S1616A

Multi-Zone Controller Amplifier

AMPLIFIER MODE

INSTALLATION MANUAL

ELAN®

Preface

Purpose of this Manual

This manual provides step-by-step installation instructions and connection examples, along with basic user information for installation and ongoing use of the S1616A in Amplifier Mode.. This manual is written for the installer of this equipment.

Organization

The following information is contained in this manual including practices and procedures allowing for the safe installation and operation of the S1616A used in Amplifier Mode.

Amplifier Mode Introduction	Provides an introduction to ELAN Home Systems' S1616A used in Amplifier Mode, along with system features to include Front and Rear panel controls, indicators and connections, along with a short description of each.
Amplifier Mode Connections	Provides a description of the S1616A used in Amplifier Mode system connections and direct connections from the S1616A to other components.
Troubleshooting	Provides troubleshooting tables to help fix common problems that may be encountered when installing the S1616A used in Amplifier Mode.
IR Command Set	Appendix A provides a list of the IR commands and their functions.

Safety Information

WARNING

RISK OF ELECTRIC SHOCK
DO NOT OPEN!

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT
REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN
INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO
THE INSTRUCTIONS.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to
alert the user to the presence of uninsulated "dangerous voltage" within the product's
enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence
of important operating and maintenance (servicing) instruction in the literature accompanying
the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR SHOCK,
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION

IMPORTANT SAFETY INFORMATION

Read Information — All the safety and operating information should be read before the appliance is operated.

Follow Information — All operating and use information should be followed.

Retain Information — The safety and operating information should be retained for future reference.

Heed Warnings — All warnings on the appliance and in the operating instructions should be heeded.

Wall Mounting — Mounting of this appliance should be done only by an authorized installer.

Ventilation — The appliances should be situated so that their location or position does not interfere with their proper ventilation. These appliances should never be placed near or over a radiator or heat register. These appliances should not be placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

Non-Use Periods — Appliances that are left unattended and unused for long periods of time should be de-energized.

Grounding or Polarization — Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one blade wider than the other blade. A grounding type plug has two blades and a third grounding prong. The polarized wide blade and the third prong are provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.

Power Cord Protection — Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.

Water — Do not use the apparatus near water.

Cleaning — Unplug the apparatus from the power outlet before cleaning. Use only a dry cloth to clean the apparatus.

Object and Liquid Entry — Never insert objects of any kind through the openings of these appliances, as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Care should be taken so that objects do not fall and liquids are not spilled into the appliance through openings in the enclosure.

Servicing — Do not attempt to service these appliances yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Damage Requiring Service — These appliances should be serviced by qualified service personnel when:

- A power supply connection or a plug has been damaged or

- If liquid has been spilled into the appliance or objects have fallen into the appliance or

- The appliance has been exposed to water or moisture or

- The appliance does not appear to operate normally or exhibits a marked change in performance or

- The appliance has been dropped or the enclosure damaged.

Replacement Parts — When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

Safety Check — Upon completion of any service or repairs to this audio product, ask the service technician to perform safety checks to determine that the audio product is in proper operating condition.

Lightning Storms — Unplug this apparatus during lightning storms or when unused for long periods of time.

Attachments and Accessories — Use only attachments/accessories specified by the manufacturer.

Cart, Stand, Tripod, Bracket or Table — Use only with a 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.

Disconnect Device — Where the mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain operable.

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

CAUTION:

Changes or modifications not expressly approved by ELAN Home Systems could void the user's authority to operate the equipment.

Table of Contents

Items in Package:

- S1616A Power Amplifier
- Rack Mount Brackets
- Power Cord
- Safety Flyer

Chapter 1: Introduction

The S1616A is the culmination of twenty four years of ELAN experience in the design and perfection of multi-channel amplification. Designed specifically for the custom installer, the S1616A used in Amplifier Mode is the perfect solution for multi-room whole-house applications. Providing cool performance and flexibility, the S1616A Amplifier Mode delivers 16 channels of powerful audio that can be configured into many combinations to suit any situation that may be encountered in a whole-house, distributed audio system.

The S1616A utilizes low heat/high efficiency Class D digital technology which features an 8x oversampling rate and 48 bit signal processing delivering the cleanest and most efficient audio amplification available. Each channel of the S1616A has a true power rating of 50 watts @ 8 ohms and 75 watts @ 4 ohms – all channels driven.

Configuration of the S1616A is performed via the front panel interface and includes advanced features such as max volume output, and min/max turn on levels. An advanced set of IR commands provides an impressive degree of operability of the S1616A allowing it to be used in many different control environments.

The ELAN Story

Located in Carlsbad, CA USA, ELAN is a part of The AVC Group, a collection of integration-centric brands. ELAN has designed innovative multi-room audio/video systems since 1989. ELAN systems were the first to integrate music, intercom and TV distribution features that used the homeowner's stereos, televisions and telephones to create the whole-house entertainment experience. These systems allow people to move from room to room, controlling centrally located equipment with ease.

ELAN's product line includes:

- Power Amplifiers
- Multi-Zone Pre-Amps
- Intelligent Keypads
- In-Wall LCD Color Touch Panels
- Film Interactive Touchpads
- Hand Held Remote Controls
- In-Wall and In-Ceiling Speakers

- System Controllers
- Volume Controls
- Telephone-Based Intercom Controllers
- Video Switchers
- Satellite Radio
- Accessories for Home Systems Installation
- Outdoor Speakers

S1616A Amplifier Mode Features

- **Class D Digital Technology**

  Provides clean, transparent audio amplification while greatly reducing power consumption

- **50 Watts Per Channel**

  Easily produces 50W/Ch into an 8 ohm load and 75W/Ch into 4 ohm loads

- **Automatic Clipping Eliminator (ACE)**

  This S1616A limiter constantly monitors the amplified output to prevent signal clipping

- **Automatic Volume Reduction (AVR)**

  This S1616A limiter constantly monitors the overall output to prevent over-driving the amplifier

- **Intelligent Load Monitoring**

  The S1616A automatically detects load faults and shuts down only the affected channels, thereby protecting speakers, wiring and the amplifier itself

- **Multiple Bus Inputs**

  The S1616A can utilize up to 8 stereo bus inputs to allow sharing a single audio source between multiple speaker outputs (no jumper wires required)

- **Buffered Loop Outputs**

  Every input channel has a buffered loop output that allows the user to easily share audio sources with other equipment

- **IR Controllable**

  Each channel can be independently controlled via IR commands

- **USB Port**

  Allows easy in-field firmware updates

- **Rack Mount Brackets Included**

  No need to worry about field compatibility

- **Available in 240 Volt Version**

- **cTUVus, CE®, and C-Tick Certified**

S1616A Functions & Indicators

Front Panel
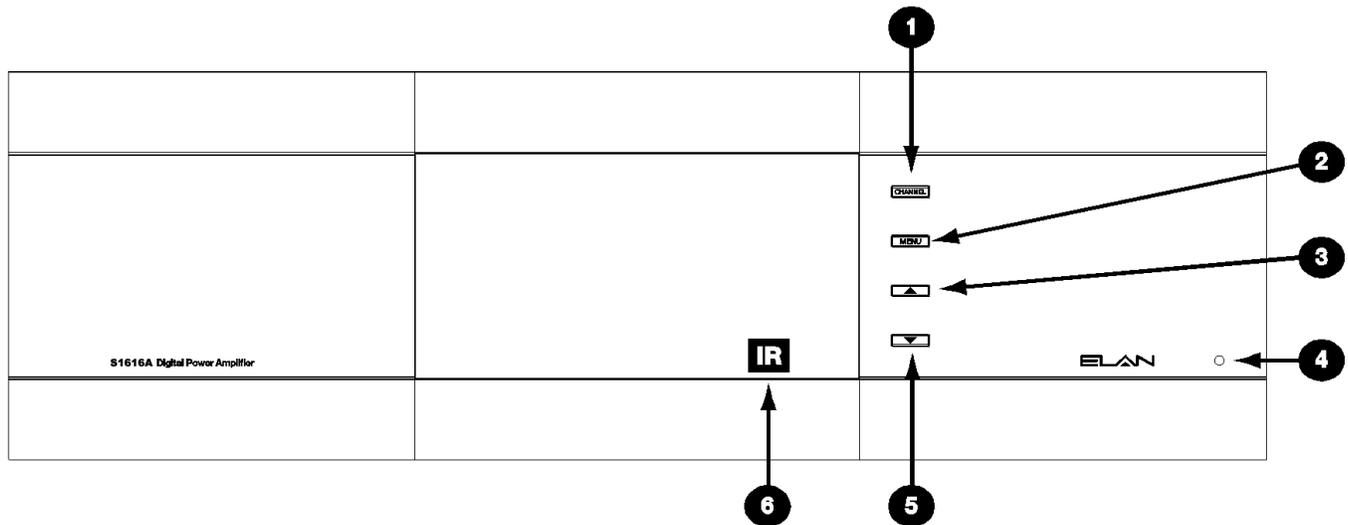
Figure 0-1: S1616A Front Panel Controls and Display

Item	Function
1	Channel Button Cycles through information pertaining to each of the 16 audio channels
2	Menu Button Cycles through various advanced setup features
3	Up Arrow Button Increments selected menu item
4	Power Indicator Illuminates when AC power is present and the power switch is on.
5	Down Arrow Button Decrements selected menu item
6	IR Receive Indicator Illuminates when the S1616A receives ELAN IR commands

S1616A Amplifier Mode Rear Panel Connections

Figure 0-2

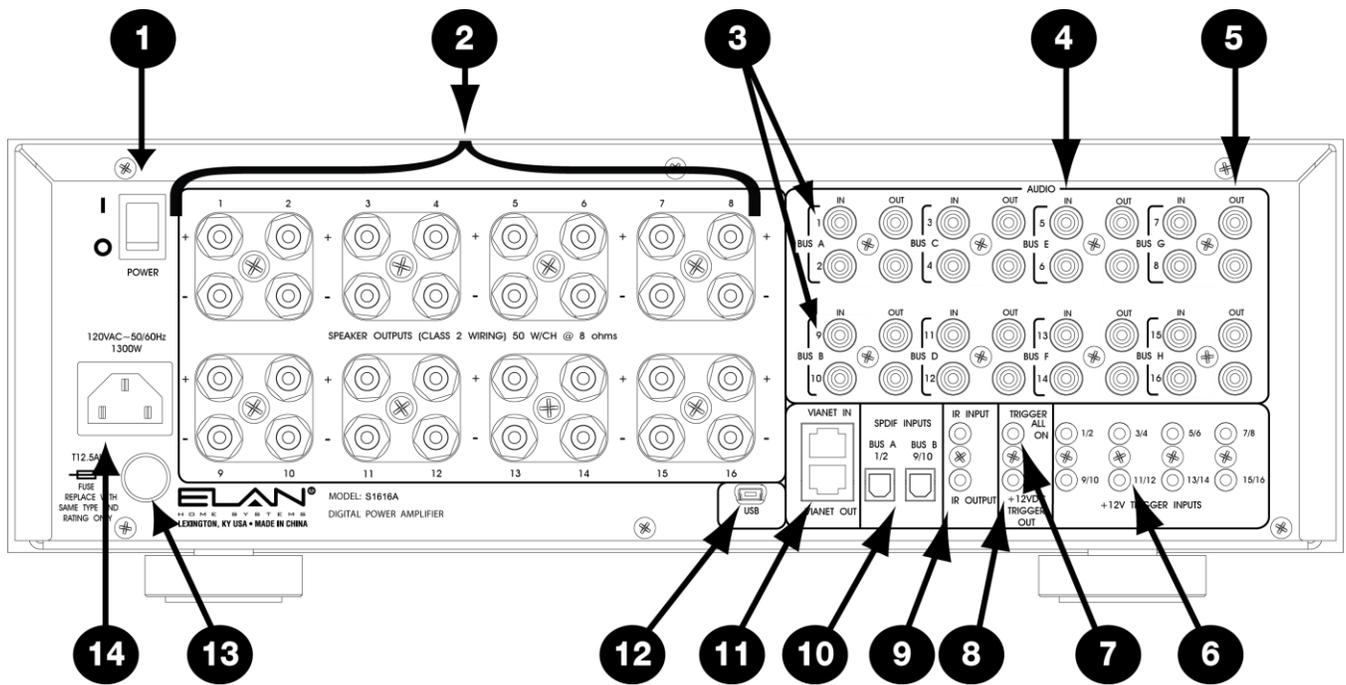| Item	Function	Item	Function
1	Power Switch Unit master power switch	8	12V Trigger Out 12VDC output when any channel is on
2	Speaker Outputs Channels 1-16, Five Way Binding Posts	9	IR Input & Output Used to control the amplifier with IR signals
3	Bus Inputs, A-H Used to connect multiple speaker outputs to the same audio source	10	Digital Audio Bus Inputs Connects S/P-DIF audio source to Bus A or Bus B using TOSLINK connections
4	Line Level Audio Inputs Channels 1-16	11	VIA!NET Input & Output Not used in Amplifier Mode
5	Line Level Audio Outputs Used for sharing audio sources between chassis	12	USB Mini B Port For in-field firmware updates
6	12V Trigger Inputs Used to turn on/off pairs of amplifier channels	13	Fuse Holder Replace only with **T12.5AL250V**
7	Trigger All On Used to turn on all amplifier channels at once	14	Power Cable Connector IEC type C14

Note: All 3.5mm connectors are mono (two conductors)

Operation & Settings

Front Panel Controls

The S1616A front panel buttons provide control for the initial setup and amplifier status. Any button press activates the front panel display which shows important system information until the display times out.

Figure 2-1
Front Panel Controls
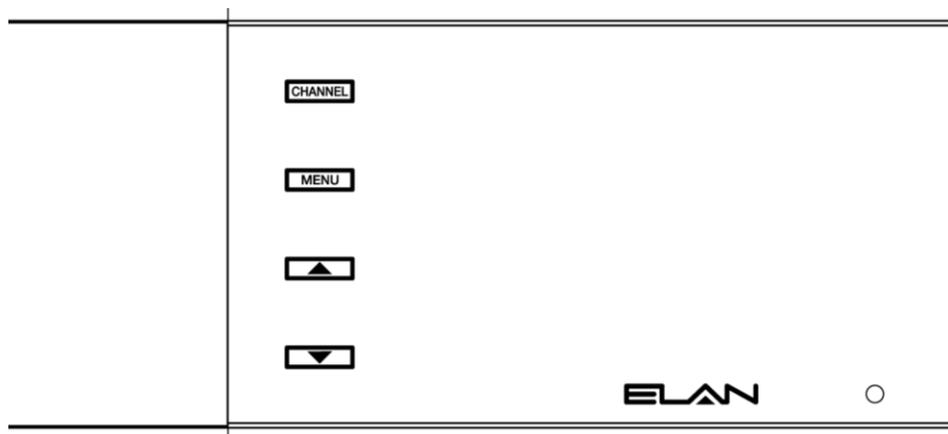
Channel Button

The **CHANNEL** button toggles through front panel display information pertaining to the individual 16 channels plus an **ALL** channel option that is available in the Installer Menus.

