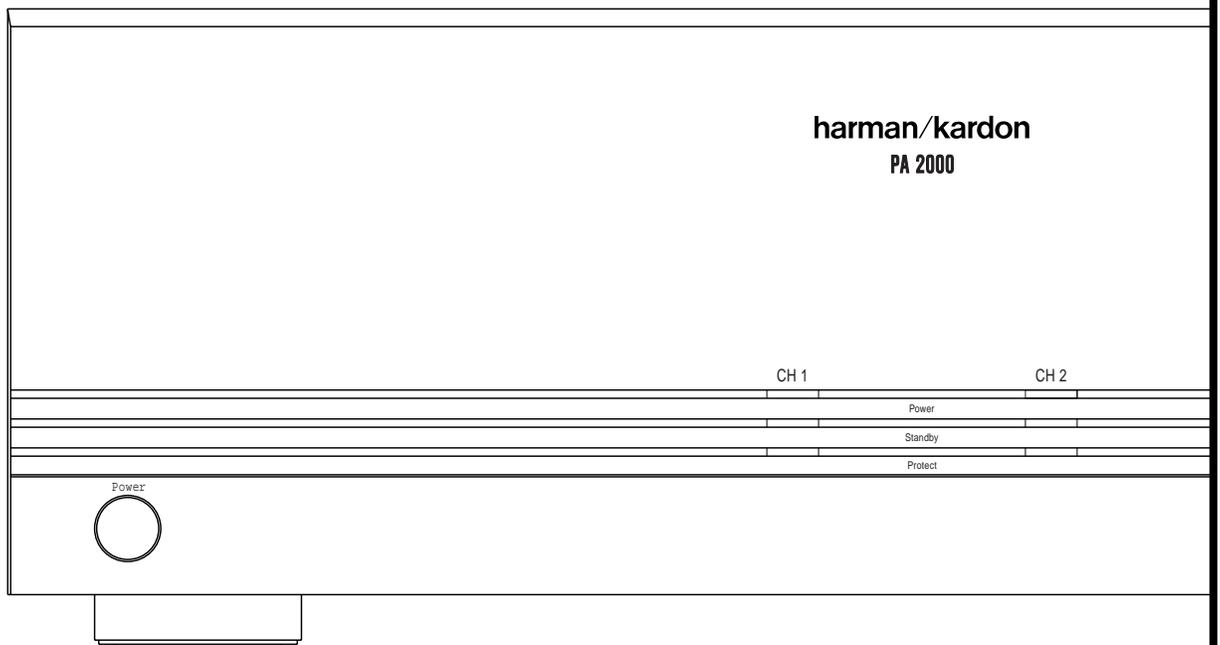


PA 2000 Bridgeable Multichannel Amplifier

OWNER'S MANUAL



harman/kardon®

Power for the digital revolution.™

PA 2000 Bridgeable Multichannel Amplifier

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Typographical Conventions

In order to help you use this manual with the front panel controls and rear panel connections, certain conventions have been used.

EXAMPLE – (bold type) indicates a specific front panel button or rear panel connection jack

1 – (number in a square) indicates a specific front panel control

❶ – (number in a circle) indicates a rear panel connection

Introduction

Congratulations! As the owner of a PA 2000 Multichannel/Multizone Power Amplifier, you have at your command a unique product. The PA 2000 has been carefully designed to deliver the best possible sonic performance, along with unique features that make it as much at home in a multiroom audio system as it is in providing power to the additional surround channels required for the latest digital audio formats.

The PA 2000 is alone among audio power amplifiers in being designed to accommodate the long speaker runs required for multiroom applications without sacrificing the ultrawide-bandwidth circuitry and high-current capability technologies that are key to Harman Kardon's long-standing tradition of audio amplifier excellence. As an added audiophile touch, five-way speaker terminals ensure a secure connection to large-gauge speaker wire, and individual output level trim controls enable output balance to be set precisely.

Along with power and performance, the PA 2000 provides the flexibility for a variety of applications. In the four-channel/two-pair output mode, the input is routed to two pairs of speakers for use with AV receivers equipped with multiroom capability. In the two-channel bridged mode, a high-output stereo pair is available for use as the rear surround channels in a 7.1 channel system or for use with a stereo preamplifier. For installations requiring multiple amplifiers, a pair of parallel outputs allows the same signal to be fed to multiple PA 2000s. To allow the widest range of system options, the PA 2000 includes both Music Sense circuitry, which automatically turns the amplifier on when an audio signal is present, and a low-voltage trigger for compatibility with multiroom controllers.

In order to fully enjoy the performance of your amplifier, please take a few minutes to read this owner's manual. It contains important information that will help you to make certain that the amplifier is properly configured for operation with the rest of the equipment in your system.

