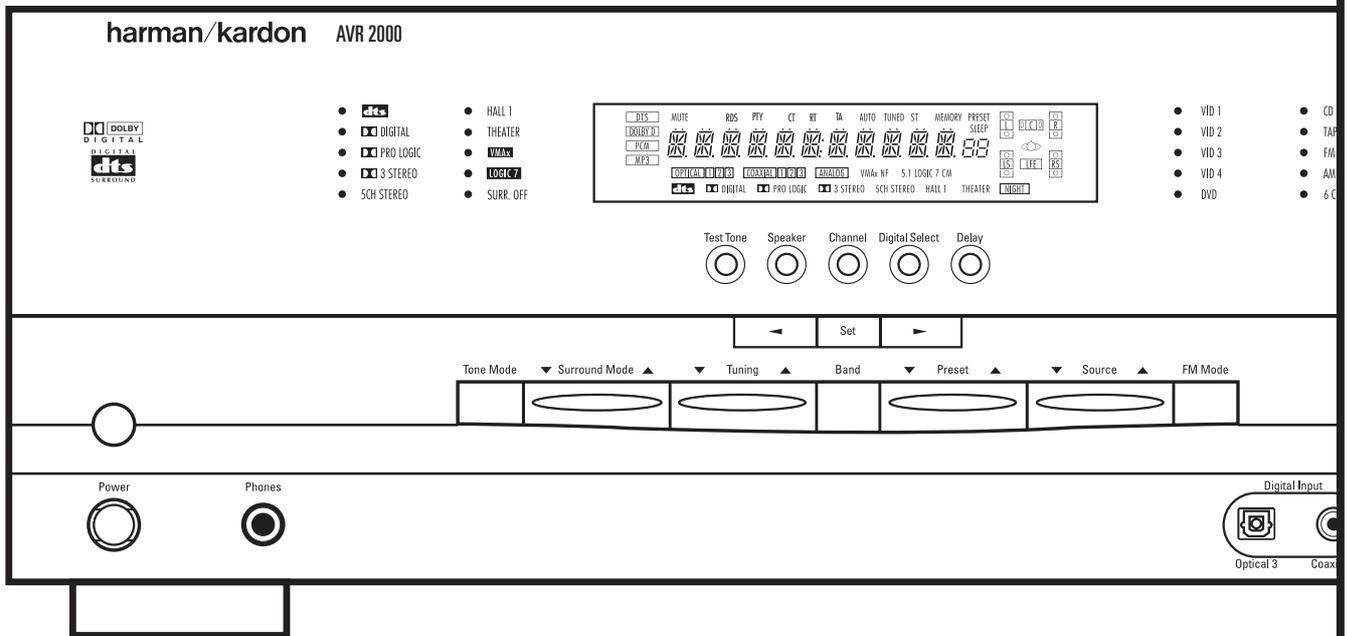


AVR 2000 Audio/Video Receiver

OWNER'S MANUAL



harman/kardon®

Power for the Digital Revolution™

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Declaration of Conformity



We, Harman Consumer International
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declare in own responsibility, that the product described in
this owner's manual is in compliance with technical stan-
dards:

EN 55013/6.1990

EN 55020/12.1994

EN 60065:1993

EN 61000-3-2/4.1995

Carsten Olesen
Harman Kardon Europe A/S
11/00

Typographical Conventions

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

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

EXAMPLE – (OCR type) indicates a message that is visible on the front-panel information display

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

1 – (number in a circle) indicates a rear-panel connection

1 – (number in an oval) indicates a button or indicator on the remote

A – (letter in a square) indicates an indicator in the front-panel display

Introduction

Thank you for choosing Harman Kardon!

With the purchase of a Harman Kardon AVR 2000 you are about to begin many years of listening enjoyment. The AVR 2000 has been custom designed to provide all the excitement and detail of movie sound tracks and every nuance of musical selections. With onboard Dolby* Digital and DTS¹ decoding, the AVR 2000 delivers six discrete channels of audio that take advantage of the digital sound tracks from the latest DVD and LD releases and Digital Television broadcasts.

While complex digital systems are hard at work within the AVR 2000 to make all of this happen, hookup and operation are simple. Color-keyed connections and a programmable remote control make the AVR 2000 easy to use. To obtain the maximum enjoyment from your new receiver, we urge you to take the time to read through this manual. This will ensure that connections to speakers, source playback units and other external devices are made properly. In addition, a few minutes spent learning the functions of the various controls will enable you to take advantage of all the power the AVR 2000 is able to deliver.

If you have any questions about this product, its installation or its operation, please contact your dealer. He is your best local source of information.

Description and Features

The AVR 2000 is among the most versatile and multi-featured A/V receivers available, incorporating a wide range of listening options. In addition to Dolby Digital and DTS decoding for digital sources, a broad choice of analog surround modes are available for use with sources such as CD, VCR, TV broadcasts and the AVR's own FM/AM tuner. Along with Dolby Pro Logic,* Dolby 3 Stereo, 5 Ch Stereo and custom Hall and Theater modes, only Harman Kardon receivers offer Logic 7[®] to create a wider, more enveloping field environment and more defined fly-overs and pans. Finally, the AVR 2000 is among the very few A/V receivers that offer decoding of MP3 data, so that you may listen to the latest music selections directly from compatible computers or playback devices with the power and fidelity you expect from Harman Kardon. Another Harman Kardon exclusive is VMAx™, which uses proprietary processing to create an open, spacious sound field even when only two front speakers are available.

In addition to providing a wide range of listening options, the AVR 2000 is easy to configure so that it provides the best results with your speakers and specific listening-room environment.

For the ultimate in flexibility, the AVR 2000 features connections for five video devices, all with both composite and S-Video inputs. Two additional audio inputs are available, and a total of six digital inputs make the AVR 2000 capable of handling all the latest digital audio sources. Coax and optical digital outputs are available for direct connection to digital recorders.

The AVR 2000's powerful amplifier uses traditional Harman Kardon high-current design technologies to meet the wide dynamic range of any program selection.

Harman Kardon invented the high-fidelity receiver more than forty-seven years ago. With state-of-the-art circuitry and time-honored circuit designs, the AVR 2000 is one of the finest receivers ever offered by Harman Kardon in its price range.

- **Onboard Dolby Digital and DTS Decoding Using Crystal[®] Chip Technology**
- **Harman Kardon's Exclusive Logic 7 and VMAx Modes**
- **MP3 Decoding for Use with compatible Computers and Digital Audio Players**
- **Front-Panel Digital Inputs for Easy Connection to Portable Digital Devices and the Latest Video Game Consoles**
- **Multiple Digital Inputs and Outputs**
- **Remote with Internal Codes Capability**

	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.		

Safety Information

Important Safety Information

Verify Line Voltage Before Use

Your AVR 2000 has been designed for use with 220-240-Volt AC current. Connection to a line voltage other than that for which it is intended can create a safety and fire hazard and may damage the unit.

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

Do Not Use Extension Cords

To avoid safety hazards, use only the power cord attached to your unit. We do not recommend that extension cords be used with this product. As with all electrical devices, do not run power cords under rugs or carpets or place heavy objects on them. Damaged power cords should be replaced immediately by an authorized service depot with a cord 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 unit for any 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 or any metal object such as a paper clip, wire or a staple accidentally falls inside the unit, disconnect it from the AC power source immediately, and consult an authorized service station.

Installation Location

- To assure 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 weight of the product.
- Make certain that proper space is provided both above and below the unit for ventilation. If this product will be installed in a cabinet or other enclosed area, make certain that there is sufficient air movement within the cabinet. Under some circumstances a fan may be required.
- Do not place the unit directly on a carpeted surface.
- Avoid installation in extremely hot or cold locations, or an area that is exposed to direct sunlight or 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.

Cleaning

When the unit gets dirty, wipe it with a clean, soft, dry cloth. If necessary, wipe it with a soft cloth dampened with mild soapy water, then a fresh cloth with clean water. Wipe dry immediately with a dry cloth. NEVER use benzene, aerosol cleaners, 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.

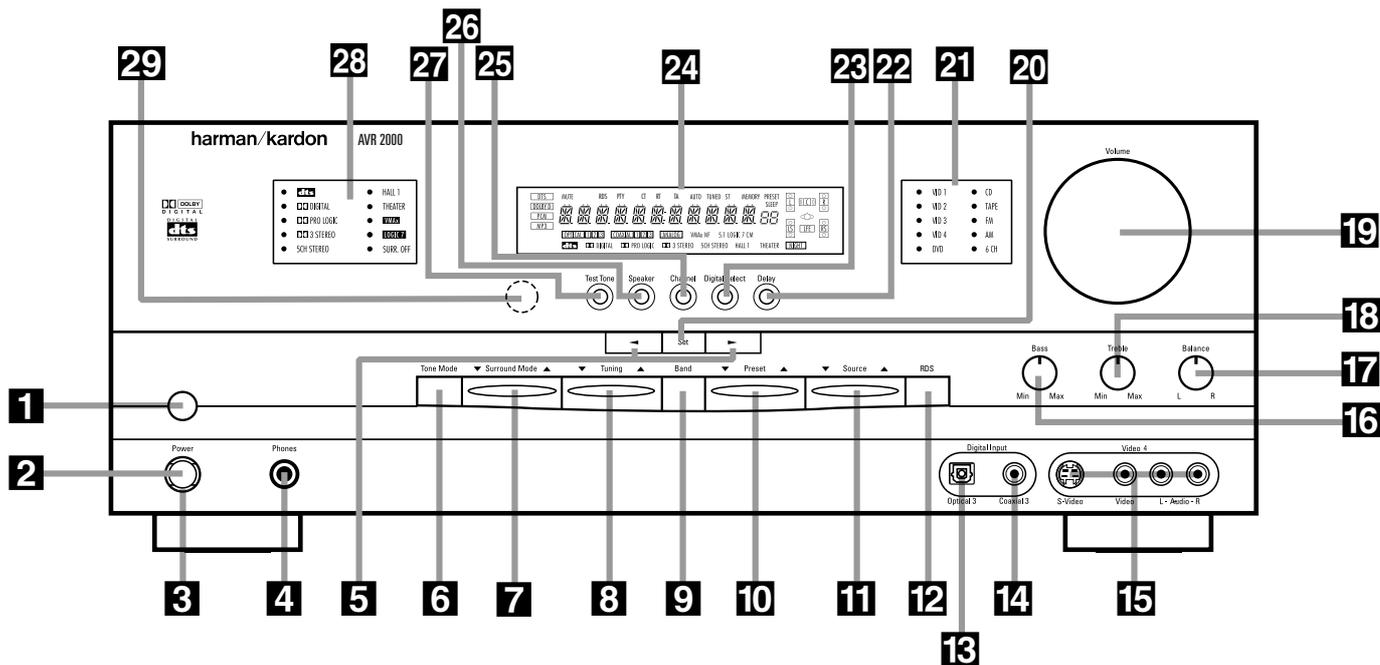
Unpacking

The carton and shipping materials used to protect your new receiver during shipment were specially designed to cushion it from shock and vibration. We suggest that you save the carton and packing materials for use in shipping if you move, or should the unit ever need repair.

