AMP2-16V Series

- AMP2-16V-M
- AMP2-E16V-M

Modular Audio/Video Management and Monitoring Platform

User Guide
(Software Release: V7.xx)

Part Number 821116, Revision M

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PREFACE

New Features

Overview

The preface lists the new features and functionality for this release.

What's New?

There is now support for the 16-channel Dante Receiver card. Appendix A describes how to set it up within an existing Dante AoIP network.

There is also support for the 16-channel Ravenna Receiver card. Appendix B describes how to set it up within an existing Ravenna AoIP network.

CHAPTER 1: Quick Start

Introduction

Overview

This chapter describes how to use the front panel controls and the user interface menu system. For a more in-depth description of each menu, refer to Chapter 5: Menu List.

Front Panel Features

This section describes the controls on the front panel.

Figure 1–1:   Front Panel Layout
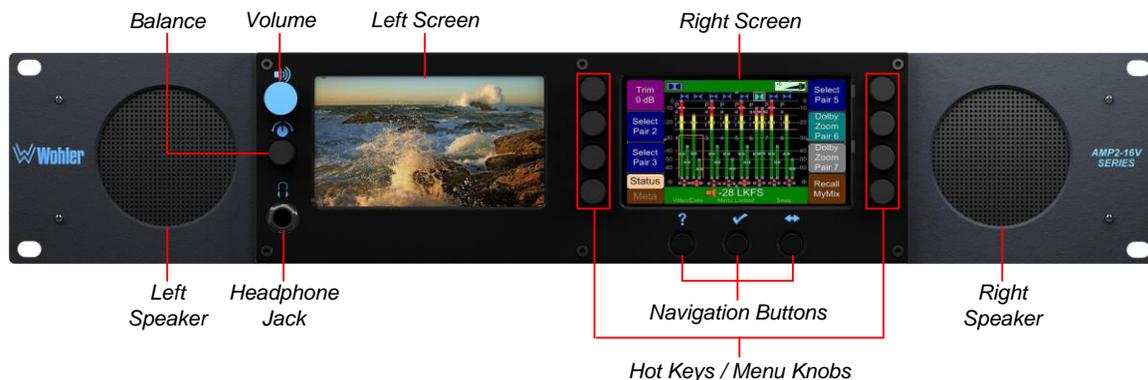
1. **Speakers:** Two Class D amplifiers drive two (left/right) full range speakers.

2. **Headphone Jack:** 1/4" stereo jack for optional headphones.

3. **Balance and Volume Knobs:** The top knob controls the **Volume**. Pressing this control sequences through a 20 dB speaker dip, mute, and then back to the current volume. The bottom knob adjusts the **Balance** between the speakers. Pressing the knob returns the audio balance to center. Rotating either knob displays the change graphically in the screen header when the **Main Screen** is displayed. The **Balance** knob can be changed to a **Volume** knob for the SuperPair. Refer to How Do I Set Up a SuperPair Volume Control? in Chapter 3.

4. **Navigation Buttons:** The three buttons below the right screen typically provide **Help** (left), **Save/Exit** (center), and **Cancel** (right) functions for the configuration menus. Some menus will have other functions for these buttons, that are labeled at the bottom of the screen.

5. **Left Screen**: You can configure this screen to display video, meters, or

metadata.

6. **Right Screen:** You can configure this screen to display meters, metadata, or the configuration menus and context-sensitive help.

7. **Rotary Knobs:** You can use the rotary knobs in two ways: by turning the knob either clockwise or counter-clockwise, or by pressing the knob like a button. These eight knobs provide menu navigation and hot key functions.

User Interface

Meters and Data Screens

You can select the arrangement of meters, video, and data in five possible configurations on the **Main Screen Configuration Menu**. In our example in Figure 1–2 below, the **Video/Data** button will switch the left screen display from video to data.

Figure 1–2: Main Screen

Speaker Indicators:
Left and Right

Dolby Signal

The Dolby logo indicates
the Dolby Card is installed.

Speaker Indicators:
Both

Volume
Indicator

Hot Keys and Hot
Key Descriptions

Phase
Indicators

The measured Loudness
of the selected channel
cluster is displayed
graphically and digitally.

Level
Meters

Navigation
Buttons

Help

If at any time you would like assistance with the function of any control, pressing the **Help** button starts the context-sensitive help for the screen as shown in Figure 1–3 below.

Figure 1–3: Screen/Menu Help
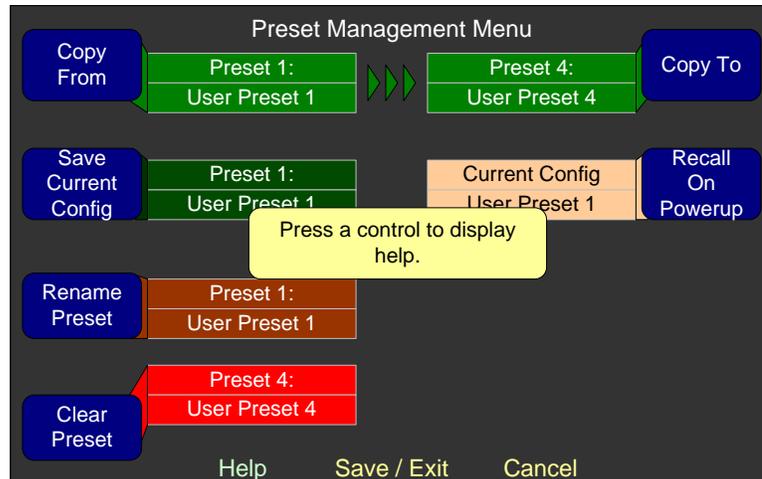
You can display help for any individual knob or button. For example, press the **Help** button on any screen and then press one of the menu/ screen controls to display help specific to that control. See Figure 1–4 below.

Figure 1–4: Individual Control Help
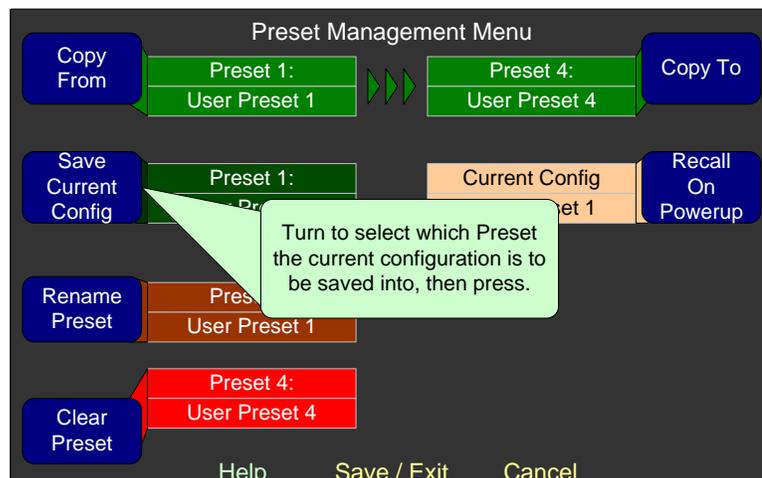
If you do not press/rotate any other controls, the help will disappear from the screen in approximately 15 seconds.

Setting Up Your Monitor for the First Time

To set up your monitor quickly and efficiently, we recommend that you set up your initial configuration in the order listed below.

1. Configure the **Monitor Mixer**: Select the inputs to be monitored.

2. Create channel clusters: Cluster the monitored channel meters to make them most readable.

3. Arrange the **Main Screen**: Configure the **Main Screen** arrangement.

4. Select the metadata to display on the screen (if you want to display metadata).

5. Save your setup into a preset.

Press the **Menu** button on the **Main Screen** to display the **Configuration Selection Menu**.

1. Configure the Monitor Mixer

While the **Monitor Mixer Configuration Menu** (Figure 1–5) provides a number of feature adjustments, only a few are needed for you to get started. (The other feature adjustments are explained later in this manual in Chapter 5: Menu List.)

Figure 1–5: Monitor Mixer Configuration Menu
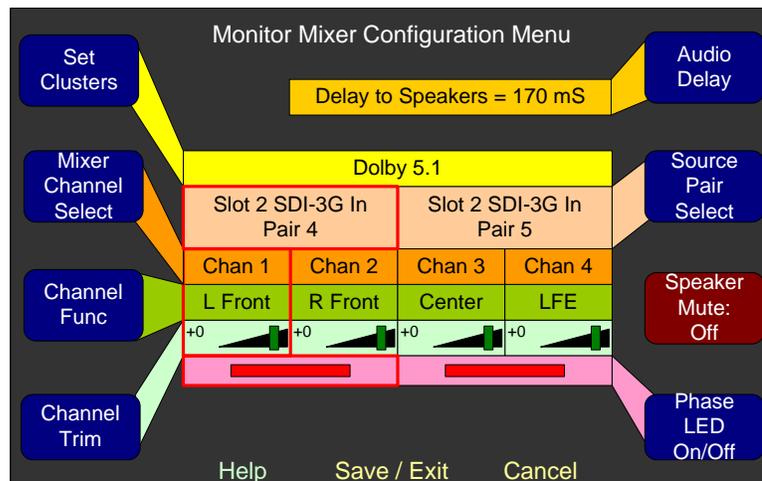
1. To get to the **Configure Monitor Mixer Menu**, press the **Menu** button to enter the **Configuration Selection Menu** and then press the **Configure Monitor Mixer** knob.

2. Before setting up the monitor mixer, it is wise to plan where you want each channel you need to monitor to appear on the metering screen. Table 1–1 may help.

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Table 1–1: Channel List

Channel Number	Cluster Name (Ex: 5.1 Dolby)	Channel Source (Ex: Slot 2: 3G-SDI In/Pair 4)	Channel Function (Circle One)
1			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
2			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
3			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
4			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
5			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
6			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
7			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
8			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
9			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
10			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
11			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
12			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
13			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
14			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
15			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N
16			L R Lfe Ls Rs Lrs Rrs Lfh Rfh Lrh Rrh Ms N

3. To select the inputs that will source each of the displayed and monitored pairs, rotate the **Mixer Channel Select** knob to the channel pair and then use the **Source Pair Select** to pick a channel pair from the available inputs.

4. Then use the **Channel Func**tion to assign a function such as **Left Front**, **Center**, **Left Surround**, or whatever function you want this channel to have. This assignment affects how this signal is treated in other parts of the AMP2-16V, and is essential for correct monitoring operation, especially in terms of the speaker mix, the loudness measurement, and external surround positioning.

After you have completed this process for all the channels you want to monitor, you are ready to move on to the **Cluster Configuration Menu**.

2. Create Channel Clusters

In the **Cluster Configuration Screen**, you will group, or cluster the channels together which you consider to be related. For example, if you have set up a discrete 5.1 set of channels (L Front, R Front, Center, LE, L Sur, and R Sur), then you will want to cluster them together.

1. From the **Monitor Mixer Configuration Menu**, press the **Set Cluster** knob to display the **Cluster Configuration Screen** (Figure 1–6).

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Figure 1–6: Cluster Configuration Screen
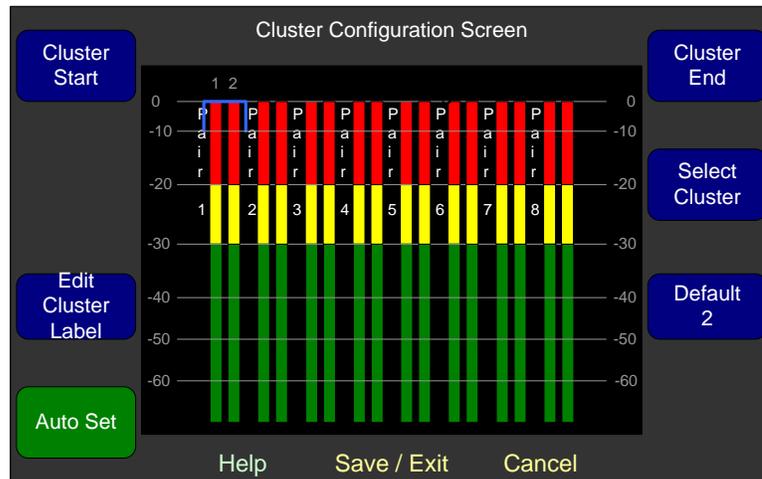
2. Press the **Auto Set** control to automatically adjust the cluster arrangements to match the **Channel Function** settings made in the **Monitor Mixer Configuration Menu**.

3. Add the cluster name that is to appear on the **Main Screen**. Rotate the **Select Cluster** knob to the cluster you want to name.

4. Press the **Edit Cluster Label** to display the **Label Menu** (Figure 1–7).

Figure 1–7: Label Menu
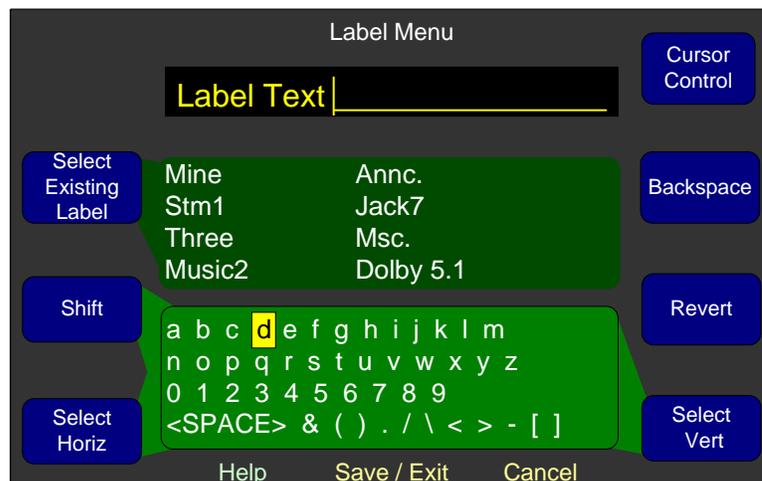
If you see a label in the **Select Existing Label** list that is close to the label you want, rotate the **Select Existing Label** knob until that label is highlighted. Then press the knob to replace the label in the **Label** field with the selected label.

5. If needed, press the **Backspace** knob until the unwanted text of the current label disappears, or rotate the **Cursor Control** knob to move the cursor to the location where you want to add text.

6. Use the **Shift** button to toggle between upper and lower case letters.

7. Turn the **Select Horiz**ontal knob (or the **Select Vert**ical knob) to select the letter to type. Press the knob to type it.

8. When you have finished typing the name, press **Save/Exit** to return to the **Cluster Configuration Screen**.

9. Repeat Steps 5 through 8 until you have named all the clusters and pairs.

10. When you are finished, press **Save/Exit** repeatedly until you reach the **Main Screen**.

3. Arrange the Main Screens

Depending on your needs, the **Main Screen** provides a number of arrangements from which you can choose.

1. From the **Main Screen**, press **Menu** to display the **Configuration Selection Menu**.

2. From the **Configuration Selection Menu**, press the **Config Main Screen** knob to display the **Main Screen Configuration Menu**. Refer to **Main Screen Arrangements** in Chapter 4 to see how the various screen arrangements will appear.

Figure 1–8: Main Screen Configuration Menu
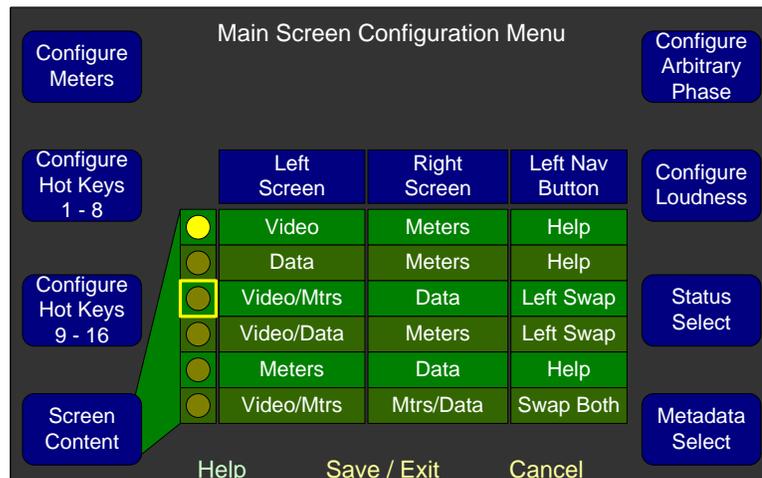
3. When the **Main Screen Configuration Menu** appears, rotate the **Screen Content** knob to select one of the six available arrangements for the left and right screens (shown in Figure 1–8 above). Rotating the knob moves the highlight box; pressing the knob makes the selection. (In these cases, the left navigation button becomes the **SWAP** button.)

Data refers to metadata, whether from:
1. The optional Dolby D/E / DD+ card,
2. The SMPTE 2020 metadata in an SDI stream, or
3. The status data in an SDI stream.

If you select a **Main Screen** arrangement that includes data, proceed to the following section to specify exactly what data you want to display.

4. Select the Metadata to Display on the Screen

Status Data:

If you do not wish to display status data, continue on to **SMPTE 2020 Metadata** on the next page.

1. From the **Main Screen Configuration Menu**, press the **Status Select** knob to display the **Status Select Menu** (Figure 1–9).

Figure 1–9: Status Select Menu
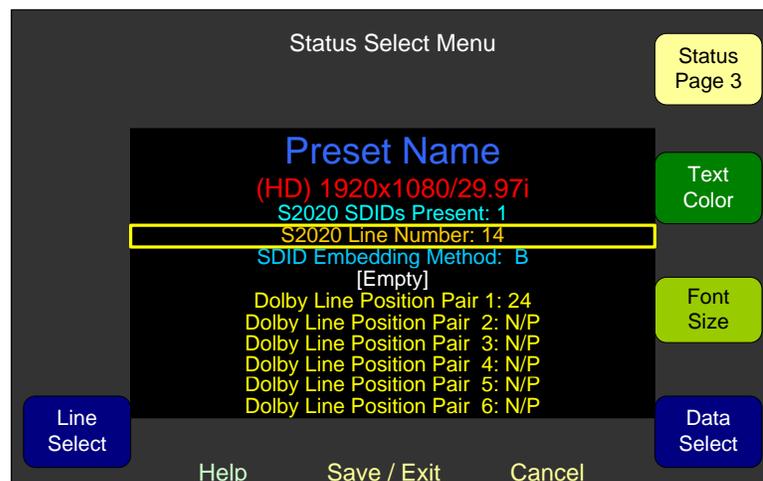
Note: The Lines of data on this display are arranged exactly as they will appear on the Main Screen.

2. Rotate the **Line Select** knob to scroll the highlight up or down among the lines of text to select the line you want to modify.

3. Rotate the **Data Select** knob to select the type of data you want to display on this line. (If you select **[Empty]** a blank line will result on the **Main Screen**. This can be used to separate the data lines so they are easier to read.)

4. Rotate the **Text Color** knob to select the text color of your choice. Use brighter colors for data that is more important to you, or dim colors for data that is less important.

5. Rotate the **Font Size** knob to select from a small, medium, or large font, according to the importance of the data.

6. Rotate the **Status Page** knob clockwise to select among the three available pages.

7. Repeat Steps 2 through 6 for Pages 2 and 3 as needed.

8. Once you have defined all the status data you want to display, press **Save/Exit** to return to the **Main Screen Configuration Menu**.

SMPTE 2020 Metadata:

You can display either SMPTE 2020 or Dolby metadata. If you prefer to display Dolby metadata, skip to Dolby Metadata.

1. From the **Main Screen Configuration Menu**, press the **Metadata Select** knob to display the **Metadata Select Menu**.

Figure 1–10: Metadata Select Menu
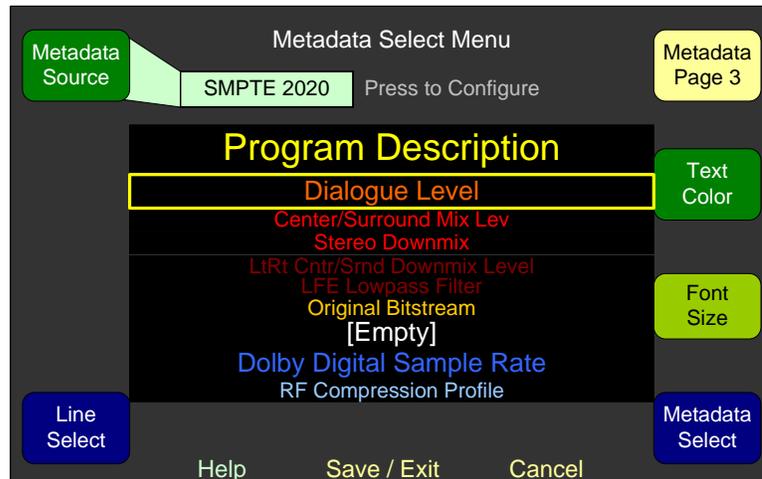
2. Rotate the **Metadata Source** knob to display **SMPTE 2020**, rather than **Dolby Decoder**.

3. Press the **Metadata Source** knob to display the **SMPTE 2020 Configuration Menu**. Figure 1–11: SMPTE 2020 Configuration Menu

Figure 1-11: SMPTE 2020 Configuration Menu
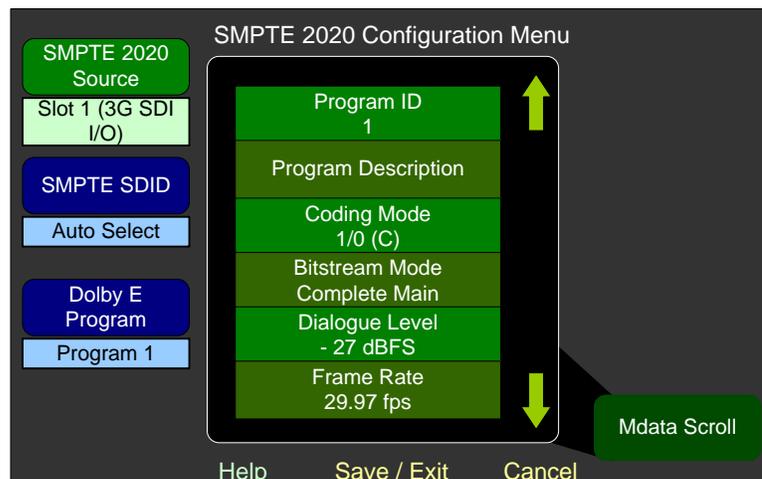
4. Rotate the **SMTPE 2020 Source** to select the input card from which the

metadata is to be extracted. The possible choices include any of the 3G/HD/SD SDI cards.

5. By default, the AMP2-16V will automatically select the lowest numbered SDID containing metadata. If you would prefer to specify a different SDID, rotate the **SMPTE SDID** to select the desired SMPTE SDID. The ten choices include **No Assoc.**, **Pair 1** through **Pair 8** and **Auto Select**.

6. Rotate the **Dolby E Program** knob to select the desired Dolby E program.

7. Press **Save/Exit** to return to the **Metadata Select Menu** (Figure 1–12 below).

Note: Any text line can contain any metadata element.

Figure 1–12: Metadata Select Menu
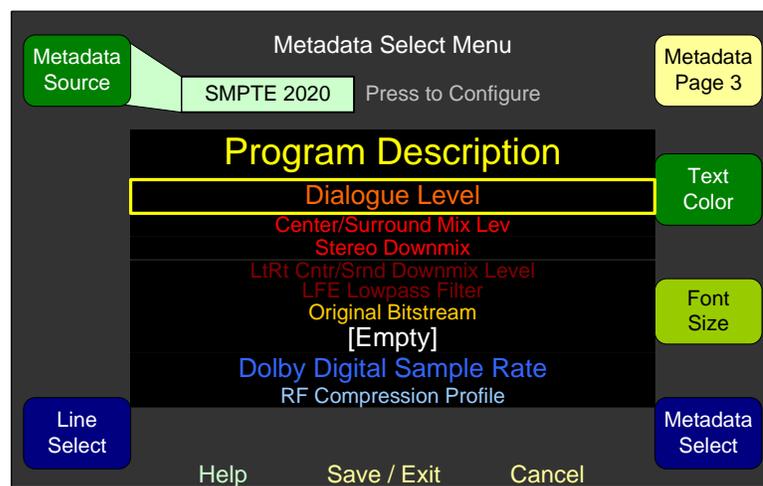
8. Rotate the **Line Select** knob to scroll the highlight up or down among the lines of text to select the one you want to modify.

9. Rotate the **Metadata Select** knob to select the type of data you want to display on this line. (If you select **[Empty]** a blank line will result on the **Main Screen**. This can be used to separate the data lines so they are easier to read.)

10. Rotate the **Text Color** knob to select the text color of your choice. Use brighter colors for data that is more important to you, or dim colors for data that is less important.

11. Rotate the **Font Size** knob to select from a small, medium, or large font, according to the data line's importance.

12. Rotate the **Status Page** knob clockwise to select among the three available pages.

13. Repeat Steps 2 through 12 for Pages 2 and 3 if needed.

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14. Once you have defined all the status data you want to display, press **Save/Exit** to return to the **Main Screen Configuration Menu**.

Dolby Metadata:

Note: Only units equipped with an optional Dolby D/E/DD+ card will show this option.

1. On the **Metadata Select Menu**, rotate the **Metadata Source** knob to display **Dolby Decoder**, rather than **SMPTE 2020**.

2. Press the knob when **Dolby Decoder** displays to display the **Dolby Decoder Configuration Menu**.

Figure 1–13: Dolby Configuration and Metadata Display Menu
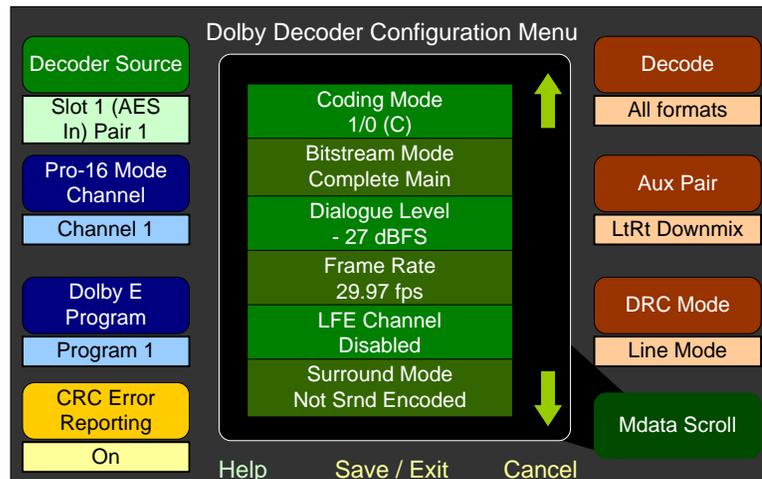
3. Rotate the **Decoder Source** knob to select the source for the Dolby D/E/DD+ Card. The choices include all available AES input pairs, all available SDI de-embedded pairs, and **Dolby Zoom Select**.

4. Rotate the **Pro-16 Mode Channel** knob to select the stream to decode when two are present in the decoder source pair.

5. Rotate the **Dolby E Program** knob to select the Dolby E program. If the selected program is not available, the metadata from Program 1 will display.

6. Press the **CRC Error Reporting** knob to toggle **Main Screen**
7. CRC error reporting and counting on or off.

8. Rotate the **Decode** knob selects the Dolby stream to decode. The available options include: **All Formats**, **Dolby D Only**, or **Dolby E Only**.

9. Rotate the **Aux Pair** knob to select how the Auxiliary Dolby Pair will be treated. The available options include: **Mute**, **Mono**, **LoRo Downmix**, or **LtRt Downmix**.

10. Rotate the **DRC Mode** knob to select the DRC Mode. The available options

are **None**, **Dialnorm Only**, **Line Mode**, or **RF Mode**.

11. Rotate the **Metadata Scroll** knob to scroll through the list of available Dolby metadata items. The metadata items in the list are actively refreshed by the software, and will change to reflect changes in the selected input stream.

12. When you have completed making your selections on the **Dolby Decoder Configuration Menu**, press **Save/Exit** to return to the **Metadata Select Menu**.

<p align="center">Figure 1–14: Metadata Select Menu</p>
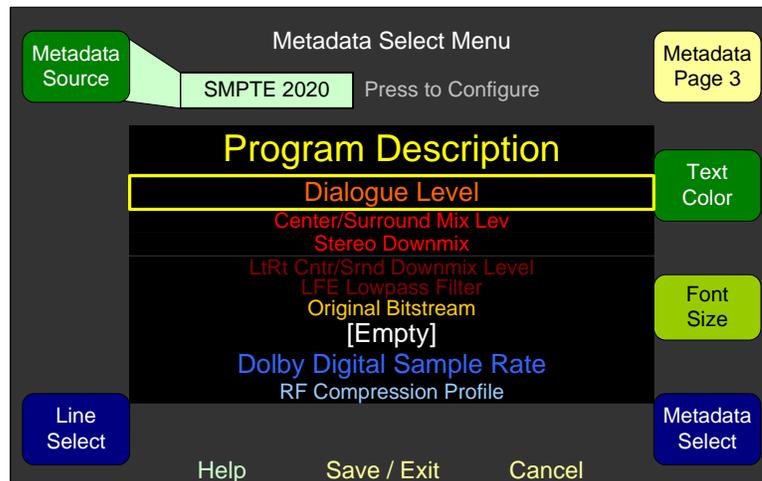
Note: Any text line can contain any metadata element.

15. Rotate the **Line Select** knob to scroll the highlight up or down among the lines of text to select the line you want to modify.

16. Select the **Text Color**, **Font Size**, and the **Metadata Select** as you did previously.

17. Repeat Steps 13 through 14 for Pages 2 and 3 as needed.

18. Press the **Save/Exit** button twice to return to the **Configuration Selection Menu**.

5. Save Your Setup in a Preset

Now that you have a basic configuration for your system, you will need to save it as a preset so you can reconfigure this way quickly and easily. Note that if you make any change(s) in the menu settings and return to the **Main Screen** without saving them into a preset, a yellow warning flag will appear on the **Main Screen** reminding you to do so.

Refer to Figure 1-15 and perform the following steps.

Figure 1–15: Preset Management Menu
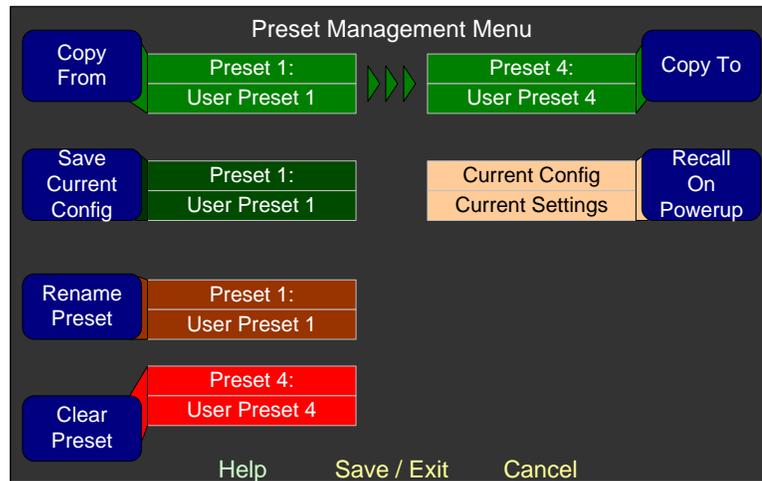
1. From the **Main Screen**, press **Menu** to display the **Configuration Selection Menu**.

2. From the **Configuration Selection Menu**, press the **Manage Presets** knob to display the **Preset Management Menu**.

3. Rotate the **Save Current Config** control to the number of the preset you would like to save the configuration into and then press the knob.

4. You will be presented with the opportunity to name the preset. Typically a short name describing the use of the configuration is appropriate. For example, if the preset will select a number of AES channels for monitoring, name the preset, **AES**.

Getting Support

Should you need to contact Wohler's customer support line (see page ii for our contact information), you will save time on the phone by writing down the software and hardware versions installed in your monitor. Refer to the How Do I Find Software Version Information? section in Chapter 3 of this manual for instructions.

CHAPTER 2: Installation

Introduction

Overview

This chapter describes how to install the AMP2-16V Series monitor into a standard 19" rack and how to connect the necessary wiring.

Important Safety Instructions

WARNING: Do not use this equipment near water, rain or moisture.

1. Read, keep, and follow all of these instructions; heed all warnings. Use only a dry cloth to clean the equipment.

2. Do not block any ventilation openings. Install only in accordance with the instructions in the section entitled, Installation Recommendations.

3. Do not install near any heat source such as a radiator, heat register, amplifier, or stove.

4. Do not attempt to plug the unit into a two-blade outlet (with only two prongs of equal width).

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

5. Protect the power cord from being walked on or pinched, particularly at plug's source on the equipment and at the socket.

6. Use only the attachments/accessories specified by the manufacturer.

7. Unplug the equipment during lightning storms or when unused for long periods of time.

8. Use of a cart is neither recommended nor approved by Wohler.

9. 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) Objects have fallen onto the equipment; or the equipment has been

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exposed to rain or moisture, or liquid has been spilled onto the equipment.
c) The equipment does not operate normally.
d) The equipment has been dropped.

Installation Recommendations

Mounting

The unit is designed to install into a standard 19" rack mounted at ear level for best high frequency response and visual observation of the monitor screen. 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 side of the unit. Therefore, as a safety precaution, you must allow proper ventilation on both sides of the unit.

Sympathetic Vibration

Sympathetic vibration from other equipment (cables, etc.,) in the rack may be serious enough to interfere with the unit's sound quality. The use of thin card stock and/or felt or foam weather-stripping type materials between adjacent vibrating surfaces, or tying up loose cables, etc., may be required to stop vibrations external to the unit.

Mechanical Bracing

Even though these 2U models are fairly heavy, the 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.

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Connections and Cable Recommendations

We recommend that you limit the length of the cables that you use for feeding HD-SDI signals sources to the HD-SDI inputs of the AMPx-E8 Series units and that you use a Belden 1694A cable (or equivalent). The HD-SDI inputs (In 1 and In 2) can be up to 150 meters (492 feet) in length when used with HD signals and 75 meters (246 feet) in length when using 3G signals.

Note: The connections of all DB-25 connectors are compatible with Tascam DB-25 to XLR cable assemblies. Consult the factory for availability. All rear panel connectors are female.

Electrical Interference

Be careful to apply proper input termination settings and 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. The internal circuitry ground is connected to the chassis.

Power

The unit comes with one 100 - 240 VAC +/- 10%, 150W, 50/60Hz power supply module. A second identical module is an optional accessory for use when redundancy is necessary. These modules plug in to the back panel and are secured with thumbscrews. The power to each supply connects an A/C mains power source through the IEC connector provided on the back panel of each power supply.

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 his 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.

Rear Panel Connectors

Standard Connectors

The AMP2-16V Series monitor back panel contains all of the connectors except for the headphone jack as shown in Figure 2–1. Note that, as you are facing the rear panel, the audio module slots are numbered from right to left.

1. **Power**: The AMP2-16V Series monitors use a standard IEC power cord for the 100 to 240 VAC power connection. A redundant power supply is optional. (Refer to Table 6-7 for a complete list of Option Kits).

2. **Ethernet**: The Ethernet port is used for system software upgrades.

3. **Serial (Console)**: This DB-9F connector is used for factory diagnostic purposes.

4. **Genlock Ref Input and Pass-Through (Ref)**: These BNC connectors are designed to be used in a daisy-chained series arrangement from unit to unit. A 75Ω BNC terminator (not supplied) must be installed in the open Ref connector of the last unit in the chain. These inputs accept composite video sync sources.

Figure 2–1: Typical Back Panel Layout
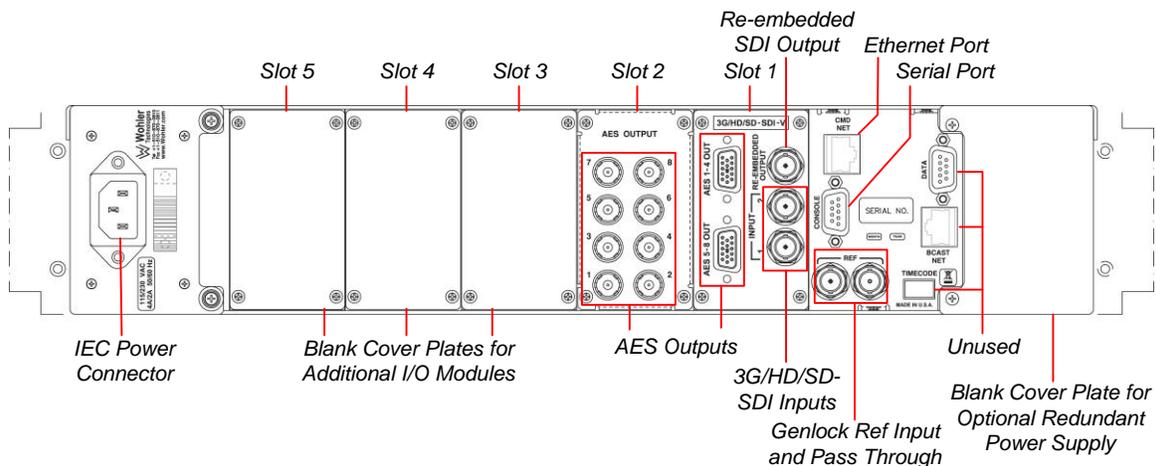
Optional I/O Modules and Rear Panel Connectors

The AMP2-16V Series monitors can include any combination of the optional I/O modules listed in Table 2–1.

Table 2–1: Available Add-On I/O Modules

I/O Module Name	I/O Module Description
3G/HD/SD-SDI-V Card	Two 3G/HD/SD-SDI inputs 8 de-embedded AES pairs outputs 1 selected reclocked or re-embedded output (Includes automatic frame rate detection)
AES Input Card	16 channel (eight unbalanced AES pairs)
AES Output Card	16 channel (eight unbalanced AES pairs)
Analog I/O Card	8 balanced channels in and 8 balanced channels out
Analog I/O SPDIF TOSLINK Card	8 balanced channels in, 8 balanced channels out, and 1 optical SPDIF (TOSLINK) input
AVB Listener Card	Provides capability to listen to two AVB streams carrying up to 8 audio channels in each stream, for a total of 16 channels.
Dante/AES67 (AoIP) Card	16 Rx channels of Dante / 8 Rx channels of AES67
Ravenna/AEC67 (AoIP) Card	16 Rx channels of Ravenna / 8 Rx channels of AES67
Dolby Card D/E/DD+ Card*	Provides Dolby bitstream decoding for an AES pair or de-embedded SDI of your choice

* The Dolby D/E/DD+ Card is an internal daughter card. It does not occupy one of the vacant slots and does not require its own external connectors.

Refer to Table 6-7 for a complete list of Option Kits.

Basic Connections

Usually, the AMP2-16V is sold with a single 3G/HD/SD-SDI-V card in Slot 1. The instructions below assume this configuration.

1. Install the AMP2-16V into a standard 19" rack as close to eye-level as possible.

2. Connect power from the unit to A/C mains. If you have purchased a redundant power supply, verify you are connecting the second power supply to A/C mains power on a different circuit from the first.

3. Connect an SDI video source to the SDI input connector.

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CHAPTER 3: The "How Do I…" Chapter

Introduction

Overview

This chapter answers many questions that naturally come up as the AMP2-16V Series monitor is first put into service.

Notation

In this chapter, we use a shorthand method to show you how to progress from the **Main Screen** to the menus. See Figure 3–1 below.

Figure 3–1: Screen Notation

Main Screen

Menu

Configuration Selection Menu

Configure Monitor Mixer

Monitor Mixer Configuration Menu

Or simply:

Main Screen

Menu

Configuration Selection Menu

Configure Monitor Mixer

Monitor Mixer Configuration Menu

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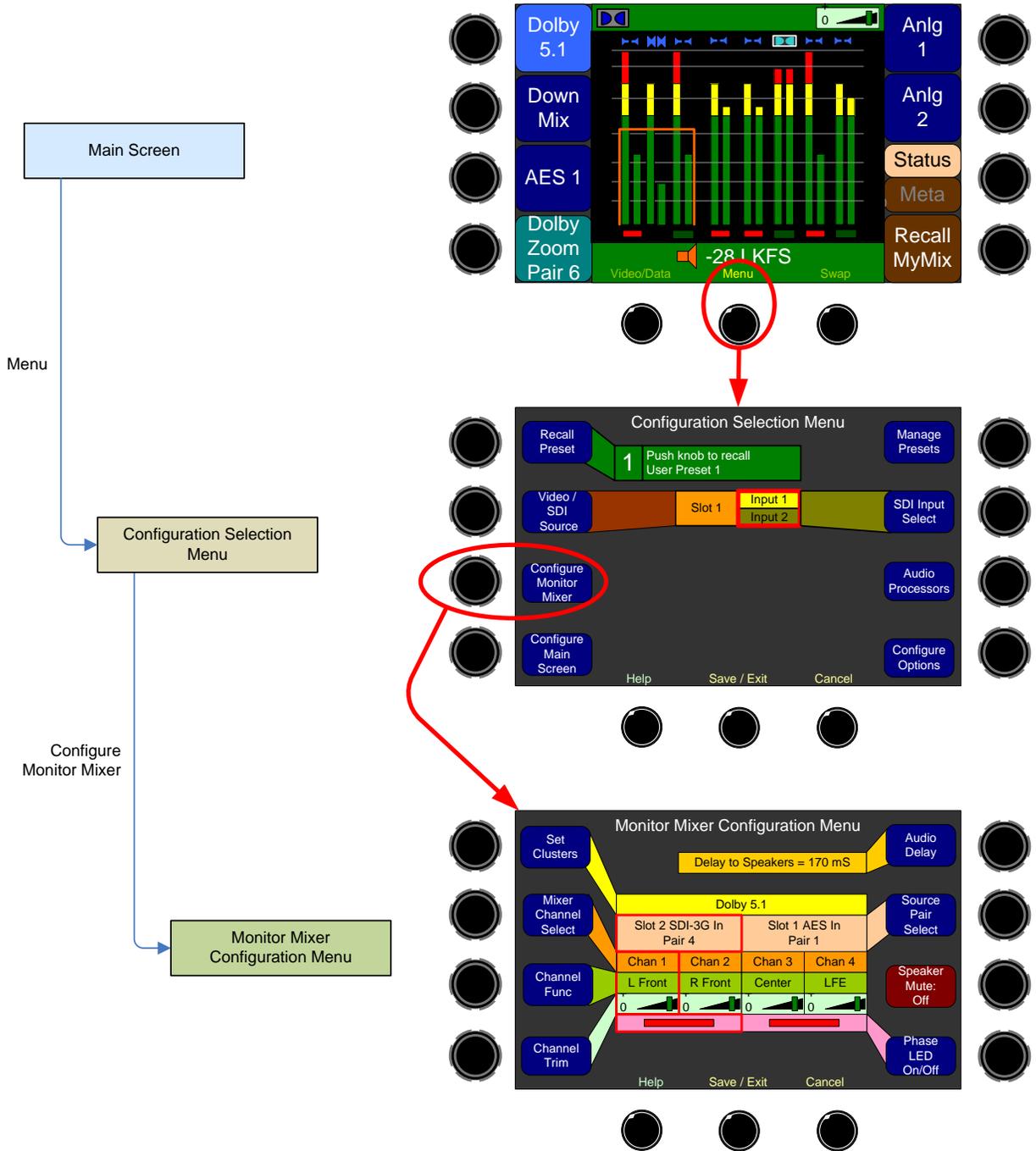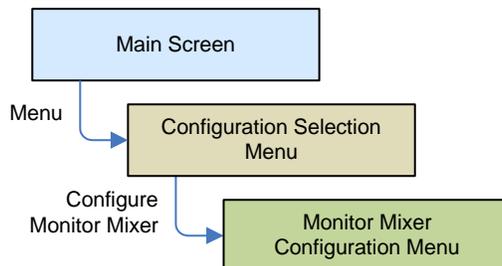
Frequently Asked Questions

How Do I Select the Inputs I Want to Hear in the Speakers?

This selection appears on the Monitor Mixer Configuration Menu.
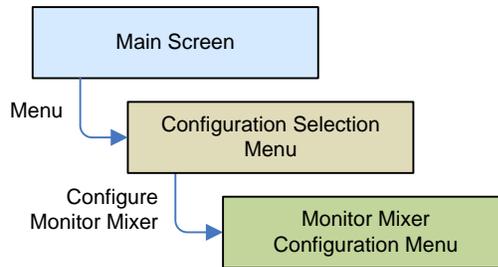
Figure 3–2: Monitor Mixer Configuration Menu
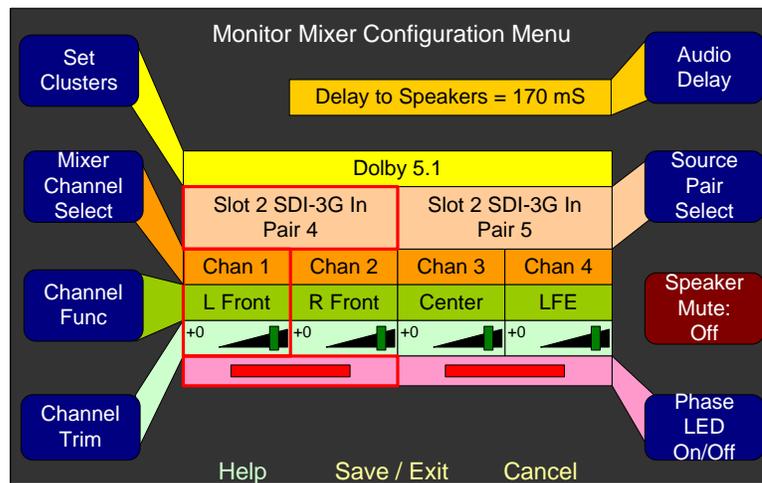
1. Rotate the **Mixer Channel Select** knob to select the channel pair to manipulate.

2. Rotate the **Source Pair Select** control to select the audio processor card slot and desired input pair on that card.

3. Now is also a good time to rotate the **Channel Func**tion control to designate the function of each channel in that pair.

How Do I Cluster Meters Pairs Together for Easy Readability?

Clustering the meter pairs in logical arrangements enhances the at-a- glance readability of the meters. It also assures that the Loudness calculations are accurately represented. After setting up the meter clusters, the **Cluster Select** hot keys are automatically configured so that they select the clusters you defined.

Meter clustering is done in the **Cluster Configuration Screen**:
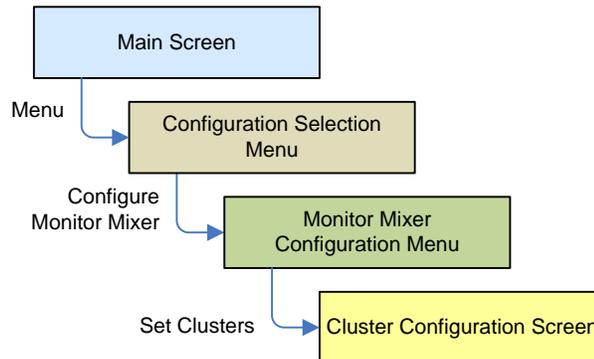
Figure 3–3: Cluster Configuration Screen
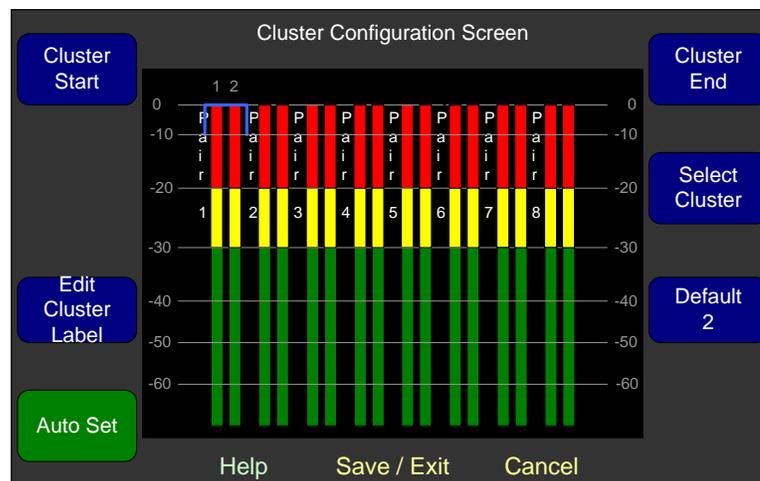
1. If you have already assigned the channel functions in the **Monitor Mixer Configuration Menu**, press the **Auto Set** control and proceed to step 4.

