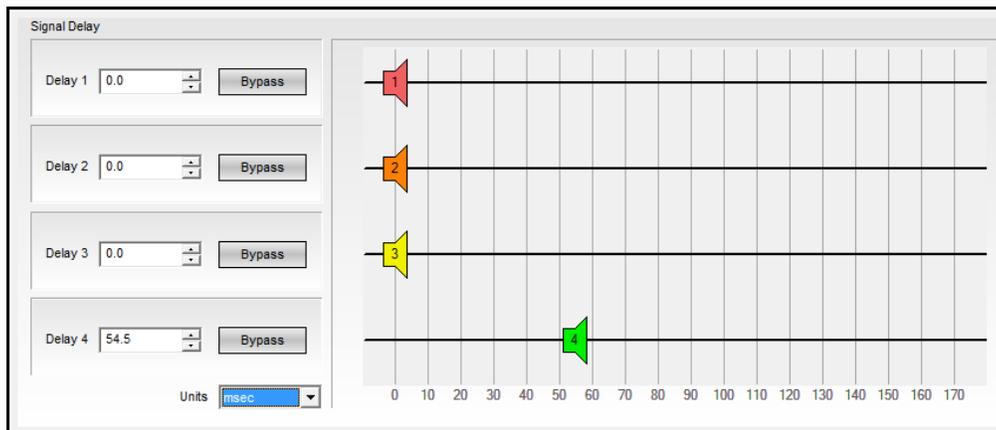


Fig. 3.9- Signal Delay

**Delay (channel)** – Enter the amount of signal delay to be applied to the channel. When using the spinner, up/down, control the signal delay is

incremented by 1.0 ms. When entering a value in the Delay text box the delay may be set using increments of 0.02 ms.

**Bypass (channel)**- Select the bypass control to disable the signal delay for the selected channel.

**Units** – Select the Units drop down menu item to change the scale used for determining signal delay. Available selections are: milliseconds (msec), feet or meters.

**Delay Graph** – Within the delay graph each output channel is represented by a loudspeaker. When dragging the loudspeaker icon the delay is continuously adjusted by 1.0 ms increments.

## Output Signal Limiter

Each output signal processing stage includes a signal limiter. Selecting any of the four signal limiter processing blocks will cause the signal limiter control panel to be displayed.

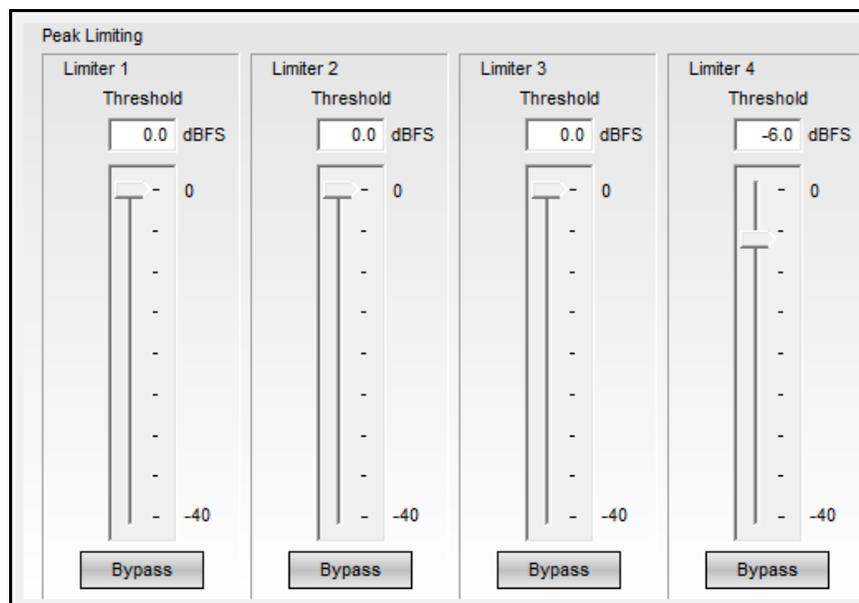


Fig. 3.9- Output Signal Limiter

**Threshold (channel)** – Enter the signal level threshold, in dBFS, at which the output limiter will engage using either a numeric value or by using the slider control.

**Bypass (channel)** – Selecting the bypass control will cause the output signal limiter to be disabled for the selected channel.

## Output Level Control

Each output processing stage includes an output level control. Selecting any of the four output level controls will cause the output level control panel to be displayed.

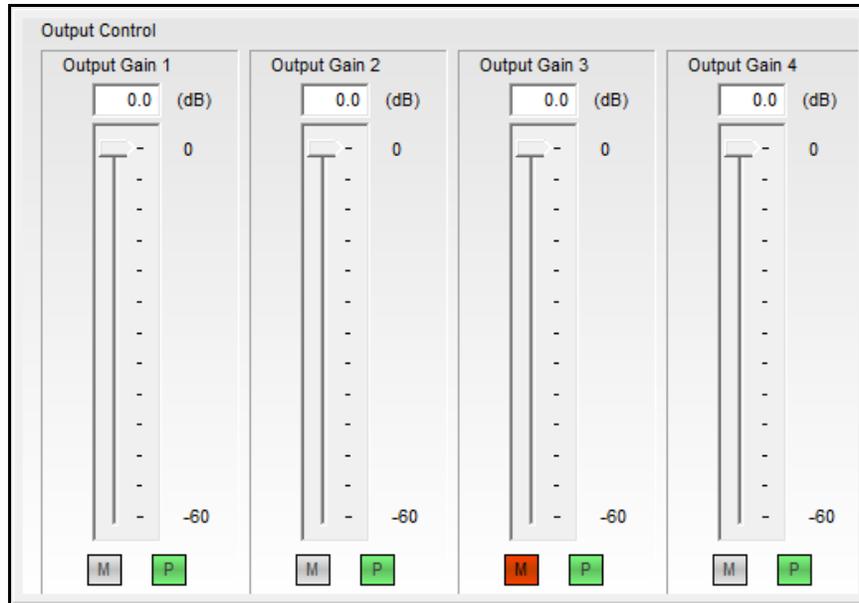


Fig. 3.10- Output Level Control

**Output Level (channel)** – Enter the output signal level attenuation, in dB, using either a numeric value or by using the slider control.