To minimize the size of the carton in storage, you may wish to flatten it. This is done by carefully slitting the tape seams on the bottom and collapsing 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.

If you do not wish to save the packaging materials, please note that the carton and other sections of the shipping protection are recyclable. Please respect the environment and discard those materials at a local recycling center.

Front Panel Controls



- 1** Main Power Switch
- 2** System Power Control
- 3** Power Indicator
- 4** Headphone Jack
- 5** Selector Buttons
- 6** Tone Mode
- 7** Surround Mode Selector
- 8** Tuning
- 9** Tuner Band Selector
- 10** Preset Stations Selector

- 11** Input Source Selector
- 12** RDS Select Button
- 13** Digital Optical 3 Input
- 14** Digital Coax 3 Input
- 15** Video 4 input jacks
- 16** Bass Control
- 17** Balance Control
- 18** Treble Control
- 19** Volume Control
- 20** Set Button

- 21** Input Indicators
- 22** Delay
- 23** Digital Input Selector
- 24** Main Information Display
- 25** Channel Select Button
- 26** Speaker Select Button
- 27** Test Tone Selector
- 28** Surround Mode Indicators
- 29** Remote Sensor Window

1 Main Power Switch: Press this button to apply power to the AVR 2000. When the switch is pressed in, the unit is placed in a Standby mode, as indicated by the amber LED **3** surrounding the **System Power Control** **2**. This button **MUST** be pressed in to operate the unit. To turn the unit off completely and prevent the use of the remote control, this switch should be pressed until it pops out from the front panel so that the word "OFF" may be read at the top of the switch.

NOTE: This switch is normally left in the "ON" position.

2 System Power Control: When the **Main Power Switch** **1** is "ON," press this button to turn on the AVR 2000; press it again to turn the unit off (to Standby). Note that the **Power Indicator** surrounding the switch **3** will turn green when the unit is on.

3 Power Indicator: This LED will be illuminated in amber when the unit is in the Standby mode to signal that the unit is ready to be turned on. When the unit is in operation, the indicator will turn green.

4 Headphone Jack: This jack may be used to listen to the AVR 2000's output through a pair of headphones. Be certain that the headphones have a standard 6.3 mm stereo phone plug. Note that the speakers will automatically be turned off when the headphone jack is in use.

5 Selector Buttons: When you are establishing the AVR 2000's configuration settings, use these buttons to select from the choices available, as shown in the **Main Information Display** **24**.

6 Tone Mode: Pressing this button enables or disables the Balance, Bass and Treble tone controls. When the button is pressed so that the words **TONE IN** appear in the **Main Information Display** **24**, the settings of the **Bass** **16** and **Treble** **18** controls and of the **Balance** control **17** will affect the output signals. When the button is pressed so that the words **TONE OUT** appear in the **Main Information Display** **24**, the output signal will be "flat," without any balance, bass or treble alteration.

Front Panel Controls

7 Surround Mode Selector: Press this button to change the surround mode by scrolling through the list of available modes. Note that Dolby Digital and DTS modes can be selected only when a digital input is used (See page 24 for more information about surround modes.)

8 Tuning Selector: Press the left side of the button to tune lower frequency stations and the right side of the button to tune higher frequency stations. When a station with a strong signal is reached, the **TUNED** indicator **V** will illuminate in the **Main Information Display 24** (see page 29 for more information on tuning stations).

9 Tuner Band Selector: Pressing this button will automatically switch the AVR to the Tuner mode. Pressing it again will switch between the AM and FM frequency bands, holding it pressed for some seconds will switch between stereo and mono receiving and between automatic and manual tuning mode (See page 29 for more information on the tuner).

10 Preset Stations Selector: Press this button to scroll up or down through the list of stations that have been entered into the preset memory. (See page 29 for more information on tuner programming.)

11 Input Source Selector: Press this button to change the input by scrolling through the list of input sources.

12 RDS Select Button: Press this button to display the various messages that are part of the RDS data system of the AVR 2000's tuner. (See page 30 for more information on RDS).

13 Digital Optical 3 Input: Connect the optical digital audio output of an audio or video product to this jack. When the Input is not in use, be certain to keep the plastic cap installed to avoid dust contamination that might degrade future performance.

14 Digital Coax 3 Input: This jack is normally used for connection to the output of portable digital audio devices, video game consoles or other products that have a coax digital jack.

15 Video 4 Input Jacks: These audio/video jacks may be used for temporary connection to video games or portable audio/video products such as camcorders and portable audio players.

16 Bass Control: Turn this control to modify the low frequency output of the left/right channels by as much as ± 10 dB. Set this control to a suitable position for your taste or room acoustics.

17 Balance Control: Turn this control to change the relative volume for the front left/right channels.

NOTE: For proper operation of the surround modes this control should be at the midpoint or "12 o'clock" position.

18 Treble Control: Turn this control to modify the high frequency output of the left/right channels by as much as ± 10 dB. Set this control to a suitable position for your taste or room acoustics.

19 Volume Control: Turn this knob clockwise to increase the volume, counterclockwise to decrease the volume. If the AVR is muted, adjusting volume control will automatically release the unit from the silenced condition.

20 Set Button: When making choices during the setup and configuration process, press this button to enter the desired setting as shown in the **Main Information Display 24** into the AVR 2000's memory. The set button may also be used to change the display brightness. (See page 28.)

21 Input indicators: A green LED will light in front of the input that is currently being used as the source for the AVR 2000.

22 Delay: Press this button to begin the sequence of steps required to enter delay time settings. (See page 20 for more information on delay times.)

23 Digital Input Selector: When playing a source that has a digital output, press this button to select between the **Optical 13 25** and **Coaxial 14 26 Digital** inputs. (See pages 25-27 for more information on digital audio.)

24 Main Information Display: This display delivers messages and status indications to help you operate the receiver. (See pages 7-8 for a complete explanation of the Information Display.)

25 Channel Select Button: Press this button to begin the process of trimming the channel output levels using an external audio source. (For more information on output level trim adjustment, see page 28.)

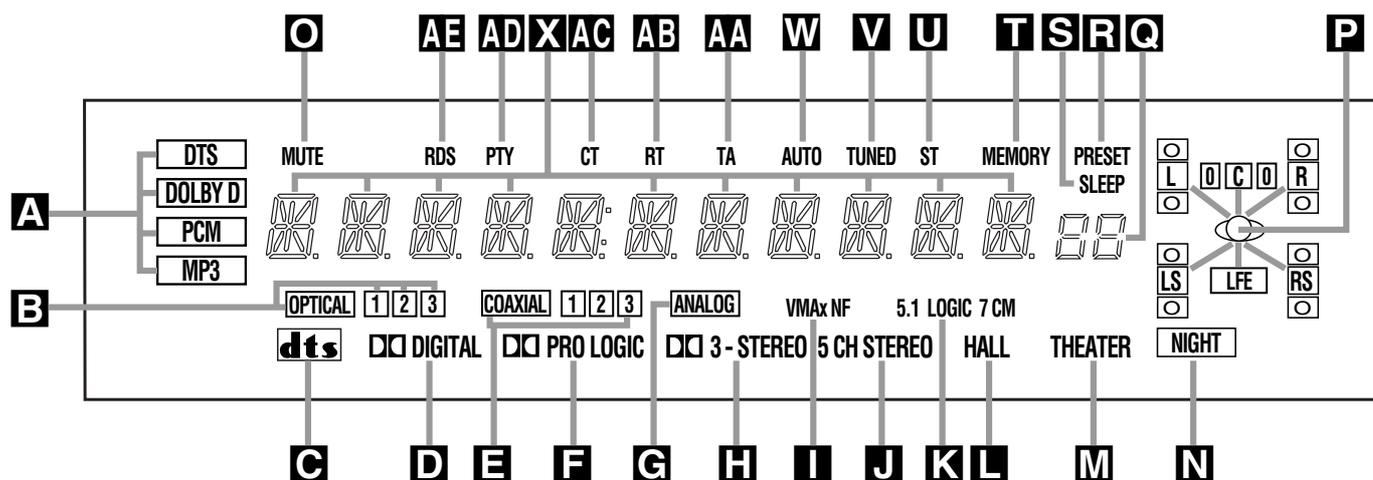
26 Speaker Select Button: Press this button to begin the process of selecting the speaker positions that are used in your listening room. (See page 19 for more information on setup and configuration.)

27 Test Tone Selector: Press this button to begin the process of adjusting the channel output levels using the internal test tone as a reference. (For more information on output level adjustment, see page 21.)

28 Surround Mode Indicators: A green LED will light in front of the surround mode that is currently in use.

29 Remote Sensor Window: The sensor behind this window receives infrared signals from the remote control. Aim the remote at this area and do not block or cover it unless an external remote sensor is installed.

