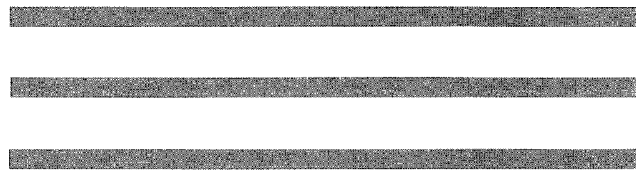
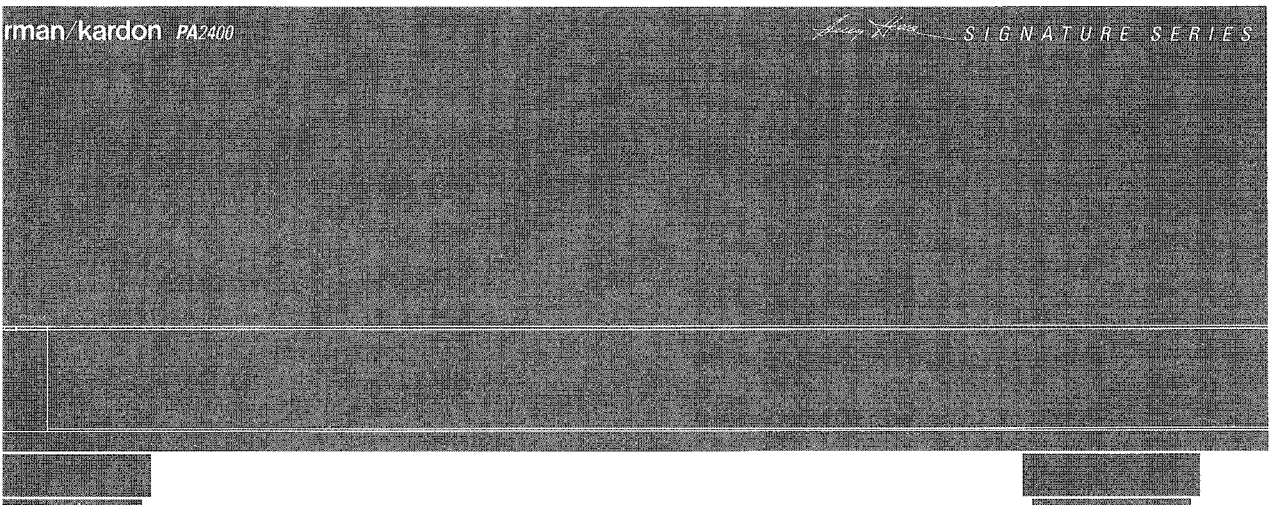


# PA2400



■ **harman/kardon**

Stereo Power Amplifier

# OWNER'S MANUAL

# PA2400 STEREO POWER AMPLIFIER



**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.

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



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.

**CAUTION:** TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

**ATTENTION:** POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.

Congratulations on your choice of the Harman Kardon PA2400 Stereo power amplifier.

This Harman Kardon power amplifier has been designed to provide a high performance/cost ratio and all of the sonic benefits assured by Harman Kardon's design philosophy. Much emphasis has been placed on minimizing the effects of the construction on the PA2400's sound quality. High grade capacitors with extremely low loss are used in the power supply and amplifier circuitry. All wires are carefully routed so as to reduce pick-up and crosstalk. Critical grounding points are connected to the chassis by copper thread-cutting screws to guarantee very low resistance.

In order to obtain the best performance from the power amplifier, please be sure to read this owner's manual and use the PA2400 only in accordance with its instructions.

## FEATURES

### HCC (High Instantaneous Current Capability).

This enables the power amplifier to maintain an undistorted output signal when driving low impedance or reactive loads.

### Ultrawide Bandwidth

The bandwidth of the power amplifier is exceptionally wide and is independent of negative feedback. This improves transient accuracy and phase linearity.

### Low Negative Feedback

This unit has been designed to have low distortion and wide bandwidth without high negative feedback. This further improves its dynamic accuracy.

