



Installation Manual

*Digital Whole Home Audio
Distribution System*



Music that can live anywhere

Easy to operate. Enjoy music regardless of where it lives, anywhere in the house (i.e. simply push the volume knob to select your living room CD player as a source of music as you relax on your patio and then use your CD remote to control the song selection or volume without getting up from your lawn chair!).

High Fidelity performance that's affordable. More power and flexibility than "amplified keypad" systems at similar cost.

First built-in unit with remote input module. Your music can be located anywhere instead of in an audio rack. Wiring to the main unit is hidden for a neat installation.

**Document Number 62I00-1 Rev A
October, 2006**

Precautions

Exposure to extremely high noise levels may cause a permanent hearing loss. Individuals vary considerably to noise induced hearing loss but nearly everyone will lose some hearing if exposed to sufficiently intense noise for a sufficient time. The U.S. Government's Occupational Safety and Health Administration (OSHA) has specified the following permissible noise level exposures:

DURATION PER DAY (HOURS)	8	6	4	3	2	1
SOUND LEVEL (dB)	90	93	95	97	100	103

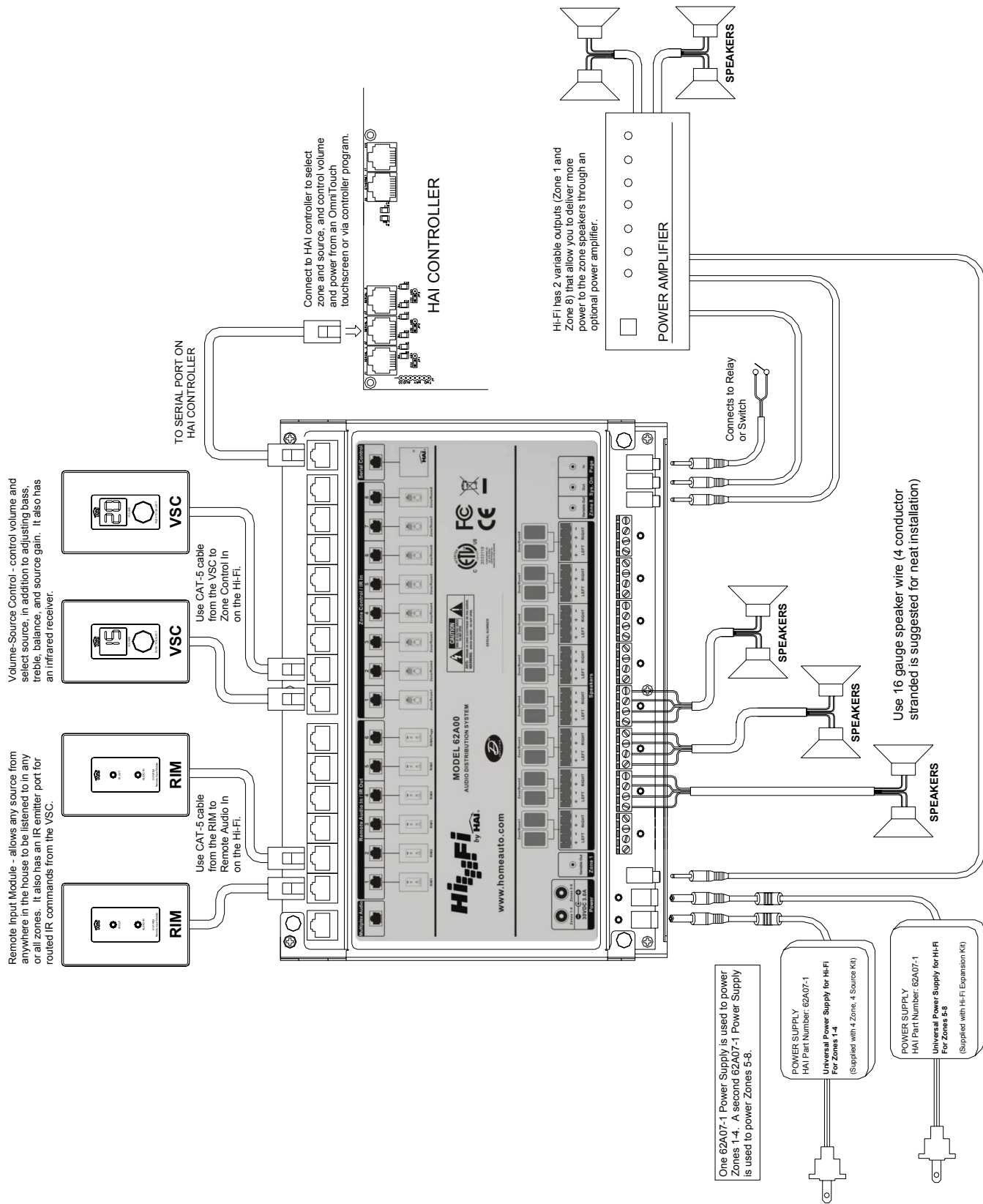
According to OSHA, any exposure in the above permissible limits could result in some hearing loss.

Important Safety Instructions:

1. Read all safety and operating instructions before using this product.
2. All safety and operating instructions should be kept for future reference.
3. Read and understand all warnings listed on the operating instructions.
4. Follow all operating instructions to operate this product.
5. This product should not be used near water (e. bathtub, sink, swimming pool, wet basement, etc.).
6. Only use dry cloth to clean this product.
7. Do not block any ventilation openings.
8. Do not install this product near any heat sources; such as, radiators, heat registers, stove or other apparatus (including heat producing 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 being walked on or pinched, particularly at plugs, convenience receptacles and the point where they exit from the apparatus. Do not break the ground pin of the power supply cord.
11. Only use attachments 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 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. Care should be taken so that objects do not fall and liquids are not spilled into the unit through the ventilation ports or any other openings.
15. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way; such as, a 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.
16. **WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

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Hi-Fi by HAI Overall Wiring Diagram