If you have any questions about this product, its installation or its operation, please contact your retailer or custom installer. They are your best source of product information.

Welcome to the Harman Kardon family. We wish you many years of listening pleasure!

Features

- Bridgeable Multichannel Amplifier powers one or two stereo pairs
- High-current, ultrawide-bandwidth design
- Parallel line-level-out connections permit amplifiers to be cascaded for system use
- Music Sense circuitry and low-voltage trigger connection for automatic turn-on
- Five-way binding post terminals accommodate large-gauge speaker cable
- Massive heatsinks for quiet, fan-free convection cooling
- Output level trim controls
- Removable IEC power cord
- Specially optimized circuitry is compatible with long speaker wire runs that may be necessary in a whole-house multiroom system

	CAUTION 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.			
	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) instructions in the literature accompanying the appliance.
WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.			
CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.			
ATTENTION: POUR EVITER LES CHOCS ELECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.			

Safety Information

Important Safety Information

Verify Line Voltage Before Use

Your new Harman Kardon PA 2000 amplifier has been factory-configured for use with 120-volt AC line current. Connecting the amplifier to a line voltage other than that for which it is intended can create a safety and fire hazard, and may damage the amplifier.

If you have any questions about the voltage requirements for your specific model, or about the line voltage in your area, contact your selling dealer before plugging the unit into a wall outlet.

Verify AC Circuit Capacity Before Use

High-power output of your amplifier may require heavy current draw under full load conditions. To ensure proper performance and avoid potential safety hazards, we recommend that it be connected to a circuit with 20-amp capacity. Connecting multiple amplifiers to the same circuit, or connecting the amplifier to a circuit used by other heavy-power devices, such as high-wattage lights, may cause circuit breakers to trip. It is always a good idea to avoid using any audio equipment on the same AC circuit as equipment with motors, such as air conditioners or refrigerators. This will lessen the possibility of power variation and electrical start-up noise affecting your sound system.

Do Not Use Extension Cords

To avoid safety hazards, use only the power cord supplied with your unit. If a replacement cord is used, make certain that it is of a similar gauge. We do not recommend using extension cords with this product. As with all electrical devices, do not run power cords under rugs or carpets or place heavy objects on power cords. Damaged power cords should be replaced immediately with cords meeting factory specifications.

Handle the AC Power Cord Gently

When disconnecting the power cord from an AC outlet, always pull the plug; never pull the cord. If you do not intend to use the amplifier for a considerable length of time, disconnect the plug from the AC outlet.

Do Not Open the Cabinet

There are no user-serviceable components inside this product. Opening the cabinet may present a shock hazard, and any modification to the product will void your guarantee. If water enters the unit, or any metal object such as a paper clip, wire or staple accidentally falls inside the cabinet, disconnect the unit from the AC power source immediately and consult an authorized warranty station.

Installation Location

- To ensure proper operation and to avoid the potential for safety hazards, place the unit on a firm and level surface. When placing the unit on a shelf, be certain that the shelf and any mounting hardware can support the amplifier's weight.
- Make certain that the proper space is provided both above and below the unit for ventilation. If the amplifier will be installed in a cabinet or other enclosed area, make certain that there is sufficient air movement within the cabinet. Consult with your dealer or installer for more information.
- Do not place the unit directly on a carpeted surface.
- Avoid installation in extremely hot or cold locations, in an area that is exposed to direct sunlight or near heating equipment.
- Avoid moist or humid locations.
- Do not obstruct the ventilation slots on the top of the unit or place objects directly over them. Remember, power amplifiers generate heat, and the heatsink fins and ventilation slots that form part of the cabinet are specially designed to remove this heat. Placing other electronic equipment near these heat-dissipation systems may possibly affect the long-term reliability of both your amplifier and the objects placed above it. The carton and shipping materials used in protecting your new amplifier were specially designed to cushion it from the shocks and vibration of shipping. We suggest that you save the carton and packing materials for use in shipping if you move or if the unit ever needs repair.

Cleaning

When the unit gets dirty, wipe it with a clean, soft and dry cloth. If necessary, first wipe the surface with a soft cloth slightly dampened with mild soapy water, followed by a fresh cloth with clean water. Wipe immediately with a dry cloth. Never use benzene, thinner, alcohol or any other volatile cleaning agent. Do not use abrasive cleaners, as they may damage the finish of metal parts. Avoid spraying insecticide near the unit.

Moving the Unit

Before moving the unit, be certain to disconnect any interconnection cords with other components, and make certain that you disconnect the unit from the AC outlet.

