



AMP1-8-M

1RU, 8-Channel, 3G/HD/SD-SDI Audio Monitor

User Guide

Software Release: V5.xx

Part Number 821815, Revision A

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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 AMP1-8-M is a 1RU, 8-channel, 3G/HD/SD-SDI audio monitor. This unit comes with two 2.4" graphics screens that work together to display 8 channels of audio level metering. You can both visibly and audibly monitor either the first four pairs (Channels 1 thru 8) or the second four pairs (Channels 9 thru 16) of the selected 3G/HD/SD-SDI input signal. The AMP1-8-M is small, low-cost, reliable and simple to operate. Configuration is simple and you can easily copy any configuration to other AMP1-8-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 through the front panel menu system.

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 sound quality of the unit. 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 update the unit’s firmware.
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 AMP1-8-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 AMP1-8-M is first starting up. The LED blinks yellow when a firmware update is in progress.
Off	The AMP1-8-M is not receiving AC power.

6. **Metering:** These screens work together to display level meter bar graphs and configuration menus.
7. **Channel Select Buttons:** These eight buttons allow you to select single channels to be monitored. They operate as configured in 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 configured so that it only controls the Right Volume. Refer to the **Speaker Control Options Menu** described in Chapter 3.
9. **SDI Selection:** These buttons have two functions:
 - a. Press and release either of these LED buttons to select one of the two SDI

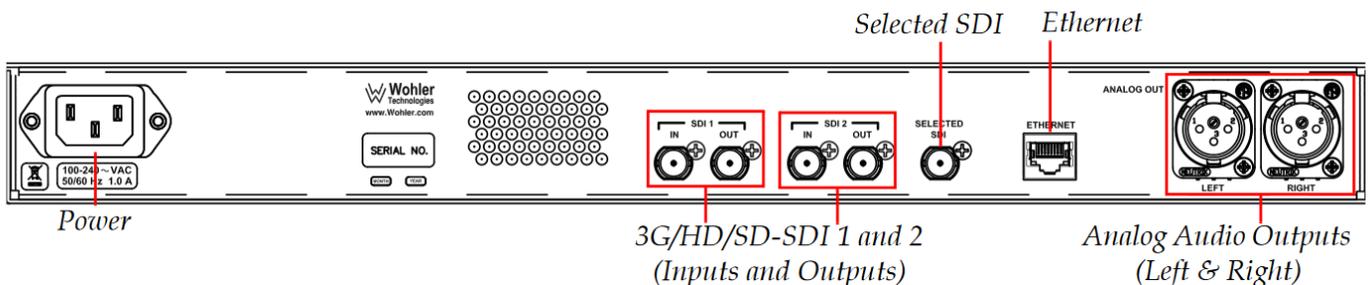
inputs. Note that SDI 1 is selected by default whenever the AMP1-8-M is powered up, or

- b. Press and hold either of these LED button for three seconds to switch between monitoring channels 1 – 8 or channels 9 – 16 for the selected SDI source.

10. **Adjust:** Pressing and holding this button for approximately three seconds opens the menu system you may use to customize the operation of the AMP1-8-M.

Rear Panel

Figure 1–2: Rear Panel Layout



1. **Power:** The AMP1-8-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 AMP1-8-M does not currently use the Ethernet port except during factory programming. For normal operation, the port may be connected to a LAN or disconnected. In future releases, Wohler may or may not release remote control software for this unit, such as is used in the AMP1-16-M.
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

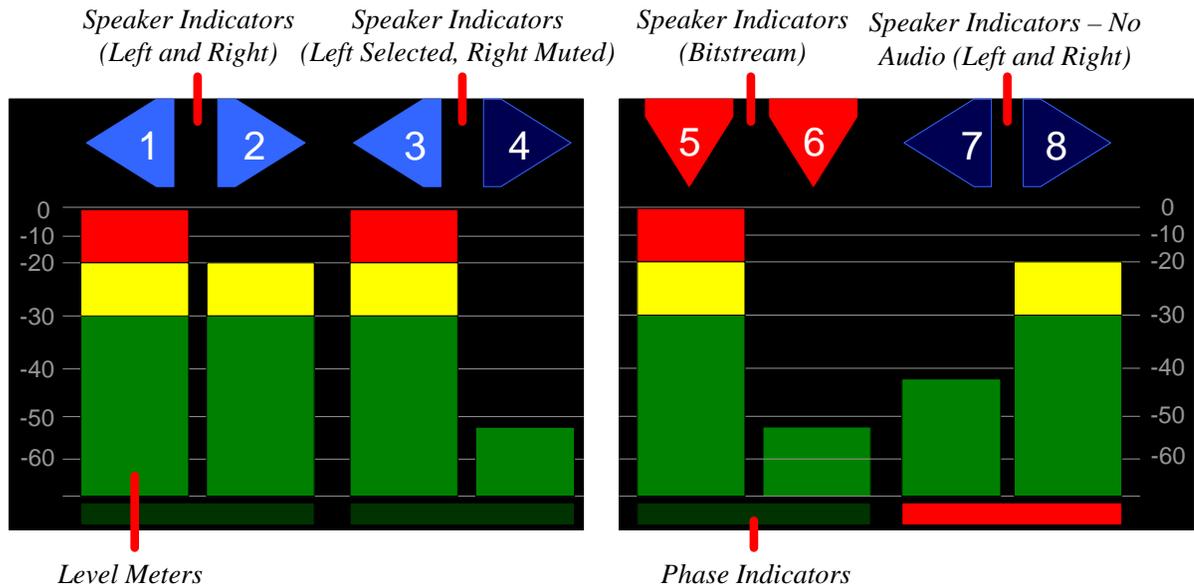
Introduction

This chapter describes how to operate the AMP1-8-M.