2. Turn the **Select Cluster** control to select the channel pair that you want the cluster to start on. Note that the blue bracket at the top moves to select the beginning of the cluster.

3. Turn the **Cluster End** control so that the blue bracket encompasses the channel pairs you want in the cluster. Press the **Cluster End** control to set the cluster.

4. Press the **Edit Cluster Label** control to proceed to a screen that lets you name the cluster. This name will appear on the main screens.

How Do I View the Loudness Screen?

The **Loudness Screen** will show detailed loudness measurements on the program source you choose, if it has 8 or fewer channels. It is quickly accessible from the **Main Screen**, but first you must set up a **Loudness** hot key.

The **Loudness** hot key is set in either the **Hot Key 1-8** or the **9-16 Configuration Menu**:
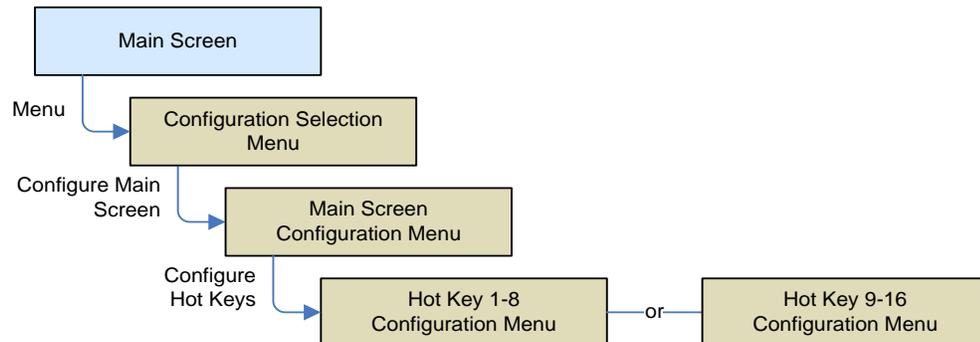
Figure 3–4: Hot Key 1-8 Configuration Menu

1. Using the hot key that is in the location you want it to be on the Main Screen, Rotate the knob to highlight the function field of the hot key. Repeatedly press the knob until the **Loudness Screen** function is shown.

2. When you return to the **Main Screen**, you will see the new **Loudness** hot key. You may press it whenever you would like to view the **Loudness Screen**. When you press it, whatever cluster you have selected for listening (if it has 8 or fewer channels) will initially appear on the **Loudness Screen**.

3. To adjust various parameters that you can use to customize the **Loudness Screen** for your needs, simply proceed to the **Loudness Measurement Menu**. Refer to Loudness Measurement Menu in Chapter 5 for complete information on setting up the **Loudness Standard**, **Reference Level**, and various timings and features.

Note: The **Loudness Screen** hot key will be gray for any cluster with more than 8 channels.

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How Do I Set the Way Loudness is Calculated?

The **Loudness Screen** will show detailed loudness measurements on the program source you choose. The way it calculates its readings can be set using the Loudness Measurement Menu described in Chapter 5.

Access to the Loudness Measurement Menu is as follows:
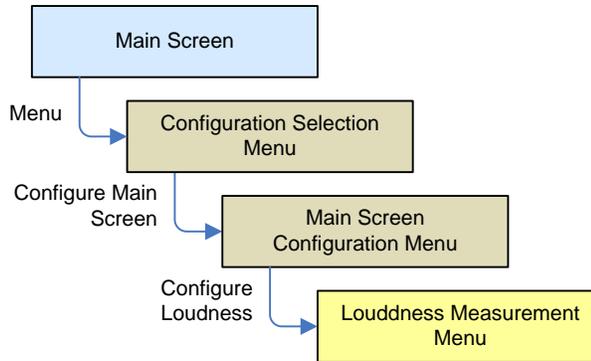
Figure 3–5: Loudness Measurement Menu
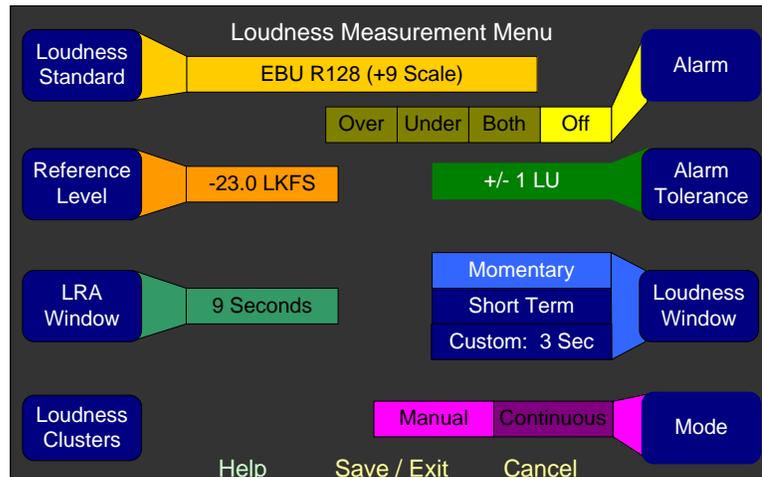
Important	In order to calculate loudness accurately, it is crucial that you correctly set the Channel Function for each channel. Depending upon the designated function of each channel, its signal levels will contribute differently to the Loudness calculation. Refer to the Monitor Mixer Configuration Menu in Chapter 5. Clusters which have 9 or more channels are not currently supported in the loudness detail screen, but are supported on the main screen.

1. Use the Loudness Standard knob to set the standard you need.

2. Use the Mode knob to set whether you want loudness calculated continuously or manually, using start/stop buttons.

3. Refer to Loudness Measurement Menu in Chapter 5 for complete information on setting up all of the adjustments available in this menu.

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How Do I Set Up for External Surround Sound?

If a studio or other monitoring environment contains a surround sound system, it may be advantageous to connect the monitored sound from the AMP2-16V Series monitor to this system. Up to six pairs (12 channels) of analog or AES outputs are available for this use.
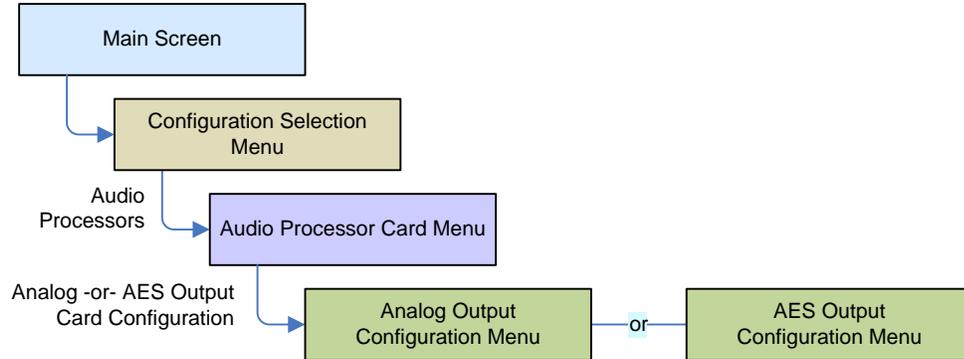
Figure 3–6: Analog Output Configuration Menu
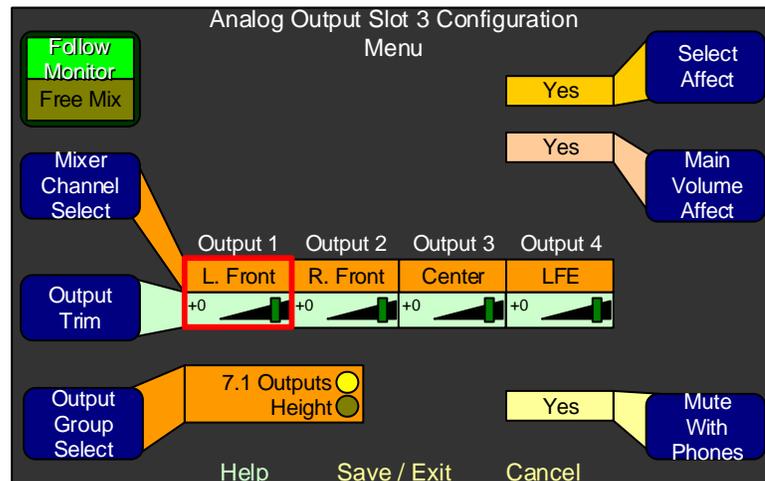
1. Press the **Follow Monitor / Free Mix** knob to select **Follow Monitor**, as shown in the figure below.

2. The **Select Affect** and **Main Volume Affect** controls should be set to **Yes**, so that the channels selected on the **Main Screen** will be heard and the volume control will adjust the surround sound.

3. If needed, rotate the **Output Trim** control to adjust the output of each channel to match the needs of the external surround sound system. The **Mixer Channel Select** control is used in conjunction with the **Output Trim** to select the channel to adjust.

4. To turn off the internal speakers so that only the surround speakers produce audio, use the **Speaker Mute** control in the **Monitor Mixer Configuration Menu**.

---

5. Analog output cards have only 8 outputs. In order to present clusters with more than 8 channels, you must have two analog output cards installed in the system. Use the **Output Group Select** control to determine which analog output card carries the first 8 channels. Set the other card to carry the remaining channels.

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How Do I Configure a Stereo Downmix for My External Surround Sound?

First, make sure you have set up your external surround sound system. (See the previous page.) This function is available ONLY for clusters with 8 or fewer channels. **Stereo Downmix** is a hot key function, so it is set up in one of the **Hot Key Configuration Menus**.
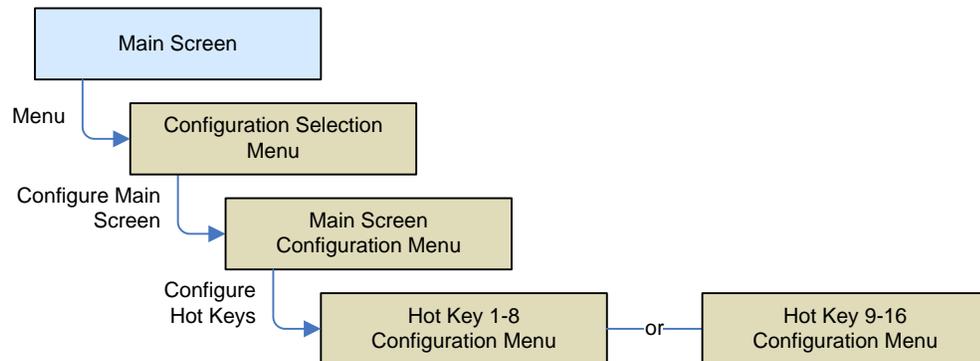
Figure 3–7: Hot Key Configuration Menu
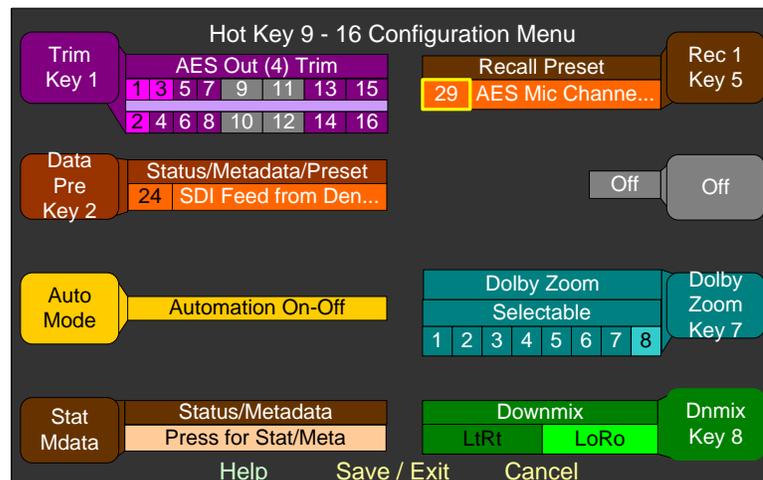
1. Turn the knob associated with the hot key you want the downmix to be on, so that the long bar (not the control label) is highlighted. Press the knob until the green **Downmix** function displays.

2. Turn the knob to either **LtRt** or **LoRo** and press to select the downmix.

3. Now, on the **Main Screen**, the system will display a downmix hot key that you can press to change the external surround sound mix from 5.1, to stereo, and press again to change to mono.

How Do I Synchronize Internal Speaker Audio with an External Video Source?

Audio from all input sources can be delayed before it gets to the internal speakers by up to 170 ms. This is adjustable in 1 ms increments.

Audio Delay is enabled and adjusted in the **Monitor Mixer Configuration Menu**. Before proceeding to this menu, adjust the **Main Screen** controls so that you are viewing the video and hearing the associated audio. Then proceed to the **Monitor Mixer Configuration Menu**:
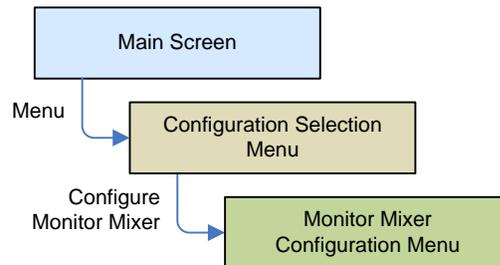
Figure 3–8: Monitor Mixer Configuration Menu
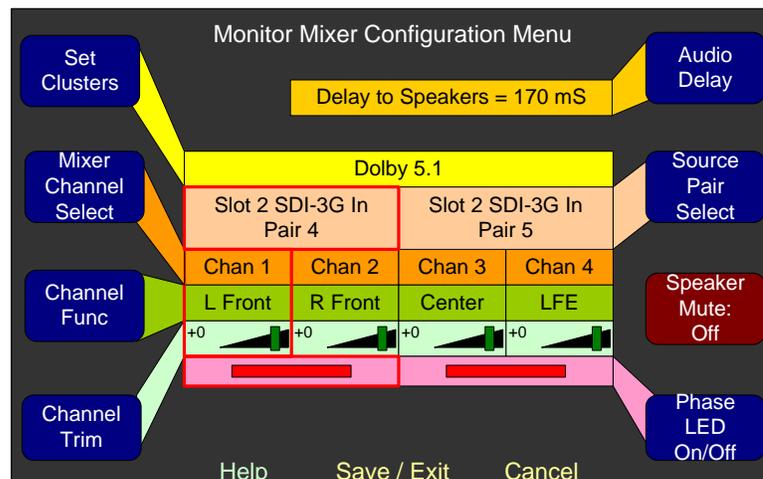
1. Press the **Audio Delay** control to turn on the delay feature.

2. Turn the **Audio Delay** control while listening to the audio and watching the video. Adjust so that they appear to be synchronized.

3. The **Audio Delay** control will then show you how much delay it needed to add.

4. If you need to set a specific delay, you can of course do that by simply adjusting the **Audio Delay** control to that amount.

5. Pressing the **Audio Delay** again will turn off the delay.

How Do I Synchronize External Surround Sound Audio with Video?

Audio from the 3G/HD/SD-SDI inputs can be delayed so that all of its destinations, including outputs will receive the delay. The SDI input channels can be delayed up to 160 ms, adjustable in 1 ms increments. Note that if you are using both the SDI input delay and the monitor mixer delay, the effect to the internal speakers is additive for a total of up to 330 ms.

Note: The **Audio Delay** you set also applies to the AES outputs on the 3G/HD/SD-SDI I/O card and to the re-embedded output if this option is selected and the same AES channels are re-embedded.

SDI input Audio Delay is enabled and adjusted in the 3G SDI I/O Card Configuration Menu. Before proceeding to this menu, adjust the Main Screen controls so that you are viewing the video and hearing the associated audio on your surround sound system. Then proceed to the 3G SDI Input Configuration Menu:

Figure 3–9: 3G SDI I/O Configuration Menu

1. Press the **Audio Delay** control to turn on the delay feature. Note that using the **Re-Embed:Select** setting, you can also delay the audio embedded in the reclocked output, which may be useful in synchronizing an external video monitor with the audio signals.

2. Turn the **Audio Delay** control while listening to the audio and watching the

video. Adjust so that they appear to be synchronized.

3. The **Audio Delay** control will then show you how much delay it needed to add.

4. If you need to set a specific delay, you may of course do that by simply adjusting the **Audio Delay** control to that amount.

5. Pressing the **Audio Delay** again will turn off the delay.

How Do I Monitor Dolby Bitstreams?

Only one bitstream may be decoded at any given time, but that bitstream may produce up to 10 channels of audio. All 10 resultant channels can be monitored at the same time if desired. **Cluster Select** hot keys associated with those bitstreams will automatically change into **Dolby Zoom** hot keys. Then you will be able to press these **Dolby Zoom** hot keys to listen to the encoded audio and view the Dolby metadata from that bitstream.

Note: The AMP2-16V must contain the optional Dolby decoder card in order to decode Dolby bitstreams.

To set up a **Dolby Zoom** hot key (that is not also a **Cluster Select** hot key) use the **Configure Hot Key** menu:
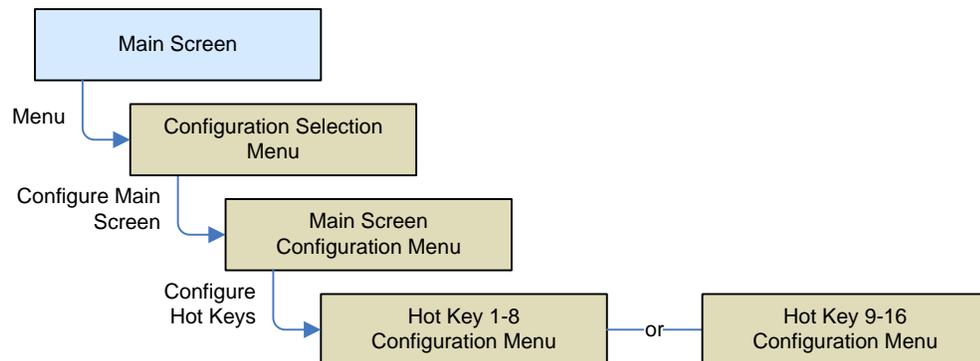
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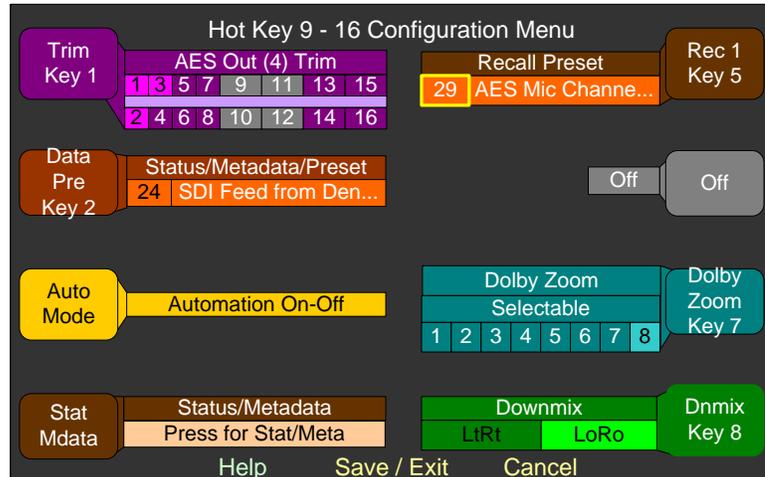
1. Turn the control associated with the hot key you want **Dolby Zoom** to be on so that the long bar (not the control label) is

2. highlighted. Press the control until the turquoise **Dolby Zoom**
3. function is found.

4. Turn the control to the number of the Dolby bitstream pair you want it to affect and press it.

5. You may instead choose **Selectable**. Then, on the **Main Screen**, you can rotate the **Dolby Zoom** hot key to pick the bitstream you want to analyze and then press it.

How Do I Decode and Monitor a Single Dolby Bitstream?

A single Dolby bitstream from the SDI or AES inputs may be monitored continuously. The bitstream itseL doesn't have to be displayed on the Main Screen meters. You may also monitor the Dolby metadata continuously.

Note: The AMP2-16V must contain the optional Dolby decoder card in order to decode a Dolby bitstream.

Setting up continuous Dolby bitstream monitoring is a two-step process, first setting up the Decoder card and then setting up the monitoring channels. The first step involves configuring the Dolby decoder card:
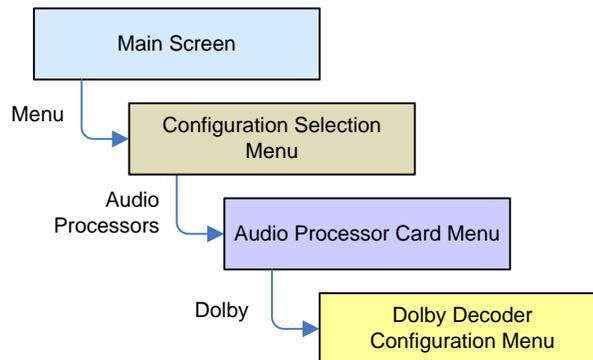
Figure 3–11: Dolby Decoder Configuration Menu
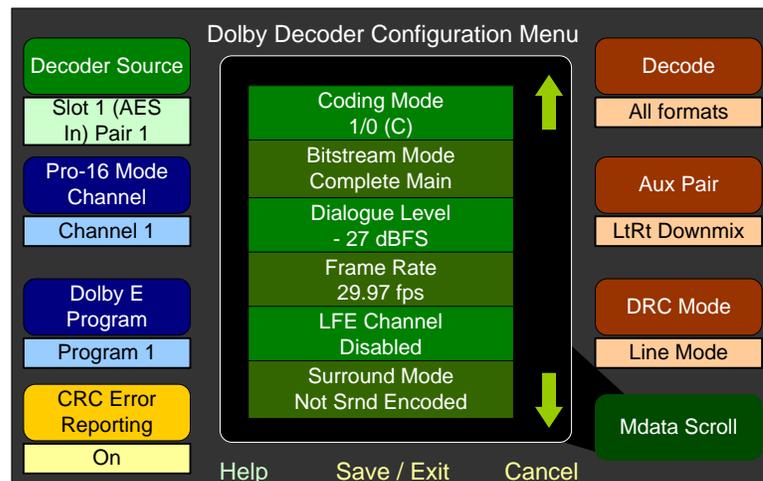
1. Turn the **Decoder Source** control to the AES or SDI channel pair that contains the Dolby bitstream to be decoded.

2. You should see the metadata from that Dolby bitstream. Adjust the other controls if necessary so that you see the data you need.

3. Follow the instructions on the next page to select which meter channels you would like to view the decoded channels on.

Now that you have connected a Dolby bitstream source to the Dolby decoder, you need to connect the outputs of the Dolby decoder to the metering channels on

which you will be monitoring the audio.

This step involves configuring the monitor mixer:
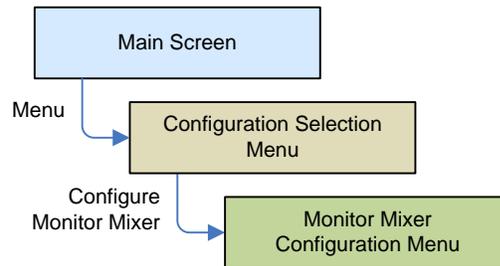
Figure 3–12: Monitor Mixer Configuration Menu
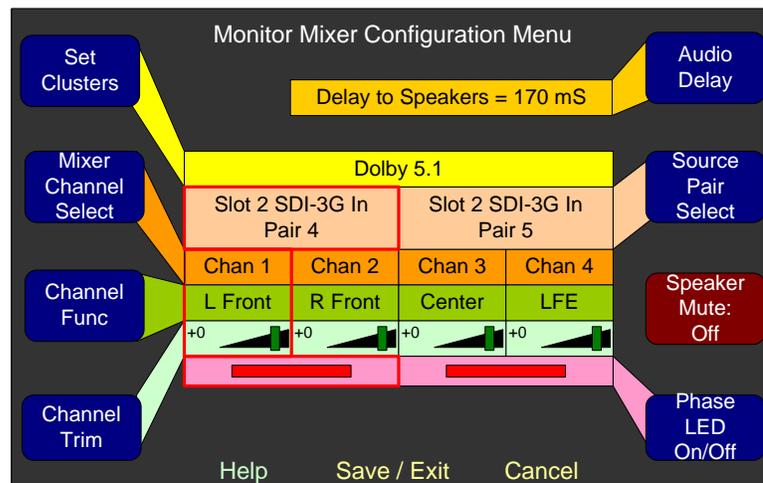
1. Use the **Mixer Channel Select** control to select the channel pair that you want the first decoded Dolby pair to reside on.

2. Use the **Source Pair Select** control to select the decoded Dolby pair, as shown below. Repeat steps 4 and 5 for each decoded pair.

3. Use the **Channel Function** control to designate the function of the channels in that pair.

4. Press the **Set Clusters** control to cluster the decoded Dolby pairs and then name the cluster.

How do I Display Dolby CRC Error Counts?

By default Dolby CRC error counts are flagged at the top of the right- hand meter screen:

Figure 3–13: Main Screen Displaying Level Meters and Number of CRC Errors
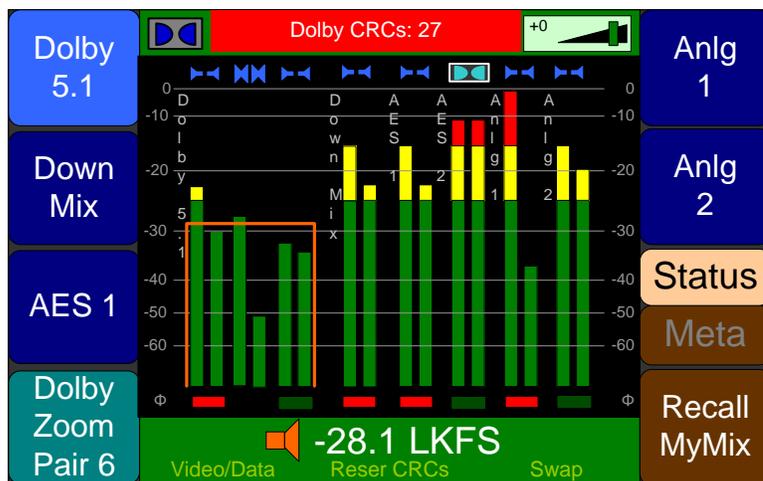
The flag is red for a few seconds when a count is added and then it turns yellow.

1. To reset the count, press the **Reset CRCs** button at the bottom of the screen.

2. This feature can be disabled if needed in the **Dolby Decoder Configuration Menu**:
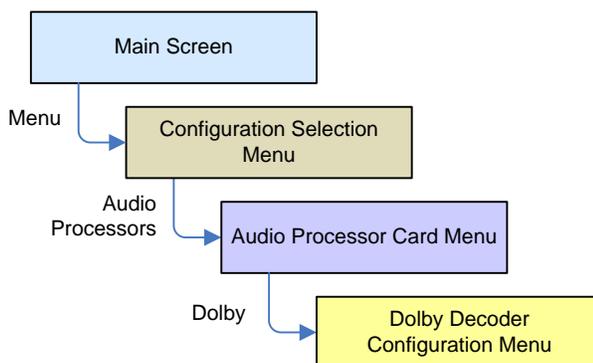
3. Press the **CRC Error Reporting** control to select **On** or **Off**.

Figure 3–14: Dolby Decoder Configuration Menu

	Dolby Decoder Configuration Menu	
Decoder Source		Decode
Slot 1 (AES In) Pair 1	Coding Mode 1/0 (C)	All formats
Pro-16 Mode Channel	Bitstream Mode Complete Main	Aux Pair
Channel 1	Dialogue Level - 27 dBFS	LtRt Downmix
Dolby E Program	Frame Rate 29.97 fps	DRC Mode
Program 1	LFE Channel Disabled	Line Mode
CRC Error Reporting	Surround Mode Not Srnd Encoded	Mdata Scroll
On	Help Save / Exit Cancel	
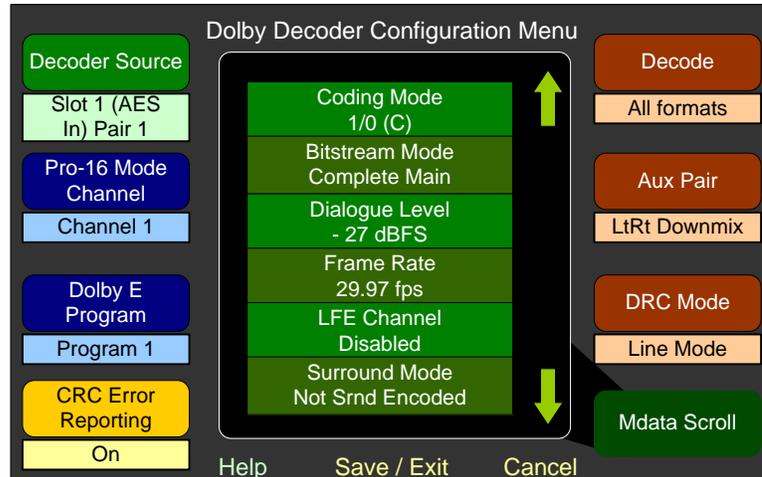
How do I Display Dolby E Line Number (Guard Band)?

As part of the Status Data screen, the AMP2-16V will display the line position of each Dolby E bitstream contained in a 3G/HD/SD-SDI signal, for guard band checking. This may be shown for any or all Dolby E bitstreams simultaneously on the same screen. As with other Status Data, Dolby E the line position can be shown in a color and size that is appropriate to its importance to you.

To show this data, first set up a Status/Metadata hot key:

```
                 Main Screen

         Menu

                 Configuration Selection
                 Menu

   Configure Main
          Screen
                 Main Screen
                 Configuration Menu

       Configure
       Hot Keys
                 Hot Key 1-8         or      Hot Key 9-16
                 Configuration Menu          Configuration Menu
```
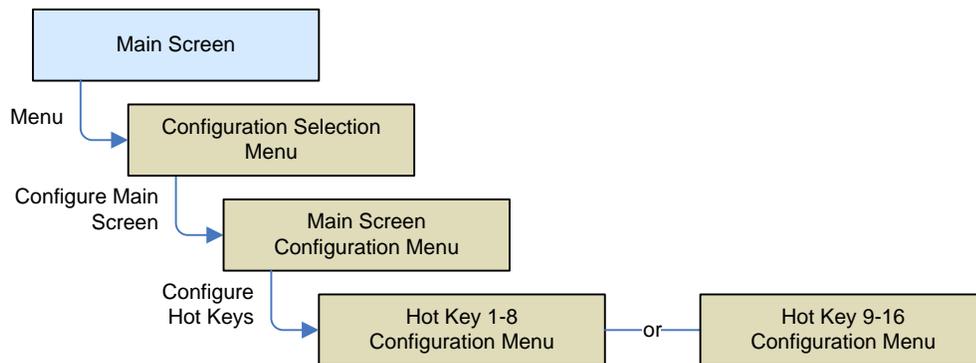
1. Turn the control associated with the hot key that you want to use for the Status/Metadata control. Press the control until the two- tone brown **Status/Metadata** function is found.

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Figure 3–15: Hot Key 9 - 16 Configuration Menu
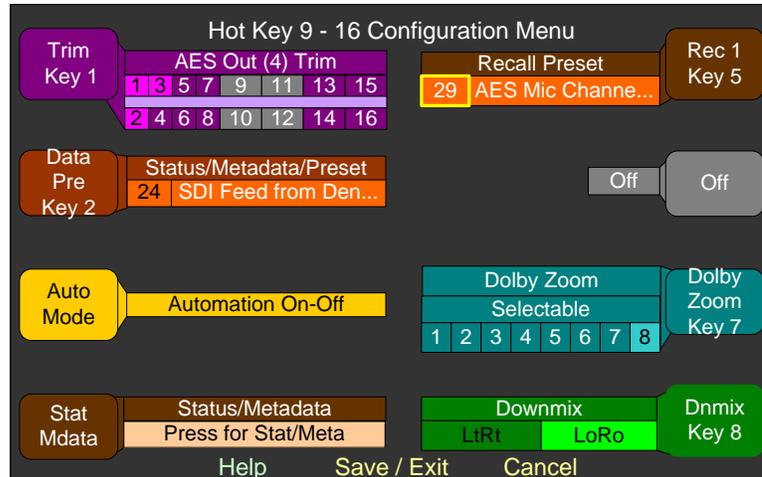
2. Make sure you have a Main Data Screen showing. Refer to Main Screen Arrangements in Chapter 4 for **Main Screen** examples.

3. Now on the main **Data Screen,** the you can press the **Status/ Metadata** control to display the **Status Screen**, which contains the Dolby line position data:

Figure 3–16: Data Screen
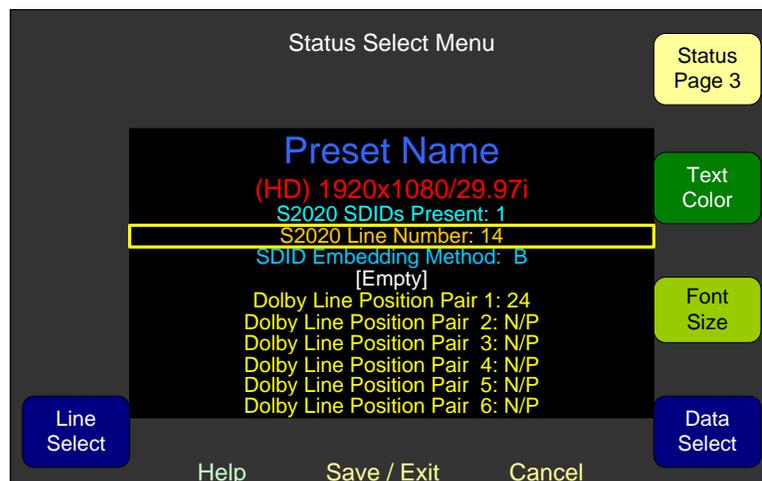
4. If desired, you can change the arrangement of data on this screen, or change the size, spacing, or text colors to best display the data you need to see. Refer to 4. Select the Metadata to Display on the Screen section in Chapter 1.

How Do I Use Presets to Change Inputs?

The AMP2-16V can be outfitted with far more inputs than can be monitored on a 16-channel screen. While it is possible to delve into the various menus to reconfigure which channels are monitored each time a change is needed, this would be a time-consuming task. Fortunately the AMP2-16 has the ability to store 32 entire system configurations as presets, including the inputs that are being monitored. These presets can be instantly recalled from the Main Screen as needed.

For example, suppose you need to monitor an SDI stream sometimes, but other times you need to monitor just some of those SDI channels along with some AES or analog inputs. You could set up one configuration to monitor purely the SDI stream channels, and another to monitor the mix of channels you need. If there were other inputs you sometimes need to monitor, you could set up system configurations for each scenario, up to a total of 32 configurations.

Since a preset is a complete system configuration, first set up all of the parameters to be part of the preset. Then use the Preset Management Menu:
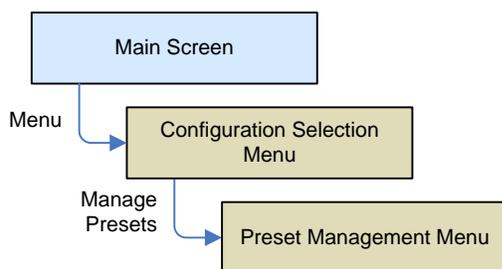
Figure 3–17: Preset Management Menu
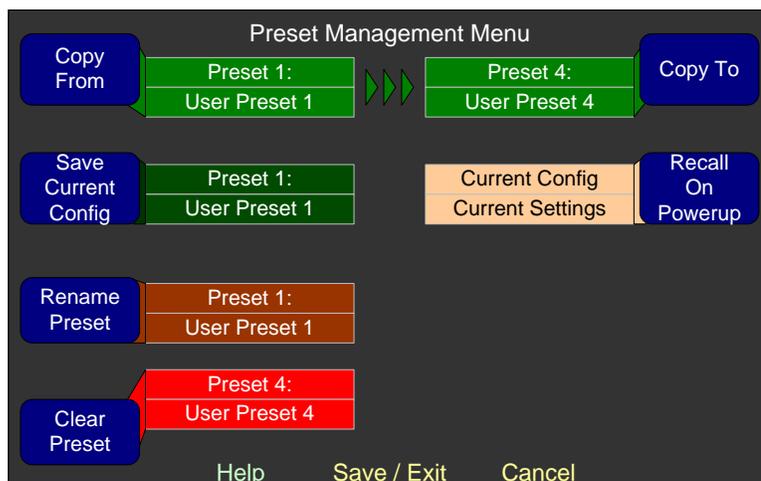
1. Turn the **Save Current Config** control to select the number (1 to 32) of the preset you would like to save the current configuration into. Then press the control.

2. The preset naming screen will automatically appear to allow you to name the preset. Enter a name that is descriptive and that you will recognize later. If you have named this preset before and want to keep the same name, simply

---

press **Save/Exit**.

3. Whenever you make menu changes and then exit to the **Main Screen** without saving into a preset, a yellow warning flag will appear in the header of the main screen to remind you to save the changes you make.

How Do I Quickly Recall Presets from the Main Screen?

While presets can always be recalled from the **Recall Preset** control on the **Configuration Selection Menu**, pressing **Recall Preset** hot keys on the **Main Screen** is an even more direct and quick way to do it.

This is set up in one of the **Hot Key Configuration Menus.**
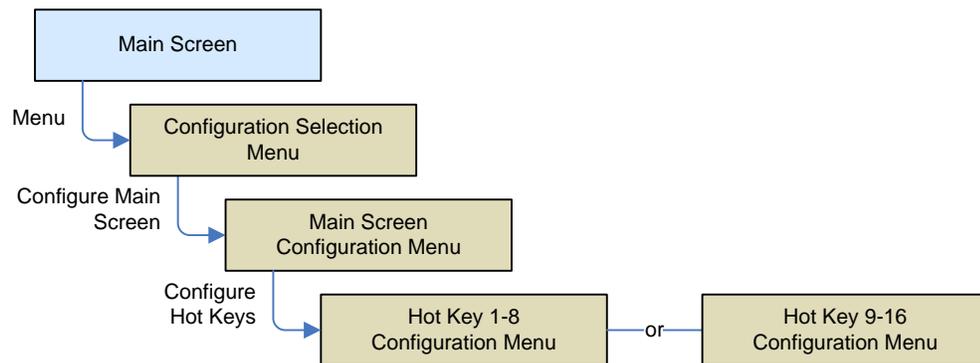
Figure 3–18: Hot Key Configuration Menu
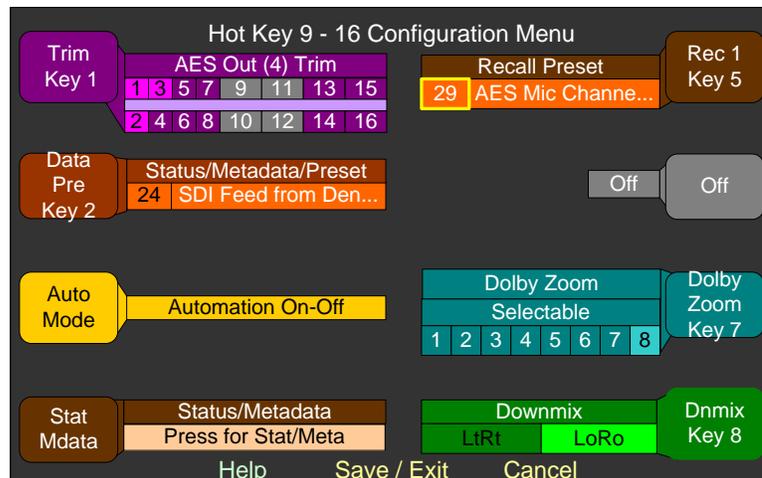
1. Turn the control associated with the hot key you want to be used to quickly recall a preset that the long bar (not the control label) is highlighted. Press the control until the **Recall Preset** or the **Status/Metadata/Preset** function displays.

2. Turn the control to the number of the preset you wish the control to recall. You can also set it to **Selectable**.

3. Now, on the **Main Screen**, that same control will recall a preset.

How Do I Set Up a SuperPair to Monitor Intercom or Other Sources?

A SuperPair is a 9th audio input pair that you can monitor along with the normally monitored audio channels. It can be any input pair. This special pair can be heard in the speakers or outputs, but is not metered on the **Main Screen**. It is useful if you need to hear production intercom audio (or any other audio) along with the monitored audio.

If you need a front panel volume control to adjust the SuperPair, please refer to How Do I Set Up a SuperPair Volume Control? in this chapter.

This setup is done in the **Monitor Mixer Configuration Menu**:
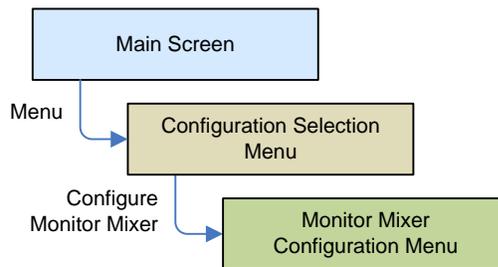
Figure 3–19: Monitor Mixer Configuration Menu
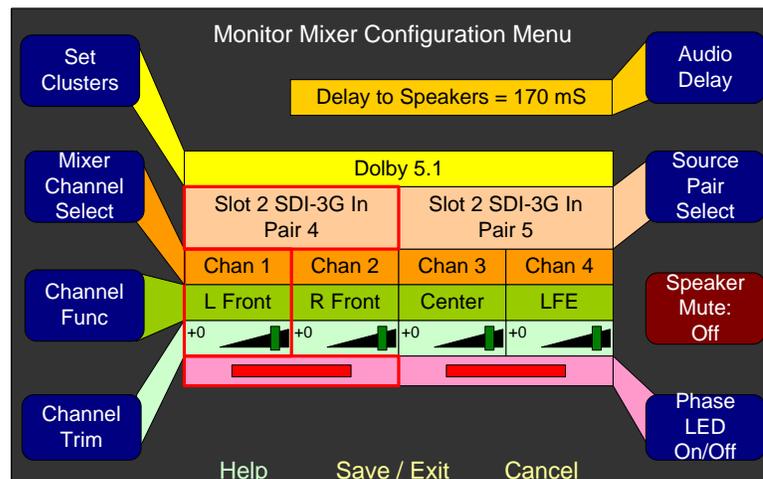
1. Rotate the **Mixer Channel Select** to select the 9th channel pair, the SuperPair.

2. Rotate the **Source Pair Select** to select the audio processor card slot and desired input pair on that card.

3. You may want to adjust the **Channel Trim** control to increase or decrease the desired input gain, relative to the other channel audio levels. Turn the **Mixer Channel Select** knob to the channel you want to adjust and then turn the **Channel Trim** knob to adjust the level. If you will be using the **Balance** control as a SuperPair **Volume** control, then set these trims to **0**.

How Do I Set Up a SuperPair Volume Control?

A SuperPair is a 9th audio input pair that can be heard along with the normally monitored audio channels. You can reconfigure the front panel **Balance** control to become a SuperPair **Volume** control, that will work independently of the main front panel **Volume** control. Like the main **Volume** control, the SuperPair **Volume** control can be pressed to dim or mute the SuperPair audio.

This setup is done in the **Hardware Configuration Menu**:
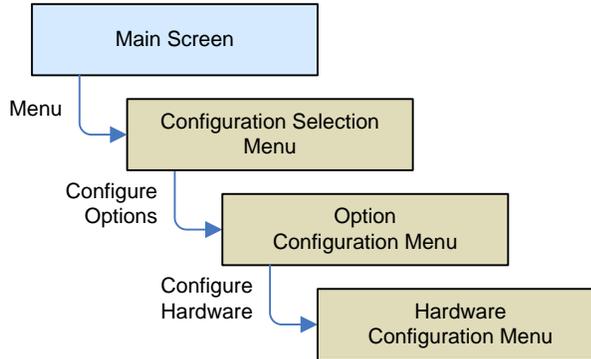
Figure 3–20: Hardware Configuration Menu
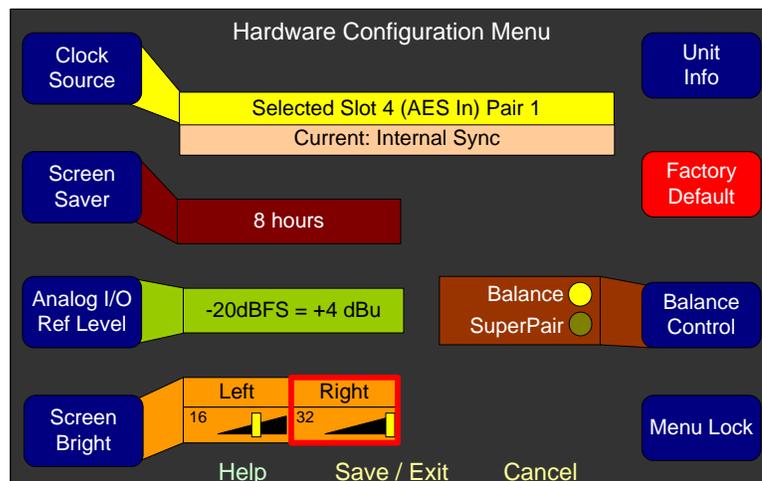
1. Turn the **Balance Control** knob to select **SuperPair** instead of **Balance**.

How Do I Mix Any Input(s) to Any Output(s)?

Any of the input channels can be mixed to any of the AES or analog outputs. The mixer controls for each AES or analog output are in the **Analog** or **AES Output Card Configuration Menu** and on the **3G SDI I/O Configuration Menu**:

Figure 3–21: AES Output Configuration Menu

1. Press the **Follow Monitor / Free Mix** control to select **Free Mix**, as shown in Figure 3–21 above.

2. Any input channel can be mixed to one or more output channels. Turn the **Mixer Channel Select** knob to select an output strip.

3. Turn the **Mix Input Select** knob to select the slot and pair containing the channel to be mixed.

4. Turn the **Output Assign** knob to select an output channel that will receive the input source. Press the knob to route the input signal to the output. One input can be routed to as many outputs as desired.

5. Turn the **Channel Trim** knob to adjust to mix level of that channel.

6. Turn the **Pan** knob to pan the input channel between the selected even and odd output channels.

How Do I Adjust Mixer Levels from the Main Screen?

