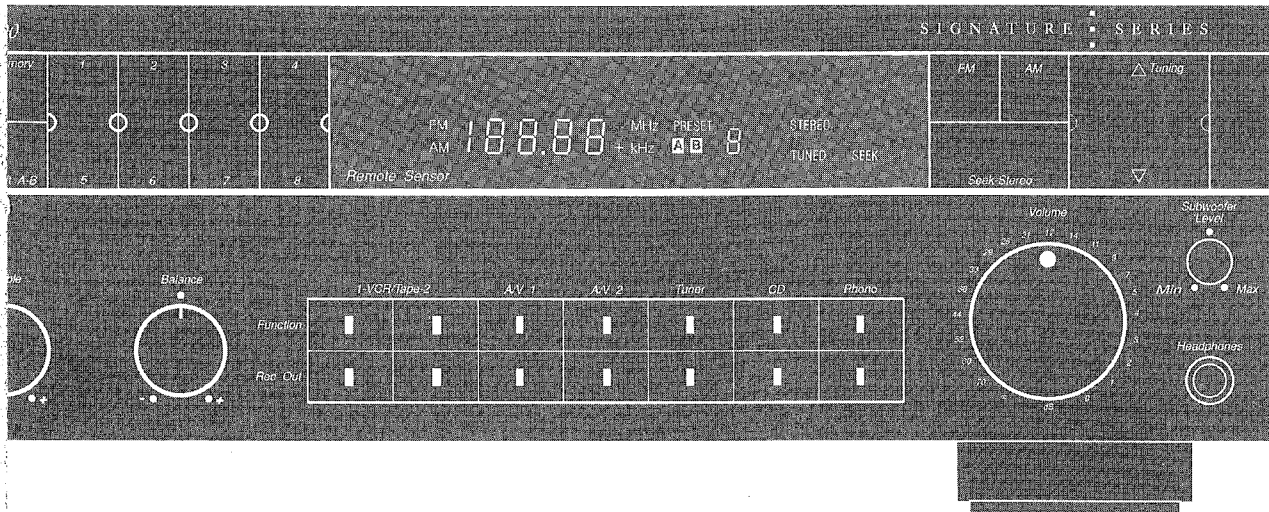


PT2300



harman/kardon

Preamplifier Tuner

OWNER'S MANUAL

GENERAL INSTRUCTIONS



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.

Use 120-volt AC only *

Connecting the unit to an outlet supplying a higher voltage may create a fire hazard.

Handle the Power Cord Gently.

- To disconnect the plug from the AC outlet, pull on the plug itself, not on the cord.
- Disconnect the plug from the AC outlet whenever the unit is to be left unused for an extended period of time.
- Do not place furniture or other heavy objects on the cord, and avoid dropping heavy objects on it. Also do not make a knot in the cord.

***NOTE:** Units sold in countries with 230-240 Volts AC are designed for 230-240 Volts.

Place the unit on a firm and level surface.

Avoid installing it:

- In moist or humid places;
- Close to heating equipment or in places exposed to direct sunlight;
- In a direct draft from an air conditioner or in other very cold locations;
- In places subject to excessive vibration or dust;
- In poorly ventilated places.

Moving the Unit.

Before moving the unit, be sure to unplug the power cord from the AC outlet and disconnect all wires to antennas and to other stereo components.

Do Not Open the Cabinet.

Do not attempt to service this unit. Tampering with internal components can cause fire or shock, and may void your guarantee. If water or small objects enter the unit, unplug the power cord immediately and consult an authorized Harman Kardon service center. Using the unit under such conditions may cause a fire or shock hazard.

Cleaning.

Remove dust by wiping the unit with a soft, dry cloth. If necessary, use a soft cloth lightly dampened with mild soapy water; then wipe with a dry cloth. Never use benzene, thinner, alcohol or other volatile agents, and avoid spraying insecticides near the unit.





PT2300 PREAMPLIFIER TUNER

Thank you for choosing a Harman Kardon Preamplifier Tuner. And congratulations. Your new unit is an exceptionally well-engineered product that will give you years of superb performance. Among its special features are:

■ **Ultrawide Bandwidth**

The circuitry is designed to deliver extended frequency response, while keeping phase shift well outside the audible spectrum. The result is stereo imaging and clarity with remarkably accurate spatial positioning of vocals and musical instruments.