Menu Button

The menu button allows access to consumer oriented functions as well as options reserved for installers. In **CONSUMER MODE** the end user can adjust volume settings on a channel by channel basis, provided that the channel is **UNLOCKED**, as well as see current volume/gain and signal presence information. Installers can access additional setup functions.

In **NORMAL MODE,** the **MENU** button toggles through the following menu choices: **STATUS**, **VOLUME**, **INPUT SELECT**, **LOCK**, **ACE**, **INPUT VIEW**, **OUTPUT VIEW**, and **UTILITY**.

Similarly, while in **ELAN MODE**, the **MENU** button toggles through the following menu choices: **STATUS**, **VOLUME**, **INPUT SELECT**, **LOCK**, **ACE**, **INPUT VIEW**, **OUTPUT VIEW**, **ABSOLUTE MAX VOLUME**, **MIN TURN ON VOLUME**, **MAX TURN ON VOLUME**, and **UTILITY**.

These menu items are explained in detail in the following pages as well as how to access installer menu screens and switch between **NORMAL MODE** and **ELAN MODE**.

Up & Down Arrow Buttons

These buttons are used to increment and decrement the currently selected menu item.

Consumer Menu Options

Current Volume Settings Display

The first press of the **MENU** button will bring up the following display showing all 16 channels' current volume/gain settings and signal presence indicators.

Figure 2-2
Current Volume Settings

```
1   ♪   90%    2   ♪   90%
3   ♪   75%    4   ♪   75%
5   ♪   75%    6   ♪   75%
7   ♪   85%    8   ♪   85%
9   ♪   85%   10   ♪   85%
11  ♪   75%   11   ♪   75%
13  -   90%   12   -   90%
15  ♪   75%   16   ♪   75%
```

Volume Adjustment Menu

The next press of the **MENU** button will display the volume screen for the *last selected* channel as shown below.

Figure 2-3
Volume Adjustment Display

```
AMP     VOLUME     MENU
Channel Locked
CH:1        Volume: 65%
Output:Clipping
-15 ███████████  ▶  +30
Input:Clipping      dBu
Trigger ON/PS
Fault  High Temp.   IR
```

Note: "Channel Locked" - "Output Clipping" - "Input Clipping" and "Fault" status information will only display if that condition is true. The "IR" indicator will display only when the S1616A is receiving an ELAN formatted IR signal.

Volume Adjustment Menu (continued)

Use the **CHANNEL** button to select the desired channel and the up and down arrow buttons to increment and decrement the gain setting.

A bar graph displays the current channel output (in dBu). The arrowhead indicates a recent output peak level.

Current trigger status for the selected channel is shown as well as an indication if power saving mode is engaged (PS). **(See Power Saving Menu on page 26.)**

 The consumer menu does not allow selecting ALL channels at once. This feature is reserved for installers.

Fault Menu

If a channel is **FAULTED** the following screen will show in the display.

Figure 2-4
Fault Display

```
AMP      FAULT      MENU

Channel:1     IN FAULT
Check Load Impedance
Shutdown:4 QTY
High Temp:0 QTY
Press Up/Dn to Reset
or Contact Dealer
```

This shows the faulted channel's number as well as how many times the channel has faulted due to high temperature and low impedance combined. It also shows high temperature warnings separately. The end user can attempt to clear the fault by pressing the **UP** or **DOWN** arrows.

If the end user is unable to clear the fault they should contact the dealer for assistance. It is not necessary to stop using the amplifier in the meantime; continuing to use the amplifier **WILL NOT** cause additional damage.

The speaker wires should not be connected to different amplifier channels without first checking for shorts or low impedance on the speakers.

Installer Menu Options

The S1616A Amplifier Mode has two operating modes, **Normal** and **ELAN**.

(See Operating Mode Menu on page 23.)

> **ELAN** mode allows the amplifier to respond to S1616A IR commands that can affect its channels. **(See Appendix A for the Command Set.)**

> **NORMAL** mode does not allow IR control of the S1616A.

To access the installer menu screens press and hold the **MENU** button for five seconds until the following screen shows in the display window. To exit the installer menu screens press and hold the **MENU** button again for five seconds or power cycle the amplifier.
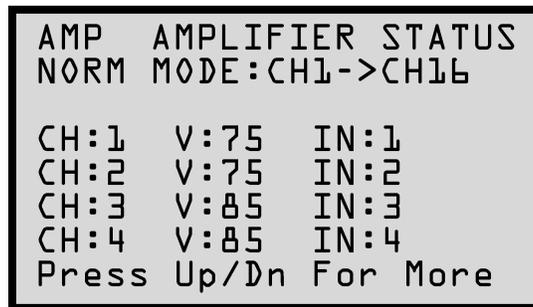
Amplifier Status Screen

Figure 2-5
Amplifier Status

```
AMP   AMPLIFIER STATUS
NORM MODE:CH1->CH16

CH:1   V:75   IN:1
CH:2   V:75   IN:2
CH:3   V:85   IN:3
CH:4   V:85   IN:4
Press Up/Dn For More
```

The **Amplifier Status** screen allows you to view the current assignments for amplifier gain and input routing for each of the 16 channels. Press the **UP** and **DOWN** arrow buttons to see information for the next group of four channels. Alternatively, press the **CHANNEL** button to move forward one channel at a time.

The top of the screen displays the mode the amplifier is in, either ELAN MODE or NORMAL MODE, followed by the channel designations of the chassis,
I.E. CH1 – CH16.

CH:1   V:75   IN:1 means that audio input 1 (IN:1) is being amplified at 75% (V:75) and is being routed to the channel 1 (CH:1) amplified output.

Normal Mode

Volume Menu

To adjust amplifier output gain on an individual channel, press the **MENU** button to cycle through the setting options until the following screen appears:
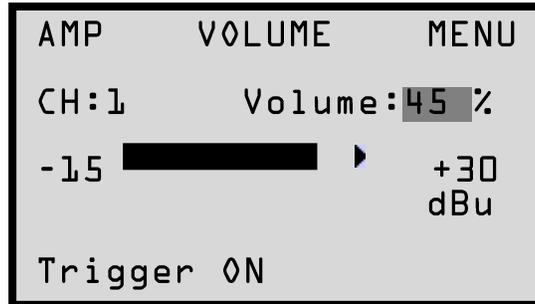
Figure 2-6
Volume Menu

```
AMP      VOLUME      MENU

CH:1         Volume:45 %

-15 ████████████  ▶    +30
                       dBu

Trigger ON
```

Use the **CHANNEL** button to select the desired channel and the **UP** and **DOWN** arrow buttons to increment and decrement the gain setting. Selecting **ALL** with the **CHANNEL** button applies settings to all 16 channels.

Current trigger status for the selected channel is shown as well as an indication if power saving mode is engaged (PS).

The **VOLUME Menu** will allow any or all channel's volume to be adjusted from 0% (MUTE) to 100% (maximum gain).

The **Factory Default** setting for each channel is **75**.

The **VU** (Volume Unit) bar displays real time (current) volume (in dBu) detected at the selected channel output. The range is from -15 dBu to+30 dBu. The arrowhead indicates a recent output peak level.

TRIGGER and **PS** (Power Sense) status are also displayed.

(See Power Saving Menu on page 26, and Trigger information on pages 39-41.)

(Continued on next page)

Volume Menu (Continued)
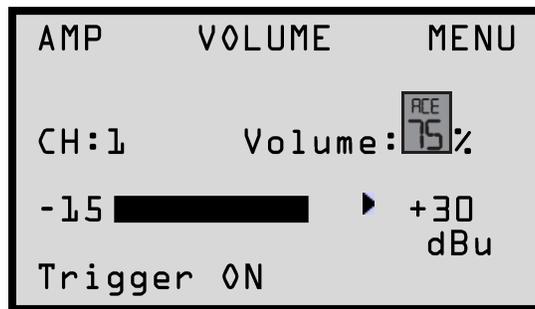
Trigger **ON** is the factory default.

The TRIGGER options are:

• **On**: The selected channel is on (consuming energy) and the trigger jack on the rear panel is active.

• **Off**: The selected channel is off (NOT consuming energy) and the trigger jack on the rear panel is not active.

• **On/PS**: The selected channel is off (NOT consuming energy) because the selected channel is in Power Saving Mode even though the trigger jack on the rear panel is active.

When **ACE (Automatic Clip Elimination)** is active on the selected channel, **ACE** will be displayed above **Volume %**.
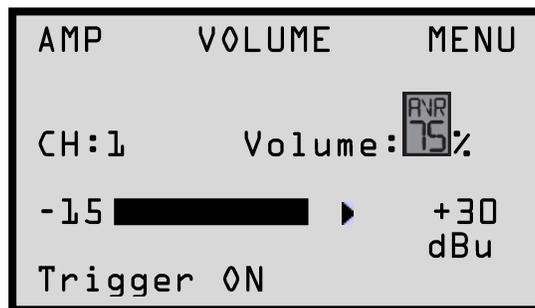
(See "ACE Menu" on page 20.)

Figure 2-7
Volume Menu with Ace

```
AMP      VOLUME      MENU


CH:1           Volume: ACE
                       75 %

-15 ██████████    ▶  +30
                       dBu
Trigger ON
```

When **AVR (Automatic Volume Reduction)** is active, **AVR** is displayed above Volume %. **AVR** is active whenever the amp is being overdriven. When **AVR** is active, the S1616A turns its volume down until it is not being overdriven. The S1616A will return to its normal volume setting when it is no longer being overdriven.

(See the Troubleshooting section for more information on AVR.)

Figure 2-8
Volume Menu with AVR

```
AMP      VOLUME      MENU


CH:1           Volume: AVR
                       75 %

-15 ██████████    ▶   +30
                       dBu
Trigger ON
```

Setting System Volume Levels

1. Set each S1616A's channel level to 25%.

2. Raise the volume of all touch panels, touchpads or volume controls to near maximum.

3. Play source program material, such as a CD or a radio station.

4. Have someone step into the room and listen.

5. Enable ACE for all channels. **(See ACE Menu on page 20.)**

6. On the Volume screen, select the channel that is wired to the speaker where the person is listening.

7. Slowly adjust Volume Up for this channel until the audio begins to distort, and then drop the level one or two percentage points.

8. Follow this procedure for all channels to achieve a good balance of sound from the most used listening position in the zone.

9. Enable or Disable ACE for all applicable channels.

Note: High volume levels can cause clipping and distortion. This can damage the loudspeaker's components and cause the amplifier to go into protection mode. The protection circuits will reset when the output signal conditions have returned to normal. Overdriving the amplifier can damage the amplifier and void the manufacturer's warranty.

Input Select Menu

To change the input used for each output, press the **MENU** button to cycle through the setting options until the following screen appears:
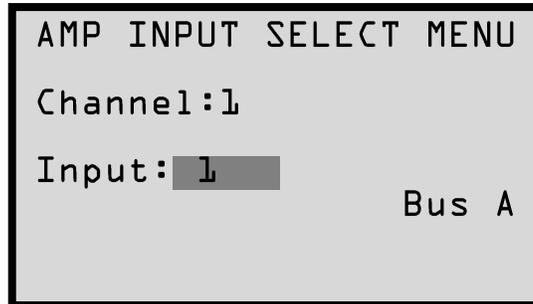
Figure 2-9
Input Select Menu

```
AMP INPUT SELECT MENU

Channel:1

Input: 1
                    Bus A
```

Select the channel whose input you wish to change by pressing the **CHANNEL** button until the correct channel is displayed. Once the desired output channel is selected pressing the **UP** and **DOWN** arrows will cycle through the following input options:

- Input 1 Direct: This is the default, Channel's audio is taken from audio input 1

- Input 1 + 2 Mono Direct: Channel's audio is the sum of audio inputs 1 and 2 (Mono)

- Input 1 Bus A: Channel's audio is taken from audio input 1 which is Bus A*

- Input 1 + 2 Mono Bus A: Channel's audio is the sum of audio inputs 1 and 2 (Mono) which is Bus A*

- Input 9 Bus B: Channel's audio is taken from audio input 9 which is Bus B*

- Input 9 + 10 Mono Bus B: Channel's audio is the sum of audio inputs 9 and 10 (Mono) which is Bus B*

- Input 3 Bus C: Channel's audio is taken from audio input 3 which is Bus C

- Input 3 + 4 Mono Bus C: Channel's audio is the sum of audio inputs 3 and 4 (Mono) which is Bus C

- Input 11 Bus D: Channel's audio is taken from audio input 11 which is Bus D

- Input 11 + 12 Mono Bus D: Channel's audio is the sum of audio inputs 11 and 12 (Mono) which is Bus D

(Continued on next page)

Input Select Menu (Continued)

- Input 5 Bus E: Channel's audio is taken from audio input 5 which is Bus E

- Input 5 + 6 Mono Bus E: Channel's audio is the sum of audio inputs 5 and 6 (Mono) which is Bus E

- Input 13 Bus F: Channel's audio is taken from audio input 13 which is Bus F

- Input 13 + 14 Mono Bus F: Channel's audio is the sum of audio inputs 13 and 14 (Mono) which is Bus F

- Input 7 Bus G: Channel's audio is taken from audio input 7 which is Bus G

- Input 7 + 8 Mono Bus G: Channel's audio is the sum of audio inputs 7 and 8 (Mono) which is Bus G

- Input 15 Bus H: Channel's audio is taken from audio input 15 which is Bus H

- Input 15 + 16 Mono Bus H: Channel's audio is the sum of audio inputs 15 and 16 (Mono) which is Bus H

*Bus A and/or Bus B can be either analog input or digital input. **(See pages 25 and 36 for additional information.)**

The following example is with Channel **ALL EVEN** and Channel **ALL ODD** selected. Instead of a single channel's audio being affected like the previous example, all 16 channels are being affected.

