



AMP1-16-M

1RU, 16-Channel, 3G/HD/SD-SDI Audio Monitor

User Guide

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Customer Support

Wohler Technologies, Inc.
31055 Huntwood Avenue
Hayward, CA 94544 www.wohler.com
Phone: 510-870-0810
FAX: 510-870-0811
US Toll Free: 1-888-596-4537 (1-888-5-WOHLER)
Web: www.wohler.com Sales: sales@wohler.com
Support: support@wohler.com

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CHAPTER 1: Quick Start

Introduction

Overview

The AMP1-16-M is a 1RU, 16-channel, 3G/HD/SD-SDI audio monitor. This unit comes with two 2.4" graphics screens that work together to display 16 channels of audio level metering. You can both visibly and audibly monitor any de-embedded channel pair or pairs of the selected 3G/HD/SD-SDI input signal. The AMP1-16-M is small, low-cost, and simple to operate. Configuration is simple and you can easily copy any configuration to other AMP1-16-M units.

Note that very little configuration should be necessary. We have already configured the unit to the most commonly requested settings. However, should you need to change these settings, you can access the unit either through the front panel menu system, or remotely through a PC program called the Wohler AMP1-16-M Manager.

Safety

Instructions

1. Read, keep, and follow all of these instructions; heed all warnings.
2. Do not use this equipment near water.
3. Use only a dry cloth to clean the equipment.
4. Do not block any ventilation openings.
5. Do not install near any heat source such as a radiator, heat register, amplifier, or stove.
6. Do not attempt to plug the unit into a two-blade outlet (with only two prongs of equal width).

Important:

By design, this monitor will only plug into a three-prong outlet for your safety. If the plug does not fit into the outlet, contact an electrician to replace the obsolete outlet.

7. Protect the power cord from being walked on or pinched, particularly at plug connections on the equipment and at the socket.
8. Use only the attachments/accessories specified by the manufacturer.
9. Unplug the equipment during lightning storms or when unused for long periods of time.
10. Refer all servicing to qualified service personnel. Servicing will be required under all of the following conditions:

- a. The equipment has been damaged in any way, such as when the power-supply cord or plug is damaged.
- b. Liquid had been spilled or objects have fallen onto the equipment.
- c. The equipment has been exposed to rain or moisture.
- d. The equipment does not operate normally.
- e. The equipment has been dropped.

Safety Symbols

WARNING:



The symbol to the left warns of electric shock hazard inside the unit. Disconnect the power cord before removing access panels when installing upgrades. Only qualified service personnel are to operate the equipment with covers removed, and are to exercise caution to avoid personal injury.

Mounting

The unit is designed for a standard 19" rack. Install it at ear/eye level for best high frequency response and visual observation of the display screens. Please adhere to the following clearances:

Clearance	Surface
24"	Front
3"	Rear
2"	Sides
1.75"	Top and Bottom (if either radiates heat)
0"	Top and Bottom (if no heat)

Heat Dissipation

The ambient temperature inside the mounting enclosure should not exceed 40° Celsius (104° Fahrenheit). Adjacent devices can be rack mounted (or stacked) in proximity to the unit if this temperature is not exceeded. Otherwise, allow a 1RU (1.75"/44.45mm) space above and below the unit for air circulation.

Important:

To reduce noise, the monitor does not have any fans. As a result, the heat generated by the Class D power amplifiers, power supplies, and other components is vented by slots in the sides and back of the unit. Therefore, as a safety precaution, you must allow proper ventilation on these surfaces.

Sympathetic Vibration

Sympathetic vibration from other equipment (cables, etc.,) in the rack may be

serious enough to interfere with the unit's sound quality. If you experience sympathetic vibrations, use thin card stock, felt, foam, or weather-stripping between the vibrating surfaces. Tie loose cables securely with cable ties.

Mechanical Bracing

The 1RU chassis is securely attached to the front panel. In addition, the chassis has mounting tabs through which you attach it to the rack rail. This feature will reduce or eliminate rear bracing requirements in many mobile/portable applications. The weight of internal components is distributed fairly evenly around the unit.

Electrical Interference

Be careful to avoid mismatched cable types and other similar causes of undesired reflections in digital signal systems. If severe enough, such reflections can result in corruption of the digital data stream. As with any audio equipment, maximum immunity from electrical interference requires the use of shielded cable; however, satisfactory results can sometimes be obtained without it. The internal circuitry ground is connected to the chassis.

Power

The unit comes with a standard internal power supply and connects an A/C mains power source (60W, 100 to 240 VAC, $\pm 10\%$, 50/60Hz) through the IEC connector provided on the rear panel of the unit.

When the mains plug or appliance coupler is used as the disconnect device, the disconnect device should remain operable.

Compliance

FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their own expense.

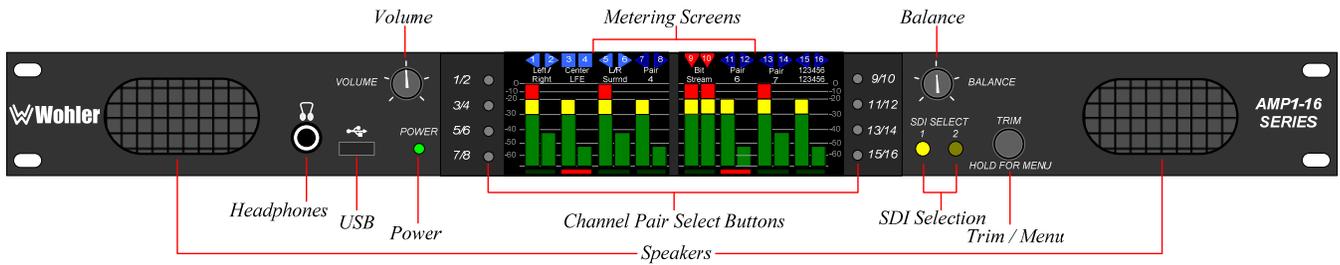
ICES-003

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Front Panel

Figure 1–1: Front Panel Layout



1. **Speakers:** Audio monitoring is achieved through the use of class D amplifiers driving two (left/right) wide range speakers.
2. **Headphone Jack (1/4"):** A 1/4" jack for an optional headphone is provided on the front panel.
3. **USB 2.0 Port:** This USB Type A connector allows you to use a flash drive (not supplied) to copy system configurations to another AMP1-16-M or to a PC and allows you to update the unit's firmware (Version 4 and later).
4. **Volume:** The left knob controls the Volume of the internal speakers, headphones, and optionally of the rear panel balanced analog outputs. This control can be set so that it only controls the Left Volume.
5. **Power Indicator:** This tri-color LED indicates power and basic status information. See Table 1–1 below.

Table 1–1: Power Color / Indication Descriptions

LED Color	Description
Green	The AMP1-16-M is functioning properly.
Red	When the LED flashes green or yellow followed by a series of red flashes, each flash sequence indicates an error code. Try restarting the unit, and if the problem persists, contact Wohler Technical Support.
Yellow	The LED is also a solid yellow when the AMP1-16-M is first starting up. The LED blinks yellow when a firmware update is in progress.
Off	The AMP1-16-M is not receiving AC power.

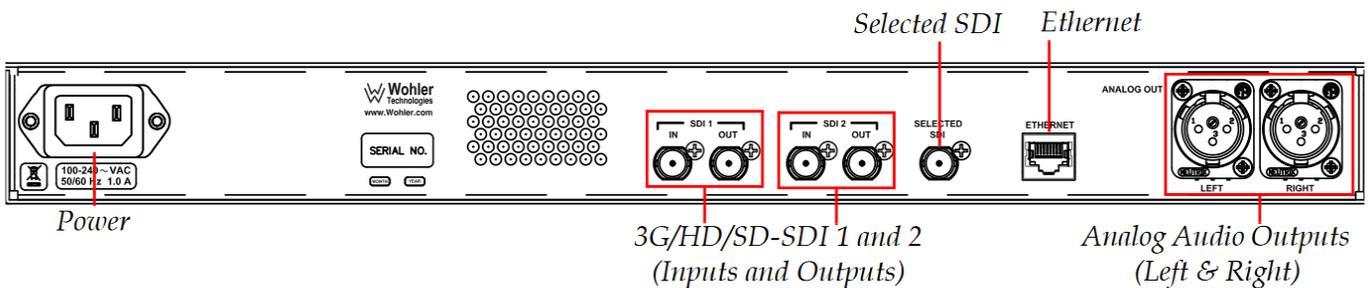
6. **Metering:** These screens work together to display bar graphs and the configuration menus.
7. **Channel Pair Select Buttons:** These eight buttons allow you to select single channels, a pair, or multiple pairs of audio to be monitored (depending upon options selected). They are also used in conjunction with the internal menu system.
8. **Balance:** The right knob adjusts the Balance between the speakers and optionally between the rear panel balanced analog outputs. This control can

be set so that it only controls the Right Volume.

9. **SDI Selection:** Press either of these LED buttons to select one of the two SDI inputs. Note that SDI 1 is selected by default whenever:
 - a. The AMP1-16-M is powered up, or
 - b. The **Send to Unit** control is clicked on a remote access.
10. **Trim/Menu:** Pressing and holding this button for at least three seconds opens the menu system so you can customize the operation of the AMP1-16-M.

Rear Panel

Figure 1–2: Rear Panel Layout



1. **Power:** The AMP1-16-M uses a standard IEC power cord for the 100 to 240 VAC $\pm 10\%$, 50/60 Hz power connection.
2. **3G/HD/SD-SDI Inputs:** These two BNC connectors accept the 3G/HD/SD-SDI input signals.
3. **3G/HD/SD-SDI Outputs:** These BNC connectors output regenerated replicas of the two 3G/HD/SD-SDI input signals.
4. **Selected 3G/HD/SD-SDI Re-Clocked Output:** This BNC connector re-clocks the selected 3G/HD/SD-SDI input signal.
5. **Ethernet:** The Ethernet port can connect to either a LAN or a PC to let you customize the AMP1-16-M configuration. It will also allow you to copy configurations from one AMP1-16-M to another. Lastly, it can be used to update the AMP1-16-M software and firmware. Refer to Chapter 3, Appendix A, Appendix B and Appendix C for details.
6. **Analog Outputs:** These XLR connectors provide two channels of balanced analog outputs. The source of these signals is the mix of audio monitored by the internal speakers.

CHAPTER 2: Operation

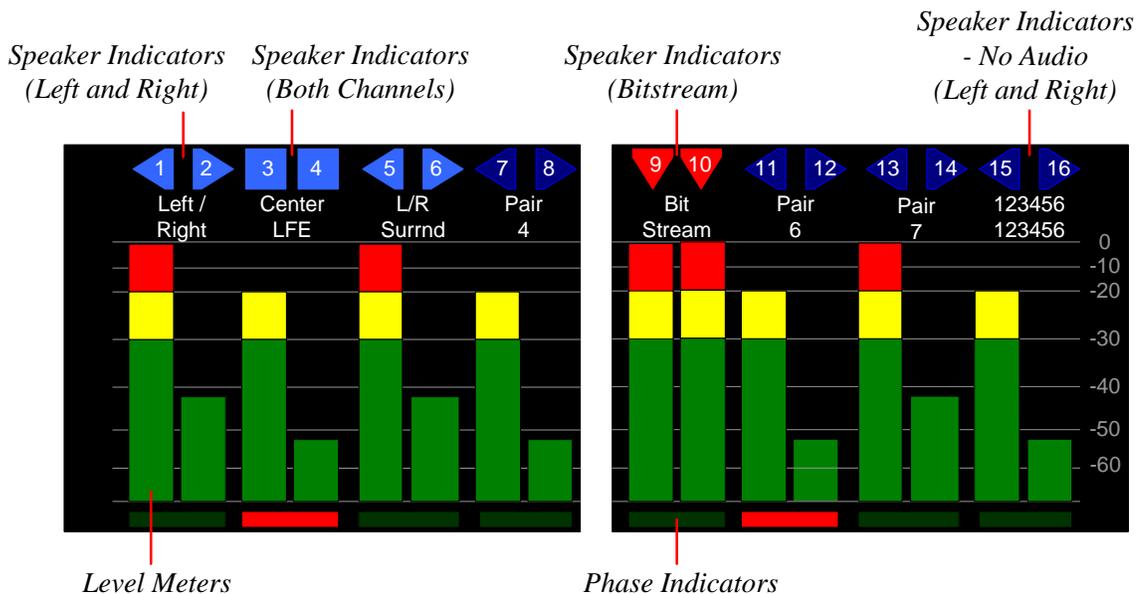
Introduction

This chapter describes how to operate the AMP1-16-M from its front panel.

Main Screen

After powering up the AMP1-16-M and connecting an SDI input, you should see the **Main Screen**, which will be similar to the one shown in [Figure 2-1](#) below.

Fig 2-1: Main Screen



1. **Speaker Indicators:** The indicators above each meter identify the channel number and the status of the channel.

Table 2-1: Channel Status Icon Descriptions

Attribute	Symbol	Description	Meaning
Icon Shape		Left Pointing Blue Triangle	Channel configured to sound in the left speaker
		Right Pointing Blue Triangle	Channel configured to sound in the right speaker
		Blue Square	Channel configured to sound in both speakers

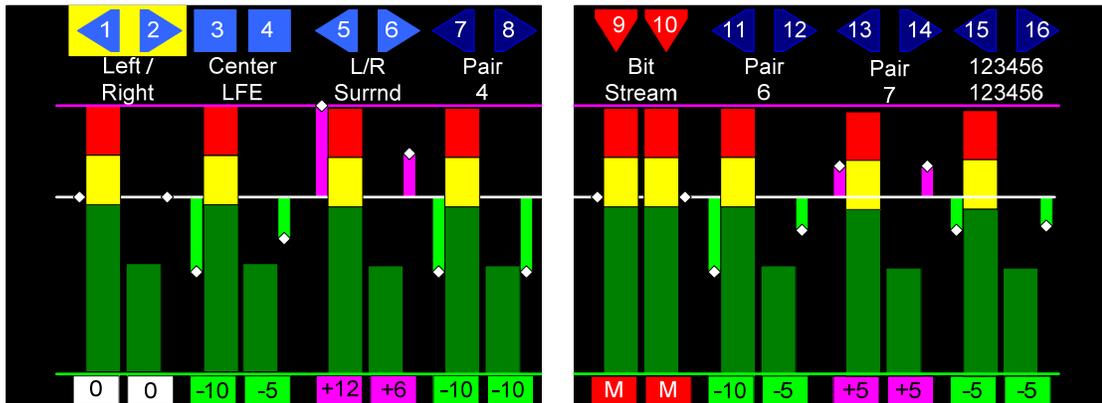
Attribute	Symbol	Description	Meaning
Icon Color		Light Blue Triangle or Square	Channel is selected by the Channel Pair Select buttons and can be heard
		Dark Blue Triangle or Square	Channel is not selected by the Channel Pair Select buttons and cannot be heard
		Downward Pointing Red Triangle	Channel contains a bitstream instead of audio and cannot be heard

2. **Level Meters:** All of the channels are metered.
3. **Channel Selection:** There are many ways to select channels for listening. There are two options located in the **Meter Type and Reference Menu**, which give four possible methods of selection. Regardless of the option settings, the icons in the **Main Screen** turn light blue to indicate that the audio channel(s) selected will be summed to the speakers.
4. **Mono Channel Select** - When set to **Disable**, both channels of a pair are quickly selected and deselected by repeated presses of a Channel Pair Select button. When set to **Enable**, multiple presses of a **Channel Pair Select** button will select or deselect one or both channels of the pair, allowing you to select individual channels. For example, using **Channel Pair Select 3/4**:
 - a. First press selects both channels for listening.
 - b. Second press leaves only channel 3 selected.
 - c. Third press leaves only channel 4 selected.
 - d. Fourth press leaves both channels 3 and 4 deselected.
5. **Audio Pair Select** – When set to **Single**, only one pair may be selected at any given time. Selecting any given pair will first deselect any other pairs. When set to **Multiple**, any number of pairs may be selected at one time for listening.
6. Adjust the **Volume** and **Balance** controls as necessary.
7. The channel pairs can be given unique names. To do this, simply connect a PC to the Ethernet port and run the Wohler AMP1-16-M Manager program. Refer to Appendix A to obtain the program.
8. To select the channels that go to each speaker, either connect a PC to the Ethernet port or open the self-contained menu system. To enter or exit the menu system, hold the **Trim** button for at least three seconds. In the menus, whether internal or in the **AMP1-16-M Manager program**, you can set many other operating characteristics of the AMP1-16-M to your exact needs. Refer to Chapter 3 to use the AMP1-16 Manager program or Chapter 4 to use the internal menus.
9. **Phase Indicators:** When any of these indicators are red, they indicate that the odd/even pair is out of phase. Green indicates in phase. Refer to the **Screen and Phase Options Menu** in Chapter 4 for more information.