Main Screen

After powering up the AMP1-8-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 Icon Descriptions

Attribute	Symbol	Description	Meaning
Icon Shape		Left Pointing Blue Triangle	Channel Configured to sounds in the left speaker
		Right Pointing Blue Triangle	Channel configured to sound in the right speaker
Icon Color		Light Blue Triangle or Square	Channel is selected by the Channel Select buttons and can be heard

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

2. **Level Meters:** The selected eight channels are metered.
3. **Channel Selection:** There are several ways to select channels for listening. The unit can be configured to play all channels but solo selected channels, or it may be configured to mute all channels, but play only selected channels. Please refer to the **Select and Detect Options Menu** in Chapter 3 for further information.
4. Adjust the **Volume** and **Balance** controls as necessary.
5. **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 **Options Menu** in Chapter 3 for more information.

USB Port Functionality

You can copy configuration files to and from your unit by using a flash drive connected to the USB port.

Immediately after connecting the flash drive to your AMP1-8-M, the **Flash Drive Connected** screen displays (interrupting any current functions except an Ethernet connection) as shown in Figure 2-3: below. The menu flow for the USB menu set is shown immediately below in Figure 2-2. The **Update Menu** button will only appear if the USB drive contains programming files. Refer to Appendix A.

Figure 2–2: Flash Drive Configurations Screen

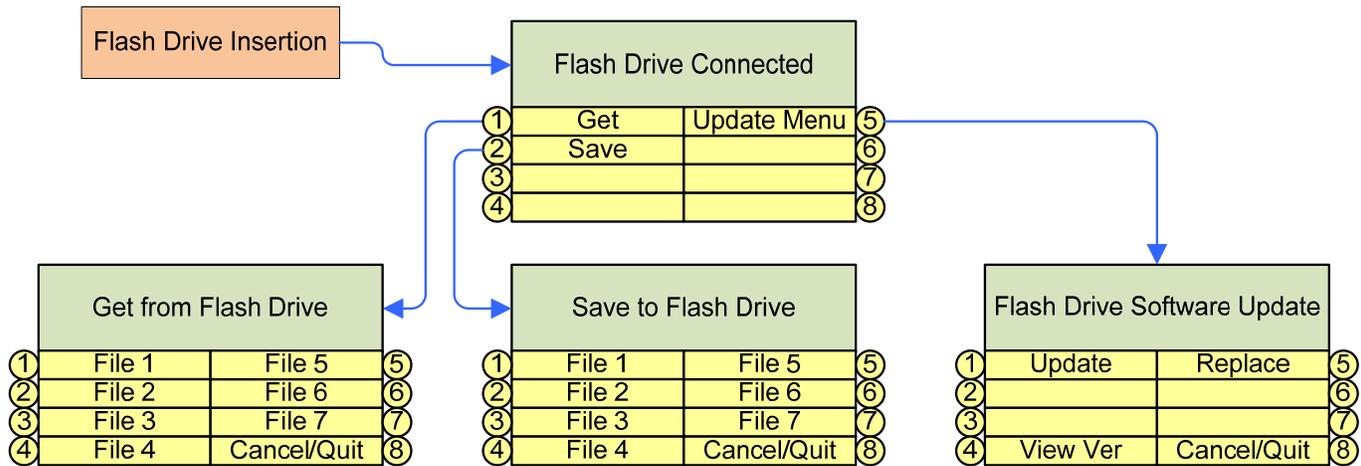
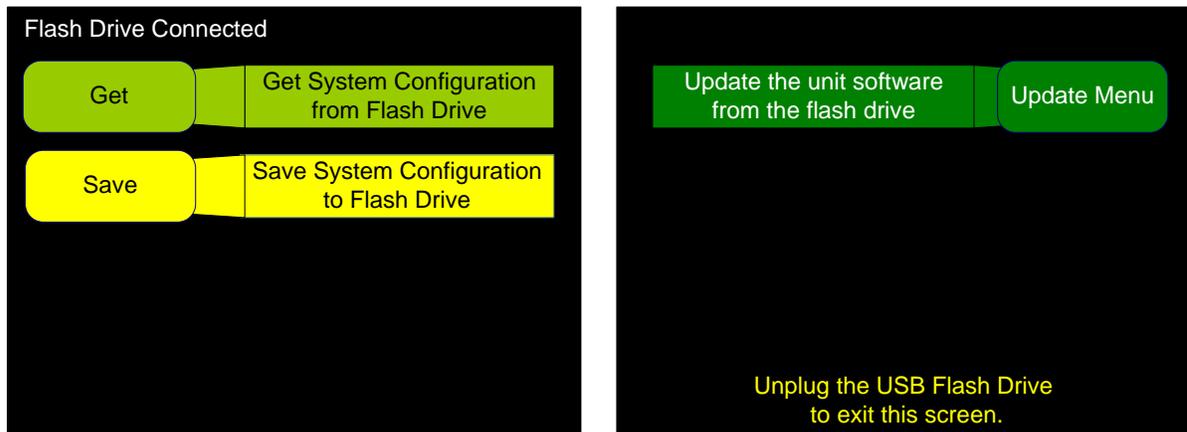