### Discrete Component Circuitry

In order to achieve the above goals, all discrete electronic circuitry has been employed. All available integrated circuits could not provide this level of performance.

## GENERAL INSTRUCTIONS

### Always Use at 120V AC

This unit is designed for operation with 120V AC. Use only domestic AC outlets. Never connect the unit to an outlet supplying a higher voltage. This may create a fire hazard. (For 230-240 Volt units only) This unit is supplied with a voltage selector enabling selection between 230V and 240V on the rear panel. If the selector is not set to the local voltage, set the selector to the correct voltage with a screwdriver before connecting the power cord to a mains outlet.

### Handle the power cord gently

Do not disconnect the plug from the AC outlet by pulling the cord; always pull the plug itself. Pulling the cord may damage it. If you do not intend to use your unit for any considerable length of time, disconnect the plug from the AC outlet. Do not place furniture or other heavy objects on the cord, and try to avoid dropping heavy objects upon it. Also do not make a knot in the power cord. Not only may the cord be damaged, it can also cause a short circuit with a consequent fire hazard.

## Place of Installation

Place the unit on a firm and level surface. Avoid installing your unit under the following conditions:

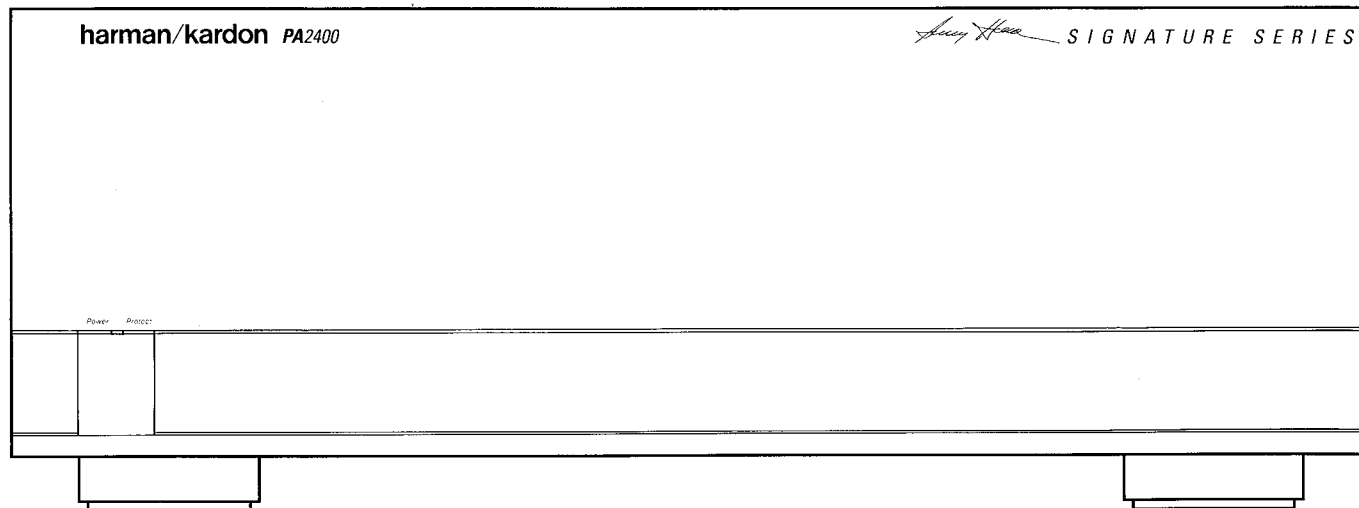
- Moist or humid places.
- Places exposed to direct sunlight or close to heating equipment.
- Extremely cold locations.
- Places subject to excessive vibration or dust.
- Poorly ventilated places.

Do not obstruct the ventilation slots on the top surface of the unit by placing objects over them.

Otherwise, the temperature inside the unit may rise, possibly affecting its long-term reliability.