Front Panel Information Display



- | | | |
|--|---|--|
| <p>A Bitstream Indicators</p> <p>B Optical Source Indicators</p> <p>C DTS Mode Indicator</p> <p>D Dolby Digital Indicator</p> <p>E Coaxial Source Indicators</p> <p>F Dolby Pro Logic Indicator</p> <p>G Analog Input Indicator</p> <p>H Dolby 3 Stereo Indicator</p> <p>I VMAX Mode Indicator</p> <p>J 5 Channel Stereo Indicator</p> | <p>K Logic 7 Mode Indicators</p> <p>L Hall Mode Indicator</p> <p>M Theater Mode Indicator</p> <p>N Night Mode Indicator</p> <p>O Mute Indicator</p> <p>P Speaker/Channel Input Indicators</p> <p>Q Preset Number/Sleep Timer</p> <p>R Preset Indicator</p> <p>S Sleep Indicator</p> <p>T Memory Indicator</p> | <p>U Stereo Indicator</p> <p>V Tuned Indicator</p> <p>W Auto Indicator</p> <p>X Main Information Display</p> <p>AA Traffic Indicator</p> <p>AB Radiotext Indicator</p> <p>AC Clock Timer Indicator</p> <p>AD Program Type Indicator</p> <p>AE RDS Indicator</p> |
|--|---|--|

A Bitstream™ Indicators: When the input is a digital source, one of these indicators will light to display the specific type of signal in use.

B Optical Source Indicators: These indicators light to show when a Optical Digital Input has been selected.

C DTS Mode Indicator: This indicator illuminates when the DTS mode is selected.

D Dolby Digital Indicator: This indicator illuminates when Dolby Digital mode is selected.

E Coaxial Source Indicators: These indicators light to show when a Coaxial Digital Input has been selected.

F Dolby Pro Logic Indicator: This indicator lights when the Dolby ProLogic mode has been selected.

G Analog Input Indicator: This indicator lights when an analog input source has been selected.

H Dolby 3 Stereo Indicator: This indicator lights when the Dolby 3 Stereo Mode has been selected.

I VMAX Mode Indicator: This indicator illuminates to show that the VMAX mode is in use. **VMAX F** appears when the Far Field VMAX mode is selected; **VMAX N** appears when the Near Field VMAX mode is selected. (See page 24 for a description of the VMAX Modes.)

J 5 Channel Stereo Indicator: This indicator lights when the 5 Channel Stereo mode has been selected.

K Logic 7 Mode Indicators: These indicators illuminate when the Logic 7 mode is in use. **LOGIC 7C** appears for the Cinema version of Logic 7, **LOGIC 7M** appears for the Music version of Logic 7. (See page 24 for a description of the Logic 7 Modes.)

L Hall Mode Indicator: This indicator lights when the Hall mode has been selected.

M Theater Mode Indicator: This indicator illuminates to show that the Theater mode is in use.

N Night Mode Indicator: This indicator lights when the AVR 2000 is in the Night mode, which preserves the dynamic range of digital program material at low volume levels.

O Mute Indicator: This indicator illuminates to remind you that the AVR 2000's output has been silenced by pressing the **Mute** button **34**. Press the Mute button again to return to the previously selected output level.

P Speaker/Channel Input Indicators: These indicators are multipurpose, indicating either the speaker type selected for each channel or the incoming data-signal configuration. The left, center, right, right surround and left surround speaker indicators are composed of three boxes, while the subwoofer is a single box. The center box lights when a "Small" speaker is selected, and the two outer boxes light when "Large" speakers are selected. When none of the boxes are lit for the center, surround or subwoofer channels, no speaker has been selected for that position. (See page 18 for more information on configuring speakers.) The letters inside each of the center boxes display active input channels. For standard analog inputs, only the L and R will light, indicating a stereo input. When a digital source is playing, the indicators will light to display the channels begin received at the digital input. When the letters flash, the digital input has been interrupted. (See page 26 for more information on the Channel Indicators.)

Q Preset Number/Sleep Timer: When the tuner is in use, these numbers indicate the specific preset memory location in use. (See page 29 for more information on preset stations.) When the Sleep function is in use, these numbers show how many minutes remain before the unit goes into the Standby mode.

Front Panel Information Display

R Preset Indicator: This indicator lights when the tuner is in use to show that the **Preset Number/Sleep Timer** **Q** is showing the station's preset memory number. (See page 29 for more information on tuner presets.)

S Sleep Indicator: This indicator lights when the Sleep function is in use. The numbers in the Preset/Sleep Number Indicators will show the minutes remaining before the AVR 2000 goes into the Standby mode. (See page 23 for more information on the Sleep function.)

T Memory Indicator: This indicator flashes when entering presets and other information into the tuner's memory.

U Stereo Indicator: This indicator illuminates when an FM station is being tuned in stereo.

V Tuned Indicator: This indicator illuminates when a station is being received with sufficient signal strength to provide acceptable listening quality.

W Auto Indicator: This indicator illuminates when the tuner's Auto mode is in use.

X Main Information Display: This display shows messages relating to the status, input source, surround mode, tuner, volume level or other aspects of unit's operation.

AA TA Traffic Announcement Indicator: This indicator illuminates if the RDS station tuned sometimes transmits traffic information (see page 30 for more information on RDS).

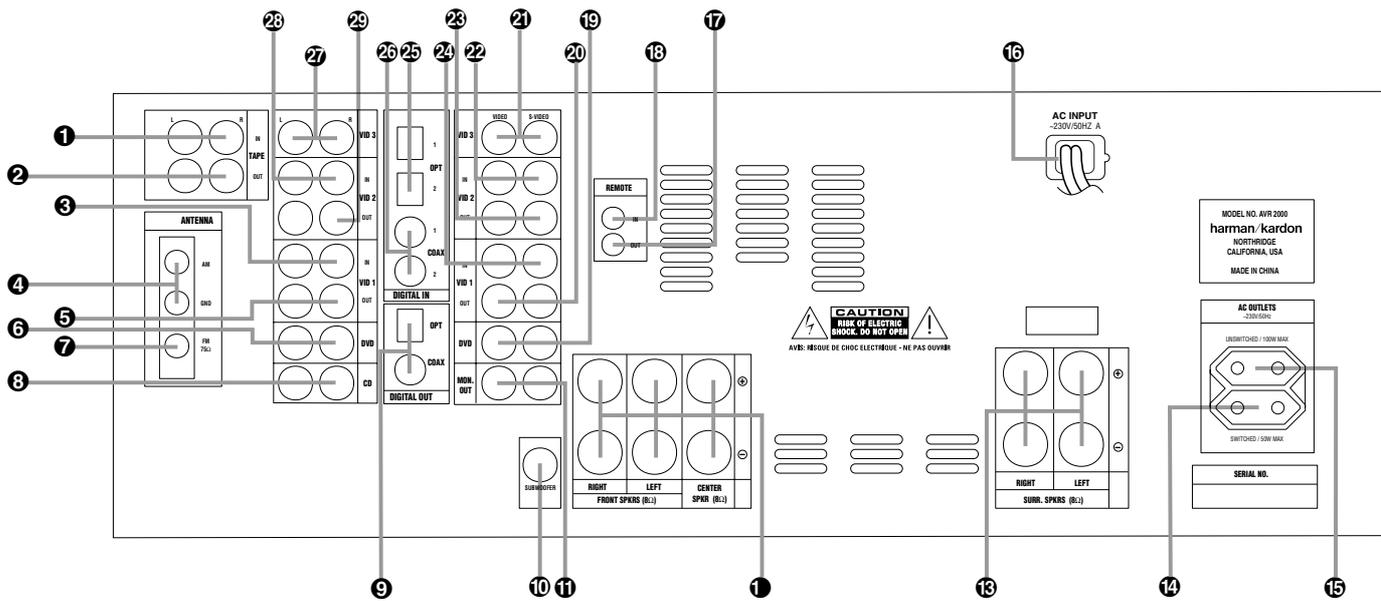
AB RT Text Indicator: This indicator illuminates when the RDS station tuned is transmitting radiotext (RT) data.

AC Clock Time Indicator: This indicator illuminates when the RDS station tuned is transmitting the CT (clock time) code, indicating the current time of day.

AD PTY Indicator: This indicator illuminates when the RDS station tuned is transmitting program type data, or during a PTY search.

AE RDS Indicator: This indicator illuminates when the station tuned is transmitting RDS data.

Rear Panel Connections



- 1 Tape Inputs
- 2 Tape Outputs
- 3 Video 1 Audio Inputs
- 4 AM Antenna
- 5 Video 1 Audio Outputs
- 6 DVD Audio Inputs
- 7 FM Antenna
- 8 CD Inputs
- 9 Digital Audio Outputs
- 10 Subwoofer Output

- 11 Video Monitor Outputs
- 12 Front/Center Speaker Outputs
- 13 Surround Speaker Outputs
- 14 Switched AC Accessory Outlet
- 15 Unswitched AC Accessory Outlet
- 16 AC Power Cord
- 17 Remote IR Output
- 18 Remote IR Input
- 19 DVD Video Inputs
- 20 Video 1 Video Outputs

- 21 Video 3 Video Inputs
- 22 Video 2 Video Inputs
- 23 Video 2 Video Outputs
- 24 Video 1 Video Inputs
- 25 Optical Digital Inputs
- 26 Coaxial Digital Inputs
- 27 Video 3 Audio Inputs
- 28 Video 2 Audio Inputs
- 29 Video 2 Audio Outputs

1 Tape Inputs: Connect these jacks to the **PLAY/OUT** jacks of an audio recorder.

2 Tape Outputs: Connect these jacks to the **RECORD/INPUT** jacks of an audio recorder.

3 Video 1 Audio Inputs: Connect these jacks to the **PLAY/OUT** audio jacks on a VCR or other video source.

4 AM Antenna: Connect the AM loop antenna supplied with the receiver to these terminals. If an external AM antenna is used, make connections to the **AM** and **GND** terminals in accordance with the instructions supplied with the antenna.