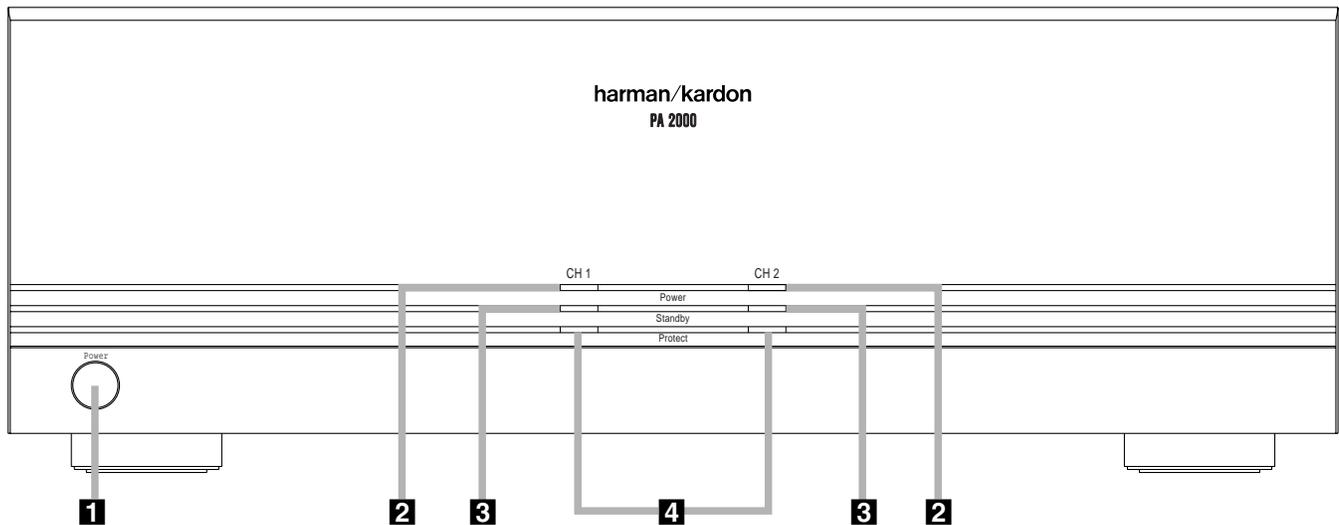
Unpacking and Installation

The carton and shipping materials used in protecting your new amplifier were specially designed to cushion it from the shocks and vibration of shipping. We suggest that you save the carton and packing materials for use in shipping if you move or if the unit ever needs repair.

To minimize the size of the carton in storage, you may wish to flatten it. Carefully remove any staples used to close carton seams; carefully slit the tape on the bottom and collapse the carton. Other cardboard inserts may be stored in the same manner. Packing materials that cannot be collapsed should be saved along with the carton in a plastic bag.

When positioning the amplifier in its final location, make certain that it has adequate ventilation on all sides, as well as on the top and bottom. Do not place CDs, record jackets, owner's manuals or other paper on top of or beneath the unit or in between multiple amplifiers in a stack. This will block the air flow, causing degraded performance and a possible fire hazard. If the unit is to be enclosed in a cabinet or rack, make certain that there is adequate air circulation, with means provided for hot air to exit and for cool air to be brought in.