Introduction

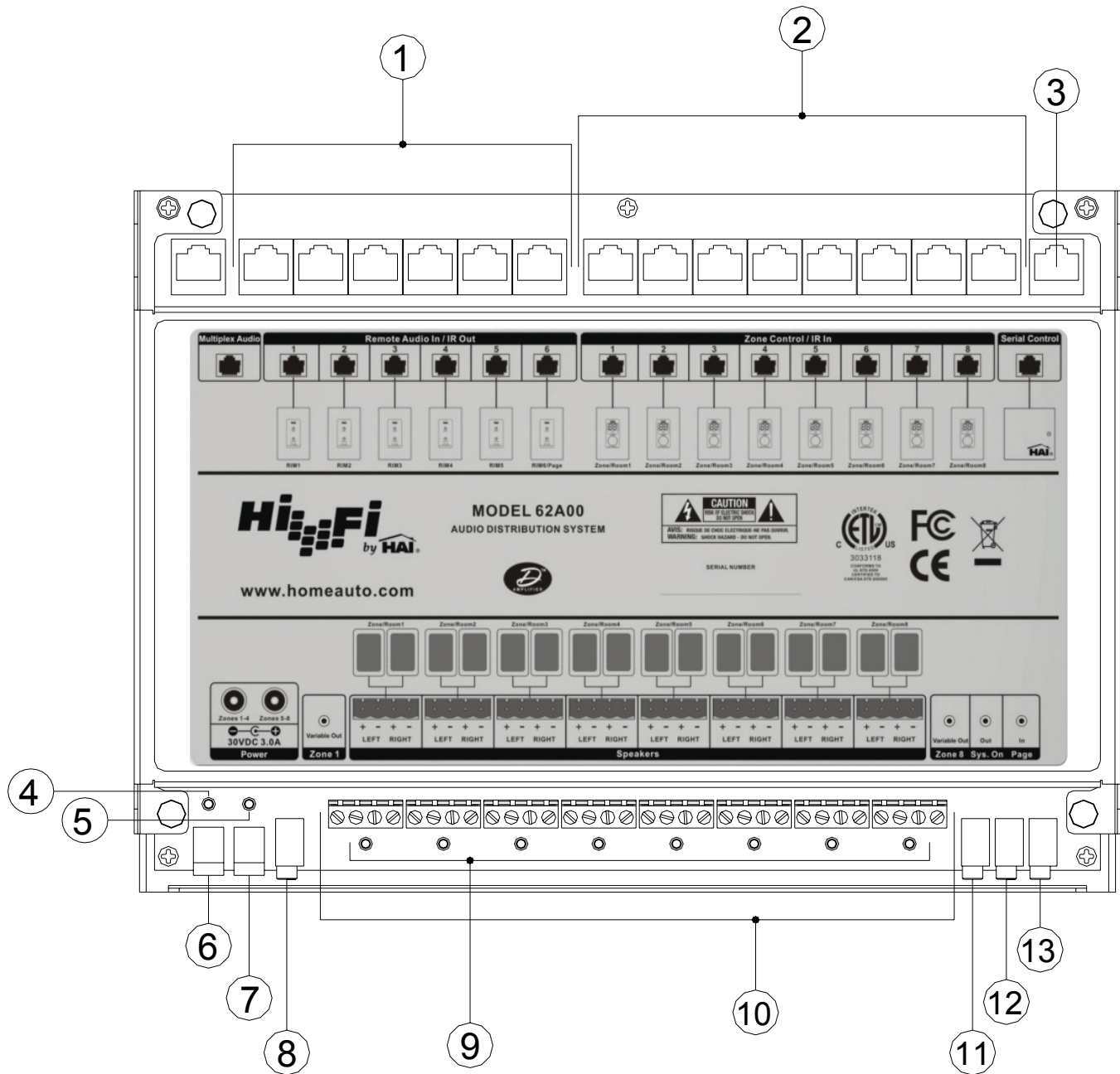
Thank you for choosing the Hi-Fi by HAI audio distribution system. Hi-Fi is an affordable high fidelity Central Controller Distributed Audio System that powers speakers through digital amplification.

This installation guide is intended as an aid to installing the Hi-Fi Four Zone, Four Source Kit. The installer should also have thoroughly reviewed and understood the Hi-Fi User's Guide which has important information regarding operation and configuration of the system.

Hi-Fi Inputs and Outputs

The Hi-Fi is equipped with the following inputs and outputs:

- | | |
|--|--|
| 1. Remote Audio Inputs / IR Outputs | These jacks are where Remote Input Modules (RIM) are connected. |
| 2. Zone Control / IR Inputs | These jacks are where Volume-Source Controls (VSC) are connected. |
| 3. Serial Control | This jack is where an HAI Omni or Lumina series Home Control System or device with a serial interface is connected. |
| 4. Power On LED (Zone 1-4) | The left LED is lit when the Power Supply for Zones 1-4 is plugged in. |
| 5. Power On LED (Zone 5-8) | The right LED is lit when the Power Supply for Zones 5-8 is plugged in. |
| 6. Power Supply Input (Zones 1-4) | This is where the Power Supply which powers Zones 1-4 is connected. |
| 7. Power Supply Input (Zones 5-8) | This is where the Power Supply which powers Zones 5-8 is connected. |
| 8. Variable Output for Zone 1 | This is a variable output used for attaching additional amplification to Zone 1. |
| 9. Zone On LEDs | These LEDs are lit when the respective zone amplifier is turned on. |
| 10. Speaker Connectors | These terminals are where all zone speakers are connected. |
| 11. Variable Output for Zone 8 | This is a variable output used for attaching additional amplification to Zone 8. |
| 12. "System On" Output | This output is energized when any of the zone amplifiers are turned on. |
| 13. Page Input | When this input is triggered, all zones are turned on at the preset paging volume (or muted) and switched to Source 6. |



Installation

The Hi-Fi Main Assembly houses the Hi-Fi processor and Zone Amplifier Cards (ZAC) for each zone. It is also the termination point for all components and connections to Hi-Fi. The Hi-Fi Main Assembly can be installed in a Vented Enclosure (HAI Part Number: 62A09-1) that can be tucked away in a closet or basement or can be installed in a Leviton, OnQ, USTec or "Open House" type structured wiring enclosures using a Universal Mounting Plate (HAI Part Number: 20A07-2).