Any of the input channels can be mixed to any of the AES or analog outputs. Although mix levels can be set in the output configuration menus of each output card, hot keys can be used to allow you to adjust mix levels from the Main Screen. The hot keys for mixer controls are set in one of the Hot Key Configuration Menu. This can also be done for the monitor mixer:

```
┌────────────────┐
│  Main Screen   │
└────────────────┘
        │
 Menu   │
        ▼
   ┌────────────────────────┐
   │ Configuration Selection│
   │         Menu           │
   └────────────────────────┘
             │
Configure Main│
Screen        │
             ▼
        ┌────────────────────┐
        │    Main Screen     │
        │ Configuration Menu │
        └────────────────────┘
                  │
   Configure      │
   Hot Keys       │
                  ▼
             ┌────────────────────┐          ┌────────────────────┐
             │   Hot Key 1-8      │── or ──│   Hot Key 9-16     │
             │ Configuration Menu │          │ Configuration Menu │
             └────────────────────┘          └────────────────────┘
```
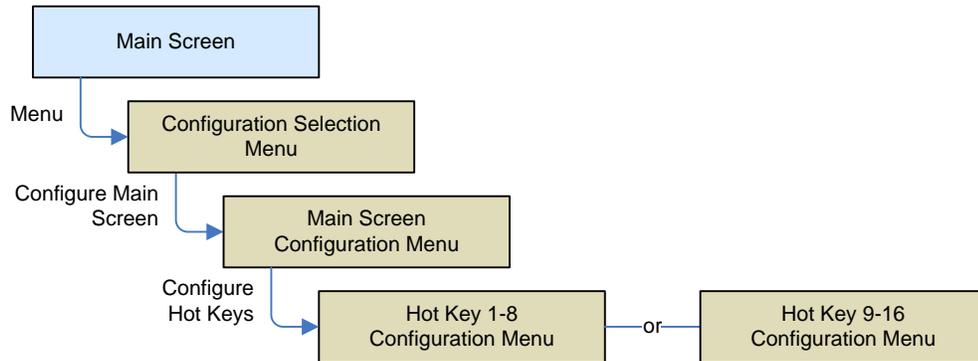
Figure 3–22: Hot Key Configuration Menu
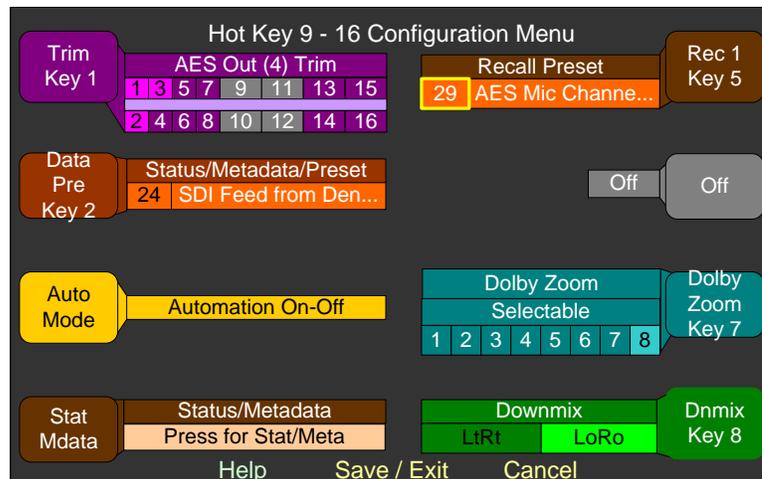
1. Turn the control associated with the hot key you want the downmix to be on so that the long bar (not the control label) is highlighted. Press the control until the purple **AES** or **Analog Output Trim** function displays. If there are multiple output cards, note that the card slot number is shown in parenthesis.

2. Turn the control to each of the 16 channels shown and press to either include that channel in this control's adjustment or not. Although you can set the control to adjust multiple channels, you cannot set two different controls to adjust the same channel. If a channel is already controlled by another hot key, its selection is shown in gray.

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How do I Show Mixer Output Levels on the Level Meters?

If you have not done so already, you first need to set up a free mix in the output card. Please refer to How Do I Mix Any Input(s) to Any Output(s)? in this chapter and set up the needed output mix.

To show mixer output levels, certain configurations must be avoided so that potential internal feedback loops will not exist within the digital mixer. Output levels cannot be displayed if:

1. The monitor mix output pair appears as one of the inputs to the output mixer, or

2. The output mixer is in *Follow Monitor* mode.

Analog I/O Cards with the TOSLINK option will not allow the analog outputs to be routed back to the monitor mixer to be metered. The internal pathways used for this feature are also used by the TOSLINK Card.

Output free mix channel pairs will appear as sources in the **Monitor Mixer Configuration Menu**:
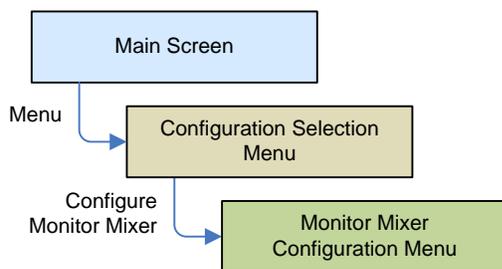
Figure 3–23: Monitor Mixer Configuration Menu
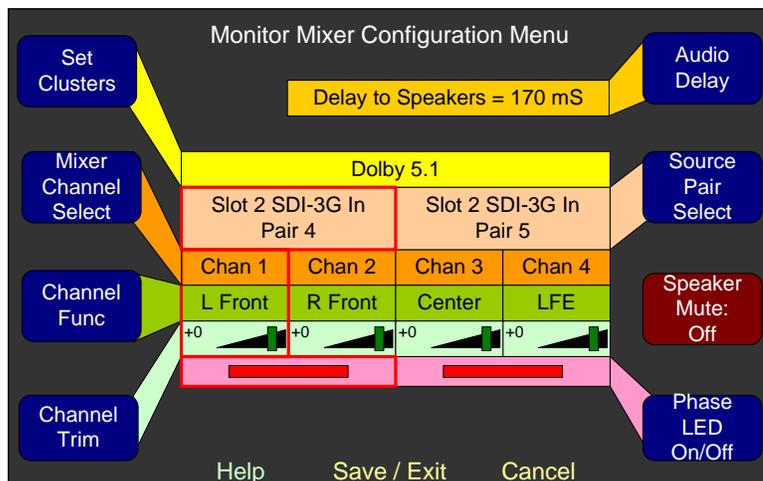
1. Use the **Mixer Channel Select** to scroll to the channel pair where you want the output signals to be displayed.

2. Use the **Source Pair Select** control to select the output pair to be metered.

3. Now is also a good time to use the **Channel Function** control to designate the function of the channels in that pair.

4. Press the **Set Clusters** control to proceed to the **Cluster Configuration Screen**. On that screen, use the **Select Cluster** control, following by the **Edit Cluster Label** control to name the output meter pair.

How Do I Configure the Audio Inputs or Outputs?

If you need to initially set up the audio inputs so that they can be monitored, first refer to the **1. Configure the Monitor** section of the **Installation** chapter in this manual.

If you need to configure an input or output card in one of the slots, go to the **Audio Processor Card Menu**:
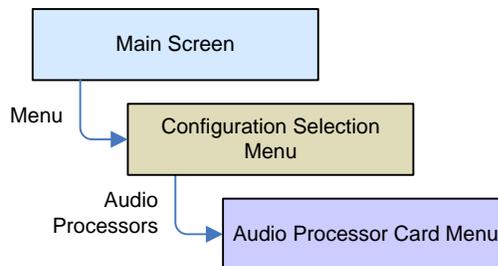
Figure 3–24: Audio Processor Card Menu
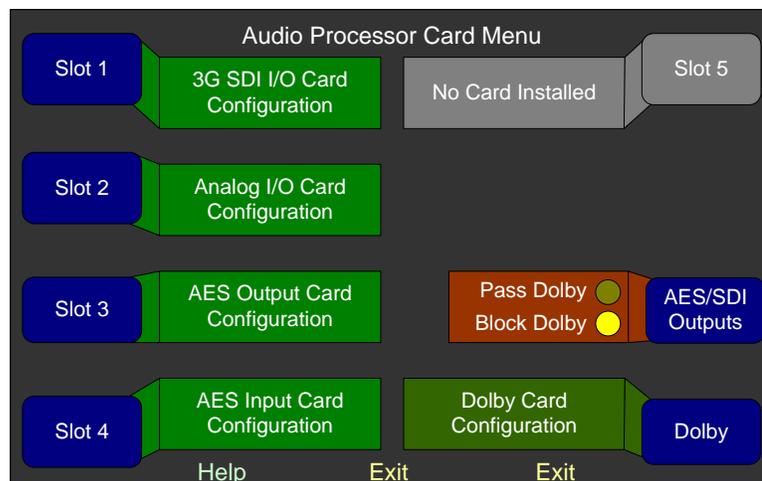
1. Press the control associated with the slot that contains the card you want to adjust (Figure 3–24 above). You may also configure the optional Dolby decoder card.

2. Depending upon the type of card, there will be more or fewer options that can be adjusted.

How Do I Set the Clock Source?

All inputs to the AMP2-16V must be synchronized to the same clock. By default, the system will automatically select a logical clock source, such as the 3G/HD/SD-SDI card in the lowest numbered slot.

However, you can also set the clock source to any AES input pair or to the **Reference Genlock Input**.

This setup is done in the **Hardware Configuration Menu**:
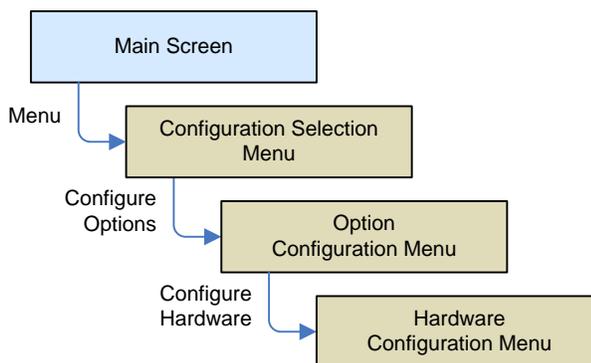
Figure 3–25: Hardware Configuration Menu
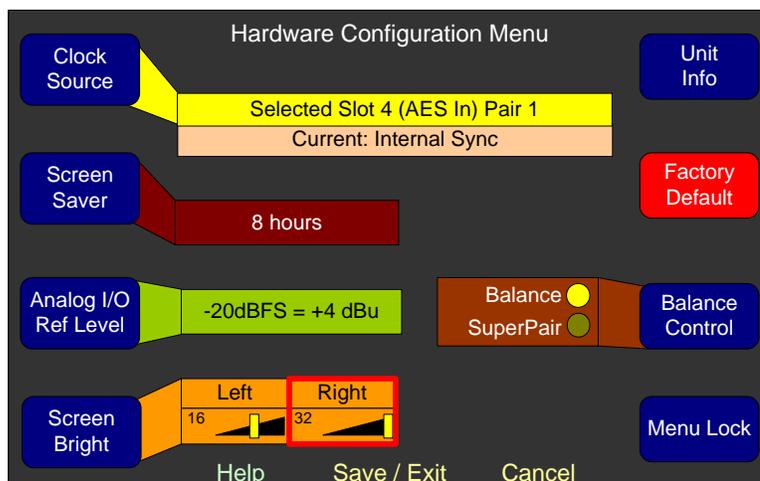
1. Turn the Clock Source knob to select the preferred clock and press it. This control will always display the current sync source in the lower rectangle. If the selected source and the current source are different, this means the current source does not have a signal applied.

Note: Channels not locked to the current sync source will mute automatically, or may periodically mute and unmute if the sampling frequencies are closely related but are drifting in and out of sync. You should choose a source of sync that is stable, always present, and not connected to an external switcher. A source of composite black burst video connected to the genlock input is the best choice. In the unlikely event that only analog sources are connected to the AMP2-16V, the Clock Source may be set to Internal.

How Do I Terminate/Unterminate AES Inputs?

AES signals should have one and only one termination. This termination should physically be at the last destination of an AES coax cable. If the AMP2-16V is the last connection in a series of AES connection, then its terminations should be turned on. By default, the AES inputs of the AMP2-16V are all terminated.

A symptom of too many terminations (or no termination) is that no signal appears to be present on the AES input.

The termination setup is done in the **AES Input Configuration Menu**:
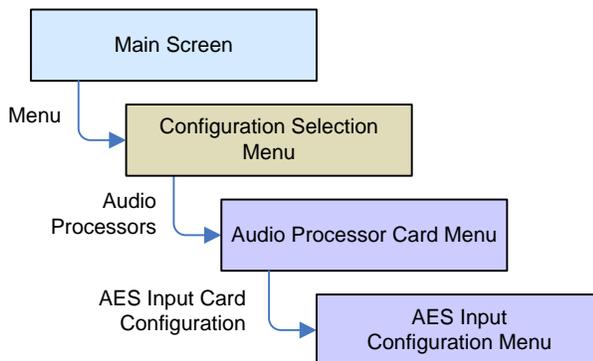
Figure 3–26: AES Input Configuration Menu
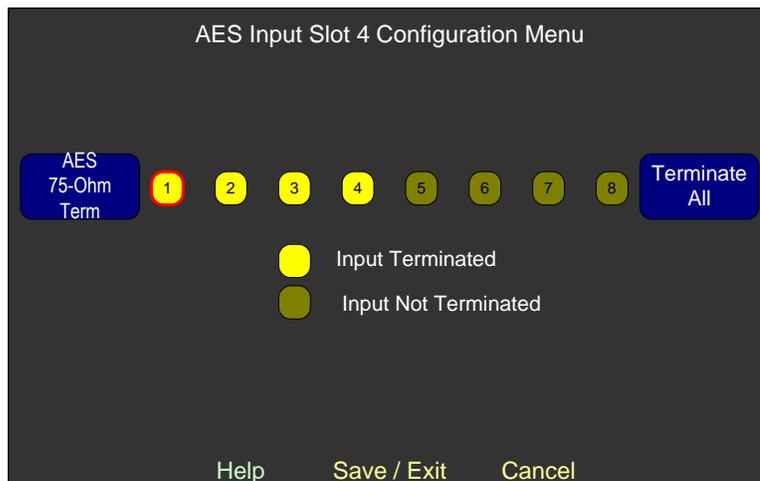
1. To terminate or unterminate all of the AES input pairs on the card in this slot, press **Terminate All**. This is an alternate-action button.

2. To terminate or unterminate one AES input pair, turn the **AES 75-Ohm Term** control to select the desired AES input pair and then press it. This, too, is an alternate-action button.

How Do I Lock Entry to the Menus?

In some installations, it may be advantageous to lock access to the menu system. The AMP2-16V is equipped with the ability to set a simple menu access lock.

Navigate to the **Select Menu Lock Screen Combination** screen:
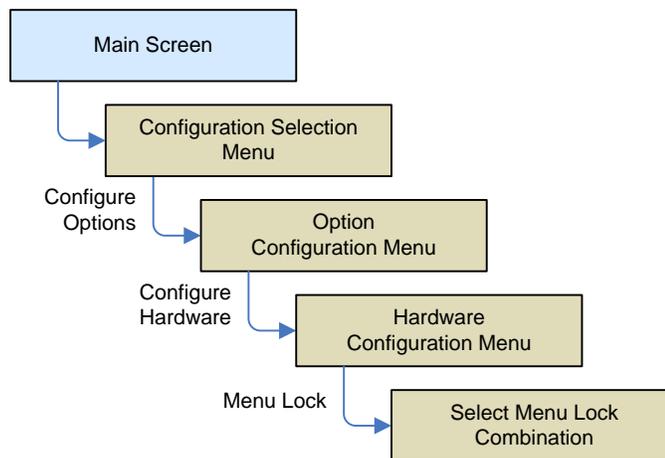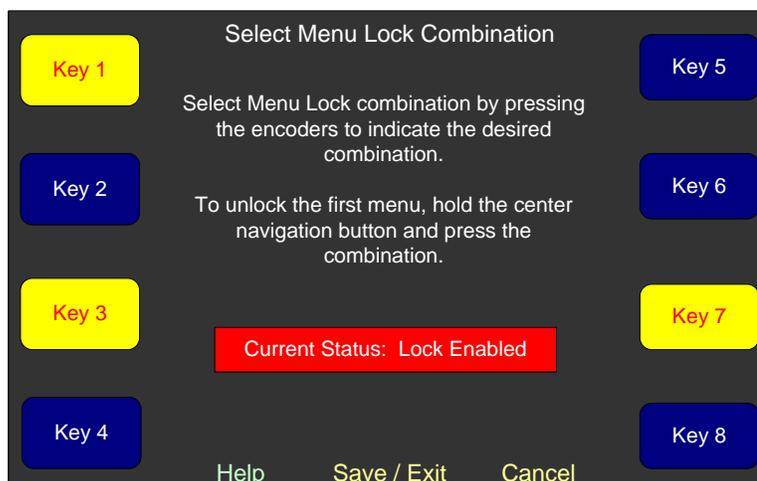
1. Instructions are located on the screen. Simply press the knobs to form an unlocking combination. In Figure 3–27 above, the combination is 1-3-7. Make sure you remember the combination you set!

2. To remove the lock, press the knobs so that none of them are yellow.

3. In the **Main Screen**, the **Menu** button will be labeled **Menu Locked** after you set a lock combination.

4. To gain entry to the menus, hold the **Menu Locked** button while pressing the lock combination on the eight knobs, one at a time, in any order. Then release the **Menu Locked** button and you will gain access to the menu system.

5. When you leave the menu system and return to the **Main Screen**, the menu system is automatically locked again.

How Do I Find Software Version Information?

Occasionally, when speaking with a customer service representative, it is necessary to locate the software versions of the software in the AMP2-16V. This is simply a screen that can be called up. This screen also reports which audio processors are installed in the product.

The software versions are displayed on the **Unit Information Screen**:
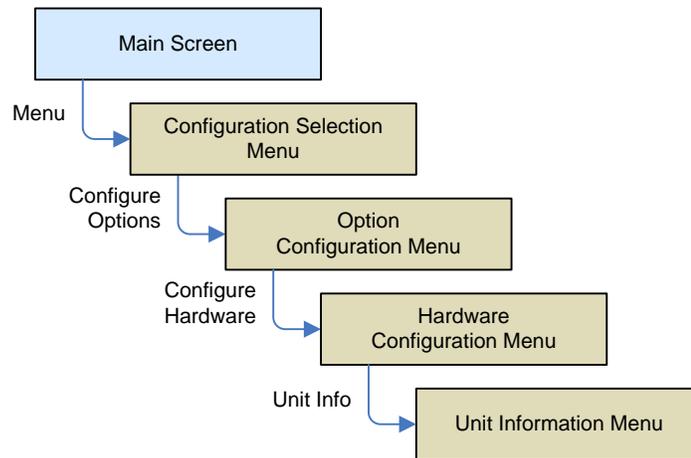
Figure 3–28: Unit Information Screen
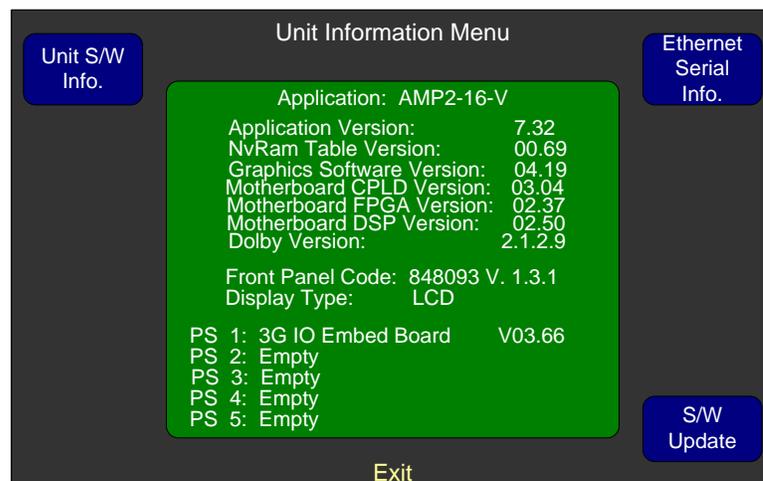
1. The upper part of the screen contains the version numbers of the system software.

2. The lower part of the screen lists the installed audio processor card slots, as well as the software versions they contain.

CHAPTER 4: Features and Screens

Introduction

This chapter describes the screens and major features of the AMP2-16V Series monitors.

Main Screen

The AMP2-16V includes two high resolution LCD screens. This makes it easy to view video, metadata, and meters from a greater range of positions. The content of each screen is fully configurable. (See Main Screen Arrangements in this chapter for details.) Audio monitoring and control functions center around the Main Screen. It contains metering for up to 16 audio channels (8 channel pairs) and labeling for the hot keys, which allow the operator to quickly control system behavior. The usage of each channel is displayed as left, right, or bidirectional arrows above each channel meter to indicate left, right, or center audio monitoring. As a channel cluster is selected for listening, its arrow indicators brighten. Refer to How Do I Select the Inputs I Want to Hear in the Speakers? in this chapter.

The header at the top of the screen shows Volume/Balance control positions, Dim, Cut, presence of Dolby decoding, and various other informative message to the operator. The footer at the bottom of the screen indicates the calculated the Loudness as measured over the selected **Loudness Window** on the selected audio channel cluster as set up in the Loudness Measurement Menu. It also labels the function of the three control buttons below the screen.

Figure 4–1: Main Screen
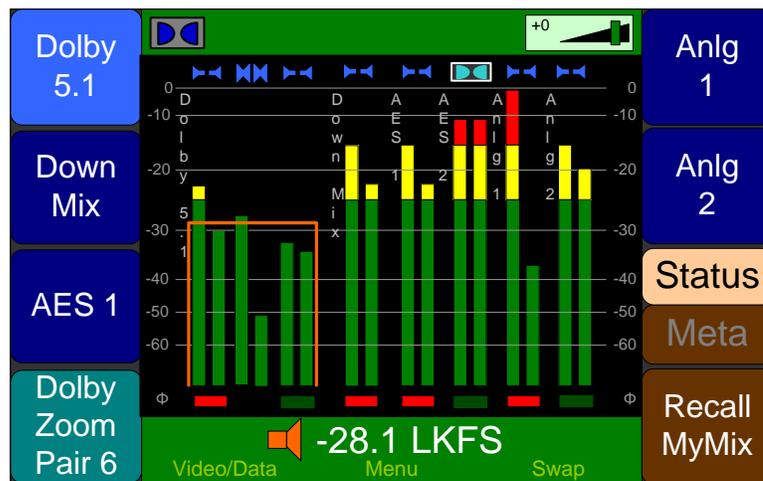
In the **Hot Key Configuration Menu**, you can assign the hot keys to allow you to perform a variety of one-touch functions.

Simultaneous Multi-Format Monitoring

The AMP2-16V can monitor 16 channels of 3G/HD/SD-SDI, AES, analog, or optical inputs in any combination on the same level meter screen. It does not need to switch between different input port types to display them simultaneously on the meters, or to monitor them audibly. Using the 32 presets, you can monitor many different arrangements of channels at the press of a button.

Monitoring Cluster Selection

Generally speaking, you probably won't want to listen to more than one audio program cluster at a time. So the **Cluster Select** hot keys allow quick selection of the audio program you want to hear. The system will automatically set up the **Cluster Select** hot keys when you arrange the level meters into clusters. Refer to How Do I Cluster Meters Pairs Together for Easy Readability? in this chapter for details.

Simply press the **Cluster Select** hot key corresponding to the meter cluster you want to monitor. The selected cluster is indicated on the meter screen by means of a highlighted cluster label and highlighted channel indicators. The loudness for the selected cluster is also calculated and displayed both numerically and graphically depending on the settings in the **Loudness Clusters Menu**.

When the chosen Select Cluster hot key is rotated right or left, individual channels or channel pairs within the cluster are then soloed or muted. This can be very useful for troubleshooting audio problems on channels.

Note that Cluster Select hot keys will automatically change to Dolby Zoom hot keys when a Dolby bitstream is detected in the cluster. This allows you to easily analyze the Dolby bitstream if needed.

When an optional AES or analog output card is used to connect the AMP2-16V audio to an external surround sound system, selecting a cluster automatically routes the appropriate channels to the correct speakers according to their function as set in the Monitor Mixer Configuration Menu.

Main Screen Arrangements

To accommodate your specific needs, you can select from six Main Screen arrangements, including ones that allow you to quickly toggle between video and metering or video and data screens. The screen arrangement is chosen in the Main Screen Configuration Menu.
Refer to the 3. Arrange the Main Screens section in Chapter 1 for more details. The six Main Screen arrangements are:

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1. Video on the left screen and level meters on the right screen (Figure 4–2 below).

Figure 4–2 Left: Video/Right: Meters

2. Metadata on the left screen and level meters on the right screen (Figure 4–3 below).

Figure 4–3 Left: Metadata/Right: Meters
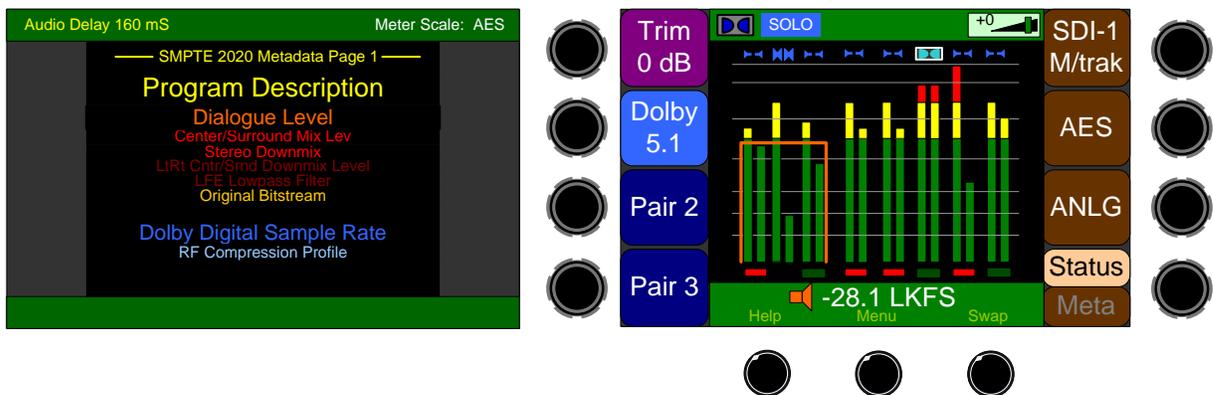
3. Swappable video or expanded level meters on the left screen and metadata on the right screen (Figure 4–4 below).

Figure 4–4 Left: Video or Meters/Right: Metadata
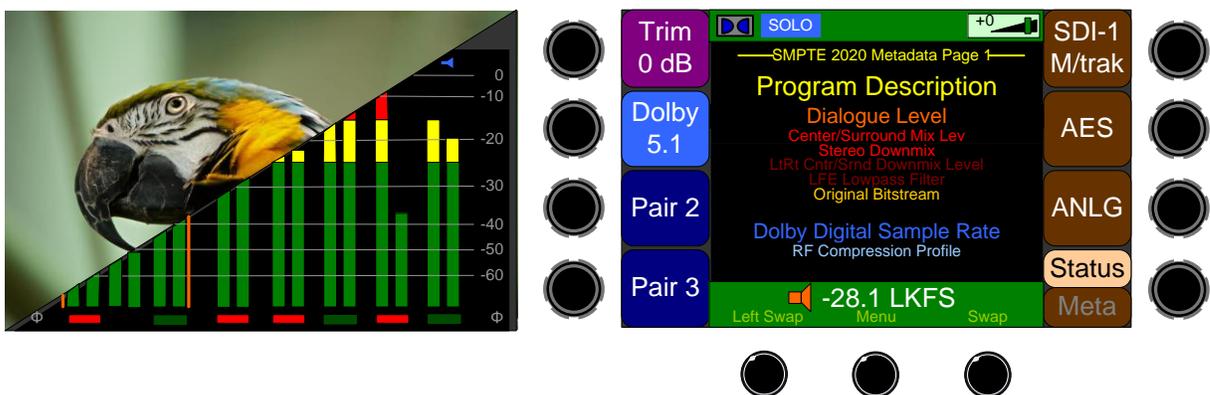
4. Swappable video or metadata on the left screen and level meters on the right screen (Figure 4–5 below).

Figure 4–5 Left: Video or Metadata/Right: Meters

5. Expanded level meters on the left screen and metadata on the right screen (Figure 4–6).

Figure 4–6 Left: Meters/Right: Metadata
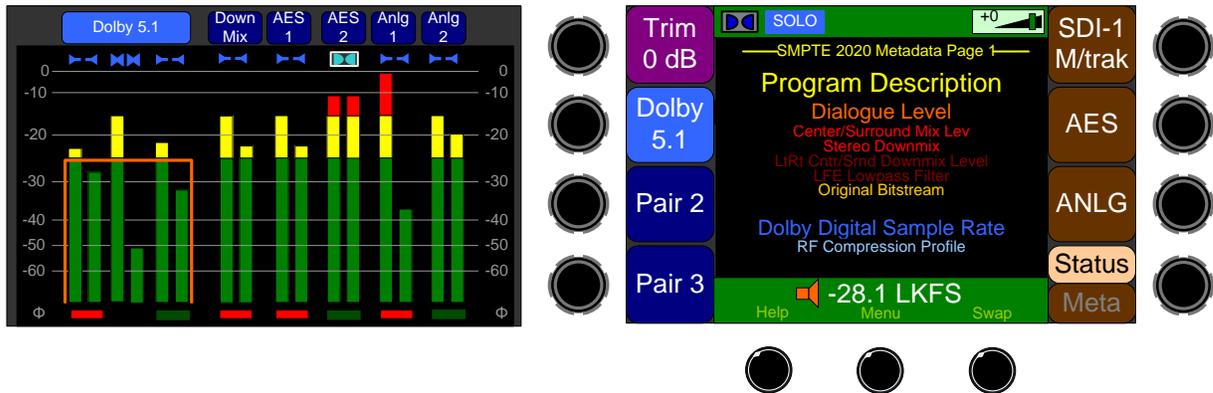
6. Video or expanded level meters on the left screen and meters or metadata on the right screen (Figure 4–7). Both screens swap simultaneously when the Video/Meters/Data **(V/M/D) Swap** button is pressed.

Figure 4–7 Left: Video or Meters / Right: Meters or Metadata
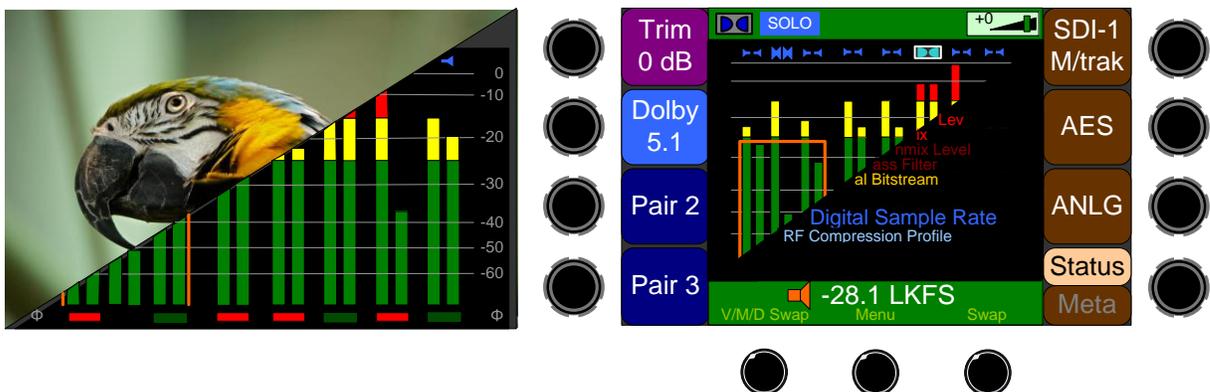
Instant Stereo Downmix

The Downmix hot key allows quick comparisons of 5.1 channel monitoring, a stereo downmix, or even a mono downmix of channels on an external surround sound system. Either LtRt or LoRo downmixes are available. Downmix parameters can be set to either fixed levels or derived from metadata. The same hot key can also be used to downmix stereo to mono. Refer to **How Do I Configure a Stereo Downmix for My External Surround Sound?** in Chapter 3 for details. This downmix capability is available only for clusters with 6 or fewer channels.

Loudness Monitoring

Loudness can be measured on any cluster with any channel count in the main screen. When a Cluster Select hot key is pressed to listen to a certain audio program, Loudness is measured and displayed automatically for that program on the Main Screen.

Loudness Screen

For more in-depth Loudness measurements, as well as either **Continuous** or **Start/Stop Loudness** measurement control, the **Loudness Screen** is provided for clusters with 8 or fewer channels ONLY. It is accessed from the **Loudness** hot key.

Figure 4–8: Loudness Screen
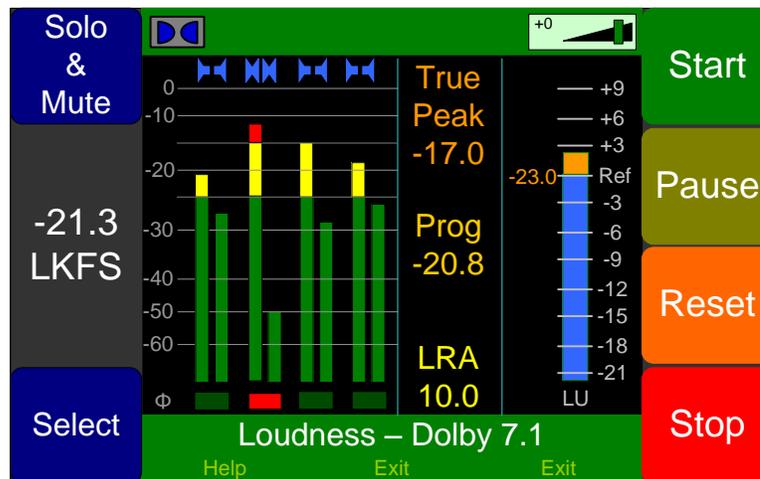
The following data is available on the **Loudness Screen**:

1. The Program **Loudness** over the **Loudness Window** (shown as -21.3 LKFS in the figure above) is shown digitally at the left of the screen as well as on the meter on the right. At the base of the meter on the right, one of three indications appears:

    a) **LU-M**: This means that the **Loudness Window** is set to **Momentary**.

b) **LU-S**: This means that the **Loudness Window** is set to **Short Term**.

c) **LU-C**: This means that the Loudness Window is set to **Custom**.

The Loudness Window is set in the Loudness Measurement Menu.

2. The LU Meter scale colors have the following meaning:

a) **Blue**: Loudness is lower than the **Reference Level** by the **Alarm Tolerance**.

b) **Green**: Loudness is within the **Alarm Tolerance**.

c) **Orange**: Loudness is greater than the **Alarm Tolerance**.

3. The **Maximum True Peak Loudness** over the program period (shown in red as **TP -17.0** above) is displayed in the central column.

4. The **Maximum Loudness** over the program period (shown in orange as **Max -17.7** above) is displayed at the top of the central column.

5. The **Average Loudness** over the Program period (shown in gold as **Prog -20.8** above) is displayed in the central column.

6. The **Loudness RAnge (LRA)** over the program period (shown in yellow as **LRA 10.0** above) is displayed at the bottom of the central column.

7. The name of the currently monitored cluster is shown in the footer at the bottom of the screen.

8. 2 - 8 Level Meters for the channels being monitored for loudness are shown on the left haL of the screen.

The controls available on the **Loudness Screen** are:

1. **Solo & Mute**: Rotating this control allows you to listen to just a subset of the channels in the displayed channel cluster. It will not affect any loudness measurement in progress.

2. **Clust Sel**: The **Cluster Select** control can be rotated to allow you to select another channel clustered to be monitored for loudness. Changing clusters with this control will reset the loudness readings.

3. **Start**: When **Manual Mode** is selected in the Loudness Measurement Menu, from a stopped condition, the **Start** button will reset the gathered loudness data and begin a new reading. From a paused condition, data will not reset as monitoring is resumed

4. **Pause**: When **Manual Mode** is selected in the Loudness Measurement Menu, the **Pause** button will temporarily stop or continue gathering loudness data. Data will not be reset using this control.

5. **Reset**: The **Reset** button will reset the gathered loudness data. If it is pressed while a loudness measurement is in progress, a new reading will then immediately begin.

6. **Stop**: When **Manual Mode** is selected in the Loudness Measurement Menu, the **Stop** button will stop gathering loudness data. Data will be held for viewing and not be reset using this control.

High Quality Audio System

The totally digital system architecture along with high-fidelity Class D amplifiers provides loud, clear, low-noise, wide range audio monitoring. A standard ¼" headphone jack is also provided.

Internal Router and Mixer

The wide variety of input and output possibilities offered by the AMP2-16V is a product of the flexible internal digital audio routing system depicted in the diagram in Figure 4–9.

As a factory default, the AMP2-16V will be configured to produce audio in the speakers from the card in the monitor's lowest numbered occupied slot (typically Slot 1). However, you can configure the monitor to produce audio in the front speakers from any available input sources. Refer to the 1. Configure the Monitor Mixer section in Chapter 1 for details.

Note that you can set up multiple audio paths. For example, while monitoring de-embedded SDI audio channels through the speakers, you may independently decode Dolby channels from an AES stream, convert them to analog, and output them. Setups like this can be stored as presets and called up at will.

Any monitored input can be routed to any AES or analog output pairs. These powerful features will allow de-embedded, Dolby decoded, or other digital or analog audio to be used by other products. The audio that is output doesn't necessarily need to be monitored by the meters or speakers.

Input channels can be metered, rearranged, monitored, and output in any order, or even mixed, panned, and trimmed. The resulting mixed output channels may also be metered. Refer to How do I Show Mixer Output Levels on the Level Meters? in Chapter 3 for details.
Because an optional redundant internal power supply is available, power integrity is assured and the output of the internal mixer can be used for live events and broadcast chain use. Refer to How Do I Mix Any Input(s) to Any Output(s)? and How Do I Adjust Mixer Levels from the Main Screen? in Chapter 3 for more information.

Figure 4–9: Audio Routing Diagram

Dual 3G/HD/SD-SDI I/O Module (up to 3)
- Re-Embedder & Reclocker
- De-Embedder
- SDI Audio Delay

SDI Output
SDI Input 1
SDI Input 2
De-embedded AES Outputs

AES Inputs — AES Input Module (up to 5)

TOSLINK SPDIF Input
Analog Inputs — Analog I/O & TOSLINK Module (up to 5)
Analog Outputs

AES Outputs — AES Output Module (up to 4)

Up to 3 X 8 De-embedded AES Pairs from SDI
Up to 3 X 8 Pairs from up to 3 menus
Up to 5 X 8 Pairs from AES
Up to 5 Pairs from SPDIF
Up to 5 X 4 Pairs Digitized from Analog
Up to 5 X 4 Pairs Balanced Analog from up to 5 menus
5 Pairs Decoded Dolby
Up to 3 X 8 Output Mix Pairs
Up to 5 X 4 Analog Output Mix Pairs
Up to 4 X 8 AES Output Mix Pairs
1 Pair from Monitor Mix
Up to 4 X 8 Pairs AES from up to 4 menus

Dolby Decoder Configuration Menu

1	Decoder Src		Decode	5
2	Pro 16 Mode		Aux Pair	6
3	Dolby E Pgm		DRC Mode	7
4	CRC Error		Mdata Scroll	8

SDI Re-Embedding Output Menu

1	SDI Audio Dly	Mix Input Sel	5
2	Mixer Ch Sel	Pan	6
3	Channel Trim	Output Assgn	7
4	Re-Embed		8

Analog Output Menu Free Mix

1	Follow/Free	Mix Input Sel	5
2	Mixer Ch Sel	Pan	6
3	Channel Trim	Output Assgn	7
4			8

AES Output Menu Free Mix

1	Follow/Free	Mix Input Sel	5
2	Mixer Ch Sel	Pan	6
3	Channel Trim	Output Assgn	7
4			8

Monitor Mixer Config Menu

1	Cluster Cfg	Audio Delay	5
2	Mixer Ch Sel	Source Pair	6
3	Ch Function	Speaker Mute	7
4	Channel Trim	Phase LED	8

Stereo Pair

Metering, Video, Metadata, Monitor Amplifiers, & Speakers

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Audio Processor Cards

While the AMP2-16V comes standard with a dual input 3G/HD/SD- SDI card, it can be outfitted with up to five optional cards of various types so that it can be customized for your particular installation.

1. **Dual Input 3G/HD/SD-SDI Card**: This card has two selectable 3G/ HD/SD-SDI inputs, one reclocked or re-embedded 3G/HD/SD-SDI output of the selected input, and eight de-embedded AES outputs on two HD-15 connectors from the selected input. The de- embedded AES output signals can be delayed 3 to 160 ms in 1 ms increments. If these delayed AES signals are then re-embedded, the delay also applies then to audio in the re-embedded 3G/HD/SD- SDI output. Up to three of these cards can be installed in an AMP2- 16V. The video from the selected input can be displayed on the left screen of the front panel.

2. **AES Input Card**: This card provides BNC inputs for eight AES channel pairs. These inputs can be metered, monitored, or output to optional output cards, according to preset and menu settings.

3. **AES Output Card**: This card provides BNC outputs for eight AES channel pairs. These outputs can be derived from other inputs, decoded Dolby channels, or the flexible internal audio mixer, according to preset and menu settings.

4. **AVB Listener Card:** This card provides a 100 Mbit/s AVB Ethernet interface specifically for AVB audio. When you connect this card to your AVB network, you can listen to two streams of up to eight channels each, for a total of 16 channels. You must use your AVB network controller to connect one or two talkers to the AVB card. If two AVB talkers are connected, they must share a common sample clock.

5. **Analog I/O and SPDIF (TOSLINK) Card**: This card provides four channel pairs of balanced analog inputs and four channel pairs of balanced analog outputs on two DB-25 connectors. It also provides an optical input for another channel pair. The outputs can be derived from other inputs, decoded Dolby channels, or the flexible internal audio mixer, according to preset and menu settings.

6. **(AoIP) Dante Card**: This card has a 1GigE RJ-45 Ethernet port to receive up to 16 channels of Dante or 8 channels of AES67 audio. Refer to Appendix A Dante Network Setup for more specific operational and setup information.

Refer to Chapter 6: Input/Output Modules and Options for a complete description and pin-out of each of the preceding cards.

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Genlock Input

To ensure the best performance, the AMP2-16V includes a Genlock input to keep all of the inputs synchronized. Note that if the Genlock input is not used, by default the AMP2-16V will automatically locate a clock source from the input cards starting with the lowest-numbered card slot.
This unit requires all inputs that are being mixed or monitored to be synchronous (i.e., have the same sample rate based on a common clock). Inputs that are not synchronous with the selected clock source will be automatically muted. Refer to **How Do I Set the Clock Source?** in Chapter 3 for details.

Audio Monitoring Delay

Add monitored audio delay to the internal speakers in 1 ms increments up to 170 ms to provide lip sync. The effect of the delay can be audibly monitored continuously as it is changed. Refer to How Do I Synchronize Internal Speaker Audio with an External Video Source? in Chapter 3 for details.

SDI Input Audio Monitoring Delay

Add audio delay to the SDI input signals in 1 ms increments up to 160 ms to provide lip sync. You can then output these delayed signals as needed through the de-embedded AES output ports or the optional AES and analog output ports. The effect of the delay can be audibly monitored continuously as it is changed. Refer to **How Do I Synchronize External Surround Sound Audio with Video?** in Chapter 3 for details.

When using this delay in conjunction with the audio monitoring delay, you can create a total delay of up to 330 ms before routing the audio to the internal speakers. When multiple SDI input cards are installed in an AMP2-16V, the SDI input delay of each card is separately adjustable.

SDI Output Re-Embedding

The 3G SDI I/O cards can be used to re-embed the selected SDI source. Audio from other AMP2-16V inputs that are clocked by a 48kHz clock locked to the SDI input can be re-embedded into the reclocked 3G SDI I/O Output stream. This means that audio channels within the SDI stream can be rearranged and/or delayed, or even replaced by audio from other 3G SDI cards, or from other inputs. Refer to the **3G SDI I/O Configuration Menu** in Chapter 5 for more information.

Toslink (SPDIF) Optical Input

One or more optical channel pair inputs are now available as part of optional Analog I/O Cards. This would typically be used for auxiliary monitoring purposes. This

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optical input is equipped with a sample rate converter so that its clocking may be independent from the clocking of all of the other inputs. Refer to How Do I Select the Inputs I Want to Hear in the Speakers? in Chapter 3 for details.

Wide Selection of Video Formats

Video formats are automatically selected. The following formats are supported:

Table 4–1: Supported Video 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
		30
3G	1080p	50
		59.94
		60

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Dolby E Line Position Display

As part of the Status Data Screen, the AMP2-16V will display the line position of each Dolby E bitstream contained in a 3G/HD/SD-SDI signal, relative to the guard band. This may be shown for any or all Dolby E bitstreams simultaneously on the same screen. As with other status data, Dolby E the line position can be shown in a color and size that is appropriate to its importance to you.

The Guard Band in an SDI signal is an interval in which video edits and switching can occur without disrupting the signal. The Line Position is the number of video lines from the start of the video raster (line 0) to the start of the Dolby E data burst.

Dolby CRC Error Counter Display

The AMP2-16V can flag and count Dolby errors as they occur. This important information is shown on the Main Screen of the AMP2- 16V. Error counts may be allowed to accumulate or may be reset as desired.

A CRC Error (Cyclic Redundancy Check Error) is a momentary flaw in the Dolby bitstream. There can be a variety of reasons that this could occur, including errors in transmission or a momentary interruption of the bitstream. The occasional CRC error may be nothing to worry about, but multiple errors are an indication of a signal problem, and this display will allow you to make that judgment.

Dolby Zoom Screen

Important: The **Dolby Zoom Screen** is only available when the Dolby D/E/DD+ Card is installed.

Dolby Zoom is a very powerful analysis tool. With the addition of the Dolby D/E/Dolby Digital Plus Option Card, you can quickly "zoom in" on your choice of encoded Dolby streams to listen to and meter the contained audio channels. The **Dolby Zoom Screen** is shown in Figure 4–10. In this screen, you may solo or mute the individual channels for troubleshooting purposes. The **Dolby Zoom Screen** also lets you scroll through multiple lines of metadata, that appear on the screen adjacent to the metered channels. Then, with the press of a button, you can quickly return to your normal monitoring screen.

Cluster Select hot keys will automatically change to **Dolby Zoom** hot keys when a Dolby bitstream is detected in the cluster. Alternatively, you may set up permanent **Dolby Zoom** hot keys. For details on how to monitor a Dolby bitstream all the time without using **Dolby Zoom**, refer to How Do I Decode and Monitor a Single Dolby Bitstream? in Chapter 3 for details. Refer to How Do I Monitor Dolby Bitstreams? in Chapter 3 for details on how to set up a **Dolby Zoom** hot key that is not combined with a **Cluster Select** hot key.

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A Dolby bitstream may also be decoded and output through an optional AES Output Card or an Analog I/O Card completely independently of other monitoring. Refer to How Do I Mix Any Input(s) to Any Output(s)? in Chapter 3 for details.

The **Dolby Zoom** feature allows you to view the Dolby metadata and the level meters simultaneously while also monitoring the Dolby audio pairs in the front panel speakers.

If a cluster contains a Dolby bitstream, then the **Select Cluster** hot key associated with it (if there is one) will automatically change to a **Dolby Zoom**. If the bitstream should disappear or change to PCM, then the hot key will change back to a **Cluster Select**.

Note: This automatic operation is subject to the following restrictions:

1. This feature only applies to the AMP2-E16V (e.g., the monitor must contain a Dolby decoder).

2. You have selected **Dolby Zoom** as the Dolby decoder source in the **Dolby Configuration Menu**.

3. You selected **Auto** for the **Decode** type in the **Dolby Configuration Menu**.

To display the **Dolby Zoom** screen from the **Main Screen**, press a **Dolby Zoom** hot key. For detailed instructions for creating a **Dolby Zoom** hot key, refer to How Do I Monitor Dolby Bitstreams? in Chapter 3.