Trim Screen

Press the **Trim** control to switch between the **Main Screen** and the **Trim Screen**. The **Trim Screen** lets you to individually adjust the gain of each channel to monitor the audio either through the internal speakers or through the analog outputs. The **Trim Screen** is shown in [Figure 2–2](#) below.

Figure 2–2: Trim Screen



The meters are labeled as they are in the **Main Screen**. At the bottom of each meter, a number indicates the amount of gain or loss being applied to each channel. If a gain is being applied, the number is indicated in a pink square. If a loss is being applied, the number is indicated in a green square. If no gain or loss is being applied, a zero is indicated in a white square. Adjacent to each meter, a small graphical indication appears, showing the gain or loss from +12 dB to -40 dB.

You can adjust a channel pair by pressing one of the eight **Channel Select** buttons to highlight the icons at the top of the meters and then turning the **Trim** knob to increase or decrease the gain. If the gain is decreased below -40 dB, the channel is muted and an **M** is shown in a red square.

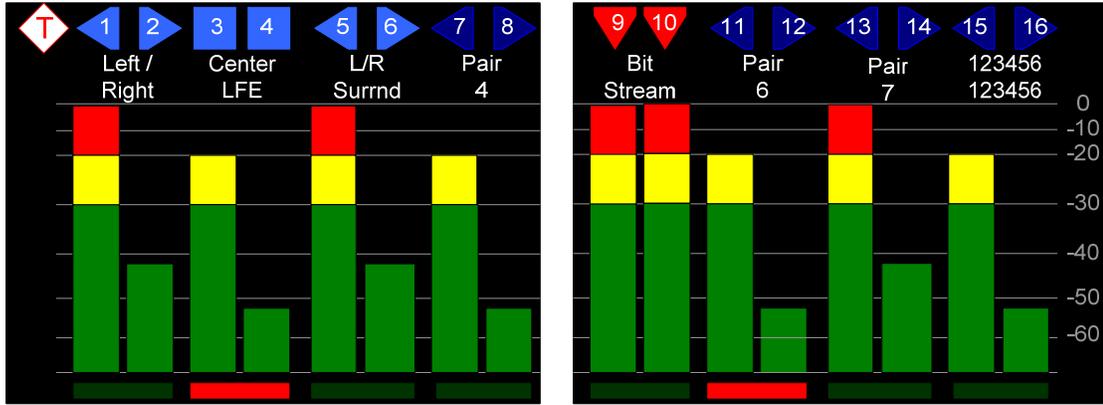
Multiple channel pairs can be adjusted simultaneously by first selecting each one and then turning the **Trim** knob to adjust. However, if Single channel pair selection is optioned as discussed in the previous section, then only one pair can be adjusted at a time.

You can adjust an individual channel by repeatedly pressing the **Channel Select** button until only the channel you want to adjust is highlighted. Then turn the **Trim** knob to adjust it.

The settings in the **Speaker and Analog Output Menu** and **Trim Options Menu** determine whether the trimmed adjustments affect the internal monitor speakers, the analog outputs, both, or neither. You can also disable access to the **Trim Screen** if necessary in the **Trim Options Menu**. Refer to the **Speaker and Analog Output Menu** in Chapter 4 and the **Trim Options Menu** in Chapter 4.

When the levels of any channels have been trimmed, this is flagged in the **Main Screen** to let you know that this has taken place. A red **T** in a white diamond shape is shown in the upper left of the screen. Refer to [Figure 2–3](#).

Figure 2–3: Main Screen (Trim Adjusted)



USB Port Functionality

You can copy configuration files to and from your unit by using a flash drive connected to the USB port. Configurations may also be created using the Wohler AMP1-16-M Manager program in a PC and transferred to a USB flash drive which can then be inserted into the unit. Refer to The USB Tab section of Chapter 3. You can also use a flash drive to update the software in the AMP1-16-M. Refer to Appendix D for instructions.

Immediately after connecting the flash drive to your AMP1-16-M, the **Flash Drive Options** screen displays (interrupting any current functions except an Ethernet connection) as shown in Figure 2-5 below. The menu flow for the USB Flash Drive menus is shown immediately below in Figure 2-4. The **Update Menu** button will only appear if the USB drive contains program update files. Refer to Appendix D.

Figure 2–4: Flash Drive Menu Tree

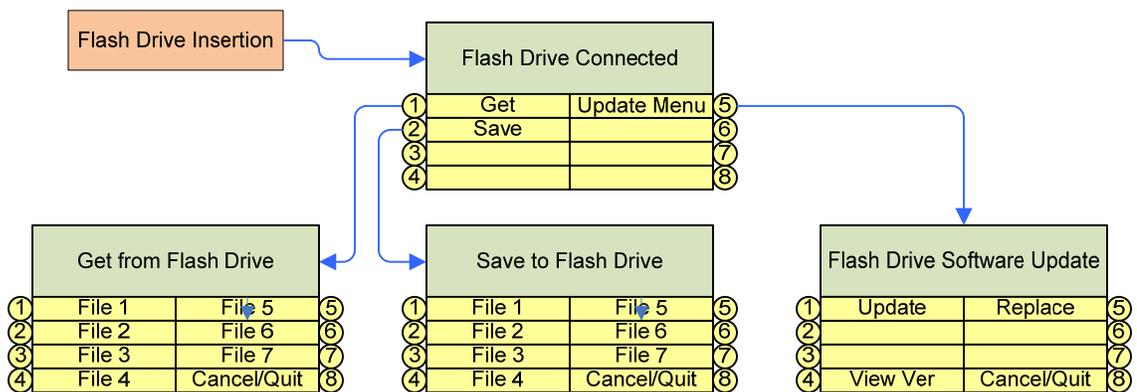
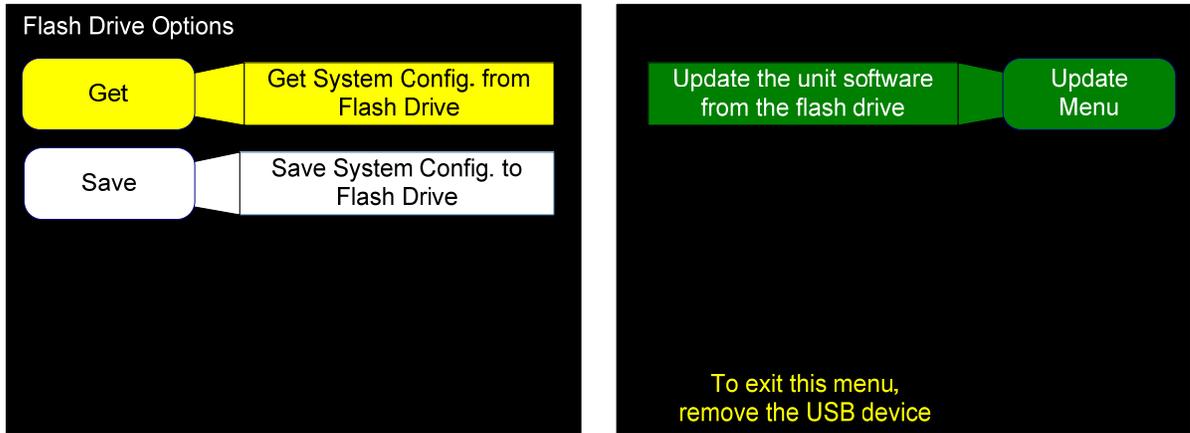


Figure 2–5: Flash Drive Options Screen

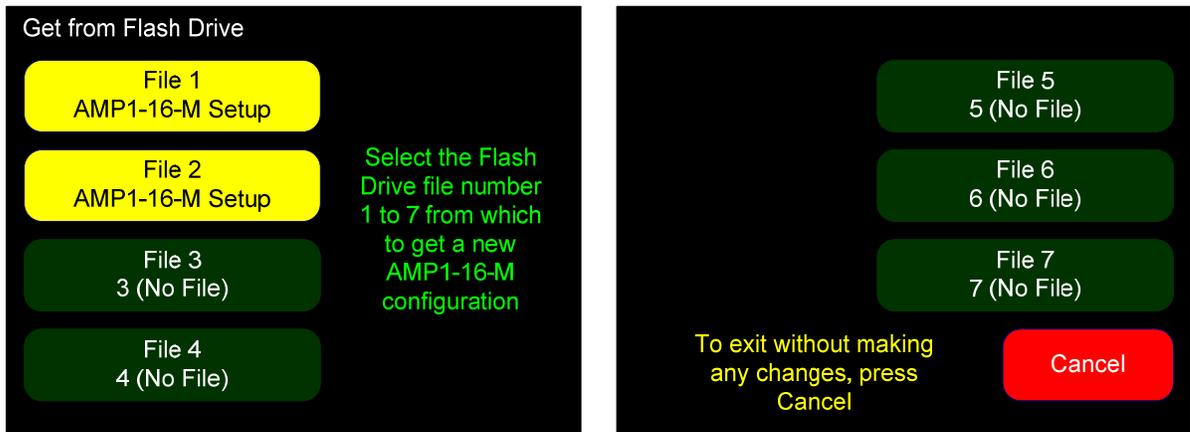


Note: All configuration files end in the .wcfg extension.

Copying a Configuration from the AMP1-16-M

1. To load a configuration file to the AMP1-16-M from your flash drive, press Get. The **Get from the Flash Drive** screen will display as shown in [Figure 2–6](#) below.

Figure 2–6: Get From Flash Drive Screen



2. Using one of the bright yellow choices, press the file number (**File 1** through **File 7**) of the file you want to copy from your flash drive. When the copy process completes, the **Flash Drive Options** screen re-displays.

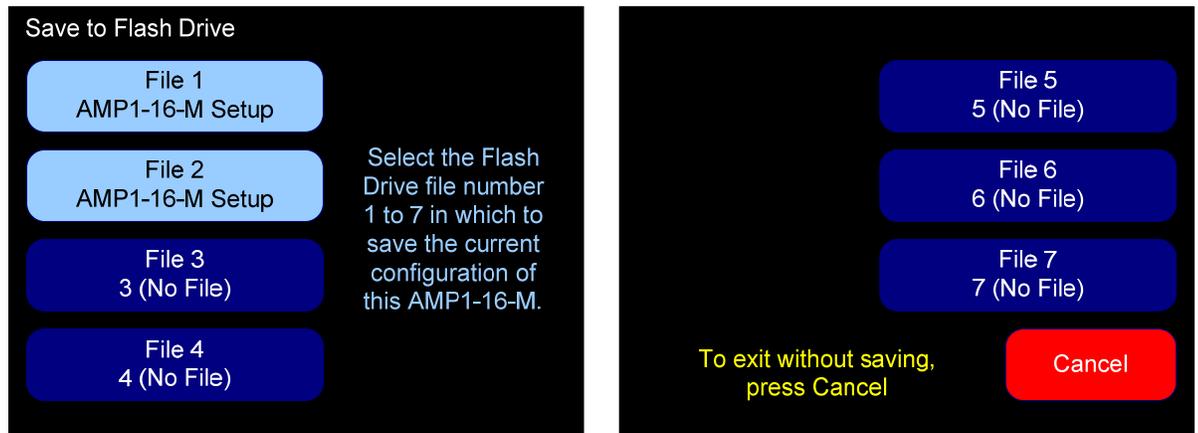
Note: The configuration takes effect immediately when you press the **File** button.

3. Remove the flash drive from the USB port.

Copying a Configuration File from the AMP1-16-M

1. To copy a configuration file from the AMP1-16-M to the flash drive, press **Save** from the **Flash Drive Options** screen. The **Save to Flash Drive** screen will display as shown in [Figure 2–7](#). The lighter color buttons indicate file numbers that already contain configuration data.

Figure 2–7: Save to Flash Drive Screen



2. Press the file number (**File 1** through **File 7**) of the file you want to copy from your flash drive. When the copy process completes, the **Flash Drive Options** screen re-displays.
3. Remove the flash drive from the USB port.

Update Menu

This button only appears if the inserted flash drive contains a software update files. Press this button to proceed to the software updating menu. Appendix D describes in detail the procedure to update the AMP1-16-M software from a flash drive.

You can copy the software update files to a flash drive using the Wohler AMP1-16-M Manager program in your PC. Refer to The **USB Tab** in Chapter 3 for adding a software update to a flash drive.

If you prefer to update the AMP1-16-M software using a direct Ethernet connection to a PC, refer to Appendix B for step by step instructions.

To update the AMP1-16-M software remotely using an Ethernet connection from a network, refer to Appendix C for step by step instructions.

CHAPTER 3 - AMP1-16-M Manager GUI

Introduction

This chapter describes how to use the AMP1-16-M Manager, which is a Graphical User Interface (GUI) PC program, to configure the AMP1-16-M.

Important:

If you have not yet installed the AMP1-16-M Manager setup software into your PC and connected it to the AMP1-16-M, you must complete all the steps in Appendix A before continuing.

Running the AMP1-16-M Manager

The AMP1-16-M Manager allows you to customize the AMP1-16-M configuration to perfectly suit your needs.

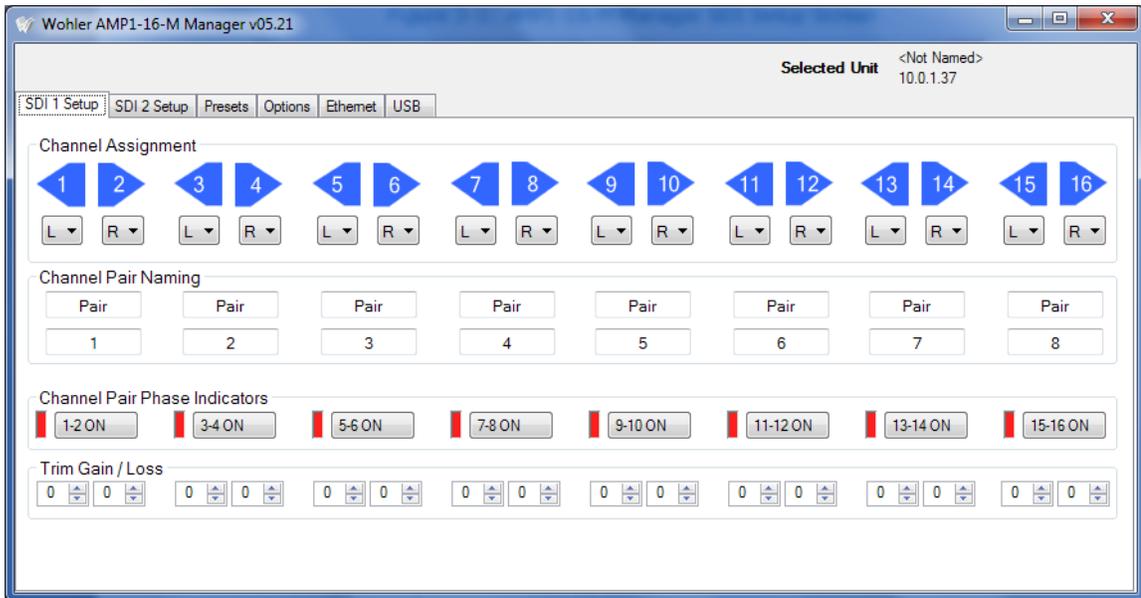
Note: When a unit is selected in the Manager's **Units Responding** window, a user at the front panel will be prevented from using the USB port. These lockouts will remain in effect until the **Disconnect From Remote Unit** button is pressed.

The SDI Setup Tabs

Since the **SDI 1 Setup** and **SDI 2 Setup** screens are identical, we are only showing and describing the **SDI 1 Setup** screen for our example.