**Mute (channel)** – Select the Mute control to mute the output channel.

**Polarity (channel)** – Select the Polarity to invert the signal polarity of the output channel. Green indicates normal, 0° phase, while red indicates the signal polarity is inverted, 180° phase.

## Working with Scenes

### Working with scenes

The ControlSpace SP-24 can store up to four Custom Scenes which may be recalled from the front panel or the SP-24 Editor software. Scenes are created using the SP-24 Editor software and are stored within the processor for use during system operation. Each scene represents a unique configuration of signal processing parameters which are immediately applied when the scene is recalled.

### Creating a new scene

A new scene may be created when working either on or offline. To create a new scene, select File > New.

 When working online, creating a New Scene will reset all parameters within the SP-24 to their default values.

### Saving a Scene to a file

The current parameter settings may be saved as a Scene file (.scn) for future use when working either on or off-line. To save the current parameters as a Scene file select File > Save.

### Opening a Scene from a file

A scene previously saved to the PC may be opened, re-applied and edited when working either on or off-line. To open an existing scene file select File > Open.

 When working on-line, opening a Scene file will overwrite all parameters within the SP-24 to the values contained within the Scene file.

### Clear a Scene from the hardware

To clear a Scene from the memory of the SP-24, select the Clear button in the application tool bar. The Clear Scene dialog is displayed on the screen-

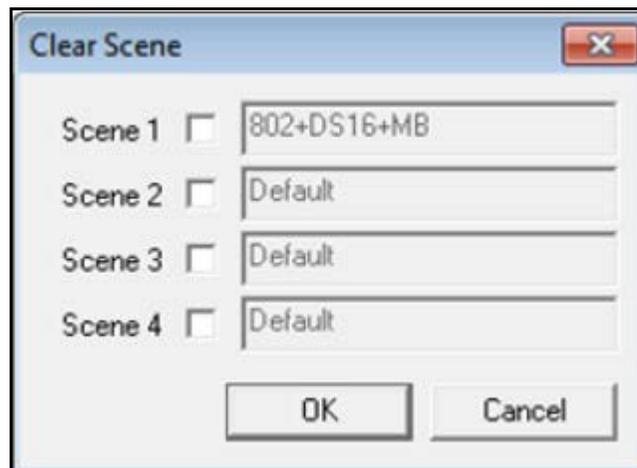


Fig. 4.4- **Clear Scene** dialog box

Select the Scene to be removed, and click **OK** to clear the selected scene.

The scene is removed from the SP-24 memory and replaced with a default set of parameters.

### Recall a Scene from the Editor software

Any one of the four Scenes can be invoked from within the Editor software, by selecting the desired Scene from the Scene drop down menu.

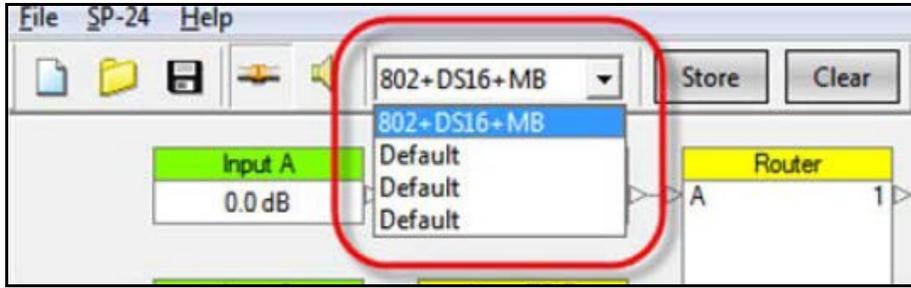


Fig. 4.3- **Scene** drop-down list

**!** Once a Scene is recalled, the previous hardware state can only be restored if it was stored as a Custom Scene. If the front panel was used to configure the hardware, it is recommended that you save the settings as either a Custom Scene within the software or as a Scene file on the PC.

### Store a Scene to hardware

When working on-line, the current parameter settings may be stored within one of the four Scene banks within the SP-24 Processor.

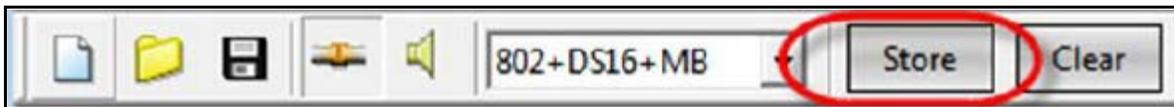


Fig. 4.1- The **Store** button

Once you have selected Store, the Store Scene dialog appears. Select the desired Scene bank, and provide a name for the Stored Scene.

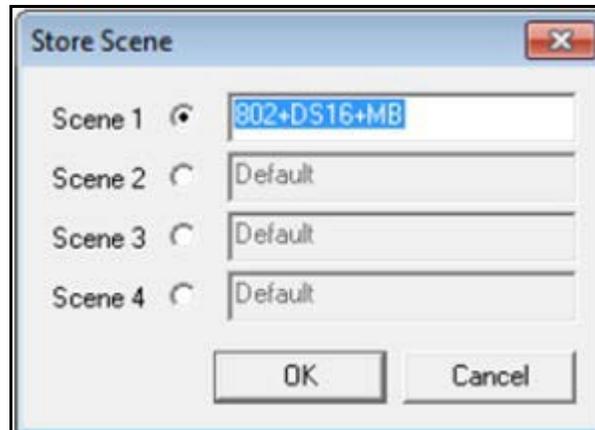


Fig. 4.2- The **Store Scene** dialog box

The Scene information is stored within the SP-24 and the Scene is now accessible from either the front panel or the Scene select drop down within the SP-24 Editor software.



# Application Examples

## Application examples

The SP-24 sound processor supports four main modes of operation from front panel interface: Mono, Stereo, Stereo High Pass + Bass and Mono High Pass + Bass.