Figure 2–3: Flash Drive Configurations Screen

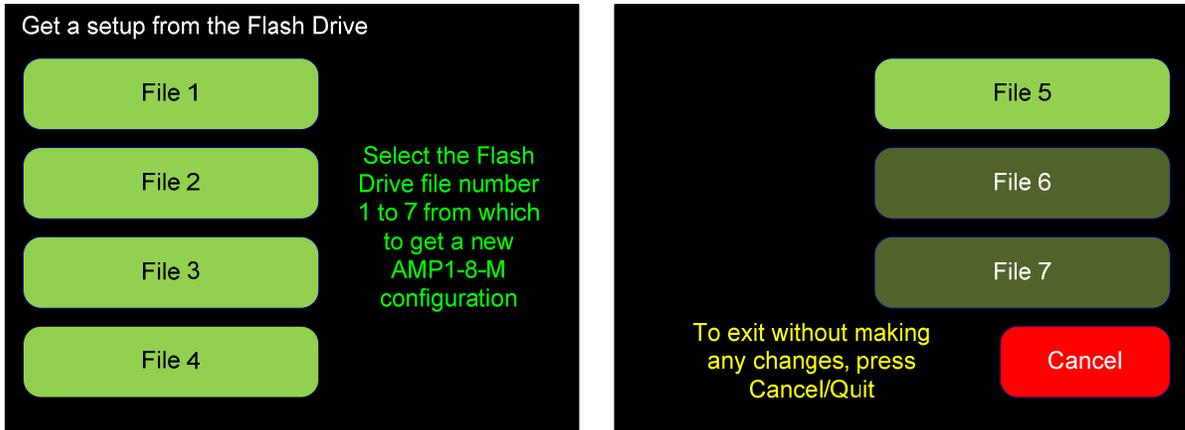


Note: All configuration files end in the .wcfg extension.

Getting a Configuration from the Flash Drive

1. To load a configuration file to the AMP1-8-M from your flash drive, press **Get**. The **Get a setup from the Flash Drive** screen will display as shown in Figure 2–4 below.

Figure 2–4: Get a Setup from the Flash Drive Screen

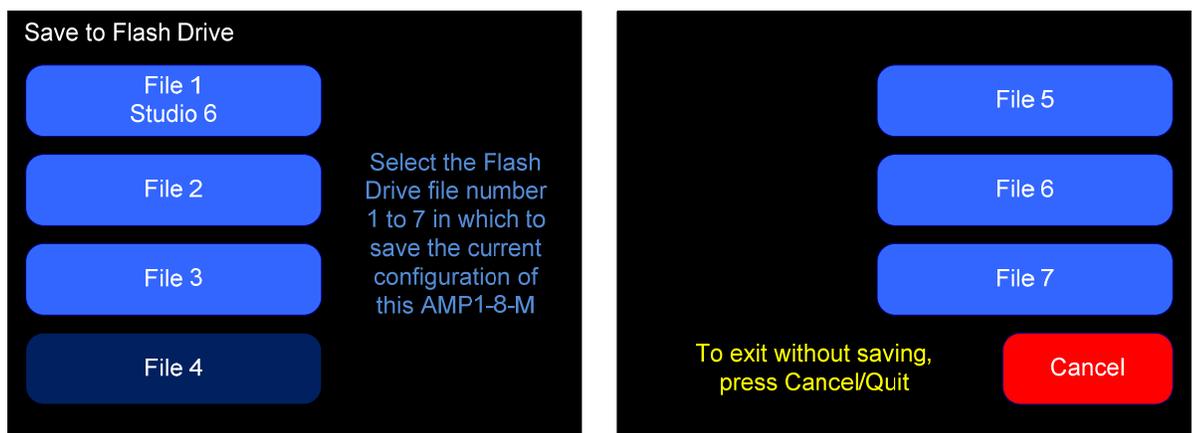


2. Using one of the bright green choices, press the file number (**File 1** through **File 7**) of the file you want to copy from your flash drive. Once the copy process completes, the **Flash Drive Connected** screen re-displays.
Note: The configuration takes effect immediately when you press the **File** button.
3. Remove the flash drive from the USB port.

Save System Configuration to Flash Drive

1. To copy a file to the flash drive from the AMP1-8-M, press **Save** from the **Flash Drive Connected** screen. The **Save to Flash Drive** screen will display as shown in Figure 2–5. The lighter color buttons indicate file numbers that are already occupied with data.

Figure 2–5: 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. Once the copy process completes, the **Flash Drive Connected** 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. Refer to Appendix A to add a software update to a flash drive.