The Hi-Fi Main Assembly should be mounted in a location that is protected from high humidity levels and temperature extremes. An AC power outlet should be located within 5 feet.

Installing Remote Input Modules (RIM)

All audio sources are connected directly to Remote Input Modules (RIM) in rooms that will have music sources. Remote Input Modules connect directly to the Hi-Fi Main Assembly using Cat 5, unshielded, twisted pair (UTP) for communications. Each end of the wire is terminated with an RJ45 connector. The correct wiring scheme for the Cat 5 cable is standard EIA/TIA 568A. Properly terminating the Cat 5 cable is crucial for the operation of the system.

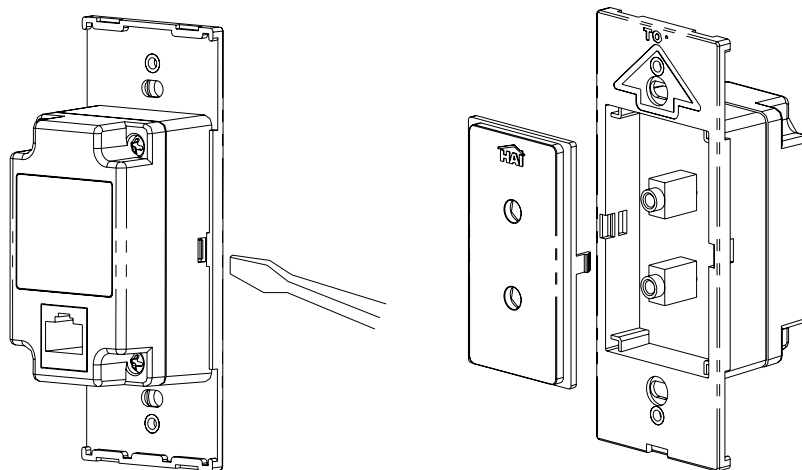
It is best that no single run of Cat 5 exceeds 500 feet.

Insert the RJ45 connector on one end of the cable to the respective source input jack (1-6) under “Remote Audio In / IR Out” on the Hi-Fi Main Assembly. Insert the RJ45 connector on the other end of the cable to the jack labeled “Remote Audio” on the RIM.

Changing the Color of the RIM

The color of the RIM may be changed to complement the interior décor. The RIM is supplied with a white faceplate and insert. Additional colors are available; contact your HAI distributor for more information. Change the color of the RIM as follows:

1. Remove the faceplate.
2. The insert attaches to the RIM with one latch on the right and one on the left. Using a small-bladed screwdriver, gently depress the latch on one side while lifting up on the insert. Once the latches are released on one side, remove the insert from the other side.
3. Align the latches of the new insert to the openings on the RIM and gently snap into place.
4. Attach the new faceplate.

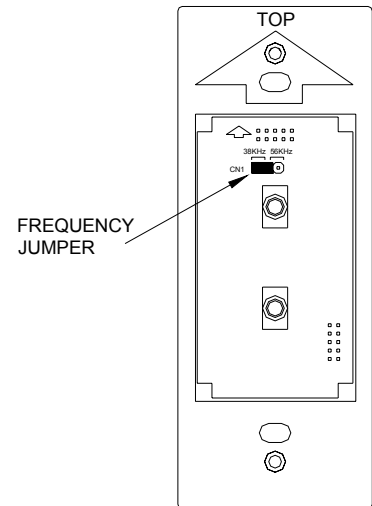


Setting the Frequency of the IR Output

When using the RIM to send IR data to source equipment, there are two different IR carrier frequencies in which the RIM can transmit the IR signal. The default setting of 38 kHz is used for most audio sources. However, most cable and satellite converter boxes operate at a higher IR carrier frequency closer to 56 kHz. Each RIM has a jumper that allows you to change the frequency of the IR output when using such devices.

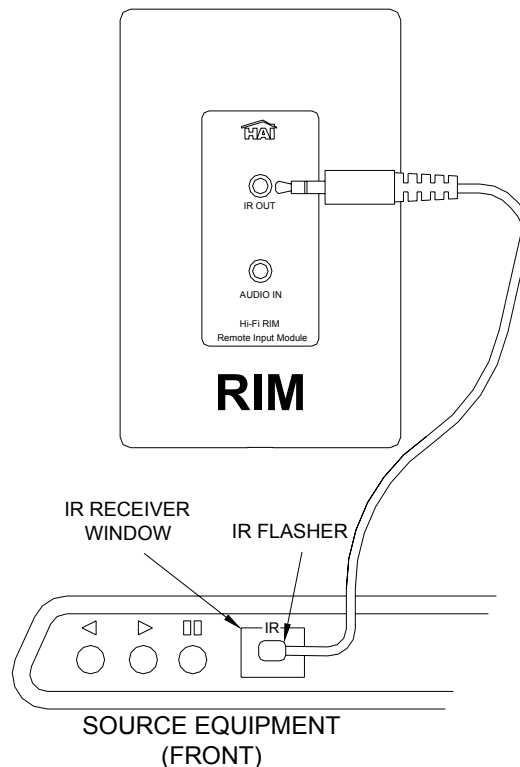
To change the frequency setting, remove the faceplate and insert from the RIM as described under “Changing the Color of the RIM”.

Once The Insert Has Been Removed, Move The Frequency Jumper (CN1) From The “38khz” Position To The “56khz” Position.



IR Output

Each RIM ships with an IR flasher (62A08-1). The IR flasher is used for sending IR data to the source equipment. When you point your source equipment remote control at the IR receiver in the VSC and send a signal, the IR data is routed to the appropriate RIM (to which the source is connected), which then sends the IR signal through the IR flasher to the source equipment.