## Do Not Open the Cabinet

To prevent shock hazard, do not tamper with internal components for inspection or maintenance. Harman Kardon does not guarantee against performance degradation resulting from any modification. If water, a hairpin or wire accidentally enters the unit, immediately extract the plug from the AC outlet to prevent shock and consult an authorized Harman Kardon service station. If you use the unit under this condition, it may cause a fire or shock hazard.



## In Case of Moving the Unit

Before moving the unit, be sure to pull out the power cord from the AC outlet and disconnect the interconnection cords with other units.

## Cleaning

If the unit gets dirty, wipe it with a soft dry cloth. If necessary, wipe it with a soft cloth dampened with mild soapy water and then with a dry cloth. Never use benzene, thinner, alcohol or other volatile agent, and avoid spraying an insecticide near the unit.

## Protection Circuit

The protect light indicates that the protection circuitry of your amplifier is engaged. The light will come on under two circumstances:

- When you turn the unit on. As the unit prepares itself for operation, a muting circuit temporarily prevents pops or other noise from reaching your speakers. When the unit is ready for operation (in approximately 10 seconds), the light will go off.
- When the unit detects a problem. This light will come on if your speaker wires are touching, causing a short circuit, or if your amplifier overheats.

In the case of overheating, a thermal sensor will shut down the unit before damage can occur. Depending on the cause and extent of the overheating, the unit may take some time to cool down, and the protection circuit will remain in operation until the unit is cool enough to operate safely. In the case of a short circuit in the speaker wires, the protection circuitry will attempt to reset itself every 10 seconds, and you may hear a slight click as it does so. The protection circuit will remain in operation until the condition is corrected.

## Connecting a Preamplifier

In order to obtain the best sound quality from the PA2400, it is recommended that high quality interconnection wires be used. Their quality can have a large effect on the quality of the total system. Connect the wires from the output terminals of the preamplifier to the left and right channel power amplifier's INPUT terminals. Push the plugs in all the way. Poorly seated plugs tend to cause hum, noise or intermittent operation which may damage the speakers.

NOTE: Do not interwind the preamplifier connection wires with the power cord. It may degrade the sound quality.

Do not turn on the power amplifier before turning on the preamplifier, and always turn off the power amplifier before turning off the preamplifier. The speakers or power amplifier may be damaged by the turn-off transients created by some preamplifiers.

## Auto-Standby Feature Operation

The PA2400 has a unique ability to sense when it is not receiving a music signal and can automatically switch into a "Standby" mode. When this happens, the power amplifier circuitry completely shuts off and the front panel power indicator color changes from green (for "On") to amber (for "Standby"). When the amplifier again receives a music signal, it will return to the "On" state. The Auto-Standby feature instantly switches the amplifier "On", and switches it to "Standby" approximately 2 minutes after the incoming music signal stops. The 2 minute time before switching to "Standby" is to prevent the amplifier from unnecessarily switching between modes during use, or while the user is changing inputs or selecting software.

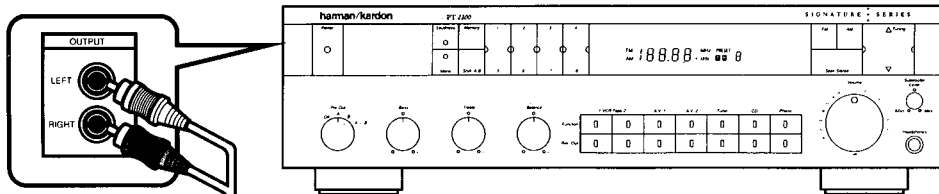
This feature allows leaving the amplifier power switch in the "On" position when the amplifier is not in use. This can be a benefit in many systems and installations where the amplifier is not located within reach or is in another room.

The "Auto-Standby" feature is also defeatable, for those customers that prefer the amplifier to behave in a conventional way. The "Auto-Standby" defeat switch is set in the "Off" position at the factory.

