AMP2-E8 Series

(DA, SDA, HDA, and MDA Models)

2U Multi-Format Analog/Digital Audio Monitor

with DOLBY® E/DOLBY DIGITAL (AC-3)/HD-SDI/SD-SDI/AES/ANALOG Inputs, HD-SDI/SD-SDI/AES/ANALOG Outputs, LCD Display, Eight 53-Segment Level Meters, and Phase Indication

Document P/N **821639** Rev-**C**

User Manual

CONTENTS

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Important Safety Instructions

1) **Read these instructions.**
2) **Keep these instructions.**
3) **Heed all warnings.**
4) **Follow all instructions.**
5) **Do not use this apparatus near water.**
6) **Clean only with dry cloth.**
7) **Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.**
8) **Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.**
9) **Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.**
10) **Protect the power cord from being walked on or pinched, particularly at plugs convenience receptacles and the point where they exit from the apparatus.**
11) **Only use attachments/accessories specified by the manufacturer.**
12) **Use only with the cart stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.**
13) **Unplug this apparatus during lightning storms or when unused for long periods of time.**
14) **Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.**
15) **Do not expose this apparatus to rain or moisture.**
16) **The apparatus shall be connected to a mains socket outlet with a protective earthing connection.**

CAUTION!

The surface at the side of these products where the audio amplifier heat sink is internally attached may get very hot after extended operation. When operating the unit excercise caution when touching this surface and ensure that external materials which may be adversely affected by heat are not in contact with it. There is a Hot Surface label (see diagram at left) attached to the aforementioned surface of the product.

Introduction

Congratulations on your selection of a Wohler Technologies **AMP2-E8 Series** audio monitor unit. We are confident it represents the best performance and value available, and we guarantee your satisfaction with it.

If you have questions or comments you may contact us at:

Wohler Technologies, Inc.
31055 Huntwood Avenue
Hayward, CA 94544
Phone: **(510) 870-0810** Fax: **(510) 870-0811**
US Toll-Free: **1-888-596-4537**
web: **www.wohler.com** e-mail: **support@wohler.com**

Section 1

General Features and Specifications

Quick Start Guide

Description

Features

Applications

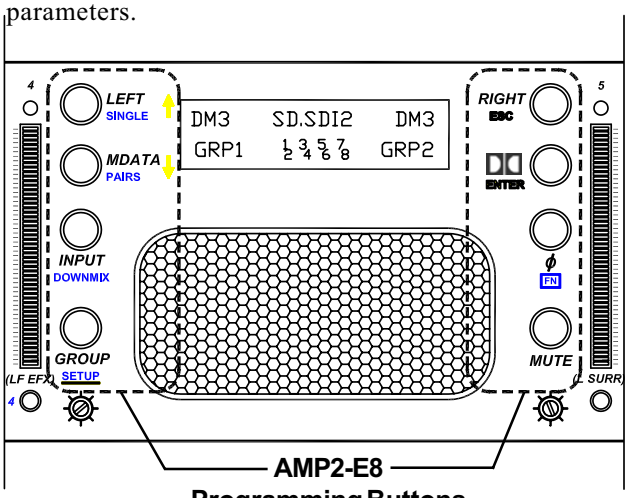
Specifications

Installation

Wohler AMP2-E8 Series

Quick Start Guide

Use the information below to quickly set up your Wohler **AMP2-E8 Series** product for immediate use. The illustration below is provided to help you locate and identify the programming buttons described in this quick start guide. See the sections **User Interface Features** (page **18**) and **User Interface Function Guide** (page **23**) for in-depth instructions and descriptions of all controls and parameters.



AMP2-E8
Programming Buttons

When in **Normal Operational Mode**, the software for this family of products allows three fast channel selection modes; **Single**, **Pair**, and **Downmix**. See above images for button locations. Select channels as follows:

Single Channel Select: Channel selection for the left and right speakers are controlled independently.

Hold down the **FN Button**, press and release the **SINGLE Button**. Use the **LEFT Button** to cycle through the channels to be assigned to the ***left*** speaker channel. Use the **RIGHT Button** to cycle through the channels to be assigned to the ***right*** speaker channel. Channels are selected for monitoring as they are displayed in the LCD.

Pair Channel Select: Channels are selected in pairs (**1/2, 3/4, 5/6,** or **7/8**) with the first channel in the pair routed to the *left* speaker and the second routed to the *right* speaker.

Hold down the **FN Button**, press and release the **PAIRS Button**. Use the **RIGHT Button** or **LEFT Button** to cycle up or down through the channel pairs assigned to the left/right speaker channels. Channels are selected for monitoring as they are displayed in the LCD.

Downmix Select: Pre-configured downmixes of multi-channel selections may be selected.

Hold down the **FN Button**, press and release the **DOWNMIX Button**. Use the **RIGHT Button** or **LEFT Button** to cycle up or down through the downmix selections. Downmixes are selected for monitoring as they are displayed in the LCD.

AMP2-E8 Series

Powered Analog/Digital Audio Monitor

Description

The **AMP2-E8 Series** audio monitoring products are a complete, exceptionally high quality **DOLBY E**, **DOLBY Digital** (**AC-3**), **SD-SDI/HD-SDI, PCM** and **Analog** stereo audio monitoring solution. The **AMP2-E8 Series** comprehensive monitoring features are available in a compact two (**2U**) rackspace cabinet. A significant feature is the ability to process and monitor up to eight channels from a **DOLBY E** or **DOLBY Digital** (**AC-3**) bitstream, an **HD-SDI** and/or **SD-SDI** bitstream, two sets of four **AES/EBU** signal pairs (balanced and unbalanced), or eight **Analog** channels. Eight high-resolution 53-segment tri-color LED bargraph audio level meters provide accurate and instantaneous visual level monitoring at a glance. A convenient high-contrast LCD display on the front panel shows the user settings and status (as currently selected), type of signal, channel selection, mute status, and alternately, phase/correlation. Input presets may be configured and easily recalled by the user.

Additionally, the unique design of the **AMP2-E8 Series** provides optimally focused sound in an Ultra Near Field tm (1 to 3 feet) environment, which allows higher SPL for the operator while reducing overall ambient sound and adjacent bay crosstalk.

Although all models in the **AMP2-E8 Series** offer **DOLBY E**, **DOLBY Digital** (**AC-3**), **PCM**, and **Analog** monitoring capabilities, there are four different configurations which vary according to **SDI** input type and configuration; the **AMP2-E8DA** (*no* **SDI**), the **AMP2-E8SDA** (270Mbps **SDI**), the **AMP2-E8HDA** (1.5Gbps **HD-SDI**), and the **AMP2-E8MDA** (270Mbps *and* 1.5Gbps **HD-SDI**).

Features

General AMP2-E8 Series Features

- 2U Rack Spaces: highest fidelity in minimum size
- DOLBY E, AC-3, AES/EBU, and Analog signal monitoring
- Four de-embedded AES balanced or unbalanced outputs (8 channels) from two selected SDI Groups.
- Four AES/EBU balanced inputs and loop-throughs on a DB-25 connector
- Eight Analog inputs on a balanced DB-25 connector
- Eight Analog outputs on a balanced DB-25 connector
- Comprehensive multi-channel to stereo downmix capability
- Unit configuration stored while unit is switched off
- Storage for ten preset monitoring settings for easy recall
- Phase (polarity) correlation display of selected channels
- LCD status display on front panel
- Volume and balance controls
- Eight high-resolution 53-segment tri-color LED bargraph level meters with simultaneous PPM dot over VU bar
- Headphone output
- Composite NTSC or PAL outputs from SDI input option (for SDI or HD-SDI models)
- Software is field upgradable

AMP2-E8HDA Features

- Two HD-SDI inputs with reclocked output of selected input
- Single HD-SDI input option available for cost savings
- Demuxes any two HD-SDI groups to AES/EBU and Analog
- Select sources from DOLBY E, HD-SDI, AES/EBU, or Analog for metering/monitoring
- AES output from HD-SDI input
- NTSC/PAL video encoder option available

AMP2-E8SDA Features

- Two SDI inputs with reclocked output of selected input
- Single SDI input option available for cost savings
- Demuxes any two SDI groups to AES/EBU and Analog
- Select sources from DOLBY E, SDI, AES/EBU, or Analog for metering/monitoring
- AES output from SDI input
- NTSC/PAL video encoder option available

AMP2-E8MDA Features

- Two SDI inputs (either SD-SDI *or* HD-SDI) with reclocked output of selected input
- Single SDI input option available for cost savings
- Demuxes any two SD-SDI *or* HD-SDI groups to AES/EBU
- Select sources from DOLBY E, AC-3 carried on SD-SDI , HD-SDI, or AES/EBU for metering/monitoring
- AES output from DOLBY E or AC-3 input
- NTSC/PAL video encoder option available

AMP2-E8DA Features

- Same as other models except no SDI input option

Applications

The **AMP2-E8 Series** is ideally suited to provide high quality multi-channel digital and analog audio monitoring in a very compact form. Ideal for use in VTR bays, mobile production vehicles, teleconferencing installations, multimedia systems, satellite links, cable TV facilities, and on-air radio studios. Designed and manufactured in the U.S.A., the **AMP2-E8 Series** is backed by a strong warranty and a satisfaction guaranteed return policy.

Specifications

Analog Input Impedance:	27K Ω balanced, minimum
AES Input Configuration:	110 Ω balanced, 75 Ω unbalanced
AES Termination:	DIP switch selectable on rear panel
Analog Input Overload:	+24 dBu balanced
Analog Reference:	+8, +6, +4, or 0 dBu
Digital Reference:	-20, -18, or -9 dBFS
Meter Dynamics (AES Scale):	VU and PPM
Level Meter Scale (standard):	AES*
AES Input Sampling Rate: **D to A Converter:**	32-48 KHz, auto-select 24-bit low jitter
Peak Acoustic Output: **(@ 2 ft.)**	104 dB SPL
Acoustic Distortion:	6% or less at worst case frequencies above 140 Hz including cabinet resonance; typically less than 1.5%
Response, Sixth Octave:	80Hz – 18 KHz +/- 5 dB (-10 dB @ 55 Hz, 21 kHZ)
Distortion, Electrical:	< 0.15% at any level below limit threshold
Hum and Noise, Analog:	Better than 68 dB below full output
Power Output, **High Frequency:** **Low Frequency:**	 6 W RMS (each channel) 14 W RMS

Converted Analog Out THD:	< 0.008%
Magnetic Shielding:	Less than 1 Gauss any adjacent surface
Input Connectors:	**AES:** D-SUB 25, BNC x4 **SD-SDI, HD-SDI:** BNC x2 **Analog:** D-SUB 25 ("Tascam" pin-out on all D-sub connectors) **DOLBY:** BNC x 2
Power Consumption (less than):	72 W
AC Mains Input:	100-240 VAC, 50-60 Hz
Chassis Dimensions (H x W x D):	3.5 x 19 x 12.5 inches 89 x 483 x 317.5 mm Depth is 14 inches (355.6 mm) including controls/knobs
Weight:	18 lbs. (8.2 kg)

*Other level meter scales are available for specification at time of manufacture including BBC, DIN, etc. Contact Wohler for more information concerning alternate scales.

Units are certified to meet, at time of manufacture, all currently applicable product safety and EMC requirements, such as those of CE. 0 dbu ref. 0.775V RMS. Features and specifications subject to improvement without notice.

Installation

Mounting

The unit should be mounted where convenient for operating persons, ideally at approximately ear level for best high frequency response. Its superior magnetic shielding eliminates concerns about locating it adjacent to most types of CRT monitors, including even high-resolution color monitors.

Heat Dissipation

Heat dissipated by the speaker amps is conducted directly to the left side of the chassis; no special considerations for cooling are necessary as long as the ambient temperature inside the rack area does not exceed approximately 40°C (104°F).

Sympathetic Vibration

Sympathetic vibration from other equipment (cables, etc.,) in the rack may be serious enough to interfere with the unit's sound quality out in the listening area. 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 the 2U models are fairly heavy, the chassis is securely attached to the front panel at eight points along its surface, not just at the four corners of the chassis ears. 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.

Audio Connections and Cable Recommendations

Connection of the audio feeds is straightforward. Please refer to the system interconnect block diagram on page **40** for clarification of the general signal paths into and out of the **AMP2-E8 Series** units.

There are recommended limits to the length of cable that should be used for feeding **HD-SDI** signals sources to the **HD-SDI** inputs of the **AMP2-E8HDA** and **AMP2-E8MDA** units. Recommendations are as follows:

Using **Belden 1694A** cable (or equivalent),

HD-SDI input2 (**IN 1** and **IN 2**) = Up To **150 Meters** (**492 feet**)

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 except for the XLR connectors. *The **Tascam** trademark is owned by Teac Inc.

Electrical Interference

Care should be exercised 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 datastream. As with any audio equipment, maximum immunity from electrical interference requires the use of shielded cable; however, satisfactory results can sometimes be obtained without it. The internal circuitry common is connected to the chassis.

AC Power

The unit's AC mains connection is via a standard IEC inlet, with safety ground connected directly to the unit's chassis. The universal AC input (100-240VAC, 50/60Hz) switching power supply is a self-resetting sealed type, with automatic over-voltage and over-current shutdown. There is no user-replaceable fuse in either the primary or secondary circuit.

Section 2

Operation

Front Panel Features

Rear Panel Features

Introduction to the User Interface

User Interface Features

User Interface Function Guide

NOTE: Throughout the manual, the following terms are used to refer to **Serial Digital** (**SDI**) signals:

- **SD-SDI** = refers only to ***standard*** **SDI** (270 Mbps).
- **HD-SDI** = refers only to ***high-definition*** **SDI** (1.5 Gbps).
- **SDI** = refers to *either* **standard SDI** (SD-SDI, 270 Mbps) or **high defintion SDI** (HD-SDI, 1.5 Gbps).

Front Panel Features

Please refer to **Figure-2a** on the facing page to familiarize yourself with the front panel controls and indicators of the **AMP-E8 Series** units. The following sections describe the functions of each of the various controls and indicators found on the front panel and are referenced, by number, to **Figure-2a**.

1 Speakers

The **AMP2-E8 Series** features two mid-range speakers (left and right) and *one* woofer speaker.

All models of the **AMP2-E8 Series** contain high performance transducers driven by three power amplifiers; two amplifier/driver combinations handle midrange and high frequency information in the left and right (stereo) speaker channels, while the third channel reproduces and sums the left and right channel information below the 500 Hz crossover point in the woofer (bass) speaker. Note that the woofer channel is NOT a dedicated **LFE** (subwoofer) or **Center** channel.

2 Headphone Jack

This jack accepts a standard **1/4"** phone type stereo plug. Select the headphone audio sources as you would for the internal speakers. When you plug in headphones the speakers will mute.

3 CHANNEL MIX (1-8) *or* Preset Select Buttons (1-4)

These buttons are used to select the channels to be summed into either or both speaker channels *or* to create and recall presets when used in conjunction with the **FN Button**. See **Item 7a** on page **18** for a full description of the function of the **CHANNEL MIX Buttons**.

4 Bargraph Meter Brightness Controls (Left and Right)

The brightness of the bargraph meters is adjusted using these two recessed trimpot controls. The left control adjusts the brightness of the *left* four LED bargraphs and the right control adjusts the brightness of the *right* four bargraphs. Use a small flat blade screwdriver or similar tool to adjust these controls. Clock-wise rotation *increases* the brightness.

5 Volume Control

This controls the loudness of the audio reproduced by the internal speaker channels or connected headphone.

6 CHANNEL MIX LEDs (1-8)

These LEDs are used to indicate the speaker mix of selected channels. The **CHANNEL MIX LEDs** are located *above* each 53-segment bargraph display. See **Item 3** for channel mix information. See **Item 7b** on page **18** for a description of the function of the **CHANNEL MIX LEDs**.

7 User Interface Controls and LCD Display

See the **User Interface Features** section starting on page **18** and the **User Interface Function Guide** starting on page **23** for instructions on the use of the **User Interface Buttons** and the **LCD Display**.

8 Audio Level Meters (1-8)

Source channels **1-8** are displayed via eight audio level meters (four on the *left* side of the front panel; four on the *right* side). These level meters are 53-segment high-resolution LED bargraph displays and feature a dynamic range of 66 dB with PPM dot over VU bar ballistic characteristics.

9 Balance Control

This control changes the volume balance between the left and right speaker channels. Please note that this control attenuates the signal from the source, so that the left and right *bass* frequencies (summed together and reproduced in the woofer channel) will respond to balance adjustments in tandem with the left and right speaker channels. See page **39** for more information concerning the **AMP2-E8 Series** balance control characteristics.