1. Launch the **AMP1-16-M Manager**.

Figure 3–1: AMP1-16-M Manager SDI Setup Screen



2. **Channel Assignment:** Click the drop downs to select whether each channel should be directed to the right, left, or both speakers.
3. **Channel Pair Naming:** In the blank fields at the middle of the screen, you can add names for any channel pair. Each name is comprised of the top and bottom field, and each field allows up to seven characters.
4. **Channel Pair Phase Indicators:** For each channel pair, click the button to toggle the phase indication on or off.
5. **Trim Gain/Loss:** Click the up or down arrows beside each **Trim/Gain Loss** value to either increase or decrease the gain or loss.
6. When you're done with this screen, click the **SDI 2 Setup** screen and repeat Steps 2 through 5 above for the second SDI input.

The Presets Tab

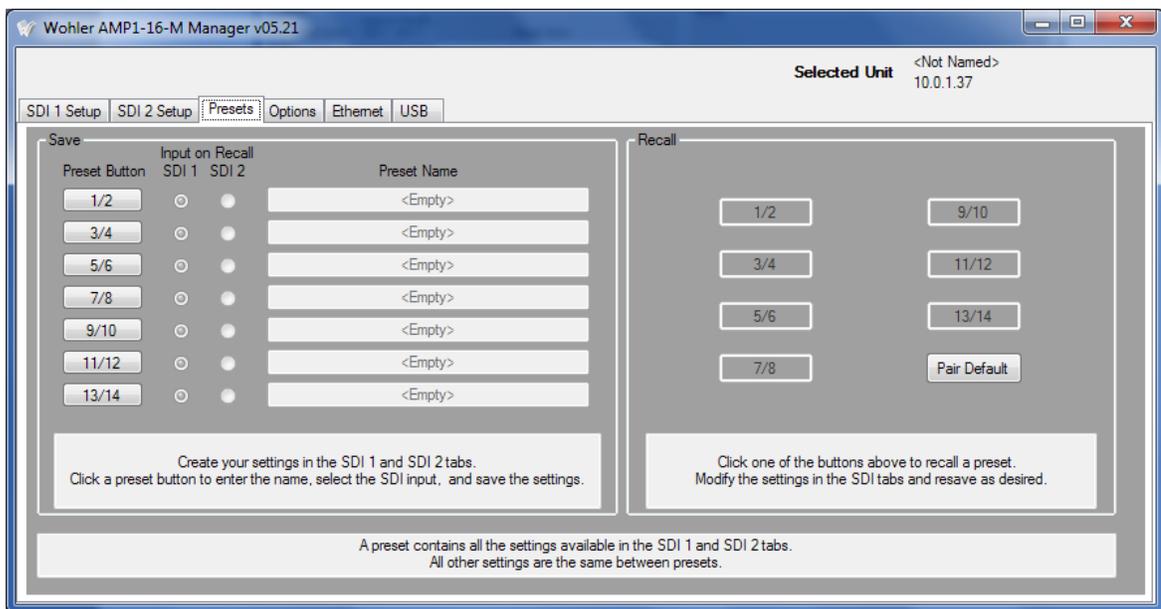
The AMP1-16-M has the ability to save and recall seven user presets and one factory preset.

Configuration changes can be made through front panel menus or Wohler AMP1-16-M Manager PC software, and can be saved as user presets 1 to 7 either way.

Presets can be recalled from a front panel menu, in the **Presets** tab of the AMP1-16-M Manager program, or by pressing and holding a front panel **Channel Pair Select** button for at least three seconds.

The eighth preset returns configurations to the factory default state with 0dB trim and other nominal settings.

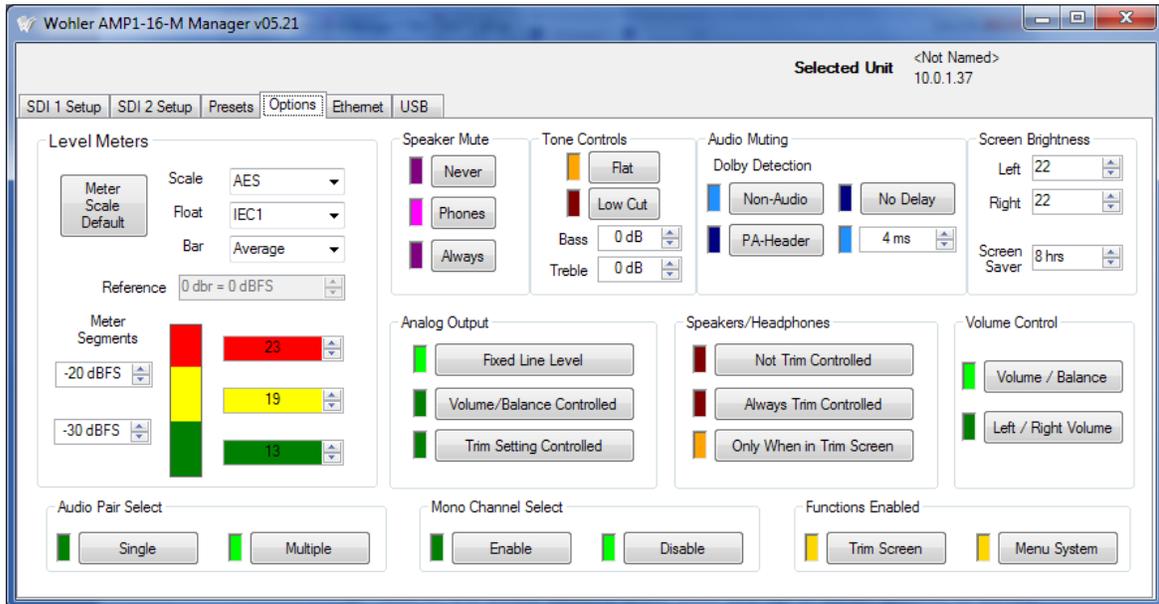
Figure 3–2: Wohler AMP1-16-M Manager Presets Tab



The Options Tab

1. Click the **Options** tab.

Figure 3–3: AMP1-16-M Manager Options Screen



2. In the **Level Meters** area, click the drop downs to select **the Scale, Float, and Bar** for your level meter display. Alternatively, you can click the **Meter Scale Default** button to return to the default for that scale. The scale itself won't change.
 - a. Also in the **Level Meters** area, click the up or down arrows to select the levels at which the colors between the top and middle segments and the middle and lower segments.
 - b. Click the up or down arrows to select the colors for each of the level meter segments.
3. Tone controls for the internal loudspeakers can be set in the front panel **Speaker Control Options Menu** or in the Wohler AMP1-16-M Manager PC program.

A certain amount of default EQ suitable for the speakers' characteristic frequency response is applied as the factory default. Tone control settings have no effect on sound of headphones or line audio outputs.

4. Selecting **Flat** gives the flattest measured response from the internal speakers.
 - a. **Low Cut** is provided for cases where unusually deep content produces audible distortion.
 - b. **Bass** and **Treble** are provided for custom tuning of the speaker sound to fit your needs.
 - c. Lowering **Bass** will unmask midrange band sounds, while increasing **Bass** will make the sound "fatter".

- d. Lowering **Treble** compensates for high frequency pre-emphasis or removes sibilance effects. Increasing **Treble** will add “sizzle” to the sound and bring high-pitched sounds out of the mix.
5. In the **Speaker Mute** area, click to select one of three speaker configurations:
 - a. **Never**: Never mute the speakers even when headphones are connected.
 - b. **Phones**: Only mute the speakers when the headphones are connected.
 - c. **Always**: Always keep the speakers muted. This option may be useful if you only want to monitor audio externally, through the XLR audio outputs on the rear panel.
 6. In the **Analog Output** area, click to select one of three output volume options. **Fixed Line Level** is exclusive of the other two:

Note: Note, if the **Analog Output** is set to **Controlled** and the **Speaker Mute** is set to **Always**, then plugging in the headphones will cause the analog outputs to mute.

 - a. **Fixed Line Level**: The volume of the output is fixed to the volume of the corresponding inputs.
 - b. **Volume/Balanced Controlled**: The volume of the outputs is controlled by the **Volume** and **Balance** knobs on the front panel.
 - c. **Trim Controlled**: The analog outputs are controlled by the **Trim** settings.
 7. In the **Audio Muting** and **Delay** area selects any combination of **Non-Audio** or **PA Header**.

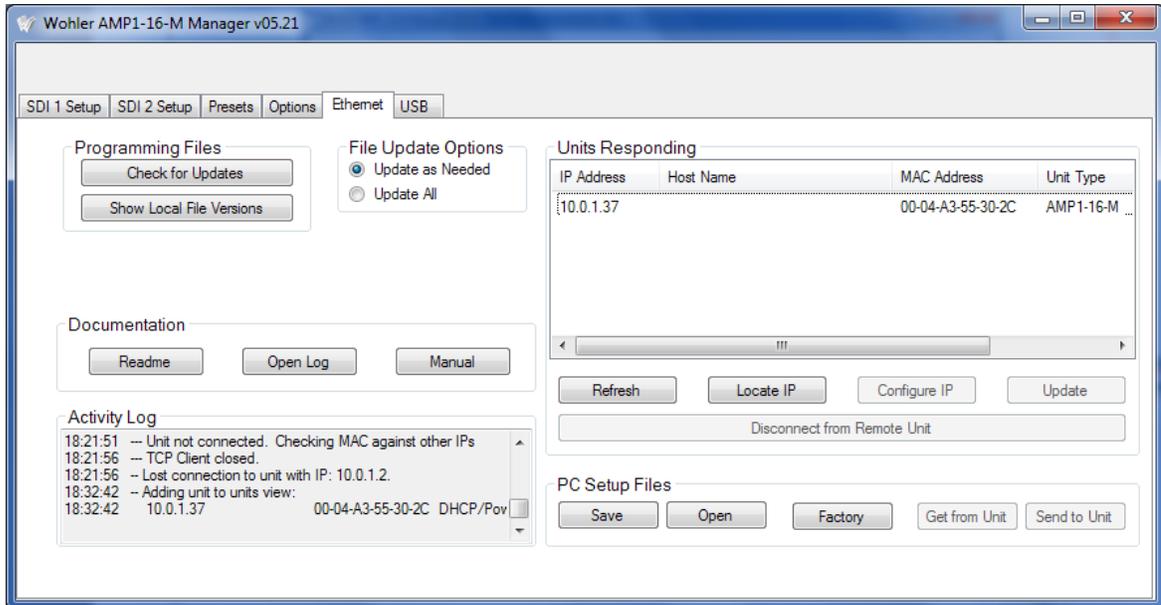
Note: The AMP1-16-M detects PA headers that represent encoded data streams.
 8. For the **Delay**, click either **No Delay**, or click the up or down arrows to either increase or decrease the amount of audio delay time.
 9. In the **Speakers/Headphones** area, click either **Not Trim Controlled** to eliminate trim control altogether, **Always Trim Controlled** to enable trim control in both the **Trim Screen** and the **Main Screen**, or **Only When in Trim Screen** to enable trim control only in the **Trim Screen**.
 10. In the **Volume Control** area, select the way the **Volume** and **Balance** knobs should operate:
 - a. **Volume/Balance**: This setting selects normal **Volume** and **Balance** control operation as labeled on the front panel. This is the default.
 - b. **Left/Right Volume**: This setting reconfigures the **Volume** control to work as a **Left Volume** control and the **Balance** control to work as a **Right Volume** control.
 11. In the **Screen Brightness** area, the select the screen brightness for each screen and the duration for the screen saver.
 - a. **Left/Right**: Either click the down arrow to increase or decrease the screen brightness value, or click the field and type in a value.

- b. **Screen Saver:** Enter the amount of time you want the monitor to wait until it invokes the screen saver. Allowable values range in 1 minute increments from 5 minutes to 119 minutes, and in 1 hour increments from 2 hours to 24 hours. The default setting is 8 hours. If the AMP1-16-M is in operation for the screen saver time-out period and no front panel controls have been turned or pressed, the screens will dim by a certain amount. If double the screen saver time-out period elapses without any front panel control activity, the screens will dim further. Operating any button or control will instantly brighten the screens.
12. In the **Functions Enabled** area, click **Trim Screen** to enable the **Trim Screen** and/or the **Menu System** to enable the menu system.
13. **Audio Pair Select** and **Mono Channel Select:** These two options control the method of channel selection on the **Main Screen** of the unit.
- a. **Mono Channel Select** – When set to **Disable**, both channels of a pair are quickly selected and deselected by repeated presses of a **Channel Pair Select** button. When set to **Enable**, multiple presses of a **Channel Pair Select** button will select or deselect one or both channels of the pair, allowing you to select individual channels. For example, using **Pair Select 3/4**:
 - i. First press selects both channels for listening.
 - ii. Second press leaves only channel 3 selected.
 - iii. Third press leaves only channel 4 selected.
 - iv. Fourth press leaves both channels 3 and 4 deselected.
 - b. **Audio Pair Select** – When set to **Single**, only one pair may be selected at any given time. Selecting any given pair will first deselect any other pairs. When set to **Multiple**, any number of pairs may be selected at one time for listening.

The Ethernet Tab

1. Click the **Ethernet** tab.

Figure 3–4: AMP1-16-M Manager Ethernet Screen



2. The **Ethernet** tab allows you to transmit configurations and perform a variety of other tasks over a network.

Note: For a complete description of the functions in the **Units Responding** area refer to Appendix A.

For a complete description of the functions in the **Programming Files** area (used to attach AMP1-16-Ms to a network) refer to Appendix C.

3. **Programming Files—Check for Updates:** Clicking this button checks the Wohler FTP site for updated software. Note: If **Update All** is checked, all the files on the local computer will be updated, regardless of whether or not they are current.
4. **Programming Files—Show Local File Versions:** Clicking this button displays the current versions of all the software components stored on the host computer; and, if a unit is selected in the **Units Responding** window, the versions of software stored in the unit itself.
5. **File Update Options:** Before beginning any update procedure, click either **Update as Needed** or **Update All**. **Update as Needed** should be used for most updates. **Update All** should only be used at the direction of a tech support representative.
Note: This controls both the unit update function and the **Check for Updates** function. If you wish to perform a software update now, proceed to Appendix A.
6. **Documentation—Readme:** Clicking this button displays the **readme.txt** file for the downloaded software updates, which includes a list of feature changes and fixes for each version released to-date.

7. **Documentation—Open Log:** Clicking this button opens the contents of the **Activity Log** in Notepad or Wordpad so that you may save the log to a desired location. Log files are automatically saved in the C:/Wohler/AMP1-16-M/User folder.
8. **Documentation—Manual:** Clicking this button allows you to read this document in .pdf format.
9. **Activity Log:** The **Activity Log** area displays system response data to the various functions on this menu. To perform any of the following functions, you must have an AMP1-16-M selected in the **Units Responding** box.

Note: The button descriptions below are not listed in the order that they appear on the **Ethernet** tab. Instead, they are listed in the most likely order that you would use them.
10. **Get from Unit:** Clicking the **Get from Unit** button transmits the configuration file from the AMP1-16-M that you selected on the **Units Responding** box to the PC.
11. **Save:** Clicking the **Save** button allows you save an AMP1-16-M configuration file to the PC.
12. **Open:** Clicking the **Open** button allows you to select an AMP1-16-M configuration from those saved on your PC.
13. **Send to Unit:** Clicking the **Send to Unit** button allows you to transfer an AMP1-16-M configuration file from your PC to the AMP1-16-M that is selected in the **Units Responding** box.
14. **Disconnect from Remote Unit:** Click this button to disconnect from the remote unit. The front-panel USB functions and menu system will be unlocked.