Figure 4–10: Dolby Zoom Screen
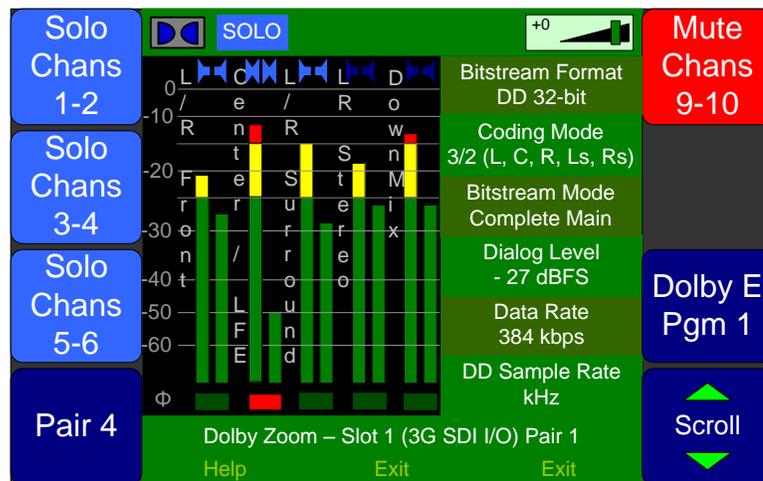
Note: The solo and mute keys on the Dolby Zoom screen are automatically configured to allow you to easily isolate and listen to the audio of any channel or channels. With the twist of a knob, these hot keys can be converted from solos to mutes. They are automatically labeled according to the Dolby metadata, as are the meter pairs.

1. **Solo/Mute Pair 1 through 4**: To **Solo/Mute** any of the Dolby pairs or the downmix:

a) Rotate the knob to the right (clockwise) to select soloing (blue) or to the left (counterclockwise) to select muting (red).

b) Press the knob to deactivate or activate the solo or mute.

c) Rotate the knob one "click" at a time to select one or the other of the channels in the pair to solo or mute.

d) Press the knob again to remove the **solo/mute**.

2. **Solo/Mute Pair 5**: The "fifth pair" is a stereo downmix of the other 4 pairs. The type of downmix for this pair is selected in the **Dolby Decoder Configuration Menu**.

3. **Dolby Program**: Rotate this knob to select the program you want. If the knob label is gray, then only one program is available.

4. **Scroll**: Rotate the knob to the right or left to scroll up or down the list of Dolby metadata.

SuperPair Input

Any input pair can be configured as a ninth SuperPair input, allowing audio-only monitoring of any input pair, in addition to the other monitored channels. This might be audio from a production intercom, audio from a computer, or audio from a satellite receiver or cable box. Refer to **How Do I Set Up a SuperPair to Monitor Intercom or Other Sources?** in Chapter 3 for details.

Standard and Custom Meter Scales

The AMP2-16V Series monitors are capable of displaying 16 high resolution, 310-segment bar graph level meters with a variety of selectable scales and phase indicators simultaneously with a loudness indication. The available options include AES, VU, Ext VU, BBC, EBU, Nordic, DIN, and Custom.

A variety of adjustments are available, depending upon the meter scale you select. The widest variety is available on the Custom scale. This scale allows you to adjust the ballistics, the reference level, segment division points and colors, upper and lower limits, and the amount of scale compression on the lower part of the scale. **Refer to How Do I View the Loudness Screen?** in Chapter 3 for details.

You can set the signals to be monitored by the level meters and internal speakers in the Monitor Mixer Configuration Menu,. These signals can be de-embedded SDI audio, AES audio, decoded Dolby, a mix of any inputs or outputs, or a combination depending on the optional I/O modules installed in the unit.

Phase Monitoring

Not only can the phase relationship of any pair be monitored, but the phase between any arbitrary non-adjacent channels or pairs can also be monitored. Phase monitoring between adjacent pairs is controlled in the Monitor Mixer Configuration Menu. Arbitrary phase monitoring between any non-adjacent channels can also be set up in the Arbitrary Phase Measurement Menu.

Status/Metadata Hot Keys

Two kinds of hot keys control the display of status data or metadata. Pressing the Status/Metadata hot key toggles between Status data or Metadata. Rotating it sequences through the three possible pages of each data type.

Pressing the Status/Metadata/Preset hot key recalls a preset. Rotating it sequences through a total of up to six pages of status data and metadata. This combination hot key makes efficient use of the available space on the Main Screen.

32 Complete System Presets

Thirty-two presets allows you to tailor the AMP2-16V to the ever- increasing number, variety, and challenging monitoring needs of the broadcast industry, providing one touch control of even major system changes and reconfigurations. Refer to **How Do I Use Presets to Change Inputs?** and **How Do I Quickly Recall Presets from the Main Screen?** in Chapter 3 for details.

Automated Preset Changes

Operational changes can be made according to a variety of conditions found on the input signals. For example a preset change can be triggered depending upon whether a 3G, an HD, or an SD signal is encountered, or whether a Dolby bitstream is found on a certain SDI or AES input channel pair.

Bright, Clear Displays

The 4.3" screens are large enough for clear viewing, whether for video, metering, or data. You can adjust the brightness of each screen individually for the ambient lighting, and a screen saver can automatically activate after your choice of a wide range of times has elapsed.

Menu Lock

You can lock the menu system with a combination code to prevent unauthorized or accidental setup changes. Refer to **How Do I Lock Entry to the Menus?**

CHAPTER 5: Menu List

Introduction

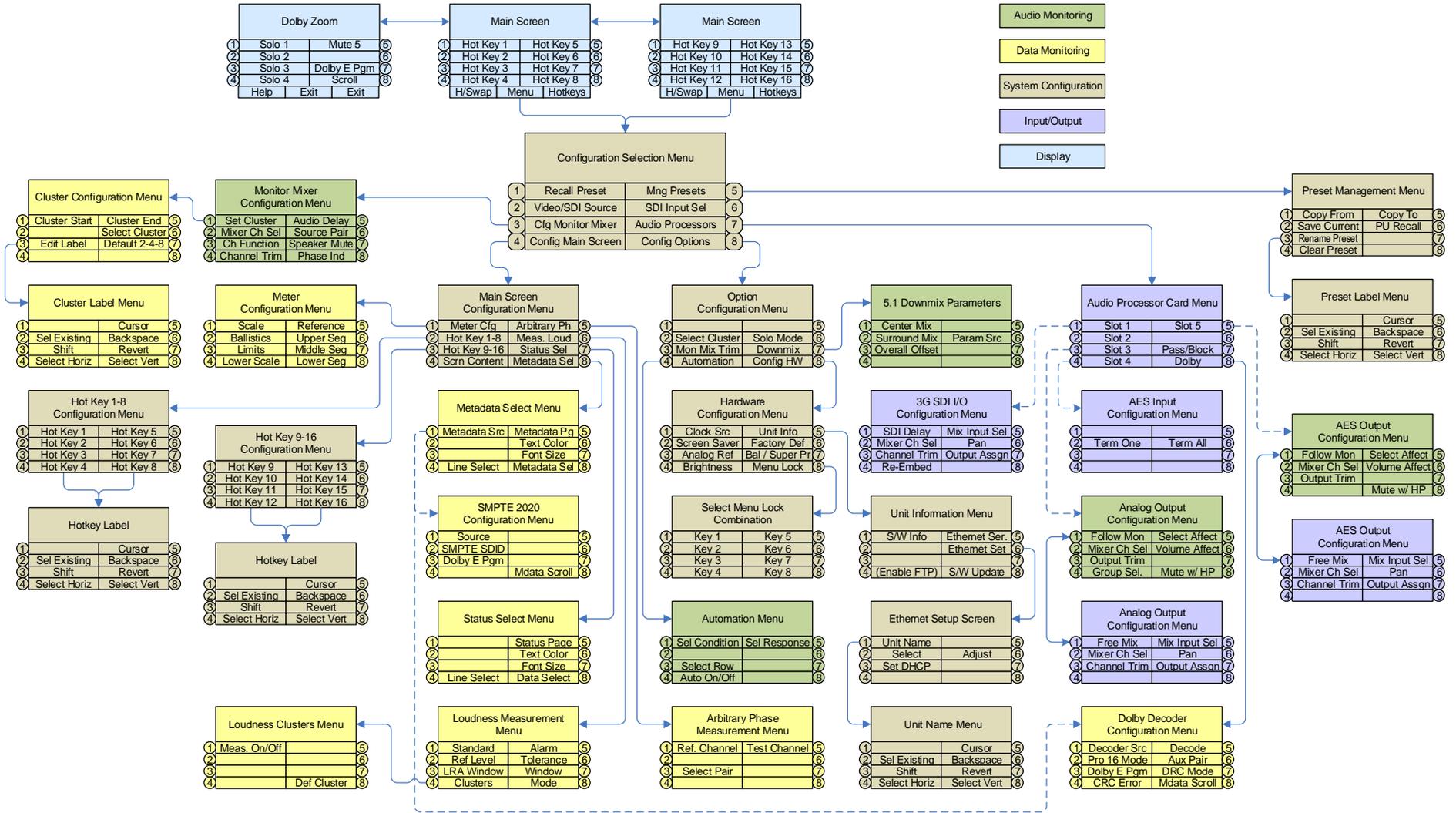This chapter provides an in-depth description of all the menus and all their respective options and functions.

Note: The menus are listed alphabetically for easy reference.

Menu Navigation Overview

The Menu Tree (shown in Figure 5–1) describes how to navigate from one screen to another on the AMP2-16V Series monitor so you can configure and customize the operation of the monitor to meet your needs exactly.

Figure 5–1: Menu Tree

Legend: Audio Monitoring · Data Monitoring · System Configuration · Input/Output · Display

Dolby Zoom
1 Solo 1	5 Mute 5
2 Solo 2	6
3 Solo 3	7 Dolby E Pgm
4 Solo 4	8 Scroll
Help	Exit	Exit

Main Screen
1 Hot Key 1	5 Hot Key 5
2 Hot Key 2	6 Hot Key 6
3 Hot Key 3	7 Hot Key 7
4 Hot Key 4	8 Hot Key 8
H/Swap	Menu	Hotkeys

Main Screen
1 Hot Key 9	5 Hot Key 13
2 Hot Key 10	6 Hot Key 14
3 Hot Key 11	7 Hot Key 15
4 Hot Key 12	8 Hot Key 16
H/Swap	Menu	Hotkeys

Configuration Selection Menu
1 Recall Preset	5 Mng Presets
2 Video/SDI Source	6 SDI Input Sel
3 Cfg Monitor Mixer	7 Audio Processors
4 Config Main Screen	8 Config Options

Cluster Configuration Menu
1 Cluster Start	5 Cluster End
2	6 Select Cluster
3 Edit Label	7 Default 2-4-8
4	8

Monitor Mixer Configuration Menu
1 Set Cluster	5 Audio Delay
2 Mixer Ch Sel	6 Source Pair
3 Ch Function	7 Speaker Mute
4 Channel Trim	8 Phase Ind

Preset Management Menu
1 Copy From	5 Copy To
2 Save Current	6 PU Recall
3 Rename Preset	7
4 Clear Preset	8

Cluster Label Menu
1	5 Cursor
2 Sel Existing	6 Backspace
3 Shift	7 Revert
4 Select Horiz	8 Select Vert

Meter Configuration Menu
1 Scale	5 Reference
2 Ballistics	6 Upper Seg
3 Limits	7 Middle Seg
4 Lower Scale	8 Lower Seg

Main Screen Configuration Menu
1 Meter Cfg	5 Arbitrary Ph
2 Hot Key 1-8	6 Meas. Loud
3 Hot Key 9-16	7 Status Sel
4 Scrn Content	8 Metadata Sel

Option Configuration Menu
1	5
2 Select Cluster	6 Solo Mode
3 Mon Mix Trim	7 Downmix
4 Automation	8 Config HW

5.1 Downmix Parameters
1 Center Mix	5
2 Surround Mix	6 Param Src
3 Overall Offset	7
4	8

Audio Processor Card Menu
1 Slot 1	5 Slot 5
2 Slot 2	6
3 Slot 3	7 Pass/Block
4 Slot 4	8 Dolby

Preset Label Menu
1	5 Cursor
2 Sel Existing	6 Backspace
3 Shift	7 Revert
4 Select Horiz	8 Select Vert

Hot Key 1-8 Configuration Menu
1 Hot Key 1	5 Hot Key 5
2 Hot Key 2	6 Hot Key 6
3 Hot Key 3	7 Hot Key 7
4 Hot Key 4	8 Hot Key 8

Metadata Select Menu
1 Metadata Src	5 Metadata Pg
2 Hot Key 1-8	6 Text Color
3	7 Font Size
4 Line Select	8 Metadata Sel

Hardware Configuration Menu
1 Clock Src	5 Unit Info
2 Screen Saver	6 Factory Def
3 Analog Ref	7 Bal / Super Pr
4 Brightness	8 Menu Lock

3G SDI I/O Configuration Menu
1 SDI Delay	5 Mix Input Sel
2 Mixer Ch Sel	6 Pan
3 Channel Trim	7 Output Assgn
4 Re-Embed	8

AES Input Configuration Menu
1	5
2 Term One	6 Term All
3	7
4	8

AES Output Configuration Menu
1 Follow Mon	5 Select Affect
2 Mixer Ch Sel	6 Volume Affect
3 Output Trim	7
4	8 Mute w/ HP

Hot Key 9-16 Configuration Menu
1 Hot Key 9	5 Hot Key 13
2 Hot Key 10	6 Hot Key 14
3 Hot Key 11	7 Hot Key 15
4 Hot Key 12	8 Hot Key 16

Hotkey Label
1	5 Cursor
2 Sel Existing	6 Backspace
3 Shift	7 Revert
4 Select Horiz	8 Select Vert

SMPTE 2020 Configuration Menu
1 Source	5
2 SMPTE SDID	6
3 Dolby E Pgm	7
4	8 Mdata Scroll

Select Menu Lock Combination
1 Key 1	5 Key 5
2 Key 2	6 Key 6
3 Key 3	7 Key 7
4 Key 4	8 Key 8

Unit Information Menu
1 S/W Info	5 Ethernet Ser.
2	6 Ethernet Set
3 (Enable FTP)	7
4	8 S/W Update

Analog Output Configuration Menu
1 Follow Mon	5 Select Affect
2 Mixer Ch Sel	6 Volume Affect
3 Output Trim	7
4 Group Sel.	8 Mute w/ HP

AES Output Configuration Menu
1 Free Mix	5 Mix Input Sel
2 Mixer Ch Sel	6 Pan
3 Channel Trim	7 Output Assgn
4	8

Hotkey Label
1	5 Cursor
2 Sel Existing	6 Backspace
3 Shift	7 Revert
4 Select Horiz	8 Select Vert

Status Select Menu
1	5 Status Page
2	6 Text Color
3	7 Font Size
4 Line Select	8 Data Select

Automation Menu
1 Sel Condition	5 Sel Response
2	6
3 Select Row	7
4 Auto On/Off	8

Ethernet Setup Screen
1 Unit Name	5
2 Select	6 Adjust
3 Set DHCP	7
4	8

Analog Output Configuration Menu
1 Free Mix	5 Mix Input Sel
2 Mixer Ch Sel	6 Pan
3 Channel Trim	7 Output Assgn
4	8

Loudness Clusters Menu
1 Meas. On/Off	5
2	6
3	7
4	8 Def Cluster

Loudness Measurement Menu
1 Standard	5 Alarm
2 Ref Level	6 Tolerance
3 LRA Window	7 Window
4 Clusters	8 Mode

Arbitrary Phase Measurement Menu
1 Ref. Channel	5 Test Channel
2	6
3 Select Pair	7
4	8

Unit Name Menu
1	5 Cursor
2 Sel Existing	6 Backspace
3 Shift	7 Revert
4 Select Horiz	8 Select Vert

Dolby Decoder Configuration Menu
1 Decoder Src	5 Decode
2 Pro 16 Mode	6 Aux Pair
3 Dolby E Pgm	7 DRC Mode
4 CRC Error	8 Mdata Scroll

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3G SDI I/O Configuration Menu

This menu allows you to configure the audio from the 3G SDI I/O Card. Note that the bulk of the functionality of this menu is identical to those of the **AES/Analog Output Configuration Menus**, so this section will only discuss those functions that are unique to this menu. For details on the **Mixer Channel Select**, **Channel Trim**, **Mix Input Select**, **Pan**, and **Output Assign** functions, refer to Free Mix Mode Controls in this chapter.
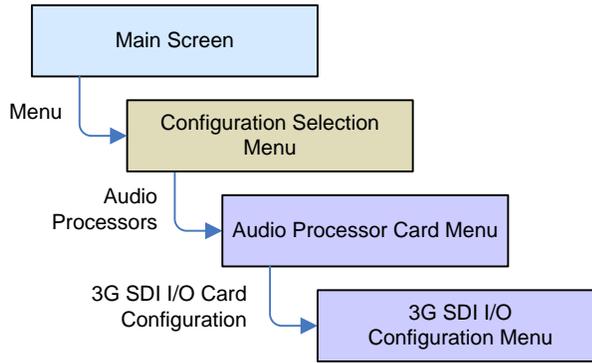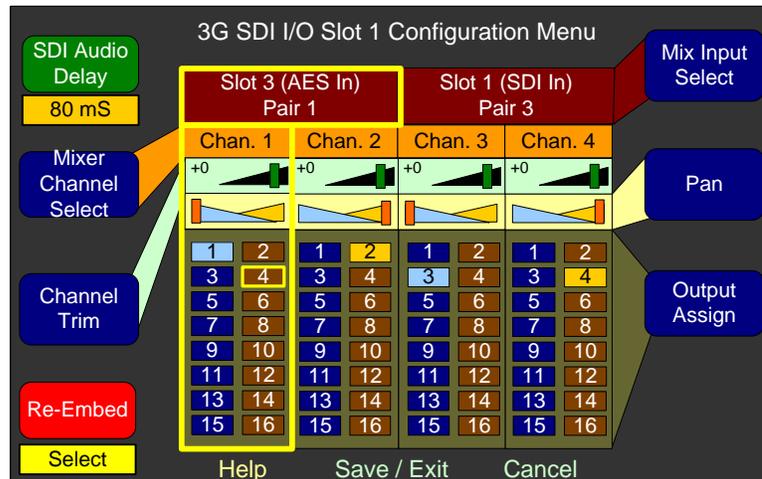

Figure 5–2: 3G SDI I/O Configuration Menu - Re-Embed: Select

1. **SDI Audio Delay**: Pressing this knob turns the SDI input delay **On** or **Off**. Rotating this knob selects the amount do delay. The SDI audio delay may be set to either **Off** or from **3 ms** to **160 ms** in 1 ms increments. The system will save the set delay value even when the system is turned off.

   Note: The SDI Audio Delay you set also applies to the AES outputs on the 3G/HD/SD-SDI I/O card and these AES signals when used in the re-embedded output.

2. **Re-Embed**: Pressing this encoder toggles between **Pass Thru** and **Select**.
   a) **Pass Thru** will cause the 3G SDI card to pass its input channels directly through to its reclocked output without any changes and without any **SDI Audio Delay**.

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b) **Select** will let you select any input card sources, and any Dolby decoder sources (if equipped) to be re-embedded in the reclocked output. De-embedded pairs that are used as **Input Mix Select** sources will be delayed by the **SDI Audio Delay**. This may be useful when synchronizing an external video monitor with the audio signals.

Important:	A Dolby bitstream should be treated with special care. No attempt should be made to adjust the **Channel Trim** or **Pan** controls. Likewise, it should not be mixed with any other signal. But it can be routed to any channel pair.

The configuration set in **Re-Embed: Select** mode is remembered when you select **Re-Embed: Pass Thru** mode. When you select **Re-Embed: Pass Thru** mode, the control labels that cannot be adjusted are disabled and turn gray as shown in .

Figure 5–3: 3G SDI I/O Configuration Menu - Re-Embed: Pass Thru
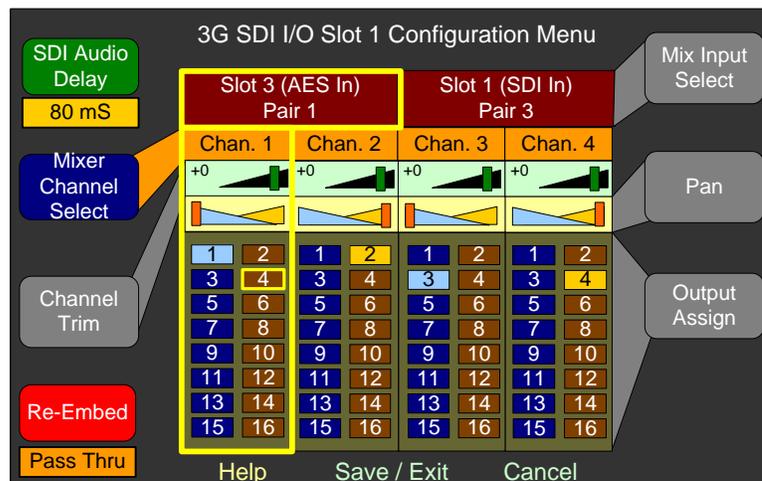
1. When one or more 3G SDI I/O cards are installed, this menu is accessible. This menu allows the customer to select the **SDI Audio Delay**.
    a) The **SDI Audio Delay** will be applied to all 16 de-embedded channels of the 3G/HD/SD-SDI input and therefore will affect all outputs of these de-embedded audio signals, including the output to a surround sound system.
    b) The AES de-embedded outputs are delayed by the SDI audio delay. When **Re-Embed: Pass Thru** is selected, the reclocked outputs are not delayed by the SDI audio delay.
    c) The SDI audio delay may be set to either **OFF** or from 3ms to 160 ms in 1 ms increments.
    d) The actual audio delay changes will occur dynamically as the knob is turned so that the audio delay may be audibly and visually matched to the video monitor, without actually knowing beforehand what the exact delay must be.
    e) The audio delay will be saved in the presets, allowing different presets to exhibit different SDI audio delays as necessary. This can allow one

touch control from the **Main Screen**.

f) Additional 3G/HD/SD-SDI cards added to the AMP2-16V will have their own separately adjustable delay.

g) The adjustable delay for the internal monitor speakers, as set in the Monitor Mixer Configuration Menu, if used, will be in addition to the **SDI Audio Delay**.

5.1 Downmix Parameters Screen

This menu allows you to set the audio attenuation levels that will be applied to the channels by pressing the Downmix hot key. These parameters apply to the downmix that appears externally through the Analog or AES outputs, as well as to the internal speaker mix. The selected mix will be LoRo, unless a Downmix hot key enables LtRt and is activated.
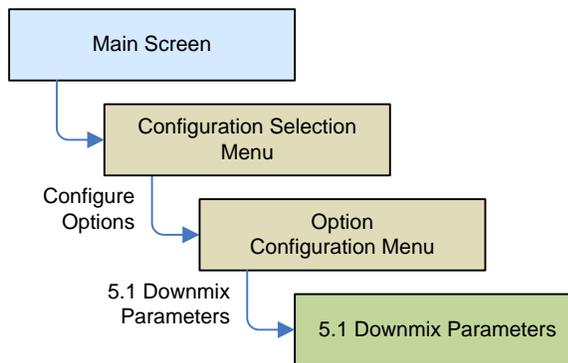
Figure 5–4: 5.1 Downmix Parameters Screen
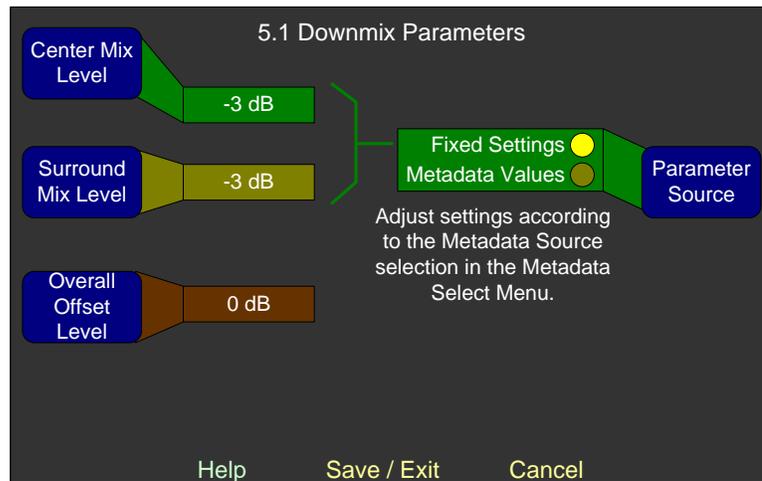
1. **Center Mix Level**: Rotating this knob selects between four possible level reductions for the center channel in the downmix: **0 dB**, **-3 dB**, **-4.5 dB**, or **-6 dB**.

2. **Surround Mix Level**: Rotating this knob selects between three possible level reductions for the surround channels in the downmix: **-3 dB**, **-6 dB**, or **Mute**.

3. **Overall Offset Level**: Rotating this knob selects between four possible level reductions for the center channel in the downmix: **0 dB**, **-3 dB**, **-4.5 dB**, or **-6 dB**.

4. **Parameter Source**: This control enables or disables the application of received center and surround level data, either SMPTE 2020 or Dolby, as set in the **Metadata Select Menu**. If metadata is received from the selected SMPTE 2020 or Dolby decoder source, it will be substituted for the fixed settings that are also set in this menu. If no metadata is available, then the fixed settings are used. Rotating this control selects either **Fixed Settings** or **Metadata Values**.

AES Input Configuration Menu

This menu allows you to set the termination on the input connectors.
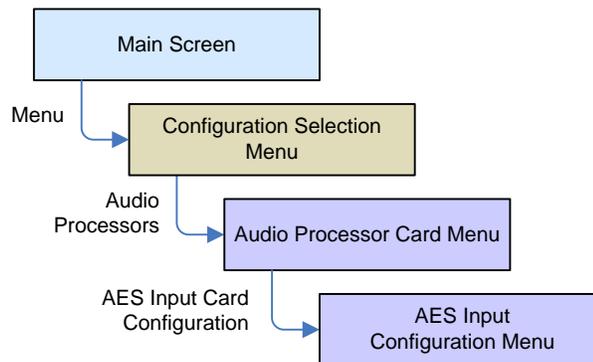
Figure 5–5: AES Input Configuration Menu
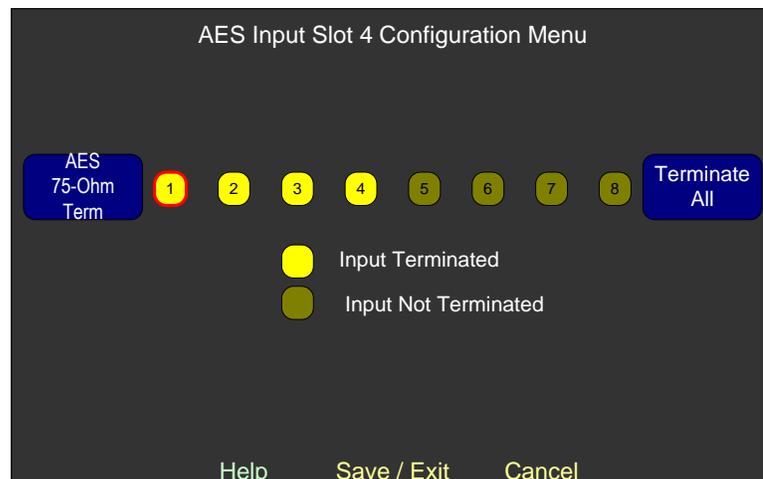
1. **AES 75-Ohm Term**: Rotate the knob to highlight each individual channel and then press the knob to toggle termination.

2. **Terminate All**: Press the knob to toggle the termination of all the channels simultaneously on or off.

AES/Analog Output Configuration Menus

Note: The AES and Analog Output Configuration Menus and controls are almost identical so we are showing the Analog Output Configuration Menu in Figure 5-6 and the AES Output Configuration Menu in Figure 5-7.

These menus allow you to:

1. Adjust the level of each channel, and

2. Mix or direct sources to outputs.
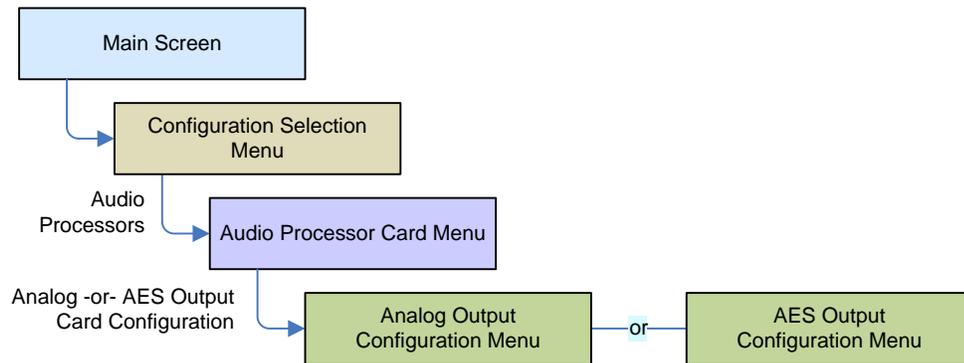
The menu can take one of two forms depending on the channel pair you want to send to the output port:

1. The same channel selection that is audible on the speakers (*Follow Monitor* mode), or

2. Any other selection (*Free Mix* mode).

Follow Monitor/Free Mix: Pressing this knob toggles between the menu display shown in Figure 5–6, and the display shown in Figure 5–7.

Follow Monitor Mode Controls

In *Follow Monitor* mode (Figure 5–6 below) you can direct the channels selected in the **Monitor Mixer Configuration Menu** (Figure 5–7) to be output through the Analog (or AES) Output Card.

Figure 5–6: Analog Output Configuration Menu - Follow Monitor
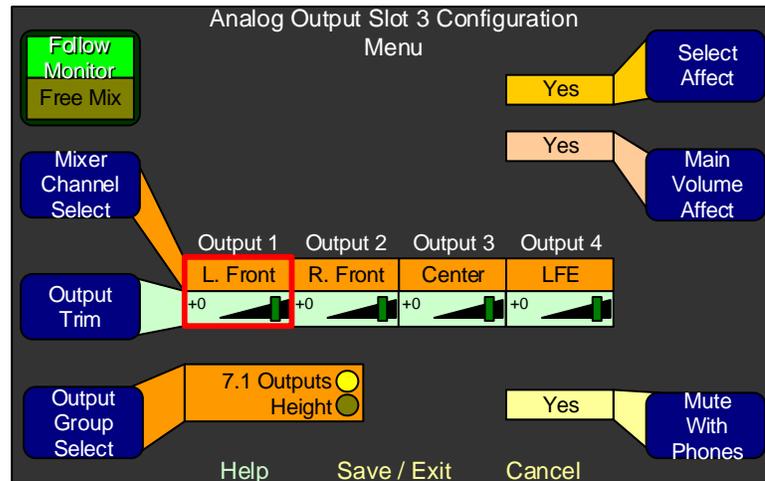
1. **Mixer Channel Select:** Rotating this knob moves a highlight between the source channels. Other controls then affect the selected channel.

2. **Channel Trim:** Rotating this knob changes the gain on the selected channel. This control has a range of -60 dB to +12 dB (inclusive) in 1 dB increments. You can mute the channel by turning the knob counterclockwise beyond -60 dB. Pressing and holding this knob returns the setting to 0 dB.

3. **Select Affect:** Pressing or rotating this knob selects **Yes** or **No**, and determines whether all the outputs are affected by the **Cluster Select** hot keys on the **Main Screen**.

4. **Main Volume Affect:** Pressing or rotating this knob selects **Yes** or **No**, and determines whether all the outputs are controlled by the front panel **Volume** control.

5. **Mute with Phones:** Pressing or rotating this knob selects **Yes** or **No**, and determines whether all the outputs are muted by the presence of a plug in the front panel headphone jack.

6. Analog output cards have only 8 outputs, so in order to present surround formats with more than 8 channels, you must have two analog output cards installed in the system. Use the **Output Group Select** control to determine which analog output card carries the first 8 channels, and set the other card to carry the remaining channels.

Free Mix Mode Controls

In *Free Mix* mode you can mix and output any combination of channel pairs into any combination of output channels, or you can turn the output pair Off altogether. Adding a Dolby D/E Card adds the five decoded Dolby output pairs, so you can select one of many inputs (up to four other processor cards at eight channel pairs each, plus five Dolby output pairs). You will see the choices displayed as Slot x (<card name>) Channel y or Dolby Decoder Pair z.

Figure 5–7: AES Output Configuration Menu - Free Mix
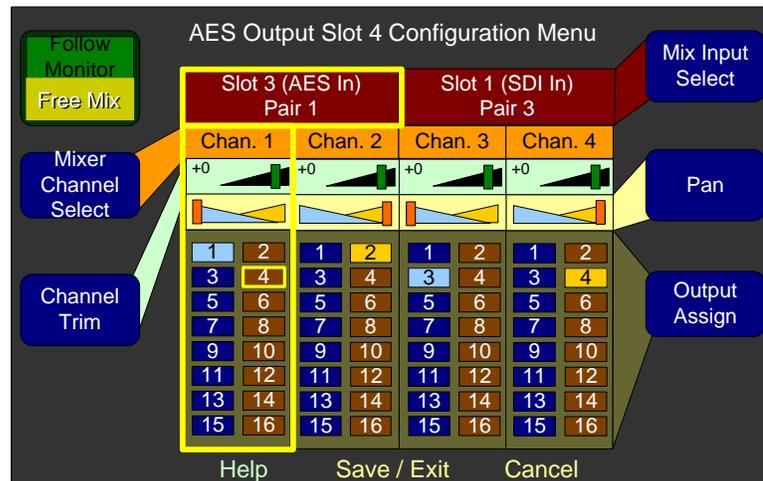
| Important: | A Dolby bitstream should be treated with special care. No attempt should be made to adjust the **Channel Trim** or **Pan** controls. Likewise, it should not be mixed with any other signal. But it can be routed to any channel pair. |

Mixer Channel Select: Rotating this knob moves a highlight between the mixer strips. Other controls then affect the mixer strip.

1. **Channel Trim**: Rotating this knob changes the gain on the selected channel. This control has a range of -60 dB to +12 dB (inclusive) in 1 dB increments. You can mute the channel by turning the knob counter-clockwise beyond -60 dB. Pressing and holding this knob returns the setting to 0 dB.

2. **Mix Input Select**: Rotating this knob selects between any input card source, the monitor mix pair, and any Dolby decoder source (if the Dolby D/E/DD+ Card is installed). Setting the channel pair to **Off** disables the other adjustments for that channel pair.

3. **Pan**: Rotating this knob changes the relative gain on the selected channel to the selected odd and even numbered output channels, allowing you to pan the selected input between the odd and even numbered output channels. Pressing and holding this knob for a second returns the setting to the center, providing equal signal levels to all selected output channels.

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4. **Output Assign**: Rotating this knob moves a highlight between possible output channel numbers and between channels and pairs. Pressing the knob adds or removes the highlighted channel from each channel's output mix.

Arbitrary Phase Measurement Menu

In addition to the normal pair-wise phase indication between adjacent pairs, the left or right meter screens can also indicate the phase relationship between any two channels being displayed. You can configure up to eight arbitrary phase comparisons in the Arbitrary Phase Measurement Menu. The system selects colors and symbols automatically.

Note: By default, no arbitrary phase comparisons are set up in an AMP2-16V Series monitor.
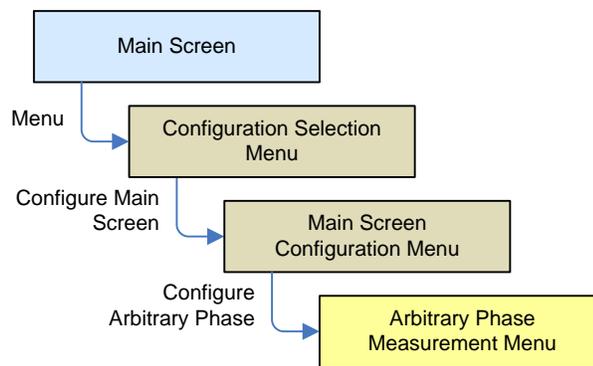
Figure 5–8: Arbitrary Phase Measurement Menu
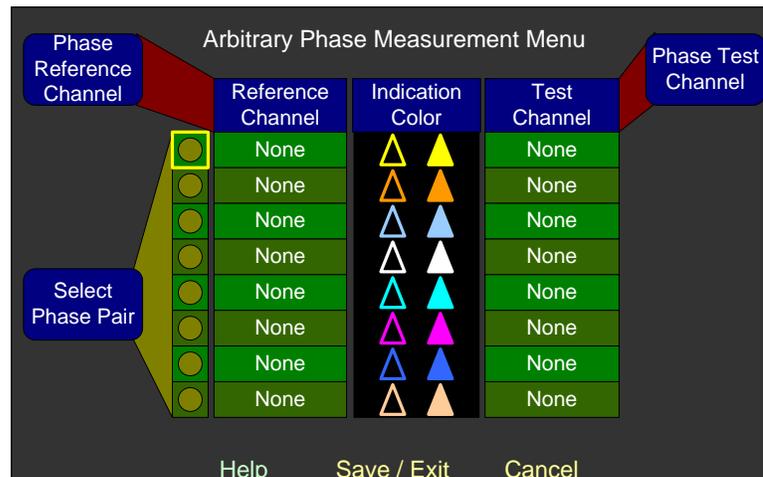
1. **Phase Compare A**: Rotating this knob steps through the channels (and also displays their functions as assigned on the **Monitor Mixer Configuration Menu**.) The channel(s) selected by **Phase Compare A** are the **Reference Channels** in each phase comparison. Use this control in conjunction with **Phase Compare B** to set up each phase measurement relationship.

2. **Select Phase Pair**: Rotating this knob moves the highlight from channel

pair to channel pair;. Pressing this control to light the indicator enables a phase comparison between the two channels on this line.

3. **Phase Compare B**: Rotating this knob steps through the audible channels (except for the one you have already selected in **Phase Compare A**). The channel(s) selected by **Phase Compare B** are the **Test Channels** to be compared to the **Reference Channels**. Use this control in conjunction with **Phase Compare A** to set up each phase measurement relationship.

   Note: The colors for each arbitrary phase indication are automatically and sequentially selected.

   Note: The same channel may not be both a **Reference Channel** and a **Test Channel**.

   Note: Any given **Reference Channel** may be used in more than one comparison.

4. If a **Test Channel** is out of phase with its **Reference Channel**, then the **Test Channel** will be shown with a filled triangle, while the **Reference Channel** will be shown with an empty triangle.

Audio Processor Card Menu

The **Audio Processor Card Menu** allows you to select each optional module independently to configure inputs, mixing, and outputs.
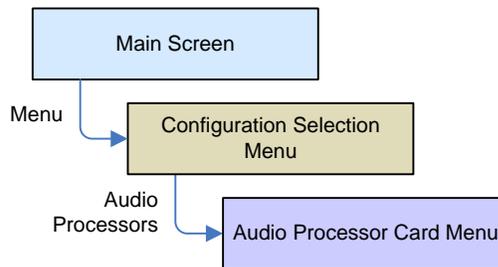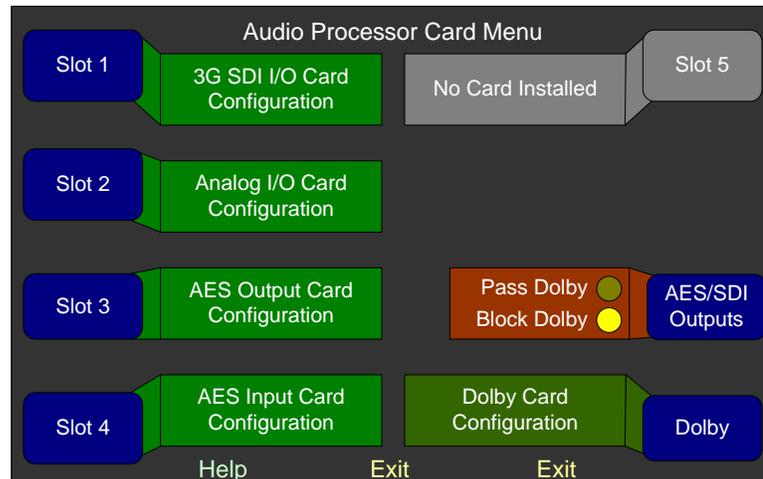
Figure 5–9: Audio Processor Card Menu

	Audio Processor Card Menu		
Slot 1	3G SDI I/O Card Configuration	No Card Installed	Slot 5
Slot 2	Analog I/O Card Configuration		
Slot 3	AES Output Card Configuration	Pass Dolby ○ Block Dolby ○	AES/SDI Outputs
Slot 4	AES Input Card Configuration	Dolby Card Configuration	Dolby
	Help	Exit	Exit

Slots 1 through 5: Each occupied slot displays the name of the card in that slot. Press the knob of the corresponding card to display the **Configuration Menu** for the card in that slot. If a slot is empty, the label will be gray and disabled, no card name will appear, and the knob will have no function. Rotating the knob does nothing; select the card by pressing the knob. Refer to **AES/Analog Output Configuration Menus** in this chapter for configuration option examples.

1. **3G SDI I/O:** Pressing a knob with this description displays the **3G SDI Output Configuration Menu**. You can delay the input signals in this menu.

2. **Analog Input/Output:** Pressing a knob with this description displays the **Analog Output Configuration Menu**. In this menu signals can be mixed to output through the analog outputs.

3. **Analog I/O and TOSLINK Input**: Pressing a knob with this description displays the **Analog Output Configuration Menu**. In this menu signals can be mixed to output through the analog outputs.

4. **AES Output:** Pressing a knob with this description displays the **AES Output Configuration Menu**. In this menu, signals can be mixed for output through the AES outputs. All output menus follow the same

5. **AES Input**: Pressing a knob with this description displays the **AES Input Configuration Menu**. In this menu, you can set or remove AES terminations.

6. **AES/SDI Outputs**: This knob adjusts whether Dolby encoded bitstreams are passed to any AES or SDI outputs or whether they are blocked. By default, they are blocked. This setting applies to each AES Output or SDI card.

7. **AVB Output:** Pressing a knob with this description displays the **AVB Output Configuration Menu**. In this menu, signals can be mixed for output through the AVB network port.

8. **Dante Output:** Pressing a knob with this description displays the **Dante Output Configuration Menu**. In this menu, signals can be mixed for output through the Dante network port.

9. **Ravenna Output:** Pressing a knob with this description displays the **Ravenna Output Configuration Menu**. In this menu, signals can be mixed for output through the Ravenna network port.

10. **Dolby:** Pressing this knob displays the **Dolby Decoder Configuration Menu** in this chapter where you can configure the Dolby D/E/DD+ Card (if installed) and display live Dolby metadata. In this screen, the source of the Dolby metadata can be set, along with other parameters. If the AMP2-16V is not equipped with the Dolby D/E/DD+ card, then this label will not display.

Important:	A Dolby bitstream should be treated with special care. No attempt should be made to adjust the **Channel Trim** or **Pan** controls. Likewise, it should not be mixed with any other signal.

Automation Menu

This menu allows you to set the system so that it automatically performs certain functions based on conditions you set.

```
┌─────────────────────┐
│    Main Screen      │
└─────────────────────┘
    │
Menu │   ┌─────────────────────┐
    └──▶│ Configuration Selection │
        │        Menu          │
        └─────────────────────┘
          Configure │   ┌─────────────────────┐
          Options   └──▶│       Option        │
                        │  Configuration Menu │
                        └─────────────────────┘
                Automation │   ┌─────────────────────┐
                Menu       └──▶│   Automation Menu   │
                               └─────────────────────┘
```
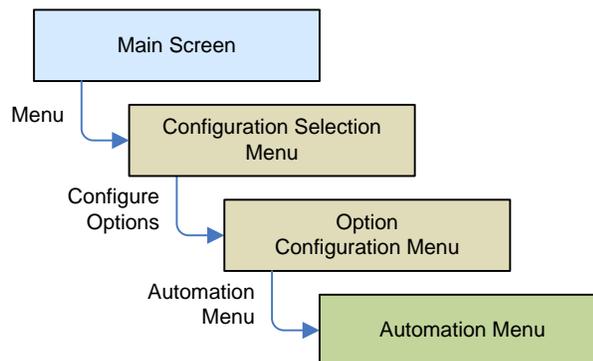
Figure 5–10: Automation Menu
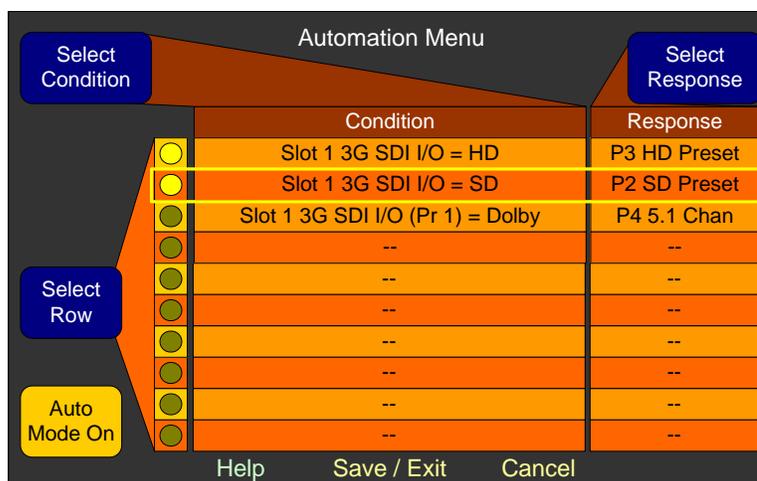
This menu shows ten **Condition**/**Response** lines that you can individually enable or disable. Each line automatically enables when either a **Condition** or a **Response** is selected. Lines that do not have both a **Condition** and a **Response** are automatically deleted when you exit the menu. The priority of each **Condition**/**Response** is determined by its position in the list: The higher the position, the higher the priority.

In operation, if more than one condition is met, the one higher in the list will rule. The **Response** events are edge triggered, that is, they will only take effect when a change occurs. You can therefore override any automated change at any time. And your changes stay in effect until the current condition is removed and then met again, or until another condition is met. As long as a high priority condition is met, lower priority conditions are ignored.

Responses can only take effect when the **Main Screen** is displayed. If a **Condition** is met when control is in the **Dolby Zoom Screen** or **Loudness Screen**, the **Response** will be delayed until the **Main Screen** is once again displayed. This will prevent a preset change from interrupting your analysis in the **Dolby Zoom Screen** or a loudness measurement in the **Loudness Screen**. Likewise, if a **Condition** is met when control is in any of the menu screens, the **Response** will be delayed until all menus are exited to avoid any unexpected changes.

Controls

1. **Select Condition**: Rotating this control selects from the set of possible conditions:
    a) Slot n SDI-3G In = (SD, HD, 3G)
    b) Slot n SDI-3G In = Unlock
    c) Slot n SDI-3G In Pair m = Dolby
    d) Slot n SDI-3G In Pair m = No Dolby
    e) Slot p AES In Pair m = Lock

f) Slot p AES In Pair m = Unlock
g) Slot p AES In Pair m = Dolby
h) Slot p AES In Pair m = No Dolby
i) Default

where:

a) **Slot n** is between 1 and 3, limited by the number of SDI cards installed,
b) **Slot p** is between 1 and 5, limited by the number of AES Input cards installed, and
c) **Channel Pair m** is between 1 and 8.