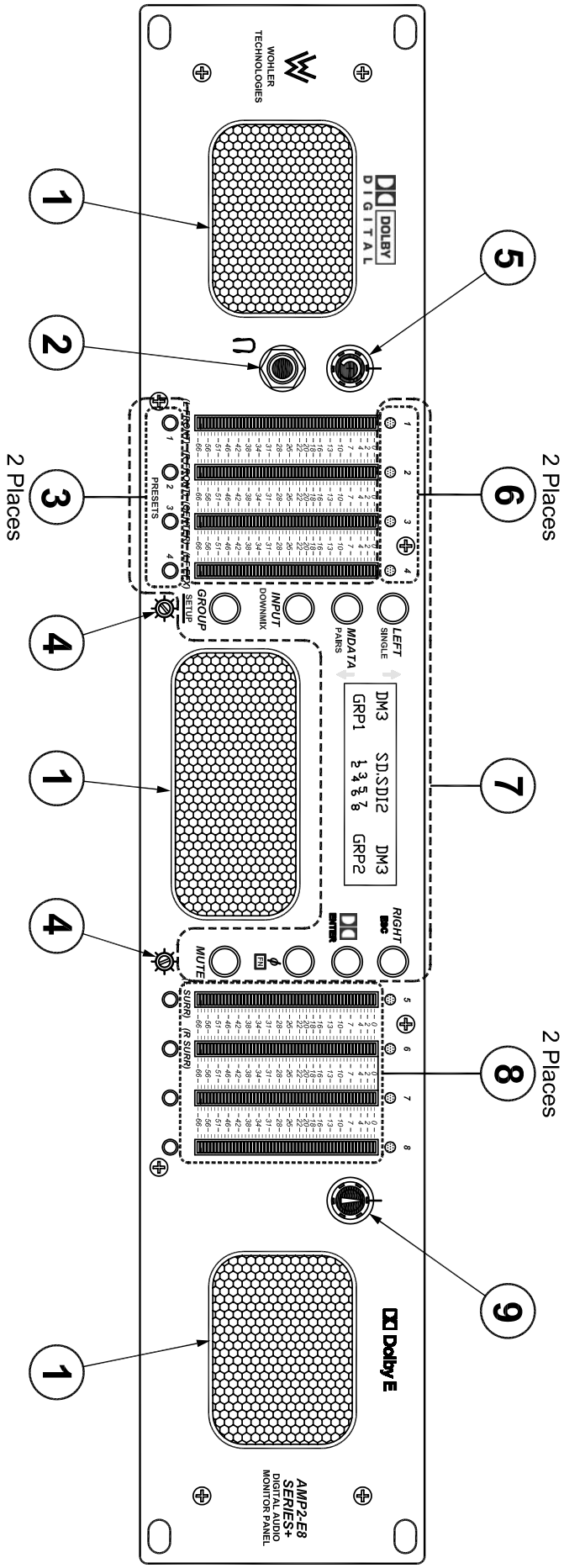


Figure-2a: Front Panel Features

Rear Panel Features

Please refer to **Figure-2b** on the following page to familiarize yourself with the rear panel features of the **AMP2-E8 Series** units. The following sections describe the functions of each of the various features found on the rear panels and are referenced, by letter, to **Figure-2b**.

NOTE: Throughout the manual, the following terms are used to refer to **Serial Digital** (**SDI**) signals:

- **SD-SDI** = refers only to ***standard*** **SDI** (270 Mbps).
- **HD-SDI** = refers only to ***high-definition*** **SDI** (1.5 Gbps).
- **SDI** = refers to *either* **standard SDI** (SD-SDI, 270 Mbps) or **high defintion SDI** (HD-SDI, 1.5 Gbps).

A Power Connector

Attach a standard **IEC-320** power cord between this connector and mains power.

B OPT B - Rotary Switch (2U MDA Model only) *or* Reset Button (2U SDA Model only)

In the 2U **SDA** model, this opening features a recessed push-button with a momentary reset function for the **SD-SDI** input module. Pressing the button with a small screwdriver or other tool will reset the **SD-SDI** input functions of the **SDA** unit.

In the 2U **MDA** model (but *not* **HDA** model) with the **CVBS Video Output** option installed (**Item D**), this opening features a 10-position rotary switch for selecting related functions as shown in the following table:

Position	OPT A SWITCH Function (MDA Models Only)
0	Bootload
1	CVBS Output is NTSC
2	CVBS Output is PAL
3	CVBS Output is NTSC, Letterboxed When Input is HD
4	CVBS Output is PAL, Letterboxed When Input is HD
5	Reserved
6	Reserved
7	Reserved
8	Hardware Reset Mode
9	Hardware Reset Mode

When set to positions **1**, **2**, **3**, or **4**, the signals from the **CVBS Video Output** option (**Item D**) *and* the video supplied to the internal LCD will be the format described for each position in the table (**NTSC** or **PAL**) regardless of the input format. When set to positions **3** or **4**, **HD-SDI** input signals are letterboxed, but **SD-SDI** input signals are not. Setting the switch to positions **8** or **9**, will force a hardware reset on the **video scaler** (**919213**) *and* **audio de-embedder** (**919212**) modules.

C OPT C Rotary Switch

The **OPT C** access opening features a 10-position rotary switch, which is reserved for future options and should be left at the factory position **1**.

D CVBS Video Output (From SDI) Connector (Option for SDA and MDA Models only)

This option is available only on the 2U rack **SDA** and **MDA** models.When the **CVBS Video Out** option is specified, a female BNC connector installed here outputs **CVBS** (composite) video encoded from the selected **SDI** input (**Item E**). **HD-SDI** signals are scaled for proper representation in composite video format. See **Item B** for how to select the *type* of **CVBS** video output for the **MDA** model. When this option is installed, a select switch is installed to allow selection of the **910213 video scaler** module for communication through the **RS232 #2** connector (**Item G**).

This output functions regardless of other selection settings. This feature enables encoding of the **SDI** signal to **CVBS** independent of other monitoring functions (as long as a valid **SDI** signal is present at the associated input).

E SDI Input Connectors - IN1 and IN2 (SDA, HDA, and MDA Models only)

These BNC inputs accept **SDI** digital audio signals for the **SDI** models as follows (the **DA** model does not feature **SDI** capability):

- **AMP2-E8SDA** = SD-SDI only (Standard, 270 Mbps)
- **AMP2-E8HDA** = HD-SDI only (High-Definition, 1.5 Gbps)
- **AMP2-E8MDA** = HD-SDI *or* SD-SDI (High-Definition, 1.5 Gbps *or* Standard, 270 Mbps)

If **Dolby E** and **Dolby D** (**AC-3**) audio signals are encoded within an **SDI** bitstream selected in **DOLBY Decode Mode** (see **Dolby Input Source Selection** on page **24**), they will automatically be de-embedded and de-coded for monitoring through the unit and for output from the **Decoded Dolby E/AC-3 Output Connectors** (**Item H**, page **12**). **PCM** signals embedded within the **SDI** bitstream are also automatically de-embedded for montoring through the unit.

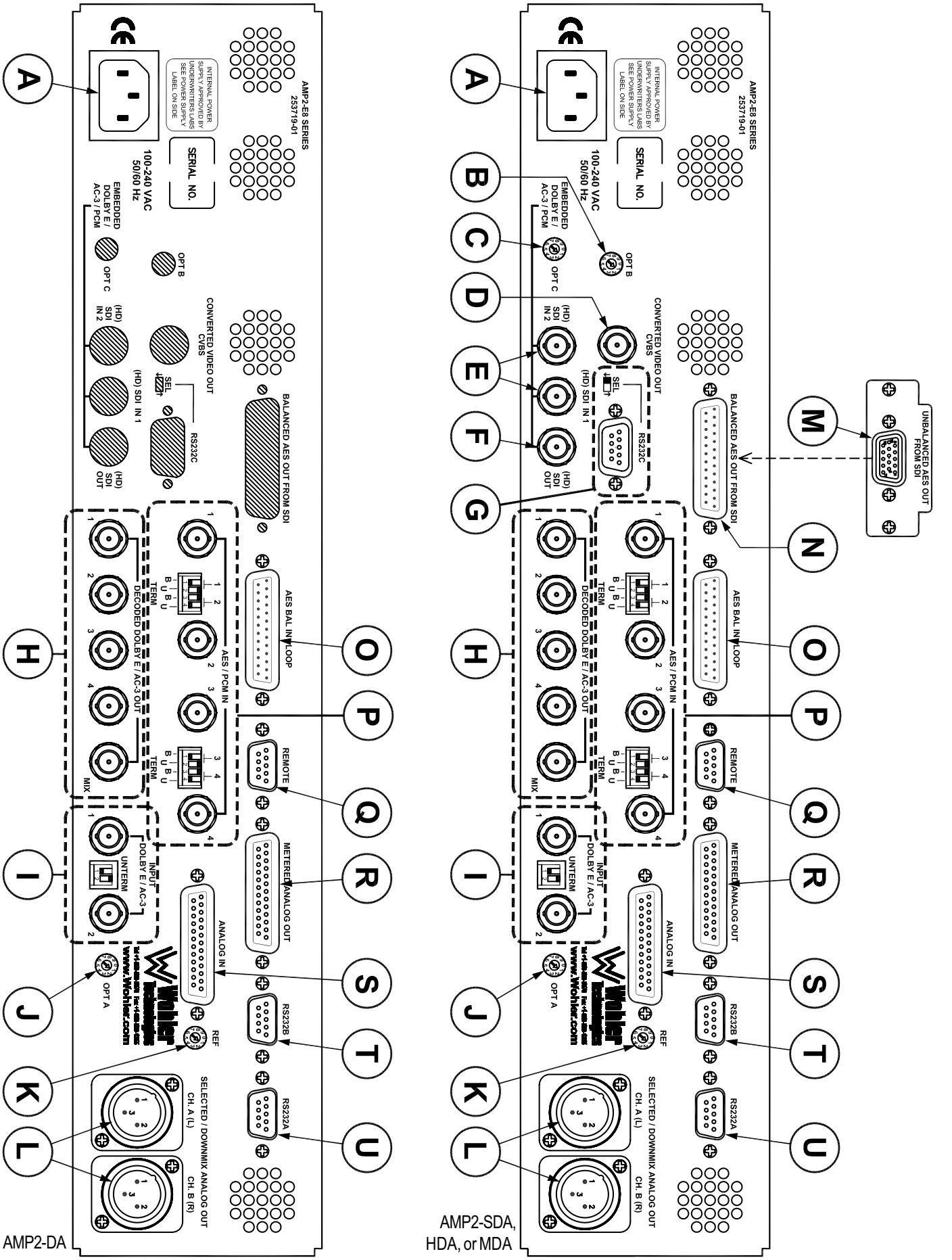


Figure-2b: Rear Panel Features

Rear Panel Features

F SDI Re-Clocked Output Connector (SDA, HDA, and MDA Models only)

This connector outputs a re-clocked copy of the **SD-SDI** or **HD-SDI** signal fed to the **SDI Input Connector** (**Item E**) selected for monitoring (**IN 1** or **IN 2**). However, when an **SDI** input source is *not* selected for monitoring, the re-clocked output will monitor the **SDI IN 2** input by default. Also, the de-embedded **AES *Unbalanced* Output Connector** (**Item M**, page **13**) or optional **AES *Balanced* Output Connector** (**Item N**, page **13**) will monitor the last *selected* **SDI** audio group pair from the last *selected* **SDI** input.

This output functions regardless of other selection settings. This feature enables the output of the re-clocked **SDI** signal independent of the units other monitoring functions (as long as a valid **SDI** signal is present at the associated input).

G RS232 #2 Connector and Select Switch (SDA, HDA, and MDA Models only)

This DB-9 connector is used for downloading programming, setup, and diagnostic information into and out of the **919212 audio de-embedder** module**.** However, if the **CVBS Video Out** option is installed (**Item D**), then the select switch is installed to allow selection of the optional **910213 video scaler** module for communication through the **RS232 #2** connector as well. When installed, the switch is placed in the UP position to access the optional **910213 video scaler** module and in the DOWN position to access the **919212 audio de-embedder** module**.**

H Decoded DOLBY E /AC-3 Output Connectors (1-4 and MIX)

There are four female BNC output connectors which output **AES** signals as de-embedded from the selected **SDI** inputs (**Item E**, page **10**) *or* **DOLBY** inputs (**Item I**), whichever is selected by the **INPUT Button** (**Item 7i**, page **21**). Output assignments for each connector are as follows:

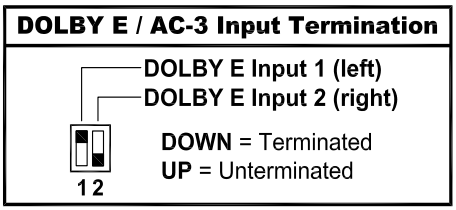
- OUTPUT **1** = Channels **1/2**
- OUTPUT **2** = Channels **3/4**
- OUTPUT **3** = Channels **5/6**
- OUTPUT **4** = Channels **7/8**
- **MIX** OUTPUT = **Mix** of all selected channels in a 5.1 or other Surround type bitstream

NOTE: In the *absence* of a 5.1 or other Surround type bitstream, the **MIX** output will output only the signals from **Channels 1** and **2.**

I DOLBY Input Connectors and Termination Switch (1-2)

There are two female BNC input connectors which accept **DOLBY E**, **DOLBY DIGITAL** (**AC-3**), or **PCM** (**AES/EBU**) formatted signals. Either **input 1** *or* **input 2** may be selected for decoding and monitoring by using the **INPUT Button** (**Item 7i**, page **21**) when the unit is in **DOLBY Decode Mode** (see **Enabling DOLBY Decode Mode** section on page **32**).

If you are connecting downstream equipment to these **DOLBY** inputs in a loop-through configuration, then you should **Unterminate** (switch UP) the selected input connector. If you are *not* connecting downstream equipment, then you should **Terminate** (switch DOWN) the selected input connector. See the diagram to the right for settings.



J OPT A Switch (1-10)

This switch is reserved for future options. The setting should be left at **1** (factory setting).

K Reference Setting Rotary Switch (1-10)

This recessed 10-position rotary switch is used to set the **Analog** and **Digital Reference Levels** for the units level meters, as well as selecting the **Software Upgrade** function. In the table shown, the **Analog Reference Level** (**Analog**, left column) is the analog input level needed to turn on the bargraph segment at the associated **Digital Reference Level** (**Digital**, right column) value. This is also the location on the bargraph level meter where the color transitions from GREEN to AMBER. **Example:** Choosing position **2** (**0 dBu = -20 dBFS**) means an analog input level of **0 dBu** will light up the LED segment associated with the digital **-20 dBFS** value on the bargraph meter and also transition from GREEN to AMBER at that segment.

Position	Ref. Level/Function	
	Analog	Digital
0	+8 dBu	-20 dBFS
1	+4 dBu	-20 dBFS
2	0 dBu	-20 dBFS
3	0 dBu	-18 dBFS
4	+6 dBu	-9 dBFS
5	+4 dBu	-18 dBFS
6	Not Used	
7	Not Used	
8	Software Upgrade	
9	Software Upgrade	

Rear Panel Features

L Selected/Downmix Analog Output Connectors (Left and Right)

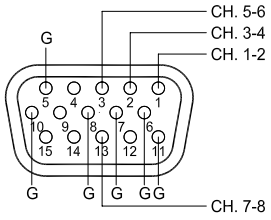
These two 3-pin male XLR connectors are **analog** outputs of the channel mix (or downmix) source as selected for the *left* and *right* speaker channels. Pinout conections are: Pin-**1** = **Ground** (**shield**), Pin-**2** = **High** (+), Pin-**3** = **Low** (-).

NOTE: The **Analog Output Preference** entry within the **Setup** menu is used to determine how these connectors output the channel mix when a **DM1**, **DM2**, or **DM3** downmix selection is enabled. The default setting is **Downmix**, which outputs the channel mix with individual channel scaling (gain settings) intact as determined by the selected downmix (**DM1**, **DM2**, or **DM3**). However, if **Discrete** is selected, then all channels within the downmix are output from these connectors at full gain *without* scaling of the channels as determined by the selected downmix. See **Analog Output Preference (A-OutPref)** section on page **30** for information on how to set this parameter.