Installing Volume-Source Control (VSC) Units

The audio sources can be selected and controlled by any Volume-Source Control (VSC). Additionally, each VSC include an IR receiver that allows you to remotely control the Hi-Fi system and/or audio sources from any zone in the house. Volume-Source Control (VSC) Units connect directly to the Hi-Fi Main Assembly using Cat 5, unshielded, twisted pair (UTP) for communications. Each end of the wire is terminated with an RJ45 connector. The correct wiring scheme for the Cat 5 cable is standard EIA/TIA 568A. Properly terminating the Cat 5 cable is crucial for the operation of the system.

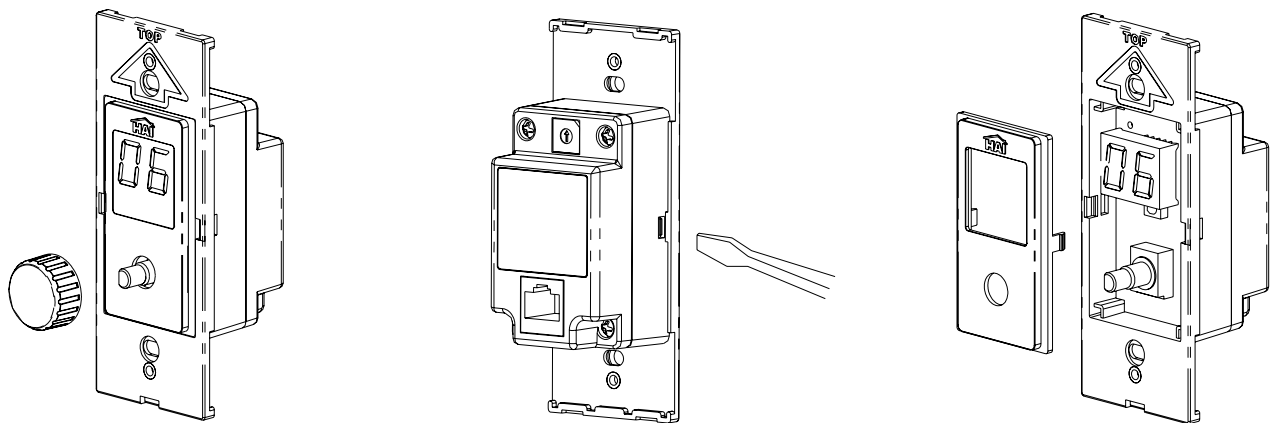
The total distance of Cat 5 between the Hi-Fi Main Assembly and the VSC units must not exceed 2000 feet. It is best that no single run of Cat 5 exceeds 250 feet.

Insert the RJ45 connector on one end of the cable to zone input jack (1-8) under “Zone Control / IR In” on the Hi-Fi Main Assembly. Insert the RJ45 connector on the other end of the cable to the jack labeled “Zone Control” on the VSC.

Changing the Color of the VSC

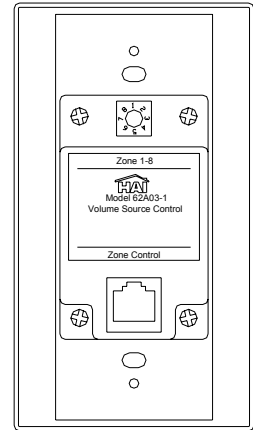
The color of the VSC may be changed to complement the interior décor. The VSC is supplied with a white faceplate, knob, and insert. Additional colors are available; contact your HAI distributor for more information. Change the color of the RIM as follows:

1. Remove the faceplate. Firmly grasp the knob and pull straight outward until the knob is removed.
2. The insert attaches to the VSC with one latch on the right and one on the left. Using a small-bladed screwdriver, gently depress the latch on one side while lifting up on the insert. Once the latches are released on one side, remove the insert from the other side.
3. Align the latches of the new insert to the openings on the RIM and gently snap into place.
4. Insert the new knob onto the volume control shaft. Attach the new faceplate.



Setting the Zone Address

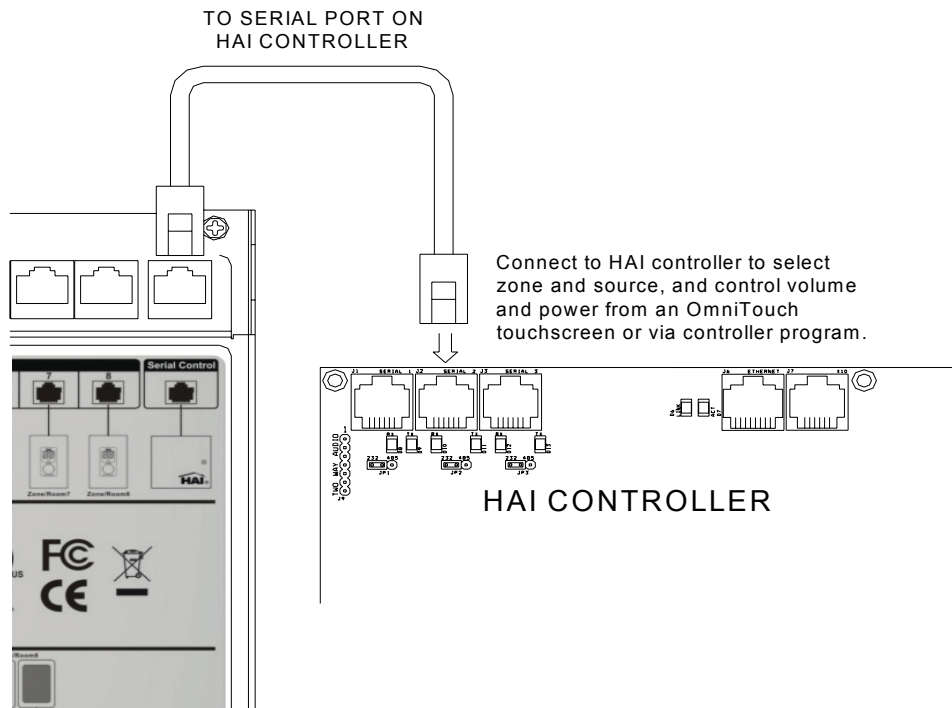
Although the Hi-Fi Main Assemble has separate RJ45 connectors for each zone, each VSC must be configured to a specific zone address to establish its location. This setting is made on the back of the VSC using a rotary switch. To set the zone address, place a small screwdriver in the slot on the rotary switch and turn it to the appropriate zone address number 1-8



Serial Control

Hi-Fi can be remotely controlled through an HAI Omni or Lumina Home Control System or by a device with a serial interface. When connected, the remote device can select a zone and change its power state, source, volume setting, and mute setting.