All of the Odd channels (1, 3, 5, 7, 9, 11, 13, 15) are taken from Audio Input 1 which is Bus A and All of the Even channels (2, 4, 6, 8, 10, 12, 14, 16) are taken from audio input 2 which is also Bus A.
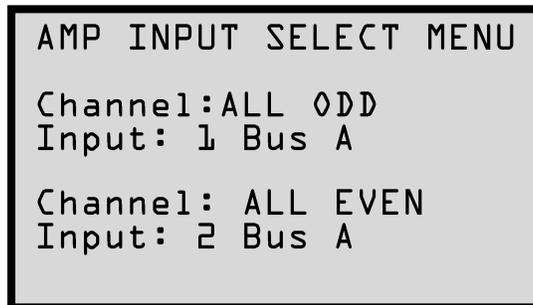
Figure 2-10
All Channels Selected

```
AMP INPUT SELECT MENU

Channel:ALL ODD
Input: 1 Bus A

Channel: ALL EVEN
Input: 2 Bus A
```

Channel Lock Menu

To **LOCK** or **UNLOCK** the settings for the channels press the **MENU** button to cycle through the setting options until the following screen appears:
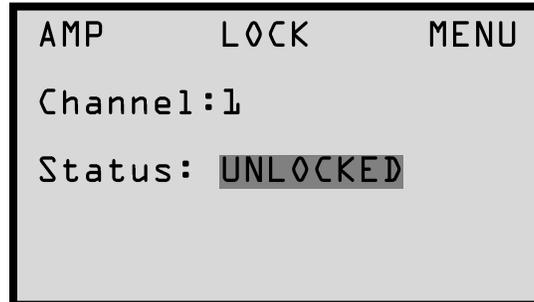
Figure 2-11
Lock Menu

```
AMP      LOCK      MENU

Channel:1

Status: UNLOCKED
```

This menu allows any or all channels to be locked or unlocked after initial set-up selections have been determined.

When locked, channel settings cannot be altered even by IR Commands in ELAN mode.

Individual channels 1 - 16 options are LOCKED or UNLOCKED.

When the **All channel** option is selected the possible status options displayed are **MIXED**, **LOCKED**, or **UNLOCKED**. **MIXED** means that some channels are locked and some channels are not locked.

Press the **Channel** button to change the channel.

Press the **UP** and **DOWN** buttons to **LOCK** or **UNLOCK** the selected channel.

ACE Menu

To enable or disable **ACE** (Automatic Clipping Eliminator) for the channels press the **MENU** button to cycle through the setting options until the following screen appears:
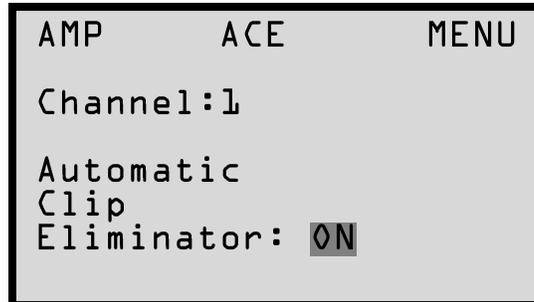
Figure 2-12
ACE Menu

```
AMP        ACE        MENU

Channel:1

Automatic
Clip
Eliminator: ON
```

When **ACE** is set to **ON**, **(Factory Default)** the amplified output is continuously monitored for signal clipping. Extremely fast transients are ignored but if it sees a consistent clipping trend, it turns the respective channel down by one increment. This action is repeated until no more clipping is detected for five seconds. After 5 seconds it gradually increases the gain of the channel back to its last setting.

ACE will be displayed on the **Volume** screen. **(See Volume Menu on page 14.)**

Individual channels 1 - 16 options are ON or OFF.

When the **All channel** option is selected the possible status options are **MIXED**, **ON** or **OFF**. **MIXED** means that some channels are **ON** and some channels are **OFF**. Press the **CHANNEL** button to change the channel. Press **UP** and **DOWN** buttons to enable or disable **ACE** for the selected channel.

Input View Menu

For information relating to the signal inputs for the S1616As channels press the **MENU** button to cycle through the setting options until the following screen appears:
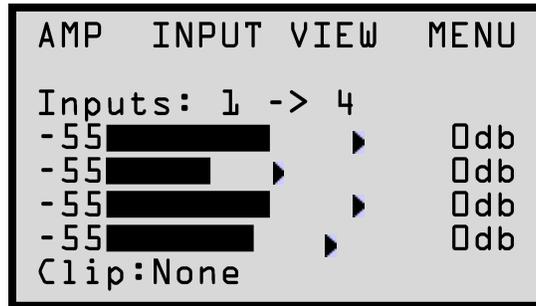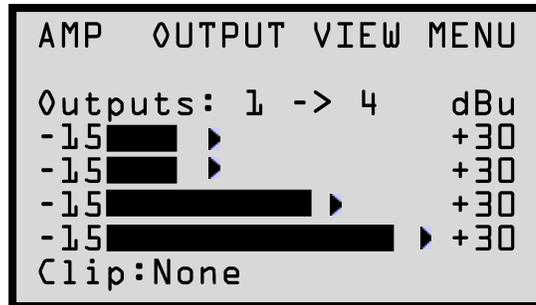
Figure 2-13
Input View Menu

```
AMP  INPUT VIEW  MENU

Inputs: 1 -> 4
-55██████████    ▶    0db
-55██████      ▶      0db
-55████████     ▶     0db
-55██████      ▶      0db
Clip:None
```

This menu selection displays four bar graphs which correspond to the input signal strength for each of the 16 channels. Press the **UP** and **DOWN** arrow buttons to see information for the next group of four channels. Press the **CHANNEL** button to move forward one channel at a time.

A clipping indicator is located in the bottom left of the screen. The indicator will show if any of the four currently displayed channels are clipping.

Output View Menu

For information relating to the amplified outputs for the S1616A press the **MENU** button to cycle through the setting options until the following screen appears:

Figure 2-14
Output View Menu

```
AMP  OUTPUT VIEW MENU

Outputs: 1 -> 4    dBu
-15████    ▶         +30
-15███    ▶          +30
-15███████████  ▶    +30
-15██████████████ ▶ +30
Clip:None
```

This menu selection displays four bar graphs which correspond to the output channel levels for each of the 16 channels. Press the **UP** and **DOWN** arrow buttons to see information for the next group of four channels. Press the **CHANNEL** button to move forward one channel at a time.

A clipping indicator is located in the bottom left of the screen. The indicator will show if any of the four currently displayed channels are clipping.

Utility Sub-Menu

The S1616A features a **Utility** sub-menu that is designed to provide easy access to the amplifier's operational functions.

Once the **Utility** sub-menu has been accessed by cycling through the **MAIN Menu** functions until you see "**UTILITY**" at the top of the display, use the **CHANNEL** button to cycle to the next sub-menu option. Pressing the **MENU** button will return the S1616A to the **MAIN Menu** options.

NOTE:

Whenever the LCD times out, the **Utility** menu will reset to display the **Operating Mode** screen first. However, if you navigate to **ANY OTHER** screen in the **Utility** menu by pressing the **Channel** button and then navigate through the **Main** menu by pressing the **Menu** button without an LCD timeout, the first **Utility** screen displayed will be the *previously selected* **Utility** menu screen.


The **Utility** sub-menu options will be discussed in detail on the following pages.

Utility Sub-Menu (Continued)

Operating Mode Menu

The initial screen shown in the **Utility Sub-Menu** is the **Operating Mode Menu**. Use the arrow **UP** or **Down** buttons to toggle between **Normal** and **ELAN** mode. If you have not allowed for an LCD time-out to reset the **Utility** sub-menu back to the **Operating Mode Menu** press the **CHANNEL** button to cycle through the **Utility** sub-menu options until you see the screen below.

Figure 2-15
Operating Mode Menu

```
AMP    UTILITY    MENU

Operating Mode:

ELAN MODE
```
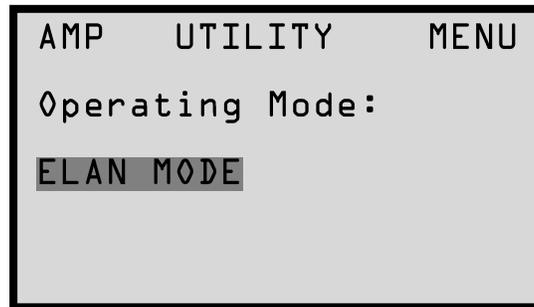
LCD Contrast

This menu adjusts the **Contrast** of the front panel **LCDs**. Once you have selected the **Utility sub-menu** by cycling through the **MAIN Menu** options using the **MENU** button, use the **CHANNEL** button to select the **LCD Contrast** menu. Use the **UP** and **DOWN** arrow buttons to adjust the contrast.

Figure 2-16
LCD Contrast Menu

```
AMP    UTILITY    MENU
       NORM MODE

LCD Contrast:

MIN▌▬▬▬▬▬▬           MAX
```
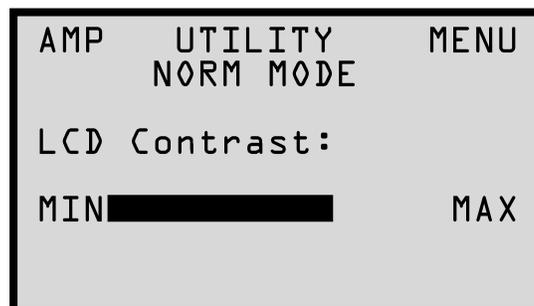
Utility Sub-Menu (Continued)

LCD Brightness

This menu adjusts the **Brightness** of the front panel **LCD**. Once you have selected the **Utility sub-menu** by cycling through the **MAIN Menu** options using the **MENU** button, use the **CHANNEL** button to select the **LCD Brightness** menu. Use the **UP** and **DOWN** arrow buttons to adjust the brightness.

Figure 2-17
LCD Brightness Menu

```
AMP    UTILITY    MENU
       NORM MODE

LCD Brightness:

MIN▮▮▮▮▮▮▮▮▮▮▮▮    MAX
```
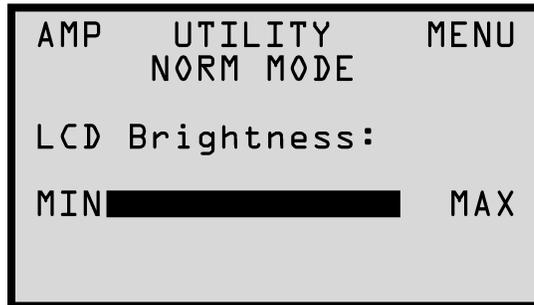
LCD Sleep Timer

This menu setting determines the amount of time that the front panel's graphical LCD display and backlight are active after a front panel button press.

The **factory default** setting is 1 minute.

Once you have selected the **Utility sub-menu** by cycling through the **MAIN Menu** options using the **MENU** button, use the **CHANNEL** button to select the **LCD Sleep Timer** menu. Use the **UP** and **DOWN** arrow buttons to adjust the timeout. The options are one minute, two minutes, five minutes, and disable.

Figure 2-18
LCD Sleep Timer Menu

```
AMP    UTILITY    MENU
       NORM MODE

LCD Sleep
Timer   :   1 MIN
```
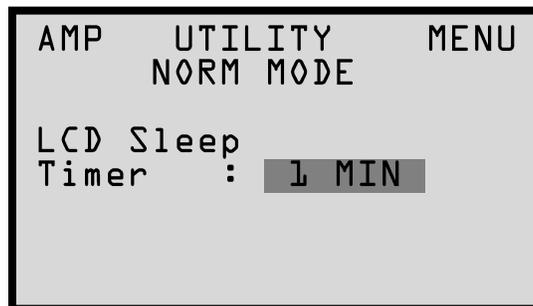
Utility Sub-Menu (Continued)

Bus A Input Menu

This menu setting determines if **BUS A** audio signal is routed from the **ANALOG** audio input for inputs **1** and **2** or is routed from **OPTICAL DIGITAL** audio input **A**.

Once you have selected the **Utility sub-menu** by cycling through the **MAIN Menu** options using the **MENU** button, use the **CHANNEL** button to select the **BUS A Input** menu. Use the **UP** and **DOWN** arrow buttons to select the desired input.

Figure 2-19
BUS A Input Menu

```
AMP    UTILITY     MENU
       NORM MODE

Inputs 1 & 2
BUS A:

Analog 1 & 2
```
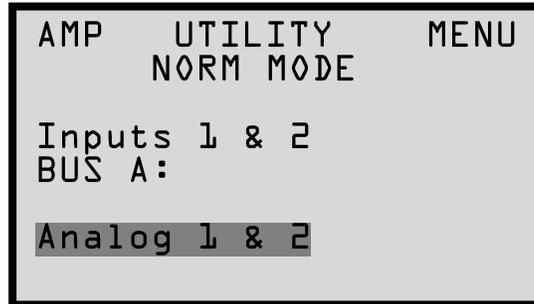
Bus B Input Menu

This menu setting determines if **BUS B** audio signal is routed from the **ANALOG** audio input for inputs **9** and **10** or is routed from **OPTICAL DIGITAL** audio input **B**.

Once you have selected the **Utility sub-menu** by cycling through the **MAIN Menu** options using the **MENU** button, use the **CHANNEL** button to select the **BUS B Input** menu. Use the **UP** and **DOWN** arrow buttons to select the desired input.

Figure 2-20
BUS B Input Menu

```
AMP    UTILITY     MENU
       NORM MODE

Inputs 9 & 10
BUS B:

Optical 2
```
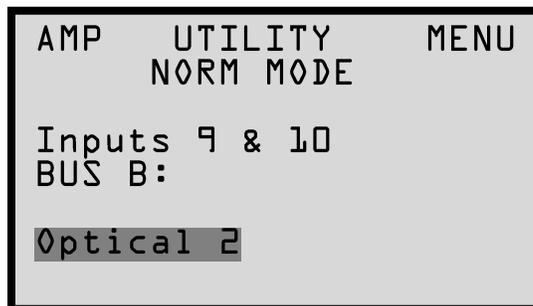
Utility Sub-Menu (Continued)

Power Saving Menu

The **Power Saving** mode uses Music Sense detection to determine if audio signals are present. If signals are not present, the enabled amplifier channels power **OFF**. When a source signal is detected the channels will power **ON**.

The factory default is **ALL ENABLED**.

When **ALL ENABLED** is selected, any channel will shut itself off after 5 minutes with no audio detected.

ALL ENABLED examples:

If a zone is turned off on an ELAN A/V Controller and the A/V Controller's triggers are not connected, the S1616A's channels will turn off after 5 minutes of not detecting audio.

If a zone is muted on the ELAN A/V Controller, the S1616A's channels will turn off after 5 minutes of not detecting audio.