Front Panel Controls and Indicators



- 1** Power Switch
- 2** Power Indicators

- 3** Standby Indicators
- 4** Protect Indicators

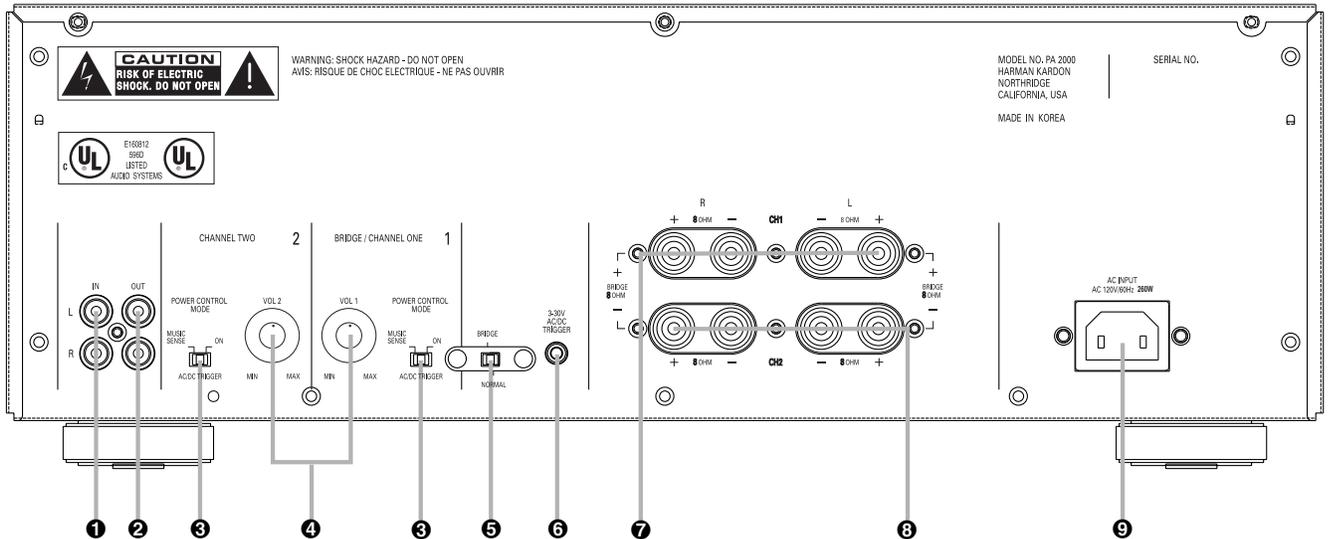
1 Power Switch: Press this switch to turn the PA 2000 on for manual operation when the **Power Control Mode Switch 3** for one or both channel pairs is in the ON position, or to place it in the Standby mode when the **Power Control Mode Switch 3** for one or both channel pairs is in either the Music Sense or AC/DC Trigger position.

2 Power Indicators: These indicators will light when either of the channel pairs is on.

3 Standby Indicators: These indicators will light when AC mains power is applied to either of the channel pairs, but when that channel pair is not currently active. In this condition, the channel pair associated with the indicator is ready to turn on when a signal is applied to the **Trigger Jack 6** or when there is an audio signal applied to the **Input Jack 1**.

4 Protect Indicators: These indicators will light when either of the channel pairs is in the Protect mode. When one of these indicators lights, turn the unit off immediately and check for a problem, such as a short in the speaker wiring.

Rear Panel Connections



- 1 Input Jacks
- 2 Output Jacks
- 3 Power Control Mode Switches
- 4 Output Level Trim Controls
- 5 Bridge/Normal Switch
- 6 Trigger Jack
- 7 Channel 1 Output Speaker Terminals
- 8 Channel 2 Output Speaker Terminals
- 9 AC Power Cord Receptacle

1 Input Jacks: Connect these jacks to the left/right output of the AV receiver, preamp, surround processor, multiroom controller or other source used to feed the PA 2000.

2 Output Jacks: These jacks provide a parallel feed of the input signal. In systems where more than one PA 2000 is used, they may be connected to the Input Jacks of the additional amplifier.

3 Power Control Mode Switch: (One for each channel pair) This three-position switch determines the method by which the PA 2000 will be placed in the active, or ON, position for 10 to 15 minutes:

- When the switch is in the far right position, under ON, the unit will be turned on when the front panel **Power Switch 1** is pressed in.
- When the switch is in the middle position, over the words "AC/DC TRIGGER", the unit will automatically turn on when a 3-volt to 30-volt signal is applied to the **Trigger Jack 6**.
- When the switch is in the far left position, under the words "MUSIC SENSE", the unit will automatically turn on when an audio signal is present at the **Input Jacks 1**. The unit will automatically turn off when the signal is no longer present.

4 Output Level Trim Controls (One for each channel pair) These trim controls are used to adjust the output level for each channel pair.

5 Bridge/Normal Switch: This switch determines whether the unit operates in the "Bridged" condition or in the Normal mode. Please be certain to disconnect the power from the unit when operating this switch.

- When the switch is in the right position, over the word "NORMAL", the unit will provide two output feed pairs for a total of four output channels.
- When the switch is in the left position, under the word "BRIDGED", the unit will function as a stereo amplifier, with a single high-power output feed into two output channels.

6 Trigger Jack: Connect this jack to the output of a compatible product capable of feeding a 3-volt to 30-volt signal to the jack when amplifier operation is desired. When one of the channel pairs has the **Power Control Mode Switch 3** set to the middle, or AC/DC trigger, position, that channel pair will automatically turn on when the low-voltage trigger signal is present. To automatically turn all channels on via the trigger, BOTH **Power Control Mode Switches 3** should be set to the trigger position.

7 Channel 1 Output Speaker Terminals: Connect these terminals to the speaker pair that is fed by the Channel 1 amplifier section.

8 Channel 2 Output Speaker Terminals: Connect these terminals to the speaker pair that is fed by the Channel 2 amplifier section.

NOTE: When the amplifier is operated in the Bridged configuration, connect the speakers as shown on Page 8.