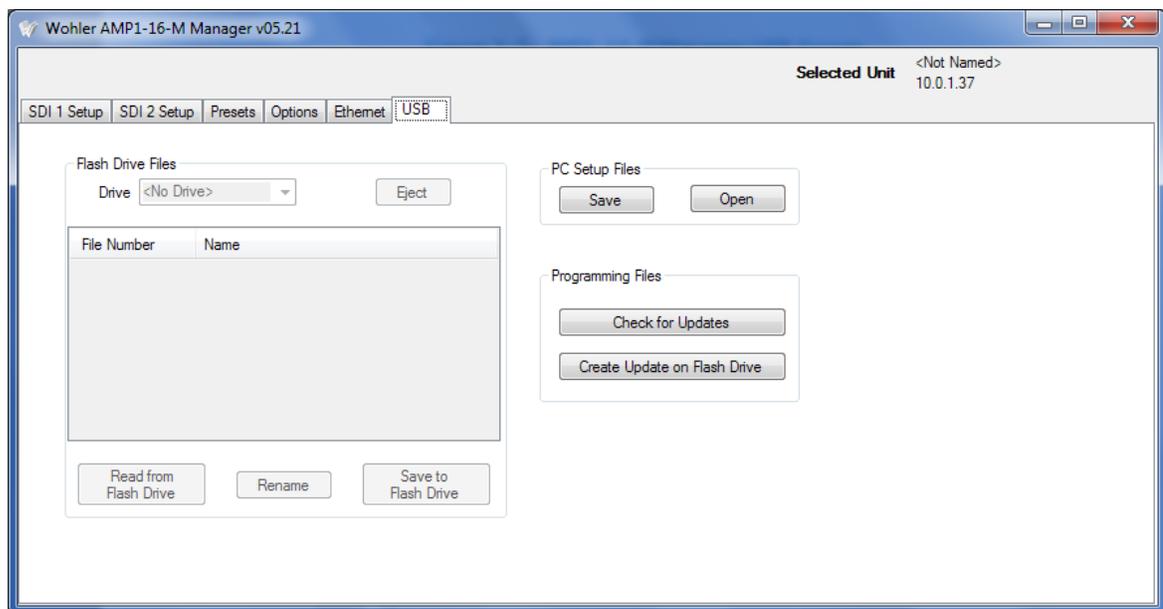
The USB Tab

You can copy up to seven configuration files to or from a USB flash drive connected to your computer. You can then use this USB flash drive to copy those settings into an AMP1-16-M using the front-panel USB connector.

Note: To use the USB port from the AMP1-16-M menu system, refer to **USB Port Functionality** in Chapter 2.

When one or more flash drives are connected to the computer, they will be shown in the **Drive** list box, and any settings files found on the selected drive will be shown in the **Flash Drive Files** window.

Figure 3–5: AMP1-16-M Manager USB Screen



1. **Flash Drive Files:** This pane displays a list that shows the seven possible files in the **\Wohler** folder of the flash drive. If no **\Wohler** folder exists, the system will immediately create it when the flash drive is first connected. Clicking on any one of the files (or the empty file positions) selects it for other operations.
2. **Flash Drive Files—Read from Flash Drive:** Clicking on the **Read from Flash Drive** button loads the selected file into the program. This button is disabled if a valid flash drive file is not selected. The system will only read the files from the **\Wohler** folder on the flash drive.
3. **Flash Drive Files—Rename:** To rename a configuration file, click on the filename you want to rename and then click **Rename**. When the dialog displays, rename the file and click **Save**.
4. **Flash Drive Files—Save to File:** Clicking the **Save the File** button allows you to name and save the current setup to the selected file number in the **\Wohler** folder on the flash drive. If you select a file number that has an

existing title, you will be asked if you want to overwrite the file.

5. **PC Setup Files—Save:** In the **PC Setup files** area, click **Save** to save the current configuration displayed in the Manager to the PC's hard drive. When the **Save As** dialog appears, browse to the folder where you wish to save the file, and then click **Save**.

Note: This button has exactly the same functionality as the **Save** button on the **Ethernet** tab. It is repeated here for your convenience.

6. **PC Setup Files—Open:** In the **PC Setup Files** area, click **Open** to open a file from the PC's hard drive. The **Open** dialog will appear where you can browse to the desired configuration file. When you press **Open**, this will become the current configuration displayed in the Manager.

Note: This button has exactly the same functionality as the **Open** button on the **Ethernet** tab. It is repeated here for your convenience.

7. **Programming Files—**This pane relates to preparing a flash drive to be used to update the software in AMP1-16-M units.

- a. **Check for Updates:** Clicking on this button checks the Wohler website for updated software, and if it exists, it downloads it.
- b. **Create Update on Flash Drive:** Whether a new update was available on the Wohler website or not, this button can be used to create a software update on the attached USB flash drive. After this operation is performed, AMP1-16-M units will recognize that an update is available on the flash drive and will offer to update themselves from it.

Note: Units with software versions prior to 4.00 will not perform a software update from a USB stick. This must be done using the Ethernet port.

CHAPTER 4 - Internal Menu System

Introduction

This chapter provides an in-depth description of all the features, specifications, and menus and all their respective options and functions. Note that the menus are listed in the order in which they are encountered when proceeding through the menu tree in the AMP1-16-M, for easy reference.

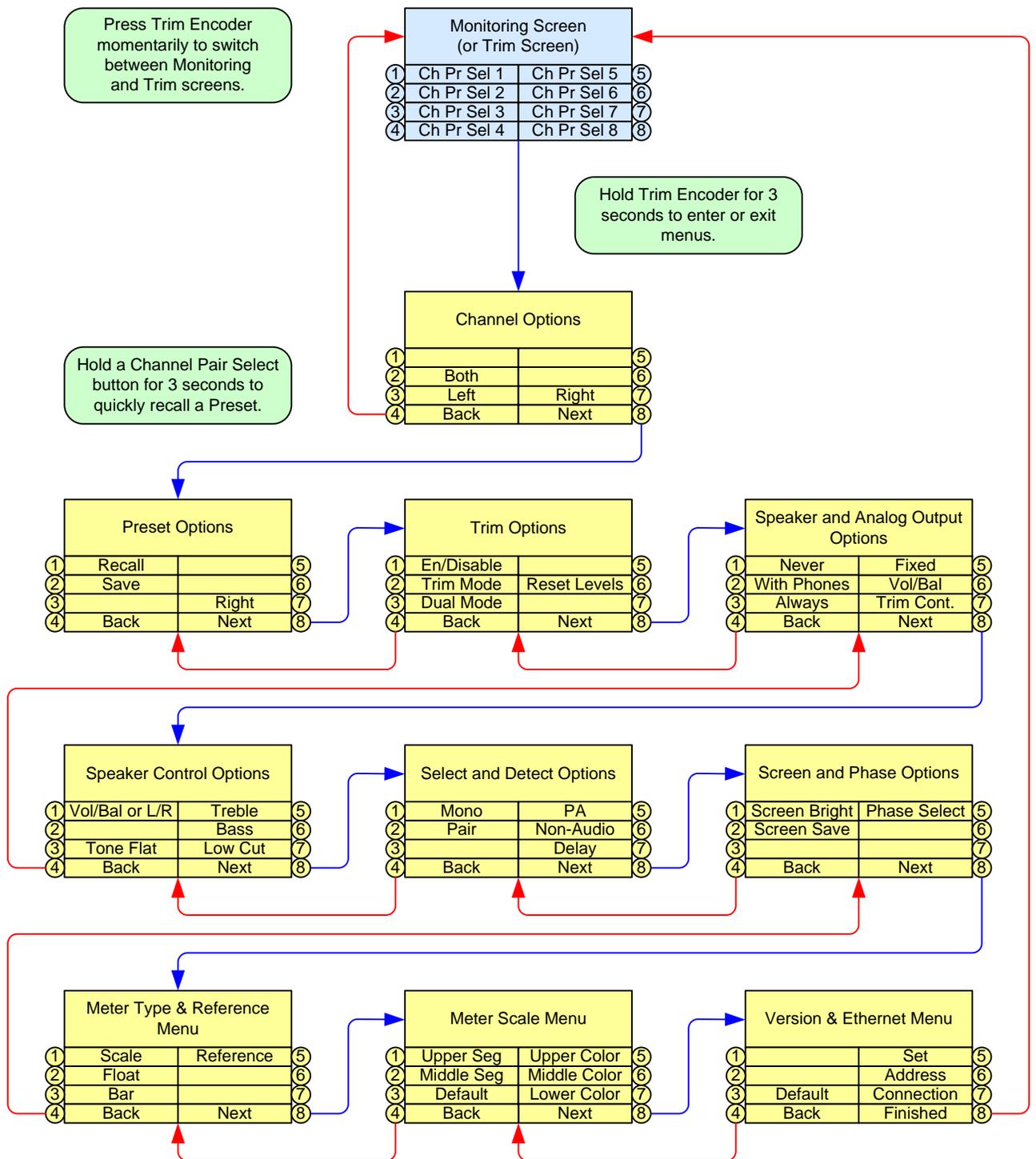
Important:

The AMP1-16-M local menus cannot be used at the same time that the **Wohler AMP1-16-M Manager** PC software is connected. If this happens, the **Wohler AMP1-16-M Manager** will take precedence and display a yellow diamond on the AMP1-16-M screen notifying you about the PC connection. When the PC access is finished, the yellow diamond will disappear, once again enabling local menu access.

Menu Navigation Overview

You can launch the menu system by pressing and holding the **Trim** button for at least three seconds. Within any menu, holding the **Trim** button for at least three seconds exits the menu system. Navigate the menu tree, as shown in Figure 4-1, with the **Back** and **Next** buttons at the bottom of each screen.

Figure 4-1: Menu Tree

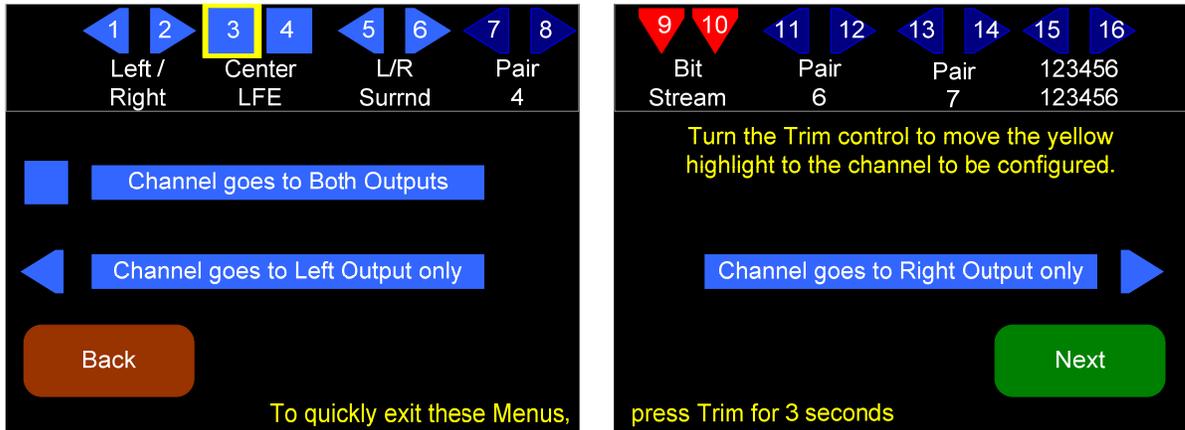


1. **Back:** Pressing this button closes this menu and opens the previous menu, one step back in the menu tree.
2. **Next:** Pressing this button closes this menu and opens the next menu, one step forward in the menu tree.

Channel Options Menu

This menu allows setup of channel-to-speaker assignments.

Figure 4–2: Channel Options Menu



Turning the **Trim** knob left or right highlights each of the 16 channels in turn. Rotate to select a channel, then press **Channel goes to Both Outputs**, **Channel goes to Left Output only**, or **Channel goes to Right Output only**.

1. **Channel goes to Both Outputs:** Pressing this button sets the selected channel to go to both speakers and both analog outputs.
2. **Channel goes to Left Output only:** Pressing this button sets the selected channel to go to the left speaker and to the left analog output.
3. **Channel goes to Right Output only:** Pressing this button sets the selected channel to go to the right speaker and to the right analog output.

Preset Options Menu

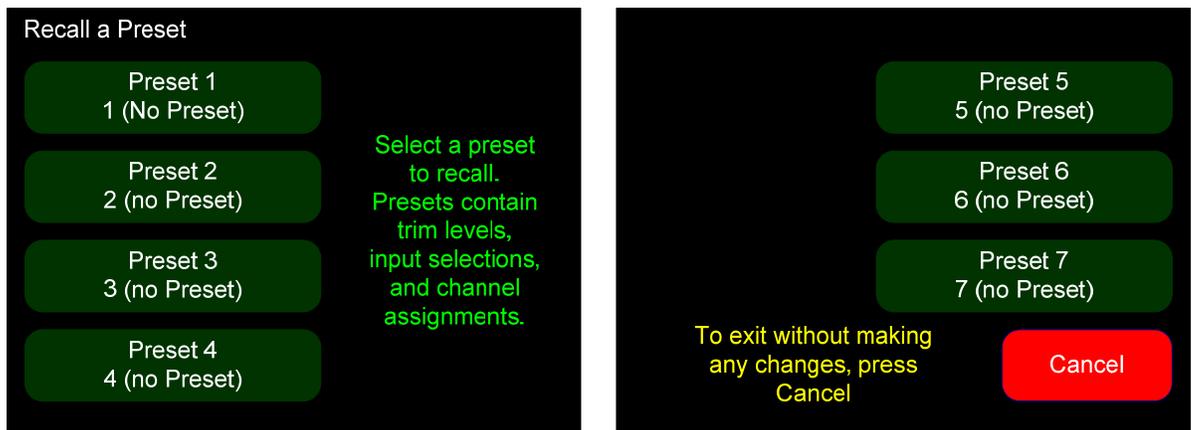
This menu allows saving or recalling Presets, which are complete system configurations.

Figure 4–3: Preset Options Menu



1. **Recall:** Pressing this button proceeds to the **Recall a Preset** screen as shown in Figure 4-4:

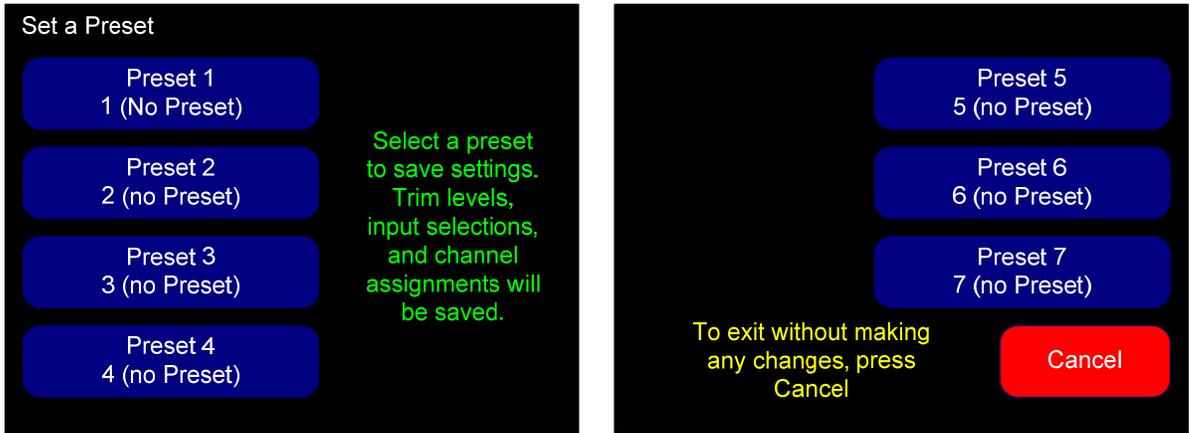
Figure 4–4: Recall a Preset Screen



Press a button corresponding to the preset you would like to recall. Presets contain trim levels, input selections, and channel assignments. To leave this screen without recalling a preset, press the **Cancel** button.

2. **Save:** Pressing this button proceeds to the **Set a Preset** screen as shown in Figure 4-5.

Figure 4–5: Save a Preset Screen

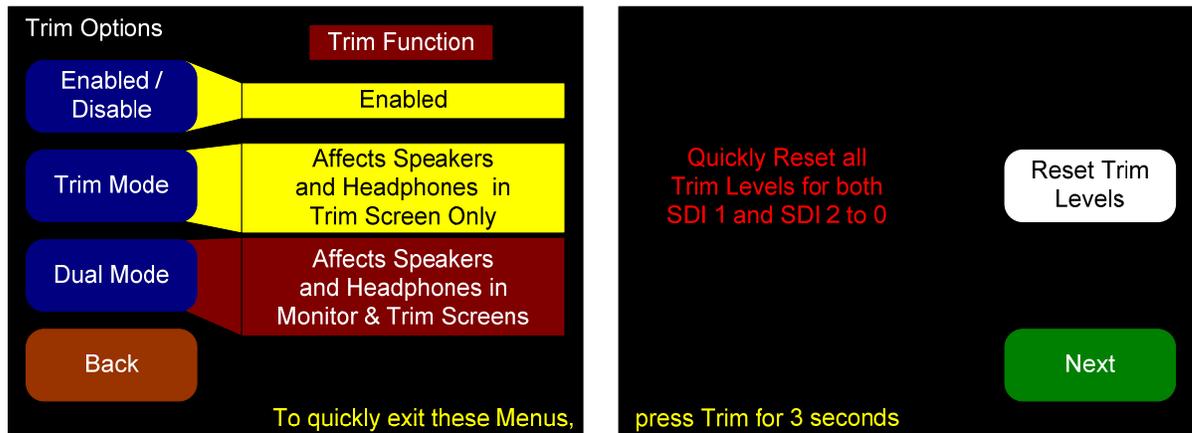


Press a button corresponding to the preset you would like to save. Presets contain trim levels, input selections, and channel assignments. To leave this screen without saving a preset, press the **Cancel** button.