M AES *Unbalanced* Output (From SDI Input) Connector (Standard SDA, HDA, and MDA)

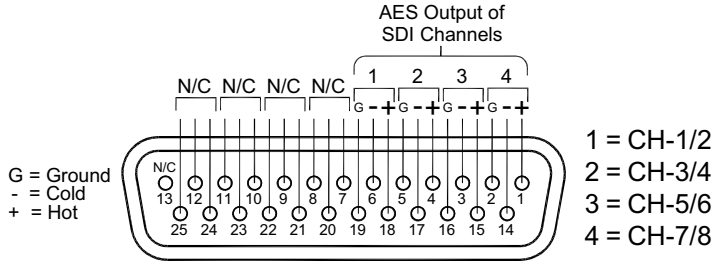
AES signals de-embedded from the selected **SDI Input**, **IN1** or **IN2** (**Item E**, page **10**) are output from this female **HD-15** connector, which is configured for *unbalanced* **75Ω** impedance connections. See the table and diagram below for pinout information. See **Item N** for instructions on how to replace this standard *unbalanced* connector with the optional integrated **DB-25** *balanced* connector.

Pin#	Channel	Typical VGA to BNC Color
1	1 and 2	Red
2	3 and 4	Green
3	5 and 6	Blue
13	7 and 8	Black
5, 6, 7, 8, 10, 11	Grounds	-



N AES *Balanced* Output (From SDI Input) Connector (Option SDA, HDA, and MDA)

AES signals de-embedded from the selected **SDI Input**, **IN1** or **IN2** (**Item E**, page **10**) can be output from this **DB-25** connector, which is configured for *balanced* connections (**110 Ω** impedance). When installed, this *balanced* **DB-25** connector replaces the *unbalanced* **HD-15** connector in **Item M**. Pinout information for the *balanced* **DB-25** connector is shown below.



Installing the Optional DB-25 Balanced Connector:

The female **DB-25** *balanced* output option may be installed by qualified service personel without need for additional parts as follows:

1) Remove power from the unit.

2) Remove the top cover from the chassis of the **AMP-E8 Series** unit (set the screws aside for later reassembly).

3) The standard unbalanced **HD-15** connector is attached to the rear panel by a plate. Under this connector and plate is the cutout for the optional **DB-25** connector. Inside the unit, the **HD-15** connector (**Item M**) is connected to an output PCB module (**919224**). Unplug the female **DB-25** connector (**Item N**) from the other end of this module. Note that the **DB-25** connector terminates an internal ribbon cable.

4) Remove and set aside the two screws, nuts, and washers from the **HD-15** connector plate attached to the rear panel and remove the connector/plate/module assembly from the unit.

5) Use the two screws, nuts, and washers removed from the disassembled **HD-15** connector plate to install the **DB-25** connector into the larger connector cutout now revealed.

6) Reassemble the top cover to the chassis.

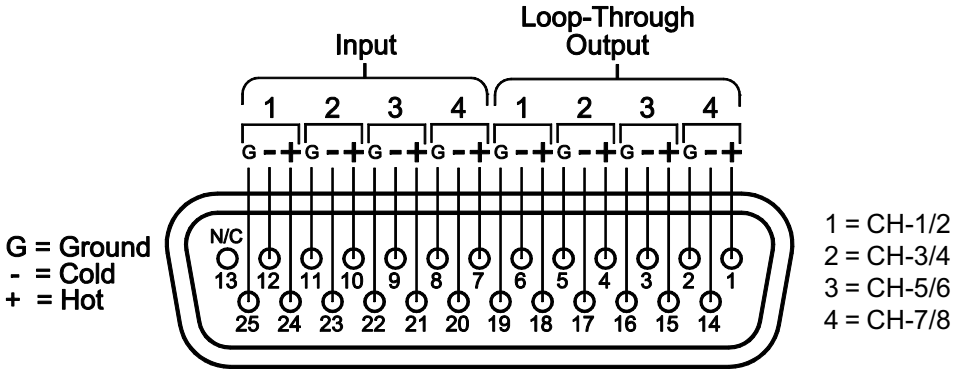
NOTES:

- The **DB-25** *balanced* option may be specified at time of order and the conversion performed at the factory.
- Once conversion to a balanced **DB-25** connector is done (following steps **1**-**6** above), a special dongle is available which may be plugged into the **DB-25** connector to easily convert it (back) to an *unbalanced* **HD-15** connector. Contact **Wohler Technologies** for more information on this dongle.

Rear Panel Features

O Balanced AES / PCM Input and Loop-Through Connector (AES2)

This female DB-25 connector accepts balanced **AES** signals. Inputs are internally connected to the loop-through outputs. See diagram below for pin-out information. These inputs are referred to as **AES2** in the LCD display.



If you are connecting downstream equipment to the **AES Loop-Through** outputs of this connector, then you should *unterminate* the selected input connector by setting the **Termination DIP Switch** (**Item P**). If you are *not* connecting downstream equipment, then you should *terminate* the selected input connector. See the diagram under **Item P** for termination settings.

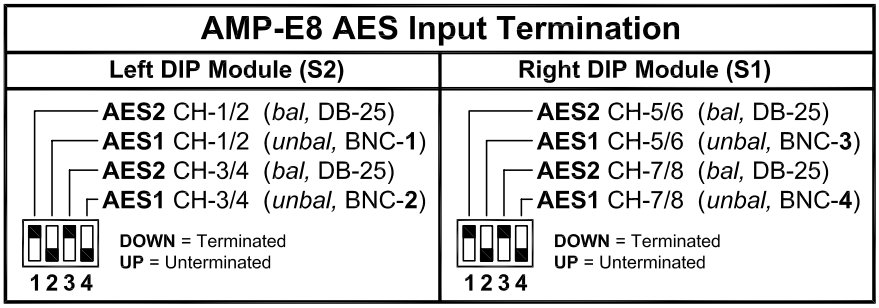
The connections for this connector are compatible with **Tascam*** DB-25 to XLR cable assemblies. Consult the factory for availability.

*The **Tascam** trademark is owned by Teac Inc.

P Unbalanced AES / PCM Input Connectors (1-4) (AES1)

In this input section, there are four female BNC input connectors (**1**, **2**, **3**, and **4**) which accept standard **AES/EBU** and **PCM** formatted signals. These inputs may be selected for monitoring by using the **INPUT Button** (**Item 7i**, page **21**). These inputs are referred to as **AES1** in the LCD display.

If you are connecting downstream equipment to these inputs in a loop-through configuration, then you should **Unterminate** (switch UP) the selected input connector. If you are *not* connecting downstream equipment, then you should **Terminate** (switch DOWN) the selected input connector. Note that these termination DIP switches are also used to set the termination of the **Balanced AES/PCM Inputs** (**Item O**) as well. See the diagram below for settings.



Q Remote Connector

This connector is not installed in standard models and is available for upgrade with a retrofit kit, or as an option when ordering. When installed, it allows remote selection of input sources for monitoring. When installed, it allows remote control over input source selection or other other aspects of the system as may be specified in a special order. Contact Wohler sales for special order inquiries (email: support@wohler.com).

Rear Panel Features

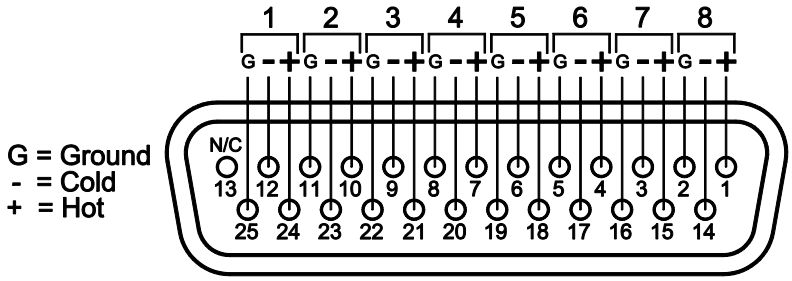
R Metered Analog Output Connector

This DB-25 connector outputs **analog** signals as de-embedded from the selected sources or downmix, which are eligible for conversion to analog. See the diagram under **Item S** below for pin-out information.

NOTE: The **Analog Output Preference** entry within the **Setup** menu is used to determine how this connector outputs the channel mix when a **DM1**, **DM2**, or **DM3** downmix selection is enabled. The default setting is **Downmix**, which outputs the channel mix with individual channel scaling (gain settings) intact as determined by the selected downmix (**DM1**, **DM2**, or **DM3**). However, if **Discrete** is selected, then all channels within the downmix are output from these connectors at full gain *without* scaling of the channels as determined by the selected downmix. See **Analog Output Preference (A-OutPref)** section on page **30** for information on how to set this parameter.

S Analog Input Connector

This female DB-25 connector accepts standard balanced, line level **analog** signals. See diagram below for pin-out information.



T RS232B Input/Output Connector

This DB-9 connector is used for downloading programming, setup, and diagnostic information into and out of the unit.

U RS232A Input/Output Connector

This DB-9 connector is used for downloading programming, setup, and diagnostic information into and out of the unit.

Introduction to the User Interface

There are two sections that may be referred to when learning how to operate the **AMP2-E8 Series** user interface controls; the **User Interface Features** section starting on page **18**, which describes the units functions by *feature* and the **User interface Function Guide** section starting on page **23**, which describes the operation of the unit by *function* and also describes operation in greater detail. Navigation, selection, and adjustment are performed by pressing the user interface buttons on the front panel of the unit (see **Figure-2d**, page **17**). The **LCD Display** provides the visual feedback and status indication for these operations.

Multi-Mode Color Codes

A **mode**, within the context of this manual, is understood to mean a state in which the monitor behaves a certain way. For instance, in **Setup Mode** the **AMP2-E8 Series** monitor allows a number of "setup" parameters to be accessed and adjusted. Most of the **User Interface** control buttons are *multi-functional*; when pressed while the unit is in one **mode** they cause a certain effect, but when pressed while the unit is in a different **mode** they cause a different effect. On the **AMP2-E8 Series** front panel itself, color-coding is used to help identify the different functions of each button when used in different modes; **WHITE** for **Normal Operational Mode**, **BLUE** for buttons used in conjunction with the **FN Button**, and **YELLOW** for button functions when in **SETUP Mode**.

Within this manual, the printed names of controls are color-coded according to function. For instance, **Item 7c** (page **18**) can alternately be referred to as the **LEFT Button**, **SINGLE Button**, or **Button** , depending on which mode the unit is in when it is pressed.

All function descriptions in the **User Interface Features** section have color-coded dots next to them, which imitate those used on the front panel and indicate which **mode** the function operates in. These dots are color coded as follows:

- ○ (WHITE) = button function when in **Normal Operational Mode**.
- ● (BLUE) = button function when used in conjunction with the **FN Button**.
- ● (YELLOW) = button function when used for **Setup Mode** navigation and selection.

Default Operational Modes

The basic default operational state of the **AMP-E8** monitor is referred to as the **Normal Operational Mode**. From this mode, sub-modes are accessed. It is also in this mode that *current* operational status is displayed in the **LCD display**. The diagram on page **17** (**Figure-2c**) shows an overview of the major operational modes that are available.

A special **Auto-Monitor Multi-Channel Mode** is enabled by default if valid bitstream containing at least one multi-*channel* program (such as a **5.1** or **7.1** channel **surround** type), is first applied to (or monitored by) the **AMP2-E8 Series** unit. While this mode initially sends a **Downmix** to the unit's speakers (and **Selected Output** XLRs on the rear panel), this mode also permits the user to select *pairs* of channels from the multi-channel program in a **DOLBY** bitstream. See the **Auto-Monitor Multi-Channel Mode** section on page **24** for more information.

Using Buttons for Selection, Display, and Navigation

Buttons are pressed one at a time or in combination to enter sub-modes and set parameters. These are explained in detail in the **User Interface Features** and **Function Guide** sections. The **Setup Menu Navigation Flow Diagram** on page **31** (**Figure-2e**), provides a graphical overview of the operation and function of the buttons as used in **Setup Mode**.

General Monitoring Characteristics and Capabilities

Units are factory-configured for ALL user settings to be non-volatile. Whenever power to the unit is cycled (Off/On) the unit will restore itself, so that each user setting such as **Channel Selection(s)**, **Input Type**, etc., are automatically restored to the units previous factory setting. However, the unit may be configured instead to have a *fixed* initial input type (**Analog**, **AES**, **SD-SDI**, or **HD-SDI**) when the unit is turned on, with all other settings being non-volatile (revert to previous settings). See **Startup** section on page **30** for more information about this setting. Any two of the eight metered channels (or a downmix of from one to all eight) may be reproduced using the internal amplifiers and loudspeakers. Each of the **AMP2-E8 Series** models is capable of visually monitoring audio levels for the eight channels of the following source types:

AMP2-E8**MDA**

- **DOLBY 1** *or* **DOLBY 2:** One 8-channel maximum bitstream
- **SD-SDI 1&2** *or* **HD-SDI 1&2:** Two 4-channel audio groups
- **AES1** *or* **AES2:** Four PCM bitstreams (each equivalent to 2 analog channels)
- **Analog:** Eight Channels

AMP2-E8**HDA**

- **DOLBY 1** *or* **DOLBY 2:** One 8-channel maximum bitstream
- **HD-SDI 1&2:** Two 4-channel audio groups
- **AES1** *or* **AES2:** Four PCM bitstreams (each equivalent to 2 analog channels)
- **Analog:** Eight Channels

AMP2-E8**SDA**

- **DOLBY 1** *or* **DOLBY 2:** One 8-channel maximum bitstream
- **SD-SDI 1&2:** Two 4-channel audio groups
- **AES1** *or* **AES2:** Four PCM bitstreams (each equivalent to 2 analog channels)
- **Analog:** Eight Channels

AMP2-E8**DA**

- **DOLBY 1** *or* **DOLBY 2:** One 8-channel maximum bitstream
- **AES1** *or* **AES2:** Four PCM bitstreams (each equivalent to 2 analog channels)
- **Analog:** Eight Channels