5 Video 1 Audio Outputs: Connect these jacks to the **RECORD/INPUT** audio jacks on a VCR or any other Audio recorder.

6 DVD Audio Inputs: Connect these jacks to the analog audio jacks on a DVD or other video source.

7 FM Antenna: Connect the supplied indoor or an optional external FM antenna to this terminal.

8 CD Inputs: Connect these jacks to the analog output of a compact disc player or CD changer.

9 Digital Audio Outputs: Connect these jacks to the matching digital input connector on a digital recorder such as a CD-R or MiniDisc recorder.

10 Subwoofer Output: Connect this jack to the line-level input of a powered subwoofer. If an external subwoofer amplifier is used, connect this jack to the subwoofer amplifier input.

11 Video Monitor Outputs: Connect these jacks to the composite and/or S-Video input of a TV monitor or video projector to view the output of any video source selected by the receiver's video switcher.

Rear Panel Connections

12 Front/Center Speaker Outputs: Connect these outputs to the matching + or – terminals on your front/center speakers. When making speaker connections, always make certain to maintain correct polarity by connecting the red (+) terminals on the AVR 2000 to the red (+) terminals on the speaker and the black (–) terminals on the AVR 2000 to the black (–) terminals on the speakers. (See page 14 for more information on speaker polarity.)

13 Surround Speaker Outputs: Connect these outputs to the matching + or – terminals on your left and right surround speakers. When making speaker connections always make certain to maintain correct polarity by connecting the red (+) terminals on the AVR 2000 to the red (+) terminals on the speakers and the black (–) terminals on the AVR 2000 to the black (–) terminals on the speakers. See page 14 for more information on speaker polarity.

14 Switched AC Accessory Outlet: This outlet may be used to power any device that you wish to have turn on when the unit is turned on with the **System Power Control** switch **2**.

15 Unswitched AC Accessory Outlet: This outlet may be used to power any AC device. The power will remain on at this outlet regardless of whether the AVR 2000 is on or off (in Standby), provided that the **Main Power** switch **1** is on.

Note: The total power consumption of all devices connected to the accessory outlets should not exceed 100 watts from the **Unswitched Outlet 15** and 50 W from the **Switched Outlet 14**.

16 AC Power Cord: Connect the AC plug to an unswitched AC wall output.

17 Remote IR Output: This connection permits the IR sensor in the receiver to serve other remote controlled devices. Connect this jack to the "IR IN" jack on Harman Kardon or other compatible equipment.

18 Remote IR Input: If the AVR 2000's front-panel IR sensor is blocked due to cabinet doors or other obstructions, an external IR sensor may be used. Connect the output of the sensor to this jack.

19 DVD Video Inputs: Connect these jacks to the composite or S-Video output jacks on a DVD player or other video source.

20 Video 1 Video Outputs: Connect these jacks to the **RECORD/INPUT** composite or S-Video jack on a VCR.

21 Video 3 Video Inputs: Connect these jacks to the **PLAY/OUT** composite or S-Video jacks on any video source.

22 Video 2 Video Inputs: Connect these jacks to the **PLAY/OUT** composite or S-Video jacks on a second VCR or other video source.

23 Video 2 Video Outputs: Connect these jacks to the **RECORD/INPUT** composite or S-Video jacks on a second VCR.

24 Video 1 Video Inputs: Connect these jacks to the **PLAY/OUT** composite or S-Video jacks on a VCR or other video source.

25 Optical Digital Inputs: Connect the optical digital output from a DVD player, HDTV receiver, LD player, MD player or CD player to these jacks. The signal may be either a Dolby Digital signal, a DTS signal or a standard PCM digital source.

26 Coaxial Digital Inputs: Connect the coax digital output from a DVD player, HDTV receiver, LD player, MD player or CD player to these jacks. The signal may be either a Dolby Digital signal, DTS signal or a standard PCM digital source. Do not connect the RF digital output of an LD player to these jacks.

27 Video 3 Audio Inputs: Connect these jacks to the **PLAY/OUT** audio jacks on any audio or video source.

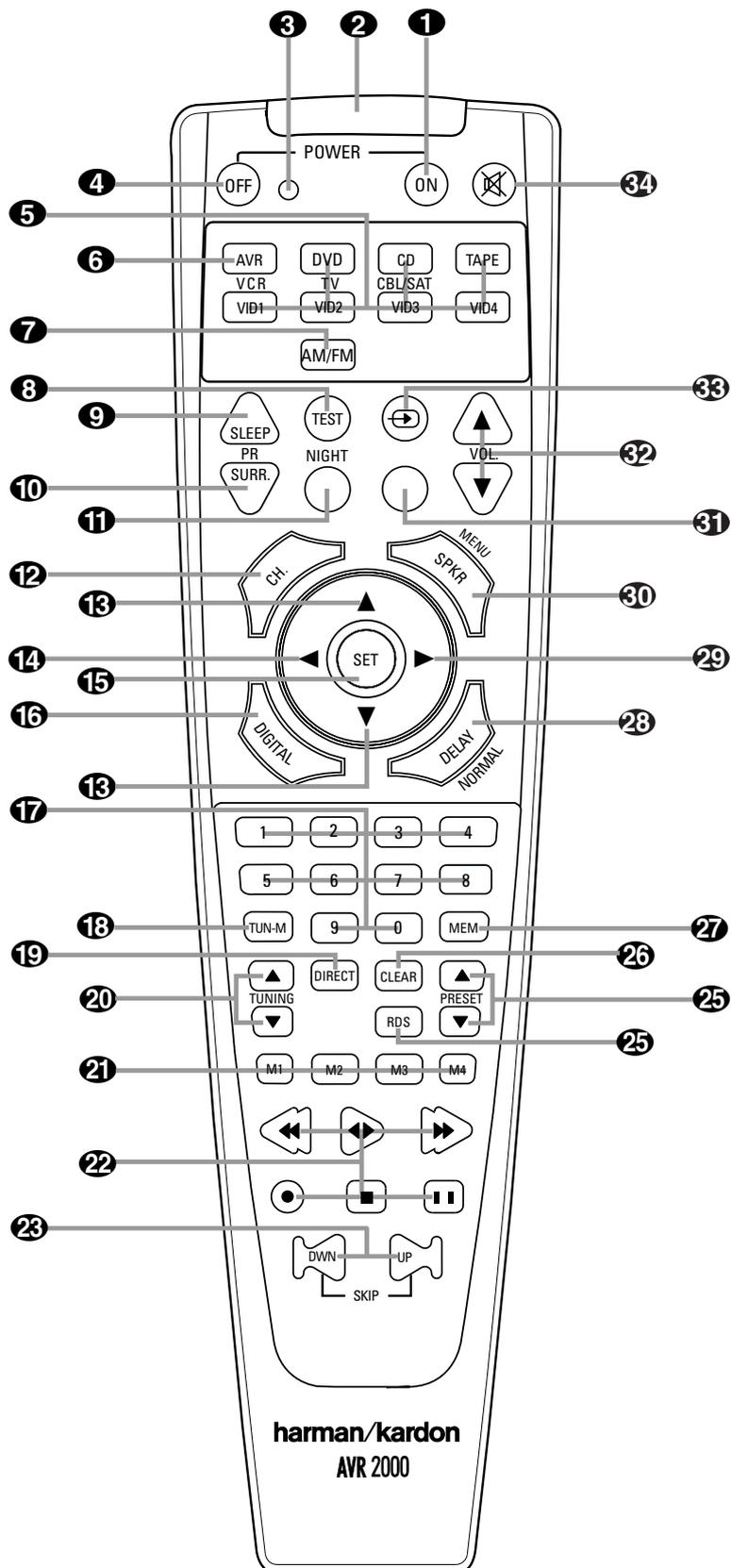
28 Video 2 Audio Inputs: Connect these jacks to the **PLAY/OUT** audio jacks on a VCR or other video source.

29 Video 2 Audio Outputs: Connect these jacks to the **RECORD/INPUT** audio jacks on a VCR or any Audio recorder.

Note: Either the Video or S-Video output of any S-Video source must be connected to the AVR 2000, not both in parallel, otherwise the video may be disturbed or its performance be adversely effected.

Remote Control Functions

- 1 Power On Button
- 2 IR Transmitter Window
- 3 Program Indicator
- 4 Power Off Button
- 5 Input Selectors
- 6 AVR Selector
- 7 AM/FM Tuner Select
- 8 Test Button
- 9 Sleep Button
- 10 Surround Mode Selector
- 11 Night Mode
- 12 Channel Select Button
- 13 ▲/▼ Buttons
- 14 ◀ Button
- 15 Set Button
- 16 Digital Select
- 17 Numeric Keys
- 18 Tuner Mode
- 19 Direct Button
- 20 Tuning Up/Down
- 21 Macro Buttons
- 22 Transport Controls
- 23 Skip Up/Down Buttons
- 24 RDS Select Button
- 25 Preset Up/Down
- 26 Clear Button
- 27 Memory Button
- 28 Delay/Prev. Ch.
- 29 ▶ Button
- 30 Speaker Select
- 31 Spare Button
- 32 Volume Up/Down
- 33 TV/Video Selector
- 34 Mute



NOTE: The function names shown here are each button's feature when used with the AVR. Most buttons have additional functions when used with other devices. See page 36 for a list of these functions.

Remote Control Functions

IMPORTANT NOTE: The AVR 2000's remote may be programmed to control up to seven devices, including the AVR 2000. Before using the remote, it is important to remember to press the **Input Selector** button **5** that corresponds to the unit you wish to operate. In addition, the AVR 2000's remote is shipped from the factory to operate the AVR 2000 and most Harman Kardon CD or DVD players and cassette decks. The remote is also capable of operating a wide variety of other products using the control codes that are part of the remote. Before using the remote with other products, follow the instructions on pages 32 to program the proper codes for the products in your system.