■ **Discrete Circuitry**

For maximum design flexibility and highest possible performance, the circuitry has been designed using discrete electronic components, not off-the-shelf integrated circuits.

■ **Low Negative Feedback**

Conventional designs rely heavily on negative feedback to reduce Total Harmonic Distortion. This results, however, in excessive Transient Intermodulation Distortion, audible in the harsh, grating quality of the sound. Harman Kardon keeps negative feedback low for smoother, clearer reproduction of complex musical sounds, such as those of stringed instruments.

■ **Two selectable preamplifier outputs**

for multi-room and multi-amplifier use.

■ **Automatic Tuner Switching**

When not in use, the tuner circuitry is automatically turned off, eliminating any electronic interference and assuring optimal performance of amplifier circuitry.

■ **Video Switching**

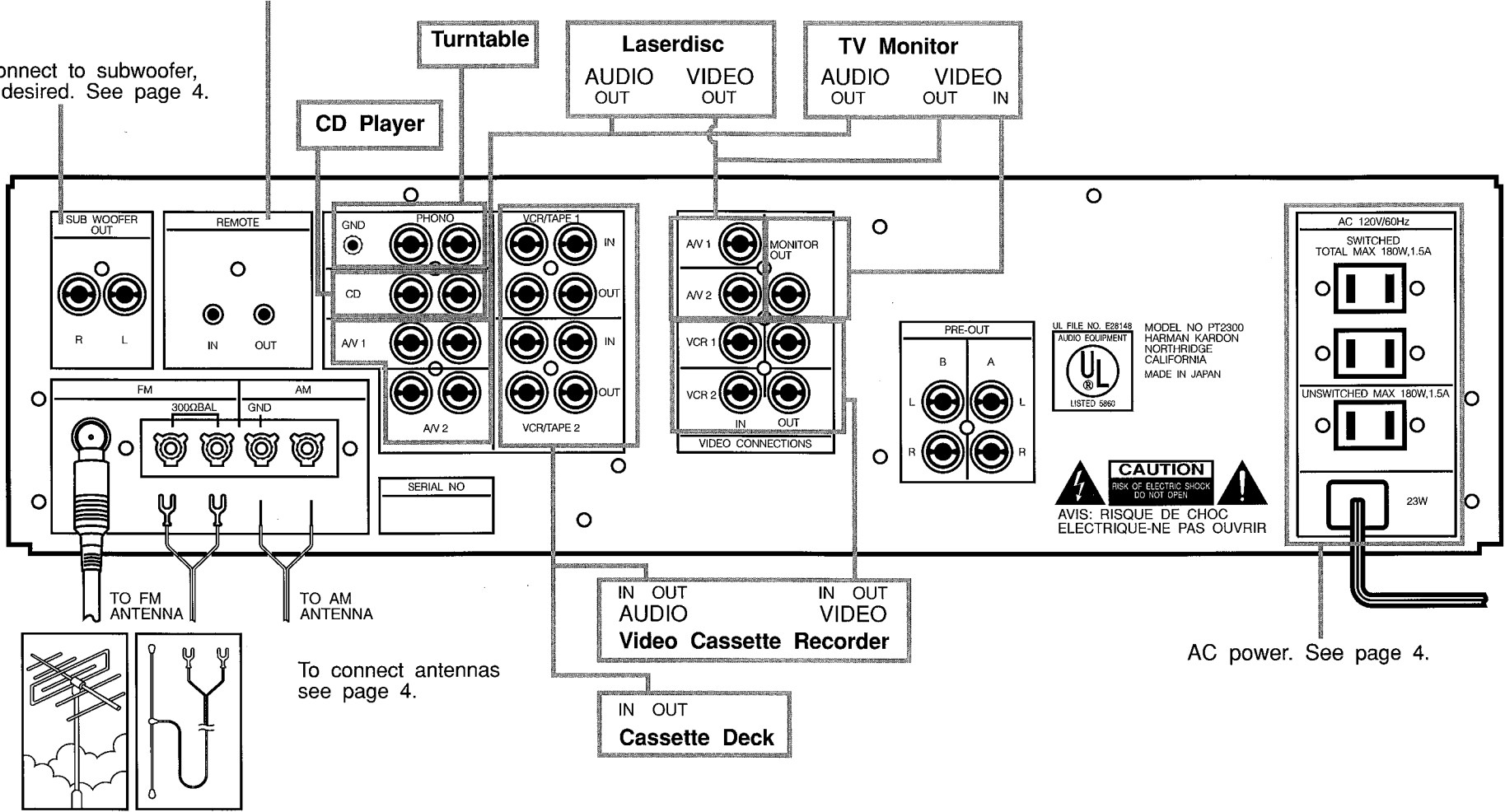
When TV, VCR, or video disc player is selected as a source for viewing or recording, both audio and video outputs are selected simultaneously.