The S1616A audio may drop out in **ALL ENABLED** mode if the audio being sent to it is at an extremely low level for five minutes.

(See Trigger information on pages 39-41.)

Once you have selected the **Utility sub-menu** by cycling through the **MAIN Menu** options using the **MENU** button, use the **CHANNEL** button to select the **POWER SAVING** menu. Use the **UP** and **DOWN** arrow buttons to select between **All Enabled** and **All Disabled**.

Figure 2-21
Power Saving Menu

```
AMP    UTILITY    MENU
       NORM MODE

Power Saving Mode:

 All Enabled
```
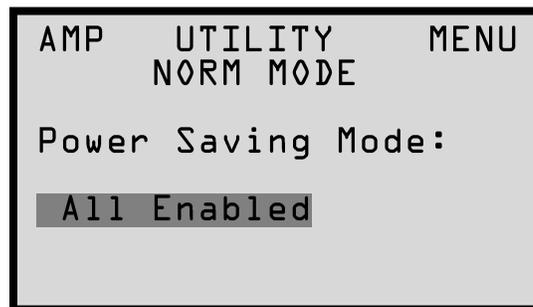
Utility Sub-Menu (Continued)

Firmware Version

This menu displays the current Firmware Version of the S1616A chassis. Once you have selected the **Utility sub-menu** by cycling through the **MAIN Menu** options using the **MENU** button, use the **CHANNEL** button to select the **Firmware Version** screen.
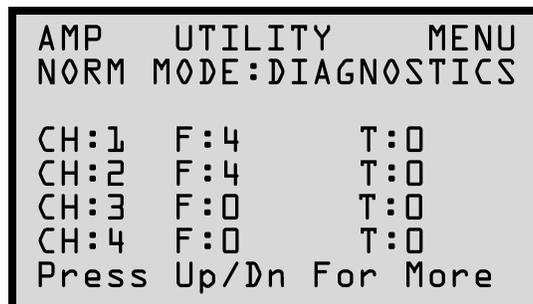
Figure 2-22
Firmware Version Screen

```
AMP    UTILITY    MENU
      NORM MODE

D16 Firmware
Version:1.0.0.4
D2Audio Firmware
Version:1.0.0.17
```
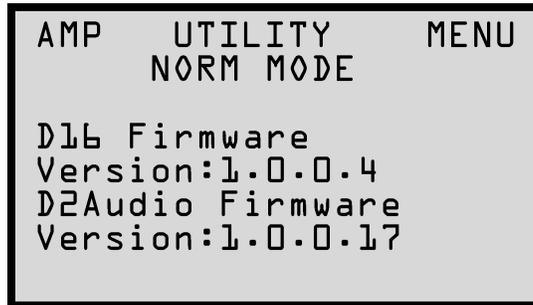
Diagnostics Menu

The Diagnostics menu provides easy access to current S1616A system status. Diagnostics information displayed on the S1616A's front panel include the number of times the unit has suffered fault conditions (**F**) and high temperatures (**T**) for each channel.

A Fault (**F**) problem occurs when a channel is shorted or the impedance drops below 4 ohms.

A Temperature (**T**) warning will occur when the temperature rises above 125C.

Once you have selected the **Utility sub-menu** by cycling through the **MAIN Menu** options using the **MENU** button, use the **CHANNEL** button to select the **Diagnostics** screen. Use the **UP** and **DOWN** arrow buttons to display additional channels.

Figure 2-23
Diagnostics Screen

```
AMP    UTILITY    MENU
NORM MODE:DIAGNOSTICS

CH:1   F:4      T:0
CH:2   F:4      T:0
CH:3   F:0      T:0
CH:4   F:0      T:0
Press Up/Dn For More
```

Utility Sub-Menu (Continued)

Ambient Temperature

This menu displays the current **AMBIENT TEMPERATURE** of the S1616A chassis as well as minimum and maximum temperatures that are logged in memory.

Once you have selected the **Utility sub-menu** by cycling through the **MAIN Menu** options using the **MENU** button, use the **CHANNEL** button to select the **Ambient Temperature** display. Use the **UP** and **DOWN** arrow buttons to select between Fahrenheit or Celsius displays.

Figure 2-24
Ambient Temperature Screen

```
AMP    UTILITY    MENU
       NORM MODE

Ambient  Temperature

Now is  93 ºF
Max was 95 ºF
Min was 91 ºF
```
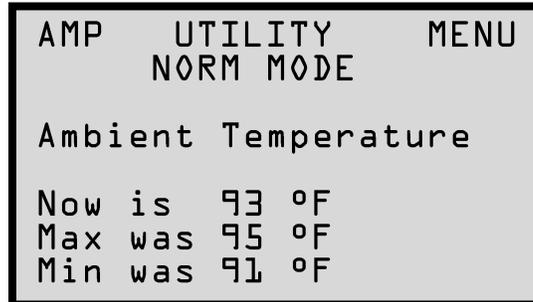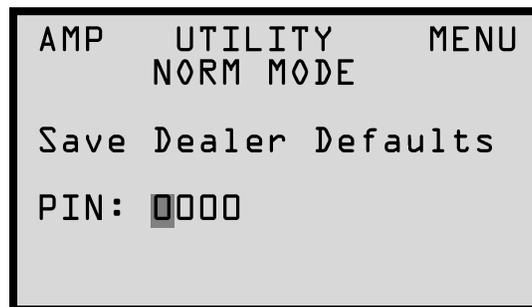
Save Dealer Defaults

A 4 digit code may be used to save all **Dealer Default** settings. This code is set to **3526** and cannot be changed.

Once you have selected the **Utility sub-menu** by cycling through the **MAIN Menu** options using the **MENU** button, use the **CHANNEL** button to select the **Save Dealer Defaults** menu.

Figure 2-25
Save Defaults Menu A

```
AMP    UTILITY    MENU
       NORM MODE

Save  Dealer  Defaults

PIN: ▉000
```

To save the current settings:

Press **UP** and **DOWN** buttons to change the digits to **3526**.

Press the **CHANNEL** button to cycle to the next digit.

Utility Sub-Menu (Continued)

Save Dealer Defaults (Continued)

Pressing the **CHANNEL** button when the fourth digit is highlighted will bring up the following screen:

Figure 2-26
Save Defaults Menu B

```
AMP    UTILITY    MENU
      NORM MODE

Save Dealer Defaults

PIN: 3526   NO SAVE

              SAVE
```
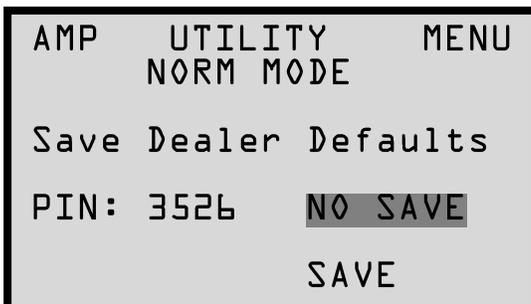
Press the **UP** and **DOWN** arrows to select **SAVE** or **NO SAVE.** If the correct code has been entered the S1616A will save the current settings. If an incorrect code has been entered the bottom line of the display will read, "**INVALID PIN, Retry**"

Restore Defaults

This menu allows the restoration of the amplifier's factory default settings as well as dealer programmed settings.

Once you have selected the **Utility sub-menu** by cycling through the **MAIN Menu** options using the **MENU** button, use the **CHANNEL** button to select the **Restore Defaults** menu.

Use the **UP** and **DOWN** buttons to change options. The options are **DO NOT RESTORE**, **FACTORY**, **DEALER** and **TRIGGER CONTROL.**

(For more information on Trigger Control see pages 39-41.)

Figure 2-27
Restore Defaults Menu A

```
AMP    UTILITY    MENU
      NORM MODE

Restore Defaults:

DEALER
```
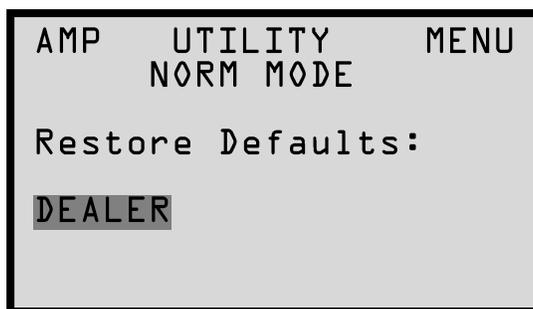
(Continued on next page)

Utility Sub-Menu (Continued)

Restore Defaults (Continued)

After selecting the restore type press the **CHANNEL** button to display the **CANCEL** and **RESTORE** options. Use the **UP** and **DOWN** buttons to select the desired option and press **CHANNEL** to commit the selection.

Figure 2-28
Restore Defaults Menu B

```
AMP    UTILITY    MENU
       NORM MODE

Restore Defaults:

FACTORY       CANCEL

              RESTORE
```
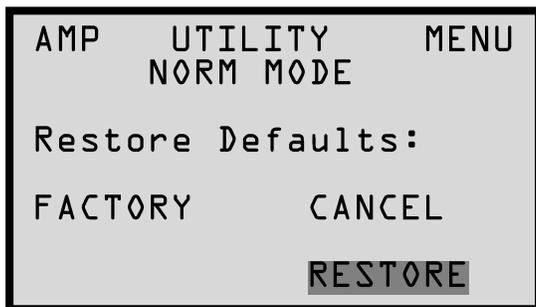
ELAN Mode

The **ELAN mode** menu items are the same except for the following additional menu items that are after **Output View**:

Absolute Max Volume, **Min Turn On Volume**, and **Max Turn On Volume**.

MAIN Menu Screens: Amplifier Status, Volume, Input Select, Lock, ACE, Input View, Output View, **Absolute Max Volume**, **Min Turn On Volume**, and **Max Turn On Volume** and Utility

The **Utility** mode menu items are the same except for the following additional menu items that are after **Operating Mode**:

Channel Range.

Utility Sub-Menu Screens: Operating Mode**, Channel Range**, LCD Contrast, LCD Brightness, LCD Sleep Timer, BUS Input A, BUS Input B, Power Saving Mode, Firmware Version, Diagnostics, Ambient Temperature, Save Dealer Defaults, and Restore Defaults.

Absolute Max Volume Menu

To set the upper gain limits for the S1616A press the **MENU** button to cycle through the setting options until the following screen appears:

Figure 2-29
Absolute Max Volume Menu

```
AMP   ELAN MODE  MENU
ABSOLUTE MAX VOLUME

Channel:15

Volume:100
```

Channel gain adjustments are performed by following the **Volume Menu** steps or by using **IR Commands**.

When **Absolute Max Volume** is set to less than 100%, the gain will not adjust higher than the set value.

(See Volume Menu on page 14.)

Use the **CHANNEL** button to select the desired channel and the **UP** and **DOWN** arrow buttons to increment and decrement the gain setting. Selecting **ALL** with the **CHANNEL** button applies settings to all 16 channels.

ELAN Mode (Continued)

Minimum Turn-On Volume Menu

To set the **Minimum Turn-On Volume** for the S1616A press the **MENU** button to cycle through the setting options until the following screen appears:

Figure 2-30
Minimum Turn-On Volume Menu
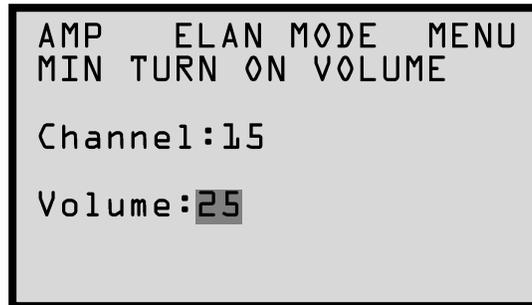
```
AMP   ELAN MODE  MENU
MIN TURN ON VOLUME

Channel:15

Volume:25
```

This will allow an **individual channel** or **All** channels to turn on to a specific or predetermined volume level if the volume level prior to turning the channel off is **lower** than this setting. This applies to IR controlled channels. It does not apply to trigger controlled channels.

Maximum Turn-On Volume Menu

To set the **Maximum Turn-On Volume** for the S1616A press the **MENU** button to cycle through the setting options until the following screen appears:

Figure 2-31
Maximum Turn-On Volume Menu

```
AMP   ELAN MODE  MENU
MAX TURN ON VOLUME

Channel:15

Volume:65
```

This will allow an **individual channel** or **All** channels to turn on to a specific or predetermined volume level if the volume level prior to turning the channel off is **higher** than this setting. This applies to IR controlled channels. It does not apply to trigger controlled channels.

Note: **Maximum Turn-On Volume** cannot be higher than the **Absolute Max Volume** level setting. (See page 31.)

Utility Sub-Menu Additions (In ELAN MODE)

Channel Range Menu

Once you have selected the **Utility sub-menu** by cycling through the **MAIN Menu** options using the **MENU** button, use the **CHANNEL** button to select the **Channel Range** menu.
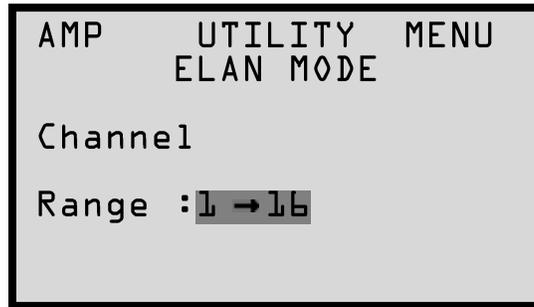
Figure 2-33
Channel Range Menu

```
AMP     UTILITY  MENU
        ELAN MODE

Channel

Range :1 →16
```

This menu sets the **IR Codes Commands** to be processed based on the channel numbers selected.

The **default** setting is **1-16**.

16 chassis can be used for a total of 256 channels.

S1616As can have the same channel range settings if you want the S1616As to respond to the same IR Commands.

Connections

The S1616A has many rear panel connections so it is important to label cables with their destination or source correctly.

Use high quality line level RCA connector type cables for source connections to ensure the lowest possible noise and best sound performance.

For most applications, use 16AWG 2 conductor speaker cable. For wiring runs longer than 80 ft., it is recommended to use 14AWG 2 conductor speaker cable. The S1616A's high quality, gold plated 5-way binding post will accommodate speaker cabling sizes up to 12AWG. Attaching banana plugs will enable the connection of larger cable sizes.

3.5mm mono interconnect cables may be used for amplifier / channel triggering.

Line Level Audio Inputs

Connect line level input audio by inserting RCA cable into the audio input connectors.