It is also important to remember that many of the buttons on the remote take on different functions, depending on the product selected using the Input Selectors. The descriptions shown here primarily detail the functions of the remote when it is used to operate the AVR 2000. (See page 36 for information about alternate functions for the remote's buttons.)

1 Power On Button: Press this button to turn on the power to a device selected by pressing one of the **Input Selectors** **5** (except Tape).

2 IR Transmitter Window: Point this window towards the AVR 2000 when pressing buttons on the remote to make certain that infrared commands are properly received.

3 Program Indicator: This three-color indicator is used to guide you through the process of programming the remote. See page 32 for information on programming the remote.

4 Power Off Button: Press this button to place the AVR 2000 or a selected device unit in the Standby mode.

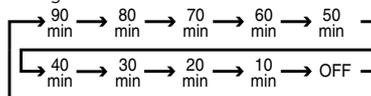
5 Input Selectors: Pressing one of these buttons will perform three actions at the same time. First, if the AVR is not turned on, this will power up the unit. Next, it will select the source shown on the button as the input to the AVR. Finally, it will change the remote control so that it controls the device selected. After pressing one of these buttons you must press the **AVR Selector** button **6** again to operate the AVR's functions with the remote.

6 AVR Selector: Pressing this button will switch the remote so that it will operate the AVR's functions. If the AVR is in the Standby mode, it will also turn the AVR on.

7 AM/FM Tuner Select: Press this button to select the AVR's tuner as the listening choice. Pressing this button when the tuner is in use will select between the AM and FM bands.

8 Test Tone: Press this button to begin the sequence used to calibrate the AVR 2000's output levels. (See page 21 for more information on calibrating the AVR 2000.)

9 Sleep Button: Press this button to place the unit in the Sleep mode. After the time shown in the display, the AVR 2000 will automatically go into the Standby mode. Each press of the button changes the time until turn-off in the following order:



Hold the button pressed for two seconds to turn off the Sleep mode setting.

Note that this button is also used to change channels on your TV, VCR and SAT receiver when selected.

10 Surround Mode Selector: Press this button to begin the process of changing the surround mode. After the button has been pressed, use the **▲/▼** buttons **13** to select the desired surround mode (See page 25 for more information). Note that this button is also used to tune channels when the TV, VCR and SAT receiver is selected using the **Input Selector** **5**.

11 Night Mode: Press this button to activate the Night mode. This mode is available only with Dolby Digital encoded digital sources, and it preserves dialog (center channel) intelligibility at low volume levels (See page 27 for more information).

12 Channel Select Button: This button is used to start the process of setting the AVR 2000's output levels with an external source. Once this button is pressed, use the **▲/▼** buttons **13** to select the channel being adjusted, then press the **Set** button **15**, followed by the **▲/▼** buttons again, to change the level setting. (See page 28 for more information.)

13 ▲/▼ Buttons: These are multi-purpose buttons. They will be used most frequently to select a surround mode. These buttons are also used to increase or decrease output levels when configuring the unit, to select speaker configuration or to select the digital inputs. They are also used to enter delay time settings after the **Delay** button **30** has been pressed.

When the AVR 2000 remote is being programmed for the codes of another device, these buttons are also used in the "Auto Search" process (See page 32 for more information on programming the remote.)

14 ◀ Button: This button does not have a function with the AVR2000. When a DVD player or TV is selected, it may be used to navigate the menus of those devices.

15 Set Button: This button is used to enter settings into the AVR 2000's memory. It is also used in the setup procedures for delay time, speaker configuration and channel output level adjustment.

16 Digital Select: Press this button to assign one of the digital inputs **13 14 25 26** to a source. (See page 26 for more information on using digital inputs.)

17 Numeric Keys: These buttons serve as a ten-button numeric keypad to enter tuner preset positions. They are also used to select channel numbers when **TV**, **VCR** or **Sat** receiver has been selected on the remote, or to select track numbers on a CD, DVD or LD player, depending on how the remote has been programmed.

18 Tuner Mode: Press this button when the tuner is in use to select between automatic tuning and manual tuning. When the button is pressed so that the **AUTO** indicator **W** goes out, pressing the **Tuning** buttons **20 8** will move the frequency up or down in single-step increments. When the FM band is in use and the **AUTO** indicator **W** is on, pressing this button will change to monaural reception making even weak stations audible. (See page 29 for more information.)

Remote Control Functions

19 Direct Button: Press this button when the tuner is in use to start the sequence for direct entry of a station's frequency. After pressing the button simply press the proper **Numeric Keys 17** to select a station (See page 29 for more information on the tuner).

20 Tuning Up/Down: When the tuner is in use, these buttons will tune up or down through the selected frequency band. If the **Tuner Mode** button **18** has been pressed or the **Band** button **12** on the front panel was held pressed so that the **AUTO** indicator **W** is illuminated, pressing either of the buttons will cause the tuner to seek the next station with acceptable signal strength for quality reception. When the **AUTO** indicator **W** is NOT illuminated, pressing these buttons will tune stations in single-step increments. (See page 29 for more information.)

21 Macro Buttons: Press these buttons to store or recall a "Macro", which is a pre-programmed sequence of commands stored in the remote. (See page 33 for more information on storing and recalling macros.)

22 Transport Buttons: These buttons do not have any functions for the AVR, but they may be programmed for the forward/reverse play operation of a wide variety of CD or DVD players, and audio or video- cassette recorders. (See page 32 for more information on programming the remote.)

23 Skip Up/Down Buttons: These buttons do not have a direct function with the AVR 2000, but when used with a compatibly programmed CD or DVD changer they will change the tracks on the disc currently being played in the changer.

24 RDS Select Button: Press this button to display the various messages that are part of the RDS data system of the AVR 2000's tuner. (See page 30 for more information on RDS).

25 Preset Up/Down: When the tuner is in use, press these buttons to scroll through the stations programmed into the AVR 2000's memory. When CD or DVD is selected using the **Input Selector** button **5**, these buttons may function as Slow Fwd/Rev (DVD) or "+10" (CD).

26 Clear Button: Press this button to clear incorrect entries when using the remote to directly enter a radio station's frequency.

27 Memory Button: Press this button to enter a radio station into the AVR 2000's preset memory. After pressing the button the **MEMORY** indicator **I** will flash; you then have five seconds to enter a preset memory location using the **Numeric Keys 17**. (See page 29 for more information.)

28 Delay/Prev Ch.: Press this button to begin the process for setting the delay times used by the AVR 2000 when processing surround sound. After pressing this button, the delay times are entered by pressing the **Set** button **15** and then using the **▲/▼** buttons **13** to change the setting. Press the Set button again to complete the process. (See page 20 for more information.)

29 ► Button: This button does not have a function with the AVR2000. When a DVD player or TV is selected, it may be used to navigate the menus of those devices.

30 Speaker Select: Press this button to begin the process of configuring the AVR 2000's Bass Management System for use with the type of speakers used in your system. Once the button has been pressed, use the **▲/▼** buttons **13** to select the channel you wish to set up. Press the **Set** button **15** and then select the speaker type (see page 18 for more information.)

31 Spare Button: This button does not have any function for the operation of the AVR 2000, but it can turn on/off the Multiroom system on other Harman Kardon AV-receivers with that feature and the Sub-function on DVD players.

32 Volume Up/Down: Press these buttons to raise or lower the system volume.

33 TV/Video Button: This button does not have a direct function on the AVR 3000, but when used with a compatibly programmed VCR, DVD or satellite receiver that has a "TV/Video" function, pressing this button will switch between the output of the player or receiver and the external video input to that player. Consult the Owner's Manual for your specific player or receiver for the details of how it implements this function.

34 Mute: Press this button to momentarily silence the AVR 2000 or TV set being controlled, depending on which device has been selected.

When the AVR 2000 remote is being programmed to operate another device, this button is pressed with the **Input Selector** button **5** to begin the programming process. (See page 32 for more information on programming the remote.)

NOTE: As any of the remote buttons pressed is active with the device selected, the corresponding **Selector** button **5 6** will briefly flash red to confirm your selection.

Installation and Connections

After unpacking the unit, and placing it on a solid surface capable of supporting its weight, you will need to make the connections to your audio and video equipment.

Audio Equipment Connections

We recommend that you use high-quality interconnect cables when making connections to source equipment and recorders to preserve the integrity of the signals.

When making connections to audio source equipment or speakers it is always a good practice to unplug the unit from the AC wall outlet. This prevents any possibility of accidentally sending audio or transient signals to the speakers that may damage them.

1. Connect the analog output of a CD player to the **CD** inputs **8**.

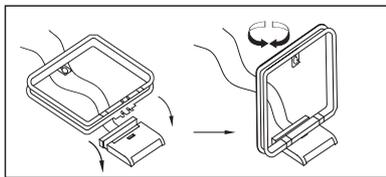
NOTE: When the CD player has both fixed and variable audio outputs it is best to use the fixed output unless you find that the input to the receiver is so low that the sound is noisy, or so high that the signal is distorted.

2. Connect the analog Play/Out jacks of a cassette deck, MD, CD-R or other audio recorder to the **Tape Input** jacks **1**. Connect the analog Record/In jacks on the recorder to the **Tape Output** jacks **2** on the AVR 2000.

3. Connect the output of any digital sources to the appropriate input connections on the AVR 2000 front or rear panel. Note that the **Optical** and **Coaxial** digital inputs **25 26 13 14** may be used with a Dolby Digital or DTS source or the output of a conventional CD, MD or LD player's PCM (S/P-DIF) output.

4. Connect the **Coaxial or Optical Digital Outputs** **9** on the rear panel of the AVR to the matching digital input connections on a CD-R or MiniDisc recorder.

5. Assemble the AM Loop Antenna supplied with the unit as shown below. Connect it to the **AM** and **GND** screw terminals **4**.