Trim Options Menu

The **Trim Options Menu** allows you to select customized settings for the levels of each channel or input pair.

Figure 4–6: Trim Options Menu

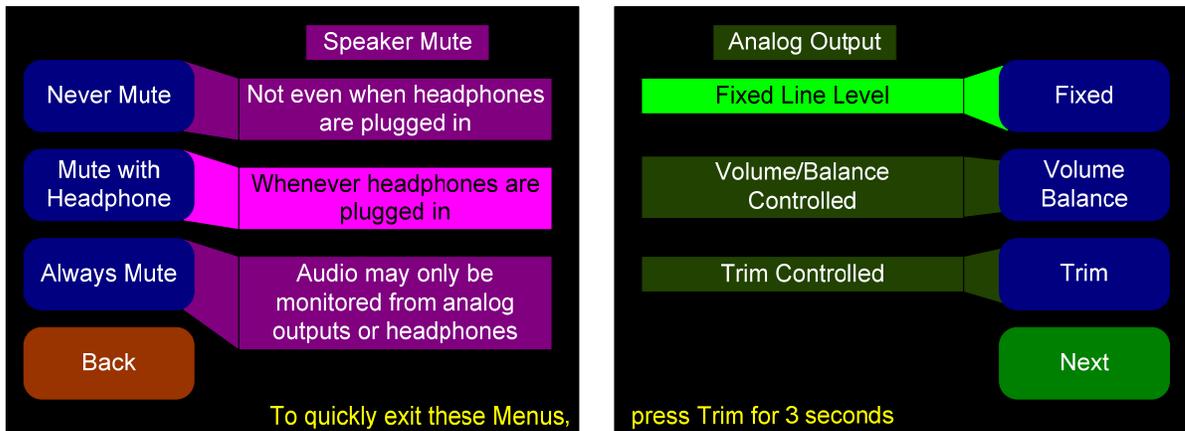


1. **Enable/Disable:** Pressing this button toggles the **Trim** feature on (enabled) and off (disabled). When disabled, pressing the **Trim** control will not enter the **Trim Screen**. Also, the **Trim** mode and **Dual** mode buttons are dark, but not disabled.
Note: When disabled, the **Trim** option on the **Speaker and Analog Output Menu** is disabled.
2. **Trim Mode:** Pressing this button puts the product in **Trim** mode and automatically selects **Enabled** for the **Enable/Disable** button. The **Trim Screen** can be accessed when the **Trim** control is pressed but any **Trim** adjustments only affect the speaker and headphone volume when the **Trim Screen** is showing.
3. **Dual Mode:** Pressing this button puts the product in **Dual** mode and automatically selects **Enabled** for the **Enable/Disable** button. The **Trim Screen** can be accessed when the **Trim** control is pressed and any **Trim** adjustments always affect the speaker and headphone volume, whether the **Trim Screen** or the **Main Screen** are showing.
4. **Reset Trim Levels:** Pressing this button opens the following warning screen in place of the right-hand display: “Reset all trim gains or losses for both SDI inputs to zero. Press again to confirm.” Pressing this button again resets all of the **Trim** gains to zero for both SDI inputs.

Speaker and Analog Output Options Menu

This menu allows adjustment of various audio related settings. The **Speaker Mute** selector buttons set the speaker / headphone behavior. The default **Speaker Mute** setting is **Mute with Headphone**. The **Analog Output** selector buttons set which gain adjustments should be applied to the analog outputs on the rear panel. By default the **Analog Output** setting is **Fixed Line Level**.

Figure 4–7: Speaker and Analog Output Options Menu

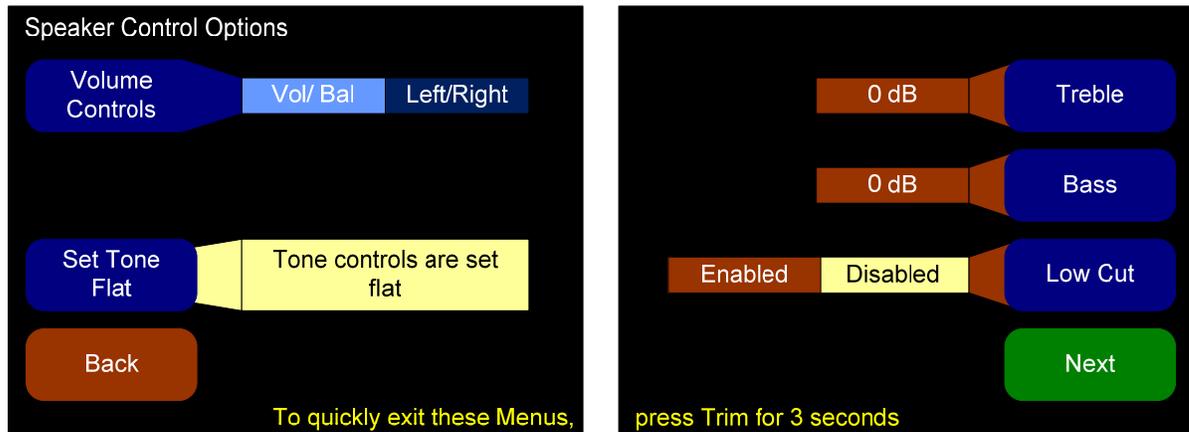


1. **Never Mute:** Pressing this button selects the option that the internal speakers will not mute when headphones are plugged into the headphone jack.
2. **Mute with Headphone:** Pressing this button selects the option that the internal speakers will mute when headphones are plugged into the headphone jack. This is the default setting.
3. **Always Mute:** Pressing this button selects the option that the internal speakers will always be muted. This setting can be convenient to use when monitoring is always done through the analog outputs with external amplifiers and speakers.
4. **Fixed:** Pressing this button fixes the line level of the analog outputs to the levels they are in the SDI signal, where $-20 \text{ dBFS} = +4 \text{ dBu} (\pm 1 \text{ dB})$. This is the default setting.
5. **Volume/Balance:** Pressing this button enables the **Volume** and **Balance** controls to affect the analog outputs. This setting can be convenient to use when monitoring is always done through the analog outputs with external amplifiers and speakers.
Note: If the **Analog Output** is set to Controlled and the **Speaker Mute** is set to **Always**, then plugging in the headphones will cause the analog outputs to mute.
6. **Trim:** Pressing this button enables the **Trim Screen** controls to affect the analog outputs.

Speaker Control Options Menu

This menu allows adjustment of various audio related settings related to the purposing of the **Volume** and **Balance** controls and to the sound of the front panel speakers.

Figure 4–8: Speaker Control Options Menu

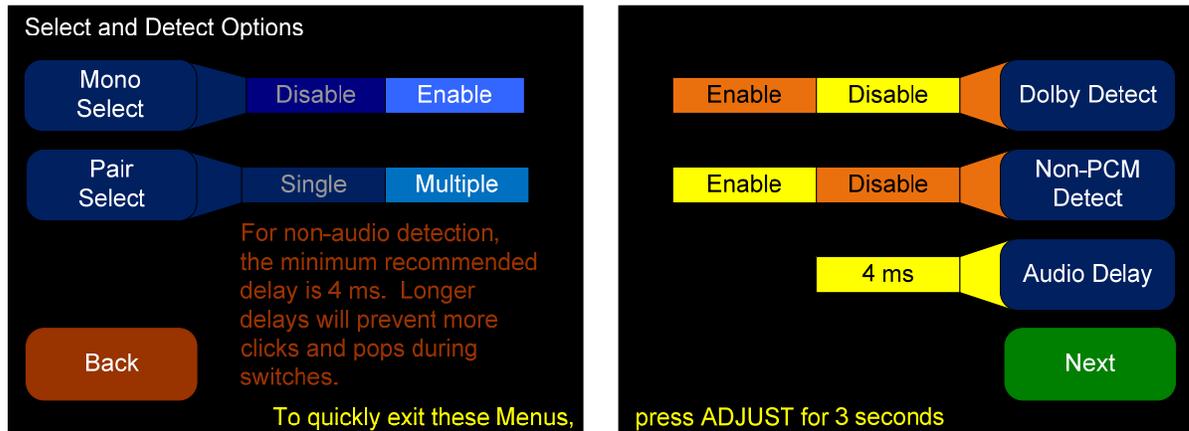


1. **Volume Controls:** You can use this option to change the master volume and the balance knob to become **Left Volume** and **Right Volume** controls.
2. **Set Tone Flat:** Selecting **Flat** gives the flattest acoustic response possible from the internal speakers.
3. **Bass and Treble** options are provided for customer tuning of the speaker sound to fit your needs. Select the menu button and use the **Adjust** rotary encoder to adjust to the desired level.
 - a. Lowering **Bass** will unmask midrange band sounds, while increasing **Bass** will make the sound “fatter”.
 - b. Lowering **Treble** compensates for high frequency pre-emphasis or removes sibilant effects. Increasing **Treble** will add “sizzle” to the sound and bring high-pitched sounds out of the mix.
4. **Low Cut:** This option is provided for cases where unusually deep content produces audible distortion.

Select and Detect Options Menu

This menu allows adjustment of various audio related settings related to the purposing of the **Volume** and **Balance** controls and to the sound of the front panel speakers.

Figure 4–9: Select and Detect Options Menu



1. **Mono Select:** This control determines whether the **Channel Pair Select** buttons on the **Main Screen** can also select single channels, in addition to channel pairs.
 - a. **Disable** means only channel pairs may be selected or deselected by the **Channel Pair Select** buttons on the **Main Screen**. Press once to select a channel pair and press again to deselect the channel pair. Disable this option if you are not interested in selecting single channels.
 - b. **Enable** means either channel pairs or single channels may be selected by the **Channel Pair Select** buttons on the **Main Screen**. Press once to select a channel pair, press again to hear the left channel of the pair, press again to hear the right channel of the pair, and press again to deselect the channel pair. Use this option if you sometimes want to solo a channel.
2. **Pair Select:** Set this control to determine how the channel pair select buttons work in the **Main Screen**.
 - a. **Single** – Use this option if you only want to hear one channel pair at a time. Pressing any **Channel Pair Select** will cancel all other selects. For example, if channel pair 1/2 is selected, and you press the **Channel Pair 3/4 Select** button, then channel pair 1/2 will be deselected, and channel pair 3/4 will be selected. If you press **Channel Pair 3/4 Select** again, then no channel pairs will be selected.
 - b. **Multiple** – Use this option if you want to hear multiple channel pairs at one time. Pressing a **Channel Pair Select** will not cancel other selects.

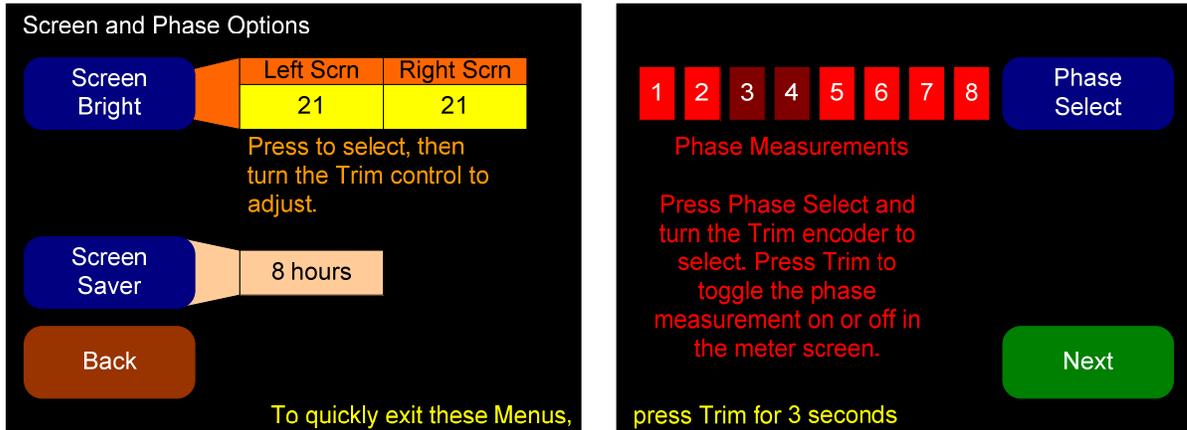
For example, pressing **Channel Pair Selects 1/2** and **3/4** will result in channel pairs 1/2 and 3/4 being selected, and all will sound in the speakers. Pressing **Channel Pair Select 1/2** again will de-select channel pair 1/2, leaving channel pair 3/4 still playing in the speakers.

3. **Dolby Detect:** Enabling **Dolby Detect** means an incoming digital stream is monitored for certain keywords called "Pa Headers." This method of detecting Dolby streams is very effective, unless the stream has been altered since being created. Alterations such as volume control, dither, and sample-rate conversion will also scramble the Pa headers, making this detection method unreliable. For Dolby Pa header detection, the minimum recommended delay is 42 milliseconds. Longer delays will prevent more clicks and pops during switches.
4. **Non-PCM Detect:** Enabling this Dolby detection method means the channel status bits are examined to determine whether they indicate the stream is non-audio. Unlike Pa detection, these bits are not affected by audio manipulations. However, not all equipment passes or sets this bit correctly, which may result in false detection or failure to detect.
5. **Audio Delay:** This will set the delay from the inputs to all outputs. Rotating the **Trim** knob changes the **Audio Delay** from **Off** to between 4 and 170 ms. This is mainly used to "lip-sync" audio produced by this monitor with video monitors which may have a few frames of delay from video signal processing algorithms. Adding delay also gives this monitor time to detect and mute Dolby bitstreams. Thus, longer delays will result in fewer (or no) undesirable noises when signals suddenly change from PCM encoding to Dolby encoding.

Screen and Phase Options Menu

The **Screen and Phase Options** Menu allows you to adjust the brightness of each screen independently, and to set the duration of inactivity before the screen saver activates. It also lets you enable or disable the operation of each of the eight phase indicators on the **Main Screen**.

Figure 4-10: Screen and Phase Options Menu



1. **Screen Bright:** Press this control to toggle between the adjustment for the left screen and the right screen. When a screen is selected, rotate the **Trim** knob to adjust the screen brightness. Thirty-two adjustment steps are provided for each screen from very dim to bright. The actual brightness of each screen will change as the control is turned. The default brightness for both screens is 21.
2. **Screen Saver:** Pressing this button and then rotating the **Trim** knob selects the screen saver timeout. Select values from 5 minutes to 119 minutes (in 1-minute increments) and from 2 hours to 24 hours (in 1-hour increments). The default setting is 8 hours.

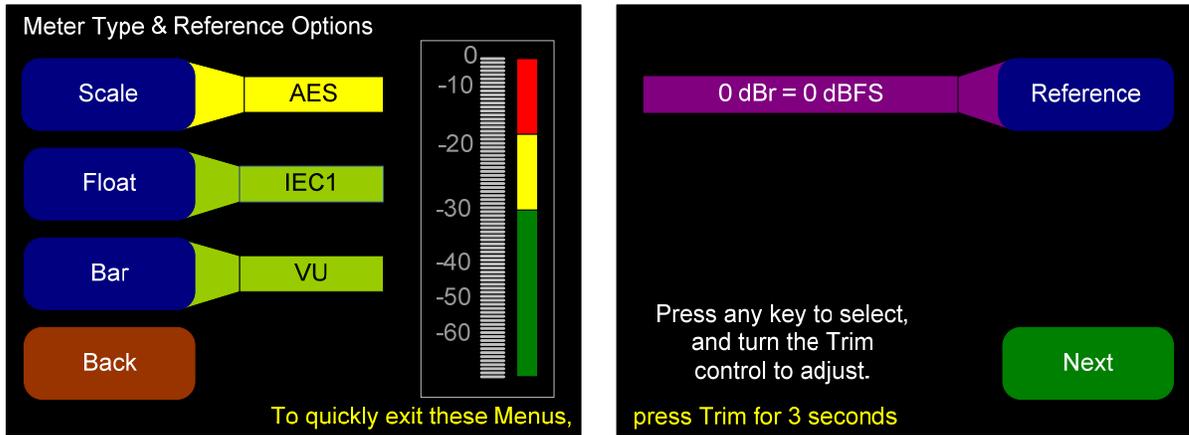
If the AMP1-16-M is in operation for the screen saver timeout period and no front panel controls have been turned or pressed, the screens will dim by a certain amount. If double the screen saver timeout period elapses without any front panel control activity, the screens will dim further. Operating any button or control will instantly brighten the screens.