Figure 3-1 Line Level Direct Inputs
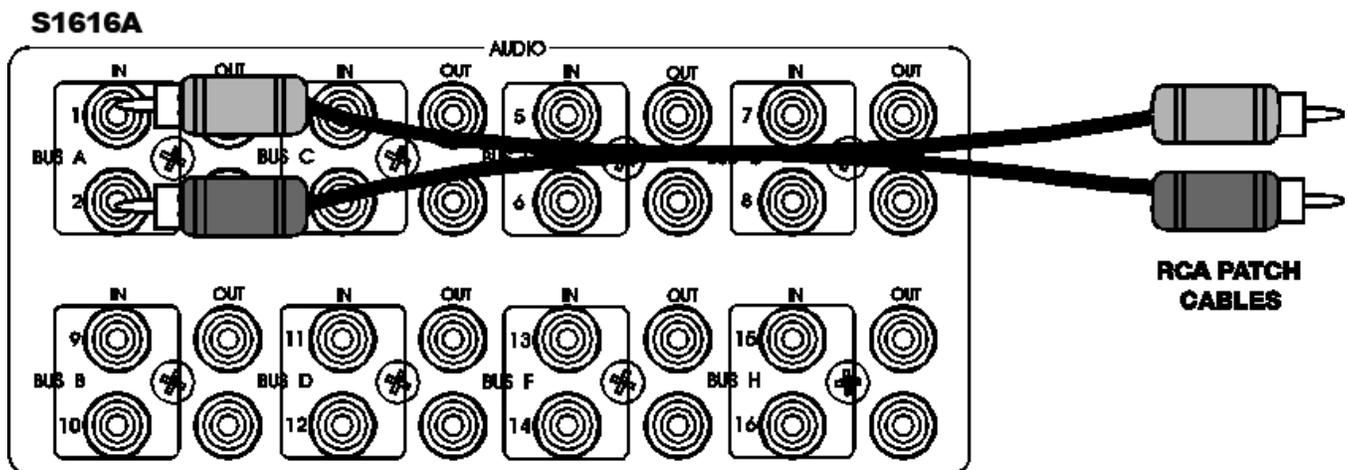
BUS Inputs

The S1616A BUS Inputs A and B enable custom configuration of listening areas. Large or irregular shaped rooms may be configured for both mono and stereo as coverage is needed. Hallways, passageways, bathrooms and laundry rooms are the most popular areas that can benefit from a mono BUS application. BUS Input application examples are shown in the Applications section of this manual.

Channels 1 and 2 analog inputs are used for the Bus A input channels and channels 9 and 10 analog inputs are used for the Bus B inputs.

The S1616A also features optical digital audio inputs for Bus A and Bus B.

(See Bus Input Menus on page 25.)
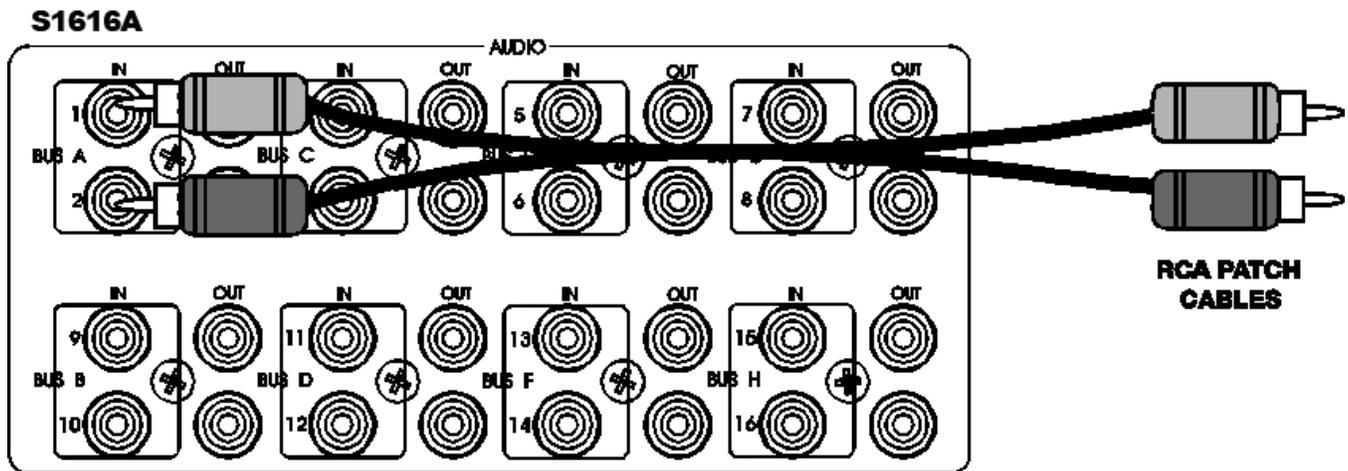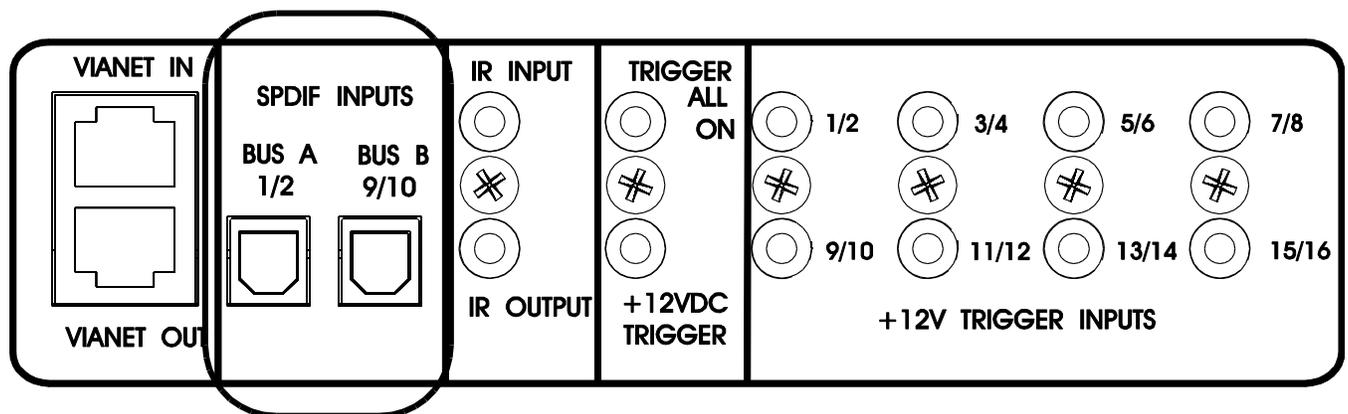
Figure 3-2 Analog Bus Inputs

*Figure 3-3 Optical Digital Bus Inputs*

BUS Outputs

BUS audio outputs enable connection of additional amplifiers to allow further system expansion. Audio input 1 is buffered and routed out the audio output 1 connector, input 2 to output 2 and so forth. There are eight Bus **Ins** and **Outs,** labeled **A** for channels 1 / 2, **B** for 3 / 4, **C** for 5 / 6, **D** for 7 / 8, **E** for 9 / 10, **F** for 11 / 12, **G** for 13 / 14, and **H** for 15 / 16.

Digital audio inputs do not "loop out" of the S1616A. If multiple amplifiers are to be used in Bus mode you should use the analog Bus inputs.

Figure 3-4 Analog Bus Outputs
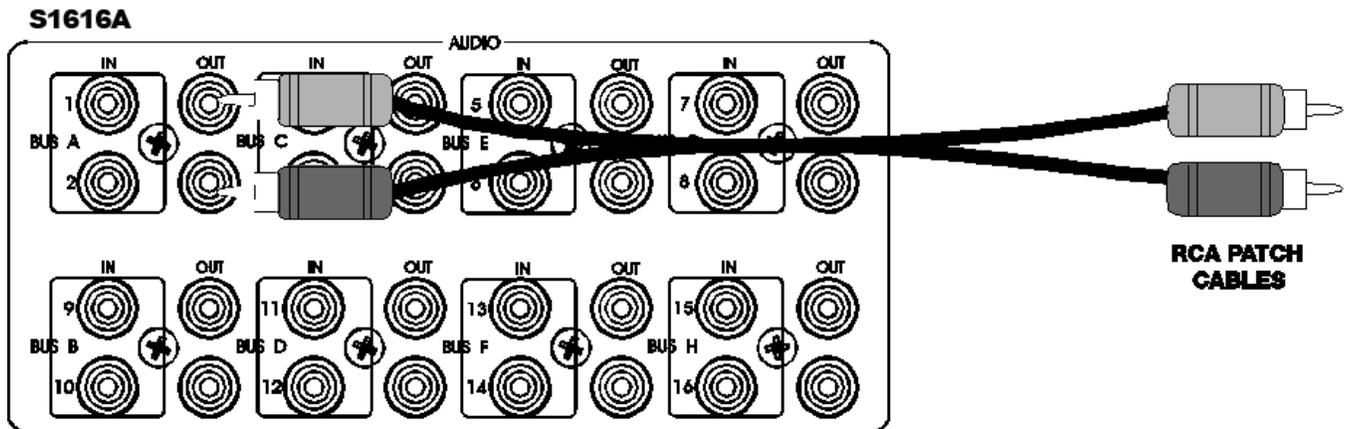
Speaker Binding Post

The S1616A is equipped with gold plated, 5-way speaker binding post. This will allow for five methods of speaker wire termination; bare wire, spade lug, pin, single banana and dual banana plug. Label all speaker wires with their destination to ensure easy configuration. To attach speaker wires use the following method:

1. Carefully split the speaker wire insulation at least two inches.

2. Strip 1/2 inch of the insulation from the speaker wire conductor exposing the bare wire.

3. Twist the wire strands of each conductor, if using banana plugs, attach wire to banana plug observing polarity.

4. If using banana plug; insert plug ends into binding post observing correct polarity. If using the bare wire method; loosen red and black binding post caps and insert the bare wire through the hole in the post. Tighten the knob until the wire is securely clamped.

CAUTION! Speaker Wire connections must be made with the amplifier OFF

Figure 3-5 Speaker Binding Posts
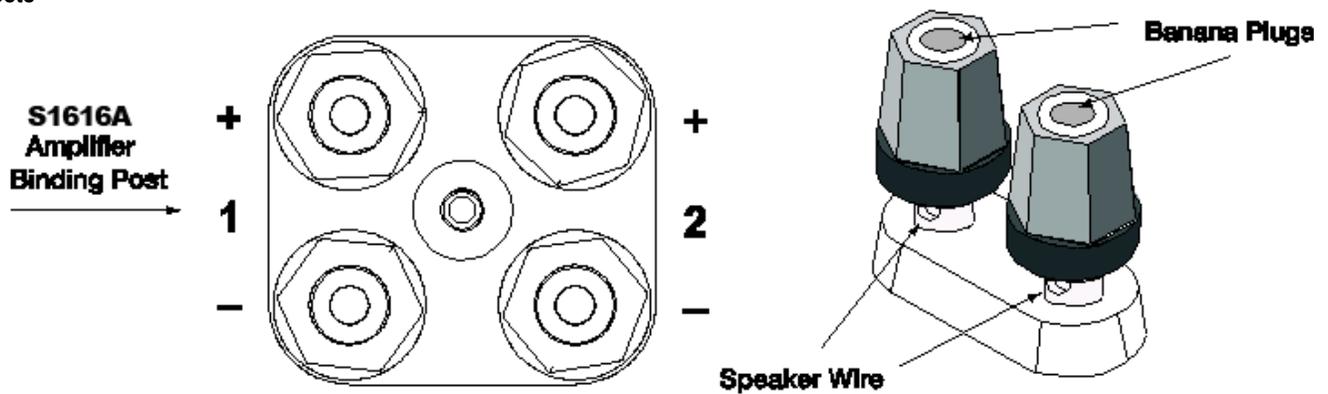
WARNING: Do not allow any strands of the bare speaker wire to touch the Amplifier Chassis or another Connector.

Triggers

+12V Trigger Inputs

A 3.5mm mono interconnect cable is used for the +12V Trigger Input connection. Each channel pair 1/2, 3/4, 5/6, 7/8, 9/10, 11/12, 13/14 and 15/16 have dedicated triggers. Trigger 1 is assigned to channel pair 1/2, trigger 2 is assigned to channel pair 3/4 and so forth.
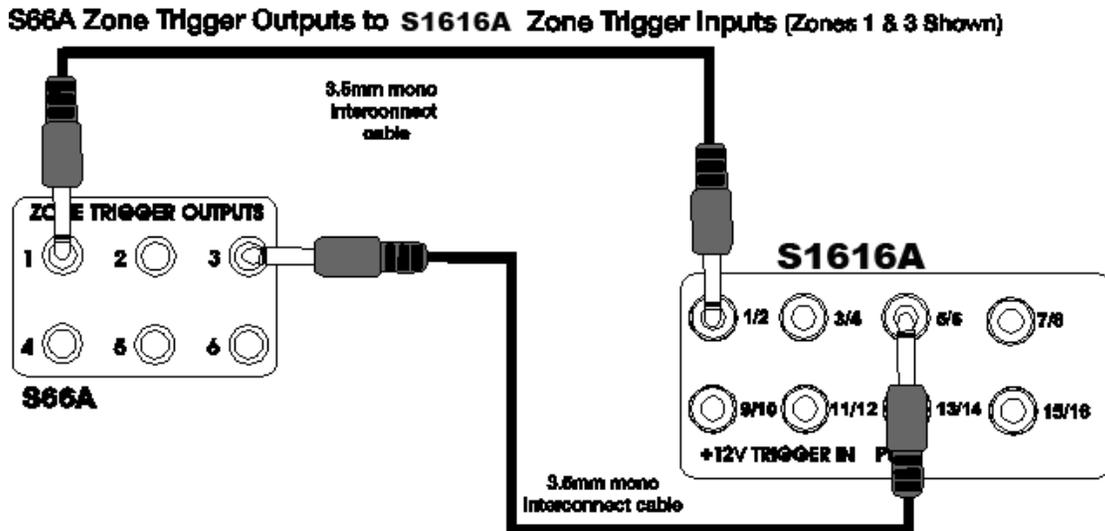
When the trigger is active the channel pairs turn on.

When the trigger is not active the channel pairs turn off.

If no cables are used, the triggers will be turned on by default.