To get the most from your new tuner, please read this manual carefully and follow its instructions. Save this manual for future reference.

INSTALLATION

Connect wired remote control, if desired. See page 4.

Connect to subwoofer, if desired. See page 4.





General Information

Save all packing material.

It is essential for shipping should you move, or in the event the unit ever needs repair.

Placement:

Unit may be placed on top of or beneath other stereo components, so long as its placement meets the cooling requirements of the component beneath it.

Connecting Antennas

Select the FM antenna that best meets your needs.

1. An indoor dipole antenna is supplied with your PT2300. This will work well if you are located in a strong signal area.
 2. Other indoor antennas are available which may improve reception by offering greater positioning flexibility.
 3. If reception is unsatisfactory using indoor antennas, an outdoor antenna should be installed.
 4. Alternatively, you may connect to an FM cable antenna, if available.
- Connect the FM antenna.
Connect the two leads of the antenna to the two screw-down terminals marked "FM 300ΩBAL".

If you wish to connect a cable antenna, connect it to the two screw-down terminals marked "FM 75Ω UNBAL". (For 230-240 Volt AC units: If you wish to connect a cable antenna, connect it to the coaxial connector marked "FM 75Ω UNBAL".)

Position the FM antenna for optimum reception.

Reception from all of the above antennas (except the cable antenna) may be improved by re-positioning them. Try your antenna in different positions to find the one in which most of your desired broadcasts have high signal strength readings and good sound quality.

Connect the AM Antenna.

Your receiver comes with an AM loop antenna which provides good reception in most locations. For best results, place this antenna away from the unit and away from contact with any metal object. Alternatively, you may place the antenna in the holder provided on the back of the PT2300. In areas where AM signals are weak, an outdoor AM antenna may improve sound quality. Connect the AM antenna leads to the screw-down terminals marked "AM" on the back of the PT2300.

Subwoofer Out

Connect these jacks, if desired, to a powered subwoofer, or a power amplifier driving a subwoofer. This output may also be used for surround-sound equipment or any external component requiring a line-level input.

Wired Remote Control

To control your PT2300 with an external infrared remote sensor, connect the wire from the remote sensor to the "Remote In" jack on the back panel. Or, if you have a stereo component with a built-in infrared remote sensor and a "Remote Output" jack, it may be possible to connect this jack to the "Remote In" jack of your PT2300. All Harman Kardon products with "Remote In" and "Remote Out" jacks are compatible with one another, except for the Citation 22, 24 and 25. Other manufacturers' remote sensors may not be compatible, but it will not hurt to experiment. A second wire may be used to connect your PT2300's "Remote Out" jack to the "Remote Input" of another stereo component. Continue

this process to include additional components (if compatible). To control your PT2300, you may use the remote control supplied with the PT2300. Or you may use a universal remote control unit, such as Harman Kardon's Masterworks, which can also control other components, such as TVs, VCRs, tape decks and CD players. Masterworks is available from your Harman Kardon dealer.

AC power

Plug the cord into a polarized wall socket, or polarized extension cord.

Using AC convenience receptacles: (120 Volt units only)

Other stereo components may be plugged into the back of your PT2300.

1. If a component is plugged into the "Switched" receptacle, power will be supplied to that component only when your PT2300 is turned on.
2. If a component is plugged into the "Unswitched" receptacle, power will be supplied whether your receiver is on or off.