CHAPTER 3 - Internal Menu System

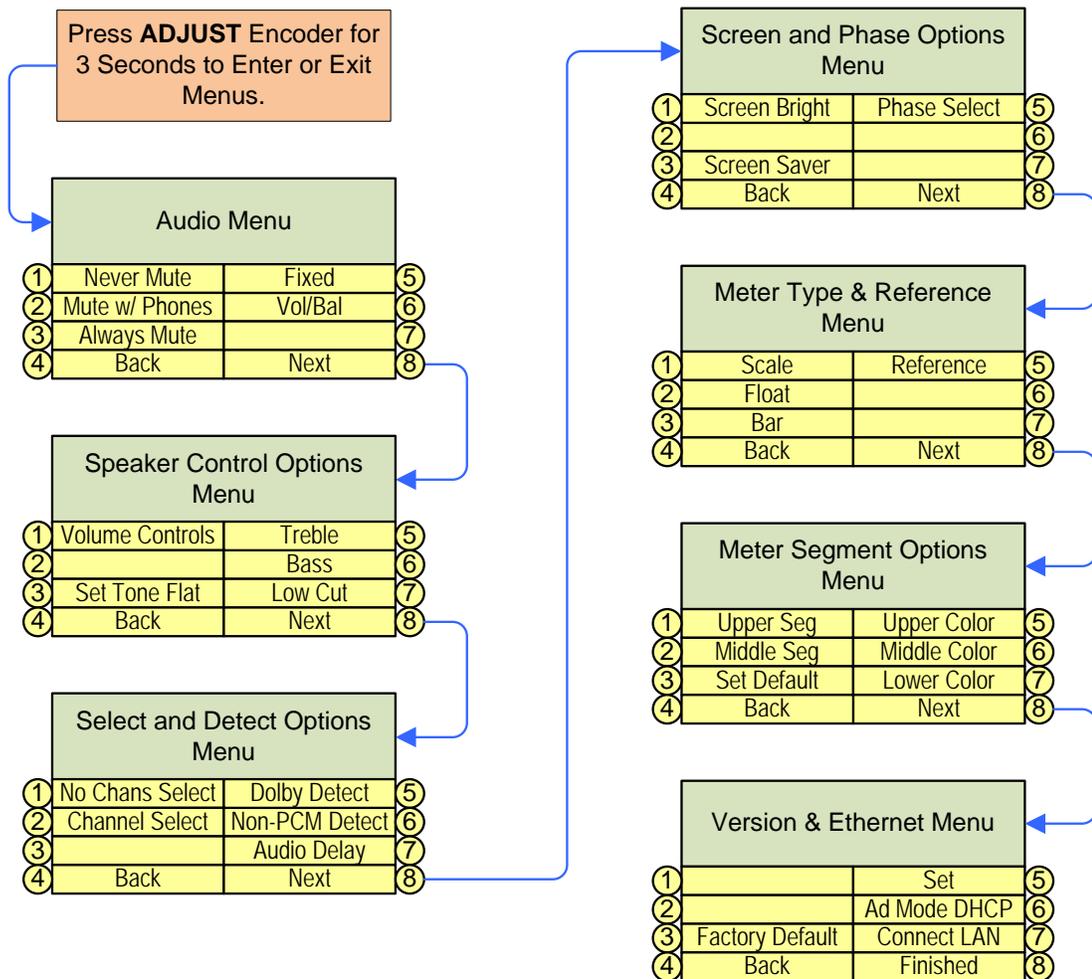
Introduction

This chapter provides an in-depth description of the menus and their respective options and functions.

Menu Navigation Overview

You can launch the menu system by pressing and holding the **Adjust** encoder for at least three seconds. Within any menu, pressing the **Adjust** encoder for at least three seconds exits the menu system. Navigate the menu tree with the **Back** and **Next** buttons at the bottom of each screen.

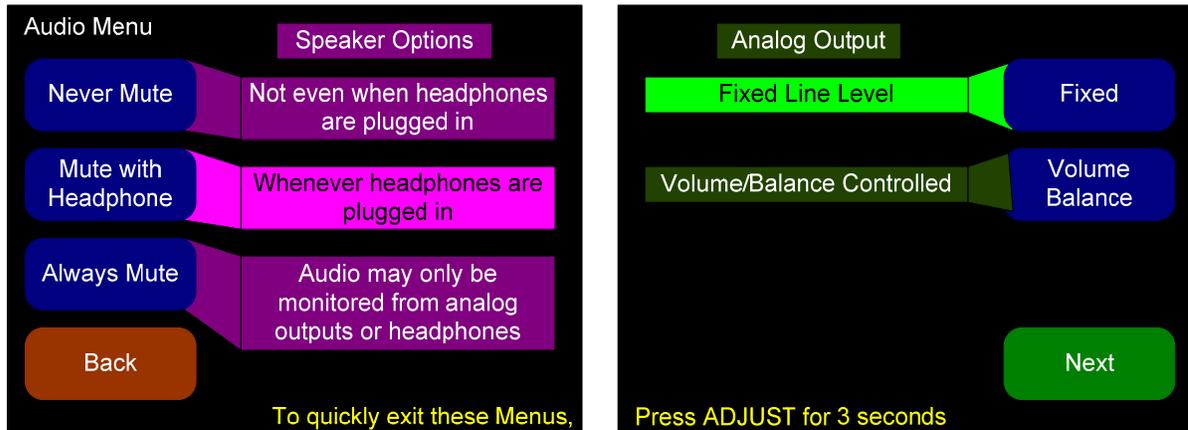
Figure 3–1: Menu Tree



Audio Menu

This menu allows adjustment of various audio related settings. Buttons 1, 2, and 3 together form a **Speaker Mute** selector. The default **Speaker Mute** is **Mute with Headphone**. Buttons 5 and 6 together form an **Analog Output** selector. The standard **Analog Output** is **Fixed Line Level**.