Introduction to the User Interface

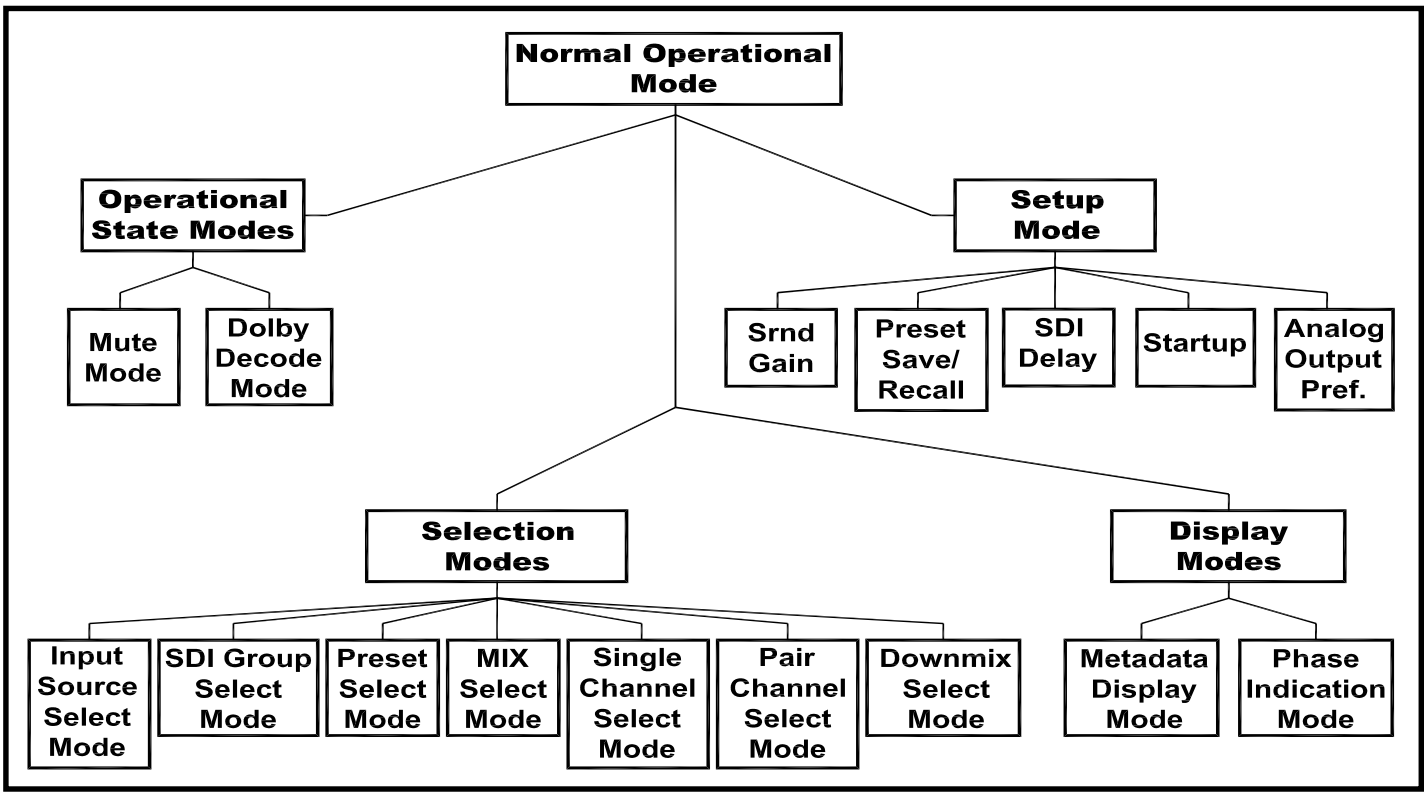


Figure-2c: Major Operational Modes, Submodes, and Parameters

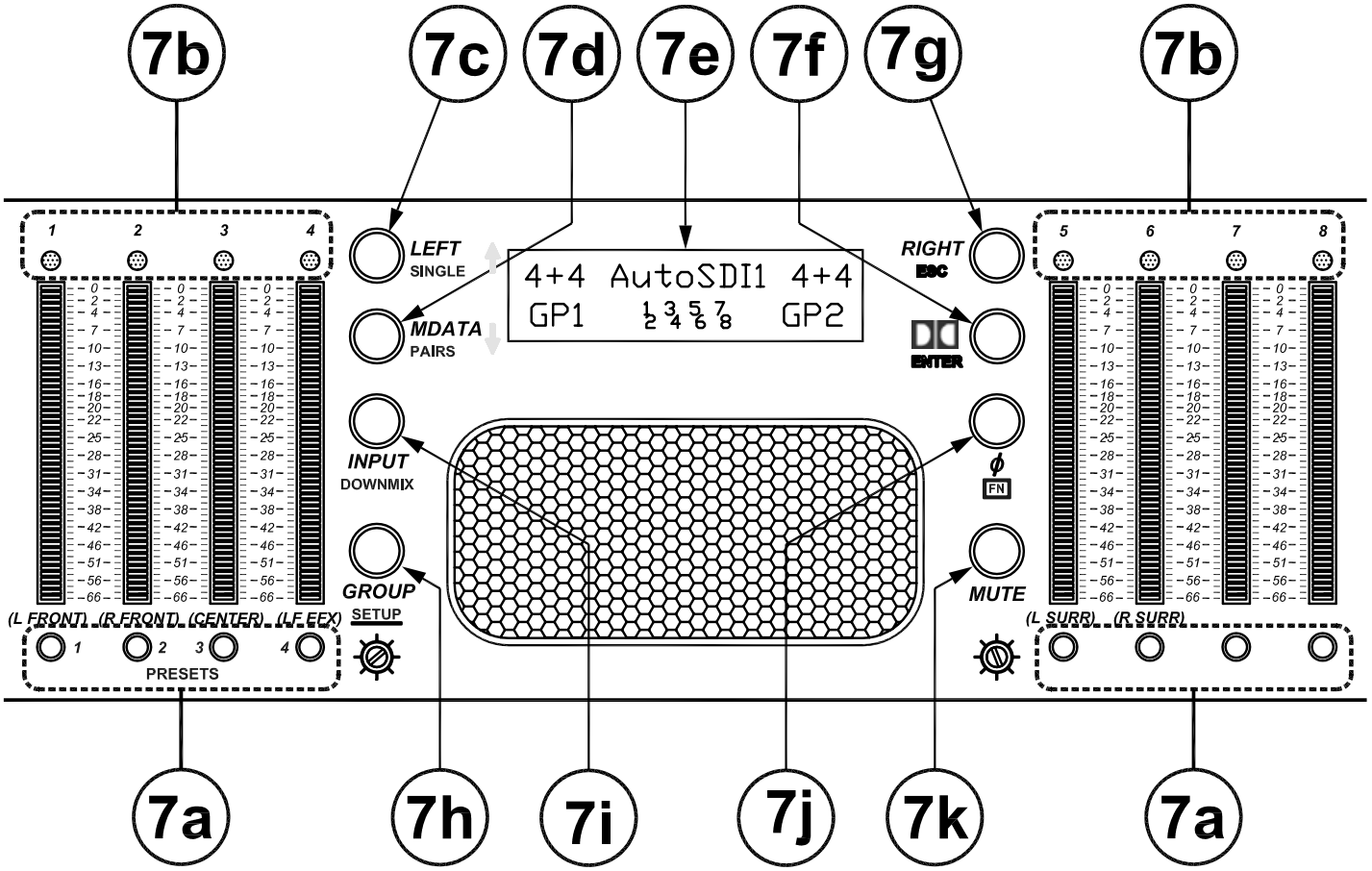


Figure-2d: Front Panel User Interface Reference

User Interface Features

Please refer to **Figure-2d** on page **17** to familiarize yourself with the front panel user interface controls of the **AMP2-E8 Series** units. The following sections describe these features and are referenced, by number/letter, to **Figure-2d**. For multi-function controls, a color-coded dot identifies the mode in which a particular function operates; WHITE dot (○) = **Normal Operational Mode**, BLUE dot (●) = **FUNCTION (FN) Modes**, YELLOW dot (●) = **Setup Mode**). The user should refer to the **User Interface Function Guide** starting on page **23** where operation is described in greater detail and contents are referenced by *function* rather than *feature*.

7a CHANNEL MIX 1-8 (PRESETS 1-4) Buttons

○ Configuring a CHANNEL MIX for Monitoring: > CHANNEL MIX Button 1-8

The mixing (summing) feature is activated whenever any **CHANNEL MIX Button** is pressed, and is indicated by the selection display showing **MIX** in the upper right and left of the display.

Each repeated press of a **Channel Mix Button** sequencially assigns that channel to the left, both, right, or neither speaker channel. With each succesive button press, the color of the associated **CHANNEL MIX LED** (**Item 7b**), and the mixing/routing of that channel, cycles through the following sequence: **1)** GREEN (to ***left*** speaker only), **2)** GREEN/AMBER alternating (to both ***left*** and ***right*** speakers), **3)** AMBER (to ***right*** speaker only), **4)** OFF (*not* mixed or routed into either speaker).

● Recalling and Saving Presets: > FN Button + PRESETS Button 1-4

Press and hold the **FN Button** and then press the corresponding **PRESETS Button (1-4)**. At the prompt, press the **ENTER Button** to accept the preset. See the **Save Preset** section on page **29** for how to save the current configuration as a preset. See pages **28-30** for more information about creating, naming, recalling, and erasing input presets within **Setup Mode**.

7b CHANNEL MIX LEDs 1-8

These LEDs are used to indicate the speaker mix of channels as selected when using the **CHANNEL MIX Buttons** (**Item 7a**). See **CHANNEL MIX Selection** section on page **25** or **Item 7a** above for a description of the function of these indication LEDs.

7c LEFT (SINGLE or ↑) Button

○ Selection Navigation Using the Left and Right Buttons: > LEFT (or RIGHT) Button

The **LEFT** (and **RIGHT**) **Button** are used to cycle through and select different channels or channel combinations, depending on which **Selection Mode** is selected. See **Single Channel Selection**, **Paired Channel Selection**, and **Downmix Selection** on page **25** for more information about using these buttons for channel selection.

● Making Single Channel Selections: > FN Button + SINGLE Button

Single Channel Select Mode is enabled by pressing and holding the **FN Button** and then pressing the **SINGLE Button**. Press the **LEFT Button** to cycle through each channel selection for the *left* speaker; press the **RIGHT Button** to cycle through each channel selection for the *right* speaker.

● Cycling Through Selections in Setup Mode: > ↑ (or ↓) Button

In **Setup Mode**, the ↑ **Button** is used to cycle *upward* through selections, and the ↓ **Button** is used to cycle *downward*. Also see **Enabling Setup Mode** (page **28**) and the **Setup Menu Navigation Flow Chart** (**Figure-2e**, page **31**).

7d MDATA (PAIRS *or* ↓) Button

○ Displaying Dolby Metadata: > ◘◘Button, MDATA Button

When **DOLBY Decode Mode** is enabled (see **Enabling DOLBY Decode Mode** on page **32**), this button is pressed to display the **metadata** (signal properties) of the selected **DOLBY E** or **DOLBY Digital** channels being monitored in the **LCD Display**. Each press of the **MDATA Button** will cycle through the properties of the selected **DOLBY** channels. When **DOLBY** sources are not selected, this button is inactive. See page **27** for **metadata** parameters available for display.

● Making Paired Channel Selections: > FN Button + PAIRS Button

Paired Channel Select Mode is enabled by pressing and holding the **FN Button** and then pressing the **PAIRS Button**. After entering this mode, the **LEFT Button** and **RIGHT Button** are used to cycle up or down through channel *pair* selections **1/2**, **3/4**, **5/6**, or **7/8** each channel being assigned, respectively, to the left and right speakers.

● Cycling Through Selections in Setup Mode: > ↓ (or ↑) Button

In **Setup Mode**, the ↓ **Button** is used to cycle *downward* through selections, and the ↑ **Button** is used to cycle *upward*. Also see **Enabling Setup Mode** (page **28**) and the **Setup Menu Navigation Flow Chart** (**Figure-2e**, page **31**).

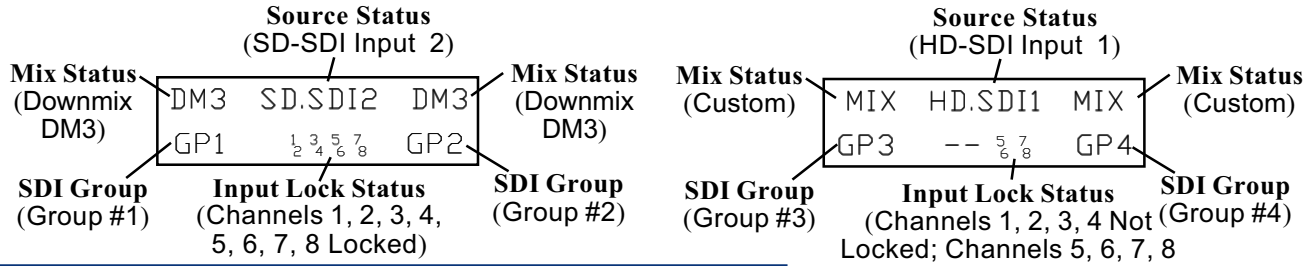
User Interface Features

7e LCD Display

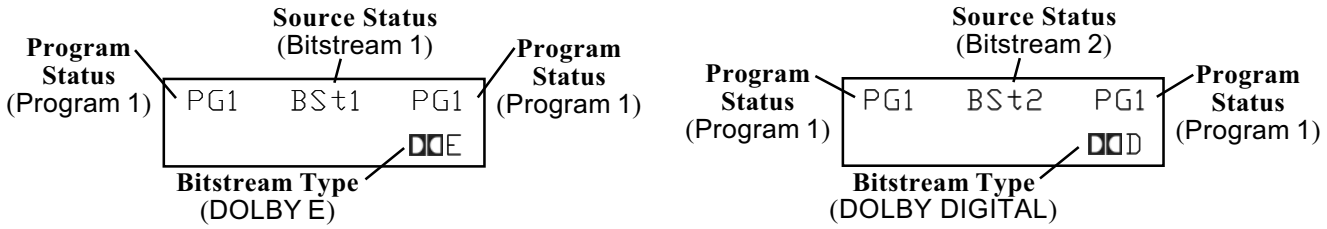
In **Normal Operational Mode** the high-contrast **LCD Display** is used to report the currently selected **channels** for reproduction along with selected **source type**, **mix type**, and any **SD/HD-SDI** audio **group** information (for products with the **SDI** inputs). In other modes the display will indicate **phase correlation**, **mute status**, and **DOLBY metadata** information. In **Setup Mode**, the display is used to navigate **menus**, select **parameters**, and recall and name **presets**.

In normal operation (*not* muted), the **Input Lock Status** indicator (center of second line in display) is used to show the lock status of selected *digital* inputs (including **SDI** sources). If all four input channel pairs are not locked (or connected), then four short dashes are displayed in the center of the second line of the display. Each dash (-) indicates a position for displaying the channel pairs available for monitoring. The display appearance and order (from left to right) is: **1/2**, **3/4**, **5/6** and **7/8**. The input status is updated whenever a change in status is detected. The **Input Lock Status** is active only if one of the *digital* sources is selected via the **INPUT Button** (**Item 7i**), and applies only to the *digital* source that is selected.

Status Display Examples - Standard Input Sources:



Status Display Examples - DOLBY Input Sources:



7f DD DOLBY Decode (ENTER) Button

Enabling Dolby Decode Mode: > DD Button

The **DD Button** (**DOLBY Decode**) is pressed to enable **DOLBY Decode Mode** for monotoring of **DOLBY E**, **DOLBY Digital** (**AC-3**), and **PCM** (**AES/EBU**) signals. When **DOLBY Decode Mode** is enabled (and a valid signal is detected), **DDE** or **DDD** will show up on the bottom right hand corner of the **LCD Display** for **DOLBY E** or **DOLBY Digital** signals, respectively. **DOLBY** bitstreams can be fed into **DOLBY Input 1** or **2**, or can be de-embedded from **SDI** signals fed into **SDI Input 1** or **2**. See examples of how **DOLBY** status is indicated in the **LCD Display** in **Item 7e**. See **Enabling DOLBY Decode Mode** (page **32)** for information about monitoring **DOLBY** signals and programs in this mode.

Using the ENTER Button:

When in **Setup Mode**, The **ENTER Button** and is pressed to accept menu selections. Also see **Enabling Setup Mode** (page **28**) and the **Setup Menu Navigation Flow Chart** (**Figure-2e**, page **31**) for more detailed information.

7g RIGHT (ESC) Button

Selection Navigation Using the LEFT and RIGHT Buttons:

The **RIGHT** (and **LEFT**) **Button** are used to cycle through and select different channels or channel combinations, depending on which **Selection Mode** is selected. See **Single Channel Selection**, **Paired Channel Selection**, and **Downmix Selection** sections on page **25** for more information about using these buttons for channel selection.

Using the ESC Button:

In **Setup Mode**, the **ESC Button** is used to exit, or back out of, any of the menus within **Setup Mode** without accepting changes. Also see **Enabling Setup Mode** (page **28**) and the **Setup Menu Navigation Flow Chart** (**Figure-2e**, page **31**) for more detailed information.

User Interface Features

7h GROUP (SETUP) Button

Selecting SDI GROUP (DOLBY Decode Disabled): > GROUP Button

When either of the the **SDI** inputs are selected for monitoring and when **DOLBY Decode** is *not* enabled, the **GROUP Button** allows the user to select which two 4-channel **SDI** audio **groups** are available for monitoring and presented to the *left* and *right* banks of four **Level Meter Bargraphs** (**Item 8**, page **8**).

When the buttons are pressed relatively rapidly, the order of selections are as follows: **3/4**, **1/2**, **1/3**, **1/4**, **2/3**, **2/4**, **3/4**. But after a selection is chosen and left until the display flashes once, slower button presses will toggle between the **Group 1/2** and **Group 3/4** selections. After this, rapid presses will again intiate the cycling as previously described. Since the first two selections are more common choices, this features allows easy toggling between them. See **SDI Group Definition**, **SDI GROUP Selection** , and **SDI SUBGROUP Selection** on page **26-27** for more information.

Selecting SDI SUBGROUP (DOLBY Decode Enabled): > DD Button, GROUP Button

When either of the the **SDI** inputs are selected for monitoring and when **DOLBY Decode** *is* enabled, the **Group Button** allows the user to select which **SDI Sub-group** (two channels) to send to the **DOLBY** decoder. The user may select either of the two available **sub-groups** possible within any of the **SDI** audio **Groups 1, 2, 3,** or **4** (see the chart at top of page **27**). For example, **G1 1/2** will appear on the bottom left hand side of the **LCD Display** when the user wants to monitor a bitstream which is in the first sub-group of **Group 1**. This corresponds to channels **1** and **2** of an ordinary **PCM** type embedded audio signal. Similarly, **G3 3/4** will appear when the user wants to monitor a bitstream which is in the second sub-group of **Group 3**. Each press of the **GROUP button** will cycle through each of the eight choices in the following order: **G1 1/2**, **G1 3/4**, **G2 1/2**, **G2 3/4**, **G3 1/2**, **G3 3/4**, **G4 1/2**, **G4 3/4**. See **SDI SUBGROUP Selection** on page **26-27** for more detailed information.