2. **Select Row**: Rotating this control selects the row that the **Conditions** and **Responses** will be set on. When pressed, the currently selected row is toggled between enabled and disabled.

a) **Auto Mode On/Off**:   Pressing this control turns the action of the **Conditions** and **Responses** on and off. While this is set to **Off**, the individual on/off settings of each line are stored unchanged.

b) **Select Response**: Rotating this control displays one of 32 presets that can be recalled when the **Select Condition** is met.

Adding an Auto Mode Hot Key

By setting up an **Auto Mode** hot key, you can quickly and easily turn the **Automation Menu** on or off. Refer to the Hot Key Configuration Menu 1 Through 8 section of this chapter to do this.

When one of the knobs is assigned as an **Auto Mode** hot key, the background color of the knob label will be gold if **Auto Mode** is on and gray if **Auto Mode** is off. Since it works in parallel with the **Auto Mode** on/off control in the **Automation Menu**, each one will be affected by toggling the other one. It determines whether the **Condition/Response** settings in the **Automation Menu** (if any) will be active or not.

Note: This hot key has no settings: simply setting it as an Automation Menu (on/off) hot key is enough. Moreover, it is normally not necessary to set up more than one Automation Menu hot key.

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Cluster Configuration Screen

The **Cluster Configuration Screen** allows you to define and select clusters for display on the **Main Screen**.
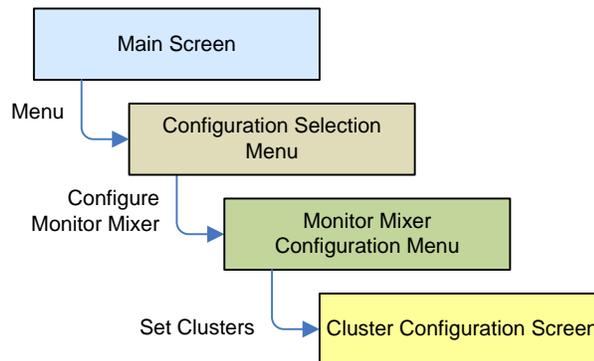
Figure 5–11: Cluster Configuration Screen
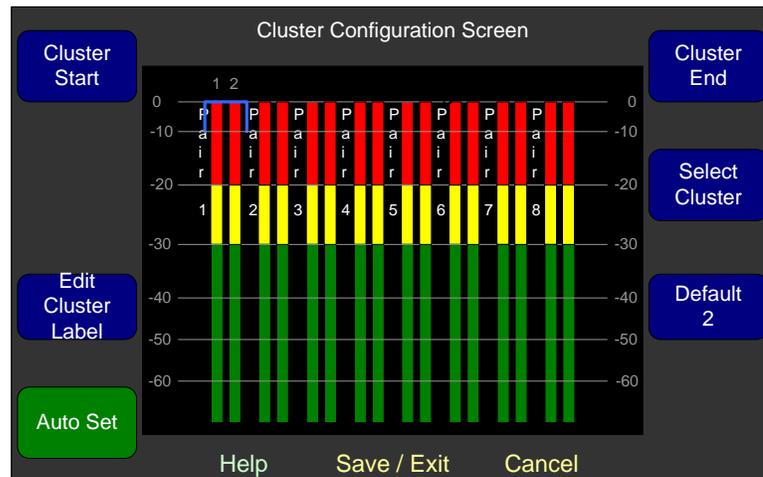
> **Note:** When you turn off channels in the **Monitor Mixer Configuration Menu**, they will appear gray on the **Cluster Configuration Screen**. Moreover, they will not appear at all on the **Main Screen** and the remaining meters will automatically redistribute themselves to display evenly on the screen.

1. **Cluster Start:** Rotating this knob moves the left side of the bracket so you can select the starting channel of a cluster. You can create up to eight clusters. Pressing this knob sets the new cluster.

2. **Edit Cluster Label:** Pressing this knob proceeds to the **Label Menu** so you can enter or change the cluster label, shown vertically in Figure 5–11 as **Pair 1**. If a partial cluster or multiple clusters are bracketed, then this knob is disabled.

3. **Auto Set**: Pressing this control automatically sets the clusters according to the **Channel Functions** of each pair. The **Channel Function** settings are made in the **Monitor Mixer Configuration Menu**. After using the Auto Set

control, clusters can still be revised using the Cluster Start and Cluster End controls. After the Auto Set control has been used, the clusters should be named appropriately using the Edit Cluster Label control.

4. **Cluster End:** Rotating this knob moves the right side of the bracket to select the ending channel of a cluster. Pressing this knob sets the new cluster. Channels from other existing clusters are automatically removed and added to the one being set. You can create up to eight clusters.

5. **Select Cluster:** Rotating this knob moves the bracket from cluster to cluster so you can adjust each one.

6. **Default 2-4-8:** Rotating this knob configures the meters into clusters of two, four, or eight. Pressing this knob reformats the screen to form two clusters of eight channels each, four clusters of four channels each, or eight clusters of two channels each.

Configuration Selection Menu

The **Configuration Selection Menu** allows you to modify meters, audio, and Dolby configurations and it allows you to select and modify SDI input selections, and audio outputs.
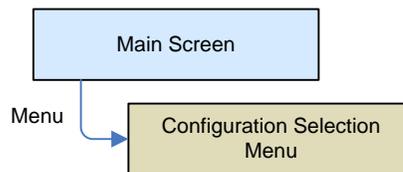
Figure 5–12: Configuration Selection Menu
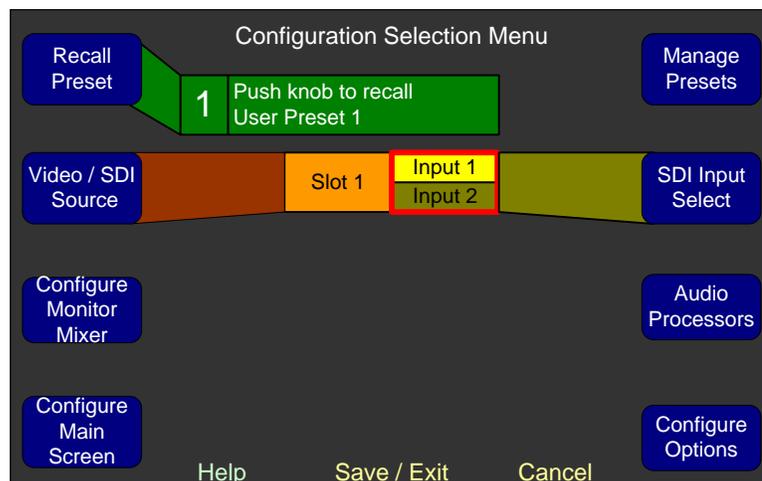
1. **Recall a Preset:** Rotating this knob steps through each of the 32 user-defined presets. Pressing the knob recalls the displayed preset.

2. **Video/SDI Source**: This control only appears when one or more 3G SDI I/O cards are installed. The number of slots displayed depends in the number of

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cards installed. Rotating this knob selects the video source to be displayed on the left-hand screen.

3. **Configure Monitor Mixer:** Pressing this knob displays the **Monitor Mixer Configuration Menu** where you can define the channel pairs that you will monitor and that will appear on the meters. You will also define the function of each channel. See Configure the Monitor Mixer or Monitor Mixer Configuration Menu in this chapter for details.

4. **Configure Main Screen:** Pressing this knob displays the **Main Screen Configuration Menu** as well as other features related to the **Main Screen**. (See 3. Arrange the Main Screens in Chapter 1 or Main Screen Configuration Menu in this chapter for details.)

5. **Manage Presets:** Pressing this knob displays the **Preset Management Menu** where you can save, name, and manage presets. (See 5. Save Your Setup in a Preset in Chapter 1 for details.)

6. **SDI Input Select**: This control appears when one or more 3G SDI cards are installed. Rotating this knob moves the red selection box from input to input on each installed card. Pressing this knob selects the input source (from 1 to 2 or from 2 to 1) for that card.

7. **Audio Processors**: Pressing this knob displays the **Audio Processor Card Menu** and identifies the card in each slot. It also allows you to set up parameters for each installed audio processor card.

Dolby Decoder Configuration Menu

Important: The **Dolby Configuration and Metadata** screen is only available when the Dolby D/E/DD+ Card is installed.

Figure 5–13: Dolby Decoder Configuration Menu
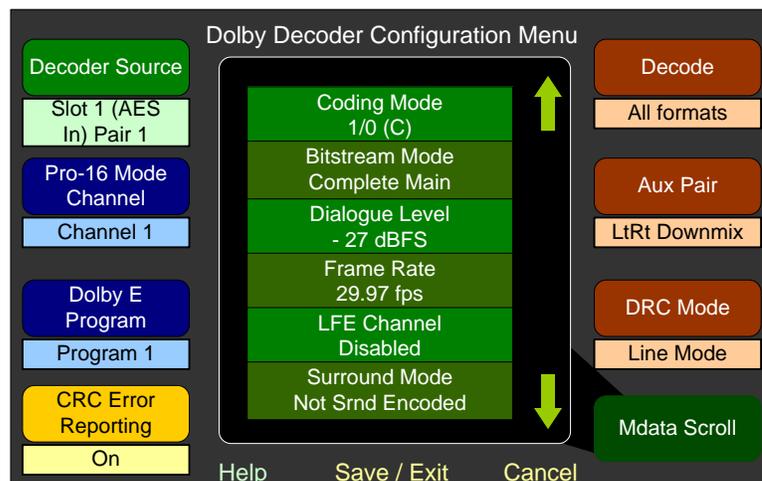
This menu allows you to configure the Dolby D/E/DD+ Card, and see the metadata

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associated with the currently-selected bitstream (if any). For more information, refer to **4. Select the Metadata to Display on the Screen** in Chapter 1 or to **How Do I Monitor Dolby Bitstreams?** in Chapter 3.

The purpose of this menu is to set up a number of parameters related to decoding Dolby bitstreams in the AMP2-E16V. These parameters include:

1. Selecting the source of the Dolby bitstream

2. Commands are provided to control the action of the Dolby decoder card.

3. CRC error reporting can be turned **On** or **Off**.

4. Metadata can be reviewed.

For convenience, you can access the Dolby Decoder Configuration menu as one of the Audio Processor cards:
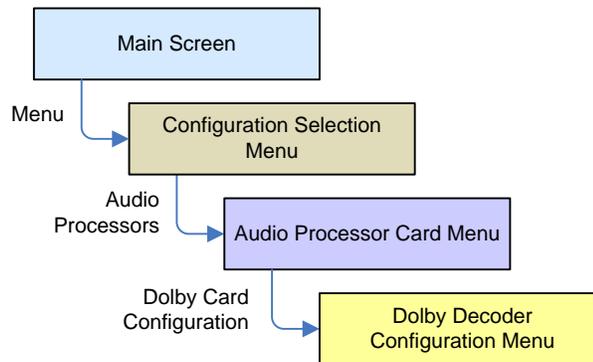
Or, while selecting metadata to appear on the main screens:
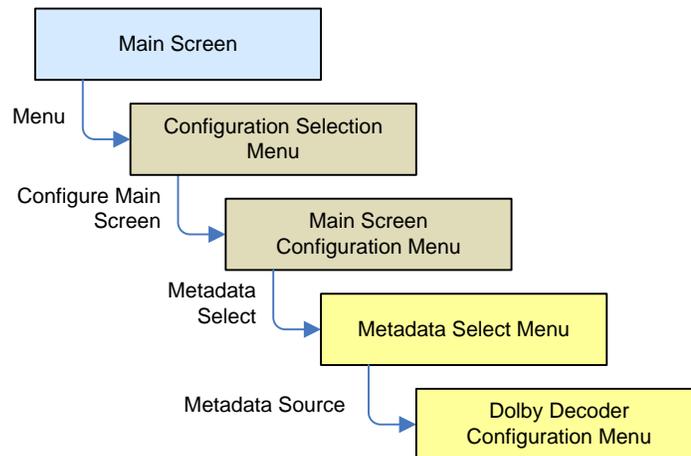
1. **Decoder Source**: Rotating this knob selects the Dolby bitstream source to be decoded:
   a) Any AES pair,
   b) Any de-embedded AES pair from an SDI input,
   c) Any TOSLINK/SPDIF input

When you select any one of these sources, the Dolby D/E/DD+ Card is locked to that source and cannot be used on other sources.

However, you can select the Dolby Zoom Select source instead. This frees the Dolby decoder card to be used by any Dolby Zoom hot key. The system will dynamically assign it to any source that must be decoded, depending on which Dolby Zoom hot key you press.

2. **Pro-16 Mode Channel:** In the early days of Dolby, Pro-16 Mode allowed you to encode two different programs simultaneously, one Dolby D bitstream on the AES left channel, and one on the right channel. This mode has largely fallen out of use; but the AMP2-16V is still capable of monitoring it, should the need arise.
The Pro-16 Mode channel control simply selects one of the two AES channels to decode. More recently, however, the incoming stream will be Dolby Digital 32-bit where both channels are used for one stream and the Pro-16 Mode channel parameter is ignored.

3. **Dolby E Program:** A Dolby E bitstream can contain up to eight separate audio programs with metadata. This control selects the program to monitor, both audio and metadata. It also selects the program that appears on the AUX (pair 5) output of the Dolby decoder. Rotating this control shows you which programs are contained in the bitstream. If you select a program that does not exist, it defaults to **Program 1**. Usually, however, the stream contains only one or two programs, so the setting should be either **Program 1** or **Program 2**.

4. **CRC Error Reporting**: A CRC (Cyclic Redundancy Check) error is a momentary flaw in the Dolby bitstream. This can occur for a variety of reasons, including transmission errors or a brief interruption of the bitstream. If this happens, the Dolby decoder will mute the audio for a very short period (perhaps 32 ms) and then will continue normally.

The occasional CRC error may be nothing to worry about, but multiple errors indicate of a signal problem. CRC errors are flagged and counted on the Main Screen of the AMP2-16V. When a CRC error is detected, a red flag appears at the top of the screen as shown in Figure 5–14.

Figure 5–14: CRC Error Count
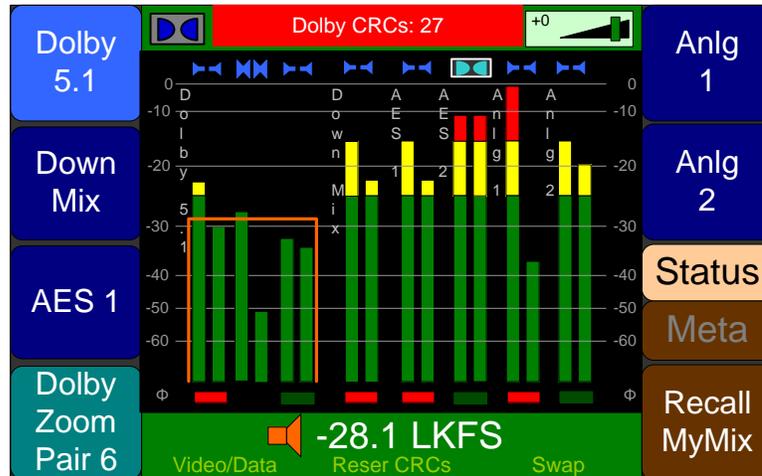
After a few seconds, the red bar turns yellow and will remain until you reset it. Note that when a CRC error first appears, the **Menu** button becomes the **Reset CRCs** button.

1. **Decode**: Either rotating or pressing this knob selects the Dolby stream to decode. The available options include: All Formats, Dolby D Only, or Dolby E Only. This is especially useful for signals that often switch between PCM and E or D. There will be a 1- frame burst of noise for every switch between PCM and D or E, unless this menu item is set to either Dolby D Only or Dolby E Only.

   For some applications, only one form of Dolby should be decoded and all others should be muted. If the same type of Dolby bitstream is always expected, then select that type. However, if any of the other formats can be expected to appear at various times and must be decoded, then select **All Formats**.

2. **Aux Pair**: Either rotating or pressing this knob determines how the auxiliary Dolby pair will be treated. The available options include: Mute, Mono, LoRo Downmix, or LtRt Downmix.

   The fifth (AUX) channel pair of the Dolby decoder can be tasked with outputting one of several downmixes:

   a) **LoRo Downmix**: This a downmix of the selected surround program that forms a stereo signal in which the surround channels are combined. The resulting signal can be used to play a representation of the surround sound signal in stereo headphones or stereo speakers. You can also downmix this signal again to mono.

   b) **LtRt Downmix**:   This is a downmix of the selected surround program that sums the surround channels and adds them with a +90° phase shift to the left channel and a -90° phase shift to the right channel. A Dolby Surround Pro Logic decoder can then be used on this signal to reconstruct the surround channel. However, while the result of this

downmix can be used, it will not produce a mono mix of the surround program because the phase-shifted channels will cancel.

  c) **Mono Downmix**: The selected surround program is downmixed to mono.

  d) **Mute**:The AUX output is muted.

The AUX output of the Dolby D/E/DD+ card is available for monitoring in the **Monitor Mixer Configuration Menu**, along with the other four output channels.

3. **DRC Mode**: Either rotating or pressing this knob selects the DRC (Dynamic Range Compression) Mode. The available options include: Bypass, RF, Line, or Dialnorm.

  a) **None**: This selection removes the compression for the main decoded channel outputs, but provides a *line* compression profile for the AUX output. This provides the least amount of compression, which allows audible monitoring in as close a representation to the actual program as possible. The characteristics of line compression are:

    i. Boost compression scaling for low-level signals is performed.

    ii. Cut compression scaling for high-level signals is performed. The term line is derived from the use of this profile with line outputs of set-top decoders and other A/V equipment.

  b) **Dialnorm Only**: This selection sets the Dolby decoder to operate in exactly the same way as in the **None** setting, except that on Dolby E bitstreams, the Dialnorm is adjusted to reproduce at the level indicated by the Dialnorm metadata value.

  c) **Line Mode**: This selection sets the Dolby decoder to operate in the same way as the **Dialnorm Only** setting above, except that the *Line* profile is applied to the main outputs as well as to the AUX output.

  d) **RF Mode**: This selection sets the Dolby decoder to operate with an *RF* compression profile. This mode provides the most aggressive amount of compression resulting in the least dynamic range in the output signal. The term *RF* is derived from the use of this profile as a suitable one for use with the RF output of set top decoders, which have a limited audio dynamic range.

4. **Metadata Scroll:** Rotating this knob scrolls the list of available Dolby metadata up or down, actively updating the metadata list. The arrows at the right of the list indicate whether you can scroll to view more data above or below.

The metadata from the selected Dolby program is shown in the window at the center of the screen. This metadata is updated live. the **Metadata Scroll** control allows you to simply scroll up and down the list.

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Ethernet Setup Screen

This menu allows you to configure your AMP2-16V monitor for a local area network (LAN).
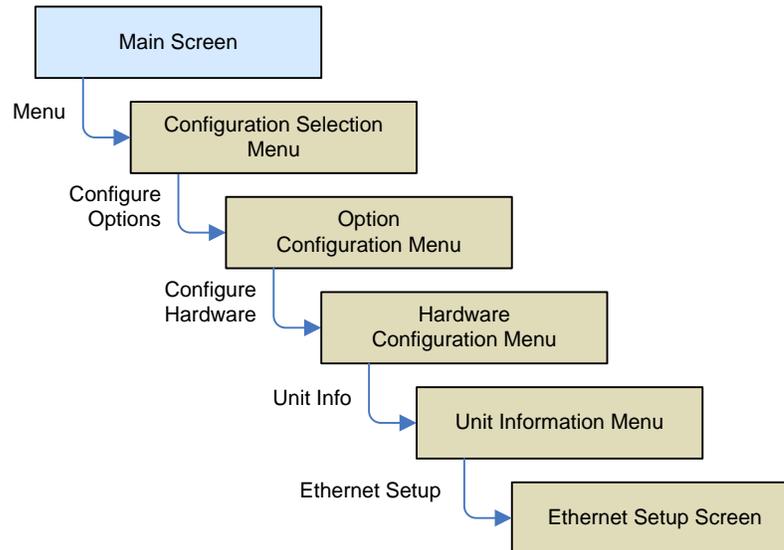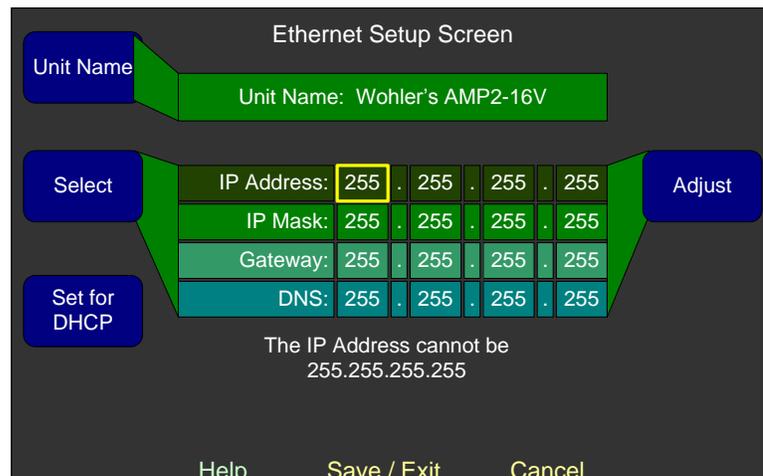

Figure 5–15: Ethernet Setup Screen

1. **Unit Name**: Pressing this knob displays the **Label Menu** where you can assign a unique and descriptive name to your monitor. This field will accept up to 17 characters.

2. **Select**: Pressing this knob highlights the current octet. Rotating this knob moves the highlight from one octet to another.

3. **Set for DHCP**: Pressing this knob resets all the fields (**IP Address**, **IP Mask**, **Gateway**, and **DNS**) to all 0s and sets the monitor so it will accept a DHCP-assigned IP address from your LAN.

    Note: The text area at the bottom of the screen will help you set a proper **IP**

Address and **IP Mask**. At this time, the **Gateway** and **DNS** settings are not used.

Also, the center navigation button will change its text from **Cancel** to **Save/Exit** depending on whether the **IP Address** and **IP Mask** settings are usable.

4. **Adjust**: Pressing this knob advances the highlight to the octet to the right. Rotating this knob increases or decreases the octet number from 0 to 255.

Hardware Configuration Menu

The menu allows you to select a clock source and set reference levels. It also provides a link to the Unit Information Menu.

Note: Except for the **Clock Source**, these settings are not stored or recalled as part of a preset. The **Clock Source** is saved as part of each preset.
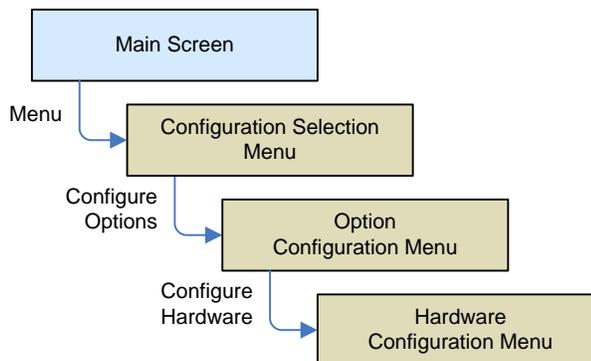
Figure 5–16: Hardware Configuration Menu
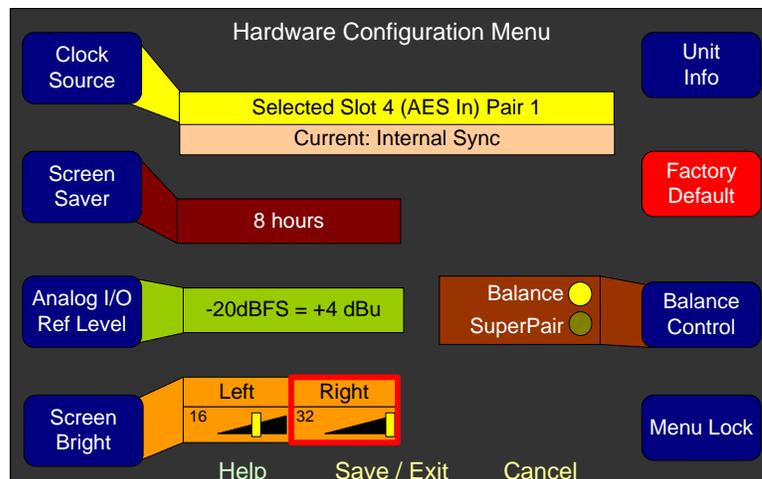
1. **Clock Source:** Rotating this knob selects the input source for audio clocking. You can use the **Ref** input on the rear panel to provide a Genlock sync signal to which all sources are locked. To use this connector, set this control to **Ref Genlocked**. If there is only one input card and no **Ref** input, this is

automatically set to that card. If the currently-selected source is unlocked, the system will automatically choose another locked source. When this happens, the current source and the selected source fields will be different. Clock problems are displayed in red on the **Main Screen** as shown in Figure 5–17.

<div style="background-color:#fde">

Important: You must set the **Clock Source** for each preset. This allows the **Clock Source** to be quickly changed using a **Preset** hot key. All other settings on this page affect all presets.

</div>

Figure 5–17: Genlock Lost Indicator on Main Screen

1. **Screen Saver**: Rotate this knob to select the interval of time the system will wait from the time the user last touched any of the front panel controls, to the time that the system will dim the screens when they are not being used. **Screen Saver** values can be **Off** (no screen saver display) or from **5 Mins** to **24 Hrs**. Setting shorter times will prolong the life of the front panel screens.

2. **Analog I/O** Reference **Level:** Rotating this knob allows you to select from any of the following eight analog I/O reference levels:

   a) -22 dBFS = +4 dBu
   b) -20 dBFS = +4 dBu
   c) -18 dBFS = +4 dBu
   d) -16 dBFS = +4 dBu
   e) -20 dBFS = +8 dBu
   f) -20 dBFS = 0 dBu
   g) -18 dBFS = 0 dBu
   h) -9 dBFS = +6 dBu

3. **Screen Bright**: Press this knob to toggle the screen whose brightness you want to change. Rotate the knob clockwise to increase the brightness, or rotate it to counterclockwise to decrease the brightness. The brightness is measured from **1** to **29**.

4. **Unit Info:** Pressing this knob displays the **Unit Information Menu** where you can display the version of the various software components in the system and/or update those software components. Refer to Unit Information Menu in this chapter for details.

5. **Factory Default:** Press this knob to clear all of the presets. Use this function with care because it will undo every setup ever configured, including factory presets that were installed to tailor system operation to the option cards purchased. A warning screen will show when pressed and a second press is required to proceed.

6. **Balance Control**: When rotated or pressed, this control switches the function of the balance control knob between being a **Balance** control and adjusting the level of the **SuperPair** into the monitor mix. When this control is set to adjust the **SuperPair** trim, the left- right balance of the monitor mix is automatically centered.

7. **Menu Lock**: Pressing the **Menu Lock** knob displays the **Select Menu Lock Combination** screen. See Select Menu Lock Combination in this chapter for details.

Hot Key Configuration Menu 1 Through 8

This menu allows you to configure the eight hot key knobs on the **Main Screen**.
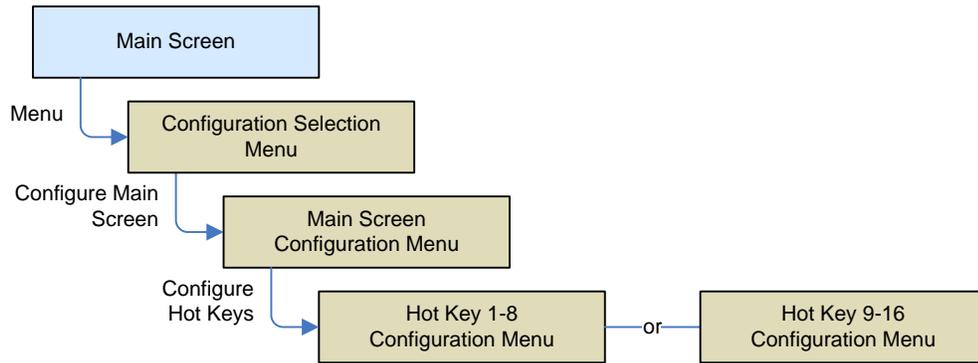
Figure 5–18: Main Screen Hot Key Configuration Menu
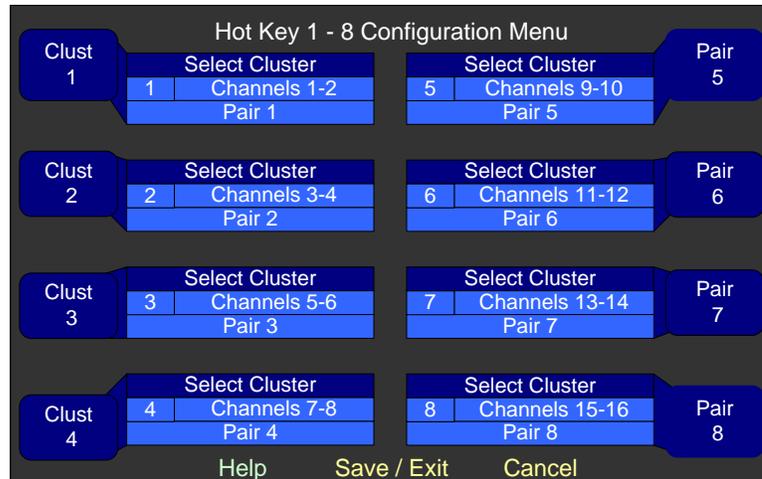
Rotary Knobs: Rotating any knob moves the highlight from the knob label itseL to the function field. After the function is chosen, rotating the knob can then step through other selections pertaining to that function.

Note: The **Select Cluster** hot keys (1 through 8) are automatically set for you when you exit the **Cluster Configuration Menu**. Also, **Select Cluster** hot keys automatically change to **Dolby Zoom** hot keys, if a Dolby bitstream is present on the associated channel pair.

1. Pressing the knob while the highlight is over the knob label displays the **Label Menu** so you can rename the hot key. Refer to the Label Menu in this chapter for details.

Note: The label may not be changed on the **Status/ Metadata** or **Off** hot keys. The label on the **Select Cluster** can be changed in the Cluster Configuration Screen, but not here.

2. Many hot keys are available to make a variety of useful functions accessible at the touch of a button:
    a) Select Cluster
    b) Recall Preset
    c) Trim
    d) Downmix
    e) Dolby Zoom
    f) Status/Metadata
    g) Status/Metadata/Preset
    h) Automation On/Off
    i) Loudness Screen
    j) Off

3. Pressing the knob while the description of a hot key is highlighted selects it and allows further detailing of the function of some of the hot keys.

Note: Multiple trim hot keys cannot adjust the same channels on the same menu, so channels that are not selectable are disabled and grayed out.

4. Pressing the knob while a channel or channel pair is highlighted selects or deselects it from applying to this hot key. Note that in some cases you can select multiple channels.

5. Pressing the knob while a preset is highlighted, selects it and deselects any other preset that was already selected. If you choose **Selectable**, you will be able to rotate the knob to display the available presets on the **Main Screen**.

Hot Key Configuration Menu 9 Through 16

This menu allows you to configure hot keys 9 through 16 on the **Main Screen**. The selections on this menu are identical to those on the **Hot Key Configuration Menu 1 Through 8**.

Label Menu

This menu allows you to modify the knob labels for clusters, presets, and hot keys. It is accessible through the menus associated with these elements.

Figure 5–19: Label Menu

1. **Select Existing Label:** This knob allows you to use an existing label to create a new one so you can avoid starting from scratch. Rotating the knob left and right moves the cursor left and right among the labels. Pressing the knob replaces the label in the **Label** field with the selected label.

2. **Shift**: Pressing this knob toggles between upper- and lower-case letters. Rotating it left selects upper case; rotating it right selects lower case. The letters inside the dark area of the screen change accordingly.

3. **Select Horiz**: Rotating the knob moves the cursor inside the character field horizontally.

   Pressing this knob selects the letter or symbol in the character field, and places it in the next character location in the **Label** field.

4. **Cursor Control**: Rotating this knob positions the cursor within the text so that new characters can be entered from that position. Pressing this knob deletes the character immediately to the left of the cursor in the **Label** field.

5. **Backspace**: Pressing this knob deletes the character immediately to the left of the cursor in the **Label** field.

6. **Revert**: Pressing this knob recalls the previous label, and allows you to continue editing.

7. **Select Vert**: Rotating this knob moves the cursor within the character field vertically.

Pressing this knob selects the letter or symbol in the character field, and places it in the next location in the **Label** field.

Loudness Clusters Menu

The **Loudness Clusters Menu** allows you to prevent the loudness measurement from being displayed on one or more clusters. By default, all clusters are available to be measured (even those with more than 8 channels). For example, if you want to limit the loudness measurement to only the 5.1 Channel Cluster (#3) in the figure below, you would disable all of the other clusters (1-2, 4-6) and set the default cluster to #3. Then no other clusters could be chosen to be measured.
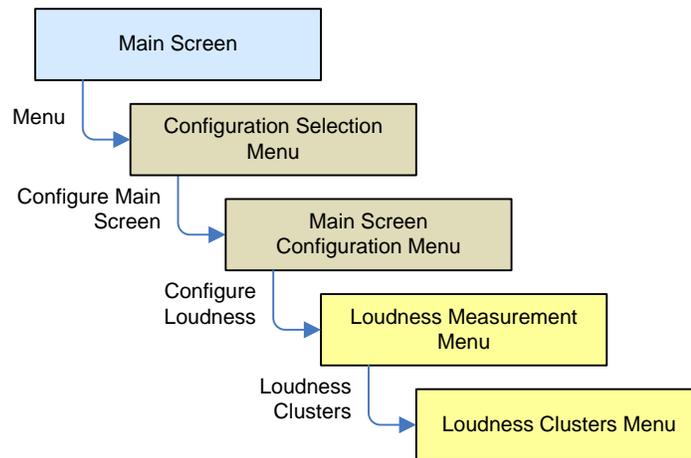
Figure 5–20: Loudness Clusters Menu
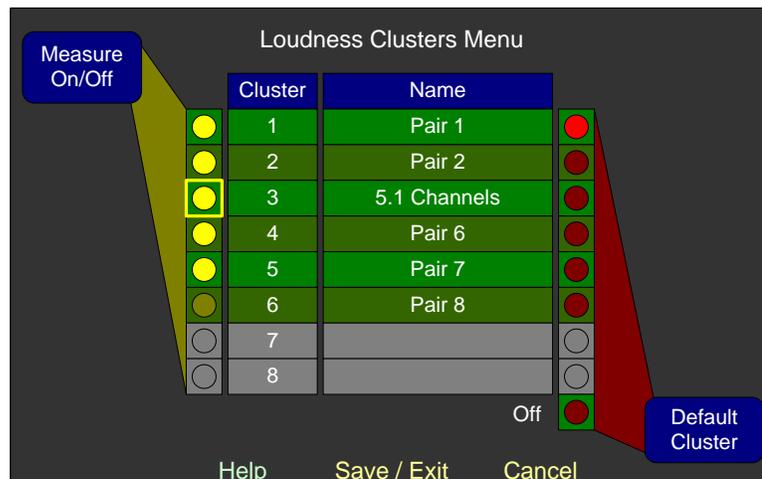
1. **Measure On/Off**: Rotating this knob moves the highlight from one cluster to the next. Pressing this knob toggles whether this cluster can be chosen for loudness measurement by a **Select Cluster** hot key or by the **Select Cluster** control on the **Loudness Screen**.

2. **Default Cluster**: The default cluster is the cluster for which loudness is measured on the **Main Screen** if no other enabled clusters are selected.

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Rotating this knob sequences through each of the clusters. Pressing this knob selects the default cluster. When set to **Off**, no cluster is the default.

Loudness Measurement Menu

The **Loudness Measurement Menu** sets loudness parameters and controls what loudness indications are displayed on the **Main Screen** and on **the Loudness Screen**.
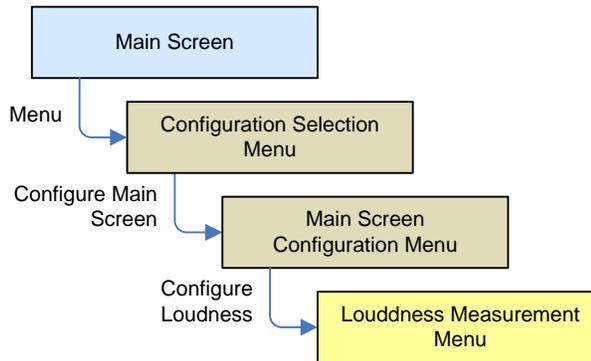
Figure 5–21: Loudness Measurement Menu
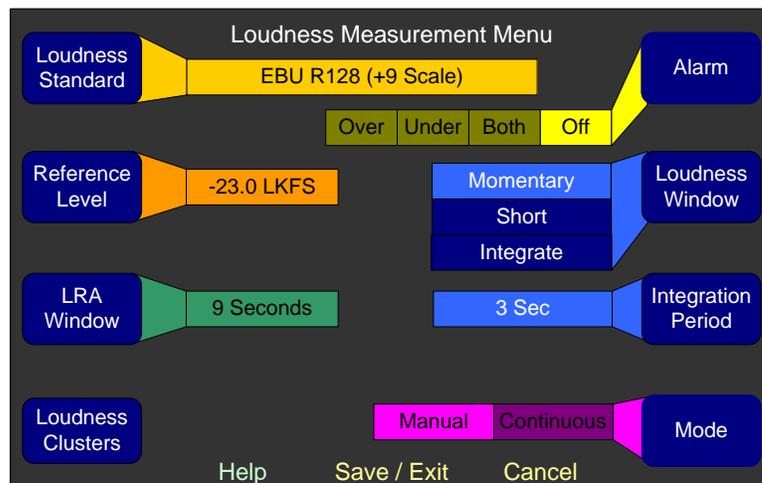
1. **Loudness Standard:** Rotating this knob will select the **Loudness Standard** to be used. As the **Loudness Standard** is selected, the **Reference Level** and **Alarm Tolerance** settings assume their default values for that standard. The choices are:
   a) ITU BS.1770-3 (default)
   b) EBU R128 (+9 Scale)
   c) EBU R128 (+18 Scale)

2. **Reference Level:** Rotating this knob selects the **Reference Level** in increments of 1.0 unit from -30.0 through -18.0. The default settings are according to the chosen **Loudness Standard**:
   a) ITU BS.1770-3: -24.0 LKFS *(The default value of -24.0 LKFS indicated*

in ITU BS.1770-3 isn't part of the standard. However, it is the value recommended by ATSC A/85, and it is chosen for the purpose of this control as a starting point and may be. It can easily be changed as required.)
  b) EBU R128: -23.0 LUFS

3. **LRA Window**: Rotating this knob increases or decreases the **LRA** (Loudness RAnge) **Window**. The possible values range from 9 seconds (default) to 3 hours.

4. **Loudness Clusters**: Pressing this control proceeds to the Loudness Clusters Menu. Refer to Loudness Clusters Menu in this chapter. From this menu, you will be able to determine which loudness channel clusters will display loudness when selected.

5. **Alarm**: Rotating this knob will select possible visual alarm indications on the **Loudness Screen**, relative to loudness of the program. The alarm will then be activated if the measured loudness exceeds the **Alarm Tolerance**. For example, if **Over** or **Both** is selected, and the **Reference Level** is exceeded by the **Alarm Tolerance**, the **Loudness Screen** will appear as follows, with the measured loudness back lighted in red:
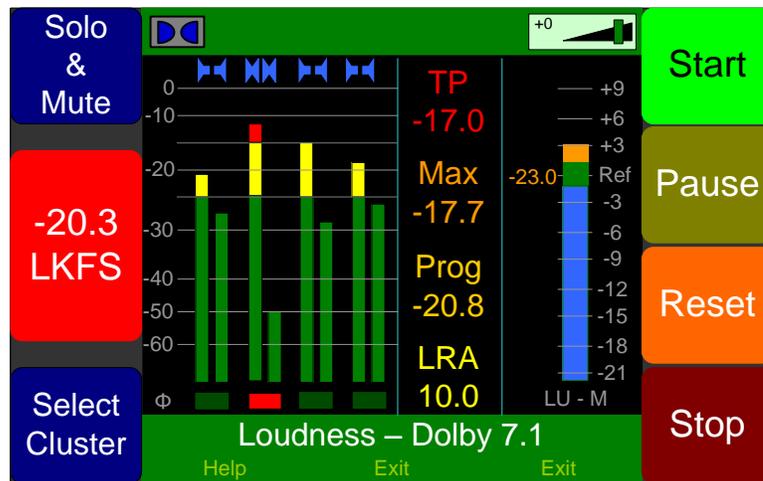
3. **Alarm Tolerance**: This setting adjusts how far above or below the **Reference Level** will activate the **Over** or **Under** alarms. It also affects the size of the green segment in the LU meter. When an EBU standard is selected, this setting default to +/- 1 LU and when the IEC standard is selected, it will default to +/- 2 LU. This control will allow further adjustment according to actual needs. Turning the **Alarm Tolerance** control will select one of six possible settings:

- +/- 1 LU
- +/- 2 LU
- +/- 3 LU
- +/- 4 LU
- +/- 5 LU
- +/- 6 LU

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4. **Loudness Window**: Pressing this knob will select one of the three possible settings:
   a) **Momentary** (0.4 seconds) (default): This setting will cause the loudness measurement to respond quickly to sudden jumps in audio loudness.
   b) **Short Term** (3 seconds)
   c) **Custom** (1 second to 120 minutes): If **Custom** is selected by pressing the **Loudness Window** knob, then rotating the knob will select the integration time of your choice.

5. **Mode**: Pressing or rotating this control will toggle between **Manual** and **Continuous** loudness monitoring modes. If Continuous mode is selected, the **Start** and **Stop** controls on the Loudness Screen will be disabled. The default is Continuous mode, which will cause loudness to be monitored all of the time.

Main Screen Configuration Menu

This menu provides links to other menus where you can configure the meters, clusters, other options, hot keys, and loudness settings.
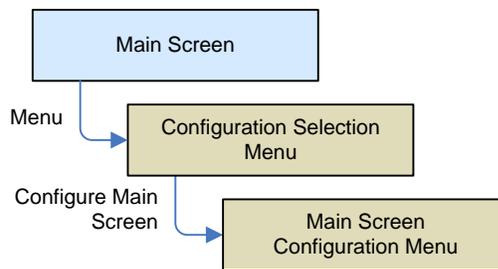
Figure 5–22: Main Screen Configuration Menu
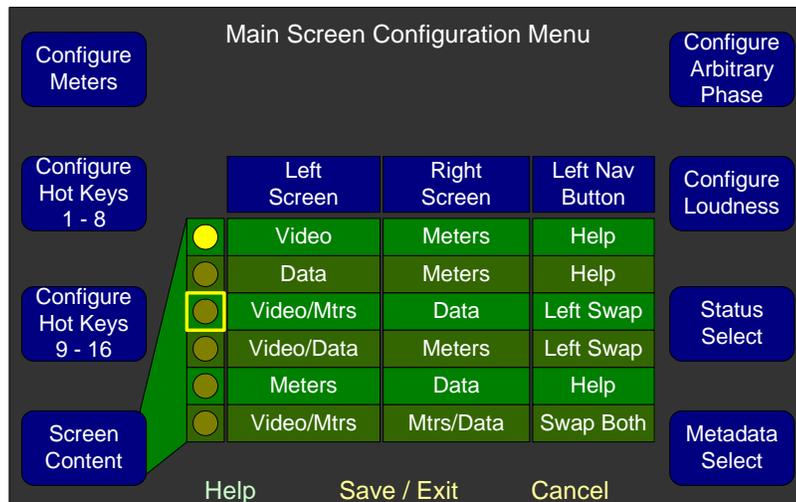
1. **Configure Meters:** Pressing this knob displays the **Meter Configuration Menu**. See Meter Configuration Menu in this chapter for details.

2. **Configure Hot Keys 1 - 8:** Pressing this knob displays the **Main Screen Hot Key Button Configuration Menu** that will allow you to set up the function of the first eight **Main Screen** hot keys.

   See Hot Key Configuration Menu 1 Through 8 in this chapter for details.

3. **Configure Hot Keys 9 - 16:** Pressing this knob displays the **Main Screen Hot Key Button Configuration Menu** that will allow you to set up the function of the second eight **Main Screen** hot keys. Refer to Hot Key Configuration Menu 9 Through 16 in this chapter for details.

4. **Screen Content**: Rotating this knob scrolls through the available video and metadata display options for the left screen and the functionality of the left navigation button. Pressing this knob selects the highlighted option. The yellow indicator identifies the current option.

5. **Configure Arbitrary Phase**: Pressing this knob displays the **Arbitrary Phase Measurement Menu**. See Arbitrary Phase Measurement Menu in this chapter for details.

6. **Configure Loudness**: Pressing this knob displays the **Loudness Measurement Menu**. See Loudness Measurement Menu in this chapter for details.

7. **Status Select**: Pressing this knob displays the **SMTPE 2020 Configuration Menu**. See SMTPE 2020 Configuration Menu in this chapter for details.

8. **Metadata Select**: Pressing the knob displays the **Metadata Select Menu**. See Metadata Select Menu for details.

Metadata Select Menu

From this menu, you can select up to three pages of exactly what metadata you want to display including the order of data items, the font color, and font size.
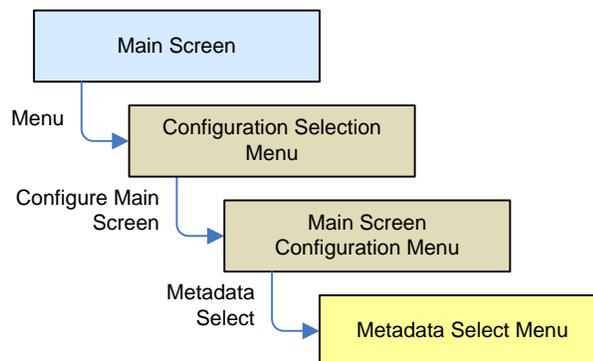
Figure 5–23: Metadata Select Menu
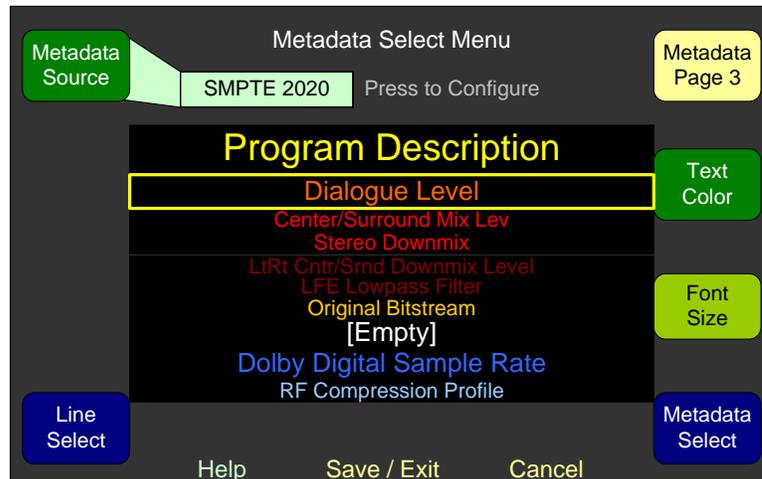
1. **Metadata Source**: Rotating this knob displays the source from which the metadata is derived. Then when you press the **Metadata Select** knob, it will display the **SMPTE 2020 Configuration Menu** or the **Dolby Decoder Configuration Menu** respectively.

2. **Line Select**: Rotating this knob scrolls the highlight up or down among the lines of text to select the line you want to modify.

3. **Metadata Page**: Rotating this knob selects among the three available pages.

4. **Text Color**: Rotating this knob selects the text color of your choice. Use brighter colors for data that is more important to you, or dim colors for data that is less important.