Figure 3–2: Audio Menu



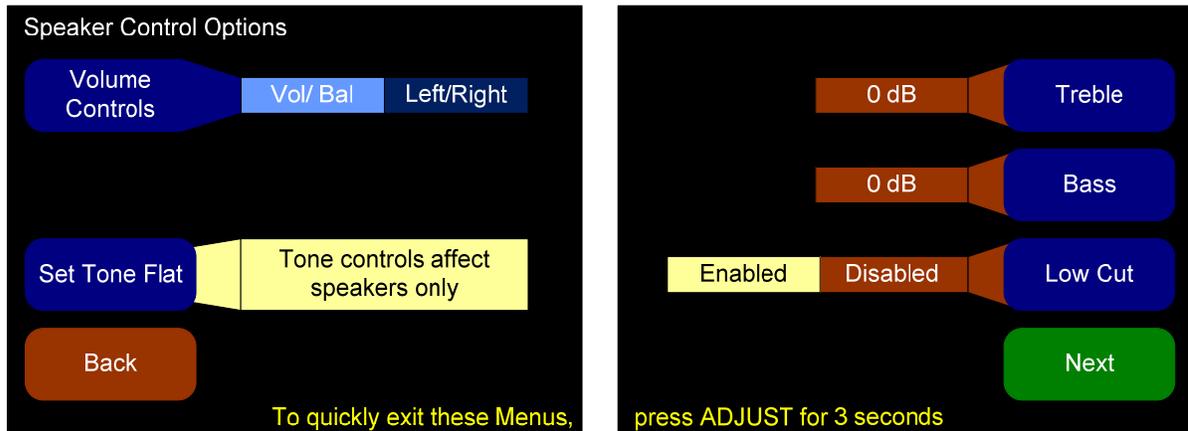
1. **Never Mute:** Pressing this button selects the option that the internal speakers will not mute when headphones are plugged into the headphone jack.
2. **Mute with Headphone:** Pressing this button selects the option that the internal speakers will mute when headphones are plugged into the headphone 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 as 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 **Volume/Balance Controlled** and the **Speaker Mute** is set to **Always**, then plugging in the headphones will cause the analog outputs to mute.

Speaker Control Options Menu

The **Speaker Control Options** menu allows configuration of the **Volume** and **Balance** control knobs for different functions and provides tone controls for the internal loudspeakers.

Figure 3–3: 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.

Lowering **Bass** will unmask midrange band sounds, while increasing **Bass** will make the sound “fatter”.

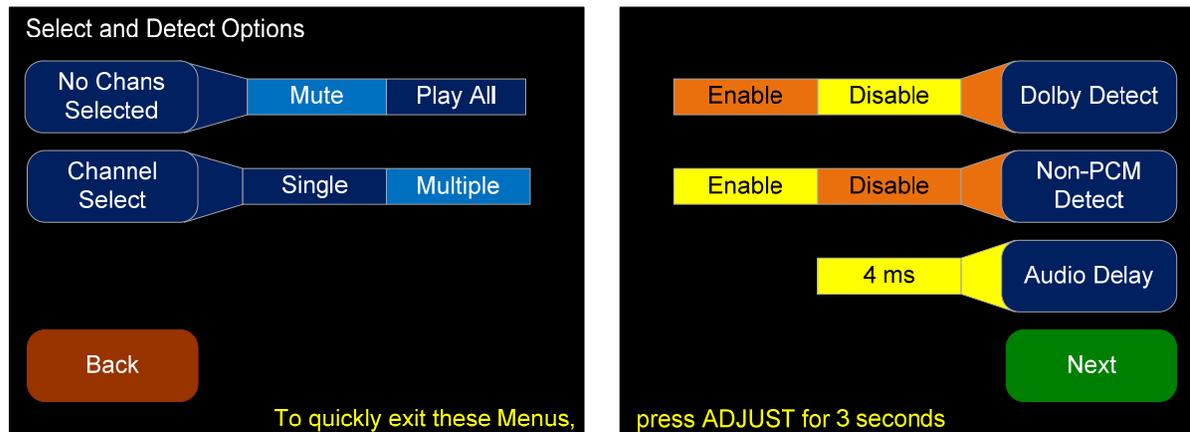
Lowering **Treble** compensates for high frequency pre-emphasis or removes sibilant effects. Increasing **Treble** will add “sizzle” to the sound and bring high-pitched sounds out of the mix.

4. **Low Cut:** This option is provided for cases where unusually deep content produces audible distortion.

Select and Detect Options Menu

This **Select and Detect Options** menu allows adjustment of how channel selections affect the muting or summing of other channels, how to handle Dolby detection, and how to adjust audio delay in conjunction with other monitoring equipment for issues of lip-syncing.

Figure 3–4: Select and Detect Options Menu



1. **No Channels Selected:** This control determines what happens when no channels are selected in the main screen.
 - a. **Mute** means the unit will not play any of the channels when none are selected. Use this option if you typically only want to hear one or two channels at a time.
 - b. **Play All** means the unit will unmute, mix, and play all the channels in the speakers when none are selected. Use this option if you usually want to hear all the channels and only occasionally “solo” one or more channels.
2. **Channel Select:** Set this control to determine how the select buttons work in the main screen.
 - a. **Single** – Use this option if you only want to hear one channel at a time. Pressing a select will cancel all other selects.

For example, if channel 1 is selected, and you press channel 3, channel 1 will be de-selected, and channel 3 will be selected. If you press the channel 3 select again, no channel will be selected, and what sounds in the speakers will be determined by the **No Chans Selected** control
 - b. **Multiple** – Use this option if you want to hear multiple channels at one time. Pressing a select will not cancel all other selects.