Enabling Setup Mode: > FN Button + SETUP Button

Setup Mode is enabled by pressing and holding the **FN Button** and then pressing the **SETUP Button**. See **Enabling Setup Mode** (page **28**) and the **Setup Menu Navigation Flow Chart** (**Figure-2e**, page **31**) for more detailed information. This mode is used to change unit features. Entries are cycled through using the ↑ or ↓ **Buttons** and selections are accepted by pressing the **ENTER Button**. The currently displayed menu may be exited by pressing the **ESC Button**. Current settable options in **Setup Mode** are:

- **Recall Preset (RCallPSet)**
- **Save Preset (SavePSet)**
- **Preset Mode Enable (PSetMode)**
- **Erase Preset (ErasePSet)**
- **SDI Delay**
- **Surround Gain (Srnd Gain)**
- **Startup**
- **Analog Output Preference (A-OutPref)**

NOTE: The **RCallSet**, **PSetMode**, and **ErasePSet** options will *not* be available if a preset has *not* been previously saved to the unit. See **Save Preset (SavePSet)** on page **29** for how to save a preset of the current unit configuration.

After entering **Setup Mode**:
The display will indicate the software, version number, and the menu selection: **RCallPSet** (if presets are saved).

Press the ↑ **Button**, display changes to **Setup: SavePSet**
Press the ↑ **Button** (again), display changes to **Setup: PSetMode** (if presets are saved)
Press the ↑ **Button** (again), display changes to **Setup: ErasePSet** (if presets are saved)
Press the ↑ **Button** (again), display changes to **Setup: SDI Delay**
Press the ↑ **Button** (again), display changes to **Setup: Srnd Gain**
Press the ↑ **Button** (again), display changes to **Setup: Startup**
Press the ↑ **Button** (again), display changes to **Setup: A-OutPref**
Press the ↑ **Button** (again), to cycle (return) to the first selection; **Setup: RCallPSet**
To select the current option, press the **ENTER Button**.
To exit **Setup Mode**, press the **ESC Button**.

Refer to **Enabling Setup Mode** (page **28**) and the **Setup Menu Navigation Flow Chart** (**Figure-2e**, page **31**) for more detailed information.

User Interface Features

7i INPUT (DOWNMIX) Button

Selecting Standard Input Sources for Monitoring: > INPUT Button

The **INPUT Button** is used to select the input source to be monitored. In **Normal Operational Mode** (**Dolby Decode Mode** and **Preset Mode** are *not* enabled), each press of the **INPUT Button** cycles through the following sources: **Analog**, **AES1** (unbalanced), **AES2** (balanced), **SD-SDI1** (or **HD-SDI1**), and **SD-SDI2** (or **HD-SDI2**).

Selecting DOLBY Input Sources for Monitoring: > DD Button, INPUT Button

When **DOLBY Decode Mode** *is* enabled (see **Enabling DOLBY Decode Mode** on page **32**), each press of the **INPUT Button** cycles through the following sources: **BSt1** (Bitstream 1), **BSt2** (Bitstream 2), **SD-SDI1** (or **HD-SDI1**), and **SD-SDI2** (or **HD-SDI2**).

Selecting Saved Presets:

When **Preset Mode** is enabled (see **Preset Mode Enable** section on page **29**), then instead of cycling through the available inputs, the **Input Button** cycles through the named presets set up by the user.

Enabling Downmix Mode and Selecting Mixes: > FN Button + DOWNMIX Button

In **Downmix Mode** the user may select from a number of different preconfigured mix types for monitoring through the speakers. **Downmix Mode** is enabled by pressing and holding the **FN Button** and then pressing the **DOWNMIX Button**. The seven downmix selections are cycled through using the **RIGHT** and **LEFT Buttons**. See **Downmix Selection** on page **25** for a description of all **Downmix** selections available.

7j Φ (FN) Button (Phase Indication and Function)

Enabling Phase Indication Mode: Φ Button

Pressed by itself, the **Φ Button** enables the **Phase/Correlation Indicator** in the **LCD Display**. The *average* correlation (phase) for the selected channel pair is indicated by a stationary block appearing within three positions on the second line of the display. A moving block may also be present in these positions to indicate the *instantaneous* (short time sample) phase correlation. The three positions are as follows:

Center: Only one channel active or zero correlation between the two channels
Left (-): Selected channels are ***out-of-phase*** (**-1** correlation maximum)
Right (+): Selected channels are ***in-phase*** (**+1** correlation maximum)

Note: With typical stereo program material, the moving block display is normal. With a single signal, or two completely *un*-related signals selected for the speaker(s), no correlation information is available, so the phase indicator block will be at rest in the *center* of the LCD. A mono ***in-phase*** signal fed to both right and left channels would result in the block being in the *right-most* position indicating complete correlation of the two signals.

Enabling Channel Select Modes and Setup Mode: FN Button

Pressing and *holding* the **FN Button** and then pressing certain other buttons puts the unit into one of the alternative modes. Below is a list of modes enabled by pressing and holding the **FN Button** and then pressing one of the other buttons. See the reference for each button for information about the indicated mode.

Five categories of functions may be accessed using the **FN Button** in combination with other buttons:

- **FN Button + SETUP Button** = **Setup Mode** (See **Enabling Setup Mode** on page **28** and the **Setup Menu Navigation Flow Chart** on page **31**)
- **FN Button + SINGLE Button** = **Single Channel Select Mode** (see **Single Channel Selection** on page **25**)
- **FN Button + PAIRS Button** = **Pair Channel Select Mode** (see **Pairs Channel Selection** on page **25**)
- **FN Button + DOWNMIX Button** = **Downmix Select Mode** (see **Downmix Selection** on page **25**)
- **FN Button + PRESET Buttons 1-4** = **Input Preset Selection** (see **Recalling a Preset** on page **26**)

User Interface Features

7k MUTE Button

Pressing the **MUTE Button** allows the user to step through three **mute** states and an **unmuted** state. When the system is in one of the **mute** states, all other information normally shown in the **LCD Display**, such as the **Input Status Display**, is *disabled* and all other buttons are disabled until the unit is taken out of the **Mute Mode**.

First press mutes *both* speakers : **Mute LR**

Second press mutes the *Left* speaker : **Mute L**

Third press mutes the *Right* speaker : **Mute R**

Fourth press returns the unit to **Unmuted** (normal) operation.

Muting functions affect the signals to the speakers/headphones and the rear panel **Selected/Downmix Analog Output Connectors** (**Item L**, page **12**). Muting does NOT affect the **Metered Analog Outputs** (**Item R**, page **15**), except to defeat scaling (see subsequent note). These outputs remain active even when the **mute** state is enabled.

When speakers are muted, the gain scaling of the **Metered Analog Outputs** is defeated so that no scaling is applied during unit muting. See the **Analog Output Preference** parameter in the **Setup Mode** section on page **30** for more information.

Presets Definitions

- ***What is stored in a Preset?***

The following parameters are stored in a named Preset:

1) **Name** of the preset, in a maximum of 8 alpha-numeric characters.
2) **Input Type** (i.e. **Analog**, **AES1**, **AES2**, **SDI 1**, etc.)
3) **Selected Channels**
4) **Channel Selection Mode** (i.e. **Single Channel Mode**, **Paired Channel Mode**, etc.)
5) **Selected SDI Groups**.
6) **Bitstream Mode** (whether decoding or not)

- ***How will Presets generally be used?***

There are two main uses of presets, depending on the application where the audio monitor panel is installed. In on-air live situations, including Master Control and remote trucks, the unit will be setup ahead of time with presets defined for the input signals and their selected channels. **Preset Mode** will be enabled so the user can easily select only from these valid monitoring modes.

In laboratory, testing, or other applications where the unit may not be connected to dedicated inputs, some presets may be defined for rapid configuration, but **Preset Mode** may not necessarily be enabled, so that each of the inputs are accessible as in normal operation.

We envision that **Preset Mode** will be enabled for most applications, and presets will be defined based on dedicated inputs to the unit. The user will more easily be able to monitor the sources that are most important. **Preset Mode** can greatly reduce the number of button pushes required to navigate from one source to another.

- ***How many presets are available?***

Ten (10) presets are available from the **Setup Menu**, and they are numbered **0-9**. **Preset 1** through **Preset 4** are accessible using the front panel button combination of **FN Button** and **CHANNEL MIX Buttons 1-4**.

- ***Is Preset Mode required in order to use presets?***

No, you can Save and Recall **presets 0-9** using the **Setup Menu** commands **Save PSet**, and **RCall Pset**. Also, **presets 1-4** can be saved and recalled using the front panel button combination: **FN Button** and **CHANNEL MIX Button 1-4**.

- ***Do you need to have presets defined before entering Preset Mode?***

Yes. If you do not have presets defined then it is not possible to enable **Preset Mode**. If you only have one preset defined, then **Preset Mode** will leave the unit in that preset. If you have only two presets defined, then the **INPUT Button** will toggle between them.

- ***How is Preset Mode enabled?***

It is enabled under the **Setup menu** called **PSet Mode** (page **29**). Options for this setting are **Enabled** and **Disabled**.

User Interface Function Guide

This **Function Guide** references the operation of the **AMP2-E8 Series** monitors by *function* rather than by *feature* and describes most operations in greater detail than are found in the **User Interface Features** section (page **18**). Before using this section, it is recommended that the **Introduction to the User Interface** section starting on page **16** be referred to for an understanding of the **AMP2-E8 Series** overall capabilities and an insight into how the user interface is structured and manipulated.

User Interface Function Guide
CONTENTS

User Interface Function Guide

Default Modes

Normal Operational Mode:

This is the default operational state of the monitor when selection modes, operational state modes, display modes, and setup modes are *not* enabled. In this mode the **LCD display** indicates the current operational status as regards input source and channel selection. The **Normal Operational Mode** is enabled by default at unit power up.

Default Auto-Monitor Multi-Channel Mode:

This mode can only be entered by default as described below, it cannot be selected.

When a valid bitstream containing at least one multi-*channel** program (such as a **5.1** or **7.1** channel "surround" type) is first applied to (or monitored by) the **AMP2-E8 Series** unit, it enters a default multi-purpose monitoring mode, the **Auto-Monitor Multi-Channel Mode**. While this mode initially sends a **Downmix** to the unit's speakers (and **Selected/Downmix Analog Output** and **Metered Analog Output** connectors on the rear panel), this mode also permits the user to select *pairs* of channels from the multi-channel program in a **DOLBY** bitstream.

Use the **LEFT** or **RIGHT Buttons** (**Item 7c**, page **18** and **Item 7g**, page **19**) to scroll, pair-wise, through the available channel pairs and the **Downmix**. To isolate any one channel, select the channel pair containing it, and use the balance control or **Mute Button** (**Item 7k**, page **22**) to isolate it. Note that channel pairs, in which neither channel is enabled (per **DOLBY** practices), are *not* selectable.

The appropriate **Channel Mix LEDs** (**Item 7b**, page **18**) above the bargraph meters will light to indicate which channels are selected to the left and right sides of the unit's stereo speaker array. While a channel pair is selected in this monitoring mode, the **LCD Display** will indicate the selected channel pairs by showing the first channel (of the selected pair) in the *upper left* of the LCD display and the second channel in the *upper right*. When the ***Downmix*** is selected, the **LCD Display** will show "**Pgm*N***" on both upper left and right corners of the LCD (***N*** is the **DOLBY** assigned program number).

* Note that a multi-*channel* bitstream may or may not have multiple *programs*; it is unusual to have more than two programs when one of them is multi-*channel.*

Selection Modes

Standard Input Source Selection: INPUT Button

In **Normal Operational Mode**, press the **INPUT Button** to enter **Input Source Selection Mode**. Each press of the **INPUT Button** cycles through each of the five selections, each being visible in the **LCD Display** in turn. The selection is enabled when it appears in the **LCD display**.

- **Analog**
- **AES1** (Unbalanced)
- **AES2** (Balanced)
- **SD-SDI1** or **HD-SDI1** (Not available in **DA** model)
- **SD-SDI2** or **HD-SDI2** (Not available in **DA** model)

Dolby Input Source Selection: Button, INPUT Button

First, enter **DOLBY Decode Mode** by pressing and releasing the **Button**. Next, press the **INPUT Button** to enter **Input Source Selection Mode**. Each press of the **INPUT Button** cycles through each of the four selections, each being visible in the **LCD Display** in turn. The selection is enabled when it appears in the **LCD Display**.

- **BSt1** (Bitstream 1)
- **BSt2** (Bitstream 2)
- **SD-SDI1** or **HD-SDI1** (Not available in **DA** model)
- **SD-SDI2** or **HD-SDI2** (Not available in **DA** model)

Preset Mode Selection: Selected and Set in Setup Mode

With **Preset Mode** enabled, the **INPUT Button** selects the next preset. If an active preset is made inactive by selecting other channels or **SDI** groups for monitoring, then pressing the **INPUT Button** will revert to the most recent **Preset** state.

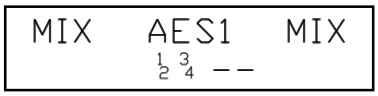
See **Preset Mode Enable** on page **29** for more information on how to select and set this parameter within the **Setup Mode** menu (page **28**).

User Interface Function Guide

Selection Modes (Cont.)

Channel Mix Selection: CHANNEL MIX Button 1-8

Press any of the eight **CHANNEL MIX Buttons** to activate the mixing (summing) feature. This mode is indicated by the **LCD Display** showing **MIX** in the upper right and left of the display. For example, as follows:



Each press of a **CHANNEL MIX Button** sequencially assigns the selected channel to the left, both, right or neither speaker channel. All eight channels may be mixed/summed in this way. With each succesive button press, the color of the associated **Channel Mix LED**, and the mixing/routing of that channel, cycles through the following sequence:

- **First Button Press:** **GREEN** (routed to *left* speaker only),
- **Second Button Press:** **GREEN/AMBER** alternating (routed to both *left* and *right* speakers),
- **Third Button Press:** **AMBER** (routed to *right* speaker only),
- **Fourth Button Press:** **OFF** (*not* mixed or routed into either speaker).

Single Channel Selection: FN Button + SINGLE Button

Single Channel Select Mode is enabled by pressing and holding the **FN Button** and then pressing the **SINGLE Button**. After entering this mode, each press of the **LEFT Button** will cycle through channel selections for the *left* speaker, while the **Right Button** will cycle through channel selections for the *right* speaker. In the **LCD display**, the channel selections and speaker assignments are indicated by showing **CH1**, **CH2**, **CH3**, **CH4**, **CH5**, **CH6**, **CH7**, or **CH8** in the top left *and* top right corners of the display.

Paired Channel Selection: FN Button + PAIRS Button

Paired Channel Select Mode is enabled by pressing and holding the **FN Button** and then pressing the **PAIRS Button**. After entering this mode, each press of the **LEFT Button** will step *down* through the channel pair selections and each press of the **RIGHT Button** will step *up* through the same channel pair selections. In the **LCD display**, the channel *pair* selections and speaker assignments are indicated by showing **CH1/CH2**, **CH3/CH4**, **CH5/CH6**, or **CH7/CH8** in the top left *and* top right corners of the display respectively. The **CHANNEL MIX LED**s also indicate these channel assignments by lighting up in the same manner as described in **Channel Mix Selection** section above.

Downmix Selection: FN Button + DOWNMIX Button

Downmix Mode is enabled by pressing and holding the **FN Button** and then pressing the **DOWNMIX Button**. Downmix selections are cycled through using the **LEFT** and **RIGHT Buttons**. In **Downmix Mode** the user may select from seven different configured mix types for monitoring through the speakers. Note that in the **DM** downmix modes indicated, Channel **4** is not reproduced because it normally carries the LFE channel, which is below 200 Hz.

DM1: This downmix is most suitable for a loudspeaker or headphone downmix of a multi-channel program. **Left** and **Left Surround** input channels mix into the *left* speaker, **Right** and **Right Surround** input channels mix into the *right* speaker. **Center** input channel mixes equally into *both* left and right speakers. Contribution of the **Surround** channel mix is set by the **Surround Gain** entry (page **30**) in the **Setup Menu**. **DM1** is equivalent to one of the Japanese ARIB Set 1 downmix formulas. See **Diagram-A**, page **33**.

DM2: This downmix can be used to create a two channel mix which could be further decoded to multi-channel program by the use of an external **Surround** decoder. Contribution of the **Surround** channel mix is set by the surround level entry in the setup menu. **DM2** is equivalent to one of the Japanese ARIB Set 2 downmix formulas. See **Diagram-B**, page **34**.

DM3: Same as **DM1** but with surround level set to –3dB. **DM3** is equivalent to one of the Japanese ARIB Set 3 downmix formulas. See **Diagram-C**, page **35**.

4+4: In this downmix channels **1**..**4** are summed to the ***left*** speaker, Channels **5**..**8** are summed to the ***right*** speaker.

MXA and MXB: Select one of these two dowmixes to "custom" mix by adding **Channels 1-8** into the *left* or the *right* speakers using the **CHANNEL MIX Buttons** (see **Channel Mix Selection** above). Both **MXA** and **MXB** mix selections are stored and are available for recall with each cycling of the units power (On/Off).