NOTE: Do not connect any component that requires more than 180 watts of power. Check the owner's manual or the back of the component to find its power requirement.

Connecting Audio Components

General Instructions:

1. Make sure the PT2300 and other components are turned off.
2. Connect each component's Output jacks to the corresponding "In" jacks on the back of your receiver. Use the white, black or gray plugs to connect Left channel jacks; use the red plugs for Right jacks.

Connect your turntable to the jacks marked "Phono."

Also connect the ground wire from the turntable to the terminal marked "GND" next to the Phono jacks.

NOTE: Your PT2300 is designed for use with turntables using moving magnet cartridges. If yours uses a moving coil cartridge, place a step-up transformer between the turntable and PT2300.

Connect tape deck(s) to the jacks marked "VCR/Tape."

Two tape loops are provided, allowing you to connect two tape decks, two video-cassette recorders (VCRs), or one of each (for VCR installation, see below). To connect a tape deck, connect the Left and Right Output jacks from the deck to the corresponding "In" jacks on

the PT2300. Then connect the Input jacks on the deck to the "Out" jacks on the PT2300.

If you are using an equalizer and/or other external signal processing components, connect these components to the tape In and Out jacks on the PT2300. Then connect your tape deck to the Tape Monitor jacks provided on the last outboard component. To activate the signal processing components, press the appropriate Function Select button (Tape 1 or Tape 2) on the front of your PT2300. To use your cassette deck, press the Tape Monitor buttons on the signal processing components.

Connect CD players and other audio components.

Plug compact disc players into the jacks marked "CD." The "A/V1" and "A/V2" jacks may be used to connect other audio components, or audio lines from VCR, TV or video disc players (see next section).

Connect Power Amplifiers to the jacks marked "Pre-Out."

Pre-Out "A" and "B" jacks are provided. If only one power amplifier is to be used, connect the Pre-Out

"A" terminals to the Left and Right input terminals on the power amplifier. You may use the Pre-Out "B" terminals for a second power amplifier.

The front panel Pre-Out Selector determines whether the "A" and "B" jacks are activated. If you are using the Harman Kardon PA2100 or PA2200 power amplifier, the PT2300 Pre-Out Selector can also be used to activate the power amplifiers' Auto-Standby features and thereby remotely turn on and turn off each amplifier.

Connecting Video Equipment

The PT2300 makes it easy to interconnect your TV, VCR or video disc player with each other and with your audio equipment.

Note: Before making connections, be sure all equipment is turned off.

Connect your TV or Laserdisc player.

Connect the Left and Right audio output jacks on your TV and Laserdisc player to the jacks marked "A/V 1" and "A/V 2" on your PT2300. Next connect the video output jack

on the TV and Laserdisc player to the "A/V 1" and "A/V 2" video jacks to the right of the tape loop jacks on the PT2300; then connect the adjacent "Monitor Out" jack on the PT2300 to the video input jack on your TV.

NOTE: Be sure to set your TV to activate its video input jack. The TV switch may be marked "TV/Monitor," "TV/Video," "Antenna/Video," etc. Select the "Monitor" or "Video" option. For some TVs it may only be switched by remote control.

Connect your VCR.

Connect the audio output jacks on your VCR to the VCR/Tape1 (or VCR/Tape 2) "In" jacks on your receiver; connect the "Out" jacks on the receiver to the input jacks on the VCR. Next connect the video output jack on your VCR to the video "In" jack marked "VCR 1" (or VCR 2 if Tape 2 audio loop was used); connect the adjacent video "Out" jack to the video input jack on your VCR.

CONTROLS

Power

Press to turn the unit on and off.
(For use with Remote Control, see page 8.)

Mono

Press to hear input from any source in mono

Loudness

Press to improve sound quality when listening to your system at low volume

Shift A-B

Allows you to access 16 pre-selected station using the 8 preset buttons.

Memory

Press to set a new Preset station in memory

Seek-Stereo

Press to select Seek tuning in stereo, or manual tuning in mono.