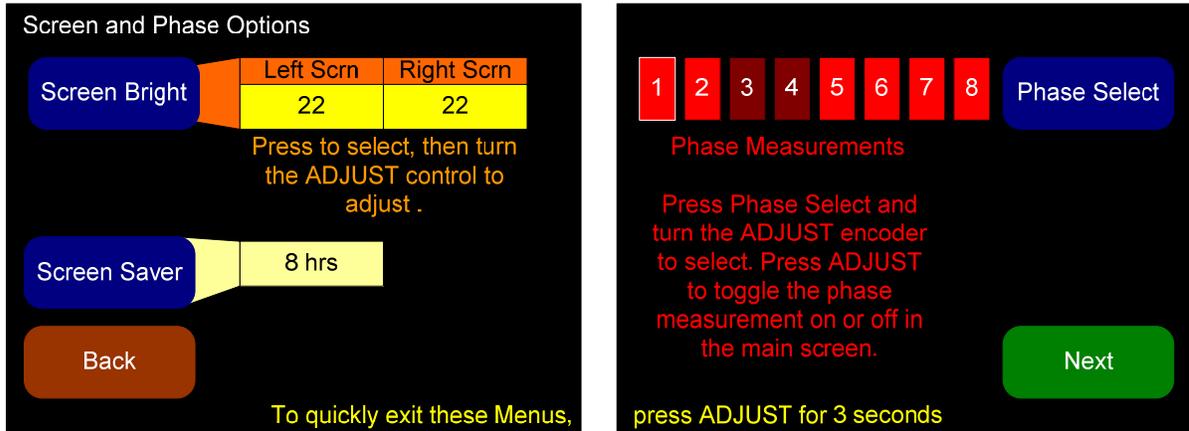
For example, pressing selects 1-6 will result in channels 1-6 being selected, and all 6 channels will sound in the speakers. Pressing the select key for channel 1 again will de-selected channel 1, and mute it.

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 if 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. 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

Figure 3-5: Screen and Phase Options Menu



- 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 **Adjust** 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 22.
- Screen Saver:** Pressing this button and then rotating the **Adjust** 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 AMP1-8-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.
- Phase Select:** Pressing this button and then rotating the **Adjust** encoder 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.

Meter Type and Reference Menu

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

Figure 3–6: Meter Type and Reference Menu



1. **Scale:** Pressing this button and then rotating the **Adjust** encoder steps through the scales for the level meters. Six selections are available as shown in Table 3–1 below.

Table 3–1: 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 **Adjust** encoder adjusts the ballistics of the floating segment.

Table 3–2: 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		

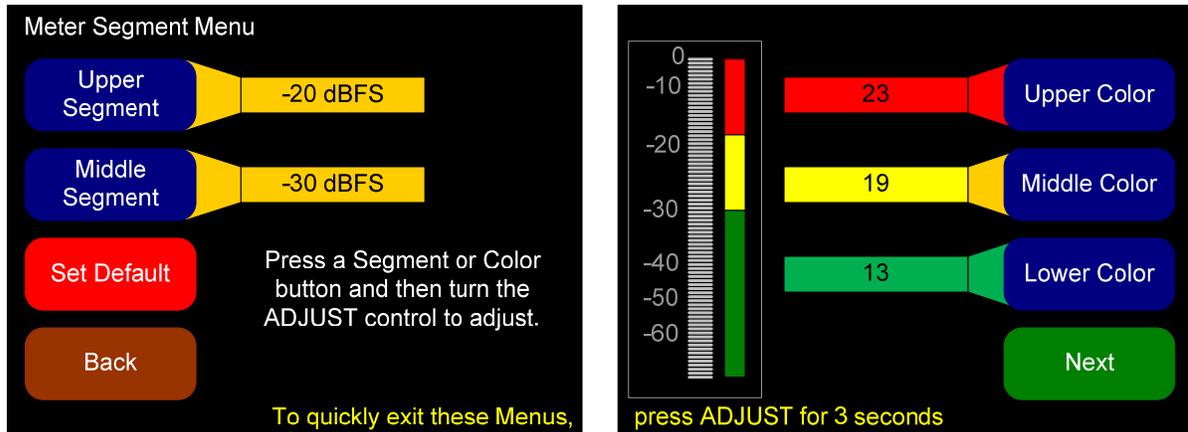
3. **Bar:** Pressing this button and then rotating the **Adjust** encoder steps through the available settings for the bar ballistics. Refer to Table 3–1 in this chapter.
4. **Reference:** Pressing this button and then rotating the **Adjust** encoder adjusts the reference. Refer to Table 3–1 in this chapter for the reference standards for each scale.

Note: The AES scale does not allow you to set a reference.

Meter Segment Menu

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

Figure 3–7: Meter Segment Menu



1. **Upper Segment:** Pressing this button and then rotating the **Adjust** encoder 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 **Adjust** encoder 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 **Adjust** encoder 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

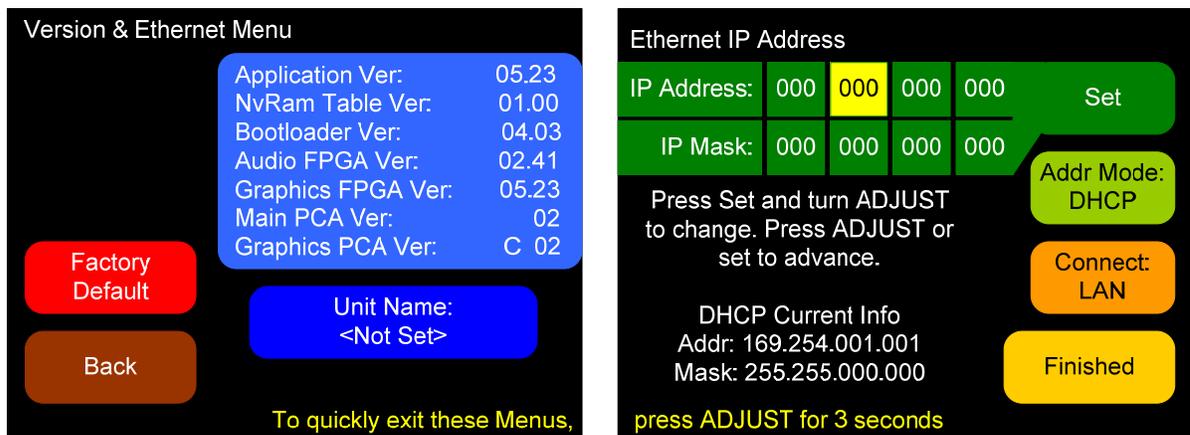
This menu displays software and hardware versions, as well as Ethernet settings. By default, the DHCP setting is enabled and the IP Address and IP Mask settings are shown as 000.000.000.000. This means it will automatically attempt to get the needed IP Address and IP Mask settings from the network.