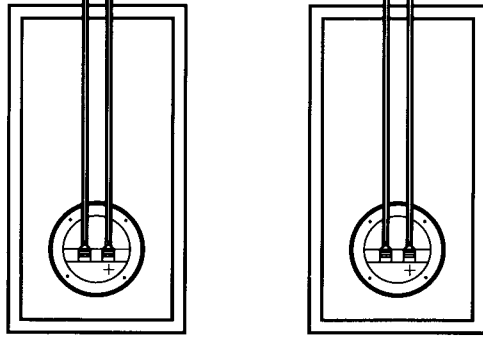
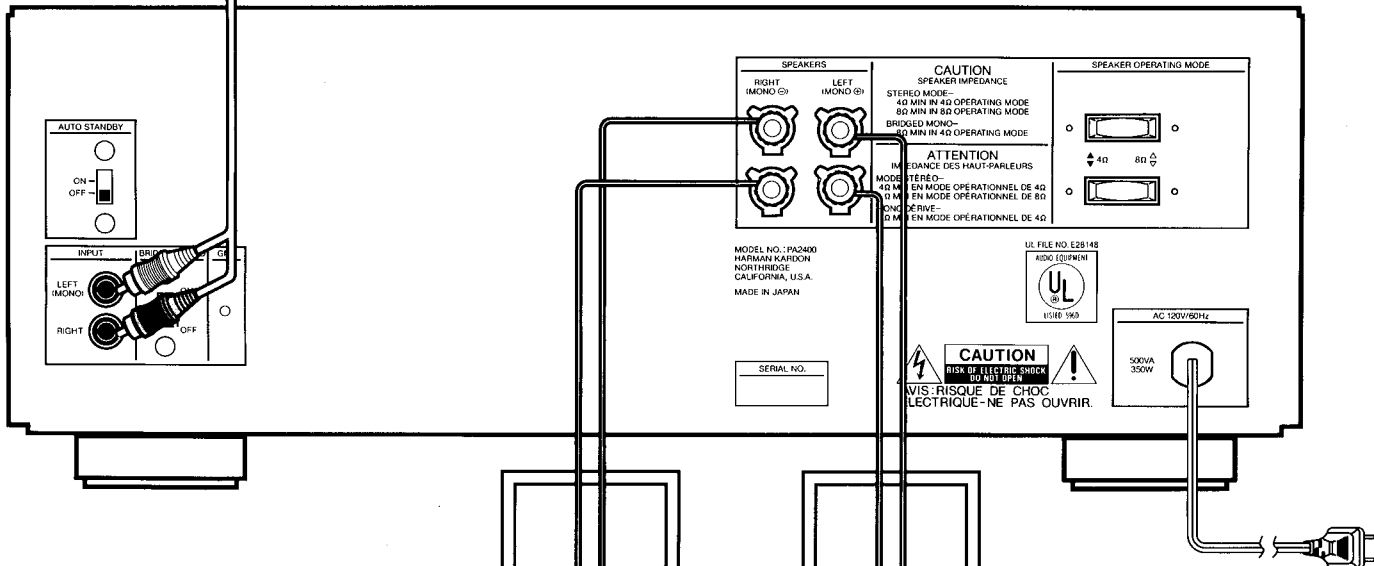
## Connecting the Speakers

CAUTION: The rated impedance of the speakers to be connected should be in the range of 4 to 16 ohms (8 to 16 ohms for bridged mono operation). Connect the speaker wires carefully to the SPEAKER terminals so as not to mistake the left and right channels or reverse the speaker polarities (+ and -). Use sufficiently thick wire (16 gauge minimum) with low electrical resistance. It is recommended that color-coded wires be used for easy determination of polarities. Speaker wires should be as short as possible, and the left and the right channel wires should have the same length.