Preset Buttons

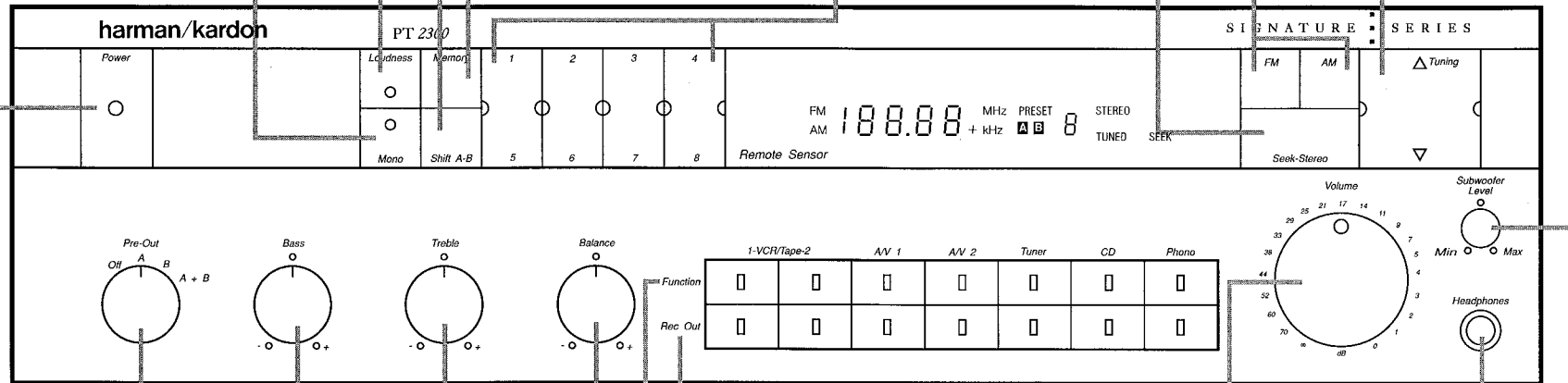
Press to access pre-selected stations.

FM/AM

Press to select FM or AM reception.

Tuning

Press ▲ to tune to stations with higher frequencies; press ▼ for lower frequencies.



Pre-out

Turn to select either of two Pre-out jacks, or both, or neither (headphone output only).

Bass

Turn to increase or decrease the proportion of low frequency sound.

Treble

Turn to increase or decrease the proportion of high frequency sound.

Balance

Turn to adjust relative output level of left and right speakers

Function Selector

Press desired key to choose audio/video source

Record Selector

Press desired key to choose source for tape deck or VCR recording

Volume

Turn to raise or lower output volume

Headphone Jack

Plug in headphones if desired. (With Pre-out switch in Off position, output is supplied only to headphones.)

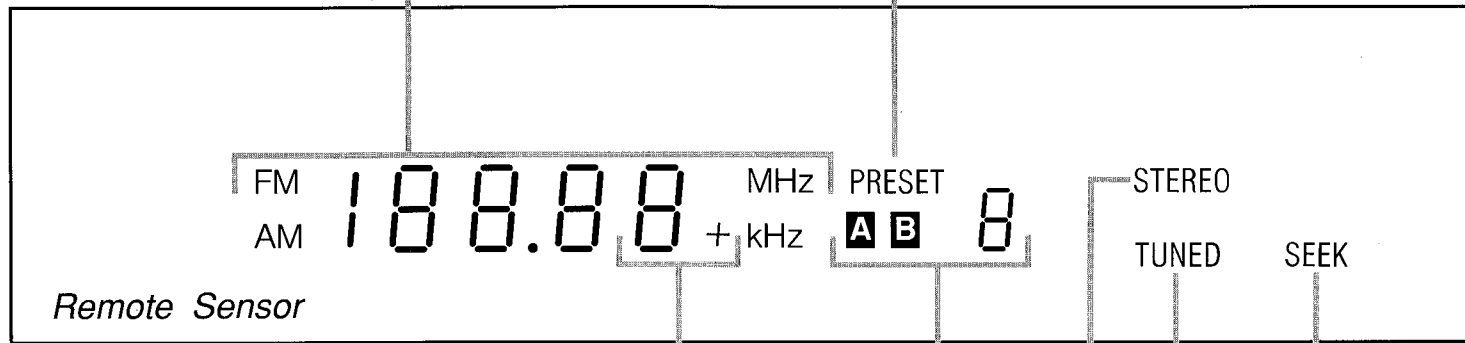
Subwoofer Level

Turn to increase the subwoofer output level relative to the speakers connected to the PT2300

DISPLAYS

Indicates AM or FM band and frequency of the tuned station

Flashes during the period when a station can be entered into memory



(For 230-240 Volt AC units)

Shows when a preset station is selected

Shows Seek function is on and stereo reception is possible

Indicates station is properly tuned

Shows stereo broadcast is being received



REMOTE CONTROL

Using the Remote Control

The keys on the remote control unit function the same as the corresponding buttons on the PT2300 itself, except for the power switch.