(See note on triggers on page 41)

Figure 3-6 S1616A Zone Trigger Connections
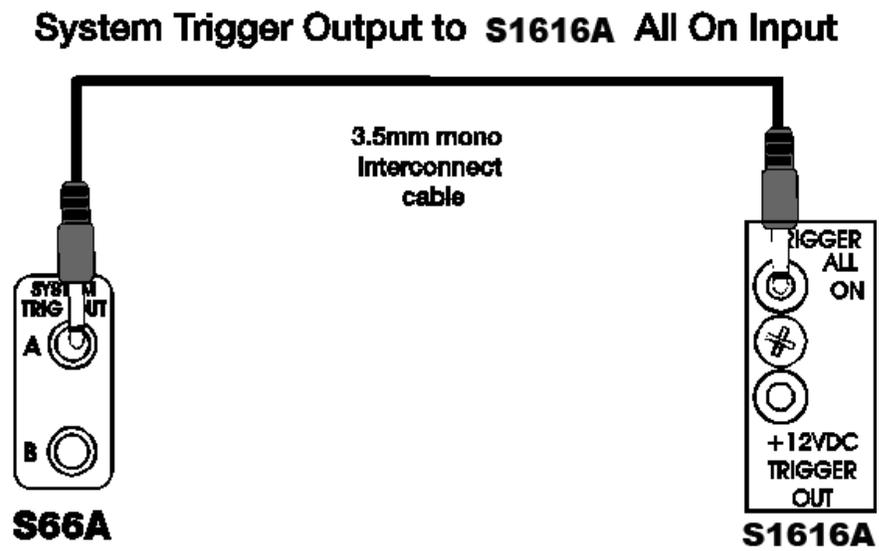
ALL ON Trigger Input

A 3.5mm mono interconnect cable is used for the **ALL ON** Trigger Input connection. This Turn-On Trigger activates **ALL** channels.

When the trigger is active all channels turn on.

When the trigger is not active all channels turn off.

(See note on triggers on page 41)

*Figure 3-7 S1616A All On Trigger Connections*

+12VDC Trigger Out

A +12VDC Output Trigger is located below the **ALL ON Trigger**. This allows daisy chained amplifiers to turn on and off.

This signal is active when any of the top or first amplifier channel(s) is active or "ON". When all amplifier channels are "OFF", the +12VDC trigger signal is removed or "OFF"

Figure 3-8
System Trigger Out
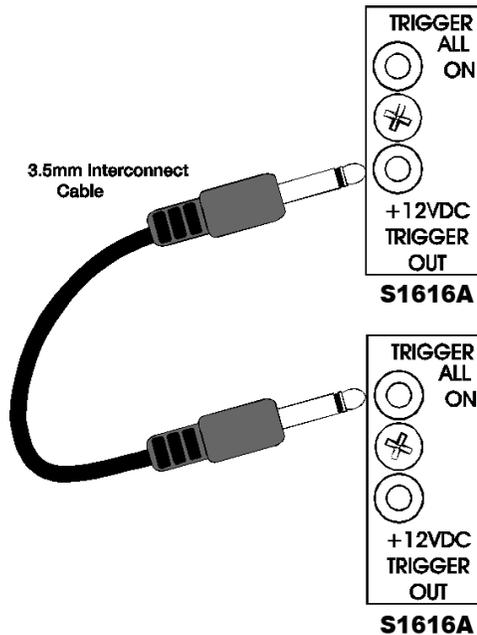
Special Note on Triggers

Once any channel receives any of the following commands, it will stop watching the trigger input jack related to the channel:

Mute, Unmute, Mute Toggle, Power ON, Power OFF, Power Toggle.

The only way to return a channel to watching the trigger input is to restore **Trigger Control** or restore **Factory Defaults**. Restoring **Dealer Defaults** *may* work, but it would depend on when the IR command was sent (before or after the Dealer Save).

Once a channel is controlled by IR, it will always AC power on to the OFF state. This is to prevent accidental music playing due to an AC power loss with an always on audio source. This is shown on the **Volume Menu** as **Trigger OFF**. When the channel is turned on with a **Power ON** command, it will display as **Trigger ON** with audio or **Trigger ON/PS** if there is no audio present and the **Power Save** is enabled. The **Power ON** command will restore the volume level using the **Min/Max Turn On Volume** parameters. When a channel is turned on by ending Mute, the volume is restored to the previous level, regardless of the preset Min/Max Turn On parameters.

(See pages 14, 26, 29, 30, and 32 for additional information.)

IR LOOP INPUT/OUTPUT Connections

The 3.5mm mono IR Loop is located beside the **ALL ON** trigger. This loop allows IR commands to be sent to each S1616A amplifier that is connected. Before the amplifier will respond to IR Commands, the S1616A amplifier must be set to **ELAN Mode**.

(See Operating Mode Menu on page 23.)

Figure 3-9 IR Loop Input / Output
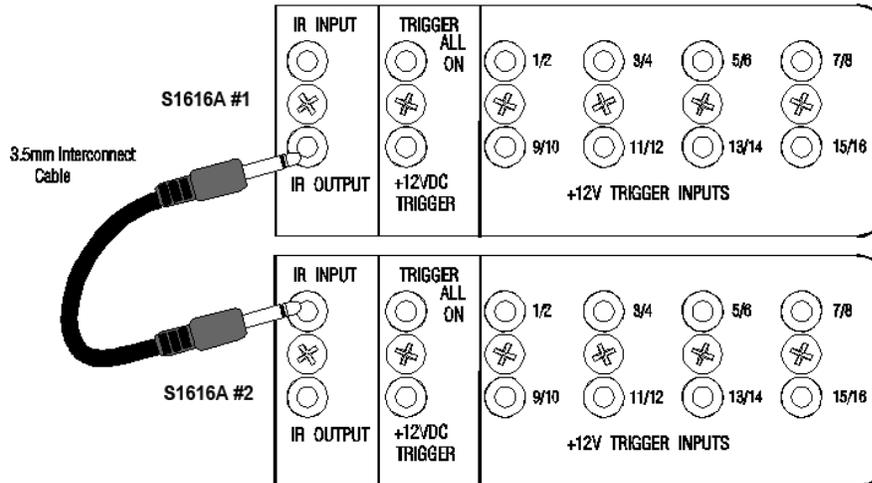
USB Connector

Used to update and configure the S1616A firmware.

Note: A Standard USB-A to USB-Mini-B cable must be utilized for firmware updates and is not included with the S1616A.
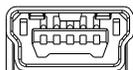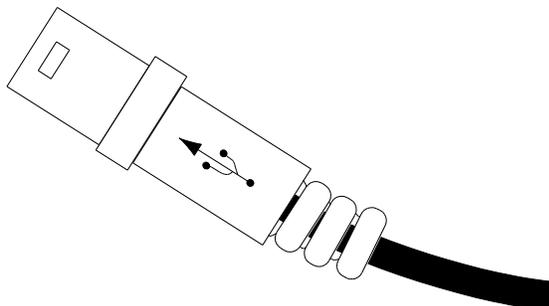
Figure 3-11
Mini-USB Port

AC Power Connector

A removable IEC compatible AC Power cord is included for connecting the AC Power Connector to 120VAC power.

**120V $\sim$ 50/60 Hz
1300W**
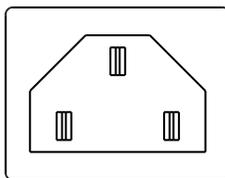
Figure 3-12
AC Power Connection

T12.5 AL
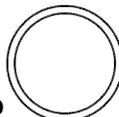
**REPLACE WITH
SAME TYPE AND
RATING ONLY.**

Applications

Stereo Input with Stereo Output

Standard application

Prerequisites: **Factory Default** the amp and set to **NORMAL Mode**.

See: Restore Defaults on page 29, Operating Mode Menu on page 23

This example displays a basic stereo setup. Stereo from a source device is connected to audio inputs 1 and 2. Audio input 1 is routed to output channel 1 and audio input 2 is routed to output channel 2.

Volume is adjusted by an **ELAN A/V Controller** or by another **Audio Device**.

Figure 4-1 Stereo Connections
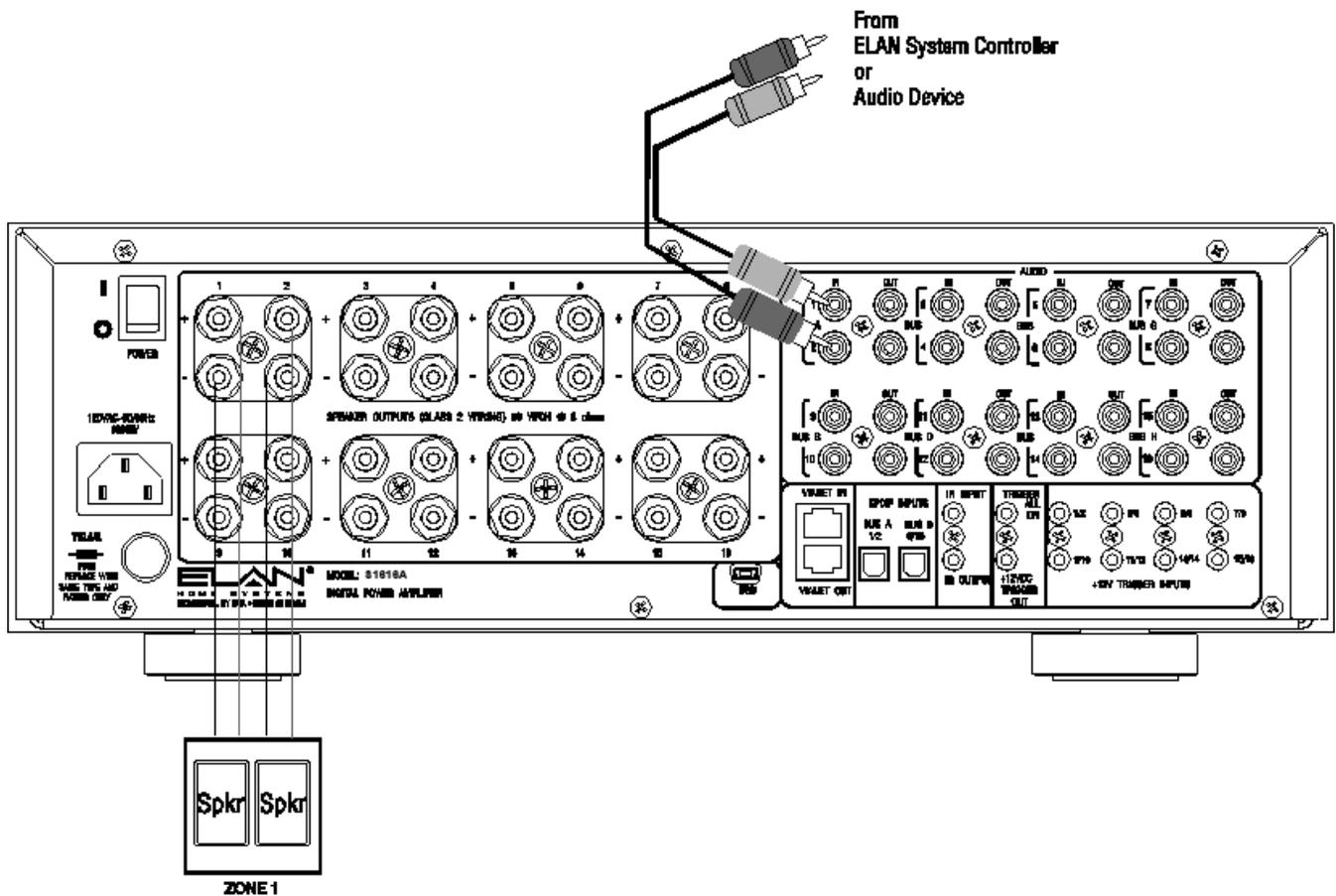
ELAN Special Application - IR Control

Prerequisites: Factory Default the amp and set to **ELAN Mode**.

Channel Range: Set to 1 to 16.

Connect IR input.

See:

Restore Defaults on page 29, Operating Mode Menu on page 23

Channel Range on page 34

Link / Unlink commands in Appendix A: IR Command Set

With the IR input connected you can control the S1616A's volume output directly.

Instead of sending ELAN zone volume commands to the ELAN A/V Controller, send S1616A's Channel 1 Volume Up/Down or Channel 2 Volume Up/Down IR Commands to the S1616A.

ELAN Special Application - IR Control (additional chassis)

Prerequisites: Factory Default the S1616As and set to **ELAN Mode**.

Channel Range: Set chassis one to 1-16 and chassis two to 17 – 32.

Connect **IR Loop** between the chassis.

Instead of sending ELAN zone volume commands to the ELAN A/V Controller, send S1616A's Channel 17 Volume Up/Down or Channel 18 Volume Up/Down IR Commands to the S1616A.

Since Channel Range is set to 17 - 32, you must control the channel's volume using different commands. When a S1616A Channel Range is set to 17 - 32, the S1616A is the second chassis in a two S1616A chassis system.

Multiple Stereo Inputs

This example shows different audio sources connected to each audio input.

With Channel Range set to Channel All Direct, Audio Input 1 is routed to Channel 1; Audio Input 2 is routed to Channel 2, etc...and Audio Input 16 is routed to Channel 16.