5. **Font Size**: Rotating this knob selects from a small, medium, or large font.

6. **Metadata Select**: Rotating this knob selects the type of data you want to display on this line. (If you select **[Empty]** a blank line will result on the **Main Screen**. This can be used to separate the data lines so they are easier to read.) The height of the blank line is controlled by the **Font Size** control.

Meter Configuration Menu

This menu allows you to configure the appearance of the Main Screen meter characteristics, including: scale, ballistics, limits, reference levels, and upper, middle, and lower segment set points, and colors.
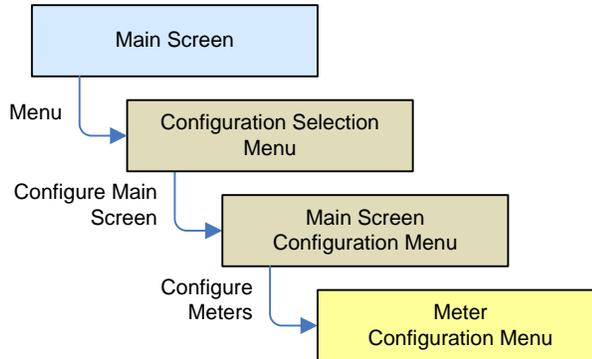
Figure 5–24: Meter Configuration Menu
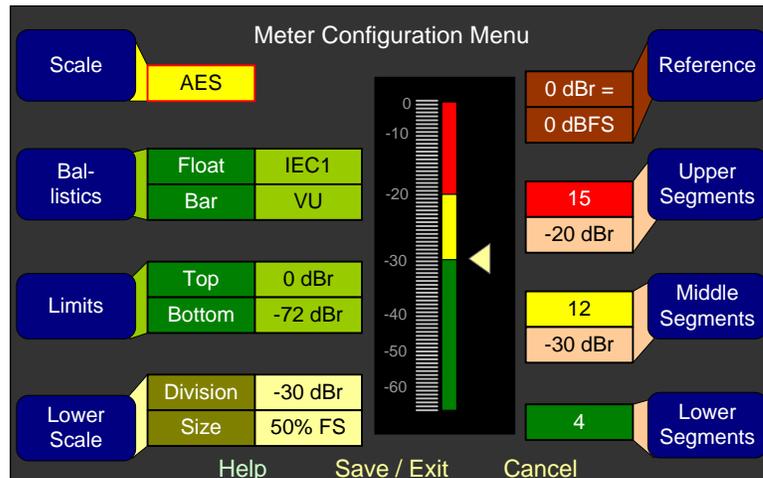
1. **Scale**: Rotating this knob steps through the scales for the level meters. Seven selections are available as shown in Table 5–1 below. Six settings are predefined; a seventh setting is user defined.

Table 5–1: 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
Extd VU	-56 dBr	+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
Custom	-72 dBr (min)	+20.0 dBr (max)	0 dBFS = 0 dBr	-30 dBr	-20 dBr	IEC Type I	VU

2. **Ballistics**: Rotating this knob adjusts the float. Pressing and then rotating adjusts the bar. Ballistic timings are valid only at 48 kHz.

Table 5–2: 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. **Limits**: Rotating this knob sets the upper limit of the display. Pressing and then rotating sets the lower limit. Top and bottom limits are adjustable in 1 dB increments. This function is available on the custom meter scale only.

4. **Lower Scale**: (This function is available on the custom meter scale only.) This knob controls the size of the lower part of the scale in relation to the overall scale. You can reduce the size of the lower part of the scale to allow more accuracy in viewing the upper part. Rotating this button sets the division point between the upper and lower parts of the scale in 1 dBr increments and it moves the arrow in the meter display up or down. As you adjust the division, the percent of full scale (%FS) in the **Size** section of this function, is continuously recalculated. Likewise, if the **Limits** control is adjusted, the %FS is also recalculated.

5. Pressing the knob and then rotating it adjusts the %FS. This value cannot be adjusted to a number in excess of the calculated %FS. Rotating the knob counter-clockwise reduces the %FS in 1% increments. It may not be adjusted to less than 5%.

6. **Reference**: Rotating this knob adjusts the display reference level. This function is available on all scales except the AES scale.

7. **Upper Segment Color**: Rotating this knob cycles the upper color of the displayed sample level meter color through a wide variety of colors. Pressing this knob allows you to adjust the division between the upper and middle segments. Color boundaries are adjustable in 1 dB increments, and have the same range as the bottom and top limits of the meter.

8. **Middle Segment Color**: Rotating this knob cycles the middle color of the displayed sample level meter color through a wide variety of colors. Pressing this knob allows adjusting the division between the middle and lower segments. Color boundaries are adjustable in 1 dB increments, and have the same range as the bottom and top limits of the meter.

9. **Lower Display Color**: Rotating this knob cycles the lower color of the displayed sample level meter color through a wide variety of colors.

Monitor Mixer Configuration Menu

This menu allows you control the audio monitoring of each channel and to control the phase displays for each channel pair. It also links to the Cluster Configuration Screen, where you can configure the clustering of the channels on the Main Screen.

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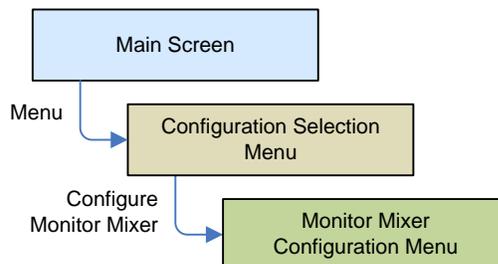
Figure 5–25: Monitor Mixer Configuration Menu
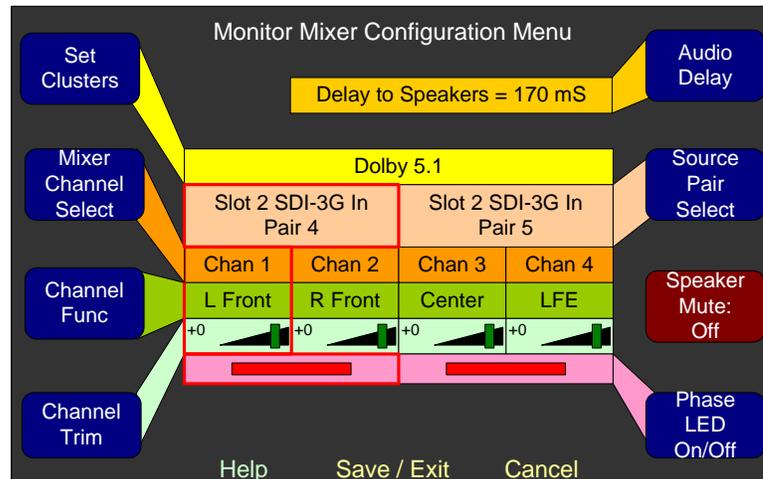
With the combination of the Volume control, channel clustering, and speaker setting, you has a very powerful, intuitive tool to arrange the metering and monitoring options on the Main Screen so users can tell at a glance what is happening with the monitored sources.

1. **Set Cluster:** Pressing this knob continues on to the **Cluster Configuration Screen**, where you can configure and label the meter clusters, and how they will display on the **Main Screen**.

2. **Mixer Channel Select:** Rotating this knob moves the red selection boxes from side to side, selecting the monitor mixer channel and pair to configure.

3. **Channel Func**: Rotating this knob selects either **L Front**, **R Front**, **Center**, **LE**, **L Sur.**, **R Sur.**, **L Rear Sur.**, **R Rear Sur.**, **M Sur.**, or **None**.

Important: It is necessary to accurately set the **Channel Function** for each channel because many other system functions depend upon it. This includes Channel Clustering, Loudness Measurement, output to a surround sound system, and output to the internal speaker system.

1. **Channel Trim:** Rotating this knob changes the gain. This knob has a range of -60 dB to +12 dB (inclusive) in 1 dB steps. Pressing and holding this knob for over 1 second returns the setting to 0 dB. You can mute the channel by turning this knob counterclockwise beyond
2. -60 dB.

3. **Audio Delay**: Rotating this knob allows you to add an audio delay of up to 170 ms in 1 ms increments to the speaker audio. As you turn the knob, the audio delay varies dynamically so that, while watching the associated video, you can visually and audibly determine the correct delay. Pressing the knob toggles between no delay (**Off**) and the current delay setting.

Note: While adjusting the delay, the monitor may temporarily produce a small

clicking noise.

4. **Source Pair Select:** Rotating this knob steps you through all the possible source pairs for this particular monitoring pair, or **Off**. Pressing this knob has no effect.

You can choose any one of the eight channel pairs of any active input or output card, or **Off**. In Dolby-capable units, the five Dolby output pairs will be added. This will select between one of many inputs (five processor cards at 16 channel pairs each plus five Dolby output pairs). The choices are presented to you as **Slot x (<card name>) Pair y** or **Dolby Decoder Pair z**.

Setting the channel to **Off** disables the other knobs for that channel pair.

Turning a channel **Off** removes its meter, its associated text, and its phase LED from the **Main screen**. The remaining meters will automatically scale and rearrange themselves to fill the void.

5. **Speaker Mute On/Off:** Rotating or pressing this knob turns the knob label on or off. When the **Speaker Mute** is **On**, no sound will emit from the speakers, although the metering will work normally. This mute is designed to be engaged when an external surround sound system is in use instead of the internal speakers.

6. **Phase LED On/Off:** Rotating or pressing this knob turns the selected pair-wise phase indicator on or off. The effect is to either enable or disable a phase indicator on the **Main Screen**.

The phase indicators in this menu can be enabled for adjacent channels that are part of the same cluster only. A phase indicator can not be enabled for any channel that is off. The box is disabled for any phase indicator that cannot be enabled. Refer to Arbitrary Phase Measurement Menu in this chapter to set up phase comparisons between non-adjacent channels.

Option Configuration Menu

This menu allows you to determine exactly how you want the audio to come through the internal speakers and whether you want to enable the **Main Screen** solos/mutes for this source. It also provides a link to the **Hardware Configuration Menu**.
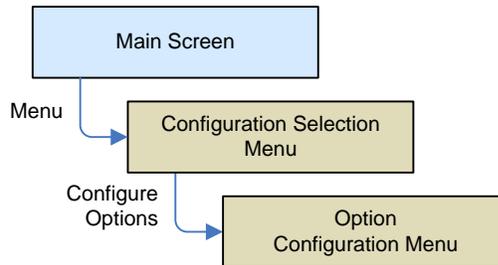
Figure 5–26: Option Configuration Menu
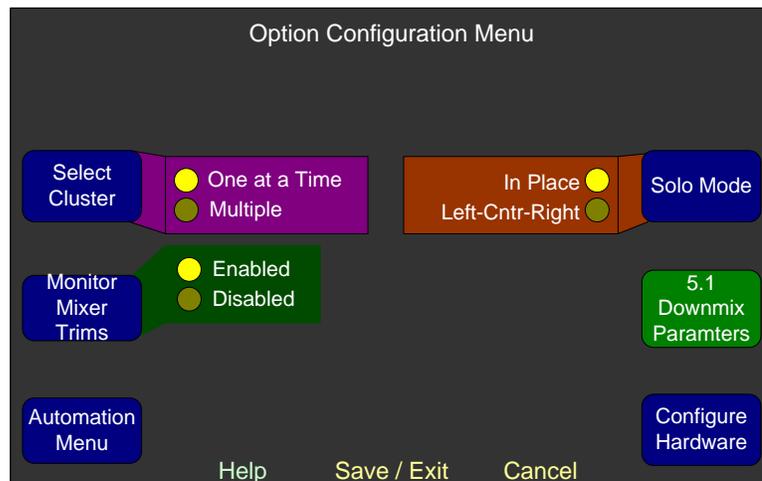
1. **Select Cluster**: Rotating or pressing this control determines whether you can select a single cluster, or multiple clusters to be heard at once.

2. **Monitor Mixer Trims**: Rotating or pressing this control determines whether the eight pairs of **Channel Trim** controls on the **Monitor Mixer Configuration Menu** will be enabled for adjustment. This setting does not affect the SuperPair, which will always have its trim controls enabled.

3. **Solo Mode**: Rotating or pressing this knob determines whether the individual channels soloed by the **Select Cluster** controls are heard in their native position or in place on the left and right speakers. When the monitor mix is fed to an Analog or AES output card (for use with surround speakers), each soloed channel is then heard either in its native (Left, Right, Center, LE, Left Surround, or Right Surround) position or in the front (Left, Right, and Center) speakers.

4. **Downmix Parameters**: Pressing this button displays the **5.1 Downmix**

Parameters Screen. See 5.1 Downmix Parameters Screen in this chapter for details.

5. **Configure Hardware**: Pressing this knob displays the **Hardware Configuration Menu**. Refer to Hardware Configuration Menu in this chapter for more details.

Preset Management Menu

This menu allows you to name, save, copy, and clear presets. Presets should be saved after changes are made to them. This menu will also let you set how the system is configured after power is lost and then restored.
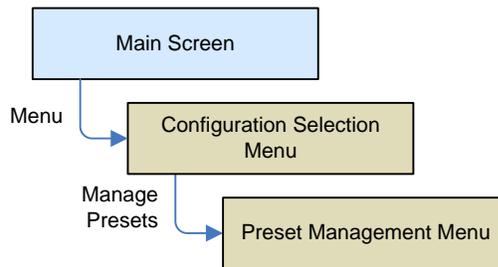
Figure 5–27: Preset Management Menu
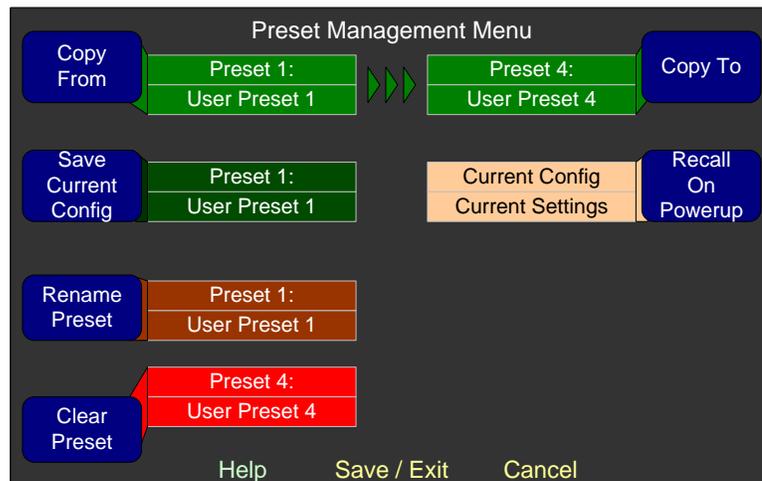
1. **Copy From:** Rotating this knob steps through source presets for the copy. Press the knob to copy the preset shown. This knob is to be used in conjunction with the Copy To knob. Pressing either one will copy the indicated preset.

2. **Save Current Config:** Press the knob to display the **Preset Label Menu** and save the current settings into the selected preset.

3. **Rename Preset:** Rotating this knob allows you to select from any of the presets. Pressing this knob displays the **Label Menu** where you can enter a new name for the preset.

4. **Clear Preset:** Rotating this knob selects a preset to be cleared, and pressing the knob clears it. A warning appears to verify that this action was intentional. Pressing the knob a second time will clear the preset completely.

5. **Copy To:** Rotating this knob selects the destination preset for the copy. Pressing the knob completes the copy. This knob is to be used in conjunction with the **Copy From** Knob. Pressing either one will copy the indicated preset.

6. **Recall on Power Up**: Rotating this knob allows you to select from any of the presets, or the last known state of the unit. Thus, after a power failure, or after the unit is unplugged and then subsequently powered up, the unit can either start up in its last known state, or in the selected preset.

Note: None of the preset modifications are saved until the **Save/Exit** button is pressed. All changes are cancelled if the **Cancel** button is pressed

Select Menu Lock Combination

The menu lock feature allows you to lock the front panel controls so that a casual operator cannot access the configuration menus. The Select Menu Lock Combination Screen allows you to create a combination that will allow entry into the menu system. Thereafter, you will need to use this combination every time you want to access the Configuration Selection Menu.

```
Main Screen
    |
    | Menu
    v
Configuration Selection
        Menu
        |
        | Configure
        | Options
        v
    Option
  Configuration Menu
        |
        | Configure
        | Hardware
        v
      Hardware
  Configuration Menu
        |
        | Menu Lock
        v
  Select Menu Lock
    Combination
```
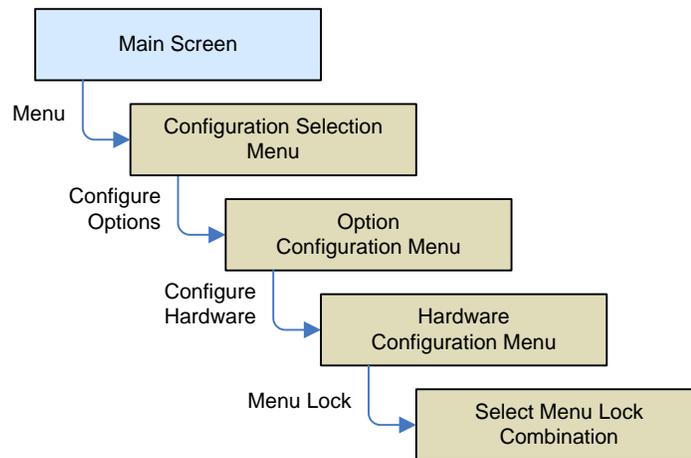
Figure 5–28: Select Menu Lock Combination Screen - Enabled
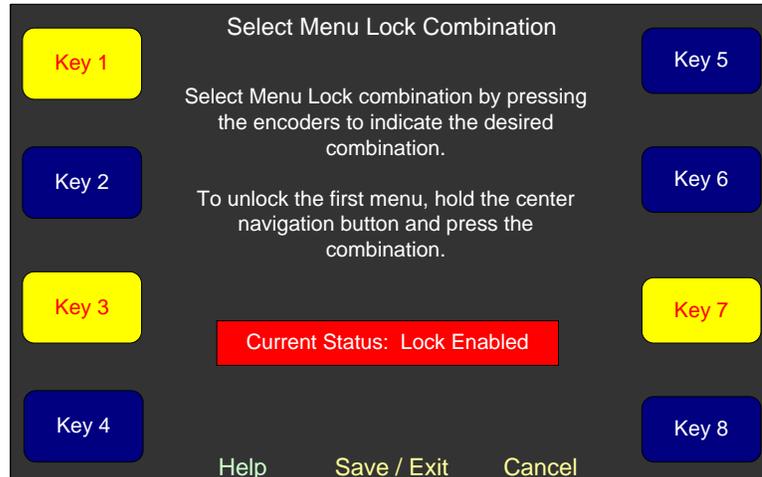
Keys 1 - 8 – Lock Configuration: Pressing each control toggles between a bright yellow or a dark blue condition on that control label. The bright yellow labels indicate that the control is part of the lock combination.

If all labels are dark blue, no combination is set as shown in Figure 5–29.

Figure 5–29: Select Menu Lock Combination Screen - Disabled
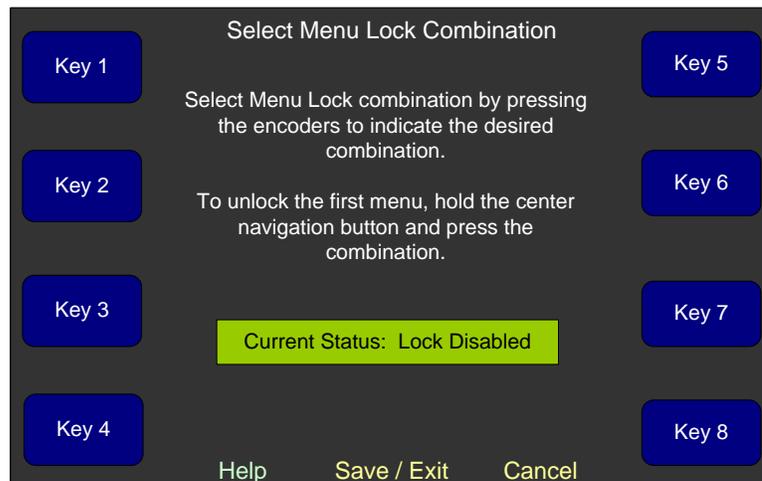
To unlock the menu screen, hold the **Menu** button down (from the **Main Screen**). Then press only the combination buttons (in any order) and no others. Release the **Menu** button and the **Configuration Selection Menu** will appear.

> **Important:** If you forget the combination, you can unlock the menus using the following steps.

1. Unplug the power cord(s) and wait 10 seconds.

2. While pressing and holding the center **Menu** button, connect the power cord(s).

3. Continue holding the center **Menu** button until a screen tells you to release

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it.

4. Press the **Continue** control.

At this point, the menu unlock combination has been forgotten, effectively unlocking the menu entry. All other system configurations and settings will remain unchanged. To again lock access to the menus after this procedure, you will need to select a new menu lock combination as described earlier in this section.

SMTPE 2020 Configuration Menu

This menu allows you to select the data that you want to appear on either of the screens depending on how you have arranged the video, data, and meters to display on the **Main Screen**. (See **4. Select the Metadata to Display** on the Screen in Chapter 1 for more information.)
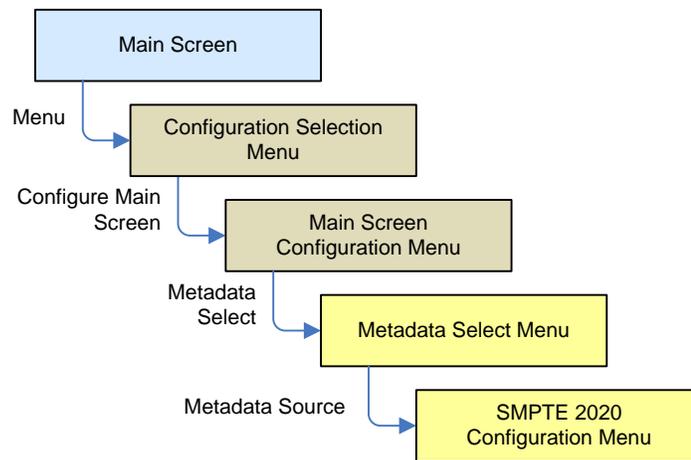
Figure 5–30: SMTPE 2020 Configuration Menu
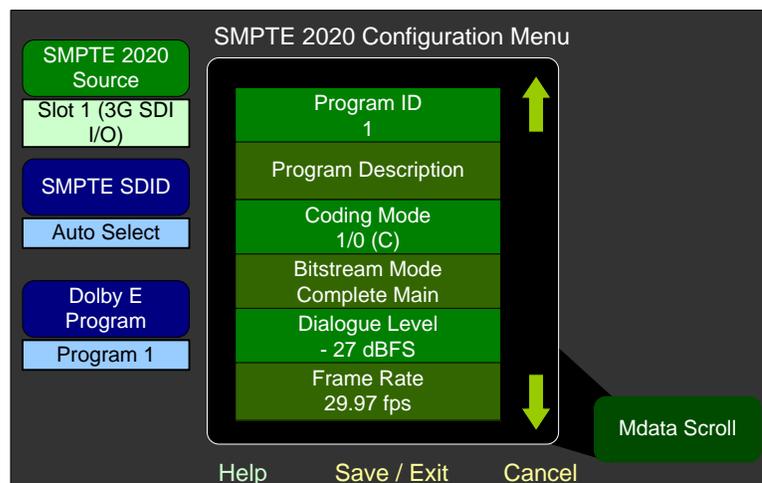
1. **SMTPE 2020 Source**: Rotating this control selects the input source of the SMPTE 2020 metadata. The possible choices include any of the 3G/HD/SD SDI cards.

2. **SMPTE SDID**: By default, the AMP2-16V will automatically select the lowest numbered SDID containing metadata. If you would prefer to specify a different SDID, rotate the SMPTE SDID to select the desired one. The metadata list to the right of the selection indicates whether the chosen SDID contains metadata. This control is grayed out if a SMPTE source is not selected. The ten choices include **No Assoc.**, **Pair 1** through **Pair 8** and **Auto Select**.

3. **Dolby E Program**: Rotating this control selects the desired Dolby E program.

4. **Mdata Scroll**: When rotated, this control scrolls up or down an actively updating metadata list.

Status Select Menu

This menu allows you to select the content and display font size and color of the status information you want to display on the screens.
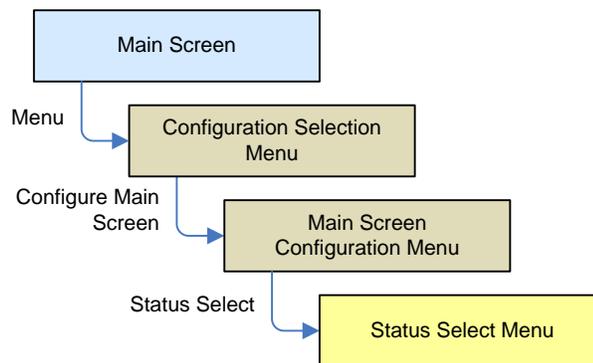
Figure 5–31: Status Select Menu
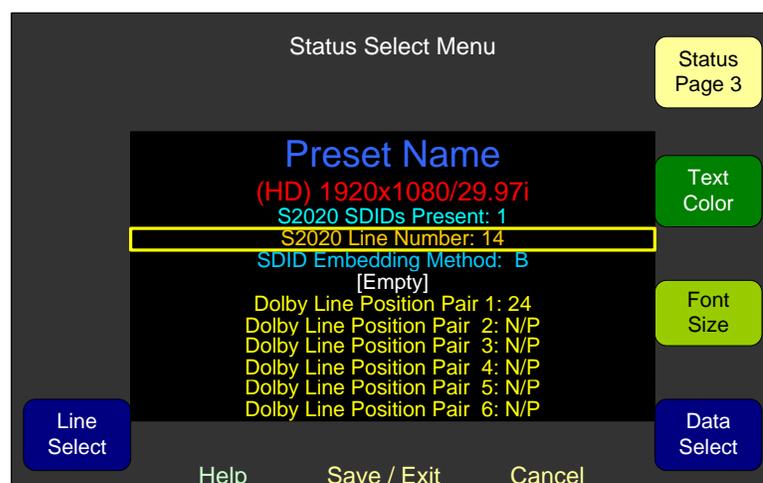
1. **Line Select**: Rotating this knob moves the highlight from line to line.

2. **Status Page 3**: Rotating this knob selects among the three available pages.

3. **Text Color**: Rotating this knob selects the text color of your choice. Use brighter colors for data lines that need to stand out more and dimmer colors for necessary but little used data.

4. **Font Size**: Rotating this knob changes the font size, small, medium, or large, for the highlighted line.

5. **Data Select**: Rotating this knob selects the type of data you want to display on this line. (If you select **Empty**, a blank line will result on the **Main Screen**. This can be used to separate the data lines so they are easier to read.) The height of the blank line is controlled by the **Font Size** control.

Unit Information Menu

This menu allows you to display the current software version of various internal components, upgrade the software of those components, and establish Ethernet and/or serial connectivity from the unit to a PC. Pressing the **S/W Update** knob enables and displays the **ENABLE FTP** control.

When you first display the **Unit Information Menu**, the **Unit S/W Info.** information will automatically display.
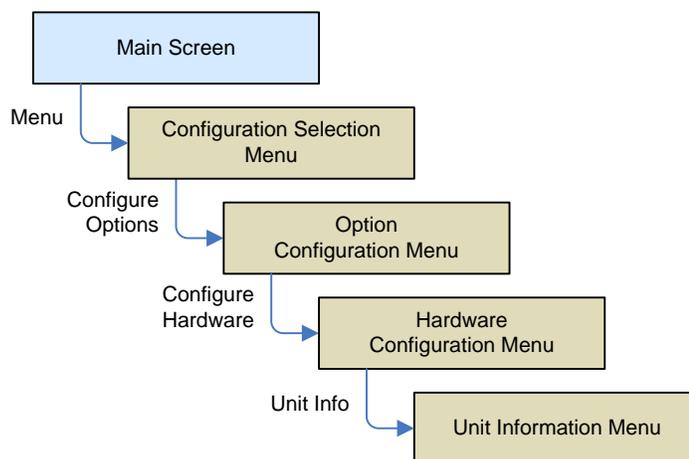
Figure 5–32: Unit Information Menu - Application
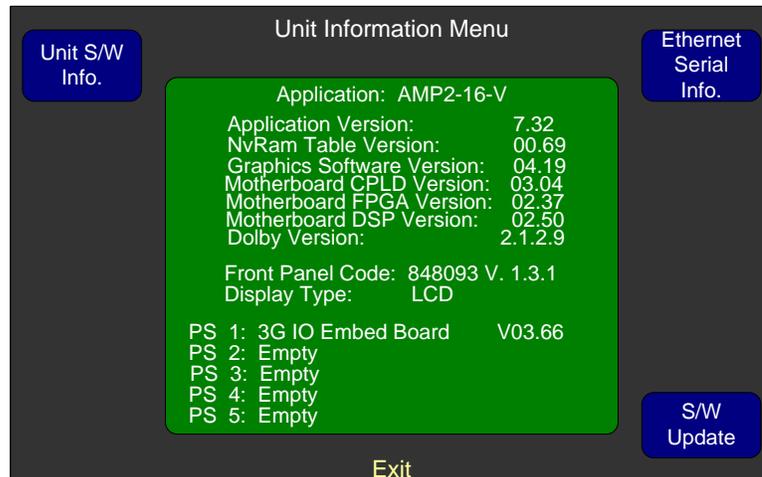
1. **Unit Name:** Pressing this knob proceeds to the **Label Menu** where you can name this particular AMP2-16V so that this name can be seen remotely when updating software via the Ethernet.

2. **Unit S/W Info.:** Pressing this knob displays the version of each software component in the unit and the I/O modules that this unit contains.

3. **Ethernet Serial Info:** Pressing this knob changes this menu to show the Ethernet and serial port information as shown in Figure 5–33 below.

Figure 5–33: Unit Information Menu - Ethernet
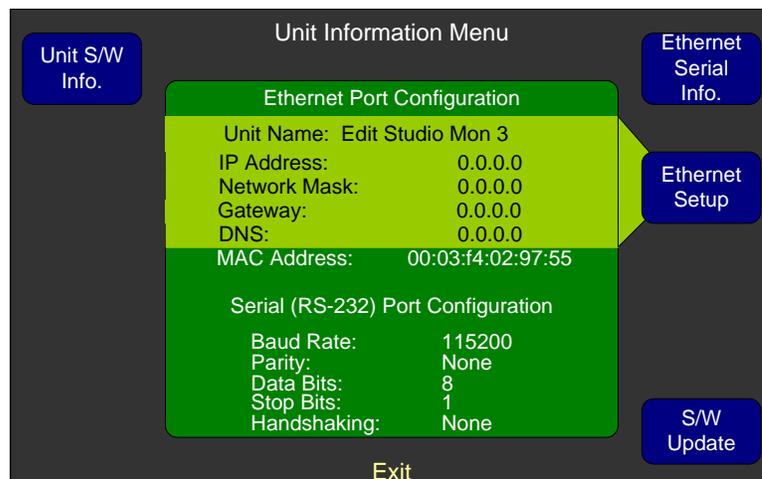
1. **S/W Update:** Do not use this knob unless instructed to do so by Wohler technical support.

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CHAPTER 6: I/O Modules and Options

Introduction

This chapter discusses the various Input/Output Modules and their impact on the menu system, as well as other available options for the AMP2-16V Series monitors.

Distinctions Among Models

Optional I/O Modules

You can further customize the AMP2-16V by inserting additional I/O modules (a total of five) to the back plane.

Figure 6–1: Optional I/O Modules

Note that you can add any of the I/O modules (listed in Table 6–1) or multiples of I/O modules, in any order.

I/O Module Name	Functionality Provided
3G/HD/SD-SDI-V Card	Two 3G/HD/SD-SDI inputs 8 de-embedded AES pairs outputs 1 selected reclocked output (Includes automatic frame rate detection)
AES Input Card	16 channels (eight AES pairs)
AES Output Card	16 channels (eight AES pairs) consisting of a mix of any channels
Analog I/O Card	8 channels
Analog I/O and SPDIF TOSLINK Card	8 channels and 1 optical pair
Dante AoIP Receiver Card	16 channel Dante Rx; 8 channel AES67 Rx
Ravenna AoIP Receiver Card	16 channel Ravenna Rx; 8 channel AES67 Rx
Dolby Card D/E/DD+ Card*	Provides Dolby decoding for an AES pair or de-embedded SDI of your choice

* The Dolby D/E/DD+ Card is a daughter card and does not occupy one of the vacant slots since it does not require its own external connectors.

Standard Models

While a huge number of functional combinations are possible by adding I/O modules, the following typical combinations form Wohler's standard offering.

Table 6−2: Relationship Between Model Name and Included I/O Modules

Model	3G/HD/SD-SDI Card	AES Input Card	AES Output Card	Analog I/O Card	Dolby D/E/DD+ Card
AMP2-16V-M	✓				
AMP2-E16V-M	✓				✓

Menu Modifications for I/O Modules

The menus automatically adjust themselves to accommodate any I/O modules that are added to the system. This means that the channels of any new input cards and the mixed outputs of any output cards automatically appear as sources in the available monitoring or output menus. The output cards automatically cause output menus to appear so that you can assign sources to them.

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| **Important:**	If a card is removed, the unit will return to the factory default settings when it is turned on again.

Important:	**Do NOT add or remove I/O Modules with system power applied**.

3G/HD/SD-SDI Card

3G/HD/SD-SDI Rear Panel Adaptor

After adding the 3G/HD/SD-SDI Card and its corresponding rear panel adaptor to the AMP2-16V, the rear panel adaptor provides the connectors shown in Figure 6–2.

Figure 6–2: 3G/HD/SD-SDI Card Rear Panel Adaptor and Rear Card Cover Plate
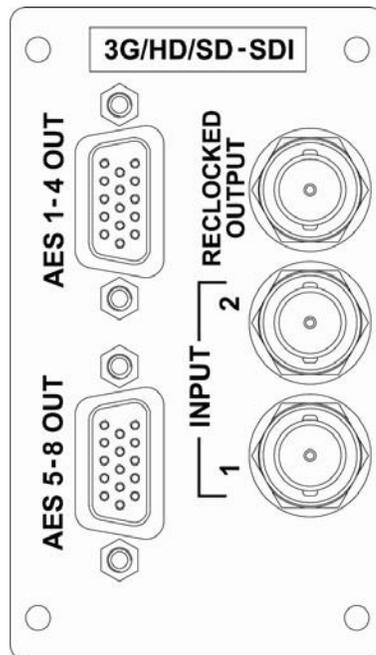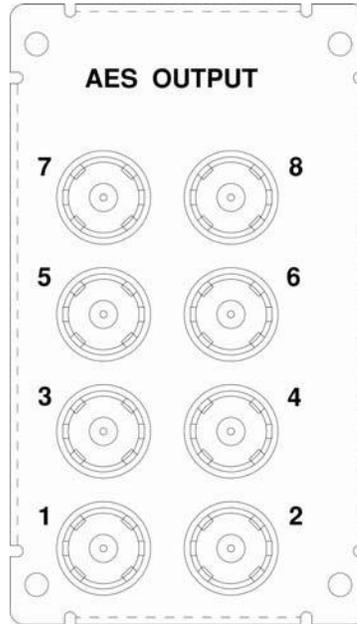

Menu Modifications: Inputs

The 3G/HD/SD-SDI Card rear panel adaptor has two selectable BNC inputs from the **Configuration Selection Menu.** The de-embedded audio channels from the selected BNC will appear on the **Monitor Mixer Configuration Menu.**

Menu Modifications: Outputs

The eight AES output pairs on this card are de-embedded and re- clocked from the 3G/HD/SD-SDI signal. No other signals can be routed to these particular outputs. Pairs 1 through 4 are output through the top DB-9 connector and Pairs 5 through 8 are output through the bottom DB-9 connector. The de-embedded pairs that you select in the Monitor Mixer Menus are the same ones that display on the level

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meters and are audible through the internal speakers.

Note: The AES outputs are delayed by the **Audio Delay** setting in the **3G SDI I/O Configuration Menu**.

The delay setting in the **Monitor Mixer Configuration Menu** has no effect on any of these outputs.

Connector Pin Outs

The pin out of the unbalanced AES output connectors on the 3G/HD/ SD-SDI rear panel adaptor is listed in Table 6–3 below.

Note: The unbalanced AES output pin-out is the same as a commercially-available VGA to BNC cable.

Table 6–3: Unbalanced AES Output Connector Pin Out

Pin	AES Outputs 1 thru 4 Function	AES Outputs 5 thru 8 Function	Use
1	AES Pair 1	AES Pair 5	Unbalanced AES Outputs
2	AES Pair 2	AES Pair 6	
3	AES Pair 3	AES Pair 7	
4	Ground	Ground	Chassis Ground Return
5	Ground	Ground	
6	Ground	Ground	
7	Ground	Ground	
8	Ground	Ground	
9	Ground	Ground	
10	Ground	Ground	
11	Ground	Ground	
12	Ground	Ground	
13	AES Pair 4	AES Pair 8	Unbalanced AES Outputs
14	Ground	Ground	Chassis Ground Return
15	Ground	Ground	

AES Input Card

AES Input Rear Panel Adaptor

After adding the AES Input Card and its corresponding rear panel adaptor to the AMP2-16V Series monitor, the rear panel adaptor provides the input connectors shown in Figure 6–3.

Figure 6–3: AES Input Card Rear Panel Adaptor and Rear Card Cover Plate
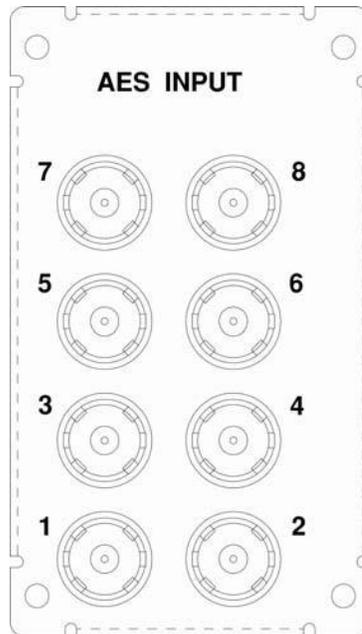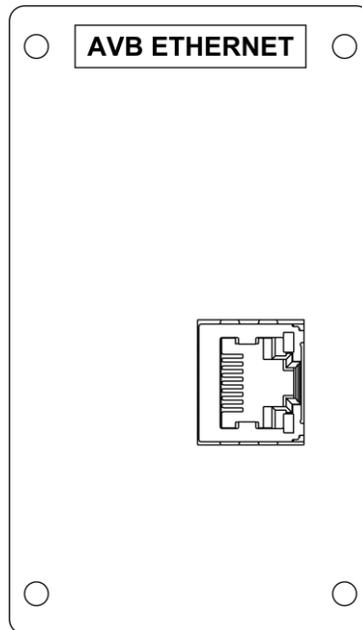

Menu Modifications

All of the AES input pairs on the AES Input Card rear panel adaptor are selectable on the **Monitor Mixer Configuration Menu** and are also sources on the AES or Analog Output Cards or on the optional Dolby D/E/DD+ Card. Terminations can be turned on or off on the **AES Input Configuration Menu**.

AES Output Card

AES Output Rear Panel Adaptor

After adding the AES Output Card and its corresponding rear panel adaptor to the AMP2-16V, the rear panel adaptor provides the connectors shown in Figure 6–6.

Figure 6–4: AES Output Card Rear Panel Adaptor and Rear Card Cover Plate

Menu Modifications

Pressing the **AES Out** knob from the **Audio Processors Configuration Menu** will display the **AES Output Configuration Menu** from which you can select and/or configure each of the AES output pairs.

AVB Listener Card

AVB Listener Rear Panel Adaptor

After adding the AVB Listener card and its corresponding rear panel cover to the AMP2-16V Series monitor, the AVB Ethernet connector will be exposed as shown in Figure 6–5.

Figure 6–5: AVB Listener Card Rear Panel Adaptor

Menu Modifications

All of the AVB input pairs become selectable in the Monitor Mixer Configuration Menu and are also sources on the AES or Analog Output Cards. The AVB card will be displayed in the Processor Card Configuration menu, but there is currently no configuration necessary for the card. Hence, its background color will be gray.

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Analog I/O Card

Analog Rear Panel Adaptor

After adding the Analog I/O Card and its corresponding rear panel adaptor to the AMP2-16V, the rear panel adaptor provides the connectors shown in Figure 6–4.

Figure 6–6: Analog I/O Card Rear Panel Adaptor and Rear Card Cover Plate
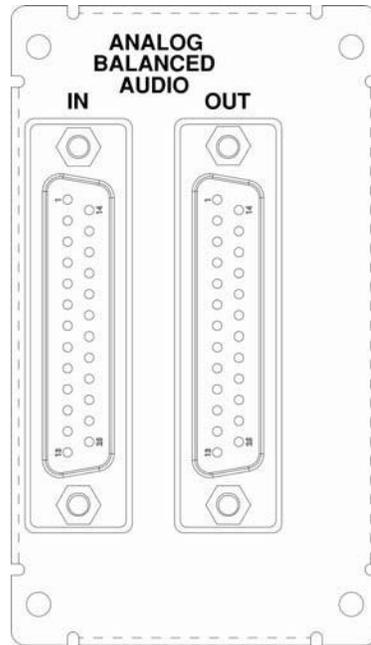
Menu Modifications

You can select the analog input from the **Monitor Mixer Configuration Menu** and also from the **AES** and **Analog Output Menus**.

The **Audio Processor Configuration Menu** will now display an **Analog I/O** knob. Pressing this knob will display the **Analog Output Configuration Menu** from which you can select and configure the outputs.

Note: You can modify the analog reference levels in the **Hardware Configuration Menu**.

Connector Pin Outs

Note: The balanced analog input connector pin out is the same as the commercially-available Tascam DA-88 adapter cables.

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Table 6–4: Balanced Analog Input Connector Pin Out

Pin	Function	Use
1	Channel 8 (+)	Non-inverted Balanced Analog Input
2	Ground	Channel 8 Shield
3	Channel 7 (-)	Inverted Balanced Analog Input
4	Channel 6 (+)	Non-inverted Balanced Analog Input
5	Ground	Channel 6 Shield
6	Channel 5 (-)	Inverted Balanced Analog Input
7	Channel 4 (+)	Non-inverted Balanced Analog Input
8	Ground	Channel 4 Shield
9	Channel 3 (-)	Inverted Balanced Analog Input
10	Channel 2 (+)	Non-inverted Balanced Analog Input
11	Ground	Channel 2 Shield
12	Channel 1 (-)	Inverted Balanced Analog Input
13	(NC)	Not Used
14	Channel 8 (-)	Inverted Balanced Analog Input
15	Channel 7 (+)	Non-inverted Balanced Analog Input
16	Ground	Channel 7 Shield
17	Channel 6 (-)	Inverted Balanced Analog Input
18	Channel 5 (+)	Non-inverted Balanced Analog Input
19	Ground	Channel 5 Shield
20	Channel 4 (-)	Inverted Balanced Analog Input
21	Channel 3 (+)	Non-inverted Balanced Analog Input
22	Ground	Channel 3 Shield
23	Channel 2 (-)	Inverted Balanced Analog Input
24	Channel 1 (+)	Non-inverted Balanced Analog Input
25	Ground	Channel 1 Shield

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The pin out of the balanced analog output connector is listed in Table 6−5 below.

Table 6−5: Balanced Analog Output Connector Pin Out

Pin	Function	Use
1	Channel 8 (+)	Non-inverted Balanced Analog Output
2	Ground	Channel 8 Shield
3	Channel 7 (-)	Inverted Balanced Analog Output
4	Channel 6 (+)	Non-inverted Balanced Analog Output
5	Ground	Channel 6 Shield
6	Channel 5 (-)	Inverted Balanced Analog Output
7	Channel 4 (+)	Non-inverted Balanced Analog Output
8	Ground	Channel 4 Shield
9	Channel 3 (-)	Inverted Balanced Analog Output
10	Channel 2 (+)	Non-inverted Balanced Analog Output
11	Ground	Channel 2 Shield
12	Channel 1 (-)	Inverted Balanced Analog Output
13	(NC)	Not Used
14	Channel 8 (-)	Inverted Balanced Analog Output
15	Channel 7 (+)	Non-inverted Balanced Analog Output
16	Ground	Channel 7 Shield
17	Channel 6 (-)	Inverted Balanced Analog Output
18	Channel 5 (+)	Non-inverted Balanced Analog Output
19	Ground	Channel 5 Shield
20	Channel 4 (-)	Inverted Balanced Analog Output
21	Channel 3 (+)	Non-inverted Balanced Analog Output
22	Ground	Channel 3 Shield
23	Channel 2 (-)	Inverted Balanced Analog Output
24	Channel 1 (+)	Non-inverted Balanced Analog Output
25	Ground	Channel 1 Shield

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Analog I/O and SPDIF TOSLINK Card

Rear Panel Adaptor

After adding the Analog I/O Card and its corresponding rear panel adaptor to the AMP2-16V, the rear panel adaptor provides the connectors shown in Figure 6–4.

Figure 6–7: Analog I/O and SPDIF TOSLINK Panel Adaptor and Cover Plate
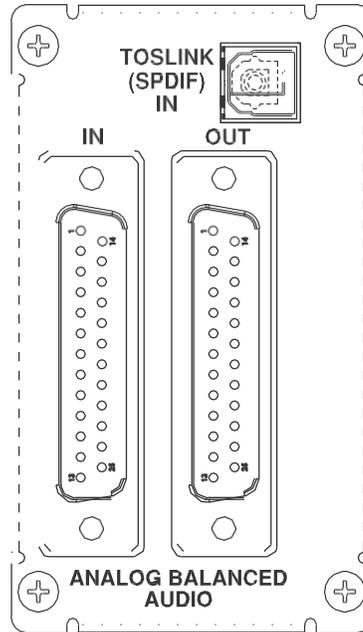
Menu Modifications

You can select the analog input or the **Toslink Input** from the **Monitor Mixer Configuration Menu** and also from the **AES** and **Analog Output Menus**.

The **Audio Processor Configuration Menu** will now display an **Analog I/O** knob. Pressing this knob will display the **Analog Output Configuration Menu** from which you can select and configure the outputs.

Note: You can modify the analog reference levels in the **Hardware Configuration Menu**.

Note: Analog I/O cards with TOSLINK options will not allow the analog outputs to be routed back to the monitor mixer. The internal pathways used for this feature are also used by the TOSLINK card.

Connector Pin-Outs

The pin-outs of the Analog I/O and SPDIF TOSLINK Card are identical to those of the Analog I/O Card. Refer to Tables 6-4 and 6-5.

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Dolby D/E/DD+ Card

Note: The Dolby D/E Card does not have a rear panel adaptor.

Menu Modifications

Installing a Dolby D/E/DD+ Card activates the **Dolby Configuration and Metadata Display Menu**. It allows the decoded Dolby signals to be monitored as set in the **Monitor Mixer Configuration Menu**. Lastly, hot keys can then be assigned to the **Dolby Zoom** function.

Dante AoIP Receiver Card

Dante Rear Panel Adaptor

After adding the Dante Receiver card and its corresponding rear panel cover to the AMP2-16V Series monitor, the Dante AoIP Ethernet connector will appear as shown in Figure 6–8.