Each of these configurations determines the state of the router, and allows selection of the loudspeaker equalization curve for the four outputs.

In some situations other applications may be desired, such as a dual mono configuration, or the creation of bass arrays using the standard Bose bass array settings provided in previous Bose loudspeaker controllers. Using the SP-24 Editor software these additional applications are easily re-created.

Included with the SP-24 Editor software are a number of sample configurations stored as Custom Scenes. To either view offline or apply one of these sample Scenes use the following steps:

1. Select File>Open.
2. Select the desired sample configuration

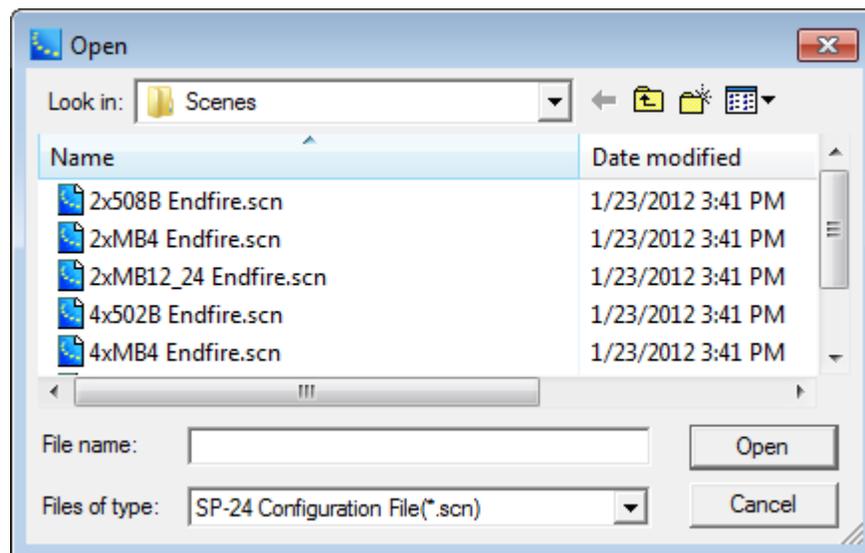


Fig. 5.1- File Open dialog

3. The settings for the custom Scene are loaded into the SP-24 Editor software.



If you are on-line when opening one of the custom Scene files the settings are immediately applied to the SP-24 processor.

## Dual Mono Configuration

In a Dual Mono configuration the processor is configured for two mono audio zones, each with a unique sources. In addition, each zone may be configured full range of bi-amped operation. The following illustration shows a typical Dual mono configuration.

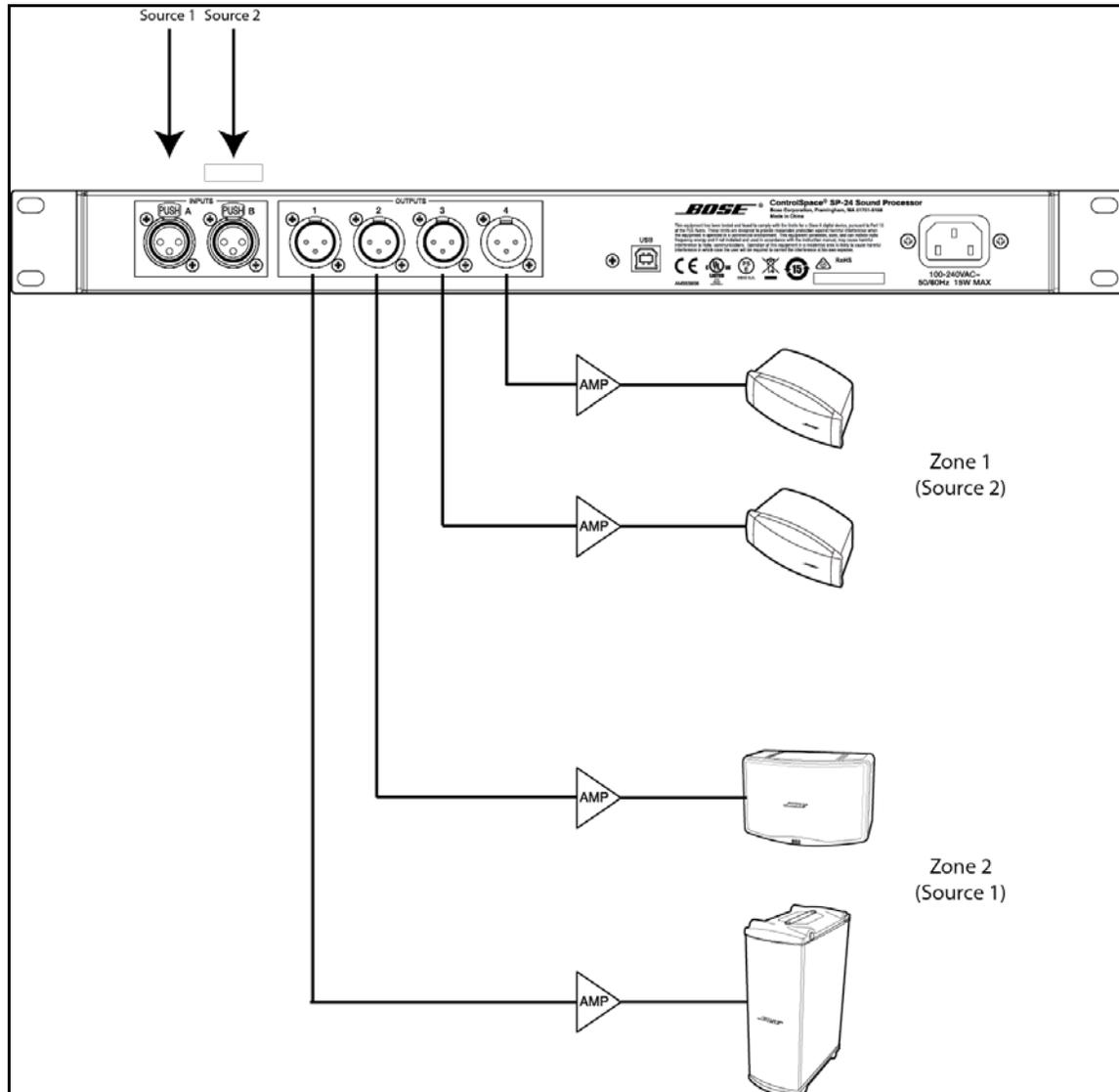


Fig. 5.2- Sample Dual Mono configuration

The sample Dual Mono configuration is configured according to the illustration above, and the settings implemented in the file are shown below:

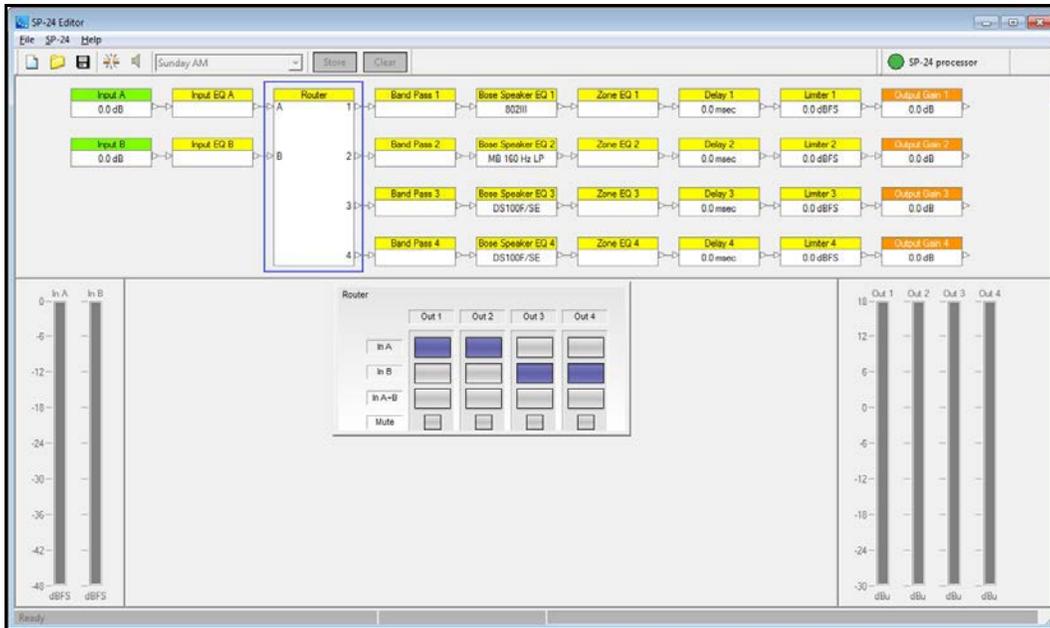


Fig. 5.3- Settings implemented for sample Dual Mono configuration

While not shown above a crossover is implemented on output channel 1 to properly cross-over the Panaray® 802®-III with the MB4 bass loudspeaker.

### Bose Bass Array Configurations

Eight bass array configurations are included with the sample Scene files. The bass array file you choose to use is determined by the bass loudspeaker you will be using, the quantity of devices, and the desired low pass frequency. All of the configurations provided are for endfire bass arrays with mono operation. The following table summarizes the settings, and recommended center to center cabinet spacing for the various bass arrays:

| Array Type         | Spacing Between Boxes |      | Delay Settings (ms) |          |          |          | LPF @  | In Panaray Controller |
|--------------------|-----------------------|------|---------------------|----------|----------|----------|--------|-----------------------|
|                    | ft                    | m    | Output 1            | Output 2 | Output 3 | Output 4 |        |                       |
| 502B 2x Endfire    | 2.62                  | 0.80 | 0.00                | 2.36     | --       | --       | 170 Hz |                       |
| 502B 4x Endfire    | 2.62                  | 0.80 | 0.00                | 2.36     | 4.72     | 7.08     | 170 Hz |                       |
| MB4 2x Endfire     | 2.00                  | 0.60 | 0.00                | 1.70     | --       | --       | 180 Hz | Y                     |
| MB4 2x Endfire     | 2.49                  | 0.76 | 0.00                | 2.21     | --       | --       | 140 Hz |                       |
| MB4 4x Endfire     | 2.43                  | 0.74 | 0.00                | 2.14     | 4.28     | 6.42     | 200 Hz | Y                     |
| MB4 4x Endfire     | 2.49                  | 0.74 | 0.00                | 2.21     | 4.42     | 6.63     | 140 Hz |                       |
| MB12/24 2x Endfire | 2.62                  | 0.80 | 0.00                | 2.36     | --       | --       | 170 Hz | Y                     |
| MB12/24 4x Endfire | 2.62                  | 0.80 | 0.00                | 2.36     | 4.72     | 7.08     | 170 Hz | Y                     |

Fig. 5.4- Summary of bass array settings

The following image depicts the proper set up and wiring of a 4 bass Endfire bass array:

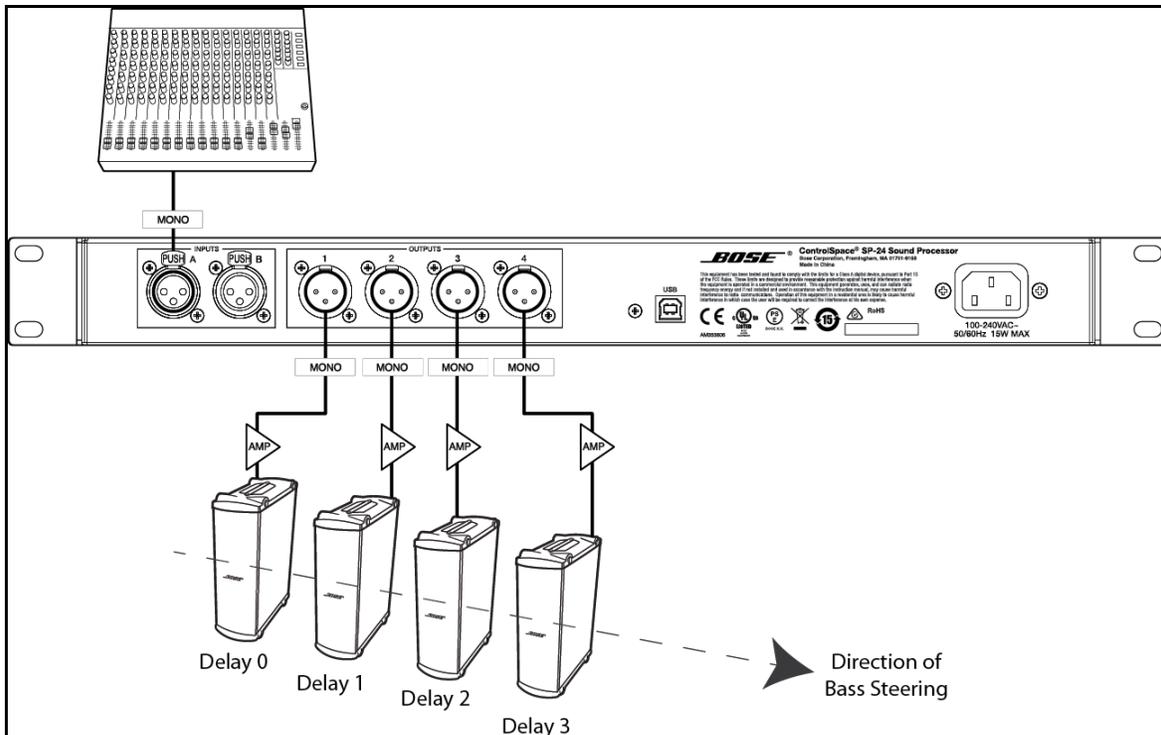


Fig. 5.5- Wiring configuration for an Endfire bass array



When working with bass arrays the audio signal for all bass devices must be processed by the same controller, regardless of whether any signal delay is used.

# Maintenance

## Upgrading SP-24 Firmware

Firmware updates for the SP-24 sound processor are performed using the SP-24 Editor software. The latest firmware version is always available at [pro.Bose.com](http://pro.Bose.com), and, when connected to the processor via USB, the current firmware version you are using can be determined by selecting Help> About Bose SP-24 Editor..



Fig. 6.1- About SP-24 Editor Dialog, firmware version is shown in lower section

All loudspeaker database and firmware updates are provided using an application update installer. To install the necessary files run the update installer.

1. Download the application update installer to your PC and run SP-24 Firmware Update application.



Fig. 6.2- SP-24 Firmware Update Application

2. Launch the SP-24 Firmware update application and follow the on-screen steps to install the updated SP-24 firmware and/or loudspeaker database update:

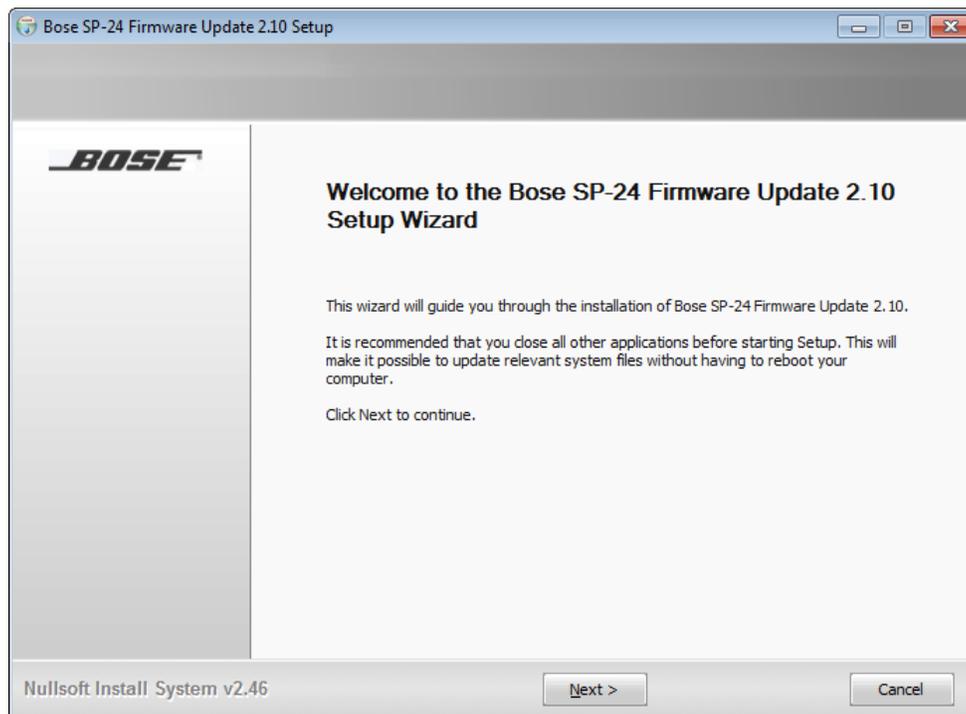
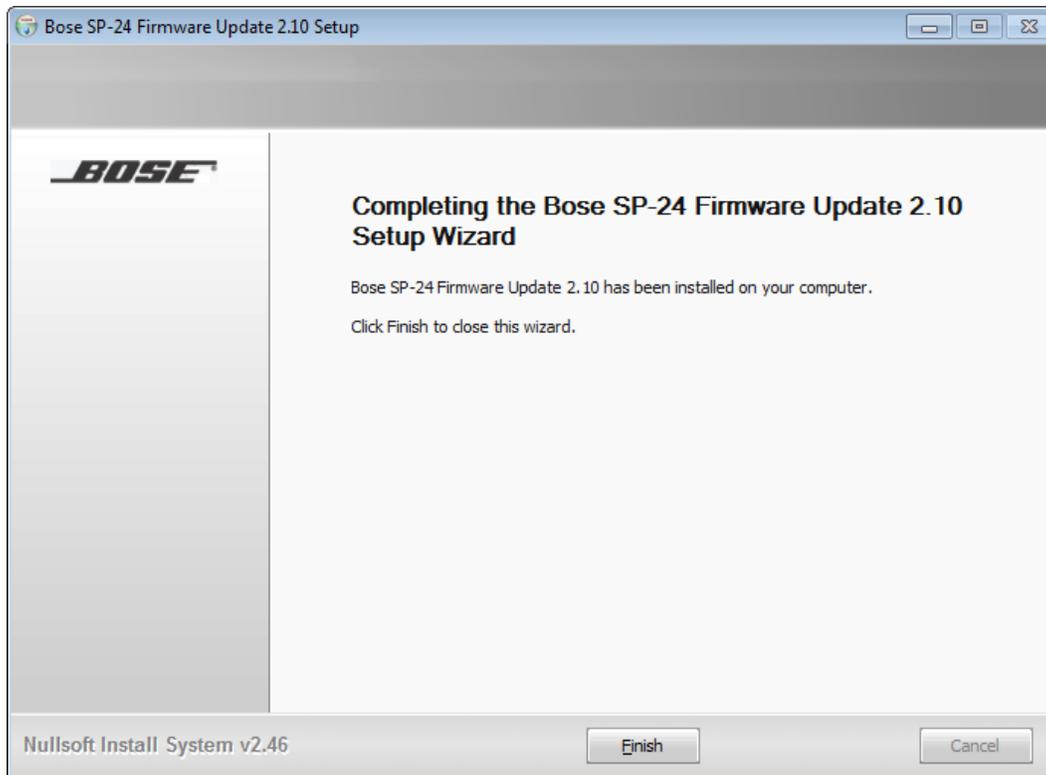