Connect Hi-Fi to an HAI Omni or Lumina series Home Control System by inserting a straight-through, 4-position modular cable between a serial interface connector on the HAI controller and the modular connector labeled “Serial Control” on the Hi-Fi Main Assembly.



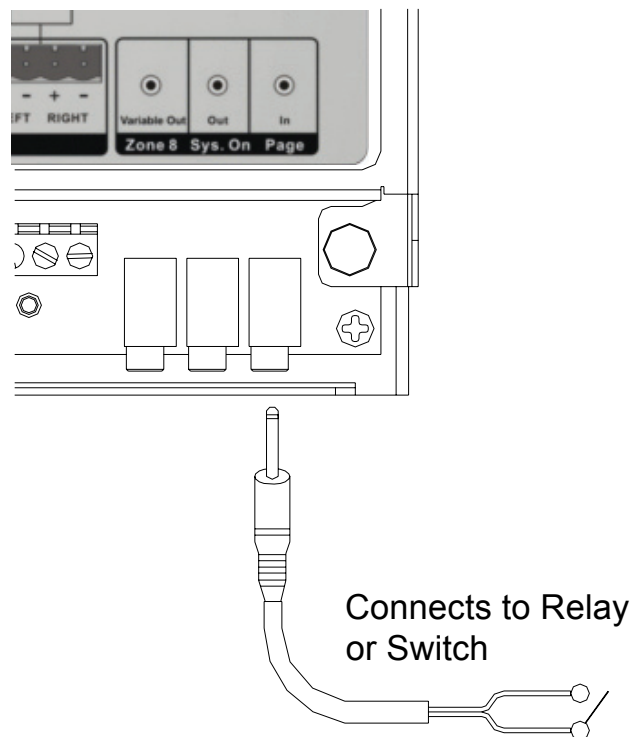
Page / Mute Input

The Hi-Fi paging feature offers the capability of playing a single audio source over all zone speakers. If paging is used, the paging audio source will be connected as audio Source 6. Hi-Fi is also equipped with a Page Input which will, when activated, turn all zones on at the preset paging volume and switch all zones to Source 6. When the input is deactivated, all zones will be returned to their previous source selection, power state, and volume setting.

When used with an HAI Omni or Lumina Home Control System and Two-Way Voice Module with Line-Level output and Mute/Page Control, custom announcements can be made over all zone speakers when certain events take place.

If desired, the Page function can be used to mute all zones instead of making an announcement. For example, you may simply want all of the zones on the Hi-Fi systems to be muted when someone is at the door or when the telephone is ringing. To configure Hi-Fi to mute all zones, set the Paging Volume for each zone to 00 as described under “Setting Paging Volume” in the Hi-Fi User’s Guide.

When the two wires on a mono patch cord are shorted together, the Page / Mute function is activated and the all zones are turned on at the preset paging volume (or muted) and switched to Source 6. The wires on the patch cord may be shorted through relay contacts or a switch. If a solid state switch is used, Tip is positive relative to Ring.



Speaker Wiring

When running the cables for speakers, use 16-gauge two-conductor or four-conductor (four-conductor stranded is recommended for neater installation) speaker wire. Speaker cable is homerun from the speaker location to the location of the Hi-Fi Main Assembly.

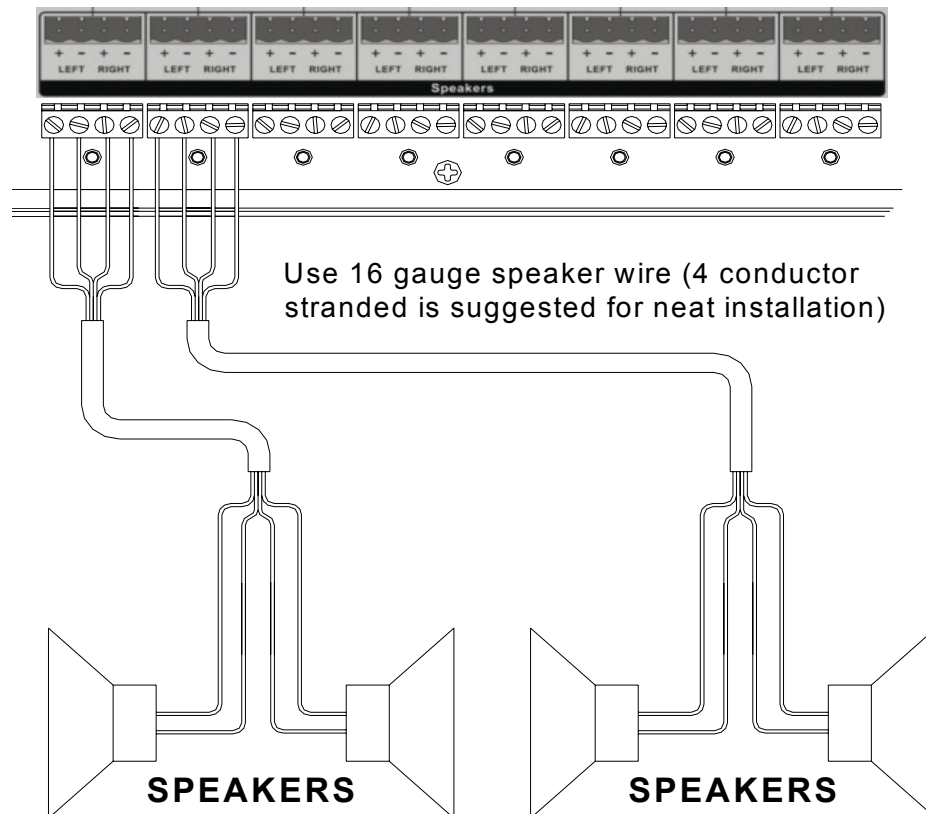
The Hi-Fi System is designed to work with one pair of speakers per zone.