6. Connect the supplied FM antenna to the **FM (75 ohm)** connection **7**. The FM antenna may be an external roof antenna, an inside powered or wire lead antenna or a connection from a cable system. Note that if the antenna or connection uses 300-ohm twin-lead cable, you must use a 300-ohm-to-75-ohm adapter to make the connection.

7. Connect the front, center and surround speaker outputs **12 13** to the respective speakers.

To assure that all the audio signals are carried to your speakers without loss of clarity or resolution, we suggest 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 receiver, 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.

Regardless of the brand of cable selected, we recommend that you use a cable constructed of fine, multistrand copper with an area greater than 2 mm².

Cable with an area of 1.5 mm² may be used for short runs of less than 4 m. We do not recommend that you use cables with an area less than 1mm² 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 listing with UL, CSA or other appropriate testing agency standards. Questions about running cables inside walls should be referred to your installer or a licensed electrical contractor who is familiar with the applicable local building codes in your area.

When connecting wires to the speakers, be certain to observe proper polarity. Remember to connect the "negative" or "black" wire to the same terminal on both the receiver and the speaker. Similarly, the "positive" or "red" wire should be connected to like terminals on the AVR 2000 and 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 assure proper phase and optimal performance, consult the identification plate on your speaker or the speaker's manual to verify polarity. If you do not know the polarity of your speaker, ask your dealer for advice before proceeding, or consult the speaker's manufacturer.

We also recommend that the length of cable used to connect speaker pairs be identical. For example, use the same length piece of cable to connect the front-left and front-right or surround-left and surround-right speakers, even if the speakers are a different distance from the AVR 2000.

8. Connections to a subwoofer are normally made via a line level audio connection from the **Subwoofer Output** **10** to the line-level input of a subwoofer with a built-in amplifier. When a passive subwoofer is used, the connection first goes to a power amplifier, which will be con-

nected to one or more subwoofer speakers. If you are using a powered subwoofer that does not have line-level input connections, follow the instructions furnished with the speaker for connection information.

Note: Speaker sets with two front satellites and a passive subwoofer must be connected to the front speaker outputs **12** only rather than to the **Subwoofer Output** **10**.

Video Equipment Connections

Video equipment is connected in the same manner as audio components. Again, the use of high-quality interconnect cables is recommended to preserve signal quality. To ensure best video performance S-Video sources should be connected to the AVR 2000 only with their S-Video In/Outputs, not with their composite video connectors too.

1. Connect a VCR's audio and video Play/Out jacks to the **Video 1** or **Video 2 In** jacks **3 22 24 23** on the rear panel. The Audio and Video Record/In jacks on the VCR should be connected to the **Video 1** or **Video 2 Out** jacks **5 20 23 29** on the AVR 2000.

2. Connect the analog audio and video outputs of a satellite receiver, cable TV converter or television set or any other video source to the **Video 2** **22 23** (if not in use) or **Video 3** **21 27** jacks.

3. Connect the analog audio and video outputs of a DVD or laser disc player to the **DVD** jacks **6 19**.

4. Connect the **Video Monitor Out** **11** jacks on the receiver to the composite and S-Video input of your television monitor or video projector.

Video Connection Note:

- S-Video or Composite video signals may only be viewed in their native formats and will not be converted to the other format.

Installation and Connections

SCART A/V Connections

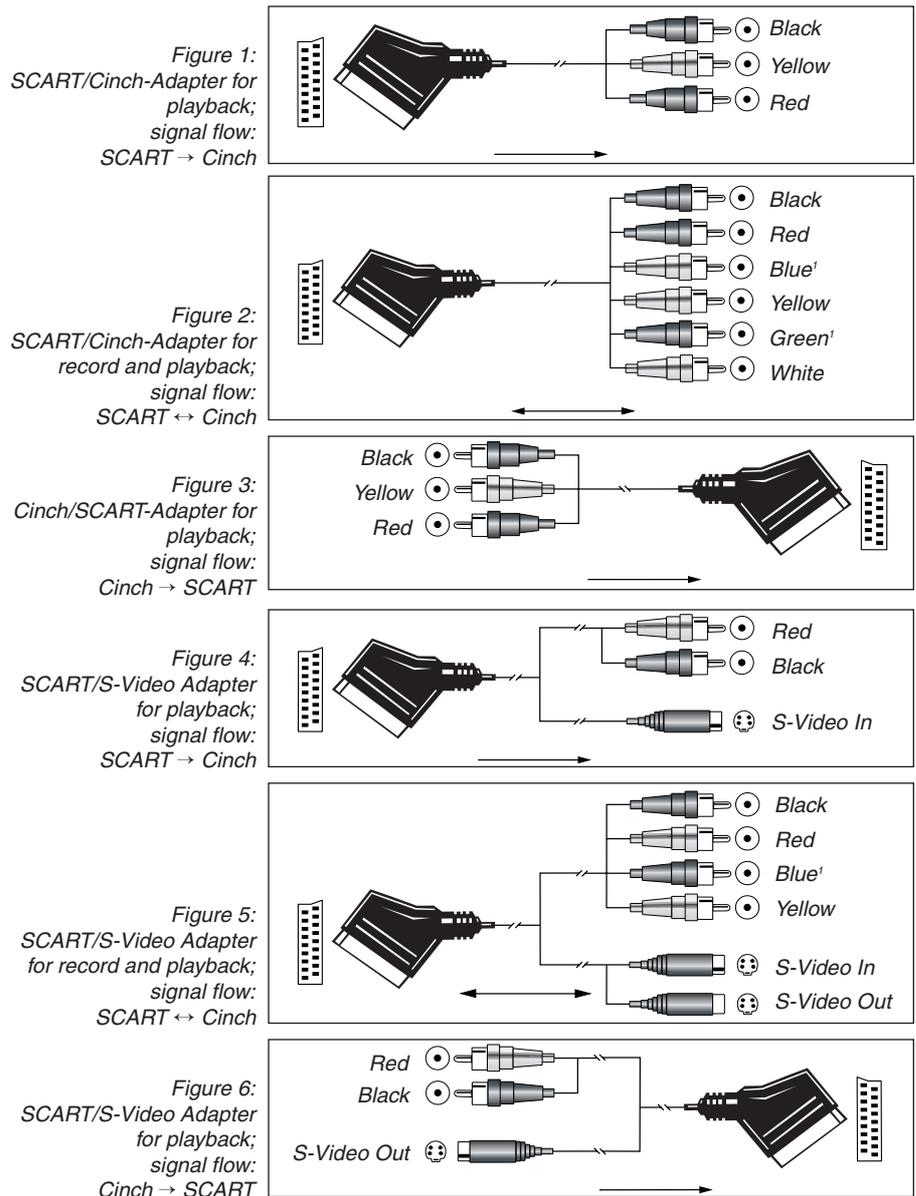
For the connections described above your video device needs RCA (cinch) connectors or/and S-Video connectors for all Audio and Video signals: Any normal video device (Not SVHS or High 8) for only playback needs 3 RCA jacks, VCRs for record and playback even 6 RCA jacks. Any S-Video device (SVHS, High 8) needs 2 RCA (Audio) and 1 S-Video jack (Video), if it's a playback unit, or 4 RCA (Audio In/Out) and 2 S-Video (Video In/Out) jacks, if it's a recording VCR.

Many european video devices are equipped with RCA (Cinch) or S-Video jacks only partially, not for all audio and video in/outputs needed as described above, but with a so called Scart or Euro-AV connector (almost rectangular jack with 21 pins, see drawings on this page).

In that case the following Scart to Cinch adapters or cables are needed:

- Units for playback, such as satellite receivers, camcorders, DVD or LD players, need an adapter from Scart to 3 RCA plugs, see fig. 1 (normal video devices) or from Scart to 2 RCA+1 S-Video plugs, see fig. 4 (S-Video devices).
- HiFi VCRs need an adapter from Scart to 6 RCA plugs, see fig. 2 (normal video), or from Scart to 4 Audio+2S-Video jacks, see fig. 5 (S-Video VCR). Read carefully the instruction attached to the adapter to find which of the six plugs is used for the record signal to the VCR (connect with the AVR's Out jacks) and for the playback signal from the VCR (connect with the AVR's In jacks). Do not misconnect Audio and Video signals. Don't hesitate to consult your dealer, if you are uncertain.
- If you use only normal video devices the TV monitor needs an adapter from 3 RCA plugs to Scart (fig. 3) only. If also S-Video devices are used an adapter from 2 RCA+1S-Video plugs to Scart is needed additionally (fig. 6), connected to the SCART input on your TV that is provided for S-Video.

Note that only the video plugs (the "yellow" cinch plug in fig. 3 and the S-Video plug in fig. 6) must be connected to the **TV Monitor Output** , and the volume on the TV must be reduced to minimum.



¹ Also other colours possible, e.g. brown and grey.

Important Note for Adapter Cables:

If the cinch connectors of the adapter you'll use are labeled, connect the Audio and Video "In" plugs with the corresponding Audio and Video "In" jacks on the AVR 2000 (and with a VCR connect the "Out" plugs to the "Out" jacks on the AVR). Note that with some adapter types it may be just turned around: If no signal is audible/ visible when the VCR is playing connect the "Out" plugs to the "In" jacks on the AVR and turned around. If the adapter plugs are not labeled in that way, pay attention to the signal flow directions as shown in the diagrams above and in the instruction attached to the adapter. If uncertain, don't hesitate to consult your dealer.

Important Notes for S-Video connections:

1. Only the S-Video In/Out of S-Video devices must be connected to the AVR, NOT both, normal video and S-Video In/Outputs (except the TV, see item 2).
2. Like most common AV units the AVR 2000 does not convert the Video signal to S-Video or vice versa. Thus both connections must be made from the AVR 2000 to the TV if both, Video and S-Video sources, are used, and the appropriate input on the TV must be selected.