3. **Phase Select:** Pressing this button and then rotating the **Trim** knob selects the phase indicator to be adjusted. Press the **Select** button to turn the selected phase indicator **On** or **Off**. When set to **On**, an out of phase condition for the associated pair will be displayed on the **Main Screen** and when set to **Off**, out of phase conditions for the associated pair will not be displayed on the **Main Screen**. By default all phase indicators are enabled. You may choose to disable phase indicators for channel pairs that contain unrelated mono program material and for channel pairs that contain bitstreams.

Meter Type and Reference Menu

The **Meter Type and Reference Menu** allows you to define the level meter scale, float, bar and reference.

Figure 4–11: Meter Type and Reference Menu



1. **Scale:** Pressing this button and then rotating the **Trim** knob steps through the scales for the level meters. Six selections are available as shown in [Table 4–1](#) below.

Table 4–1: Meter Limits and References

Scale	Bottom Limit	Top Limit	Default Reference	Default Color Bounds		Default Ballistics	
				Lower	Upper	Float	Bar
AES	-72 dBFS	0.0 dBFS	0 dBFS = 0 dBFS	-30 dBFS	-20 dBFS	IEC Type I	VU
VU	-45 dBr	+3.5 dBr	-20 dBFS = 0 dBr	-3 dBr	0 dBr	-	VU
Ext VU	-56 Br	+16.0 dBr	-20 dBFS = 0 dBr	-10 dBr	0 dBr	-	VU
BBC (EBU)	-13.25 dBr	+13.0 dBr	-18 dBFS = 0 dBr	0 dBr	8 dBr	-	IEC Type II
Nordic	-44 dBr	+12.5 dBr	-18 dBFS = 0 dBr	-10 dBr	0 dBr	-	IEC Type I
DIN	-53 dBr	+5.5 dBr	-15 dBFS = 0 dBr	-5 dBr	0 dBr	-	IEC Type I

2. **Float:** Pressing this button and then rotating the **Trim** knob adjusts the ballistics of the floating segment. The possible settings are shown in [Table 4–2](#).

Table 4–2: Meter Timings

Ballistics	Rise	Fall	
		Level Change	Time
VU	Not Specified		
IEC Type I	5 ms to reach -2 dB of settled reading	-20 dB	1.7 sec.
IEC Type II	10 ms to reach -2 dB of settled reading	-24 dB	2.8 sec
None	Bar or Floating Segment Not Displayed		

3. **Bar:** Pressing this button and then rotating the **Trim** knob steps through the available settings for the bar ballistics. Refer to Table 4–1.
4. **Reference:** Pressing this button and then rotating the **Trim** knob adjusts the reference. Refer to Table 4–1 for the reference standards for each scale.
Note: The AES scale does not allow you to set a reference.

Meter Segment Options Menu

On the **Meter Segment Menu**, you can customize your level meter segments thresholds and colors.

Figure 4–12: Meter Segment Menu

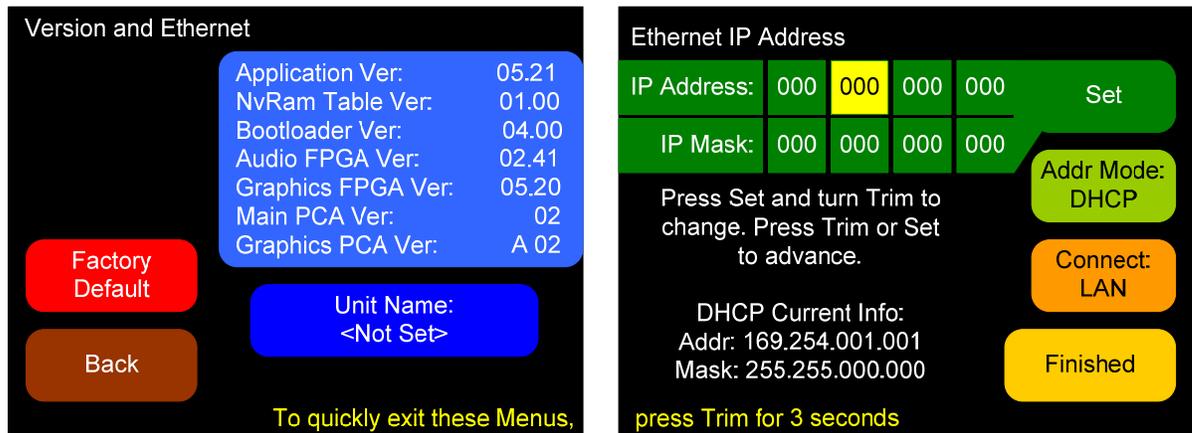


1. **Upper Segment:** Pressing this button and then rotating the **Trim** knob adjusts the division between the upper and middle segments. You can adjust the color boundary in 1 dB increments, and it has the same range as the bottom and top limits of the meter.
2. **Middle Segment:** Pressing this button and then rotating the **Trim** knob adjusts the division between the middle and lower segments. You can adjust the color boundary in 1 dB increments, and it has the same range as the bottom and top limits of the meter.
3. **Default:** Pressing this button changes the settings on this menu and on the **Meter Type and Reference Menu** back to the factory settings for the chosen scale type.
4. **Upper, Middle, and Lower Color:** Pressing this button and then rotating the **Trim** knob cycles the upper, middle, or lower color of the displayed sample level meter color through a wide variety of colors.

Version and Ethernet Menu

This menu displays software and hardware versions, as well as Ethernet settings. By default, the DHCP setting is enabled and the IP Address and IP Mask settings are shown as 000.000.000.000. This means it will automatically attempt to get the needed IP Address and IP Mask settings from the network.

Figure 4–13: Versions and Ethernet Menu



1. **Factory Default:** Pressing this button opens a cautionary window to verify that you really want to restore the AMP1-16-M setup to the factory default. If you press the **Factory Default** button again, the action proceeds and the unit will restart. Otherwise, after five seconds, the factory default request is cancelled. You can also cancel the factory default request by pressing any other button.

Note: The **Factory Default** action restores the entire unit to its factory fresh condition. The unit name is deleted, the **IP Address** is set to DHCP, and the **Connect:** setting is reset to LAN.

2. **Set (IP Address or IP Mask):** Pressing this button highlights the first of the four octets, turning the **Menu/Trim** encoder clockwise increases the octet; turning it counterclockwise reduces the octet. Pressing either the **Set IP Address** or the **Menu/Trim** encoder advances the highlight to the next octet. Advancing beyond the last octet returns the highlight to the first octet.

Important:

If the IP information has been changed, the unit will have to restart. A warning diamond will display, and you will need to confirm or cancel before proceeding.

If the information in the IP fields is not correct, the changes made in the IP fields will be ignored. The IP address is valid if the screen reads "DHCP Mode Enabled" or "Static IP Mode Enabled."

3. **Addr Mode:** Pressing this button selects between **DHCP** and **Static** address modes. **Note:** Switching to a static IP will automatically cancel the direct

connection selection.

4. **Connect LAN:** Pressing this button selects between a **LAN** connection and a **Direct** connection. **Note:** Choosing the direct connection will automatically put the unit into DHCP mode.

Important:

This enables a single-address DHCP server. Thus, when a computer is connected directly, both the unit and the host computer will be assigned a DHCP address, and they will be able to communicate. However, this setting will cause problems with some LANs. If this unit will be connected to a LAN, leave this setting in the **Connect: LAN** setting which disables the internal DHCP server.

5. **Finished:** Pressing this button closes this menu and returns to the **Main Screen**.

CHAPTER 5 - Features and Specifications

Introduction

This chapter lists the features and specifications of the features and options of each local, internal menu.

Features

1. Totally digital system architecture with high fidelity Class D amp
2. Stereo or mono monitoring
3. **Volume** and **Balance** controls can optionally become **Left Volume** and **Right Volume** controls.
4. Quick push-button selection of any pairs to sum to monitor
5. Dual 3G/HD/SD-SDI inputs for audio monitoring
6. Regenerated loop outputs of each SDI input
7. Re-clocked output of the selected SDI input
8. Balanced stereo analog outputs on XLR-M: optionally **Volume/Balance** controlled or fixed line output
9. Front panel ¼" headphone jack
10. Automatic frame rate detection and selection
11. Level metering of all 16 de-embedded SDI channels
12. High resolution metering with 166 segments displayed
13. Level Meter Representation: Simultaneous average and PPM
14. Brightness control for each screen, 32 levels
15. Permanent internal storage for all options and settings
16. Easy update management software
17. Shallow chassis depth
18. IEC power input, 100 – 240 VAC +/- 10%, 50/60 Hz
19. Phase indicators for each stereo input channel pair
20. User selectable meter scale, color thresholds, and ballistics

Compliance

All components comply with UL, CE, and RoHs specifications.

The AMP1-16-M meets FCC Part 15 compliance.

Specifications

Table 5-1: Specifications

Specification	Values / Domains
Power requirements	100 V to 240 V AC \pm 10%, 50/60Hz
Power consumption	60 Watts
Dimensions (H x W x D)	1.75" x 19" x 4.25" (44mm x 483mm x 107mm)
Weight	5 lbs. (2.3 kg)
Space Required	1 RU (rack unit)
Supplied Accessories	AC Power Cord (North America)
Display Type	TFT LCD
Number of Displays	2
Screen Size	2.4" diagonal per screen
Screen Resolution	320 x 240
Inputs	SDI: 2 3G/HD/SD-SDI on BNC
Outputs	<ul style="list-style-type: none"> • SDI: 2 regenerated on BNC • SDI: 1 selected reclocked on BNC • Analog: 2 balanced channels on XLR-M
Level Meters	166 segments
Level Meter Scales	Selectable: AES; VU; Ex. VU; BBC; EBU; Nordic; DIN
Level Meter Characteristics	Selectable: <ul style="list-style-type: none"> • Meter thresholds • Reference • Segment Colors • Ballistics
Peak Acoustic Output	90dB SPL (@ 2 feet)

Specification	Values / Domains
Power Output RMS	6 W RMS, 12 W peak (each side)
Frequency Response	150 Hz to 16 kHz (± 5 dB)
Analog Output Reference Level	-20 dBFS = +4 \pm 1.0 dBu
Analog Output Frequency Level	40 Hz to 20 kHz (± 1 dB)
Analog Output Distortion	<0.01% THD+N
Analog Output Dynamic Range	> 100 dB
SDI Input Termination	75 Ω unbalanced
Hum and Noise	Better than -68 dB below full output
Electrical Distortion	<0.05% at any level below limit threshold

Audio Formats

All of the audio formats listed in Table 5–2 below are available for monitoring in the AMP1-16-M.

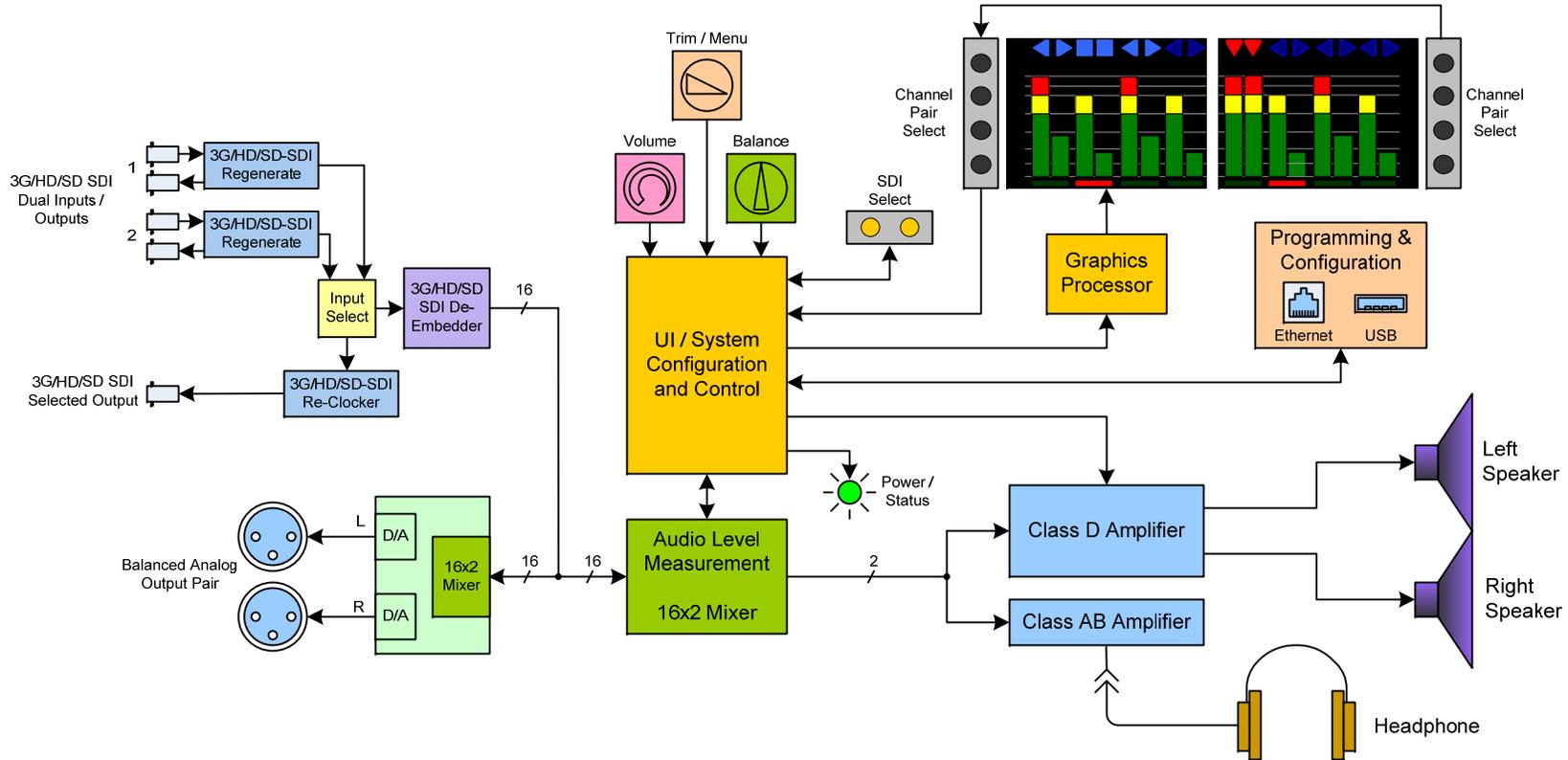
Table 5-2: Audio Formats

Standard	Format	Rate
SD		29.97; 25
HD	720p	23.98; 24; 25; 29.97; 30; 50; 59.94; 60
	1035i	29.97; 30
	1080i	25; 29.97; 30
	1080sf	23.98; 24; 25; 29.97; 30
	1080p	23.98; 24; 25; 29.97
3G	1080p	50; 59.94; 60

Technical Functional Overview

Figure 5-1 illustrates the overall functionality of the AMP1-16-M monitor.

Figure 5-1: AMP1-16-M Block Diagram



Note: Stereo phase indication measurement occurs in the signal chain before it is routed to the speakers.

APPENDIX A: Connecting the AMP1-16-M to a LAN

Introduction

This appendix describes how to connect your PC to your AMP1-16-M through a local area network (LAN) and to configure the monitor using the Wohler AMP1-16-M Manager PC program.

Alternatively, you may connect your unit to your computer directly with a single Ethernet cable. Refer to Appendix B for instructions regarding this method.

If you have not already installed the AMP1-16-M Manager software on your PC, Please continue with these instructions until the manager has been installed.

Requirements

1. You must have a PC or laptop that:
 - a. Is running Windows XP, Vista, or Windows 7,
 - b. Is connected to a LAN, and
 - c. Has access to the Internet.
2. An IP address from your network administrator (not required if your network uses DHCP)
3. An IP mask from your network administrator (not required if your network uses DHCP)
4. A standard Ethernet cable to connect the AMP1-16-M to your LAN
5. Your product's serial number (if you have not already created a user ID and password for the Wohler web site)

Downloading the File

You will need to download the AMP1-16-M Manager from the Wohler web site.