MIX: This mode appears whenever the **CHANNEL MIX Buttons** are pressed. The selection made in this mode is lost whenever another mode is selected, or a preset is recalled. Presets saved in **MXA** or **MXB** mode are recalled in this **mode**.

User Interface Function Guide

Selection Modes (Cont.)

Presets:

Presets may be recalled, created, and replaced by either using the **PRESETS Buttons 1-4** or by menu selection in **Setup Mode**. Presets can only be erased in **Setup Mode**. See page **29-30** for how to recall, create, and erase presets within **Setup Mode**.

Recalling a Preset: FN Button + PRESETS Button 1-4

PRESETS Buttons 1, 2, 3, 4 may be used to recall P**resets 1-4** respectively, by pressing and holding the **FN Button** and then pressing the corresponding **PRESETS Button (1-4)**. This allows the user the option to recall that preset with the following prompt.

```
RECALL PRESET?
Preset1: Off Air
```

Pressing the **ENTER Button** at this point will recall that preset.

Creating (Overwriting) a Preset:

If you do not wish to recall the preset at the prompt indicated above (**Recalling a Preset**), then pressing the **ESC Button** invokes a prompt to save (overwrite) the current state of the unit over that preset as follows:

```
OVERWRITE PRESET
Preset1: Off Air
```

Pressing the **ENTER Button** at this point will prompt the user whether to Keep Old Name, where the existing name can be retained by pressing **ENTER**. If the user presses **ESC**, then they will be prompted for a new preset name as follows:

```
AES 1    ?@<A>BC
    Name: A_
```

If the user presses the **ESC Button** before finishing the naming, then the preset is not saved and the existing preset is retained. To enter the new name, select letters using the **LEFT** and **RIGHT Buttons**. The current selectable character appears between the <> symbols. Press the **ENTER Button** to accept the current letter and move to the next letter. Naming will automatically end after 8 characters are selected, or naming can be ended by pressing the **ENTER Button** when the **_DONE_** selection appears. The **DONE** selection comes before the numerals, and follows the lower case alphabet. The character order is the order of ASCII characters. A chart showing the character order appears in the **SAVE Preset** section on page **29**.

Upon completion of naming the preset, the current state of the system is saved under that name and preset number. At any time during this process the user may press the **ESC Button** and the preset will not be saved and the unit will return to **Normal Operation Mode**. See page **29-30** for more information about creating, naming, recalling, and erasing presets from the menu in **Setup Mode**.

SDI GROUP Definition:

NOTE: The embedded channels within an **SDI** signal are defined and referred to in this manual as shown in the chart below:

SDI Group	SDI Sub-group	Channels	Designation
Group 1	Sub-group 1	1 and 2	G1 1/2
	Sub-group 2	3 and 4	G1 3/4
Group 2	Sub-group 1	1 and 2	G2 1/2
	Sub-group 2	3 and 4	G2 3/4
Group 3	Sub-group 1	1 and 2	G3 1/2
	Sub-group 2	3 and 4	G3 3/4
Group 4	Sub-group 1	1 and 2	G4 1/2
	Sub-group 2	3 and 4	G4 3/4

User Interface Function Guide

Selection Modes (Cont.)

SDI GROUP Selection (DOLBY Decode *Disabled*): GROUP Button

When either of the the **SDI** inputs are selected for monitoring *and* when **DOLBY Decode** is *disabled*, the **GROUP Button** allows the user to select which two 4-channel **SDI** audio **groups** are presented to the *left* and *right* banks of four **Level Meter Bargraphs**.

When the buttons are pressed relatively rapidly, the order of selections follows that shown in the table (right). But after a selection is chosen and left until the display flashes once, slower button presses will toggle between the **Group 1/2** and **Group 3/4** selections. After this, rapid presses will again intiate the cycling as shown in the table. Since the first two selections are more common choices, this features allows easy toggling between them.

SDI GROUP SELECT		
Button Press	Left Bargraph Bank (CH 1-4)	Right Bargraph Bank (CH 5-8)
1st	Group 1	Group 2
2nd	Group 3	Group 4
3rd	Group 1	Group 2
4th	Group 1	Group 3
5th	Group 1	Group 4
6th	Group 2	Group 3
7th	Group 2	Group 4
8th	Group 3	Group 4

Toggle

SDI SUBGROUP Selection (DOLBY Decode *Enabled*): GROUP Button

When either of the the **SDI** inputs are selected for monitoring and when **DOLBY Decode** is *enabled*, the **Group Button** allows the user to select which **SDI Sub-group** (two channels) to send to the **DOLBY** decoder. The user may select either of the two available **sub-groups** possible within any of the **SDI** audio **Groups 1, 2, 3,** or **4** (see the chart on the previous page). For example, **G1**$_{1/2}$ will appear on the bottom left hand side of the **LCD Display** when the user wants to monitor a bitstream, which is in the first sub-group of **Group 1**. This corresponds to channels **1** and **2** of an ordinary **PCM** type embedded audio signal. Similarly, **G3**$_{3/4}$ will appear when the user wants to monitor a bitstream, which is in the second sub-group of **Group 3**. Each press of the **GROUP button** will cycle through each of the eight choices in the following order: **G1**$_{1/2}$, **G1**$_{3/4}$, **G2**$_{1/2}$, **G2**$_{3/4}$, **G3**$_{1/2}$, **G3**$_{3/4}$, **G4**$_{1/2}$, **G4**$_{3/4}$.

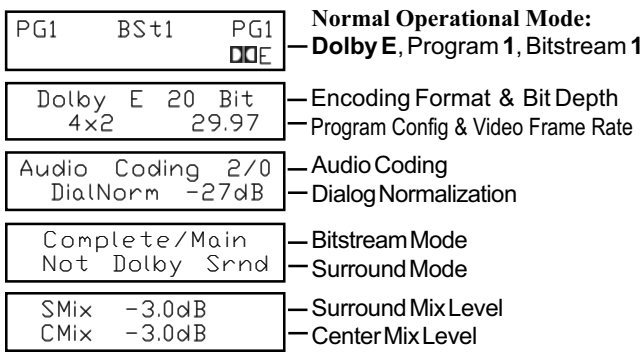
Display Modes

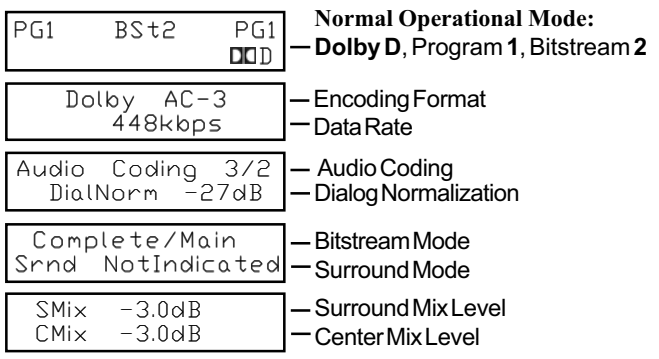
Displaying Dolby Metadata: MDATA Button

Pressing the **MDATA Button** when **DOLBY Decode Mode** is enabled displays the **metadata** (signal properties) of the selected **DOLBY E** or **DOLBY Digital** channels being monitored. Each press of the **MDATA Button** will cycle through the properties of the selected **DOLBY** channels in (approximately*) the following order:

- **Audio Encoding Format and Bit Depth** (DOLBY AC-3, DOLBY E 20 bit, etc.)
- **Data Rate** (32, 384, 640, etc.)
- **Program Configuration** (5.1 + 2, 4x2, 3x2, etc.)
- **Video Frame Rate** (29.97, 30, etc.)
- **Audio Coding** (3/2, 2/0, etc.)
- **Dialog Normalization** (0 to –31 dB)
- **Bitstream Mode** (Complete/Main, Music/Effects, etc.)
- **Surround Mode** (Srnd Not Indicated, Not DOLBY Srnd, etc.)
- **Surround & Center Mix Level** (-3.0 dB, -6.0 dB, etc.)

*Not all properties will be available for all audio formats. For example, **audio coding** and **data rate** are only available in **DOLBY Digital** format. The **MDATA Button** is *inactive* (when pressed alone) if a **DOLBY** input source is *not* selected for monitoring. Below are some examples of how **DOLBY metadata** information is displayed in the **LCD Display**:





User Interface Function Guide

Display Modes (Cont.)

Displaying Phase/Correlation Indication: *Φ* Button

Pressed by itself, the ***Φ* Button** enables the **Phase/Correlation Indicator** in the **LCD Display**. The *average* correlation (phase) for the selected channel pair is indicated by a stationary block appearing within three positions on the second line of the display. A moving block may also be present in these positions to indicate the *instantaneous* (short time sample) phase correlation. The three positions are as follows:

Center: Only one channel active or zero correlation between the two channels
Left (-): Selected channels are ***out-of-phase*** (**-1** correlation maximum)
Right (+): Selected channels are ***in-phase*** (**+1** correlation maximum)

Note: With typical stereo program material, the moving block display is normal. With a single signal, or two completely *un*-related signals selected for the speaker(s), no correlation information is available, so the phase indicator block will be at rest in the *center* of the LCD. A mono ***in-phase*** signal fed to both right and left channels would result in the block being in the *right-most* position indicating complete correlation of the two signals.

Setup Mode

Enabling Setup Mode: FN Button + SETUP Button

Setup Mode is enabled by pressing and holding the **FN Button** and then pressing the **SETUP Button**. This mode is used to change unit features. Menu selections and parameters are cycled through using the the ↑ and ↓ **Buttons.** Selections are accepted by pressing the ENTER **Button**. The currently displayed menu may be exited without saving by pressing the ESC **Button**. Current settable options in **Setup Mode** are:

- **Preset Recall (RCallPSet)**
- **Preset Save (SavePSet)**
- **Preset Create (PSetMode)**
- **Preset Erase (ErasePSet)**
- **SDI Delay**
- **Surround Gain (Srnd Gain)**
- **Startup**
- **Analog Output Preference (A-OutPref)**

NOTE: The **RCallSet**, **PSetMode**, and **ErasePSet** options will *not* be available if a preset has *not* been previously saved to the unit. See **Save Preset (SavePSet)** on page **29** for how to save a preset of the current unit configuration.

After entering **Setup Mode**:

The display will indicate the software, version number, and the menu selection: **RCallPSet** (if presets are saved).

Press the ↑ **Button**, display changes to **Setup: SavePSet**
Press the ↑ **Button** (again), display changes to **Setup: PSetMode** (if presets are saved)
Press the ↑ **Button** (again), display changes to **Setup: ErasePSet** (if presets are saved)
Press the ↑ **Button** (again), display changes to **Setup: SDI Delay**
Press the ↑ **Button** (again), display changes to **Setup: Srnd Gain**
Press the ↑ **Button** (again), display changes to **Setup: Startup**
Press the ↑ **Button** (again), display changes to **Setup: A-OutPref**
Press the ↑ **Button** (again), to cycle (return) to the first selection; **Setup: RCallPSet**

To select the current option, press the ENTER **Button**.

To exit **Setup Mode**, press the ESC **Button**.

User Interface Function Guide

Setup Mode (Cont.)

Recall Preset (RCallPSet):

This is a menu command, allowing the user to recall a stored preset. Pressing the **ENTER Button** while this menu is active will present the user with the option of choosing a preset to recall:

```
Choose  PresetNum
 Preset1: Off  Air
```

Pressing the ↑ and ↓ **Buttons** will scroll through the presets, showing each one by name. In the above example, **Preset 1** is called "**Off Air**". If a particular preset is not assigned, it will be indicated as follows:

```
Choose  PresetNum
 Preset7: Unused
```

Pressing the **ENTER Button** with the desired preset shown will recall that preset, so the system state will be now setup according to that preset.

Save Preset (SavePSet):

Pressing the **LEFT** and **RIGHT Buttons** will scroll through the presets, showing each one by name. If a particular preset is not assigned, it will be indicated as follows:

```
Choose  PresetNum
Preset7:  Unused
```

Choosing an already used preset will display a warning to the user that they are about to overwrite the preset, as follows:

```
OVERWRITE  PRESET
Preset1: Off  Air
```

If the user presses the **ENTER Button**, a prompt appears asking if the user would like to save the old name with the new preset as follows.

```
 Save Old Name?
Preset1: Off  Air
```

Pressing the **ENTER Button** keeps the old name for the new preset. Pressing the **ESC Button** results in a prompt for a new preset name as follows:

```
 AES1    ?@<A>BC
Name: A_
```

Select letters using the **LEFT** and **RIGHT Buttons**. The current selectable character appears between the <> symbols. Press the **ENTER Button** to accept the current letter and move to the next letter. Naming will automatically end after eight characters are selected, or end naming by pressing the **ENTER Button** when the **_DONE_** selection appears. The **_DONE_** selection comes before the numerals, and follows the lower case alphabet. The character order is the order of **ASCII** characters. Characters are cycled through in the following order (left to right, top to bottom):

```
" # $ % & ' ( ) * + ,- . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A
B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _
` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~
```

Upon completion of naming the preset, the current state of the system is saved under that name and preset number. At any time during this process the user may press the **ESC Button** and the preset will *not* be saved and the unit will return to **Normal Operational Mode**.

Preset Mode Enable (PSetMode):

This is an alternative mode of operation. In **Preset Mode**, the **INPUT Button** cycles through the defined **Presets**.

With **Preset Mode** enabled, the user can approach the unit and press only the **INPUT Button** to access each stored preset by *name*, rather than by *signal type*.

User Interface Function Guide

Setup Mode (Cont.)

Erase Preset (ErasePSet):

This is a menu command that allows the user to erase a stored preset. Pressing the ENTER **Button** will allow the user to choose a preset to erase:

```
Choose  PresetNum
Preset1: Off  Air
```

The **LEFT** and **RIGHT Buttons** select from among the available presets. Once a preset has been chosen by pressing the **ENTER Button**, the user will be warned that the preset will be erased:

```
ERASE  PRESET?
Preset1: Off  Air
```

Pressing the ENTER **Button** will erase that preset. Pressing the ESC **Button** will *not* erase that preset. In either case, control returns to the menu to choose another preset to erase:

```
 Choose PresetNum
Preset2: VTR  #2
```

Press the ESC **Button** to exit **Setup Mode** and return to **Normal Operational Mode**.

SDI Delay:

Changing the **SDI Delay** changes the latency of an **SDI** a*udio* signal as it is de-embedded from **SDI**. This adjustment allows precisely synchronizing an **SDI** audio signal to a video signal. To change **SDI Delay**, select **SDI Delay** and then press the ENTER **Button**.

SDI Delay adjust screen display will indicate:

```
   —Setup—
SDI Delay: 140 ms
```

Step through settings using ↑ or ↓ **Buttons**, select **140 ms** (for example). To accept, press the ENTER **Button**. Press the ESC **Button** to exit **Setup Mode** and return to **Normal Operational Mode**.

Surround Gain (Srnd Gain):

To change **Surround Gain**, select **Srnd Gain** and then press the ENTER **Button**.

Surround Gain adjust screen display will indicate:

```
   —Setup—
Srnd Gain -3dB
```

Step through settings using the ↑ or ↓ **Buttons**, select **-9dB** (for example). To accept, press the ENTER **Button**. To exit without saving, press the ESC **Button**. Note that surround gain adjustments are only effective for downmixes **DM1** and **DM2**. In downmix **DM3** the surround gain is fixed.

Startup:

The **Startup** entry within the **Setup** menu is used to determine the input which is used by the unit at power up. When set to **Last Used**, the unit will power up the same way that the unit was before power was interrupted. If the user needs the unit to power up in **Analog** mode (for example), then user should select the **Analog** entry by stepping through available entries using the ↑ or ↓ **Buttons**. Save the selection by pressing the ENTER **Button**. Press the ESC **Button** to exit **Setup Mode** and return to **Normal Operational Mode**.

Analog Output Preference (A-OutPref):

To change **Analog Output Preference**, select **A-OutPref** and then press the ENTER **Button**.

The **Analog Output Preference** entry within the **Setup** menu is used to determine how the **Selected/Downmix Analog Output Connectors** and **Metered Analog Output Connector** (**Item L**, page **12** and **Item R**, page **15**) on the rear panel output the channel mix when the **DM1**, **DM2**, or **DM3** downmix selections is enabled.

The default setting is **Downmix**, which outputs the channel mix with individual channel scaling (gain settings) intact as determined by the selected downmix (**DM1**, **DM2**, or **DM3**). However, if **Discrete** is selected, then all channels within the downmix are output from these connectors at full gain *without* scaling of the channels as determined by the selected downmix. For example, the **Center** channel scaling is -3dB, and the **Surround** channel scaling is set in the **Setup** menu.

User Interface Function Guide

Setup Mode (Cont.)