9 AC Power Cord Receptacle: Connect the AC power cord supplied with the unit to this receptacle, and connect the power cord plug to an AC outlet.

Installation and Configuration

SAFETY NOTE: When making connections between any source components such as AV receivers, surround processors or multiroom controllers and the PA 2000, or when making any connections to speakers, be certain that both the source device and the PA 2000 are turned off. To ensure that there will be no unwanted signal transients that can damage equipment or speakers, it is always best to unplug all equipment before making any connections. Modern electronic products often have a “standby” mode that may be activated even though the product may appear to be turned off.

Power Control Connections

The PA 2000 features a built-in remote turn-on system that will automatically turn on either or both of the amplifier pairs in one of three ways. Depending on your specific application, the unit may be turned on manually using the **Power Switch 1**, or via automatic sensing of either an input source or a low-voltage trigger signal. For manual operation, no special installation is required. For automatic turn-on, follow the instructions below for the chosen trigger method.

Note that when the unit is operated in the standard, two-pair output mode, each of the channel pairs may be operated by the same trigger method, or they may be turned on via different methods.

Remote Turn-On From an External Device Using the Low-Voltage Trigger

To configure the PA 2000 so that either or both of the channel pairs turn on automatically in response to a low-voltage trigger signal, follow these steps:

1. Place the **Power Control Mode Switch 3** for either channel in the center position, so that the switch is over the words “AC/DC TRIGGER”.
- 2a. To trigger the amplifier from a device such as a preamp surround processor or multiroom controller with a built-in trigger jack, connect one end of a cable with a 3.5mm mono mini-plug to the **Trigger Jack 6** on the PA 2000. Connect the other end to a matching jack on the device that will provide a 3-volt to 30-volt signal when the unit is to be turned on.

- or
- 2b. To trigger the amplifier using the switched AC accessory outlet on an AV receiver or other source device, purchase a small AC to DC power converter, as is typically used to replace the batteries in portable electronics devices. Select a model that is capable of delivering 3 to 12 volts DC, and make certain that one of the “tips” provided with the unit is a 3.5mm mini-plug. Plug the transformer end of the converter into the switched AC output on the source product, and connect the 3.5mm mini-plug to the **Trigger Jack 6**.
 3. Press the **Power Switch 1** in so that it is engaged, and note that the **Standby Indicator 3** will light for the channel pairs selected for trigger control operation.

When the source control unit providing the power is turned on, the PA 2000 will automatically turn on. When the source unit is turned off, the PA 2000 will return to the Standby mode.

Remote Turn-On Using Music Sense

To configure the PA 2000 so that either or both of the channel pairs turn on automatically when the amplifier is receiving an audio signal, follow these steps:

- Connect the audio input as normal to the audio **Input Jacks 1**.
- For each channel pair that you wish to control using an incoming audio signal, slide the **Power Control Mode Switch 3** to the far left so that the switch is under the words “MUSIC SENSE”.
- Press the **Power Switch 1** in so that it is engaged, and note that the **Standby Indicator 3** will light for the channel pairs selected for trigger control operation.

In this configuration, the PA 2000 will automatically turn on whenever it is receiving an audio input signal. The unit will return to the Standby mode 10 to 15 minutes after the audio signal stops.

NOTE: When the PA 2000 is used in the Bridged mode as a single-pair stereo amplifier, use the **Power Control Mode Switch 3** in the area labeled “BRIDGE/CHANNEL ONE” to make the settings for the desired turn-on mode.

Channel Configuration and Speaker Connections

Two-Pair Output

For use in multiroom applications, the PA 2000 may be used to send the same signal feed to two separate locations, such as living room and dining room speakers. While each room will receive the same feed, the volume may be controlled by using the channel **Output Level Trim Controls 4** or optional in-wall volume controls.

The PA 2000 is factory-shipped to operate in this configuration, but it is always a good idea to double-check the switch setting to make certain that it is correct. For two-pair output, the **Bridge/Normal Switch 5** should be set so that the switch is on the right side, over the word "NORMAL". To ensure that the switch setting is not changed, make certain that the plastic switch guard is installed once the proper setting is made.

To connect speakers when the PA 2000 is used in the two-pair output mode, connect one pair of speakers to the **Channel 1 Output Speaker Terminals 7**, and the other pair to the **Channel 2 Output Speaker Terminals 8**. (See Figure 1.)