Prerequisites: **Factory Default** the amp and set to **ELAN** or **Normal Mode**

Channel Range: Set to 1 to 16

Input Select Menu: Channel Direct

See:

Restore Defaults on page 29, Operating Mode Menu on page 23

Input Select Menu on page 17

Figure 4-2 Multiple Stereo Inputs
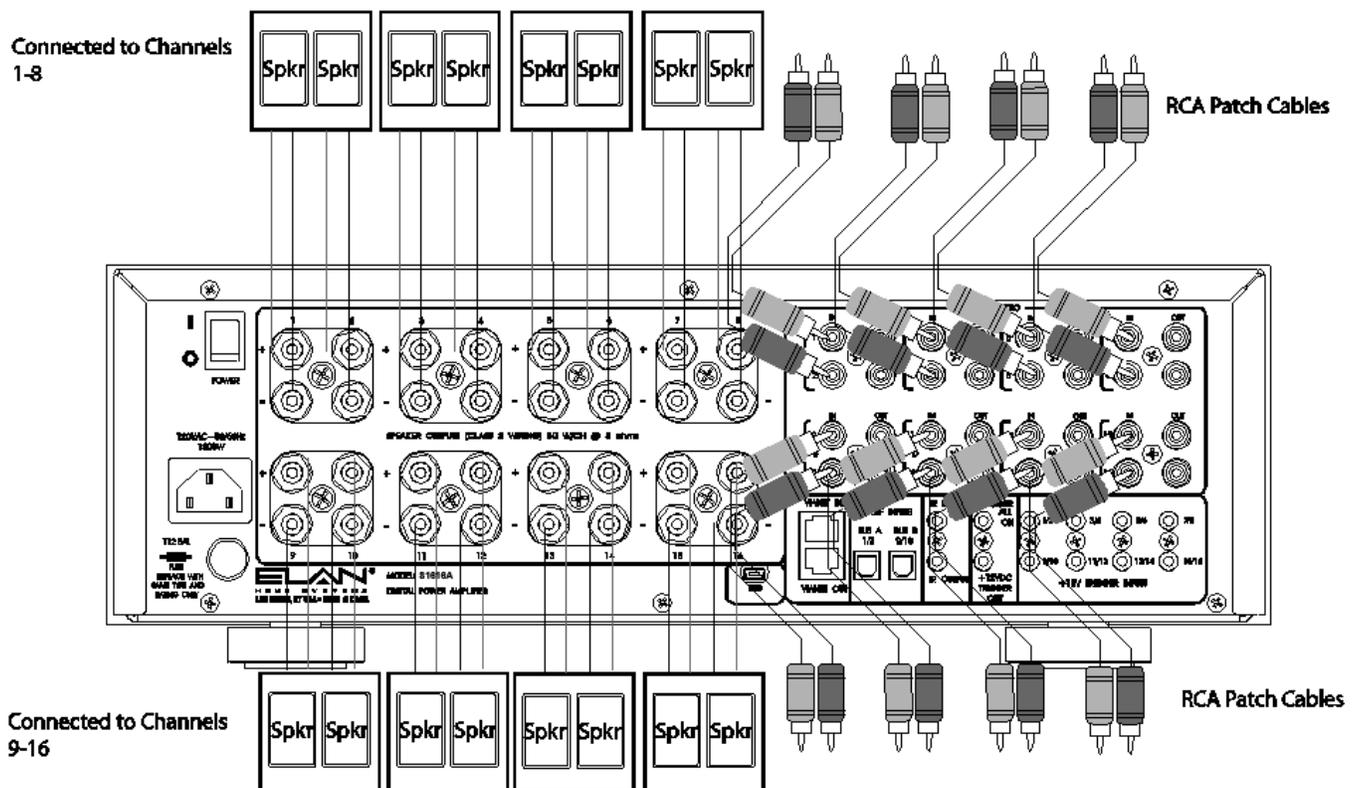
Single Stereo Input with Stereo and Mono Output

ELAN Special Application

Prerequisites: **Factory Default** the amp and set to **ELAN** or **Normal Mode**

Input Select Menu: Channel 3 with Input set to 1 + 2 Mono Bus A

See:

Restore Defaults on page 29, Operating Mode Menu on page 23

Input Select Menu on page 17

With the Input Select Menu set to the above settings, the S1616A sums audio input 1 and 2 (Mono) and routes it to channel 3. This eliminates the need to use a "Y" cable.

Volume is adjusted by the ELAN A/V Controller or by the other Audio Device. Increasing or decreasing the volume increases stereo channels 1 and 2 and mono channel 3.

Figure 4-3 Stereo/Mono Using S1616A
Settings
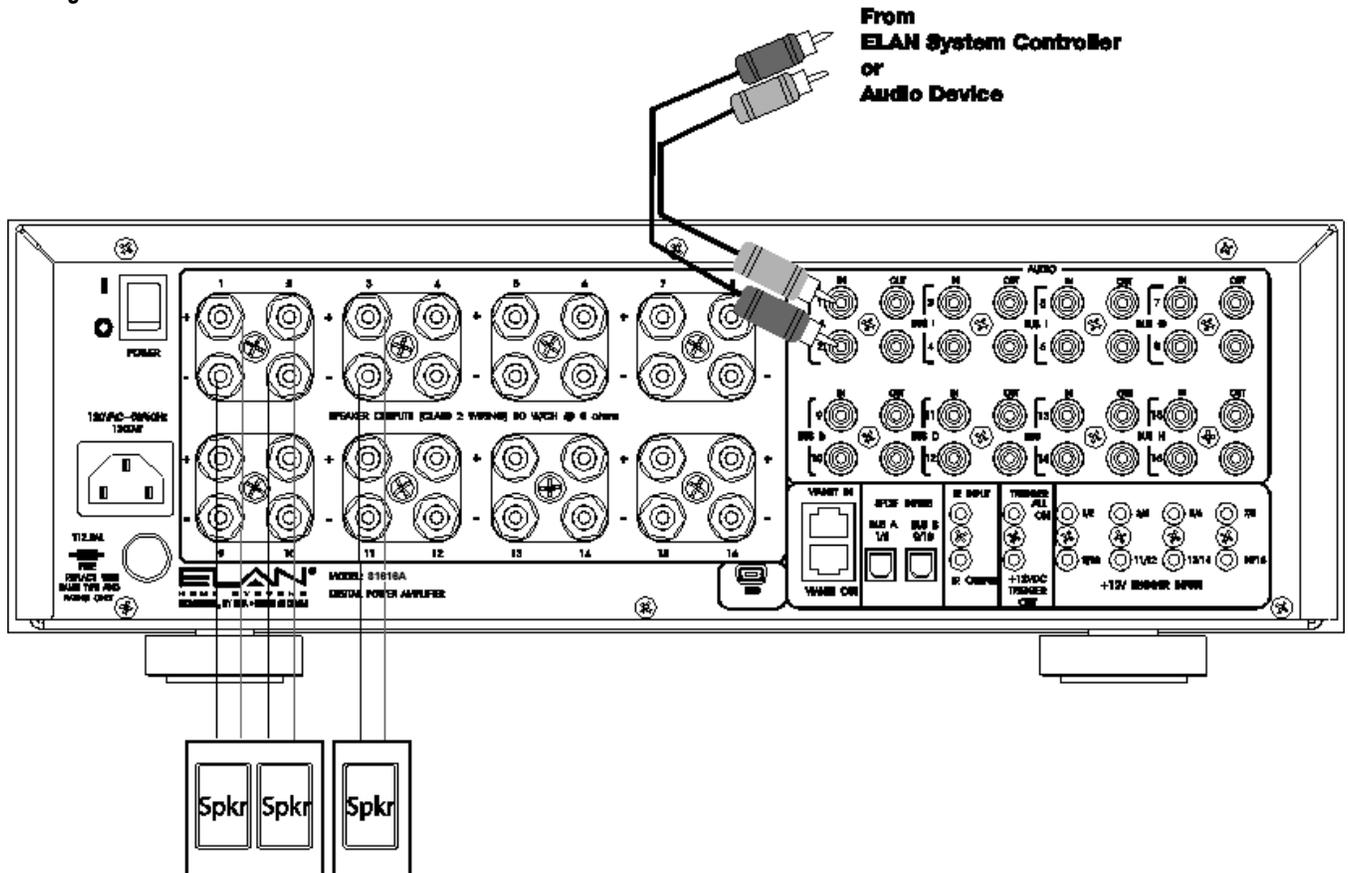
Multiple Bus Inputs with Stereo and Mono Outputs

ELAN Special Application

Scenario: Zone one has four stereo speaker pairs, zone two has two stereo pairs and two summed mono speakers, zones three and four have a single summed mono speaker each.

Prerequisites: **Factory Default** the amp and set to **ELAN** or **Normal Mode.**

Input Select Menu:

Zone 1 - Channels 1, 3, 5, 7 - Set Inputs to 1 Bus A

Zone 1 - Channels 2, 4, 6, 8 - Set Inputs to 2 Bus A

Zone 2 - Channels 9, 11 - Set Inputs to 9 Bus B

Zone 2 - Channels 10, 12 - Set Input to 10 Bus B

Zone 2 - Channel 13 - Set Input to 9+10 Mono Bus B

Zone 2 - Channel 14 - Set Input to 9+10 Mono Bus B

Zone 3 - Channel 15 - Set Input to 13+14 Mono Bus F

Zone 4 - Channel 16 - Set Input to 15+16 Mono Bus H

See:

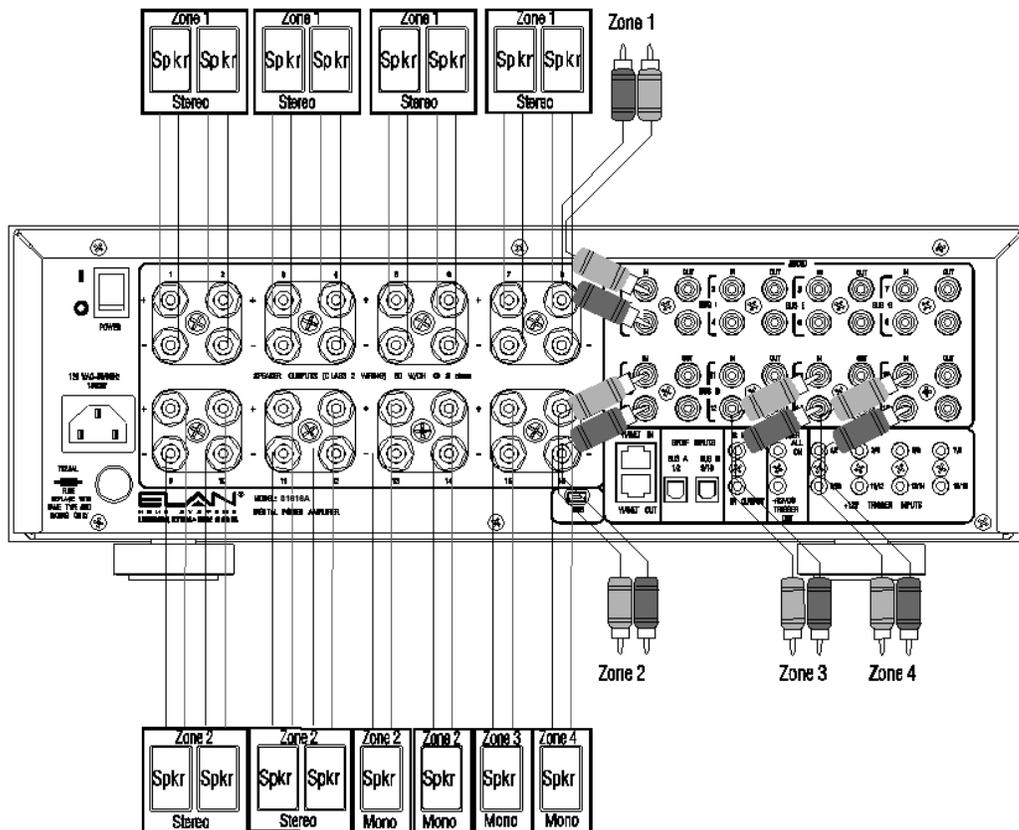**Restore Defaults on page 29, Operating Mode Menu on page 23**

Channel Range Menu on page 34, Input Select Menu on page 17

Also see Analog / Digital Bus Input information on page 25

Volume is adjusted by the ELAN A/V Controller.

(Wiring example on next page.)

Figure 4-4 Multiple Bus Inputs with Stereo and Mono Outputs

Stand-Alone Stereo Bussing with Multiple Chassis

Prerequisites First S1616A Chassis: **Factory Default** the amp and set to **ELAN Mode**.

Channel Range: Set to 1 to 16

Input Select Menu: Channel **All ODD** with Input set to 1 Bus A

Channel **All Even** with Input set to 2 Bus A

Prerequisites Second S1616A Chassis: **Factory Default** the amp and set to **ELAN Mode**.

Channel Range: Set to 17 to 32

Input Select Menu:

Channel **All ODD** with Input set to 1 Bus A

Channel **All Even** with Input set to 2 Bus A

See:

Restore Defaults on page 29, Operating Mode Menu on page 23
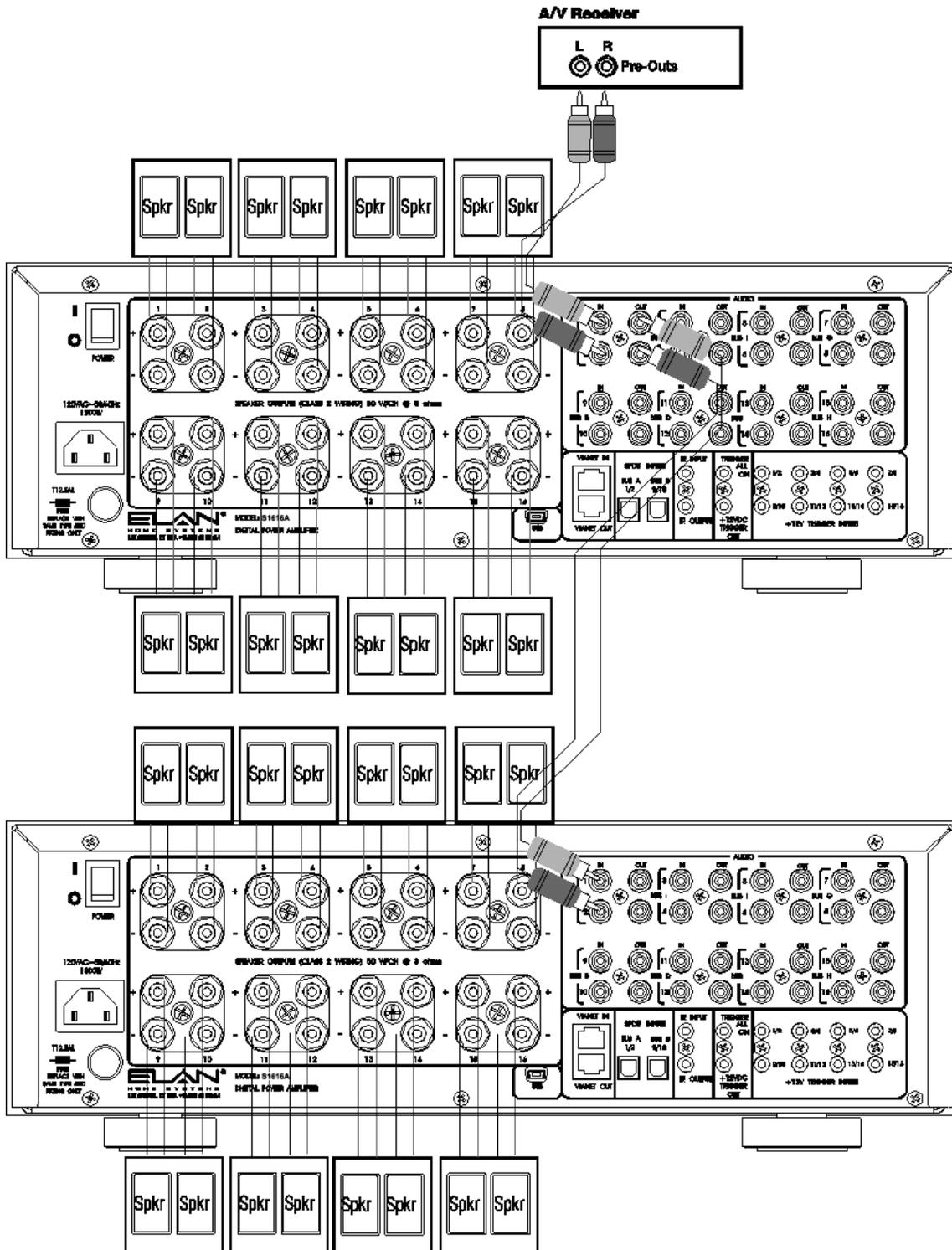
Channel Range Menu on page 34,

Input Select Menu on page 17

Appendix A: IR Command Set

This example shows the preamp output of an A/V Receiver being distributed in a wide-area application, such as a great room. Speakers for both chassis are stereo for up to 32 pairs of speakers.