Fig. 6.3- SP-24 Firmware Update Installation Dialog

3. Once the installation is complete, click '**Finish**' to close the installer.



*Fig. 6.4- SP-24 Firmware Update Installation Dialog*

You are now ready to upgrade the firmware within the SP-24 sound processor. Use the following procedure to install the new firmware:

1. Make sure the SP-24 sound processor is connected to the PC and powered on.
2. Launch the SP-24 Editor software, and establish a connection between the PC and the hardware.
3. The Firmware update dialog contains the necessary instructions for placing the SP-24 sound processor into firmware update mode. Follow the instructions, and press **OK**.



Fig. 6.5- SP-24 Editor firmware update instruction dialog

4. Pressing 'OK' causes the File Open dialog to appear. Select the new firmware file that will be uploaded to the processor.

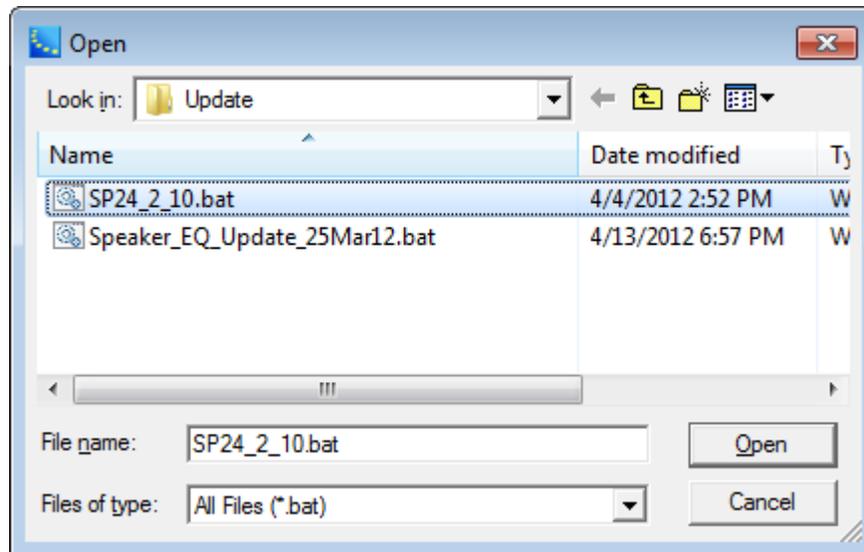


Fig. 6.6- SP-24 firmware file selection

5. You will be prompted to Erase all settings from the processor.

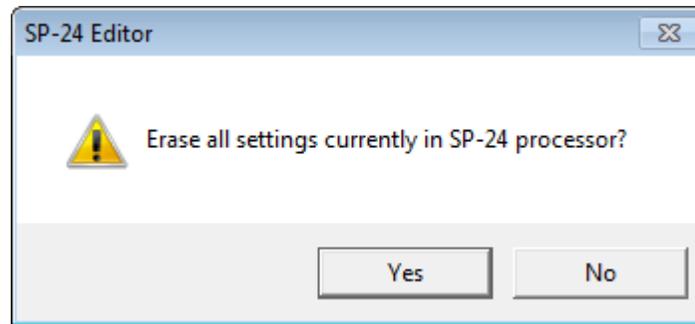


Fig. 6.7- Erase all settings confirmation

6. Selecting Yes will remove the current configuration, and all Custom Scenes from the processor, selecting No will leave the current configuration and Custom Scenes untouched.

7. Once the firmware update process has begun the firmware update progress dialog appears.

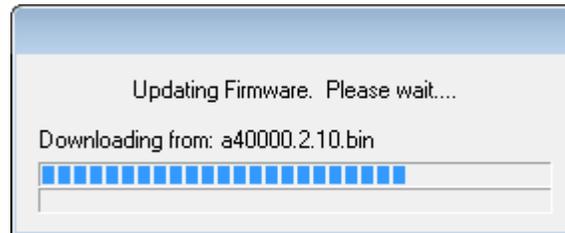


Fig. 6.8- Firmware update progress dialog

 During the firmware update procedure do not disconnect the unit from the PC, or power cycle the SP-24 sound processor, until you are prompted to do so.

8. You will be prompted to power cycle the SP-24 sound processor. Once the SP-24 sound processor has rebooted press OK to restore the connection between the SP-24 Editor software and the hardware.