Installation and Connections

Important Note for the Use of SCART-Cinch Adapters:

When video sources are connected to the TV directly with a SCART cable, specific control signals apart from Audio/Video signals will be fed to the TV. These specific signals are: With all video sources, the signal for automatic input selection that switches the TV automatically to the appropriate input as soon as the video source is started. And with DVD players, the signals automatically turning the TV to 16:9 format (with switchable 4:3 TVs) and turning the RGB video decoder of the TV on or off, depending on the DVD player's setting. With any adapter cable, these control signals will be lost and the appropriate setting of the TV must be made manually.

System and Power Connections

The AVR 2000 is designed for flexible use with external control components and power amplifiers.

Remote Control Extension

If the receiver is placed behind a solid or smoked glass cabinet door, the obstruction may prevent the remote sensor from receiving commands. In this event, the remote sensor of any Harman Kardon or other compatible device, not covered by the door, or an optional remote sensor may be used. Connect the **Remote IR Output** of that device or the output of the remote sensor to the **Remote IR Input** jack 18.

If other components are also prevented from receiving remote commands, only one sensor is needed. Simply use this unit's sensor or a remote eye by running a connection from the **Remote IR Output** jack 17 to the **Remote IR Input** jack on Harman Kardon or other compatible equipment.

NOTE: All remotely controlled components must be linked together in a daisy chain. Connect the **IR OUT** jack of one unit to the **IR IN** of the next to establish this chain.

AC Power Connections

This unit is equipped with two accessory AC outlets. They may be used to power accessory devices, but they should not be used with high-current draw equipment such as power amplifiers. The total power draw to the **Unswitched** Outlet 15 must not exceed 100 watts, that to the **Switched** Outlet 14 50 watts.

The **Switched** 14 outlet will receive power only when the unit is on completely. This is recommended for devices that have no power switch or a mechanical power switch that may be left in the "ON" position.

NOTE: Many audio and video products go into a Standby mode when they are used with switched outlets, and cannot be fully turned on using the outlet alone without a remote control command.

The **Unswitched** 15 outlet will receive power as long as the unit is plugged into a powered AC outlet and the **Main Power** Switch 1 is on.

Finally, when all connections are complete, plug the power cord into a nonswitched 220-240-volt AC wall outlet. You're almost ready to enjoy the AVR 2000!

System Configuration

When all audio, video and system connections have been made, there are a few configuration adjustments that must be made. A few minutes spent to correctly configure and calibrate the unit will greatly add to your listening experience.

Speaker Selection

No matter which type or brand of speakers is used, the same model or brand of speaker should be used for the front-left, center and front-right speakers. This creates a seamless front soundstage and eliminates the possibility of distracting sonic disturbances that occur when a sound moves across mismatched front-channel speakers.

Speaker Placement

The placement of speakers in a multichannel home-theater system can have a noticeable impact on the quality of sound reproduced.

Depending on the type of center-channel speaker in use and your viewing device, place the center speaker either directly above or below your TV, or in the center behind a perforated front-projection screen.

Once the center-channel speaker is installed, position the left-front and right-front speakers so that they are as far away from one another as the center-channel speaker is from the preferred listening position. Ideally, the front-channel speakers should be placed so that their tweeters are no more than 60cm above or below the tweeter in the center-channel speaker.

They should also be at least 0.5 meter from your TV set unless the speakers are magnetically shielded to avoid colourings on the TV screen. Note that most speakers are not shielded, even with complete surround sets only the Center speaker may be.

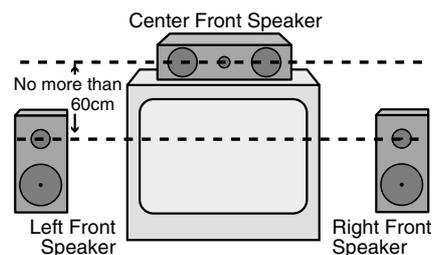
Depending on the specifics of your room acoustics and the type of speakers in use, you may find that imaging is improved by moving the front-left and front-right speakers slightly forward of the center-channel speaker. If possible, adjust all front loudspeakers so that they are aimed at ear height when you are seated in the listening position.

Using these guidelines, you'll find that it takes some experimentation to find the correct location for the front speakers in your particular installation. Don't be afraid to move things around until the system sounds correct. Optimize your speakers so that audio transitions across the front of the room sound smooth.

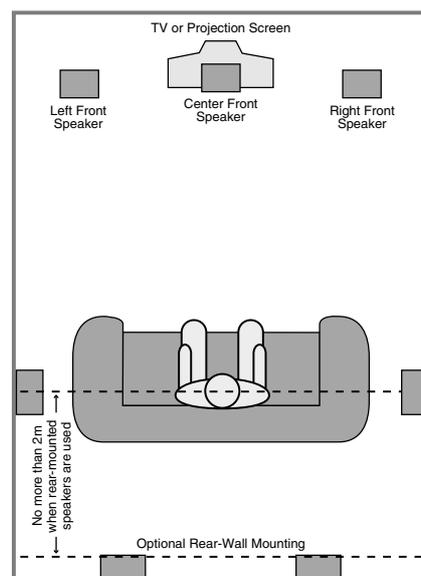
Surround speakers should be placed on the side walls of the room, at or slightly behind the listening position. The center of the speaker should face you.

If side-wall mounting is not practical, the speakers may be placed on a rear wall, behind the listening position. The speakers should be no more than two meters behind the rear of the seating area.

Subwoofers produce largely nondirectional sound, so they may be placed almost anywhere in a room. Actual placement should be based on room size and shape and the type of subwoofer used. One method of finding the optimal location for a subwoofer is to begin by placing it in the front of the room, about 15cm from a wall, or near the front corner of the room. Another method is to temporarily place the subwoofer in the spot where you will normally sit, and then walk around the room until you find a spot where the subwoofer sounds best. Place the subwoofer in that spot. You should also follow the instructions of the subwoofer's manufacturer, or you may wish to experiment with the best location for a subwoofer in your listening room.



A) Front Channel Speaker Installation with Direct-View TV Sets or Rear-Screen Projectors



B) The distance between the left and right speakers should be equal to the distance from the seating position to the viewing screen. You may also experiment with placing the left and right speakers slightly forward of the center speaker.

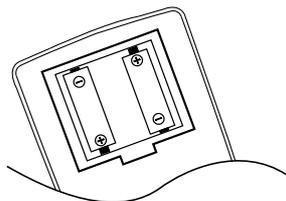
System Configuration

First Turn On

Once the speakers have been placed in the room and connected, the remaining steps are to program the system configuration memories. With the AVR 2000 two kind of memories are used, those associated individually with the input selected, e.g. surround modes, and others working independently from any input selected like speaker output levels, or delay times used by the surround sound processor.

You are now ready to power up the AVR 2000 to begin these final adjustments.

1. Plug the **Power Cable 16** into an unswitched AC outlet.
2. Press the **Main Power Switch 1** in until it latches and the word "OFF" on the top of the switch disappears inside the front panel. Note that the **Power Indicator 3** will turn amber, indicating that the unit is in the Standby mode.
3. Install the 2 supplied AAA batteries in the remote as shown. Be certain to follow the (+) and (-) polarity indicators as shown in the figure below.



4. Turn the AVR 2000 on either by pressing the **System Power Control 2** or the **Input Source Selector 11** on the front panel, or via the remote by pressing the **AVR Selector 6** or any of the **Input Selectors 5 7** on the remote. The **Power Indicator 3** will turn green to confirm that the unit is on, and the **Main Information Display 24** will also light up.

Settings to be Made With Each Input Used

The AVR 2000 features an advanced memory system that enables you to establish different configurations for the speaker configuration, digital input and surround mode for each input source. This flexibility enables you to custom tailor the way in which you listen to each source and have the AVR 2000 memorize them. This means, for example, that you may associate different surround modes and analog or digital inputs with different sources, or set different speaker configurations with the resultant changes to the bass management system or the use of the Center speaker. Once these settings are made, they will automatically be recalled whenever you select an input.

The default settings for the AVR 2000, as it is shipped from the factory, have all inputs set for an analog source, with stereo as the surround mode, the front left and right speakers set to "large" (with surround modes other speakers to "small"), and a subwoofer connected. Before using the unit, you will probably want to change these settings for most inputs so that they are properly configured to reflect the use of digital or analog inputs, the type of speakers installed and the surround mode specifics. Remember, since the AVR 2000's memory system keeps the settings for each input separate from the other inputs, you will need to make these adjustments for each input used. However, once they are made, further adjustment is only required when system components are changed.

To make this process as quick and as easy as possible, we suggest that with each of these settings to be made you step through each input. Once you have completed the settings for the first input, many settings may be duplicated for the remaining inputs.

The items that follow will describe the individual settings required for each input.

Input Setup

The first step in configuring the AVR 2000 is to select an input. This may be done by pressing the front panel **Input Source Selector 11** until the desired input's name appears momentarily in the **Main Information Display X**, and the green LED lights next to the input's name in the front panel **Input Indicators 21**. The input may also be selected by pressing the appropriate Input Selector on the remote control **5 7**.

The second step is to associate one of the digital inputs with the selected input source (if this is needed, otherwise the selected analog input will remain). Press the **Digital Input Select button 23 16** on the front panel or the remote. Within five seconds, make your input selection using the **Selector buttons** on the front panel **5** or the **▲/▼ buttons 13** on the remote until the desired digital or analog input is shown in the **Main Information Display X**. Then press the **Set button 15** to enter the new digital input assignment. After the setting has been made with one input, repeat as described above with all inputs in use. The digital input associated with the input selected can also be changed at any time later and the AVR 2000's memory system will keep the settings until they are changed again.