Terminating Speaker Wires

Always observe proper orientation of the positive and negative signal for each speaker connection.

Typically, when using two-conductor speaker wire, the red wire indicates positive (+) and black wire indicates negative (-). Another indication of positive is a dark line running through the insulation.

Four-conductor wire can also be used and makes for a neater installation. Four-conductor wire has four separate wires in one outer jacket, making it possible to run a single speaker wire for a pair of zone speakers. This type of wire typically uses red and black for one speaker and white as positive and green as negative for the second speaker.



Variable Outputs

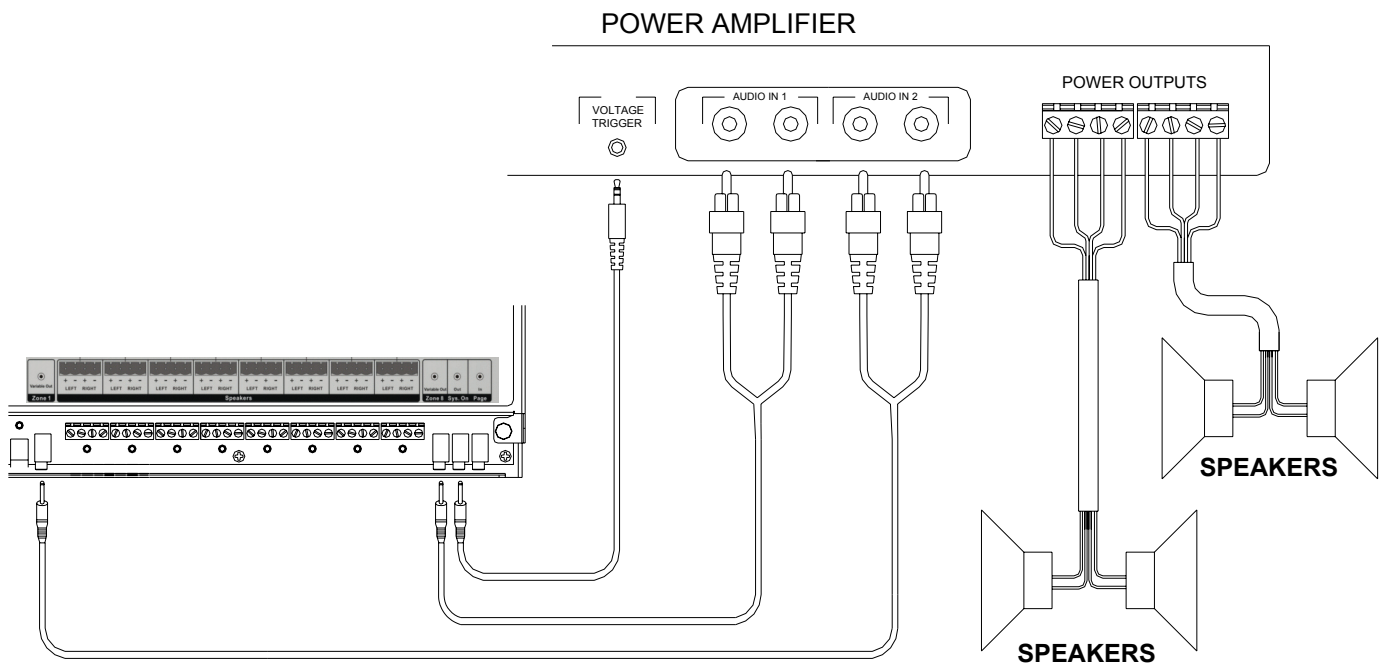
Zone 1 and Zone 8 are equipped with a pre-amp variable output for use with an optional power amplifier that allows you to deliver more power to the zone speakers. This is ideal for outdoor areas or a large living room where more power and/or additional speakers are desirable.

To connect Zone 1 and/or Zone 8 to an optional power amplifier using a stereo patch cable:

- 1) Connect the power amplifier to the Hi-Fi Main Assembly by inserting a 3.5mm stereo connector into the 3.5mm jack labeled “Variable Out Zone 1” or “Variable Out Zone 8” (HAI 62A14-1, 3.5mm male to 2 RCA male retractable patch cable may be used).

If your power amplifier is equipped with a voltage trigger that will turn on the amplifier when energized:

- 2) Connect the voltage trigger of the power amplifier to the Hi-Fi Main Assembly by inserting a 3.5mm mono connector into the jack labeled “System On”.
- 3) When any audio zone is turned on, Hi-Fi supplies 5 VDC to the “System On” Output.
- 4) When all audio zones are turned off, Hi-Fi supplies 0 VDC to the “System On” Output.