Figure 6–8: Dante Receiver Card Rear Panel Adaptor
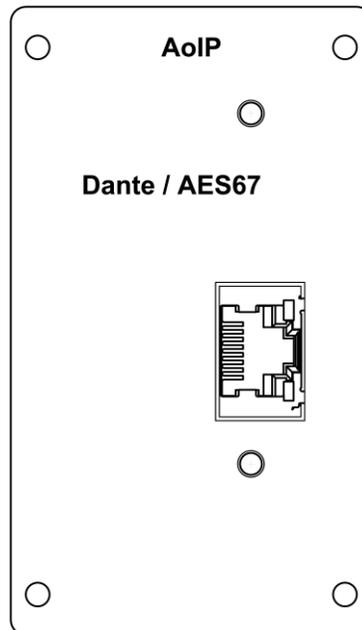
Menu Modifications

All of the Dante Receiver channels become selectable in the Monitor Mixer Configuration Menu and are also sources on the AES or Analog Output Cards. The Dante card will be displayed in the Processor Card Configuration menu, but there is currently no output configuration necessary for the card. Hence, its background color will be gray.

Ravenna AoIP Receiver Card

Ravenna Rear Panel Adaptor

After adding the Ravenna Receiver card and its corresponding rear panel cover to the AMP2-16V Series monitor, the Ravenna AoIP Ethernet connector will appear as shown in Figure 6–9.

Figure 6–9: Ravenna Receiver Card Rear Panel Adaptor
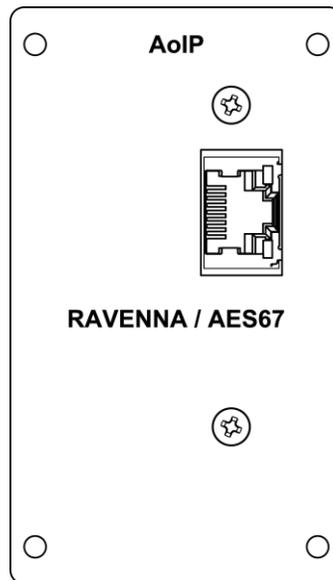
Menu Modifications

16 of the Ravenna Receiver channels become selectable in the Monitor Mixer Configuration Menu and are also sources on the AES or Analog Output Cards. The Ravenna card will be displayed in the Processor Card Configuration menu, but there is currently no output configuration necessary for the card. Hence, its background color will be gray.

Adding a Redundant Power Supply

The AMP2-16V Series monitors come with a single 150W power supply that is sufficient to drive a fully-loaded monitor. However, an additional power supply (also 150W) is available as an option to provide for system redundancy. Power supply modules are to be installed into their specialized slots on the far left and far right of the back panel. When adding an optional redundant power supply, remove the blank cover to gain access to the power supply slot.

Precautions

Before unpacking your new power supply, make sure you have a static- free surface on which to work.

Requirements

1. A small Phillips screwdriver

2. The redundant power supply option kit

Adding the AC Power Supply

To install an additional power supply, position the monitor with the rear panel facing you and follow the instructions below.

1. Remove the power cord.

2. Using a small Phillips screwdriver, remove the blank cover plate on the rear panel on the far right-hand side.

Important: Keep the blank cover plate for future use. We recommend taping it to the side of the monitor; but do not cover the air vent.

3. Slide the power supply into the slot from the rear panel, making sure that the power supply's connector seats securely into the connector inside the monitor.

4. Replace the screws that hold the power supply in place.

5. Attach the power cords to the power supply connectors and plug them into outlets protected by different breakers.

Important: It is crucial that the secondary power supply be plugged into an outlet on a different circuit breaker than the original power supply to ensure system redundancy.

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Adding the DC Power Module

The DC power supply can be used with a redundant AC or DC power supply.

To install an additional power supply, position the monitor with the rear panel facing you and follow the instructions below.

1. Using a small Phillips screwdriver, remove the screw on the right side of the rear of the monitor as shown in Figure 6–10 below.

Figure 6–10: Remove Side Screw
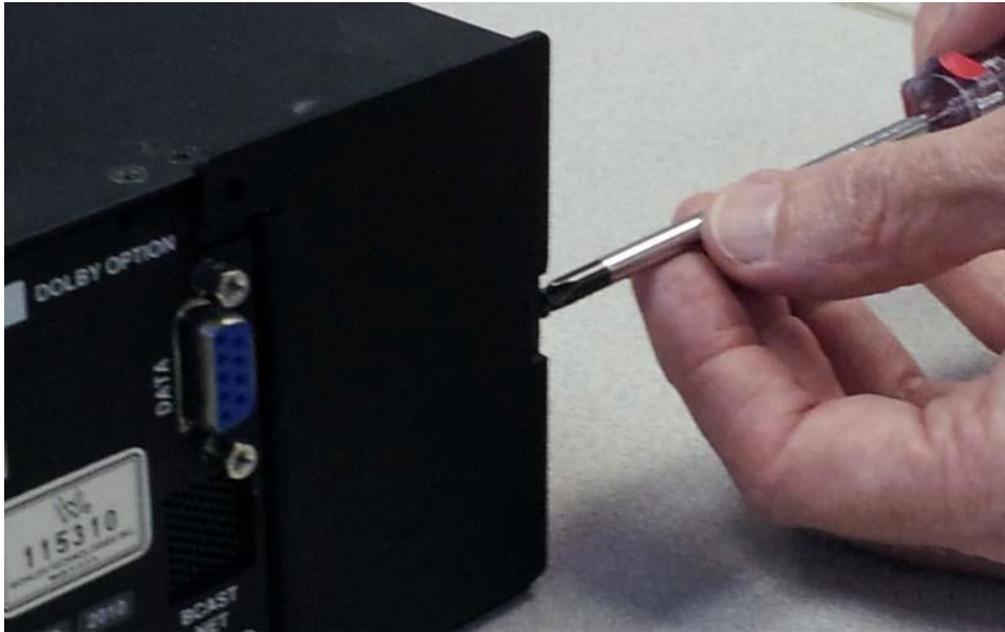
2. Remove the screws on the blank cover plate and remove the cover plate.

Important: Keep the blank cover plate for future use. We recommend taping it to the side of the monitor; but do not cover the air vent.

3. Slide the power supply into the slot from the rear panel, making sure that the power supply's connector seats securely into the connector inside the monitor.

4. Screw in the two captive screws that hold the power supply in place.

5. Attach the DC power cord to the power supply connector (4-pin XLR-M) and plug it into an outlet protected by a different breaker.

Important: Do not sort the DC wire or plug connecting the AMP2-16V monitor.

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Figure 6–11: DC 4-Pin Power Connector
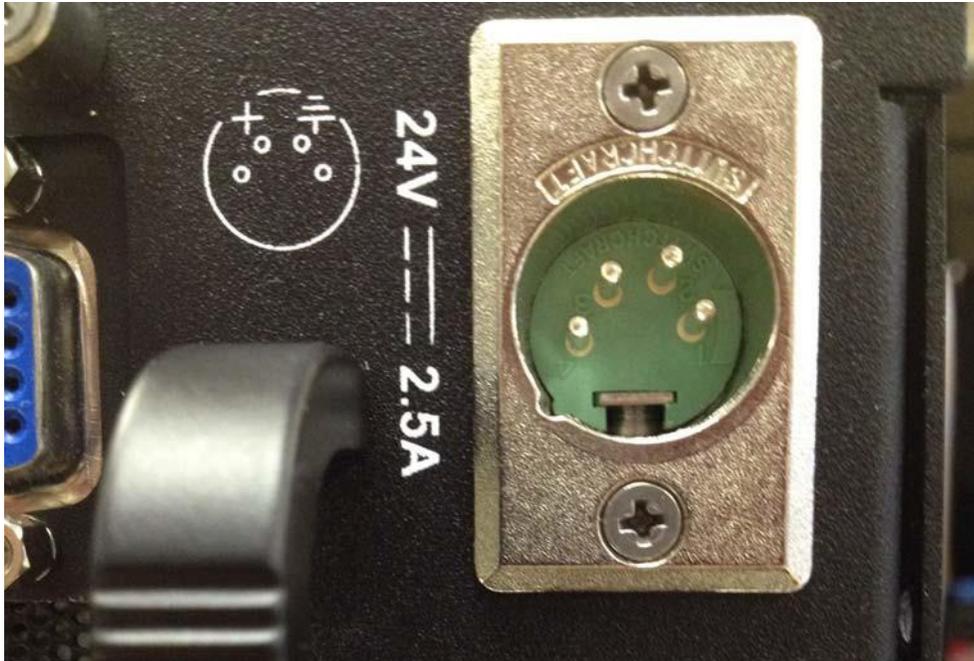
Note: Wohler does not supply the mating connector for this option.

Table 6–6: DC Power Specifications

Specification	Value
Voltage Input Range	20VDC to 30VDC
Input Current	Typical <2A; Max 5A

Note: The AMP2-16V monitor will not operate if the DC power is applied with reverse polarity, but doing so will not harm the unit.

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Adding/Removing Modules

Wohler's standard models typically do not populate all five slots, allowing for the addition of other modules. This section describes the procedures for adding new cards and removing existing cards.

Important: After adding or removing a card from the monitor, software current with the new card will automatically recognize the configuration, and automatically implement all appropriate changes to the menu system.

Software versions predating the new module will need to be upgraded for the system to recognize it.

However, it may take two minutes for the unit to boot the first time after a card swap. A message will briefly be displayed, and the user will have to press **Initialize** to proceed.

Precautions

Before unpacking your new module, make sure you have a static-free surface on which to work.

CAUTION!   Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling the circuit boards in high static environments such as carpeted areas, and when synthetic or wool fiber clothing is worn.

Touch the frame to dissipate static charge before removing boards from a frame, and always exercise proper grounding precautions when handling circuit boards.

Do NOT add or remove cards with system power applied.

Requirements

1. A small Phillips screwdriver

2. A adjustable wrench

3. If you are adding hardware, the components of the option kit you want to add

4. If you are removing hardware, a static-free bag or container in which to place the removed assembly

Adding a Dolby D/E/DD+ Card

To add a Dolby D/E/DD+ Card, position the monitor with the rear panel facing you and follow the instructions below.

1. Place the monitor on a solid, static-free surface and remove the power cord(s).

2. Using a small Phillips screwdriver, remove the top cover.

Figure 6–12: Remove Bottom Screw

3. Pull the monitor so that it slightly hangs over the edge of the surface on which it is sitting, and remove the screw on the bottom as shown in Figure 6–12 above.

Figure 6–13: Remove Nuts and Washers
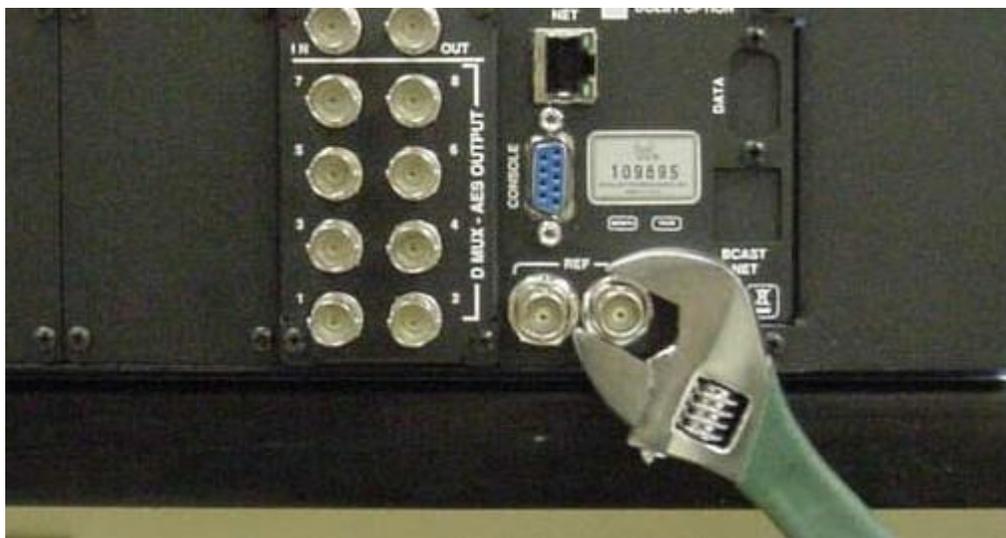
4. Using the adjustable wrench, remove the nuts and washers from the **REF** connectors as shown in Figure 6–11 above.

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Figure 6–14: Remove System Control Board's Rear Panel Adaptor
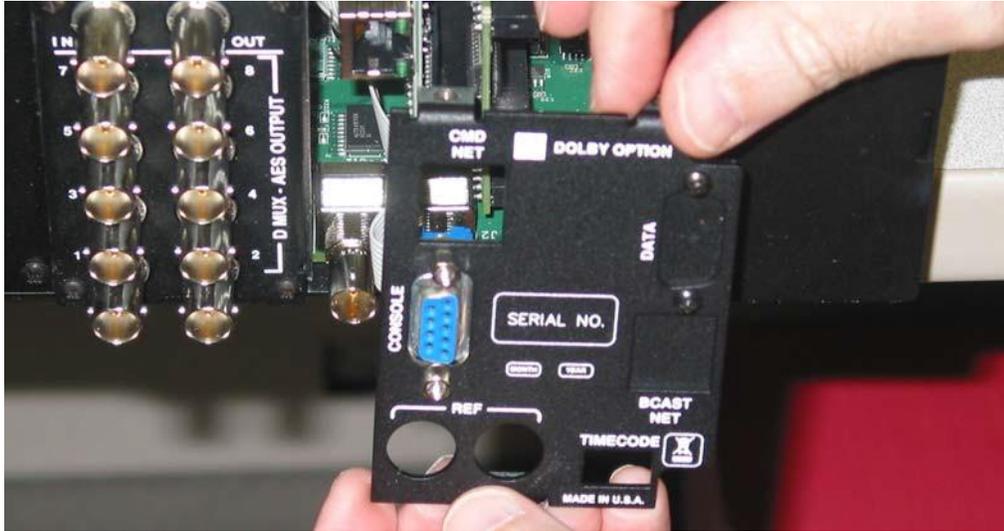
5. Remove the rear panel adaptor for the system control board as shown in Figure 6–14 above.

6. Gently unplug the ribbon cable from the system board.

Figure 6–15: Remove System Control Board
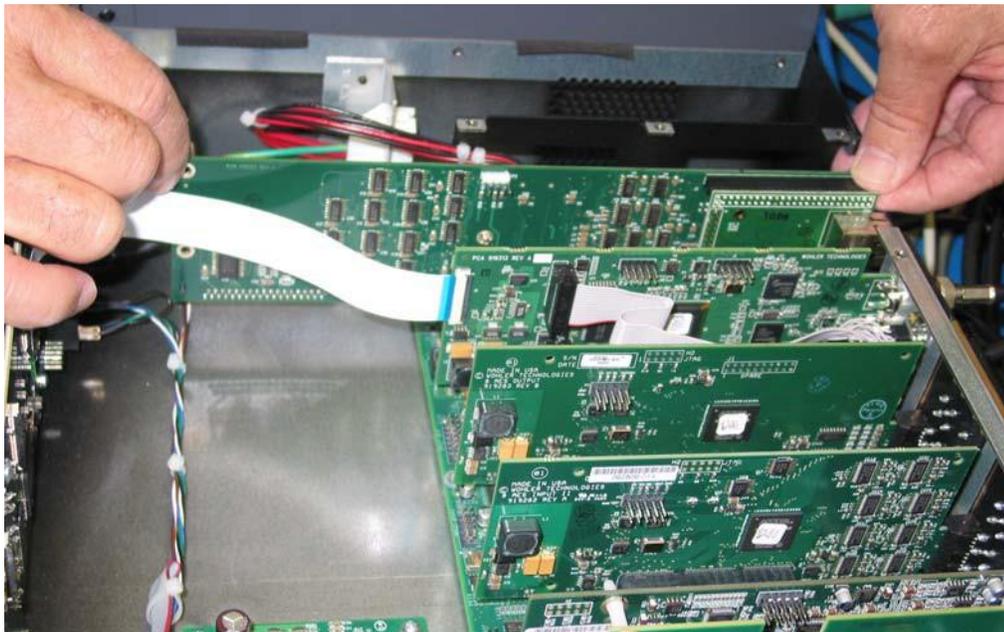
7. Gently tilt the system board out of its slot and remove it from the monitor as shown in Figure 6–15 above.

Figure 6–16: Dolby D/E/DD+ Option Kit
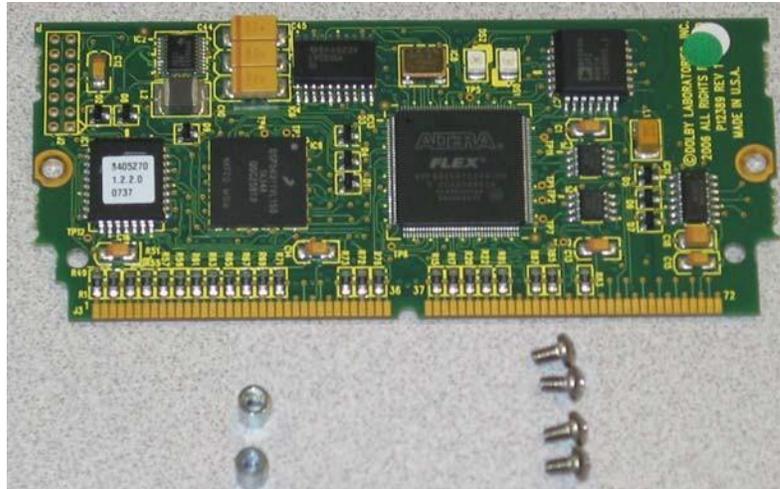
8. Remove the new Dolby D/E/DD+ Card from its shipping container being careful to remain grounded. Figure 6–16 above illustrates the card and the two standoffs (left) and the four screws (right).

Figure 6-17: Attach First Standoff
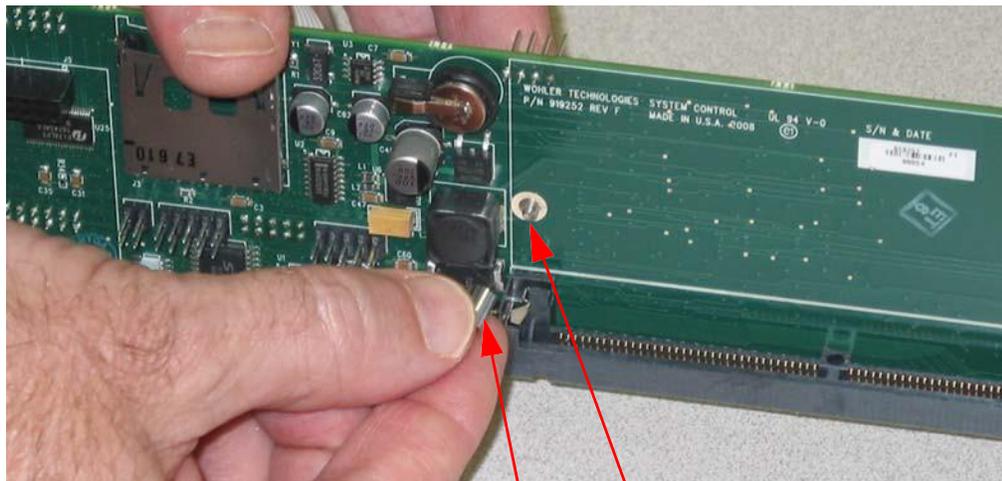
Standoff   Screw from the Other Side

9. Attach a standoff to the side of the system control board containing the Dolby slot, by screwing it in from the other side of the board as shown in Figure 6–17 above.

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Figure 6–18: Attach Second Standoff
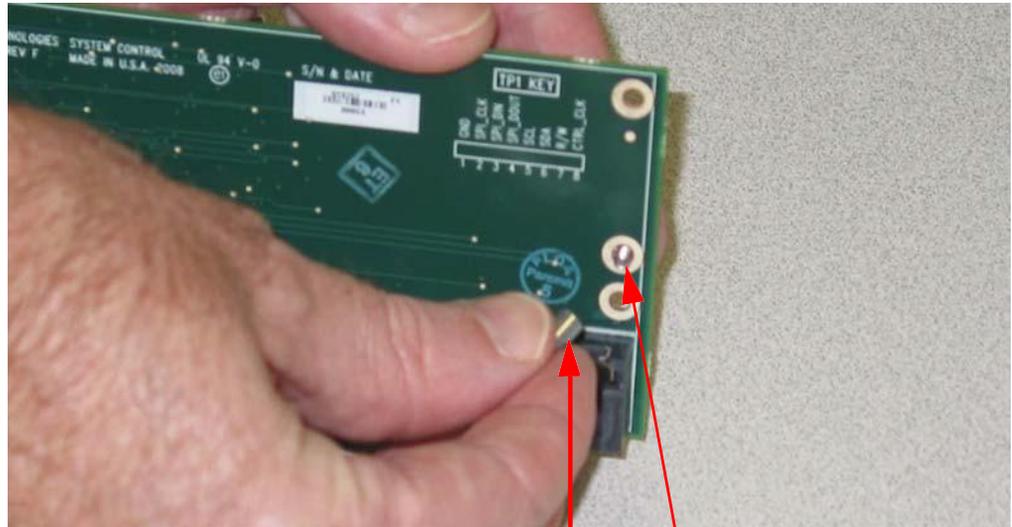
Standoff   Screw from the Other Side

10. Attach the second standoff similarly as shown in Figure 6–18 above.

Figure 6–19: Insert Dolby D/E/DD+ Card
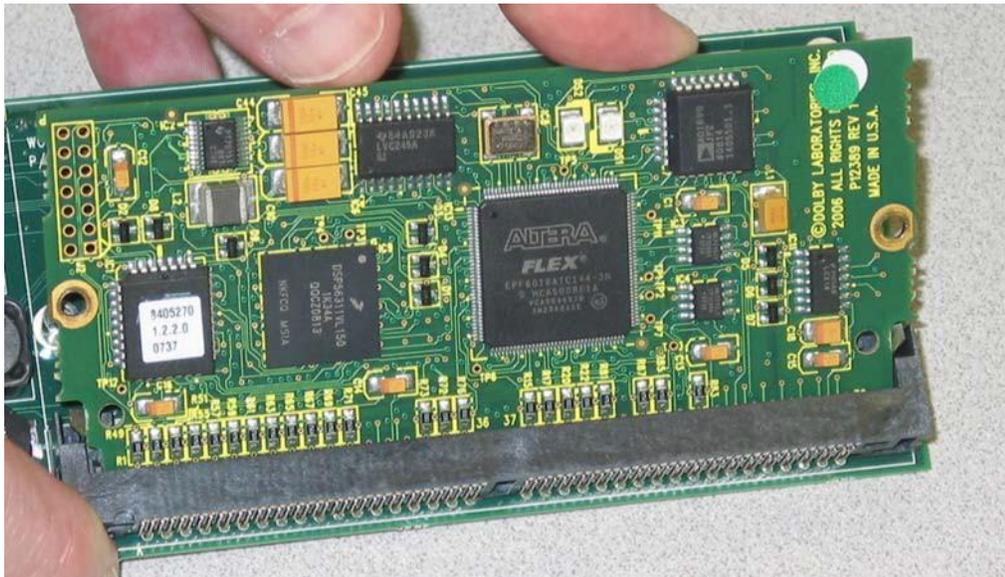
11. Insert the Dolby D/E/DD+ Card into the slot as shown in Figure 6–17 above.

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Figure 6−20: Tighten First Standoff Screw
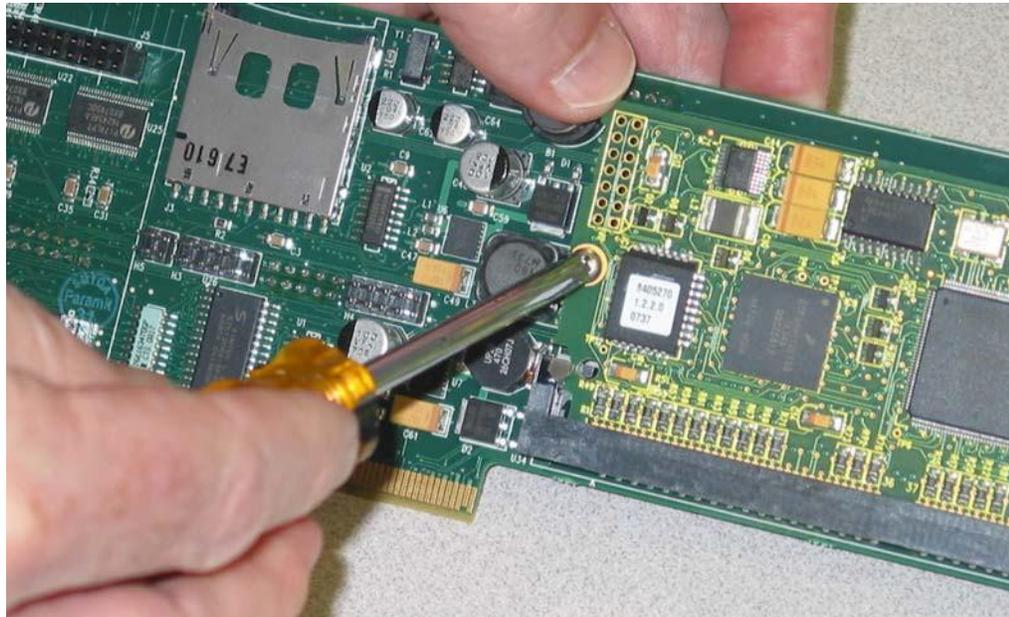
12. Adjust (if needed) and tighten the first standoff screw on the opposite side of the system control board, and then attach another screw on top of the standoff as shown in Figure 6−20 above.

Figure 6−21: Tighten Second Standoff Screw
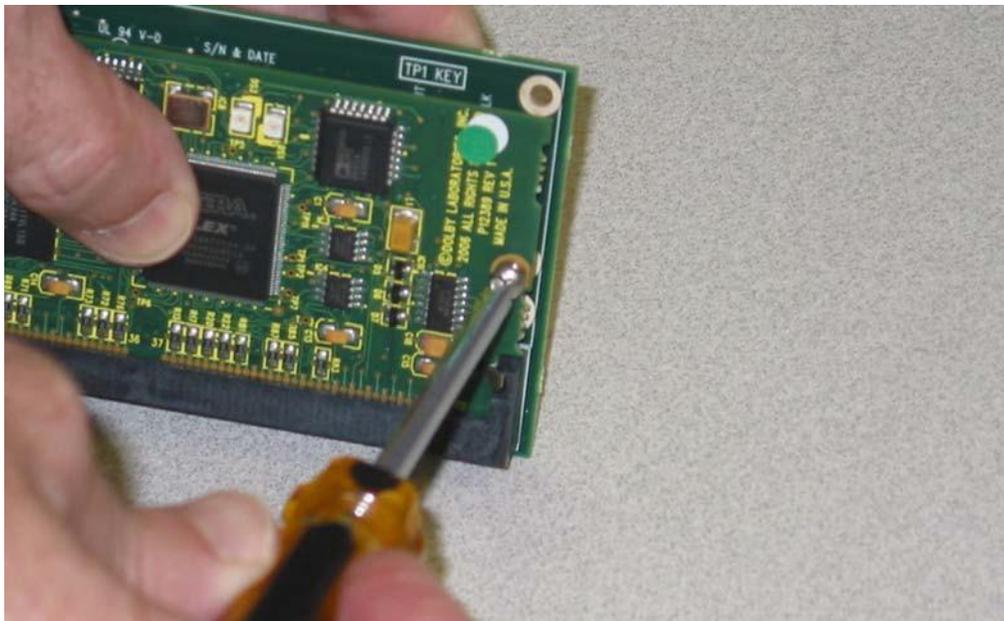
13. Similarly, adjust and tighten the second standoff screw on the opposite side of the system control board, and then attach another screw on top of the standoff as shown in Figure 6−21 above.

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Figure 6–22: Re-Seat System Control Board

14. Firmly press the system control board back into its slot so that it is securely connected as shown in Figure 6–22. Generally, this board does not snap in.

15. Connect the ribbon cable to the system card.

Figure 6–23: Replace Rear Panel
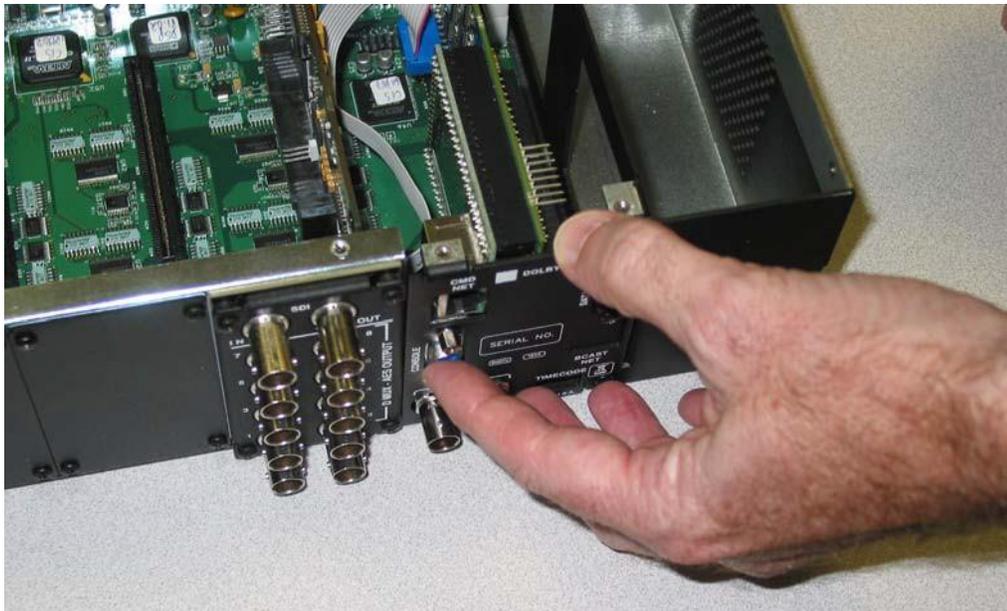
16. Replace the rear panel as shown in Figure 6–23 above.

17. Replace the washers and nuts on the **REF** connectors.

18. Screw in the rear panel from the bottom of the monitor.

19. Replace the lid and the screws.

Removing a Dolby D/E/DD+ Card

To remove a Dolby D/E/DD+ Card, follow the instructions in reverse for Adding a Dolby D/E/DD+ Card but leave the standoffs attached to the system control board.

Note: All presets will be set to a factory default appropriate for the new arrangement of cards.

Adding an I/O Module

Adding a 3G Option Card

To add a new 3G card, position the monitor with the rear panel facing you and follow the instructions below.

1. Place the monitor on a solid, static-free surface and remove the power cord(s).

2. Using a small Phillips screwdriver, remove the top cover.

3. Remove the blank cover plate from the rear panel for the new I/O module's slot. Remember to save the four screws for the new rear panel cover plate.

Important: Keep the blank cover plate for future use. We recommend taping it to the side of the monitor; but do not cover the air vent.

4. Remove the 3G Option Card from its shipping container being careful to remain grounded.

5. When you receive your 3G Option Card, it will arrive partially assembled. Verify that the external nuts and washers on the gold BNC connectors are loose.

6. Insert the 3G Option card into the rear panel opening being careful not to snag the ribbon cables. Keep them folded against the circuit board to keep them out of the way.

7. Insert the card into the slot and press firmly until it plugs in securely.

8. Insert the rear panel cover screws and tighten.

9. Replace the lid and the screws.

10. Tighten the external nuts on the gold BNC connectors.

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Adding a Non-3G Card I/O Module

To add a new 3G card, position the monitor with the rear panel facing you and follow the instructions below.

1. Place the monitor on a solid, static-free surface and remove the power cord(s).

2. Using a small Phillips screwdriver, remove the top cover.

3. Remove the blank cover plate from the rear panel for the new I/O module's slot.

Important: Keep the blank cover plate for future use. We recommend taping it to the side of the monitor; but do not cover the air vent.

4. Remove the new I/O module from its shipping container being careful to remain grounded.

5. Insert the new I/O module in the empty slot until the I/O module snaps in securely.

6. Attach the rear panel connectors to the card and screw it to the rear panel frame.

7. Replace the lid and the screws.

WARNING!   Do not attempt to operate the monitor without all rear panel cover plates in place. Doing so will compromise the unit's ability to shield contain unwanted radio emissions.

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Removing an I/O Module

To remove a new 3G card, position the monitor with the rear panel facing you and follow the instructions below.

CAUTION!	Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling the circuit boards in high static environments such as carpeted areas, and when synthetic or wool fiber clothing is worn. Touch the frame to dissipate static charge before removing boards from a frame, and always exercise proper grounding precautions when handling circuit boards.

1. Place the monitor on a solid, static-free surface and remove the power cord(s).

2. Using a suitable socket wrench, adjustable wrench, or needle-nose pliers, loosen the nuts on the gold BNC connectors and remove them.

3. Using a small Phillips screwdriver, remove the top cover.

4. Unseat the card from the slot and remove the card (still connected to the rear panel) through the rear panel opening.

5. Cover the rear panel opening with a blank rear panel cover.

6. Insert the rear panel cover screws and tighten.

WARNING!	Do not attempt to operate the monitor without all rear panel cover plates in place. Doing so will compromise the unit's shielding.

7. Replace the lid and the screws.

   Note: All presets will be set to a factory default appropriate for the new arrangement of cards.

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Option Kits

Table 6–7 below lists the option kits with their respective hardware components for your convenience. Please contact your Wohler sales representative for further information.

Table 6–7: Part Numbers for Optional Hardware/Kits

Part Number	Description
829024	**3G/HD/SD-SDI Audio/Video I/O Card Option Kit** Note: The 3G/HD/SD-SDI I/O Module does not have a *separate* rear panel adaptor. The I/O module and the rear panel connectors are all on one piece of hardware. (includes 256756, 919313 and 750645)
256756	3G SDI Rear Cover Plate
919313	3G SDI I/O Module
750645	2 Cables (15-Pin VGA Female to IDC 16 Pos Female 6" LG)
829001	**AES Input Option Kit** (includes 256455-01, 919256, and 919282)
256455-01	AES Input Rear Cover Plate
919256	AES Input Rear Panel Adaptor
919282	AES Input I/O Module
829002	**AES Output Option Kit** (includes 256455-02, 919256, 919283)
256455-02	AES Output Rear Cover Plate
919256	AES Output Rear Panel Adaptor
919283	AES Output I/O Module
829009	**AVB Listener Option Kit**
256888	AVB Card Cover Plate
919414	AVB Board
829010	**Analog I/O Option Kit** (includes 256885, 919277, and 919285)
256885	Analog I/O Rear Cover
919277	Analog I/O Rear Panel Adaptor
919285	Analog I/O Module
829090	**Dante Receiver Option Kit**
829091	**Ravenna Receiver Option Kit**

Table 6–7: Part Numbers for Optional Hardware/Kits (cont'd)

Part Number	Description
829021	**Analog I/O and SPDIF TOSLINK Card Option Kit**
256767	Analog I/O Rear Cover for TOSLINK Child Card
919316	Analog I/O Rear Panel Adaptor for TOSLINK Child Card
919285	Analog I/O Module with TOSLINK Child Card Connector
919301	TOSLINK Child Card
829014	**Dolby D/E/DD+ Option Kit** Note: The Dolby D/E/DD+ Card is a daughter card to the system control board (P/N 919323), so it does not have a rear panel adaptor or a rear panel cover plate. [includes 919210, 281422 (x4), and 285050 (x2)]
919210	Dolby D/E/DD+ Decoder Module
281422	4 Screws (4-40 x 3/16")
829013	**Redundant Power Supply Option Kit** (includes 760033 and 600001)
760033	Power Supply (24V)
600001	Power Cord
829068	**24V DC Power Entry Module** Converts the AMP2-16V Series monitor to DC power
829015	**Harness DB25 to Female XLR Option Kit** (includes 751017)
751017	Cable (DB25 to Female XLR)
829016	**Harness DB25 to Male XLR Option Kit** (includes 751018)
751018	Cable (DB25 to Male XLR)
Other Optional Hardware	
256262	Blank Rear Cover Plate (does not include additional screws)

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CHAPTER 7: Specifications

Introduction

This chapter lists the specifications for the AMP2-16V Series monitors.

Compliance

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

Standards

Loudness measurements may be set up to comply with either ITU- 1770-3 or EBU R128 standards. Additional standards may be accommodated by adjusting various loudness measurement parameters. Refer to the Loudness Measurement Menu in Chapter 5.

For the AVB card, the following standards apply: IEEE 802.1AS, 802.1Qat, 802.1Qav. It incorporates basic 1722.1 protocol, including, advertisements, discovery, and enumeration.

The AVB Ethernet interface is capable of communicating at up to 100 Mbits/s.

The Dante and Ravenna Ethernet interfaces are capable of communicating at 100 Mbits/s or 1000 Mbits/s (recommended).

Specifications

The AMP2-16V Series monitors meet the following specifications.

Table 7–1: Specifications

Specification	Values/Domains
Power requirements	100 V to 240 V AC ± 10%, 50/60Hz
Power consumption	250 Watts max
Dimensions	3.5" x 19" x 14.5"
Weight	About 18 lbs.; depends upon configuration
Space Required	2 RU (rack unit)
Supplied Accessories	AC Power Cord (North America)
Optional Accessories	See card list in Table 6–1
LCD Resolution	800 x 480
Level Meter Resolution	310 segments

Level Meter Scales	Selectable: • AES • VU • Ext. VU • BBC • EBU • Nordic • DIN • Custom
Level Meter Characteristics	Selectable: • Meter range • Meter thresholds • Reference • Segment Colors • Ballistics • Phase (pair-wise or arbitrary)
Peak Acoustic Output	104 dB SPL (@ 2 feet)
Power Output	15W (30W peak) per channel
Frequency Response	60 Hz - 16 kHz (±5 dB) (-10 dB @ 50 Hz, 20 kHz)
AES/EBU Input Termination	75 Ohms unbalanced, switchable
SDI Input Termination	75 Ohms unbalanced
AES/EBU Sampling Rate	48kHz
Analog Input Impedance	40K Ohms
Hum and Noise	Better than -75dB below full output
Electrical Distortion	<0.15% at any level below limit threshold
Acoustic Distortion	8% or less at worst case frequencies above 300 Hz; typically <2%
Magnetic Shielding	<0.8 gauss any adjacent surface

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CHAPTER 8: Troubleshooting

Introduction

This chapter lists the potential error and warning messages in the event the AMP2-16V Series monitor may experience an unexpected condition.

If on the outside chance you cannot recover from an error message, contact Wohler's customer support. Wohler's contact information is on the copyright page of this document.

Normal Messages

Occasionally, if you may make changes to your system, you may receive an unexpected message the next time you power up the AMP2-16V Series monitor. Receiving any of the following messages is part of the normal operation of the unit.

No IP Address

If you are attempting to connect your AMP2-16V Series monitor to your network and you see this message displayed on the Unit Information Menu, refer to Ethernet Setup Screen in Chapter 5 for more information.

Figure 8–1: Unit Information Menu

	Unit Information Menu	
Unit S/W Info.		Ethernet Serial Info.
	Ethernet Port Configuration	
	Unit Name: Edit Studio Mon 3	
	IP Address: 0.0.0.0	Ethernet
	Network Mask: 0.0.0.0	Setup
	Gateway: 0.0.0.0	
	DNS: 0.0.0.0	
	MAC Address: 00:03:f4:02:97:55	
	Serial (RS-232) Port Configuration	
	Baud Rate: 115200	
	Parity: None	
	Data Bits: 8	
	Stop Bits: 1	S/W
	Handshaking: None	Update
	Exit	
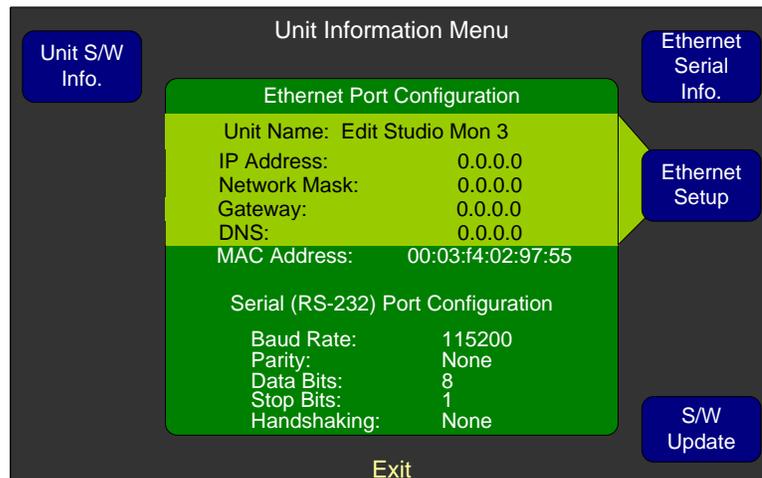
Inconsistent Module List

If you recently removed any of the I/O cards from the AMP2-16V Series monitor, you will see the following message.

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Figure 8–2: Removed Module Message

Figure 8–2: Removed Module Message
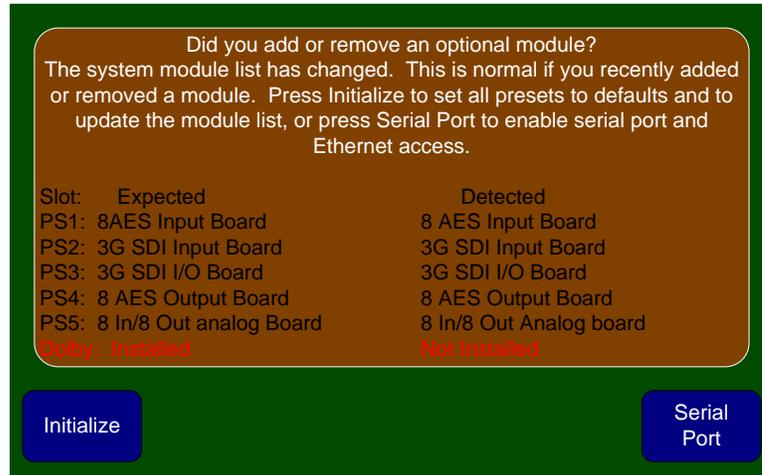
If you have not recently removed an I/O module, remove the top cover to verify that all the cards are seated properly, then restart the unit.

Restart

When powering up the AMP2-16V Series monitor, you may see the following message.

Figure 8–3: Restart Message
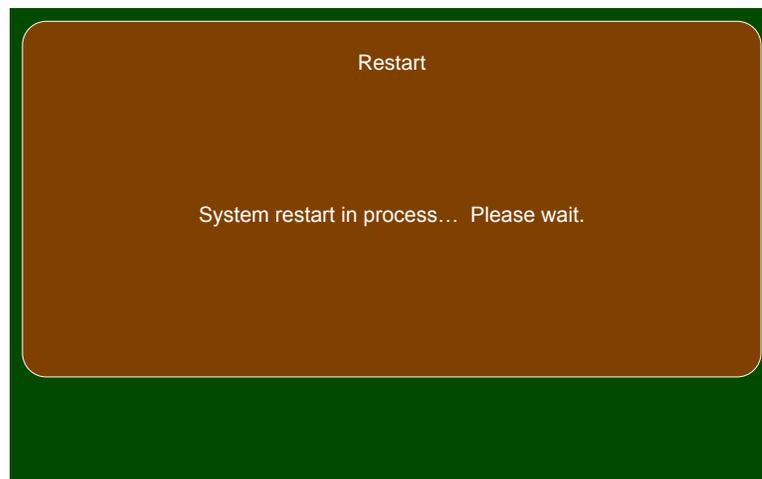
Error Messages

Front Panel Error

If the AMP2-16V Series monitor cannot communicate with its internal input controls, restarting the unit can often correct this condition.

Figure 8–4: Front Panel Error Message

Front Panel Error

The system is unable to communicate with the front panel controls. Turn the power off and then back on again. Call Wohler Technical Support if this problem persists.
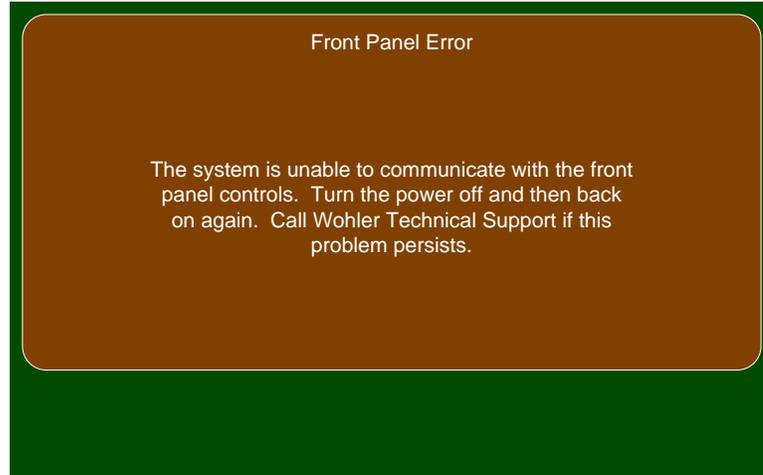
Minor Issue

In the event of the following error, please print the report and have it available before contacting Wohler's customer support.

Figure 8–5: Minor Issue Message

Minor Issue

The system encountered a minor issue during power up.
Press Reboot to clear this issue.
If this issue recurs after several restarts, connect a PC to the serial port and run a terminal emulation program. Then restart once more. Contact Wohler Technical Support if this problem persists.

Reboot

Continue
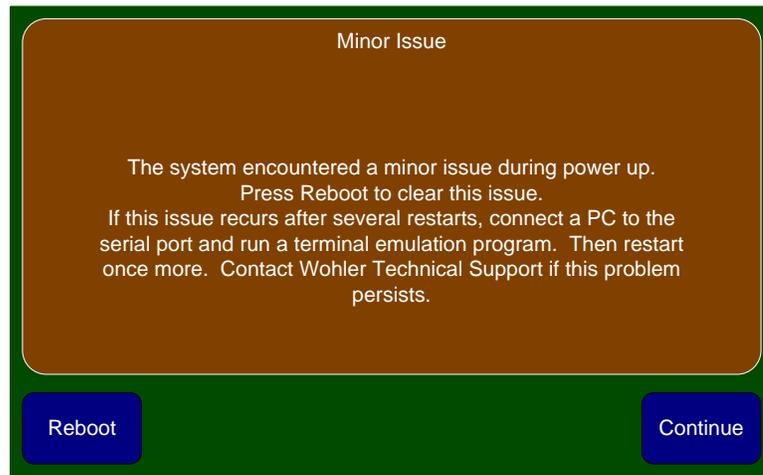
Serial Port Access

In the event of the following error, please print the report and have it available before contacting Wohler's customer support.

Serial Port Access

The system has encountered an operation error. Cycle the power on the monitor and connect your laptop/PC to the serial port to view a report.

APPENDIX A: Dante Network Setup

Introduction

Installing the AMP2-16V into an existing and known functional Dante network is virtually plug and play. The Dante module rear panel AoIP jack supports 1Gbs and 100Mbs Ethernet devices in Dante Audio over IP network configurations. It can receive 16 channels of audio from any available sources.

AMP2-16V channel source selections are made by choosing **Source Pair Select** 'Dante' in the **Monitor Mixer Configuration Menu as** shown in Figure A-1.