The power switch on the PT2300 turns the unit On and Off. The switch on the remote control switches the PT2300 from On (green LED illuminated on PT2300 power switch) to Standby (amber LED), as follows:

When power is On, pressing the power switch on the remote control puts the PT2300 in Standby mode. From this mode, the receiver can be turned back On from the remote control.

When power is Off, the PT2300 can be turned on only from the unit itself, not from the remote control.

In addition to this amplifier, this system remote control can operate many basic functions on the following Harman Kardon tuners, CD players and cassette decks:

HD7450	HD7600II	TD4200*	TD4800	TU9200*
HD7500	TL8500	TD4400*	DC5300*	TU9400
HD7500II	TL8600	TD4500	DC5500	TU9600
HD7600		TD4600	DC5700	

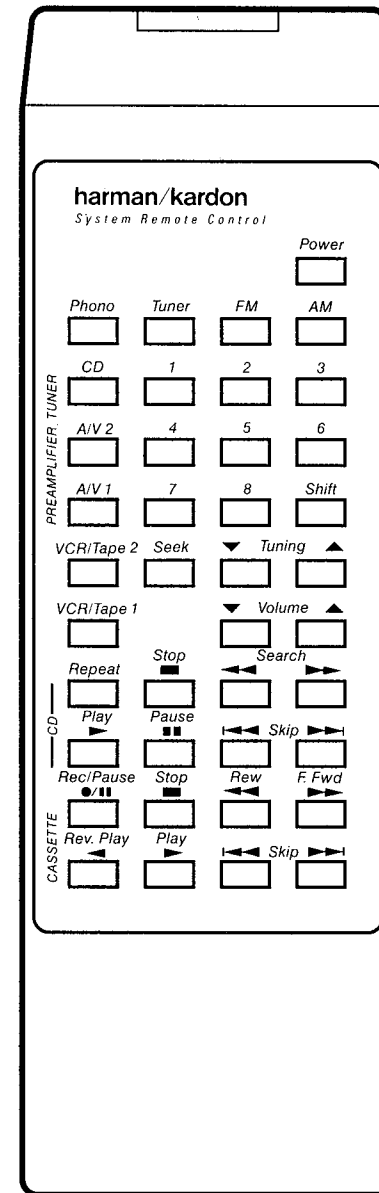
Please refer to the owner's manual for each unit for operating instructions.

*These units must be connected to the amplifier's remote control output jacks so that the system remote control can operate them.

Operating Conditions

The control unit operates effectively within a distance of 7 meters (23 feet) and an angle of 30° from the PT2300. Using the control near fluorescent lights may shorten this range, as will any dust or dirt that accumulates on the front of the remote control, or the "Remote Sensor" area of the PT2300. Also avoid blocking the line of sight between the PT2300 and remote.

The control unit is powered by two AA batteries, included in the carton with your PT2300. When you replace weak batteries, replace both at the same time. When the remote is to be unused for an extended period, remove the batteries to prevent damage from corrosion.



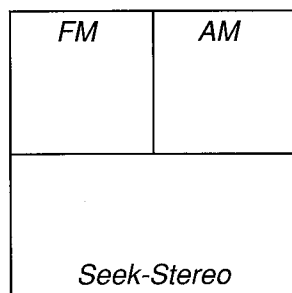
OPERATING INSTRUCTIONS

Listening to your turntable (phono), CD player, tape deck, or other component sound source

1. With Power on and Volume knob at minimum level, select pre-out setting to play amplifiers A, B, both or neither (for headphone use).
2. Press the Function Selector button that corresponds to the component you wish to hear.
3. Begin playing the desired component.
4. Adjust the Volume to the desired level.
5. When listening at low volume, you may wish to press "On" the Loudness button. This boosts low frequencies to improve the apparent balance of low, mid and high frequencies.
6. Adjust Bass, Treble and Balance knobs as desired.