1. Power up your PC and create a folder on your desktop called **AMP1-16-M**.
2. Launch the web browser and navigate to the Wohler web site:
www.wohler.com.

Decision Point

If you already have a member user ID and password for the Wohler web site, then log in by clicking on the Member Sign In link at the top right hand corner of the home page and sign in.

Otherwise, if you do not already have a member user ID and password then you must click Register as New User at the top right hand corner of the home page, and enter the requested data. Remember to log in after you have created your account.

3. Once you have successfully logged into the Wohler web site, click **Products** from the home page menu bar and go through the sub-menus to locate **AMP1-16-M**.
 - a. Click on **AMP1-16-M**.
 - b. When the **AMP1-16-M** web page displays, click on the **Downloads** tab in the middle of the page.
4. Download the AMP1-16-M configuration Manager.
 - a. Click on the **AMP1-16-M Update Package** folder to begin the download.
 - b. When the **File Download** dialog appears, click **Save As**.
 - c. When the **Save As** dialog appears, navigate to the folder you created in Step 1 and click **Save**.
5. Double-click the **ZIP package** on the desktop to display the contents.
6. Extract the file(s) to the folder you created in Step 1 on your desktop.

Installing the AMP1-16-M Manager

Important:

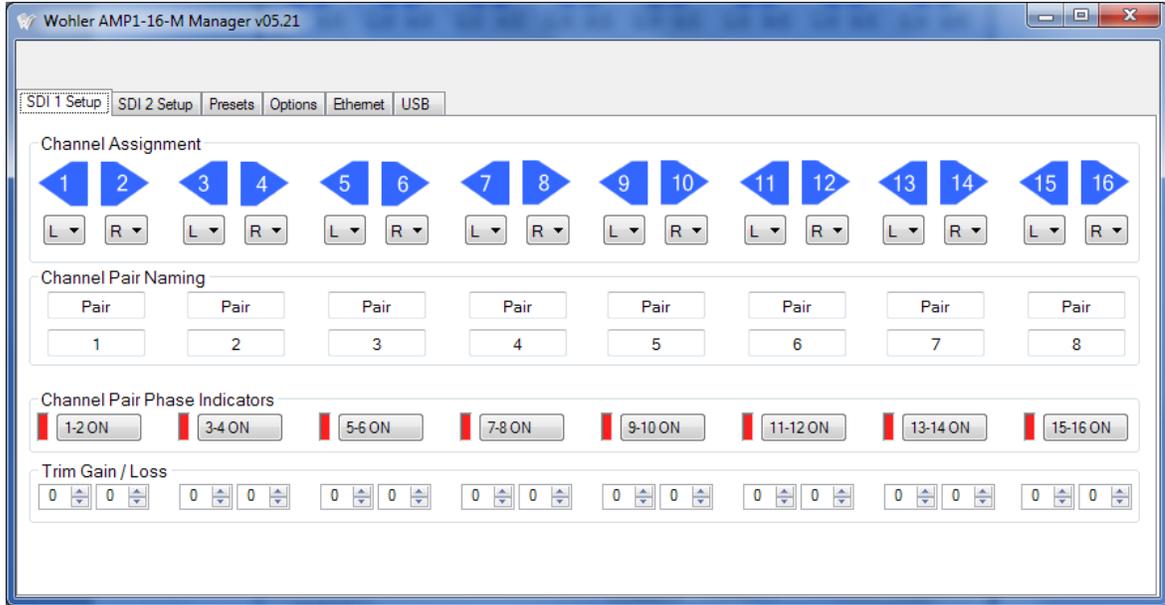
You must use an extracted setup file. Running the installer from within the .zip file does not work.

Open the extracted folder and right-click on the AMP1-16-M Manager.exe file and choose Run as Administrator. Follow the on-screen instructions to complete the installation.

Launching the AMP1-16-M Manager

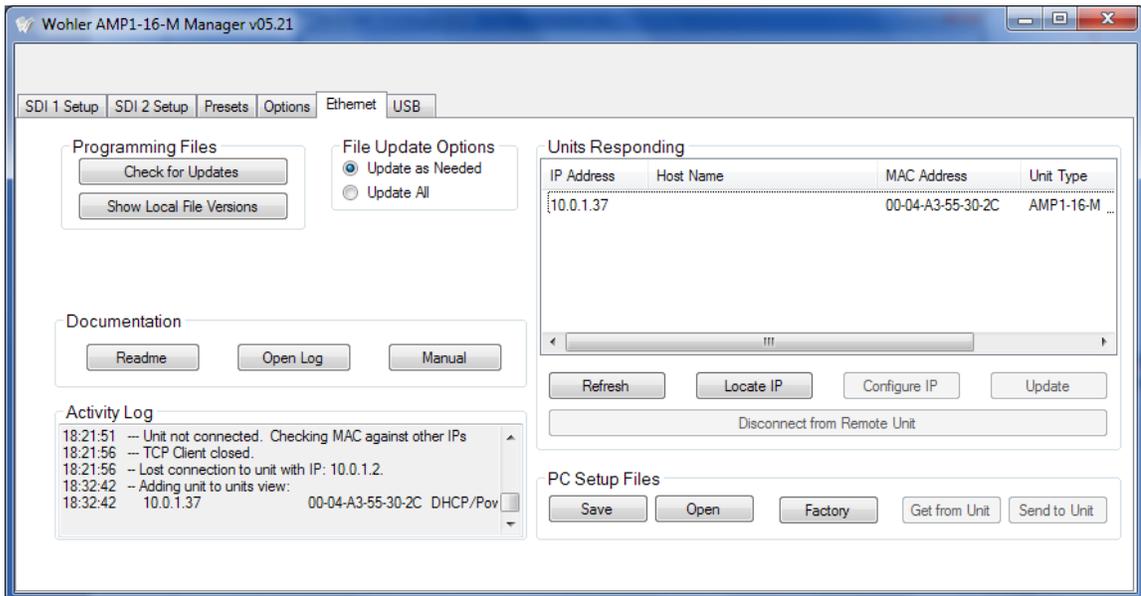
1. Launch the **AMP1-16-M Manager** from the Desktop. When the **AMP1-16-M Manager** appears, it will display the **SDI 1 Setup** tab by default.

Figure A–1: AMP1-16-M Manager SDI 1 Setup Tab



2. Click the **Ethernet** tab.

Figure A–2: AMP1-16-M Manager Ethernet Tab



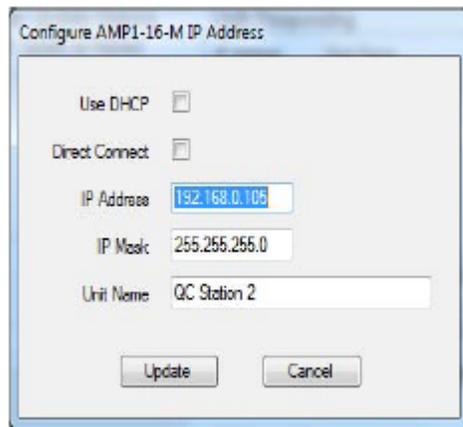
Adding Your AMP1-16-M to Your Network

Note: By default, the unit ships with DHCP addressing enabled. If you wish to use DHCP mode, you may skip this section if your unit appears in the **Units Responding** window. Otherwise, you may configure the IP information using the **Version and Ethernet** menu inside the unit, or follow the instructions below.

Note: The unit name may only be assigned using an Ethernet connection.

1. If you have not already done so, connect an Ethernet cable from the Ethernet port of the AMP1-16-M (labeled Ethernet) to the network.
2. Click **Refresh**.
3. Click on the unit you wish to configure in the **Units Responding** list.
4. Click **Config IP**.

Figure A–3: Enter AMP1-16-M Address Dialog



The screenshot shows a dialog box titled "Configure AMP1-16-M IP Address". It contains the following elements:

- Use DHCP:
- Direct Connect:
- IP Address:
- IP Mask:
- Unit Name:
- Update button
- Cancel button

5. When the **Enter AMP1-16-M IP Address** dialog displays, do the following:
 - a. Click the **Use DHCP** check box (if needed) to select DHCP
 - b. Do NOT check **Direct Connect** if connecting to the unit through a LAN. If you wish to connect to the unit directly, see Appendix B.

Important:

If your network uses DHCP, then skip Steps C and D and continue on Step E below.

- c. Enter the **Unit IP address**.
- d. Enter the **Unit IP Mask**
- e. (Optional) Enter a Unit Name of up to 15 characters. The name you select for this AMP1-16-M should denote its position or function within your facility so that it can be easily recognized later.
- f. Click **Update** to close the dialog. Click **Cancel** to ignore any changes

and return to the previous window. Note: A grayed **Update** button means the IP information is not correct.

To change the IP settings, the unit must restart. The Windows application will automatically restart the unit, and display the unit with its new address after it has rebooted. This takes approximately 10 seconds.

6. Click **Refresh**. After the system polls the network, all the AMP1-16-Ms on the network will display in the **Units Responding** box.
7. If the unit is located on a different subnet than the host computer, the Windows Manager may not be able to automatically locate it. In this case, use the **Locate IP** button.
 - a. Enter the **IP Address** of the AMP1-16-M that you're trying to locate on the network.
 - b. Enter the **IP Mask**.
 - c. Click **Find**. If the **Find** button is grayed, it means the IP information is not correct.

Important:

You must see your AMP1-16-M listed in the **Units Responding** area. If not, double-check your connections. If the monitor still does not display, call Wohler's technical assistance. (Wohler's contact information is on page 2 of this manual.)

APPENDIX B: Using a Direct Connection

Introduction

A direct connection should only be used when a LAN (local area network) is not available. A direct connection to any unit can be difficult if you're not familiar with setting static IP addresses. Fortunately, this unit has a DHCP server embedded in it, which will make a direct connection much easier. All of these instructions may not be needed in your particular situation, but following them ensures success.

Important:

If you have not yet installed the AMP1-16-M Manager setup software into your PC you must do that first. Please see the download and installation instructions in Appendix A before continuing.

Using a Direct Connection

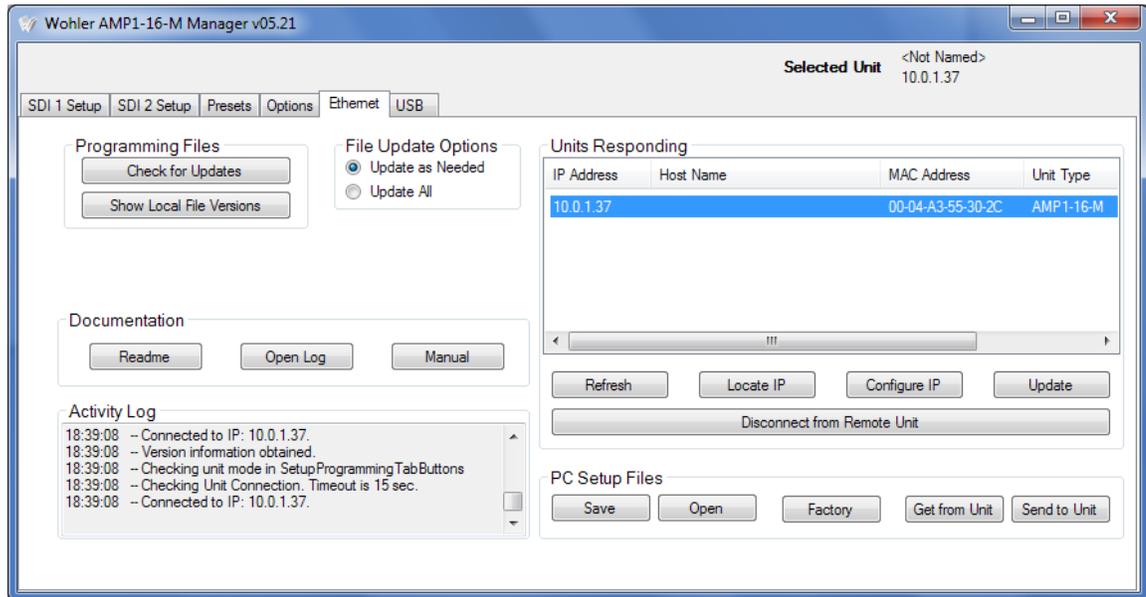
1. Disconnect the Computer from any LAN.
2. Disconnect the UNIT from any LAN.
3. Connect the unit to the host computer through either a standard network "patch" cable or "crossover" cable. The unit will recognize which is being used automatically.
4. Turn the unit on, and set the unit for direct mode and DHCP. This can be done in the **Version and Ethernet Menu, Connect: Direct**. For more information, see the **Version and Ethernet Menu** description in Chapter 4.

Note: If there are static values already entered for the **IP Address** and **IP Mask**, you may want to write them down so you can restore those settings later

5. On your host computer, close any running applications, especially those using the internet or maintaining a VPN (virtual private networking) connection.
6. If your host computer has multiple network interfaces (such as wireless and wired Ethernet), disable the ports you will not be using (especially wireless port(s)).
7. Restart your computer.
8. Start the AMP1-16-M Manager.
9. Your unit should eventually appear in the **Units Responding** window of the Wohler AMP1-16-M Manager PC program. Depending upon your computer, it

may take a few minutes for the DHCP negotiations to take place. You may press the **Refresh** button in the Wohler AMP1-16-M Manager program as often as you like until the unit appears. See Figure B-1 below.

Figure B-1: AMP1-16-M Manager



10. Once the unit appears, select it and complete any desired operations as described elsewhere in this manual. If the unit fails to appear after a few minutes, double check your connections and the instructions above about disabling unused Ethernet ports.
11. When finished, be sure to disable the **Direct Mode** on the unit, and return it to the previous Ethernet settings either through the Windows software and the **Configure IP** function, or through the **Version and Ethernet Menu** as described previously.
12. Enable any network interfaces on the computer that were disabled, and restore any settings that were changed.
13. Turn off the unit.
14. Shut down the computer.
15. Disconnect the computer from the unit.

Of course, if you are familiar with setting compatible static IP addresses and subnets in both your host computer and the AMP1-16-M, that option is open to you as well. You may use either an Ethernet patch cable or a crossover cable for the connection.

APPENDIX C: Upgrading the AMP1-16M using Ethernet

Introduction

This chapter describes how to download software upgrades to your PC and then transfer and install them to your AMP1-16-M.

Important:

If you have not yet installed the AMP1-16-M Manager setup software into your PC you must do that first. Please see the download and installation instructions in Appendix A before continuing.

There are two methods to update the software in the AMP1-16-M.

1. Use a USB flash drive.
2. Use the AMP1-16-M Manager to update the unit over Ethernet.

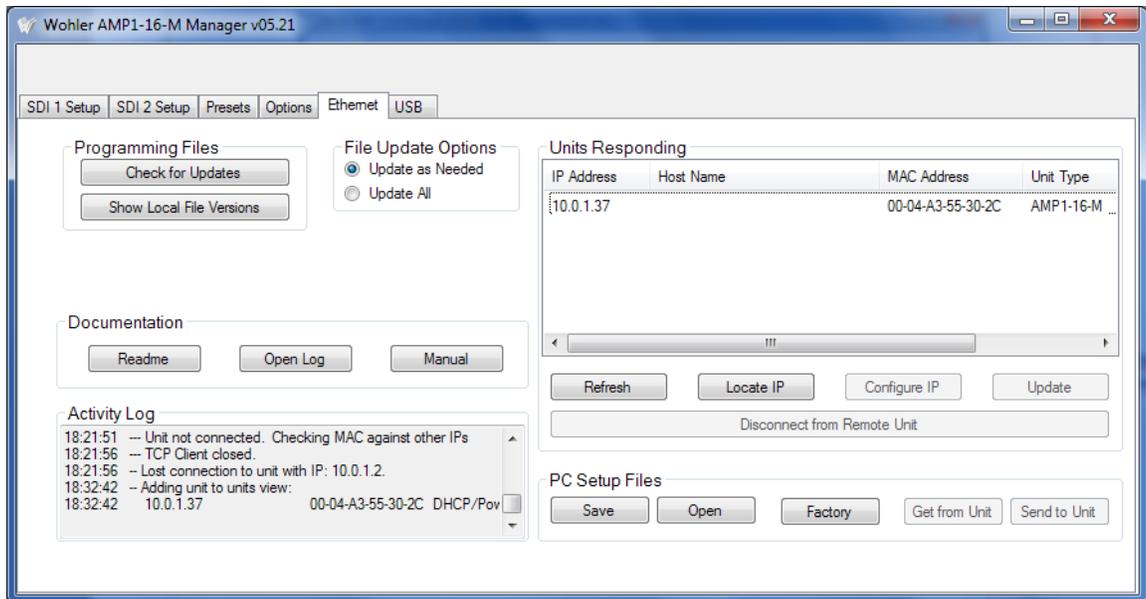
NOTE: Option 1 is only available for units with software Version 4.00 or later installed.