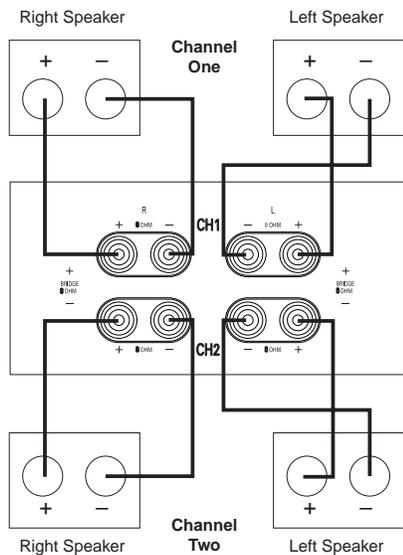


Figure 1

One-Pair Output (Bridged Operation)

The PA 2000 is a bridgeable amplifier, which means that the two pairs of medium-powered amplifiers may also be combined, or "bridged", to form a higher-powered stereo amplifier with a single pair of outputs. This type of operation is suitable for use in powering the rear surround channels of a 7.1 surround-sound system, or for general use as a high-quality, high-power stereo amplifier for a main listening room or remote room applications.

To configure the PA 2000 for use as a single-pair stereo amplifier, follow these steps:

- Disconnect the power from the unit.
- Locate the **Bridge/Normal Switch 5** on the rear panel, and use a #1 Phillips screwdriver to carefully remove the screws on either side of the plastic switch guard. Remove the plastic guard and set it aside with the screws.
- Slide the switch to the left so that it is under the word "BRIDGE".
- Replace the plastic switch guard so that it secures the switch in the desired position.
- Replace the two screws to secure the plastic guard.

To connect speakers when the PA 2000 is used as a stereo amplifier, an alternative connection method is used. As shown in Figure 2, connect the speakers to the terminals shown on the rear panel as "BRIDGE +/-", with the connections made vertically, as opposed to the horizontally oriented connections used in two-pair output use. Note that the negative, or "-", terminal used for bridged operation is normally marked as "+" for use in two-pair use. For bridged operation, please observe the Bridge markings, not the markings used for the Ch. 2 output.

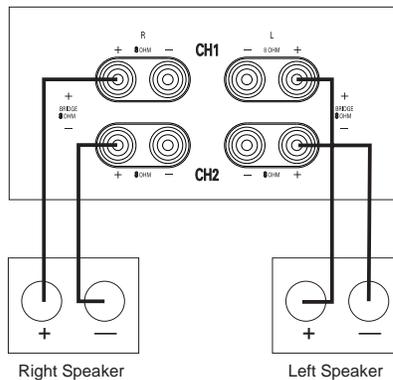


Figure 2

Speaker Wire Connections

Regardless of the channel configuration used, the final step of the installation process is to connect the amplifier to your speakers, using high-quality cable. The PA 2000 is equipped with binding post terminals that accept bare wire, spade lugs or banana-type plugs, when they are permitted by local safety agencies. Once you have located the proper speaker terminals for the type of output configuration in use, connect your speakers using the following guidelines.

To ensure that the high-quality signals produced by your PA 2000 are carried to your speakers without loss of clarity or resolution, we recommend that you use high-quality speaker cable. Many brands of cable are available, and the choice of cable may be influenced by the distance between your speakers and the amplifier, the type of speakers you use, personal preferences and other factors. Your dealer or installer is a valuable resource to consult in selecting the proper cable for connections between your amplifier and speakers.

Regardless of the brand or type of cable selected, we recommend that you use a cable constructed of fine, multistrand copper with a gauge of 14 or larger. Remember that in specifying cable, the lower the number, the thicker the cable.

Cable with a gauge of 16 may be used for short runs of less than ten feet. We do not recommend that you use any cables with an AWG equivalent of 18 or higher, due to the power loss and degradation in performance that will occur.

Cables that are run inside walls should have the appropriate markings to indicate that they are listed with UL, CSA or other testing agency standards. Questions about cables inside walls should be referred to a qualified installer or a licensed electrical contractor who is familiar with the NEC and/or the applicable local building codes in your area.

If bare wire is used for the connections, strip approximately 1/2 inch to 3/4 inch of insulation from the end of each wire and carefully twist the strands of each conductor together. Be careful not to cut the individual strands or twist them off; for optimal performance, all strands must be used.

Then, loosen the knobs of the speaker output terminals far enough so that the pass-through hole is revealed. In order to preserve proper stereo imaging and low-frequency reproduction, it is essential that proper polarity be observed when connecting speakers to the PA 2000. Be sure to connect the negative terminal for each channel on the PA 2000 to the negative terminal on the speaker, and the positive terminal on the PA 2000 to the positive terminal on the speaker. Note that one conductor of the speaker cable will have no markings and the other will have a red line, brand name markings, a black thread or some other positive indication. Follow the proper connection instructions for your system with regard to which terminals are used. The small speaker icons next to each pair of terminal posts will guide you to the correct connections. When the connections are made, twist the cap back so that the connection is secured, but do not overtighten or use tools, as this may break the delicate wire strands and decrease system performance.