Playing Video Equipment

1. With Power on and Volume knob at minimum level, select Pre-out setting to play amplifiers A, B, both or neither (for headphone use).
 2. Press the Function Selector button that corresponds to the equipment you wish to play.
 3. Begin playing the video equipment.
 4. Adjust Volume to desired level.
- When listening at low volume, press in the Loudness button, if desired.
5. Adjust Bass, Treble and Balance knobs as desired.

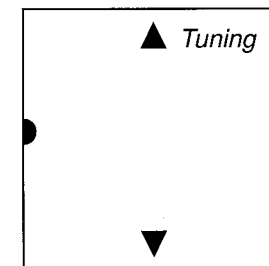


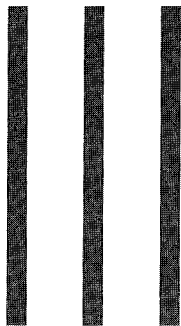
Listening to AM/FM broadcasts

1. With Power on and Volume knob at minimum level, select Pre-amp setting to play amplifiers A, B, both or neither (for headphone use).
 2. Press the Function Selector button marked "Tuner".
 3. Select AM or FM by pressing the corresponding button.
 4. Use the ▲ and ▼ buttons to tune to desired frequency. Or use the station Preset buttons as described below.
 5. When tuning FM stations, begin with Seek-Stereo function on ("Seek" will light on the Display Panel). In this mode, pressing ▲ (or ▼) will tune your unit to the next higher (or lower) strong station.
- To tune to stations too weak to be received in Seek-Stereo mode, turn Seek-Stereo off. Then use ▲ and ▼ buttons to reach the desired frequency.
- NOTE: With Seek-Stereo off, all broadcasts are received in mono (this eliminates the excessive noise

that results when weak stations are received in stereo). When you tune to a new, stronger station, be sure to turn Seek-Stereo back on.

6. Adjust the Volume to the desired level. When listening at low volume, press in Loudness button if desired.
7. Adjust Bass, Treble and Balance knobs as desired.





Using the Preset Buttons

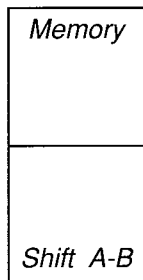
Your PT2300 allows you to store 16 station settings and quickly access them, using the 8 Preset buttons along with the Shift A-B button. The Preset stations are designated by the letter A or B, followed by a number from 1 to 8. Any designation may be used for an AM or FM station, in whatever combination you choose.

To enter a station in memory:

1. Tune to the desired station.
2. Be sure Seek-Stereo setting is the one desired*.
3. Press the Shift A-B button to display the desired letter.
4. Press the Memory button ("Preset" will flash for about 8 seconds).
5. With "Preset" flashing, press the desired numbered Preset button.

*NOTE: When a station is set in memory, the Seek-Stereo setting is also saved. Subsequently, each time a station is recalled using a

Preset button, the tuner automatically switches to the original Seek-Stereo setting for that station.



To Change a preset station:

Simply enter the new station. The old station is automatically erased.

To access a preset station:

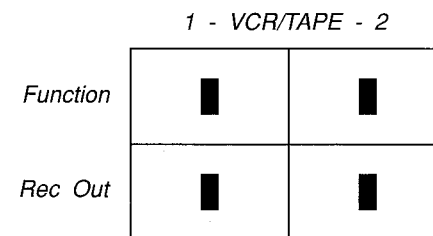
Press the Shift A-B button to display the correct letter. Then press the desired numbered preset button.

NOTE: Preset stations are stored indefinitely while the unit is connected to a live AC source, and for approximately 1 week when the unit is unplugged.

Making Recordings

To make a recording on either a tape deck or VCR, simply press the "Rec Out" button that corresponds to the piece of equipment you wish to record from. Output from this source will be supplied to both Tape 1 and Tape 2 devices, enabling you to record on either one, or both simultaneously.