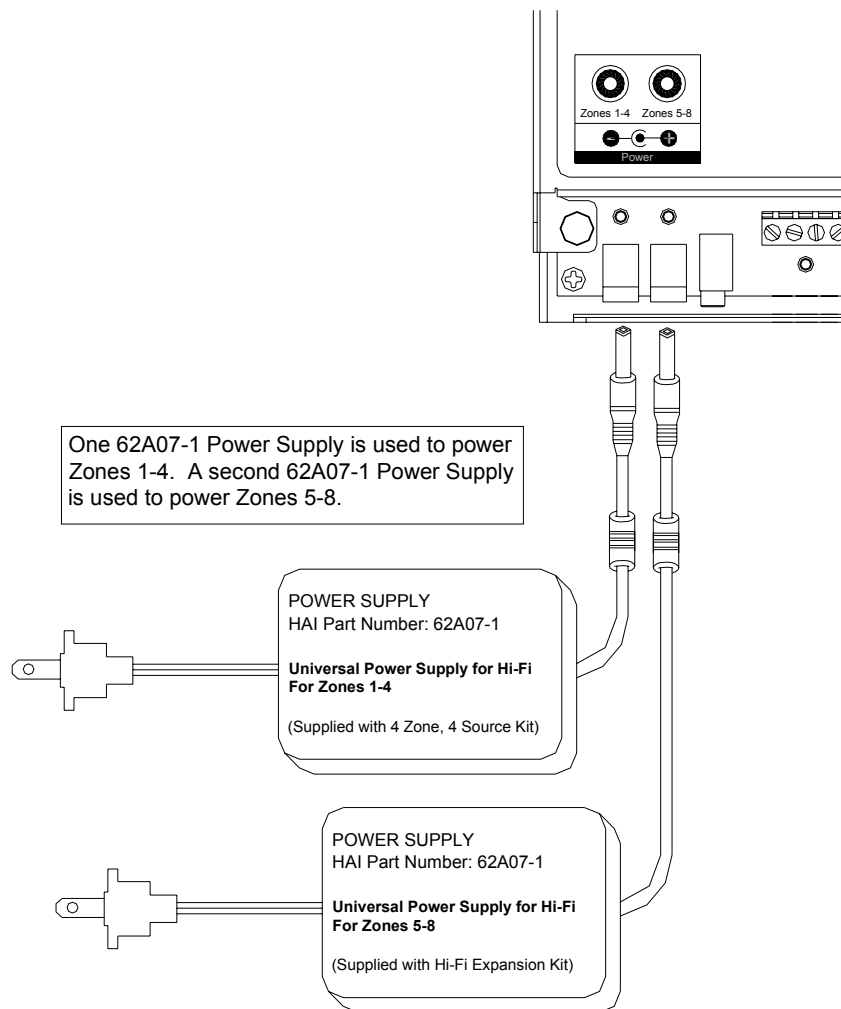


Powering the Hi-Fi System

The supplied Power Supply (HAI Part Number: 62A07-1) powers the Hi-Fi processor and the first 4 Zone Amplifier Cards (when connected to the Power jack on the left). One Power Supply is needed to power Zones 1-4 and a second Power Supply (supplied with the Hi-Fi Expansion Kit) is needed to power Zones 5-8 (when connected to the Power jack on the right).

- 1) Insert the connector for the Power Supply into the Power jack marked “PJ1” (jack to the left) under the section labeled “Power Zones 1-4” on the Hi-Fi Main Assembly.
- 2) Plug the power cord from the Power Supply into a 120 VAC outlet. The “POWER ON” LED will illuminate. The Hi-Fi system will start. Follow the instructions in the User’s Guide for operation.

If applicable, insert the connector for the Power Supply into the Power jack marked “PJ2” (jack to the right) under the section labeled “Power Zones 5-8” on the Hi-Fi Main Assembly. Plug the power cord from the Power Supply into a 120 VAC outlet. The “POWER ON” LED will illuminate.

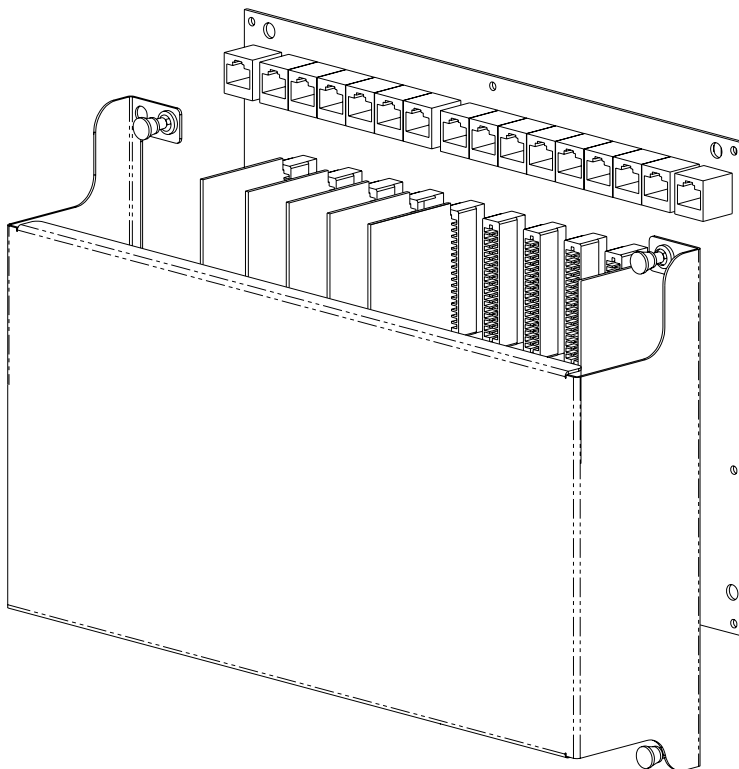
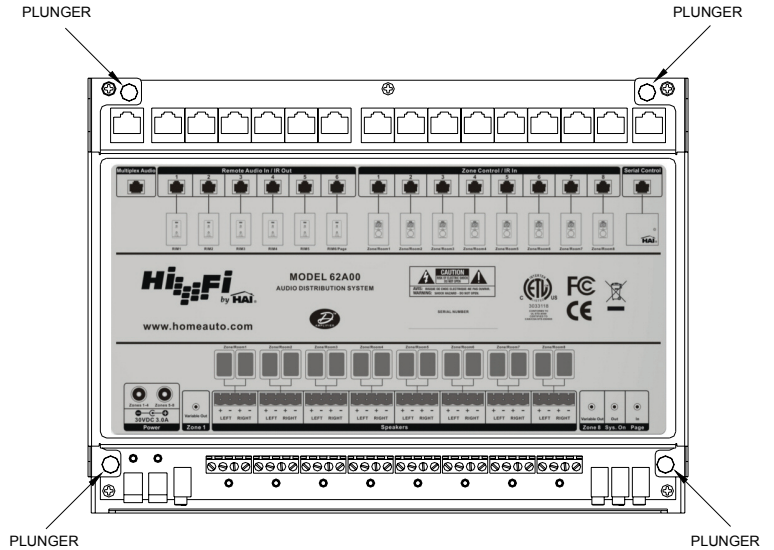


Installing Zone Amplifier Cards

Zone Amplifier Cards (ZAC) can be added at any time to increase the total number of zones to eight.