Note:

The AMP1-8-M does not currently use the Ethernet port except during factory programming. For normal operation, the port may be connected to a LAN or disconnected.

In future releases, Wohler may or may not release remote control software for this unit, such as is used in the AMP1-16-M.

Figure 3–8: Versions and Ethernet Menu



1. **Factory Default:** Pressing this button opens a cautionary window to verify that you really want to restore the AMP1-8-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.
 - i. **Note:** The **Factory Default** action restores the entire unit to its factory condition. The unit name is deleted, the **IP Address** is set to DHCP, and the **Connect:** settings reset to LAN.
2. **Set (IP Address or IP Mask):** Pressing this button highlights the first of the four octets. Turning the **Adjust** encoder clockwise increases the octet while turning it counterclockwise reduces the octet. Pressing either the **Set IP Address** or the **Adjust** 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:** 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 **Monitoring Screen**.

CHAPTER 4 - Features and Specifications

Introduction

This chapter lists the features and specifications of the AMP1-8-M.

Features

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

Compliance

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

The AMP1-8-M meets FCC Part 15 compliance.

Specifications

Table 4-1: 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 4–2 below are available for monitoring in the AMP1-8-M.

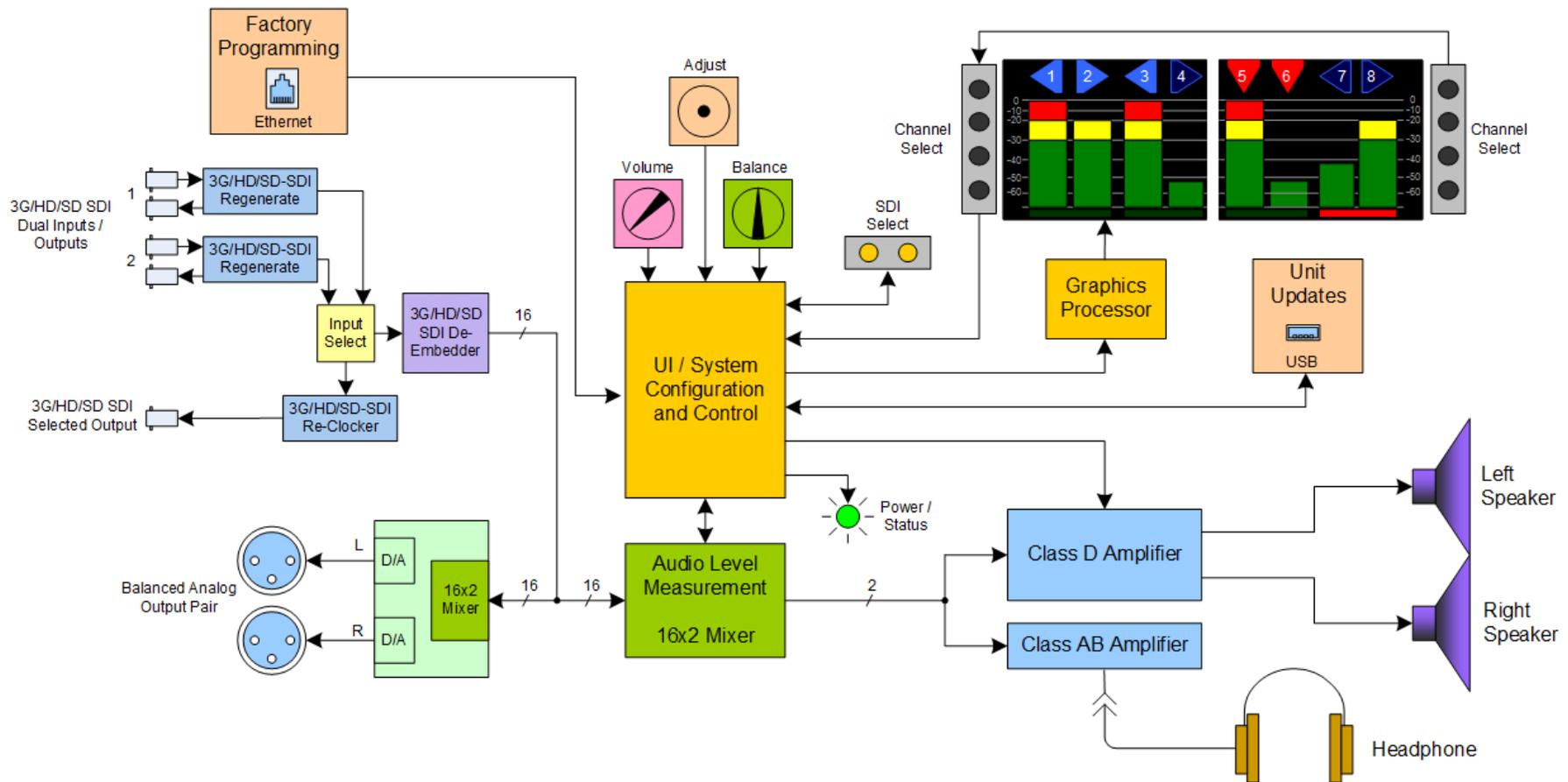
Table 4-2: Audio Formats

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 4-1 illustrates the overall functionality of the AMP1-8-M monitor.