- (a) To record from one tape device to another, press the Rec Out button corresponding to the source (play) device.
 - (b) By selecting different sources for Function and Rec Out, you may listen to one audio or video component, while recording from another.
 - (c) Make videotape recordings from TV, video disc player or second VCR in the same manner described above, simply by pressing the appropriate Rec Out button.
- With equipment installed as outlined in this booklet, both audio and video output is supplied to the VCR.



TROUBLESHOOTING

This unit is designed for trouble-free operation: most problems users encounter are due to operating errors. So if you have a problem, first check this list for a possible solution. If the problem persists, consult your authorized Harman Kardon service center.

If the problem is:

No lights illuminate when Power switch is pressed.
No sound is heard.

Tuner sound has a large amount of interference.
OR, The "Stereo" display is not fully illuminated.
OR, Tuner sound distorts and/or volume level is too low.

Intermittent or continuous buzzing or hissing.

Stations cannot be preset.

Phone sound is too faint, has hum, ringing, or "howl".

Selecting video component produces sound but no picture.
The TV picture does not match the sound.

Make sure that:

- The unit is plugged into a live outlet.
- Pre-out selector is turned to the desired speakers.
- Correct function button has been pressed.
- Volume is turned up.
- Power amplifier is connected properly.
- Hook-up wires to source component are connected properly.

- The antenna is properly connected.
- The antenna is properly located.
- The antenna is set in the proper direction.
- The antenna is adequate to receive the desired station.

- The unit is away from fluorescent lights, TVs, motors and other electrical appliances.

- After pressing Memory button, the Preset button is set while the "Preset" light is still flashing.

- Turntable cartridge is moving magnet type, or step-up transformer is used.
- Ground wire from turntable has been connected to ground terminal on receiver.
- Cable from turntable is away from power cords and speaker cables.
- Turntable is away from speakers.
- Turntable is on a stable surface.

- Video cables are connected correctly.
- Video sources are properly connected to receiver.
- Video/Antenna Switch on TV is set to Video.



PT2300 SPECIFICATIONS

Preamplifier Section

Output Level (10 Ω Load, 20Hz to 20kHz):	0.8 Volts @ < 0.005% THD
Maximum Output Level (0.1% THD):	6.0 Volts
Output Impedance:	620 Ω
Negative Feedback:	18dB
Frequency Response (+/-3dB):	0.5Hz - 200kHz
Slew Rate:	50 Volts/Sec
Rise Time:	1.5 μ Sec
Transient Intermodulation Distortion (TIM):	Unmeasurable
Signal-to-Noise Ratio (ref. 1 Volt, A-Wtd)	
Phono (MM):	88dB
CD, A/V, Tape:	96dB
Input Sensitivity/Impedance	
Phono (MM):	2.2mV/47k Ω , 125pF
CD, A/V, Tape:	135mV/22k Ω
Subwoofer Output Level/Load:	2.0 Volts/10k Ω
RIAA EQ Accuracy (20Hz-20kHz):	\pm 0.5dB
Phono Overload:	100mV
Tone Control Range	
Bass @ 50Hz:	\pm 10dB
Trable @ 10kHz:	\pm 10dB
Loudness Counter @ -40dB, 50Hz:	+10dB

Tuner Section: FM

Usable Sensitivity, Mono (dBf):	11.2
50dB Quieting Sensitivity, Stereo (dBf):	37.2
Signal-to-Noise Ratio @ 65dBf, mono/stereo:	80dB/74dB
Capture Ratio:	1.5dB
Selectivity, Adjacent/Alternate Channel:	5dB/70dB
IF Rejection:	80dB
Image Rejection:	45dB
AM Rejection	45dB
Stereo Separation @ 1kHz, 65dBf:	50dB
THD @ 1kHz, 65dBf, mono/stereo (%):	0.08/0.09

Tuner Section: AM

Sensitivity, External Antenna:	25 μ V
Alternate Channel Selectivity:	55dB
Image Rejection:	40dB
IF Rejection:	60dB
Dimensions (WxHxD):	
inches:	17 $\frac{3}{8}$ x 4 $\frac{7}{8}$ x 13 $\frac{1}{2}$
mm:	443 x 122 x 342
Weight (lbs/kgs):	11.0/5.0

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.