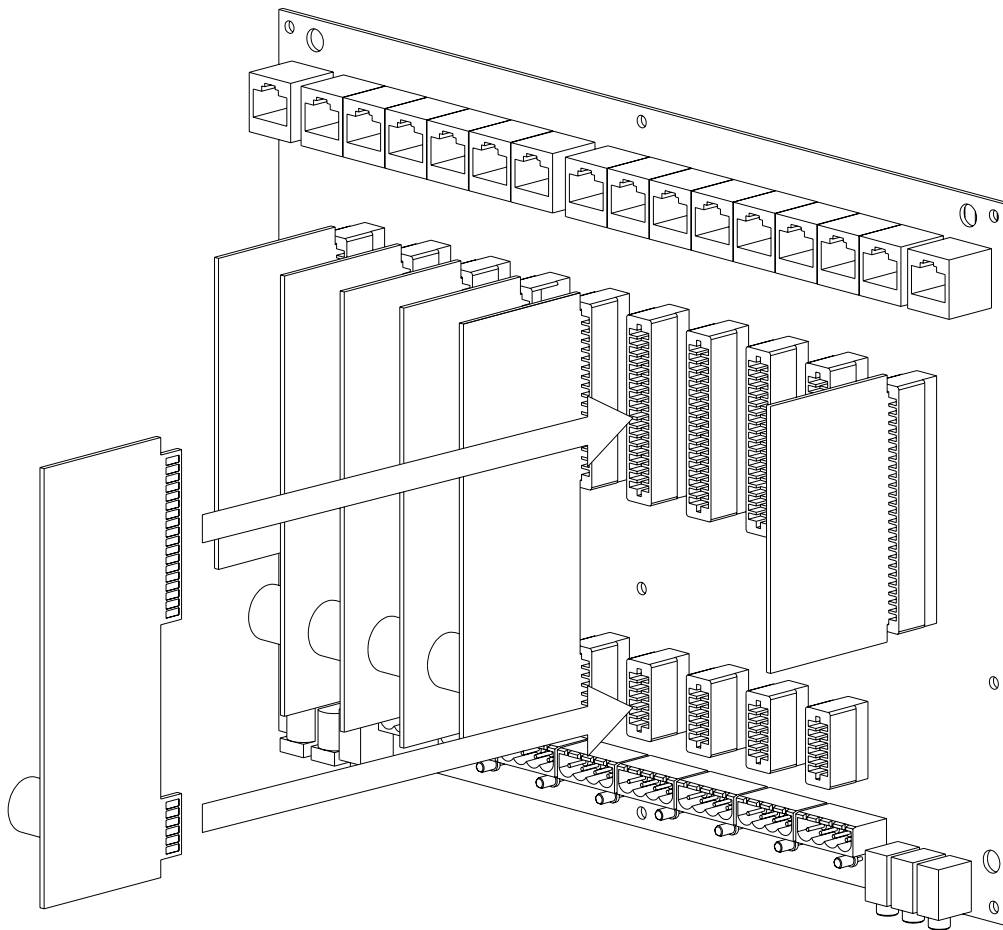
To install a Zone Amplifier Card:

- 1) Power down the Hi-Fi system by unplugging both Power Supply units (if applicable) from the inputs labeled "Power" on the Hi-Fi Main Assemble.
- 2) Pull upward on each of the 4 plungers until you hear them snap



- 3) Remove the cover from the Hi-Fi Main Assembly by lifting it away from the Hi-Fi circuit board.

- 4) Install additional Zone Amplifier Cards in an empty connector (CN5-CN8) by positioning the Zone Amplifier Card directly over the connector and gently but firmly pushing down on both sides of the card until the top and bottom are securely seated into the connector.
- 5) Replace the cover by pushing down on each of the 4 plungers until you hear them snap.
- 6) Reconnect each Power Supply.



Specifications

Zones 1-8 Power Amplifier Outputs

Continuous Average Output Power:	30W (15W x 2) Two channels driven 30-20kHz @1% THD
Rated Distortion (1/2 power):	0.40%
Rated Impedance:	6 Ohms
Damping Factor:	50+
Frequency Response (20-20kHz):	±2dB

Preamplifier Section

Variable output:	0-600mV
Impedance:	600 Ohms

Source Inputs 1-6

Input Impedance:	10K
Input Sensitivity for rated power:	300mV RMS
Input Overload:	3V RMS

Emitter Outputs

Output Drive Current:	100mA
Output Drive Voltage:	5V

System

System On:	5V @ 50mA (Ring = Ground)
Page / Mute input:	Normally open (close to activate)

Power

Power Input:	DC30V === 3.0A Each
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Power Supply

Power Supply Input (each):	100-240VAC, 50/60Hz, 120W
Power Supply Output (each):	30VDC, 3 Amps

Power Consumption

All channels driven to full-rated power:	240W
Average operating conditions:	30W
No signal:	Less than 10W

Physical Specifications

Unit Size (in enclosure):	13" W x 13" H x 4.5" D
Unit Size (on mounting plate):	13.25" W x 8.5" H x 3.75" D
Unit Weight (in enclosure):	14 lb.
Unit Weight (on mounting plate):	8 lb.



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