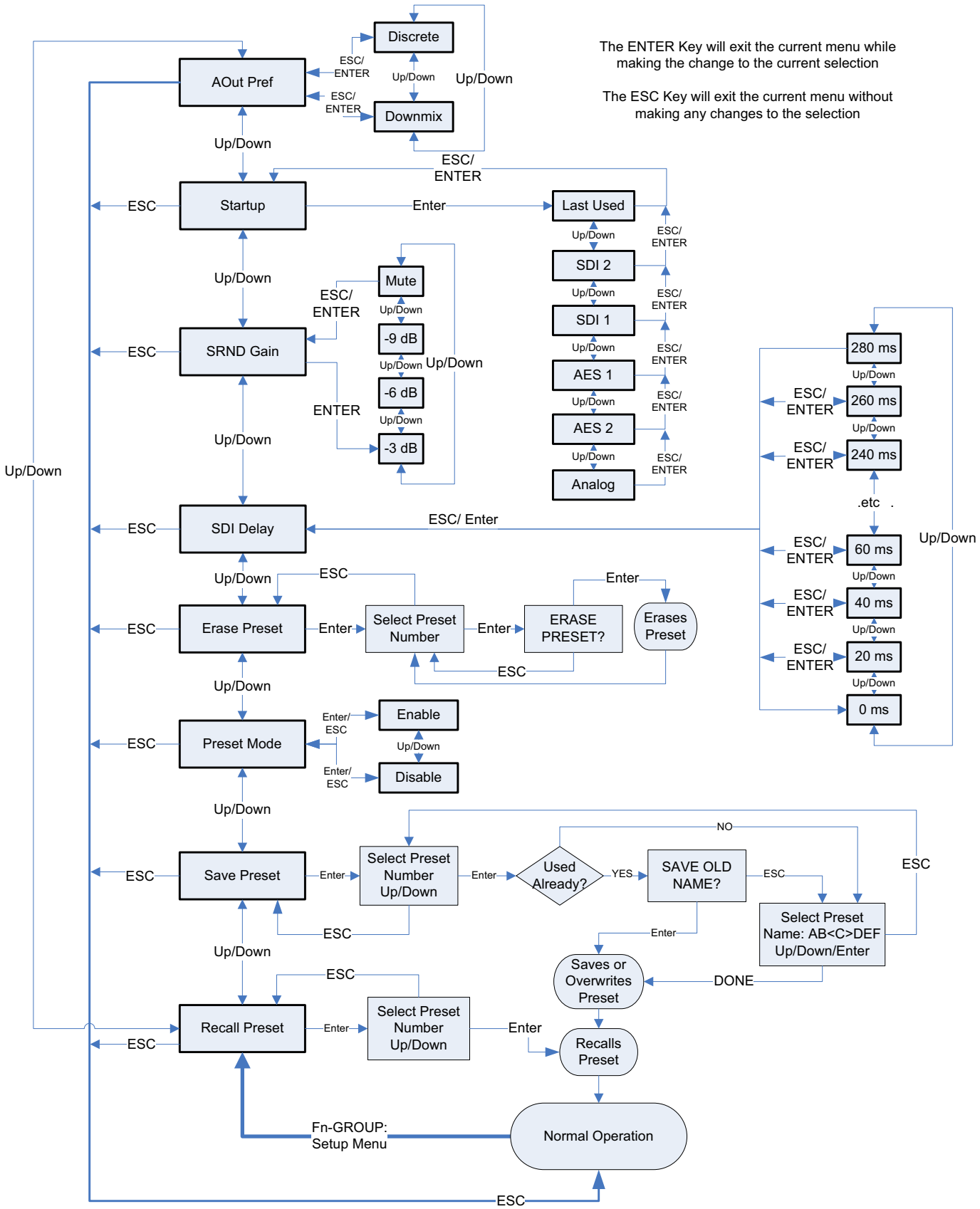


Figure-2e: Setup Menu Navigation Flow Diagram

User Interface Function Guide

Operational State Modes

Enabling Mute States: Mute Button

Pressing the **MUTE Button** allows the user to step through three **mute** states and an **unmuted** state. When the system is in one of the mute states, all other information normally shown in the **LCD Display**, such as the **Input Status Display**, is *disabled*. All other buttons are disabled until the unit is taken out of the **Mute Mode**.

First press mutes *both* speakers : **Mute LR**

Second press mutes the *Left* speaker : **Mute L**

Third press mutes the *Right* speaker : **Mute R**

Fourth press returns the unit to **Unmuted** (normal) operation.

Muting functions affect the signals to the speakers/headphones and the rear panel **Selected/Downmix Analog Output Connectors** (**Item L**, page **12**). Muting does NOT affect the **Metered Analog Outputs** (**Item R**, page **15**), except to defeat scaling (see subsequent note). These outputs remain active even when the **mute** state is enabled.

When speakers are muted, the gain scaling of the **Metered Analog Outputs** is defeated so that no scaling is applied during unit muting. See the **Analog Output Preference** parameter in the **Setup Mode** section on page **30** for more information.

Enabling DOLBY Decode Mode: DD Button

The **DD Button** (**DOLBY Decode**) is pressed to enable **DOLBY Decode Mode** for monotoring of **DOLBY E** and **DOLBY Digital** (**AC-3**) signals. When **DOLBY Decode Mode** is enabled (and a valid signal is detected), **DD E** or **DD D** will show up on the bottom right hand corner of the **LCD Display** for **DOLBY E** or **DOLBY Digital** signals, respectively. **DOLBY** bitstreams can be fed into **DOLBY Input 1** or **2**, or can be embedded into **SDI** signals fed into **SDI Input 1** or **2**.

There are up to eight (**8**) program selections available if the signal being monitored is a **DOLBY E** signal; **PG1**, **PG2**, **PG3**, **PG4**, **PG5**, **PG6**, **PG7**, or **PG8**. The number available depends on the type of signal being monitored. **DOLBY Digital** bitstreams may contain no more than six (**6**) programs. Please see the **DOLBY Main Output Channel Assignment** table on page **41** for a full list of possible program channel assignments for both **DOLBY Digital** and **DOLBY E** bitstreams. The three types of bitstreams accepted at the **DOLBY** inputs are monitored as follows:

DOLBY E:

If *any* one (or the only) program configuration in a **DOLBY E** bitstream is **multi-channel** (**5.1**, for example), then only one monitoring mode is available – the **Default Auto-Monitor Mode** (page **24**). When the unit first enters this mode, **Channels 1** and **5** are mixed into the *left* speaker, **Channels 2** and **6** are mixed into the *right* speaker and **Channel 3** is mixed into *both* speakers. This downmix is the same as the **DM1** downmix formula (see **Downmix Selection** on page **25**). The user may also select any *pair* of channels (or revert to the downmix) using either the **LEFT** or **RIGHT Buttons**. If the program configuration for **DOLBY E** is **8x1**, then all *eight* programs are available: **PG1** through **PG8**. When any of these (monaural) programs is selected, that program is mixed into both left and right speaker channels. If the program configuration is **4x2**, the first (odd-numbered) channel of the selected program is fed to the *left* speaker channel; the even-numbered channel is fed to the *right* speaker channel.

DOLBY DIGITAL:

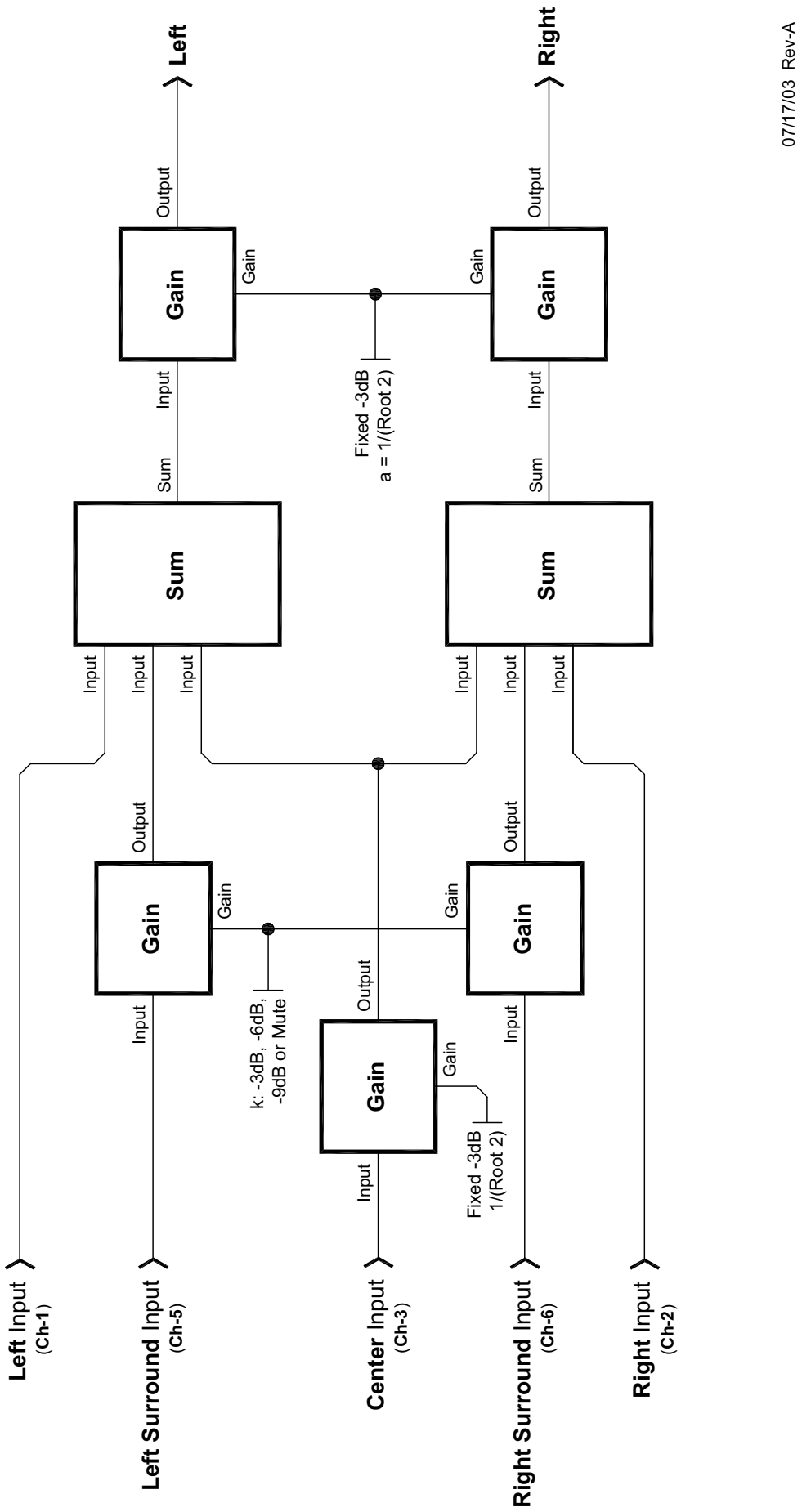
If the signal being monitored is a **DOLBY Digital** signal there is only one monitoring mode available – **PG1**. In this mode **Channels 1** and **5** are mixed into the *left* speaker, **Channels 2** and **6** are mixed into the *right* speaker and **Channel 3** is mixed into *both* speakers. This monitoring mode is the same as the **DM1** downmix formula (see **Downmix Selection** on page **25**).

PCM:

If the signal being monitored is a **PCM** (**AES/EBU**) signal there is only one monitoring mode available – **PG1**. In this mode **Channel 1** is mixed into the *left* speaker and **Channel 2** is mixed into the *right* speaker.

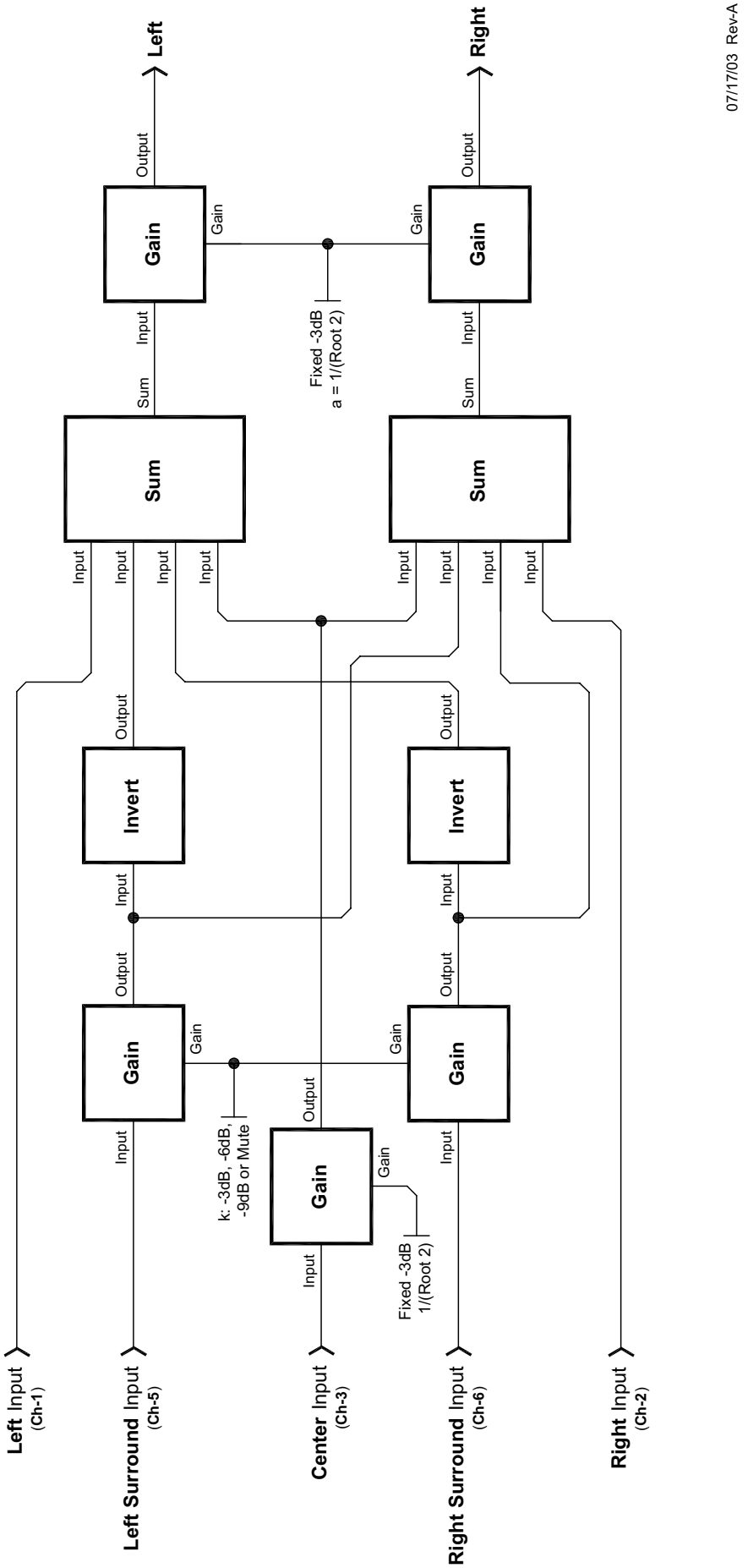
See page **41** for a table of Dolby main output channel assignments.