Preamplifier



PA2400



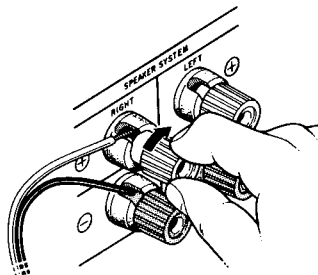
Right Channel

Left Channel

Speaker System

### Connect as follows:

1. Remove about 3/4 inch (20mm) of insulation from the end of each wire and twist the strands of each conductor.
2. After making sure of the correct channel and polarity, loosen the SPEAKER terminal knob and insert the conductor directly into the recess at the upper-left of the terminal. Then tighten the terminal knob, and the end of speaker wire is automatically wound around the terminal.



### Setting the Speaker Operating Mode Switches

These switches, located in the top right corner of the back panel, optimizes the amplifier for the best possible operation with your speakers. *It is extremely important* that you set these switches before playing your speakers. First, determine the impedance of your speakers. The impedance may be noted on the back of the speaker or in the owner's manual. If not, call the dealer or manufacturer to find out the impedance.

If you are using set of 8 ohm speakers, set both of the "Speaker Operating Mode" switches to 8Ω position. In all other cases, use the 4Ω positions. If you are in doubt about the impedance of your speakers, use the 4Ω positions, since the power amplifier runs cooler in this mode. Having these switches set to 8Ω if you are using 4 ohm or 6 ohm speakers may result in overheating of the amplifier or failure of an internal fuse.

### Bridged Mono Operation

This feature permits both amplifier channels to drive one 8Ω loudspeaker. To operate the amplifier in this way, set both of the "Speaker Operating Mode" switches to the 4Ω positions, set the "Bridged Mono" switch in the "On" position and connect one channel of the preamplifier output to the amplifier's left input jack. Then connect the amplifier's Left (Mono +) speaker terminal to the loudspeaker's "+" wire and the amplifier's Right (Mono -) speaker terminal to the loudspeaker's "-" wire.

**Please note:** The amplifier is not designed to drive a 4Ω speaker in the Bridged Mono mode.

### Warranty and After-sale Service (USA Customers Only)

- Please find the warranty card enclosed with this unit when you purchased it.
- After filling in the required items and reading the contents of the warranty card, keep it in a safe place.
- The warranty term is two years after date of purchase.
- If this unit does not appear to operate normally, read this manual following the instructions carefully and operate the unit again.
- If a problem persists even though you have done according to the manual, consult your authorized Harman Kardon service station.
- Repair within the warranty term is made according to the conditions specified in the warranty card.

# PA2400 SPECIFICATIONS

## Continuous Average Power

Per Channel (FTC), from 20Hz to 20kHz, both Channels Driven

8 Ohms: 170 Watts @ < 0.08% THD

4 Ohms: 170 Watts @ < 0.08% THD

Bridged (FTC), from 20Hz to 20kHz, Mono

8 Ohms: 340 Watts @ < 0.15% THD

## Dynamic Power (IHF, 1kHz tone burst)

High Voltage/High Current Mode:

8 Ohms: 270 Watts

4 Ohms: 420 Watts

2 Ohms: 600 Watts

High Current Mode:

4 Ohms: 270 Watts

2 Ohms: 420 Watts

High Instantaneous Current Capability (HCC):

±100 Amperes

Negative Feedback:

12dB

Power Bandwidth @ half-rated output, 8 Ohms:

< 10Hz - > 100kHz

Frequency Response @ 1 Watt (+0/-3dB):

0.1Hz - 250kHz

Slew Rate\*:

280 Volts/μSec

Rise Time:

0.8 μSec

Transient Intermodulation Distortion (TIM):

unmeasurable

Damping Factor:

120

Signal-to-Noise Ratio (ref rated power, A-Wtd):

120dB

Input Sensitivity/Impedance:

0.8 Volts/33kOhms

Dimensions (W x H x D)

inches: 17<sup>3</sup>/<sub>8</sub> x 6<sup>3</sup>/<sub>8</sub> x 16

mm: 443 x 160 x 405

Weight

lbs: 35.3

kgs: 16.0

Depth measurement includes buttons and terminals.

Height Measurement includes chassis feet.

\*Measured without input anti-slewing and output isolation networks.