If you are using spade lugs, connect them to the wire using the manufacturer's instructions and then loosen the caps on the speaker terminals. Place the lugs between the plastic cap and the back of the terminal, as if it were a horseshoe on the game's post. Be sure to observe proper polarity, using the appropriate speaker hook-up icons for your system's configuration. Tighten with your fingers to obtain a positive contact.

When banana plugs are permitted, connections may be made by simply inserting the jack affixed to your speaker wire into the hole provided on the rear of the colored screw caps on the binding posts. Before using banana-type jacks, make certain that the plastic screw caps are firmly tightened down by turning them in a clockwise direction until they are snug against the chassis. This will ensure that the maximum surface area of the plug is in contact with the jack. Be certain to observe proper polarity.

Finally, run the cables to the speaker locations. Where possible, it is recommended that the length of cable connecting any pair of speakers be identical, even though one speaker may be physically closer to the amplifier than the other. Do not coil any excess cable, as this may become an inductor that creates frequency response variations in your system.

Finally, connect the wires to the speakers, again, being certain to observe proper polarity. Remember to connect your "negative" or "black" wire to the matching terminal on the speaker. Similarly, the "positive" or "red" wire should be connected to the like terminal on the speaker.

NOTE: While most speaker manufacturers adhere to an industry convention of using black terminals for negative and red ones for positive, some manufacturers may vary from this configuration. To ensure proper phase connections and optimal performance, consult the identification plate on your speaker terminals, or the speaker's manual to verify polarity. If you do not know the polarity of your speaker, ask your dealer or installer for advice before proceeding, or consult the speaker's manufacturer.

As a general rule, avoid running input signal or speaker wire connections in parallel with each other, or with AC power cords. This can result in undesired hum or other interference that will greatly degrade signal performance.

Audio Signal Connections

Audio connections for the PA 2000 are straightforward: connect the output of the source unit, which may be the multiroom outputs of an AV receiver or "whole-house" audio system or the rear surround outputs of a processor or a receiver to the audio **Input Jacks ❶**.

In some multiroom systems, you may wish to have the same signal feed multiple amplifiers. In that type of installation, the input feed to the PA 2000 may be daisy-chained to an additional amplifier by connecting the audio **Output Jacks ❷** on the PA 2000 to the input jacks on a second PA 2000 or another amplifier.

When making connections with the RCA-type plugs on interconnect cables, make certain to *gently* but firmly insert them into the jacks on the back of the PA 2000. Loose connections can cause intermittent sound and may damage your speakers. The barrel assembly of some high-quality RCA plugs may be very tight, and it is important to ensure a proper connection between the interconnection cable and the input jack.

AC Power Connection

The final step in the installation of the PA 2000 is to connect the power cord. First, connect the female end of the cord into the **AC Power Cord Receptacle ❸** on the rear panel. Once the cord has been firmly connected to the PA 2000, insert the plug end into an AC power outlet.

SAFETY NOTES:

- Due to the current draw of the PA 2000, DO NOT connect the power cord to the accessory outlet on audio/video components.
- Should the power cord become lost or damaged, be certain to replace it with a replacement that meets or exceeds the original specifications. Use of power cords with insufficient capacity, such as those used with computers or office equipment, may create a safety hazard.

Operation

Operation of the PA 2000 is simple. In normal use, there are no controls to adjust once the installation is complete.

After all connections have been made to the amplifier's inputs and speaker terminals, and the AC power cord has been connected, the way in which the unit turns on is determined by the settings for the **Power Control Mode Switches 3**. Depending on the settings, as described on page 7, the amplifier will turn on in one of these three ways:

- When the **Power Control Mode Switches 3** are set to the right, in the ON position, the PA 2000 will turn on when the **Power Switch 1** is pressed in. Press the switch again to turn the amp off.
- When the **Power Control Mode Switches 3** are set in the middle, in the "AC/DC TRIGGER" position, the **Power Switch 1** should be pressed in to place the PA 2000 in the Standby mode. The unit will now turn on automatically when a low-voltage signal is present at the **Trigger Jack 6**.
- When the **Power Control Mode Switches 3** are set to the far left, in the "MUSIC SENSE" position, the **Power Switch 1** should be pressed in to place the PA 2000 in the Standby mode. The unit will now turn on automatically whenever an audio signal is present. The unit will return to the Standby mode 10 to 15 minutes after the audio signal is removed.