(Wiring example on next page.)

Figure 4-5 Multi-Chassis Bussing

Troubleshooting

General

Symptom	Possible Cause	Solution
Amplifier will not power up.	1. Power switch is OFF 2. Circuit breaker tripped	1. Turn switch ON. Switch is on the back of the unit. 2. Set circuit breaker. The S1616A draws 12 amps of AC current. Ensure that combined current draw of all devices on circuit does not exceed the circuit's capacity.
Menus do not appear as shown in manual.	1. Wrong Firmware	1. Load correct S1616A Amplifier Mode firmware.

Audio

Symptom	Possible Cause	Solution
No audio out on one or more channels.	View **Diagnostics Menu on page 27** 1. Loose/bad speaker cable connection 2. Break/short in speaker cable 3. Speaker is defective 4. RCA patch cable defective 5. Source not sending audio 6. Amplifier is overheating due to inadequate ventilation or prolonged operation at clipping levels. 7. "Trigger OFF" command has been sent to channel.	1. Check cable ends at binding posts and speaker terminals. 2. Check continuity of each speaker cable using multi-meter. If short or open is indicated, check wiring for proper connections. 3. Swap with known good speaker. 4. Swap with known good patch cable. 5. Verify source is powered up and playing. Check any tape monitor settings on A/V Receiver. 6. (a) Turn the amplifier off and allow the internal circuits to cool. (b) Ensure that the amplifier has proper ventilation. Add cooling fan if necessary. (c) Lower the volume level controls for that channel pair. 7. Restore **Trigger Control defaults (See Restore Defaults on page 29.)**

Audio (Continued)

Symptom	Possible Cause	Solution
Audio hum	1. Ground potential difference between source components (ground loop)	1. (a) Test AC outlet using ground tester. (b) Reverse the AC plug of components with non-polarized ends plugged into the same outlet strip as amp.
	2. Faulty/damaged cables	2. Check source equipment cables for damage and faulty connections.
	3. Faulty wiring	3. (a) Make sure volume controls are not hooked up backwards. (b) Check for shorts in wiring (see item 2 in "No audio…").
Distorted audio at normal volume levels	1. Input gain set too high	1. Reduce gain to the channel in question.
	2. Defective/incompatible speaker	2. (a) Check for physical damage to speaker. (b) Ensure speakers have appropriate power rating for amplifier. (c) Ensure speakers have at least 4 Ohm impedance. This amp is compatible with speakers with 4-8 Ohm impedance or greater.
	3. Volume control wired incorrectly.	3. Check for proper input/output connections at volume control. Verify that the input comes from amplifier and the output goes to speakers.
	4. Volume control Impedance Match settings incorrect.	4. Verify/correct Impedance Match settings.
Audio is unclear, bass response low	Speakers are out of phase	Verify that **+** of amplifier goes to **+** of speaker and **-** of amplifier goes to **-** of speaker on ALL speaker leads.

Audio (Continued)

Symptom	Possible Cause	Solution
Incorrect source playing on speakers	1. Source connected to wrong input of amplifier or A/V Controller. 2. Speakers connected to incorrect speaker outputs. 3. Incorrect input selected for channel.	1. Verify/correct input connections. 2. Verify/correct speaker connections. 3. Verify **Input Select Menu** settings.
Volume level/gain cannot be increased	1. ACE Limiter engaged 2. **AVR** (Automatic Volume Reduction) is engaged. 3. Gain increase would exceed the **ABSOLUTE MAX VOLUME** setting.	1. Check **Volume Menu** for **ACE** indication, if indicated, check and verify procedures as listed in "Distorted Audio at Normal Volume Levels." 2. Check **Volume Menu** for **AVR** indication, check **Ambient Temperature Menu** for possible overheating. Check and verify proper ventilation. If well ventilated follow the steps for "Distorted Audio at Normal Volume Levels." 3. Adjust setting on the **ABSOLUTE MAX VOLUME Menu**. **(See page 31)**
First notes of audio track missing	**Power Save** enabled	Disable **Power Save. (See Power Saving Menu on page 26)**

Audio (Continued)

Symptom	Possible Cause	Solution
Low output volume	1. Gain set too low on amplifier channel 2. AVR engaged due to: a) low impedance b) channel has reached max power peak c) channel has reached max sustained power d) entire chassis at max power output e) max amp IC temperature reached f) max Ambient temperature reached g) high input AC voltage with high output demand	1. Adjust gain 2. a) check for low impedance or faulty wiring b) adjust individual channel gain c) lower output from A/V Controller d) adjust gain settings on all channels e)increase ventilation f) increase ventilation g) spread high output loads (example: outdoor speakers) across multiple amplifiers in multi amp installs.

IR Control

Symptom	Possible Cause	Solution
IR Icon does NOT flash when a button is pressed.	1. IR controller not programmed or programmed with a non-ELAN command. 2. S1616A not set to ELAN Mode 3. IR signal path wiring bad.	1. Program IR controller or correct programming. 2. Set S1616A to **ELAN Mode**. **(See page 23)** 3. Verify IR signal path wiring. Check keypads, IR sensors, IR distribution blocks, S1616A IR Input jack, IR emitters, etc.
No control of channel from IR controller. IR Icon DOES flash when a button is pressed.	1. Incorrect IR commands programmed (not D16 commands). 2. Incorrect **channel** commands. 3. Channel **range** set incorrectly.	1. Verify/correct IR programming. 2. Verify/correct IR programming. 3. Change settings on the **Channel Range Menu**. **(See page 34)**
Intermittent control from IR controller.	IR flooding.	Connect a "talk-back" emitter to the IR out of the S1616A. Glowing or flickering when no commands are being sent indicates IR flooding. Possible sources: ambient light or plasma / LCD TV flooding.
Incorrect channel and/or chassis selected.	Incorrect S1616A IR commands programmed.	Verify/correct IR programming.

Appendix A: IR Command Set

The S1616A IR code set includes 16 **ALL Channel** commands as well as six **Scene** commands. Additionally, each of the 256 possible individual channels has its own group of 16 commands.

ALL Channel Commands	
Stereo In 1_1	Switches each output to its direct input.
Mono In 2_1	Switches each output to its "summed-mono" input. Outputs 1 & 2 are the "summed" signal of inputs 1 & 2, outputs 3 & 4 are the "summed" signal of inputs 3 & 4, etc.
Stereo Bus A In	Switches all **ODD** outputs to the BUS A "left" input and all **EVEN** outputs to the BUS A "right" input.
Mono Bus A In	Switches each output to the "summed" left and right inputs of Bus A.
Stereo Bus B In	Switches all **ODD** outputs to the BUS B "left" input and all **EVEN** outputs to the BUS B "right" input.
Mono Bus B In	Switches each output to the "summed" left and right inputs of Bus B.
Volume Down	Decrements the volume of all outputs.
Volume Up	Increments the volume of all outputs.
Unmute	Unmutes all outputs.
Mute	Mutes all outputs.
Mute Toggle	Toggles all outputs between "mute" and "unmated."
Power Off	Switches all outputs off.
Power On	Switches all outputs on and checks level for min/max turn on values.
Power Toggle	Toggles all outputs between "on" and "off."
Link	Links **stereo pairs** (i.e.: 1 & 2, 3 & 4, 5 & 6, etc.) Allows channel pairs to be controlled together. **Example**: Channels 1 & 2 are being used for a stereo zone; the Link command will force all IR commands for either channel 1 or channel 2 to affect both channels. This holds true for all stereo pairs, (3/4, 5/6, 7/8, etc.)
Unlink	Unlinks **stereo pairs** (i.e.: 1 & 2, 3 & 4, 5 & 6, etc.) Allows channel pairs to be controlled individually.

Appendix A: IR Command Set (Continued)

| Scene Commands	
Scene Save A	Saves a preset volume configuration or "scene."
Scene Restore A	Restores preset volume configuration "A."
Scene Save B	Saves a preset volume configuration or "scene."
Scene Restore B	Restores preset volume configuration "B."
Scene Save C	Saves a preset volume configuration or "scene."
Scene Restore C	Restores preset volume configuration "C."

Individual Channel Commands	
Stereo In 1_1	Switches the selected output to its direct input.
Mono In 2_1	Switches the selected output to its "summed-mono" input. Outputs 1 & 2 are the "summed" signal of inputs 1 & 2, outputs 3 & 4 are the "summed" signal of inputs 3 & 4, etc.
Stereo Bus A In	Switches the selected output to the BUS A input. **ODD** numbered channels select input 1 and **EVEN** numbered channels select input 2.
Mono Bus A In	Switches the selected output to the "summed" left and right inputs of Bus A.
Stereo Bus B In	Switches the selected output to the BUS B input. **ODD** numbered channels select input 9 and **EVEN** numbered channels select input 10.
Mono Bus B In	Switches the selected output to the "summed" left and right inputs of Bus B.
Volume Down	Decrements the volume of the selected output.
Volume Up	Increments the volume the selected output.
Unmute	Unmutes the selected output.
Mute	Mutes the selected output.
Mute Toggle	Toggles the selected output between "mute" and "unmated."
Power Off	Switches the selected output off.
Power On	Switches the selected output on and checks level for min/max turn on values.
Power Toggle	Toggles the selected output between "on" and "off."
Link	Links **stereo pairs** (i.e.: 1 & 2, 3 & 4, 5 & 6, etc.) Allows channel pairs to be controlled together. **Example**: Channels 3 & 4 are being used for a stereo zone; the Link command will force all IR commands for either channel 3 or channel 4 to affect both channels.
Unlink	Unlinks **stereo pairs** (i.e.: 1 & 2, 3 & 4, 5 & 6, etc.) Allows channel pairs to be controlled individually.

Appendix B: Rack Mounting

When mounting the S1616A in an equipment rack, use the included Rack Mount Brackets for secure mounting and proper ventilation. The S1616A requires three rack spaces.

1. Attach the rack mount bracket onto the S1616A chassis from the front as shown in *Figure A-1*.

Figure B-1
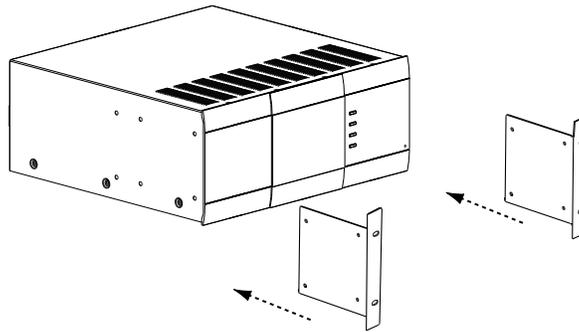
2. Ensure that the brackets are flush with the front of the unit. Install each of the eight screws (included) through the side mounting flanges into the holes in the sides of the unit as shown in *Figure A-2*. Hand tighten screws! Over-tightening could cause damage to the S1616A chassis.

Figure B-2
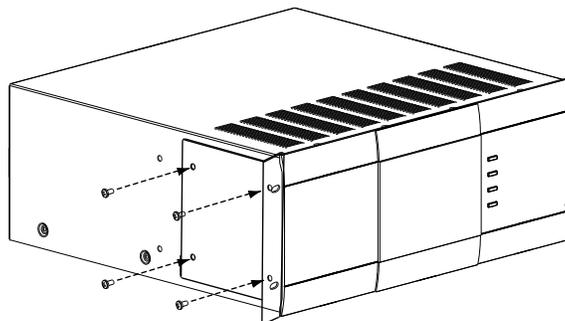
3. 3. Once the brackets are securely mounted, install the entire assembly into a standard 19" equipment rack from the front using four rack screws (not included). Three rack spaces will be used.
See *Figure A-3*.

Figure B-3
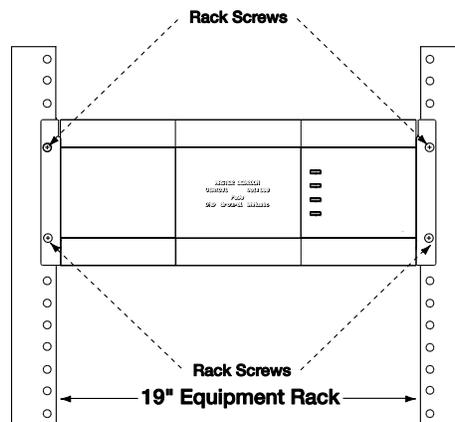
Limited Warranty

ELAN HOME SYSTEMS L.L.C. ("ELAN") warrants the S1616A Multi-Zone Controller Amplifier to be free from defects in materials and workmanship for the period of two years (2 years) from date of purchase. If within the applicable warranty period above purchaser discovers that such item was not as warranted above and promptly notifies ELAN in writing, ELAN shall repair or replace the item at the company's option. This warranty shall not apply (a) to equipment not manufactured by ELAN, (b) to equipment which shall have been installed by other than an ELAN authorized installer, (c) to installed equipment which is not installed to ELAN's specifications, (d) to equipment which shall have been repaired or altered by others than ELAN, (e) to equipment which shall have been subjected to negligence, accident, or damage by circumstances beyond ELAN's control, including, but not limited to, lightning, flood, electrical surge, tornado, earthquake, or other catastrophic events beyond ELAN's control, or to improper operation, maintenance or storage, or to other than normal use of service. With respect to equipment sold by, but not manufactured by ELAN, the warranty obligations of ELAN shall in all respects conform to the warranty actually extended to ELAN by its supplier. The foregoing warranties do not cover reimbursement for labor, transportation, removal, installation or other expenses which may be incurred in connection with repair or replacement.

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S1616A Amplifier Mode Manual Rev A.