Figure A-1: AMP2-16V Source Pair Selection
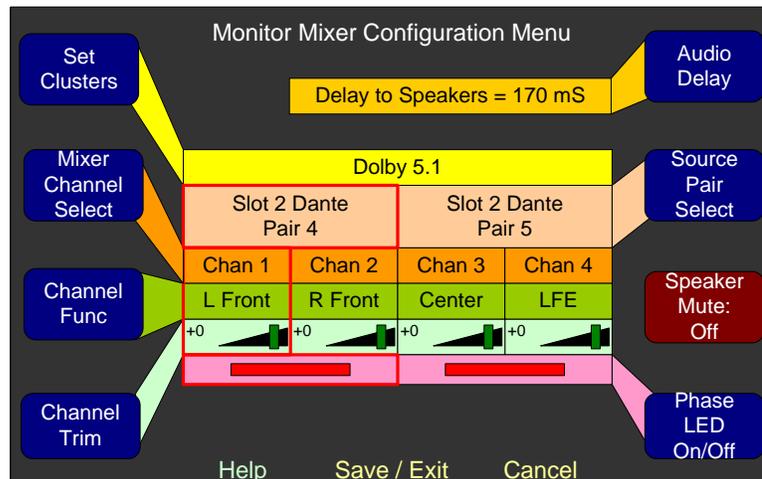
Dante Input Module Features

The Audinate Brooklyn II board supports the following features:

DANTE-Compatible Listener

The Dante Input Module for the AMP2-16V offers the following features:

1) RFC 3551 – RTP Profile for Audio and Video Conferences
   a) L16 16-bit linear format defined in RFC 3551 clause 4.5.11
   b) L24 24-bit linear format defined in RFC 3190 clause 4
   c) AM824 24-bit Audio as defined in IEC61883-6
   d) Multicast and unicast session support
   e) 48 kHz audio sampling rate
   f) 1 to 8 audio channels per stream
2) Media clock support
   a) 48 kHz and 96 kHz

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3) IGMP v3 support
4) Session Announcement Protocol (SAP) support

Brooklyn II™ Controller Interface

The Brooklyn II board includes a Graphical User Interface to review and manage the network. It provides an interface to:

1) Manage connections with ease
    a) Display discovered devices and streams
    b) Connect streams from network to local destinations
    c) Start, stop and monitor stream health/status
2) Enable local Brooklyn II™ device configuration & status reporting. Examples include:
    a) Device latency monitoring
    b) Active clock health monitoring
    c) Packet error reporting
    d) Alarms
    e) Bandwidth usage statistics

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Routing to the AMP2-16V

The AMP2-16V is set up by Wohler to be used as a slave rather than a master within the Dante network. Other devices, or software such as **Dante Controller**, are expected to be responsible for most device configurations and all audio routing. The setup screen for Channel and Audio Routing is shown in Figure A-2.

Figure A-2: Channels and Audio Routing Assignments
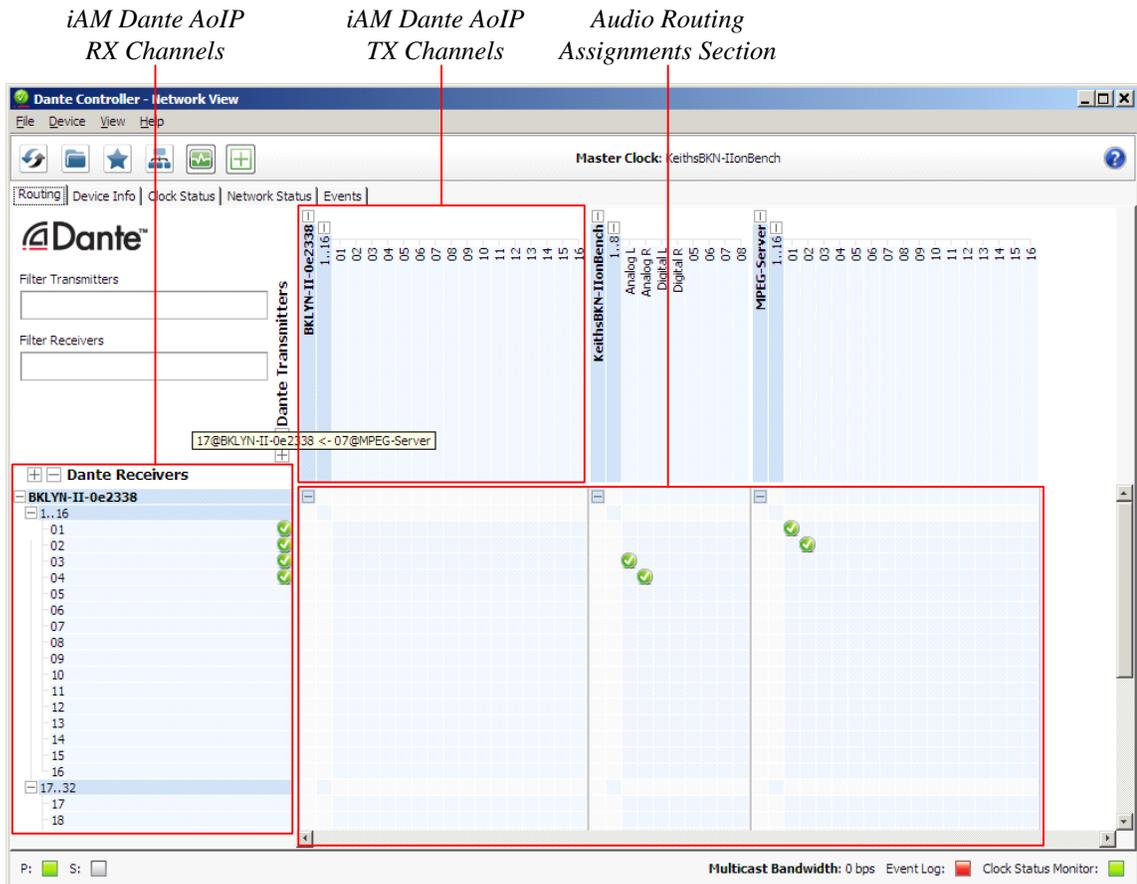
Please refer to the **Dante Controller User Guide** or other control device's documentation for specific network and device setup information.

What is in the AMP2-16V for Dante

The Audinate Brooklyn II board automatically recognizes Dante networks when installed, will alert other devices of its presence and configuration, and will configure its AoIP address per DHCP or local link protocols. DHCP works best and is recommended. There is no need to set a static address for the AMP2-16V Dante port, so no address entry method is provided in the AMP2-16V for Dante network setup. While possible to "Manually Configure an IP Address" from the network, this is not recommended Dante practice and as such is not a normally tested configuration.

Figure A-3: IP Address Configuration

Leave at the Default Setting
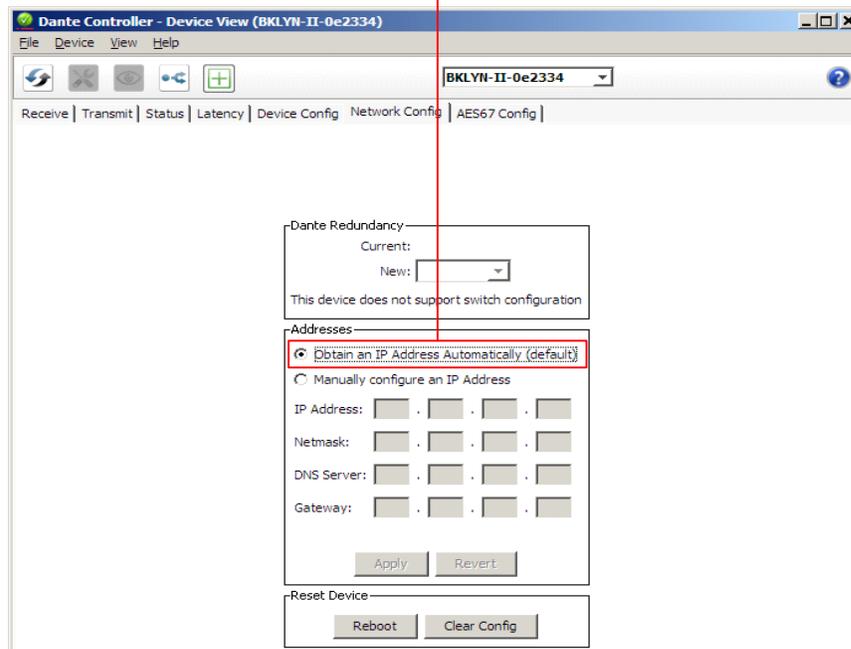
Up to sixteen AoIP receive channels can be monitored at once in the AMP2-16V.

The AMP2-16V Dante AoIP is configured by the AMP2-16V to receive up to 16 channels of Dante AoIP at a 48kHz audio sample rate. 48 kHz is the AMP2-16V default rate.

Sample rate selection is left up to the Dante Controller device or software. **All devices connected to each other through a Dante network must be set to the same sample rate.** Slight ticking may be heard in the AMP2-16V monitor when monitoring different input types at different sample rates or if sources are asynchronous.

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Dante Device Setup

The AMP2-16V's default **Dante Device Name** is "BKLYN-II- …" followed by the last 6 digits of the Dante port MAC address. This name can be changed by the Dante Controller to appear that way on the network.

Figure A-4: Dante Device Name

Dante Device Name

Figure A-5: Device Name Change

Change the AoIP Name

Other changes such as **Latency** settings can be made by the Dante Controller through the Device View menus. Some changes may require remote rebooting of the Brooklyn II board to take effect, temporarily interrupting audio and publishing the new information to the network.

Important: Only 48kHz audio sample rates are currently supported by the AMP2-16V. Default rate is 48kHz, which can only be changed via network reconfiguration such as Dante Controller. Connected devices must be set to the same rate.

Dante Clock Selection

While the Brooklyn's internal clock is highly accurate, the AMP2-16V does not have provisions for external audio sync clocks or GPS time sources. So it is generally not the best candidate to be the PTP Master Clock (commonly called the "grandfather clock") for the AoIP network. It can be set as the preferred master if no better clock source exists.

The Brooklyn Dante board will serve as a temporary fallback clock source if preferred masters are interrupted. It functions as an accurate slave clock synchronized to the master clock on the network when not operating as the master.

<p align="center">Figure A-6: Preferred Master Clock Selection</p>
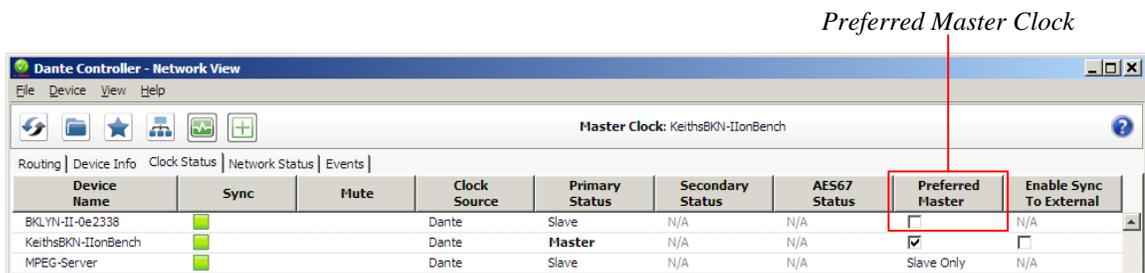
Channel Names

The AMP2-16V uses the BKLYN-II default network channel names of Pair 1L, Pair 1R, Pair 2L, etc. The network controller can change these names as desired, but AMP2-16V channel/pair selections will remain as the original default [Slot n (Dante) Pair n].

AES67

The AMP2-16V Brooklyn II can be configured to support multicast AES67 operation. Session Announcement Protocol (SAP) should be used. AES67 operation with Dante is limited to eight or less receive channels at a 48 kHz sample rate.
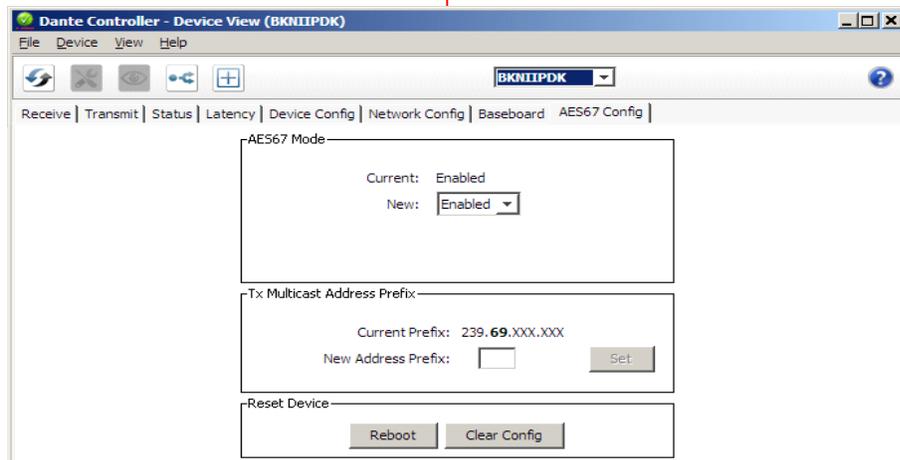
16 bit (L16) or 24 bit (L24) encoding and 125/250/333/100 usec packet times can be received.

24 bit linear (L24) encoding and 1 msec packet time are fixed default transmit parameters.
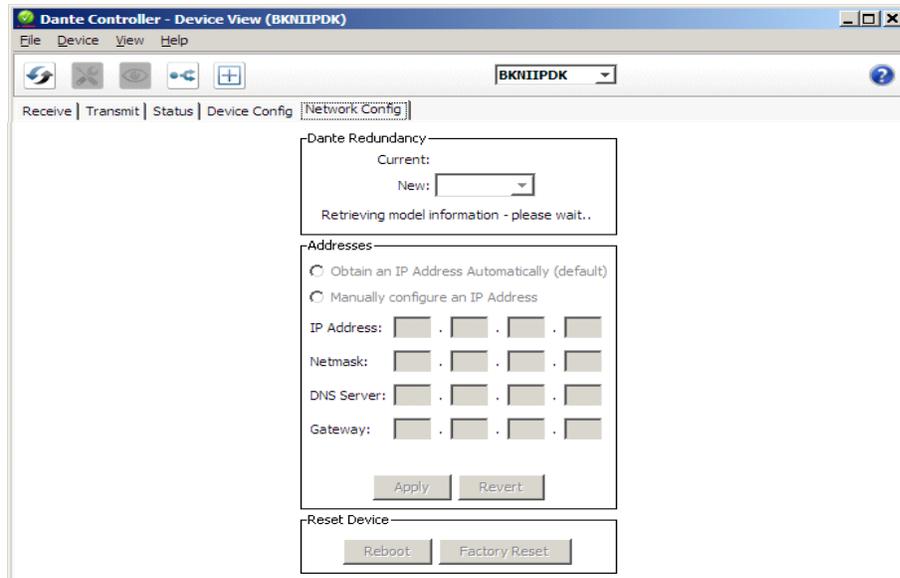
Device View-AES67 Config menu enables/disables AES67.

Figure A-7: AES67 Enable/Disable

AES67 multicast streams must have an IP address in the range 239.nnn.0.0 to 239.nnn.255.255 where nnn is set as shown in Figure A-7. Nnn can be configured using Dante Controller. The default is 69. Provisions for this are in Dante Controller Device View-Network Config.

The channels to be multicast are selected in the Dante Controller File menu-Create Multicast Flows window.

Figure A-9: Multicast Channel Selection
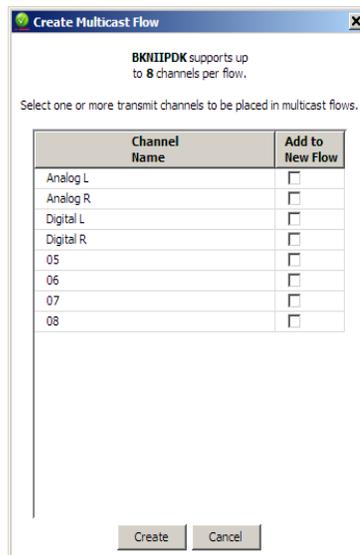
Device Lock

There a feature whereby a remote controller can send a command to lock Dante network device configurations. The AMP2-16V does not implement the Device Lock command at this time.

Troubleshooting

It can happen that the AMP2-16V Dante option doesn't immediately operate as expected. This can be the result of a variety of causes. Refer to Table A-1 for solutions to the problem. If after following the advice in the table, you still cannot resolve the issue please contact Wohler Technical Services for additional help. Contact information is on the second page of this manual.

Table A–1: Troubleshooting

Symptom	Possible Solutions
Dante Option card doesn't show up on the network	1. Make sure that the Dante Option card and the computer doing the setup are on the same subnet.
	2. Restart the unit that doesn't show up.
	3. Restart the network.
Cannot find the Dante Option card after changing the IP address.	1. Use DHCP.
	2. Connect directly to a computer and use Wireshark** to check network traffic to locate the card.
	3. If Macbook is used, use MT (Merging Technology) discovery program to check network traffic to locate the card.

* Wireshark is a free and open sourced packet analyzer software program. It can be used to analyze network traffic and locate IP addresses being used. It may be downloaded from www.wireshark.org.

Dante Firmware Upgrades

Wohler AMP2-16V monitors ship with current Brooklyn II firmware as of the final test date. The version information is found in the **Dante Controller Device View-Status** page. AMP2-16V software/firmware is tested with the latest Dante code release. Therefore it is recommended that AMP2-16V and Dante software/ firmware be updated at the same time to ensure compatibility and support of the latest features.

Use the Audinate **Dante Firmware Update Manager** Windows or OS X application to update the Dante firmware over the Dante network. Follow the application's installation and usage guide plus any applicable technical notes available.

Follow instructions in **AMP2-16V Wohler Update Manager Manual** for AMP2-16V software updates.

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APPENDIX B: Ravenna Network Setup

Introduction

Installing the AMP2-16V into an existing and functioning Ravenna network is virtually plug and play. The AMP2-16V Ravenna input module supports 1Gb/s and 100Mb/s Ethernet devices in Ravenna Audio over IP network configurations. AMP2-16V channel source selections are made by choosing **Source Pair Select** 'Ravenna' in the **Monitor Mixer Configuration Menu as** shown in Figure B-1.

Figure B-1: AMP2-16V Source Pair Selection
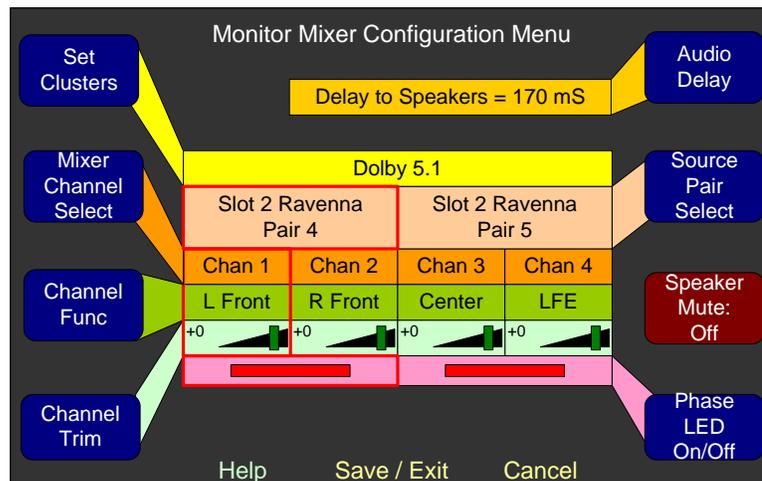
Note: In addition to the AMP2-16V configuration, the Coveloz Bach board needs to configured using its own configuration tool. The menus in this configuration tool are shown in this Appendix.

Note: The instructions provided in this appendix are intended only as an overview. Detailed instructions may be found in the Coveloz Manual.

Ravenna Input Module Features

The AES67 enabled Coveloz Bach board supports the following features:

RAVENNA-Compatible Listener

The Ravenna Input Module for the AMP2-16V offers the following features:

5) RFC 3551 – RTP Profile for Audio and Video Conferences
   a) L16 16-bit linear format defined in RFC 3551 clause 4.5.11
   b) L24 24-bit linear format defined in RFC 3190 clause 4
   c) AM824 24-bit Audio as defined in IEC61883-6
   d) Multicast and unicast session support

e) 48 kHz and 96 kHz audio sampling rates
f) 1 to 8 audio channels per stream
g) Up to 2 streams
6) Media clock support
a) 48 kHz and 96 kHz
7) IGMP v3 support
8) Session Announcement Protocol (SAP) support

AVB Ethernet Features

AVB uses the concept of streams and channels. A stream is a connection from one talker to one or more listeners. One stream can be made up of 1- 60 audio channels. The Ravenna option supports the following AVB features:

1) AVB 1722 AVTP with multiple subtypes:
a) IEC 61883-6 MBLA
b) AM824, 24-bit Audio Encapsulation
c) Support up to 2 streams
d) Up to 8 channels per stream
e) 512+512 Channels of audio
f) 48kHz and 96kHz sampling rates
2) IEEE 802.1Q/SRP
3) IEEE 1722.1/AVDECC control
4) IEEE 802.1AS/gPTP
5) Compatible with Apple OS X devices, such as MacBooks and MacMini computers
6) Media clock per the AVnu specification

BACH™ Controller Interface

The BACH board includes a Graphical User Interface to review and manage the Bach board. It provides an interface to:

3) Manage connections with ease
a) Display discovered devices and streams
b) Connect streams from network to local destinations
c) Start, stop and monitor stream health/status
4) Enable local BACH™ device configuration & status reporting. Examples include:
a) Receive buffer statistics
b) Ethernet statistics
c) Alarms

The context is device-specific, meaning that:

1) A stream "source" refers to this device's source

Home Page

You can navigate to different pages within the Bach Controller GUI to review or perform various functions.

The **Home** page can be accessed by entering the **172.27.2.30** IP address. It gives a device overview and stream status.

Note: The IP address given above is only the factory default setting, but you can change it if necessary. Once you have changed it, only another BACH card can discover the new IP address, and then only if it is on the same subnet.

Note: If you do change the IP address, make sure you document this change by writing down the new IP address and affixing it to the rear panel cover plate of the associated Ravenna option card for your future reference.

Figure B–2: BACH Controller Home Page
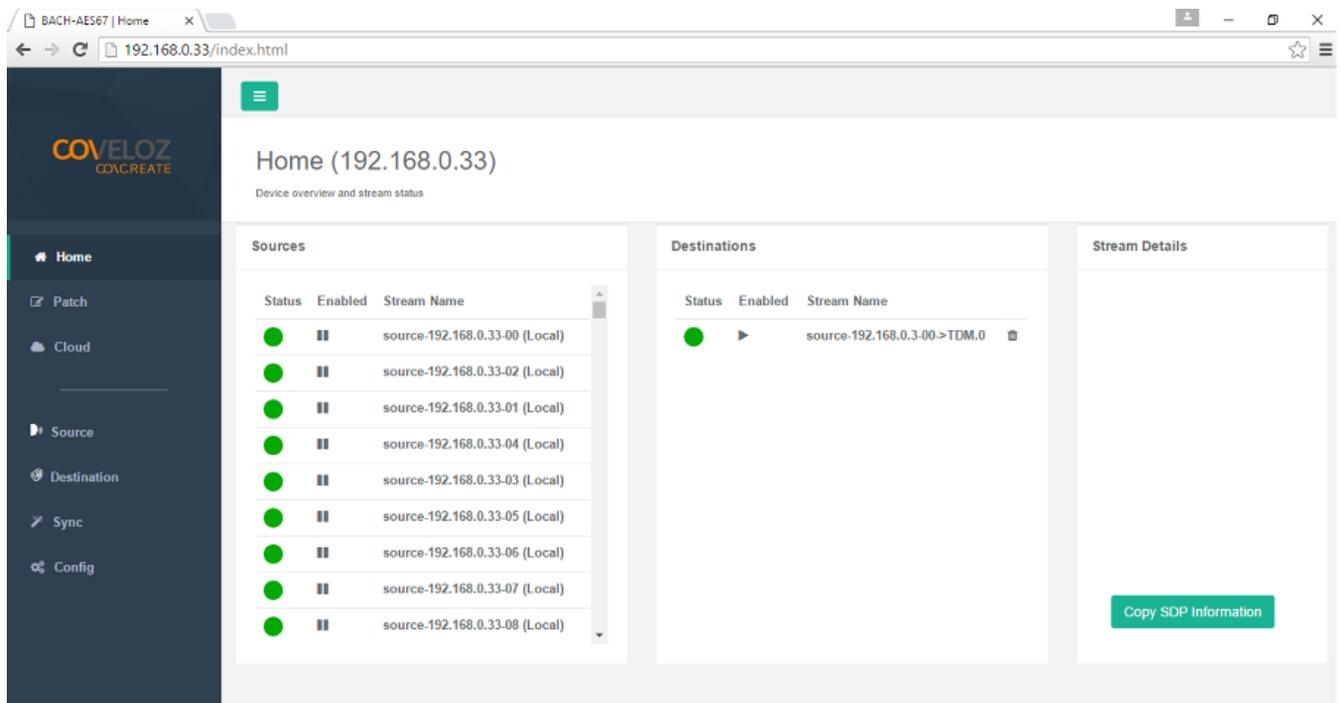
Configuration/Device Management

The first step in setting up the Ravenna option is to configure the Ethernet IP address and other settings. The Device Configuration page allows operations such as modifying the IP address, Packet time, Rebooting etc.

Note: There are important considerations when setting up a Ravenna network. Ideally, the Ravenna network must be completely isolated from other Ethernet devices, such as computers, printers, and connections to the internet. This is because the timing of the communications on the Ravenna network is very critical.

It should have its own 1Gbps router. However, at least one computer must be connected to the Ravenna network to perform configuration.

Set the Ethernet IP address of the Ravenna option into the "eth1" line on the Device Configuration page. The address must be on the same subnet as the other devices on the Ravenna network.

**Note:** The "eth0" setting is not to be used. Leave it at its default setting.

Next, check that the Sampling Frequency is 48 kHz and the Packet Time is 1ms. Check that the Firmware Version is the same as what is shown in Figure B-3.

Note: ALL Devices must use the same packet time, or sources or destinations may not be available.

If you change any setting on the Device Configuration page, click **Save Running to Startup**. If you have changed any Ethernet IP addresses, click **Reboot Device**.

Note: If you do decide to change an IP address, make sure you document this change by writing down the new IP address and affixing it to the rear panel cover plate of the associated Ravenna option card, for your future reference. If you forget the IP address of a card, the only way to find it is to connect it to a very small network consisting of a computer, a switch and the card. Then use Wireshark to discover its IP address.

Figure B–3: BACH Controller Device Configuration

---
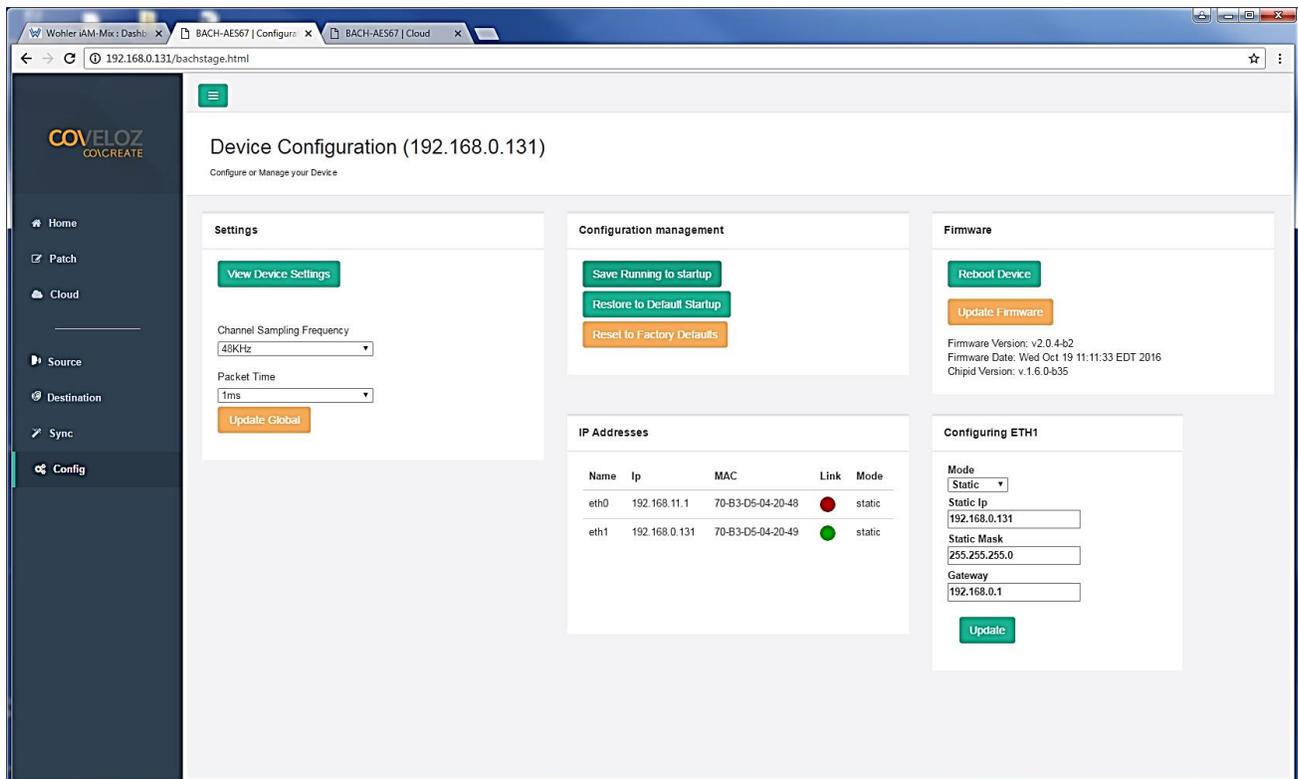
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Controller Cloud

The Cloud page shows any Ravenna devices on the given network, including any Wohler devices with the Ravenna option installed.

After the configuration described in the previous section, the devices you have set up should now appear on the Controller Cloud page.

Note: All devices must be on the same subnet to be discovered.   If the subnet of a BACH device is unknown, one must use a tool such as Wireshark to discover the IP address.

Figure B–4: BACH Controller Cloud Page
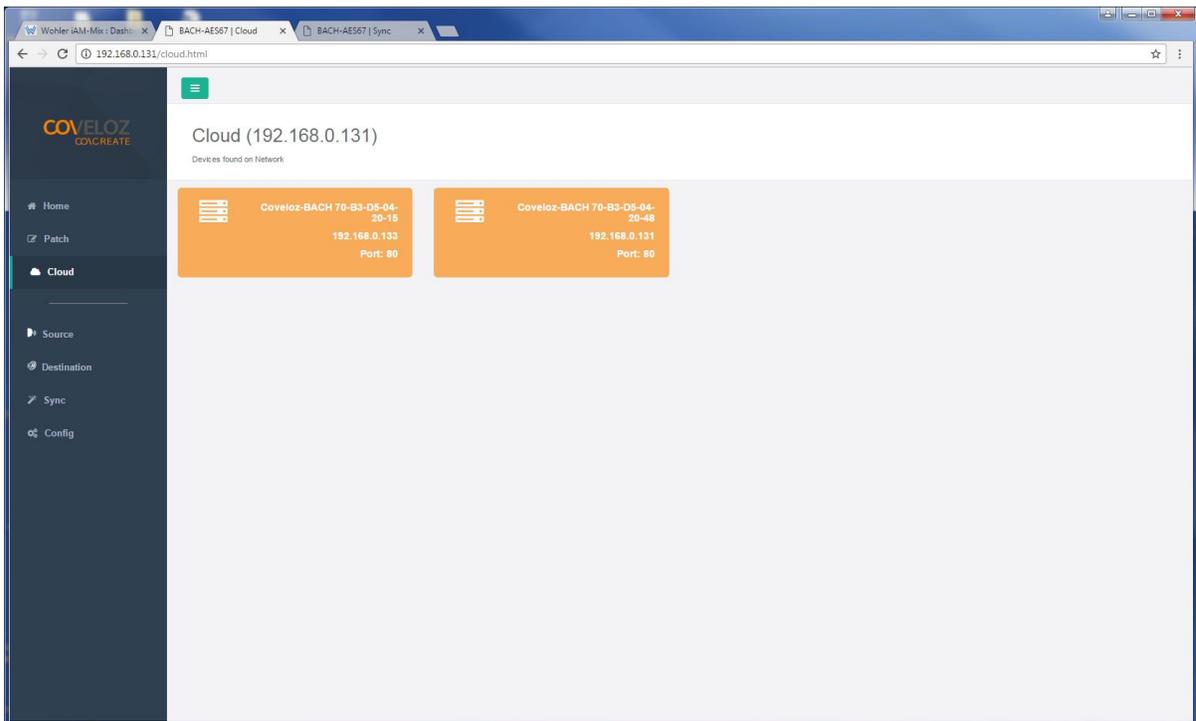
Sync

The Sync page allows you to program parameters relating to Precision Time Protocol (PTP) based time synchronization of network clocks of your BACH AES67 devices. For each of the devices you set up, you may check its associated Sync page. An example of a Sync page is shown in Figure B-5.

Note: All cards must be set to the same Sync interval, announce interval, etc. The default values should be sufficient. Likewise, although there are a number of clocking options, packet times, and announcement times available, the default values should be sufficient.

Note: Click the **Advanced** button to show which card is the grandmaster clock source. The source card can be the grandmaster clock. Ideally, all Ravenna devices are clocked from a GPS source. Configuration Priority1 should be the lowest value on the network for the grandmaster clock source card.

Figure B–5: BACH Controller Sync Page

Source Streams

The Source provides in-depth information on source streams that are transmitting (sourcing) Ravenna signals from devices on the network.

Check the Source tab of the source card web page. At lease one source much be turned on. Figure B-6 shows a Source page with six sources turned on. The status of each source should be green.

Note: Sources must be turned on to appear on the list.

<div align="center">Figure B–6: BACH Controller Source Stream</div>
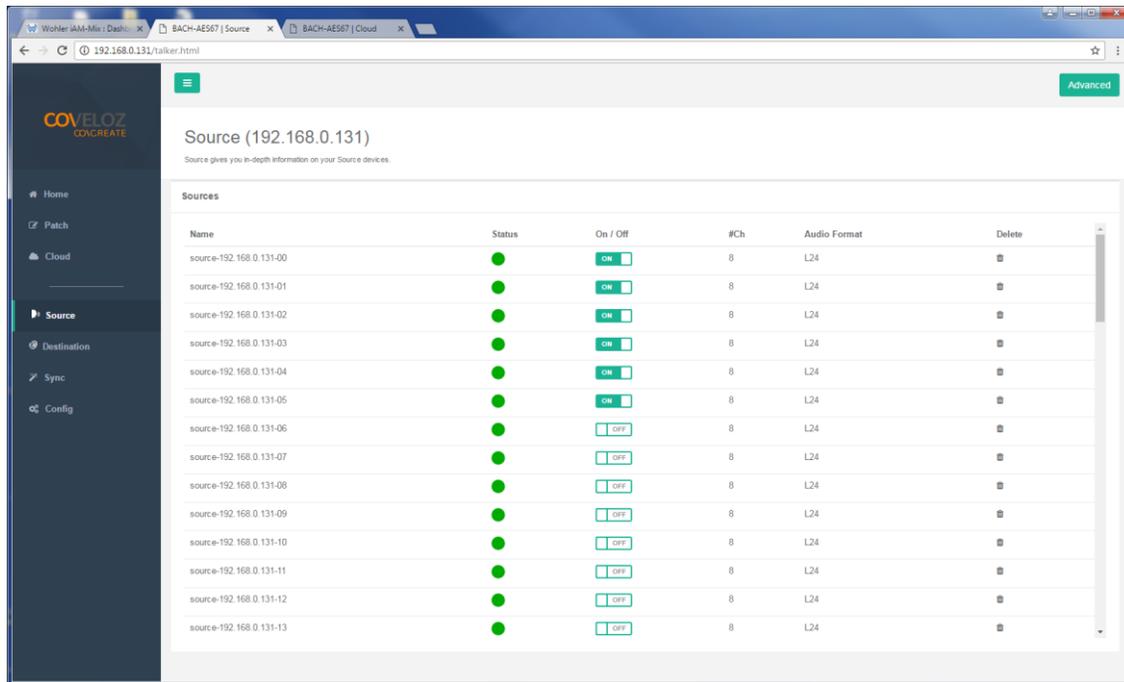
Stream Destinations

The Destination page provides in-depth information on your destination devices that are receiving Ravenna signals on the network. Clicking the **Advanced** button provides additional options.

Note: The Destinations must be set to ON.

An AMP2-16V should have (at most) two destinations - TDM.0 and TDM.1.

Figure B–7: BACH Controller Stream Destinations
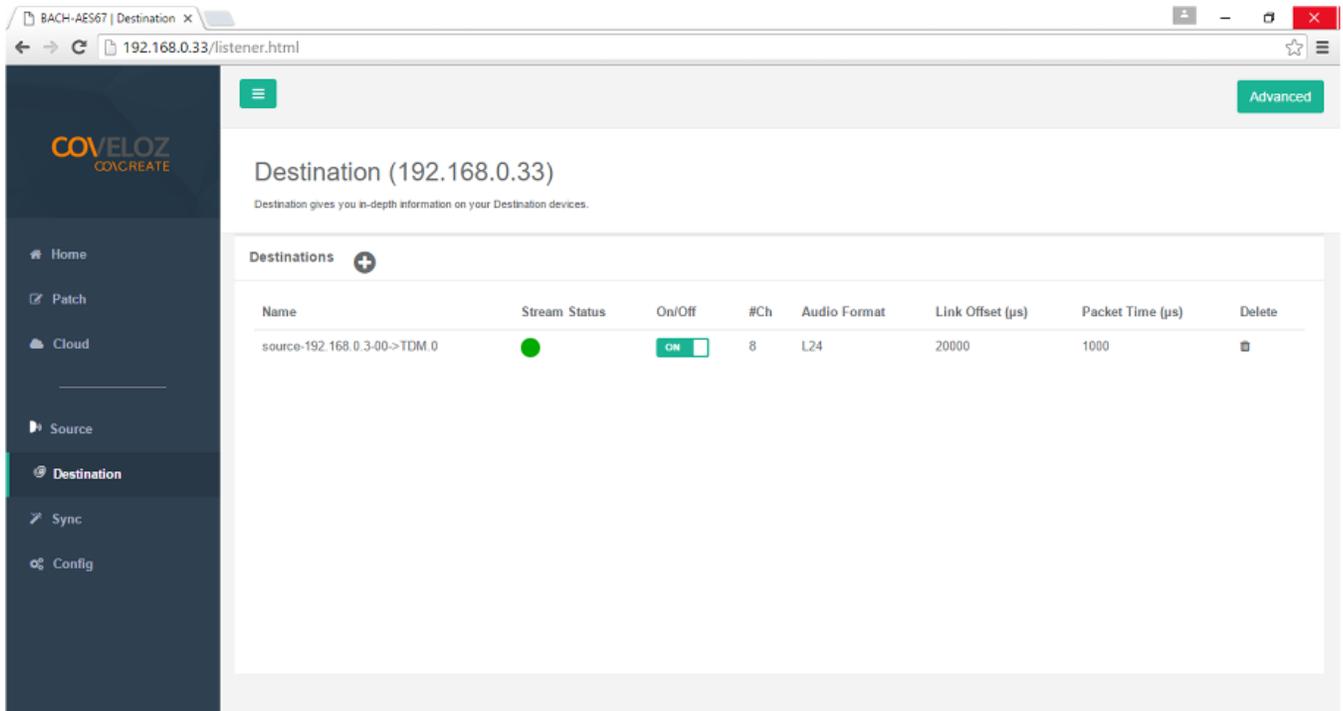
In the event that the Patch tab will not allow you to route to TDM.0 or TDM.1, use this tab to delete all sources routed to those destinations by clicking on the trash can icon in the delete column.

Refer to Figure B-8, which shows destinations that can be deleted. Typically these destinations are from previous network configurations that are no longer used.

Note: The Stream Status indicators for those destinations that can be deleted are yellow instead of green.

Figure B–8: Deleting Stream Destinations
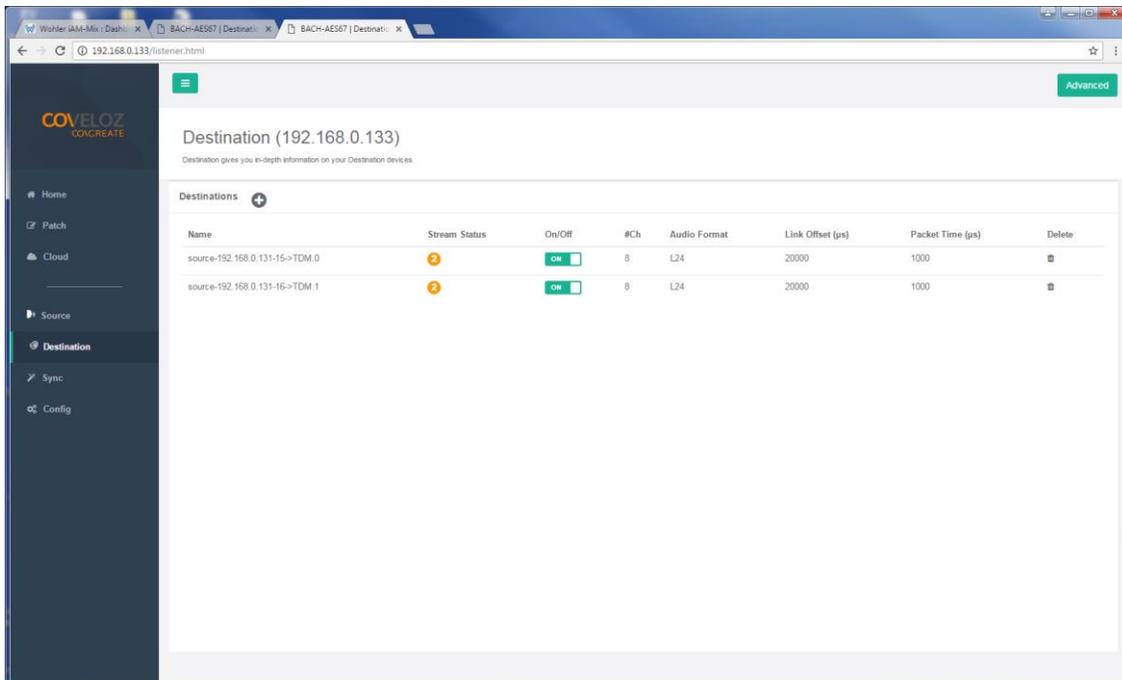
Patch Panel

The Patch page enables routing of connections between listener and talker channels for devices on the network. The highlighted green square indicates a routing connection between a source or talker (left) and a destination or listener (bottom). The Web GUI will allow selection of channels to monitor from among the listeners (bottom).

The AMP2-16V is a destination only. Although many may be shown in the list, you may route only to the TDM.0 and TDM.1 columns from any available source, as follows:
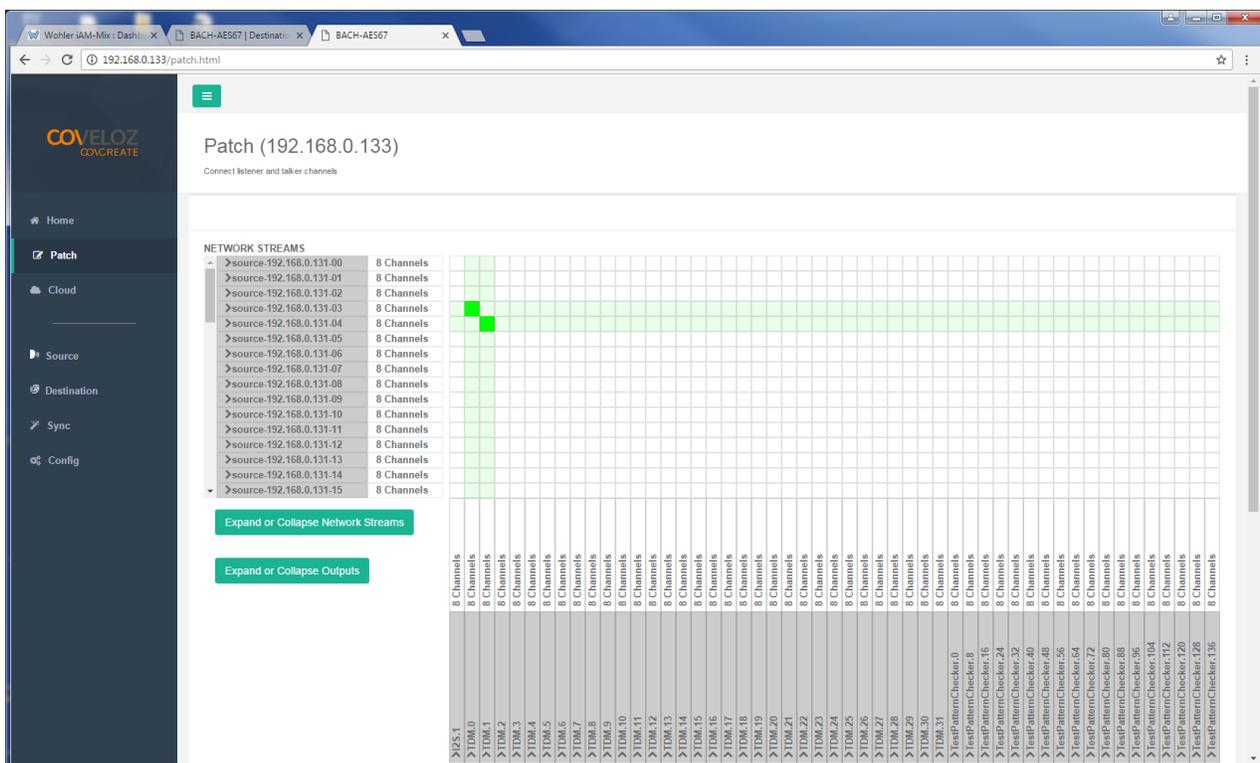
TDM.0: Ravenna Pairs 1 - 4
TDM.1: Ravenna Pairs 5 - 8

All other columns are reserved and are ignored by the AMP2-16V.

In the event that the controller will not allow you to select either TDM.0 or TDM.1 as a destination, refer to the additional information under the Stream Destinations section in this appendix.

Figure B−9: BACH Controller Patch Panel

Troubleshooting

It can happen that the AMP2-16V Ravenna option doesn't immediately operate as expected. This can be the result of a variety of causes. Refer to Table B-1 for solutions to the problem. If after following the advice in the table, you still cannot resolve the issue please contact Wohler Technical Services for additional help. Contact information is on the second page of this manual.

Table B–1: Troubleshooting

Symptom	Possible Solutions
Source or destination doesn't show up on the network	1. Restart the AMP2-16V.
	2. Restart the unit that doesn't show up.
	3. Restart the network.
Cannot open a web page for either a source or a destination	1. Go to the cloud page of a working device and see if the source or destination is listed there. This will help determine whether the IP address was changed or simply entered incorrectly.
	2. Use software such as Wireshark* to check network traffic.
	3. Empty the cache of the browser.
Cannot route to a destination	1. Go to the Destinations tab, delete all of the destinations and then try to route again.
	2. Make sure that the source is turned on.
	3. Go to the Dashboard page and check the Sources and Destination blocks. Verify that they are ready and working without timing errors.

* Wireshark is a free and open sourced packet analyzer software program. It can be used to analyze network traffic and locate IP addresses being used. It may be downloaded from www.wireshark.org.

Ravenna Firmware Upgrades

Follow instructions in **AMP2-16V Wohler Update Manager Manual** for AMP2-16V software updates and for guidance on whether a Ravenna software update should be applied. If a Ravenna software update is indicated, follow instructions in the Coveloz Ravenna software update materials.