Checking for Updates

Before establishing the connection to the AMP1-16-M, you should check to see if any software updates are currently available.

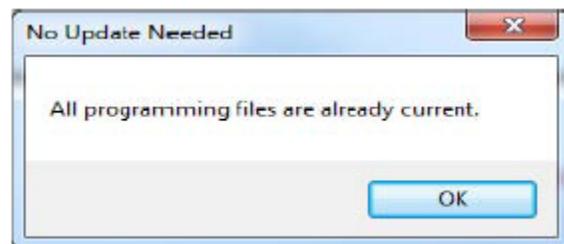
1. Launch the AMP1-16-M Manager from your PC's desktop.
2. Click the **Ethernet** tab.

Figure C–1: AMP1-16-M Manager Ethernet Screen



3. If directed by Wohler Technical Support to check the **Update All** radio button in the **File Update Options** box, please do so here. Otherwise, leave the **Update as Needed** box checked.
4. Click **Check for Updates**. At this point, the system will respond with one of three dialogs:
 - a. **No New Updates**: In the event that no new updates are available, then the system will display the dialog shown in Figure C–2 in Appendix C.

Figure C–2: No New Files Dialog



- b. In the event the system discovers updates to the AMP1-16-M firmware stored on your hard drive, the system will display the dialog shown in

Figure C-3 below.

- c. The Wohler AMP1-16-M Manager may also display a message that the manager itself needs to be updated. In this case, you must uninstall the current manager, download the latest manager, and install it on your PC

Figure C–3: FTP Success Dialog

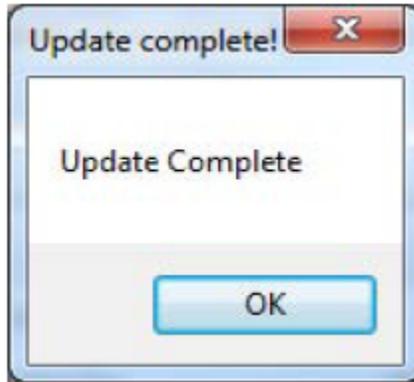
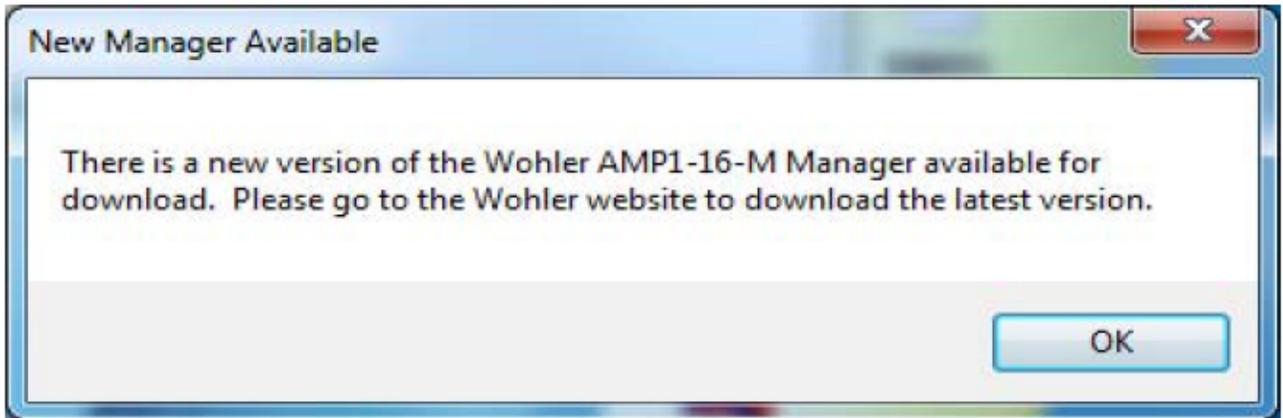


Figure C–4: FTP Success Dialog

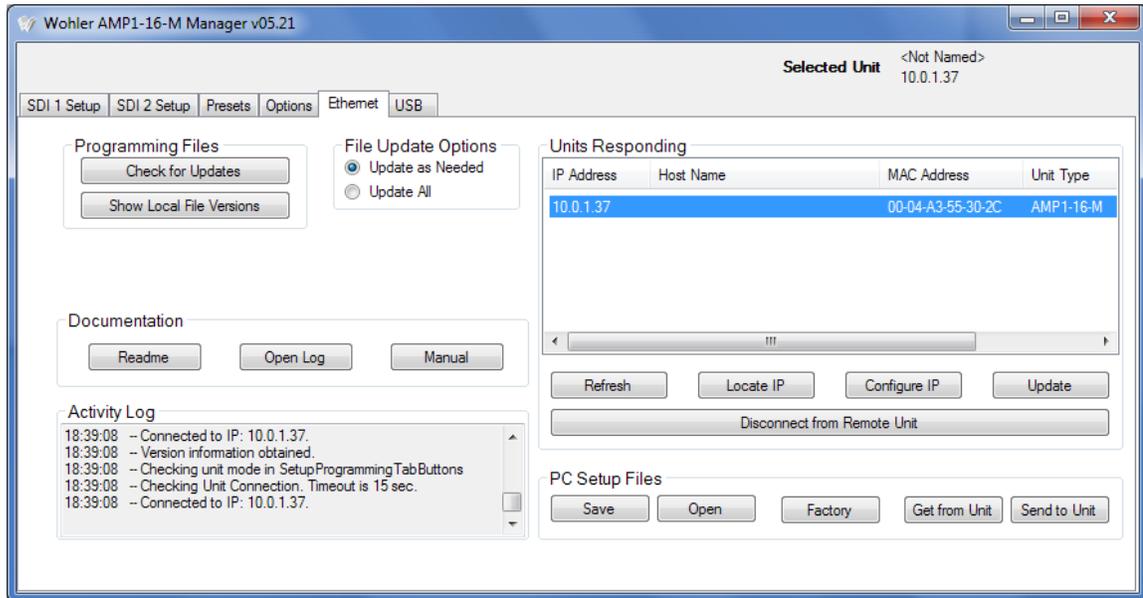


In any case, click **OK**.

Note: The firmware stored on the computer is now up-to-date. However, even if no updates were needed to the computer files, the unit may still need to be updated. Please continue on to **Upgrading the AMP1-16-M** instructions below.

Upgrading the AMP1-16-M

Figure C–5: AMP1-16-M Manager Ethernet Screen



1. To update the AMP1-16-M of your choice, click the one you want to update from the **Units Responding** area.
2. Click **Update**.

Note: The AMP1-16-M will discontinue its normal operation while the software update is taking place. This process may take several minutes after which the AMP1-16-M will restart.

This concludes the AMP1-16-M Ethernet software update procedure.

APPENDIX D: Upgrading the AMP1-16-M Using a USB Flash Drive

Introduction

This chapter describes how to download software upgrades to your PC using a USB Flash Drive.

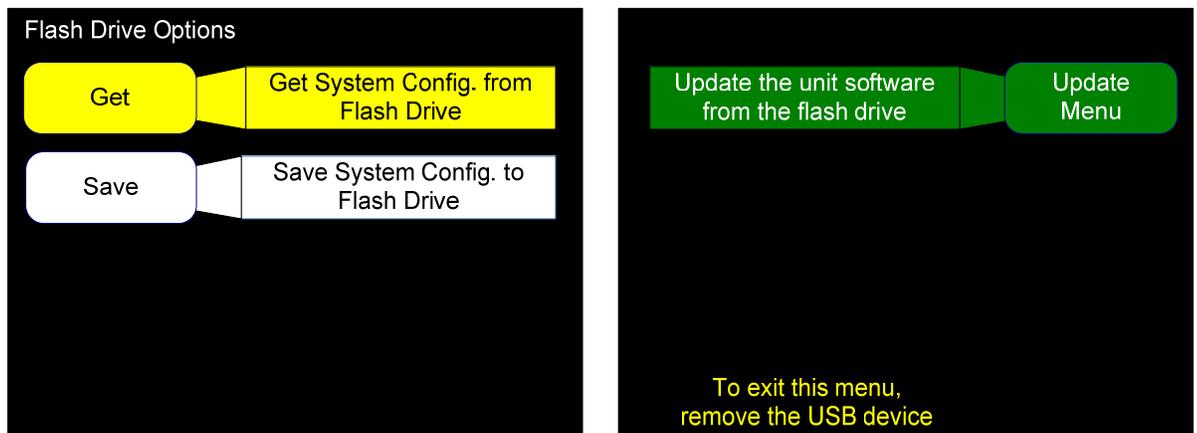
Important:

If you have not already done so, place a software update onto the flash drive using the instructions in Programming Files in Chapter 3: The USB Tab. USB software updates can be only performed if the unit has firmware version 4.00 or later. Units with earlier software versions must be update using the Ethernet port.

Upgrading the Software Using a USB Flash Drive

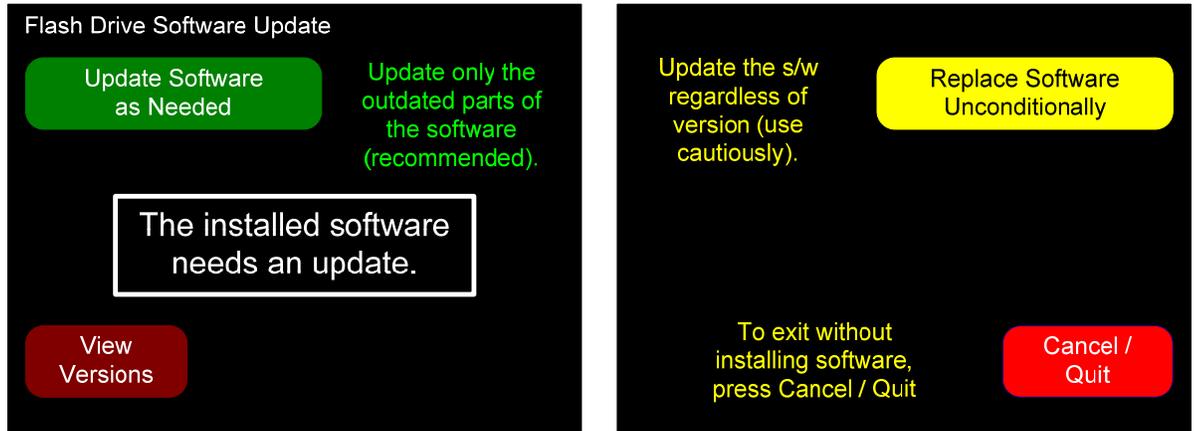
1. Insert the USB flash drive into the unit.
2. If the USB flash drive has firmware files on it, the green **Update Menu** button will appear on the right screen. If the firmware files are missing, this button will not appear. See Figure D-1 below.

Figure D–1: Flash Drive Options Screen



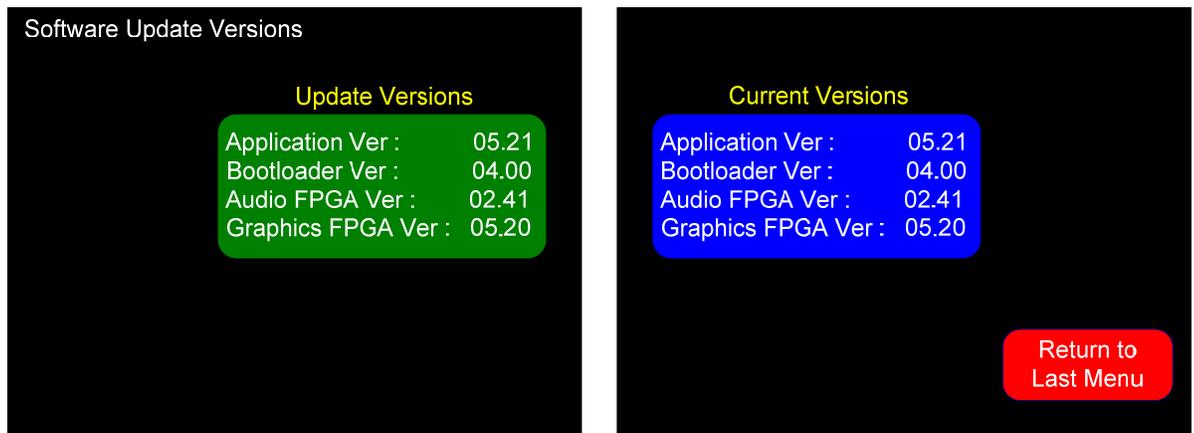
3. Press **Update Menu**.
4. All the firmware files on the USB drive will be read and validated. This will take a few minutes, and progress screens are presented. Once the validation is finished the following menu appears:

Figure D–2: Flash Drive Software Update Screen



5. If you wish, you may use the **View Versions** button to display the current versions in the unit against those on the flash drive, as shown in the next figure.

Figure D–3: Software Update Versions Screen



6. From the **Software Update Versions** menu, press **Return to Last Menu** to return to the **Flash Drive Software Update** menu shown in Figure D-2.

If the screen indicates that the software needs an update, you can select one of two update options:

- a. Press the **Update Software as Needed** button to install only newer software versions contained in the flash drive into the AMP1-16-M. The next screen to appear will describe what to expect in the installation process.
- b. Alternatively, you can press the **Replace Software Unconditionally** button to install the software contained in the flash drive into the AMP1-16-M, even if it the same version already is installed and even if the flash drive version is a lower version than what is already installed. Normally, this option is only used at the advice of a service technician. The next screen to appear will describe what to expect in the installation process.

After you have selected a software installation option, the system will display the **Software Update** screen shown in Figure D-4 below.

Figure D-4: Software Update Screen

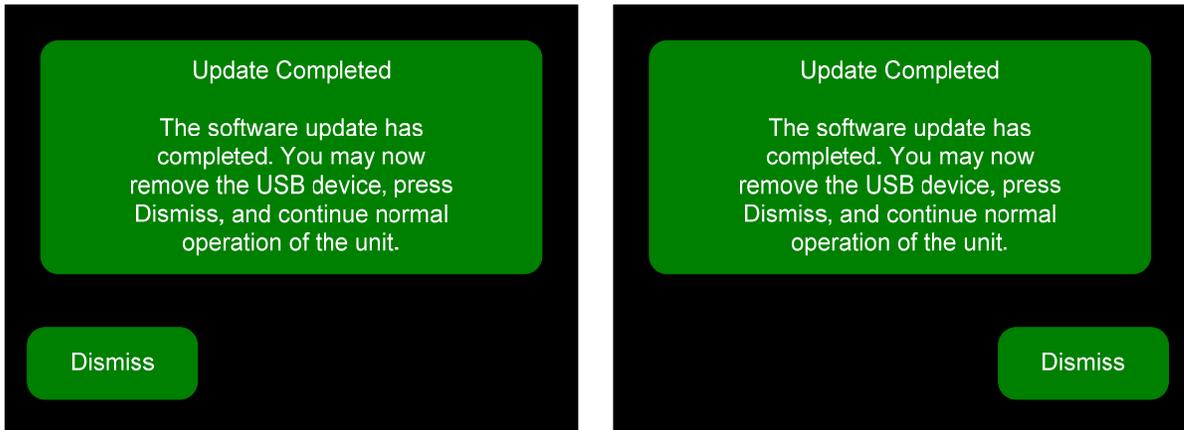


Read the advice on the screen so that you will know what to expect during the installation process. Pressing the **Start the Update** button will start the installation process, which will automatically continue until its conclusion.

Alternatively, you may press the **Cancel/Quit** button to return to the **Flash Drive Software Update** menu and not perform the software update.

When the software is finished installing, the AMP1-16-M will restart and the screen will display the message in Figure D-5 below. At this point, you may remove the Flash Drive. Press **Dismiss** to return to the AMP1-16-M **Main Screen**.

Figure D-5: Flash Drive Software Update Complete Screen



This concludes the USB firmware update procedure.