Diagram A: AMP-E8 DM1 Downmix



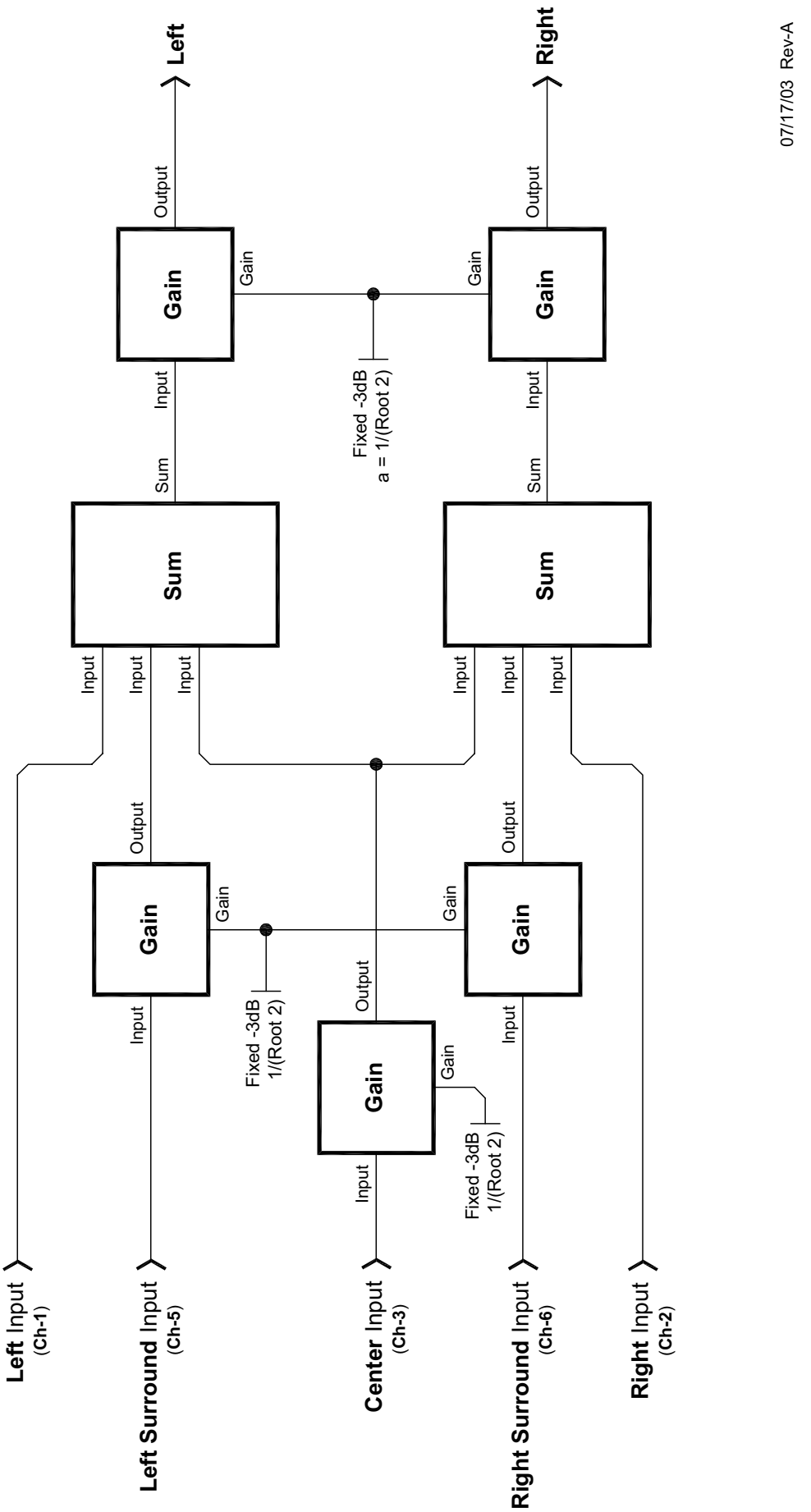
(See Downmix Selection on page 25)

Diagram B: AMP-E8 DM2 Downmix



(See Downmix Selection on page 25)

Diagram C: AMP-E8 DM3 Downmix



(See Downmix Selection on page 25)

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Section 3

Technical Information

General Technical Observations

Balance Control Characteristics

AMP2-E8 Series Interconnect Block Diagram

DOLBY Main Output Channel Assignments

General Technical Observations

General Mechanical Observations

Elimination of cabinet and component sympathetic vibrations (resonances) requires considerable attention to mechanical details. Because of this, and the physical constraints of the speakers' acoustic enclosures, even minor changes to any of the mechanical details of the unit can seriously impair its acoustic performance. This especially applies to the speaker mountings. If mechanical work on the unit is necessary, be sure to make adequate notes to permit accurate reassembly.

The proprietary method of magnetic shielding in the 2U models is usually degraded slightly by any disassembly of the unit, except removal of the rear panel. Almost any maintenance or repair will require removal of the cover. If an immediately adjacent video monitor shows magnetic interference after reassembly of the unit, it may have to be returned to the factory to restore the shielding completely.

General Audio Circuitry Observations

Since a single-sided power supply is used, all amplifier sections are “biased” with a 1/2 supply reference, so all opamp signal terminals on the main board should have a DC level of +12V, +/-0.7V. Signal inputs to the main audio board from any of the input select circuits are via the balanced input stage, in lieu of the analog inputs on a basic unit. The signal pick-off for the headphones is after the volume and balance controls. Speaker muting is controlled by circuitry that senses connection of headphones to the jack.

The power amps are attached to an aluminum heatsink plate (which is also connected to the circuit common for these devices). The heatsink plate forms an operational module separate from the chassis, which allows access to the solder side of the circuit board while power is applied to the circuitry. To avoid thermal shutdown of the power amp(s), they should NOT be operated without their tabs being fastened securely to the heatsink plate.

Variations in the frequency response of different production runs of drivers sometimes requires minor adjustments in the equalization/ crossover components in individual runs of units. If any of the drivers (speakers) are replaced, it may be helpful to change certain components to achieve maximum flatness of response. Contact Wohler Technologies for support in such matters.

The operating threshold of the woofer limiter is critical to both satisfactory reproduction of program transients and preventing damage to, or destruction of, the speaker itself. The side speaker output limiter circuits are similarly important, though not as critically adjusted.

The woofer power amps are arranged in a bridge configuration; care must be taken to avoid letting EITHER speaker terminal contact the chassis (common) OR THE GROUNDED LEAD OF ANY TEST EQUIPMENT so as not to short out the power amps. The side speaker outputs are single-ended, so these precautions are not necessary for them.

Balance Control Characteristics

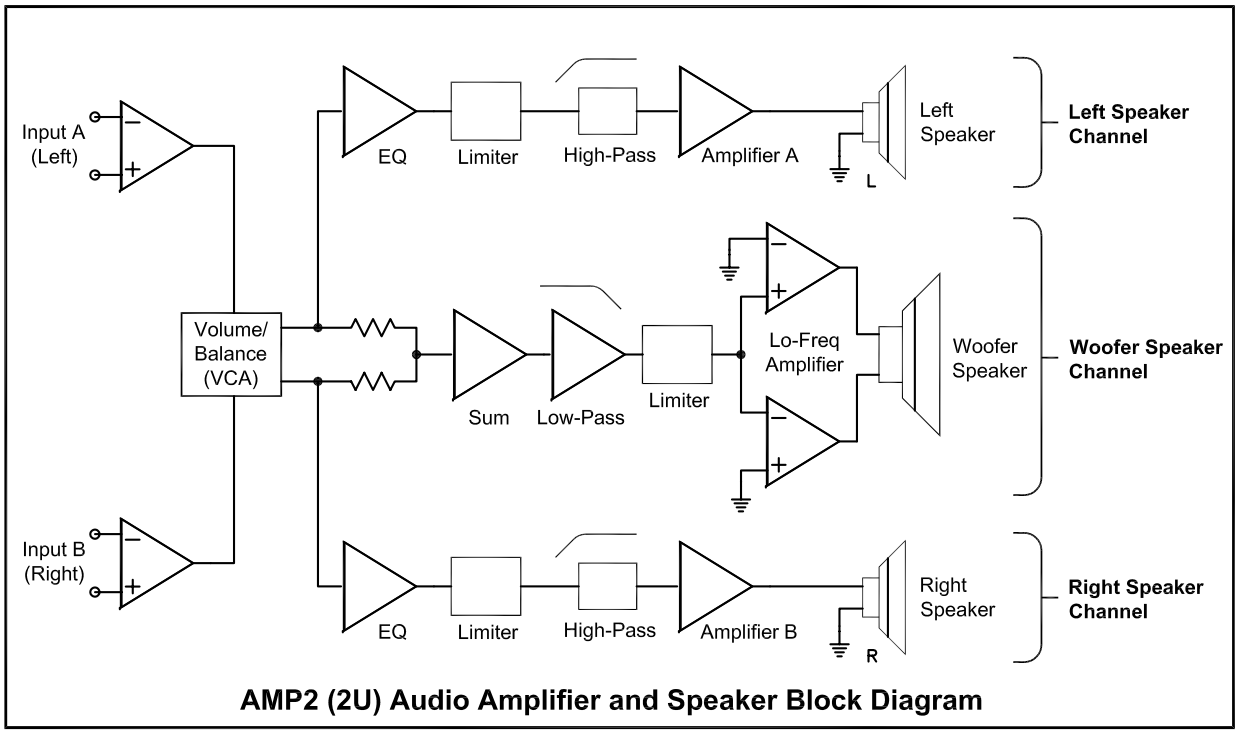
The balance control attenuates the signal from the source, so that the left and right bass frequencies (summed together and reproduced in the woofer channel) will also respond to the balance control.

Example:
If an audio signal of a voice speaking English is fed to the *left* (A) input and a voice speaking Spanish is fed to the *right* (B) input, then the *left* speaker channel will reproduce the midrange and high-range frequencies of the English speaking voice, the *right* speaker channel will reproduce the midrange and high-range frequencies of the Spanish speaking voice, and the *woofer* speaker channel will reproduce the summed (combined) low-range frequencies of *both* voices.

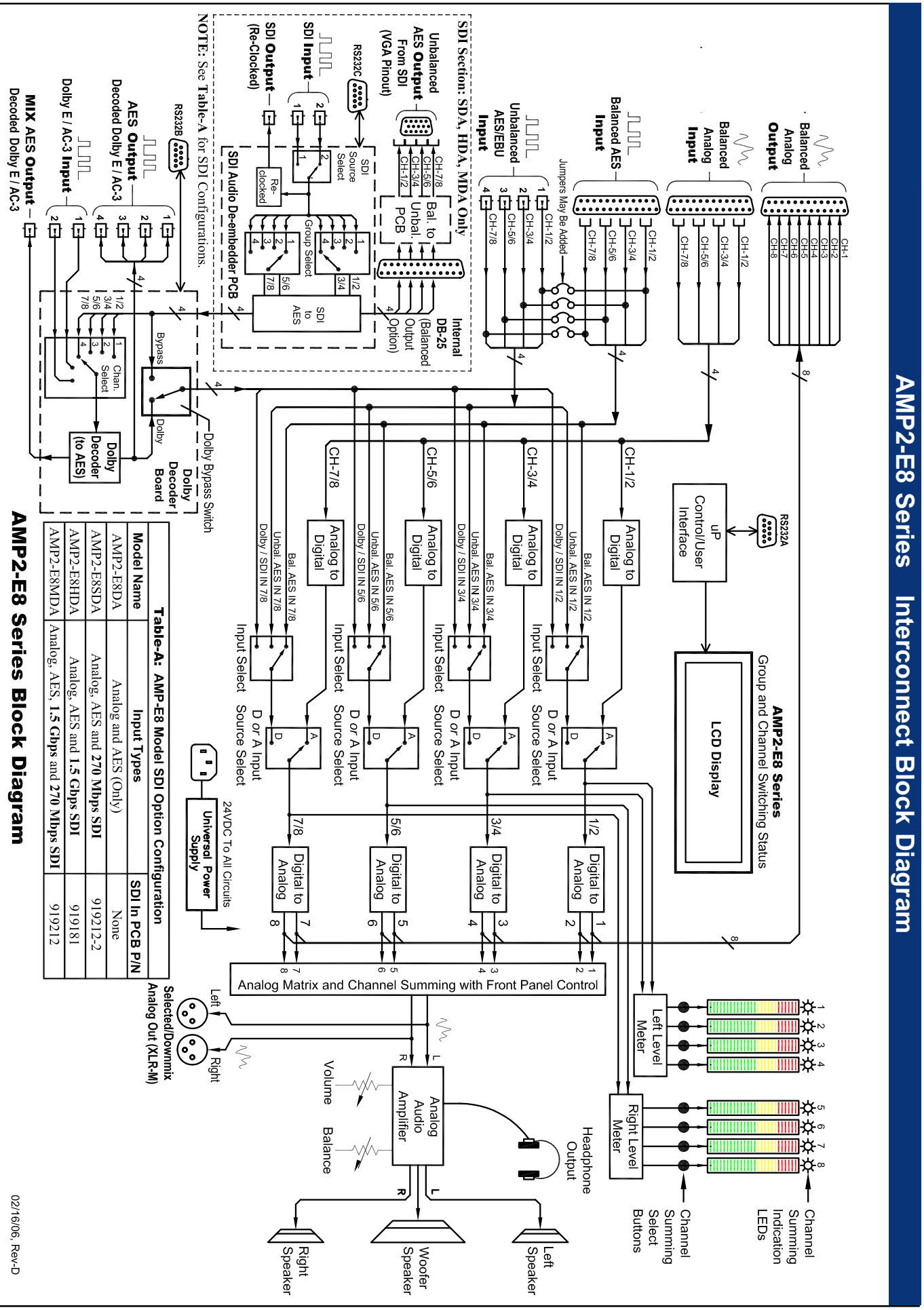
If the balance control is rotated to the *left* (English), then the Spanish speaking voice in the *right* speaker channel will diminish in volume and the Spanish speaking voice in the *woofer* speaker channel will also diminish.

Note that if the balance control is rotated completely to the *left*, the volume in both the *left speaker* channel and *left woofer* speaker channel will increase slightly to maintain overall output level. See the simplified diagram below for placement of the balance control in the audio amplifier circuit.

The converse of the above is true if the balance control is rotated to the right.



AMP2 (2U) Audio Amplifier and Speaker Block Diagram



AMP2-E8 Series Block Diagram

Table-A: AMP-E8 Model SDI Option Configuration

Model Name	Input Types	SDI In PCB P/N
AMP2-E8DA	Analog and AES (Only)	None
AMP2-E8SDA	Analog, AES and **270 Mbps SDI**	919212-2
AMP2-E8HDA	Analog, AES and **1.5 Gbps SDI**	919181
AMP2-E8MDA	Analog, AES, **1.5 Gbps** and **270 Mbps SDI**	919212

02/16/06, Rev-D

DOLBY Main Output Channel Assignments

Dolby E Program Config or Dolby Digital coding mode	*Main Output Channel Assignment*							
	Ch 1	**Ch 2**	**Ch 3**	**Ch 4**	**Ch 5**	**Ch 6**	**Ch 7**	**Ch 8**
5.1 + 2	0L	0R	0C	0LFE	0Ls	0Rs	1L	1R
5.1 + 1 + 1	0L	0R	0C	0LFE	0Ls	0Rs	1C	2C
4 + 4	0L	0R	0C	0S	1C	1S	1L	1R
4+2+2	0L	0R	0C	0S	2L	2R	1L	1R
4+2+1+1	0L	0R	0C	0S	2C	3C	1L	1R
4+1+1+1+1	0L	0R	0C	0S	3C	4C	1C	2C
2+2+2+2	0L	0R	2L	2R	3L	3R	1L	1R
2+2+2+1+1	0L	0R	2L	2R	3C	4C	1L	1R
2+2+1+1+1+1	0L	0R	2C	3C	4C	5C	1L	1R
2+1+1+1+1+1+1	0L	0R	3C	4C	5C	6C	1C	2C
1+1+1+1+1+1+1+1	0C	1C	2C	3C	4C	5C	6C	7C
5.1	0L	0R	0C	0LFE	0Ls	0Rs	none	none
4+2	0L	0R	0C	0S	none	none	1L	1R
4+1+1	0L	0R	0C	0S	none	none	1C	2C
2+2+2	0L	0R	2L	2R	none	none	1L	1R
2+2+1+1	0L	0R	2C	3C	none	none	1L	1R
2+1+1+1+1	0L	0R	3C	4C	none	none	1C	2C
1+1+1+1+1+1	0C	1C	2C	3C	4C	5C	none	none
4	0L	0R	0C	0S	none	none	none	none
2+2	0L	0R	none	none	none	none	1L	1R
2+1+1	0L	0R	none	none	none	none	1C	2C
1+1+1+1	0C	1C	2C	3C	none	none	none	none
3/2L (Dolby Digital)	0L	0R	0C	0LFE	0Ls	0Rs	none	none
3/2 (Dolby Digital)	0L	0R	0C	none	0Ls	0Rs	none	none
2/2L (Dolby Digital)	0L	0R	none	0LFE	0Ls	0Rs	none	none
2/2 (Dolby Digital)	0L	0R	none	none	0Ls	0Rs	none	none
3/1L (Dolby Digital)	0L	0R	0C	0LFE	0S	none	none	none
3/1 (Dolby Digital)	0L	0R	0C	none	0S	none	none	none
2/1L (Dolby Digital)	0L	0R	none	0LFE	0S	none	none	none
2/1 (Dolby Digital)	0L	0R	none	none	0S	none	none	none
3/0L (Dolby Digital)	0L	0R	0C	0LFE	none	none	none	none
3/0 (Dolby Digital)	0L	0R	0C	none	none	none	none	none
2/0 (Dolby Digital)	0L	0R	none	none	none	none	none	none
1/0 (Dolby Digital)	none	none	0C	none	none	none	none	none
1+1 (Dolby Digital)	0C	1C	none	none	none	none	none	none
PCM	0L	0R	none	none	none	none	none	none

NOTE:

PCB layout and schematic support documentation is available upon request.

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