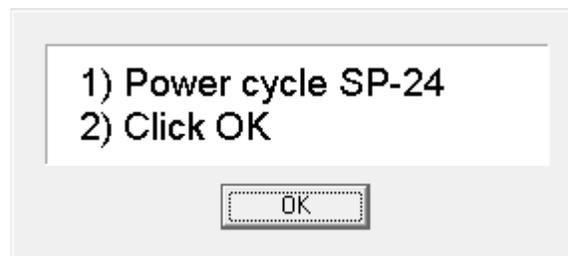


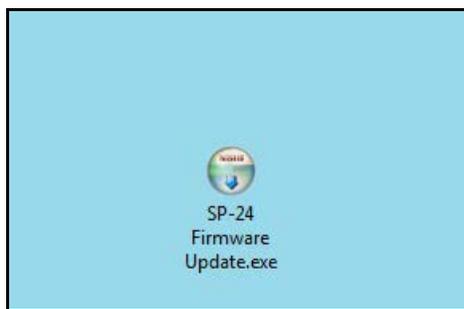
Fig. 6.9- Firmware update complete dialog

## Upgrading the Bose Loudspeaker EQ Database within the SP-24 Sound Processor

As new loudspeaker products become available from Bose professional systems we will issue a loudspeaker database only firmware update. The most recent loudspeaker EQ database update for the SP-24 sound processor is always available at [pro.Bose.com](http://pro.Bose.com).

All loudspeaker database and firmware updates are provided using an application update installer. To install the necessary files run the update installer.

1. Download the application update installer to your PC and run SP-24 Firmware Update application.



*Fig. 6.10- SP-24 Firmware Update Application*

2. Launch the SP-24 Firmware update application and follow the on-screen steps to install the updated SP-24 firmware and/or loudspeaker database update:

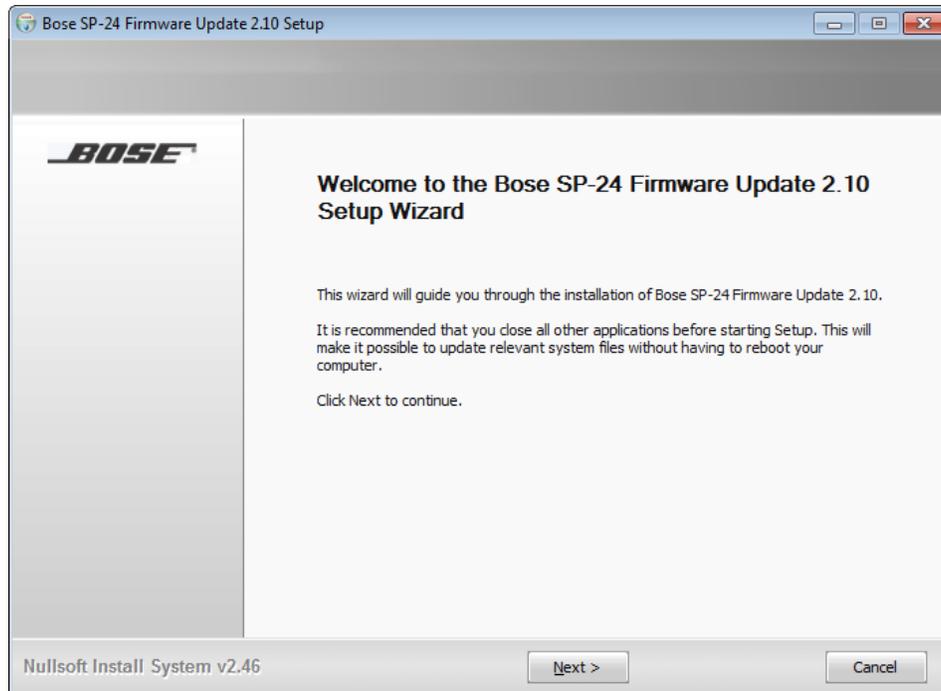


Fig. 6.11- SP-24 Firmware Update Installation Dialog

3. Once the installation is complete, click **Finish** to close the installer.

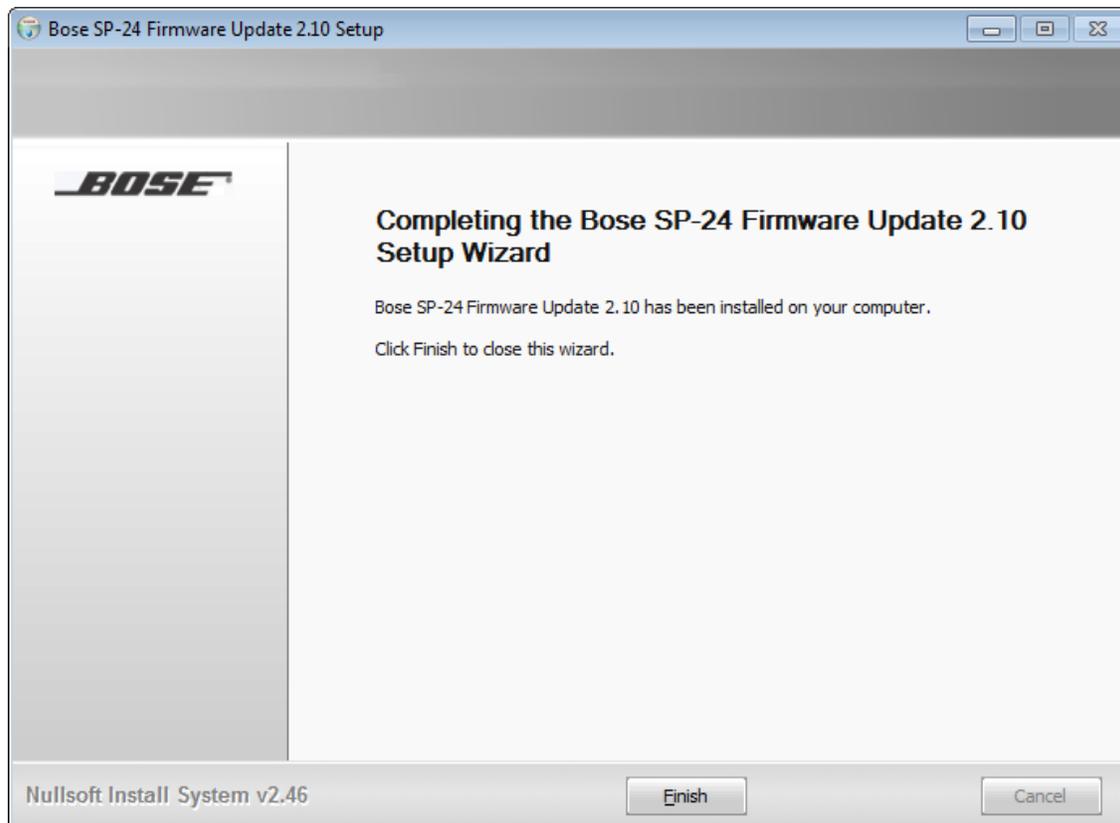


Fig. 6.12- SP-24 Firmware Update Installation Dialog

You are now ready to update the loudspeaker EQ database within the SP-24 sound processor. Use the following process to update the SP-24 loudspeaker EQ database:

1. Make sure the SP-24 sound processor is connected to the PC and powered on.
2. Launch the SP-24 Editor software, and establish a connection between the PC and the hardware.
3. The Firmware update dialog contains the necessary instructions for placing the SP-24 sound processor into firmware update mode. Follow the instructions, and press 'OK'.



Fig. 6.13- SP-24 Editor firmware update instruction dialog

4. Pressing **OK** causes the File Open dialog to appear. Select the new loudspeaker EQ database file that will be uploaded to the processor.

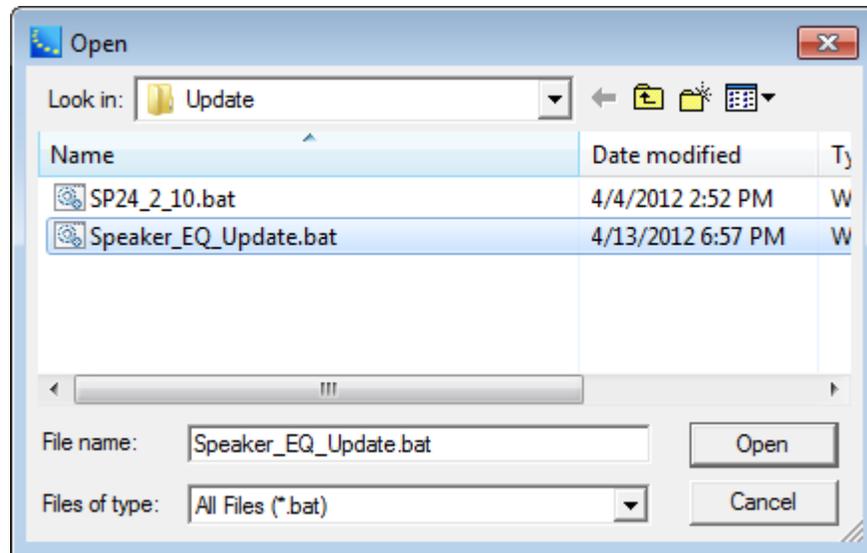


Fig. 6.14- Loudspeaker EQ update selection

5. Once the firmware update process has begun the firmware update progress dialog appears.

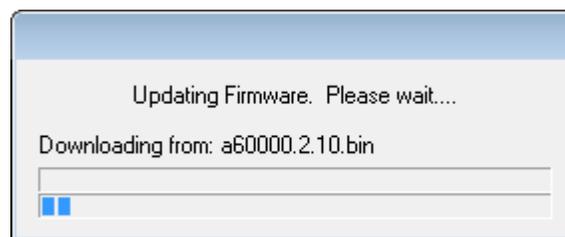


Fig. 6.15- Firmware update progress dialog

During the firmware update procedure do not disconnect the unit from the PC, or power cycle the SP-24 sound processor, until you are prompted to do so.

6. You will be prompted to power cycle the SP-24 sound processor. Once the SP-24 sound processor has rebooted press OK to restore the connection between the SP-24 Editor software and the hardware.

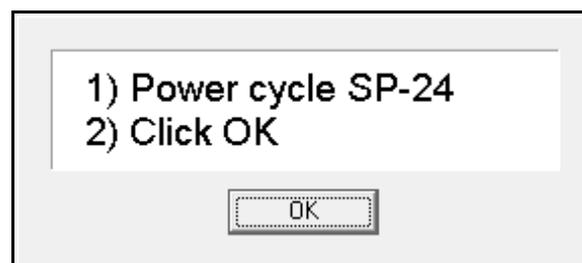


Fig. 6.16- Firmware update complete dialog

## Upgrading an Existing System to the SP-24 Sound Processor

In some situations you may wish to upgrade an existing system using an older Panaray® system controller to the SP-24 sound processor. In this situation it is recommended that the SP-24 Editor is used to configure the processor for operation.

Within the Bose Speaker EQ processing block you may select the required active equalization curve for a variety of discontinued Bose loudspeaker products. The following legacy equalization curves are available:

| <b>BOSE Professional Legacy Equalization Curves</b> |                              |                    |
|---|------------------------------|--------------------|
| <b>FreeSpace® Products</b>                          | <b>Panaray® Products</b>     | <b>LT Products</b> |
| FS1B 100Hz LP                                       | Acoustic Wave® Cannon (AWCS) | LT3202-I           |
| FS1B Surface  | 402-I                        | LT4402-I           |
| FS1B Flush  | 802-II                       | LT9702-I           |
| FS360 Hard  | 802-II ST                    | LT3202-I Cluster   |
| FS360 Soft  | AWCS                         | LT4402-I Cluster   |
| FS360 Deck  | 502BEX                       | LT9702-I Cluster   |
| Model 8   |                              |                    |
| Model 32  |                              |                    |