As a general rule, it's always a good idea to turn on your amplifier LAST. This avoids the possibility of any turn-on pops or transients from other equipment being amplified and sent to your speakers where they may cause damage. Always start with a low volume level on your receiver, controller or preamp to avoid damage to your speakers.

You are now ready to enjoy the finest sonic performance available.

SAFETY NOTE: To prevent unintended operation, remember to turn the unit completely off when it will not be used for an extended period of time. This is done by pressing the **Power Switch 1** and noting that the **Standby Indicator 3** goes out. This will prevent the automatic turn-on circuits from accidentally turning the amplifier on during your absence.

Output Level Adjustment

In normal operation, the source unit controls the volume for signals fed to the PA 2000. This is particularly important for surround-sound applications, as the volume to all channels in a system, regardless of the amplifier, should be equal in order to ensure proper reproduction. In most cases, the factory volume setting is appropriate and need not be changed.

However, in some instances it may be necessary to vary the output level of the PA 2000, either to match the levels for surround systems, or to set a fixed volume level for a remote room speaker. In these cases, the PA 2000's output volume may be adjusted by turning the **Output Level Trim Control 4** on the rear panel. When adjustment is required, turn the knob in either direction until the desired level is achieved.

When the PA 2000 is operated in the Bridged configuration, use the **Output Level Trim Control 4** labeled "VOL. 1" to make adjustments.

NOTE: The Output Level Trim Controls operate for both speakers in a given channel. You may adjust the output of one channel pair or the other, but it is not possible to individually adjust either the separate left or right channel output within a given channel pair.

Service Information

If your installation has followed the procedures in this manual, you should enjoy many years of trouble-free operation and high-quality listening enjoyment. The PA 2000 does not contain any user-serviceable parts. If you suspect a problem that may require service assistance, contact your dealer, installer or an authorized Harman Kardon service depot.

You may also contact Harman Kardon at www.harmankardon.com.

It is important that any repairs be carried out only by an authorized Harman Kardon service agent to ensure proper service and preserve the protection of your Limited Warranty. It's a good idea to keep your sales slip or receipt in a safe place (along with this manual) so that it will be available to verify the purchase date for warranty claims.

Input/Output Protection Mode

Under some conditions, such as a shorted speaker wire, DC voltage on an input connection or thermal overload, the Harman Kardon PA 2000 will place itself in a Protect mode to prevent damage to the amplifier. When this happens, the **Protect Indicator**  will light.

When this occurs, IMMEDIATELY turn off the unit using the power switch and correct the problem. Then turn the unit back on. If the unit continues to go into a Protect mode, contact your dealer or installer for assistance.

Troubleshooting Guide

The items listed below are a brief guide to minor problems that may arise with audio equipment such as the PA 2000. Before taking a unit in for service, you should check to see whether any of these hints solve the problem. If these solutions do not rectify the problem or if the problem recurs, contact your dealer or an authorized Harman Kardon service depot for assistance.

SYMPTOM	CAUSE	SOLUTION
Amplifier will not turn on.	<ul style="list-style-type: none">• Power switch turned off (no power light LED).• Remote trigger cable not properly connected.	<ul style="list-style-type: none">• Turn on power switch.• Verify connection of trigger cable at both ends.
Amplifier turns on, but there's no audio from one or more channels.	<ul style="list-style-type: none">• Inputs not connected to proper jack.• Speakers not connected properly.• Improper settings or levels from processor or controller.	<ul style="list-style-type: none">• Check input connections.• Check speaker connections.• Check the settings on your preamp, processor or controller.
Audio plays, then cuts off.	<ul style="list-style-type: none">• Amplifier shorted (Protect Indicator lights).	<ul style="list-style-type: none">• Check speaker connections for short circuit.

Technical Specifications

Power Output	
Normal Mode	4 x 45 watts @ 8 ohms, 20Hz – 20kHz, <0.07% THD, all channels driven
Bridged Mode	2 x 100 watts @ 8 ohms, 20Hz – 20kHz, <0.07% THD, all channels driven
High-Current Capability	±45 amps
Frequency Response	<1Hz – 170kHz, –3dB at 1 watt
Signal-to-Noise Ratio	110dB at rated power 45 watts
THD/IMD	Less than 0.07% at rated output
Power Bandwidth	<1Hz – 100kHz
Input Impedance	47K ohms
Input Sensitivity	1 volt for rated output
Remote Trigger Voltage	3 – 30 volts AC/DC
Remote Trigger Impedance	20K ohms
Dimensions (H x W x D)	6-1/8" x 17-3/8" x 15-3/4" 155mm x 442mm x 400mm
Weight	25.3 lb/11.4kg
Power Requirements	120VAC, 50Hz/60Hz 260 watts, maximum

Notes

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