Figure 4-1: AMP1-8-M Block Diagram



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

APPENDIX A: Upgrading the AMP1-8-M Using a USB Flash Drive

Introduction

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

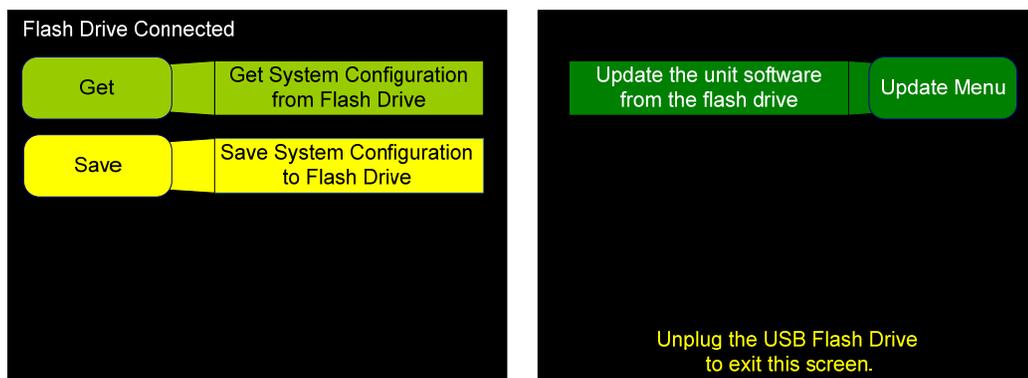
Important:

When a new version becomes available, software updates may be obtained in .zip file format from the Wohler Website. Download this zip file, unzip it, and place the "AMP1-8-MProgrammingFiles" folder on a standard USB flash drive. Insert the flash drive into the unit, and follow the instructions below.

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 A-1 below.

Figure A-1: Flash Drive Connected Screen



3. Press **Update Menu**.

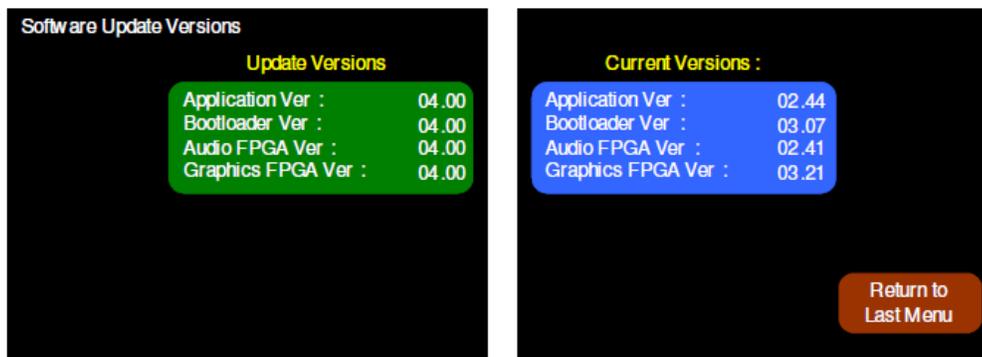
- All the firmware files on the USB drive will be read and validated. This will take a few minutes, and progress screens are presented. Once the validation is finished the following menu appears:

Figure A–2: Flash Drive Software Update Screen



- 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 A–3: Software Update Versions Screen



- From the **Software Update Versions** menu, press **Return to Last Menu** to return to the **Flash Drive Software** menu shown in Figure A-4 below.

Figure A–4: Software Software Update Screen



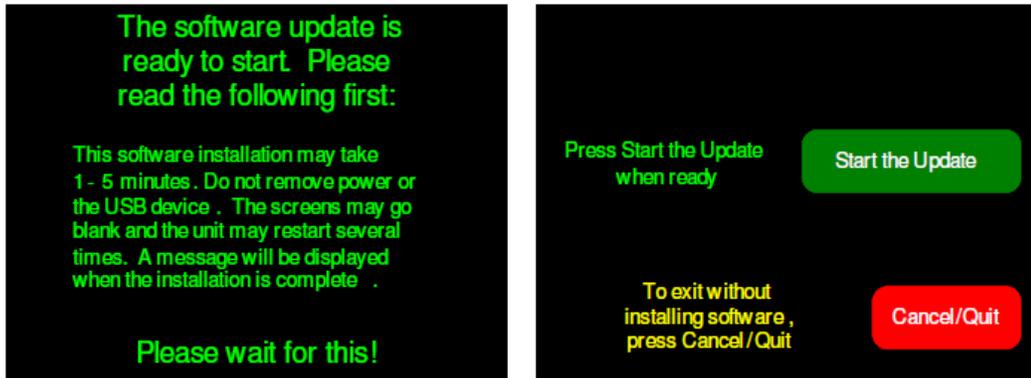
If the screen does not indicate that the software is up to date, you can select one of two update options:

- Press the **Update Software as Needed** button to install only newer

software versions contained in the flash drive into the AMP1-8-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 AMP1-8-M, even if the same version already is installed and even if the flash drive version is a lower version than what is already installed. The next screen to appear will describe what to expect in the installation process.
7. After you have selected a software installation option, the system will display the **Software Update** screen shown in Figure A-5 below.

Figure A-5: Flash Drive Software Update Screen



8. Pressing **Start the Update** button will start the installation process, which will automatically continue until its conclusion. Instructions are provided on this screen to explain the process.

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

9. When the software is finished installing, the AMP1-8-M will restart and the **Main Screen** will display the message in Figure A-6 below.

Figure A-6: Flash Drive Software Update Complete Screen



This concludes the USB firmware update procedure.