Speaker Setup

This setup tells the AVR 2000 which type of speakers are in use. This is important as it adjusts the settings that determine which speakers receive low frequency (bass) information and whether a Center speaker should be used or not, separately for each input used. For each of these settings use the **L A R G E** setting if the speakers for a particular position are traditional full-range loudspeakers that are capable of reproducing sounds below 100Hz. Use the **S M A L L** setting for smaller, frequency-limited satellite speakers that do not reproduce sounds below 100Hz. Note that when "small" front (left and right) speakers are used, a subwoofer is required to reproduce low frequency sounds. If you are in doubt as to which category describes your speakers, consult the specifications in the speakers' owner's manual, or ask your dealer. Remember that each speaker setup that differs from the default settings (see above) must be made individually for each input of the AVR 2000.

It is best to select the Dolby Pro Logic mode for speaker setup. Then with the currently selected input all settings will be copied to other surround modes too (as far as possible) and need not be repeated with any other mode.

System Configuration

With the AVR 2000 turned on, follow these steps to configure the speakers:

1. Put the AVR 2000 in the Dolby Pro Logic mode by pressing the **Surround Mode Selector** button **7** on the front or **10** and then the **▲/▼** buttons **13** on the remote, until **PRO LOGIC** appears in the **Main Information Display X** and the **PRO LOGIC** indicator **F** lights.

2. Press the **Speaker** button **30 26** on the remote or front panel. The words **FRNT SPEAKER** will appear in the **Main Information Display X**.

3. Press the **Set** button **15 20**.

4. Press the **▲/▼** buttons **13** on the remote or the **Selector** buttons **5** on the front panel until either **LARGE** or **SMALL** appears, matching the type of speakers you have at the left-front and right-front positions, as described by the definitions shown in preceding section.

When **SMALL** is selected, low frequency front channel sounds will be sent only to the subwoofer output. Note that if you choose this option and there is no subwoofer connected, you will not hear any low frequency sounds from the front channels.

When **LARGE** is selected, a full-range output will be sent to the front left and front right outputs. Depending on the subwoofer configuration (see below), the front left and right bass information may also be directed to a subwoofer.

Important Note: When a speaker set with two front satellites and a passive subwoofer is used, connected to the **front speaker outputs 12**, the fronts must be set for **LARGE**.

5. When you have completed your selection for the front channels, press the **Set** button **15 20**, and then press the **▲/▼** buttons **13** on the remote or the **Selector** buttons **5** on the front panel to change the display to **CEN SPEAKER**.

6. Press the **Set** button **15 20** again, and use the **▲/▼** buttons **13** on the remote, or the **Selector** buttons **5** on the front panel, to select the option that best describes your system based on the Center speaker definitions shown in preceding section.

When **SMALL** is selected, low frequency center channel sounds will be sent to the Fronts, if they are set for **LARGE** and **Sub** is turned off. When **Sub** is on, low frequency center channel sounds will be sent to the subwoofer only.

When **LARGE** is selected, a full-range output will be sent to the center speaker output, and with analog and digital surround modes **NO** center channel signal will be sent to the subwoofer output.

When **NONE** is selected, no signal will be sent to the center channel output. The receiver will operate in a "phantom" center channel mode and center channel information will be sent to the left and right front channel outputs. This mode is needed if no Center speaker is used (note that for the use of Logic 7C surround mode a Center speaker is needed, but Logic 7M works well without a Center too).

7. When you have completed your selection for the center channel, press the **Set** button **15 20**, and then press the **▲/▼** buttons **13** on the remote or the **Selector** buttons **5** on the front panel to change the display to **SUR SPEAKER**.

8. Press the **Set** button **15 20** again, and then use the **▲/▼** buttons **13** on the remote or the **Selector** buttons **5** on the front panel to select the option that best describes your system based on the Surround speaker definitions shown in preceding section.

When **SMALL** is selected, low frequency surround channel sounds will be sent to the Fronts, when **Sub** is turned off, or to the subwoofer output when **Sub** is on. With **Pro Logic** mode, there is no bass in the surround channels.

When **LARGE** is selected, a full-range output will be sent to the surround channel outputs (with all analog and digital surround modes), and, except with **Hall** and **Theater** modes, **NO** surround channel bass will be sent to the subwoofer output.

When **NONE** is selected, surround sound information will be split between the front-left and front-right outputs. Note that for optimal performance when no surround speakers are in use, the **Dolby 3 Stereo** mode should be used instead of **Dolby Pro Logic**.

9. When you have completed your selection for the surround channel, press the **Set** button **15 20**, and then press the **▲/▼** buttons **13** on the remote or the **Selector** buttons **5** on the front panel to change the display to **S - W SPEAKER**.

10. Press the **Set** button **15 20**, and then press the **▲/▼** buttons **13** on the remote or the **Selector** buttons **5** on the front panel to select the option that best describes your Subwoofer system.

The choices available for the subwoofer position will depend on the settings for the other speakers, particularly the front left/right positions.

If the front left/right speakers are set to **SMALL**, the subwoofer will automatically be set to **SUB**, which is the "on" position.

If the front left/right speakers are set to **LARGE**, three options are available:

- If no subwoofer is connected to the AVR 2000, press the arrow buttons **13 5** so that **NONE** appears in the display. When this option is selected, all bass information will be routed to the front left/right "main" speakers.

- If a subwoofer is connected to the AVR 2000, you have the option to have the front left/right "main" speakers reproduce bass frequencies at all times, and have the subwoofer operate only when the AVR 2000 is being used with a digital source that contains a dedicated Low Frequency Effects, or LFE soundtrack. This allows you to use both your main and subwoofer speakers to take advantage of the special bass created for certain movies. To select that option press the arrow buttons **13 5** so that **SUB (LFE)** appears in the display.

- If a subwoofer is connected and you wish to use it for bass reproduction in conjunction with the main front left/right speakers, regardless of the type of program source or surround mode you are listening to, press the arrow buttons **13 5** so that **SUB L/R+LFE** appears in the display. When this option is selected, a "complete" feed will be sent to the front left/right "main" speakers, and the subwoofer will receive the front left and right bass frequencies.

11. When all speaker selections have been made for the input selected, press the **Set** button **15 20** twice or simply wait for three seconds until the display returns to the normal mode.

System Configuration

To assist in making these settings, the icons in the **Speaker/Channel Input Indicators**  will change as the speaker type is selected at each position. When only the inner icon box is lit, the speaker is set for "small." When the inner box and the two outer boxes with circles inside them are lit, the speaker is set for "large." When no indicator appears at a speaker location, that position is set for "none" or "no" speaker.

As an example, in Figure 6 below, the left front and right front speakers are set for "large," the center, left surround and right surround speakers are set for small, and a subwoofer is set.

After the speaker setting has been made with one input, repeat as described above with all inputs you will use. In most cases, the speaker type will be the same and may be quickly entered by entering the same data used for the original input. But with some music sources you may prefer to listen to your surround system without using a Center speaker, particularly when a small Center is in use with an audio performance not matching perfectly with the main front speakers. With these sources selected the Center speaker may be turned off automatically (enter NONE for the Center setting), while its signal will be fed to the left and right Fronts.

The speaker setting mode can also be changed at any time later, and the AVR 2000's memory system will keep these settings for the input selected, until they are changed again.

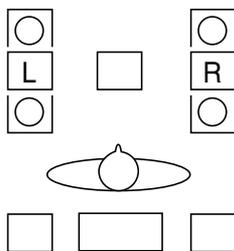


Figure 6

Surround Setup

Once the speaker setup has been completed, the next setup step is to set the surround mode you wish to use with each input. Since surround modes are a matter of personal taste, feel free to select any mode you wish – you may change it later. The Surround Mode chart on page 24 may help you select the mode best suited to the input source selected. However, to make it easier to establish the initial parameters for the AVR 2000, it is best to select Dolby Pro Logic for most analog inputs and Dolby Digital for inputs connected to digital sources. In the case of inputs such as a CD Player, Tape Deck or Tuner, you may wish to set the mode to Stereo, if that is your preferred listening mode for standard stereo sources, where it is unlikely that surround encoded material will be used. Alternatively, the 5 Channel Stereo or Logic 7 Music mode may also be a good choice for stereo-only source material.

To set the surround mode you wish to use with the input selected, press the **Surround Mode Selector** button  on the front or  and the  buttons  on the remote until the desired surround mode's name appears in the **Main Information Display** .

As the modes are changed, a green LED will also light next to the mode names in the **Surround Mode Indicators**  on the front panel.

Note that Dolby Digital and DTS will only appear as choices when a digital input has been selected.

After the surround mode setting has been made with the current input, repeat the setting with all inputs you will use. The surround mode can also be changed at any time later, and the AVR 2000's memory system will keep the settings for the input selected, until they are changed again.

Making Settings independent of selected Input

After the settings described above have been made for all input sources in your system, the following settings, made with any input, will remain in effect independent of the input selected.

Delay Settings

Only for the Dolby Digital or Dolby Pro Logic modes, you will need to adjust the delay time setting. Note that the delay time is not adjustable for any other modes.

Important Note: Once the delay time is set with any input it will be effective with all other inputs too. Moreover the surround delay time setting must be made only for either the Dolby Pro Logic or the Dolby Digital mode. The other setting will be set automatically.

Due to the different distances between the listening position for the front channel speakers and the surround speakers, the amount of time it takes for sound to reach your ears from the front or surround speakers is different. You may compensate for this difference through the use of the delay settings to adjust the timing for the specific speaker placement and acoustic conditions in your listening room or home theater.

The factory setting (see Surround Mode Chart page 24) is appropriate for most rooms, but some installations create an uncommon distance between the front and surround speakers that may cause the arrival of front channel sounds to become disconnected from surround channel sounds.

To resynchronize the front and surround channels, follow these steps:

1. Measure the distance from the listening/ viewing position to the front speakers in meters.
2. Measure the distance from the listening/ viewing position to the surround speakers.
3. Subtract the distance to the surround speakers from the distance to the front speakers and multiply the result by 3.
 - a. When setting the delay time for the Dolby Digital surround modes, the optimal delay time is the result of that subtraction. For example, if the front speakers are 3 m away and the surround speakers are 1 m away, the optimal delay time is figured as $(3-1) \times 3 = 6$. Thus, in this example, the delay time for Dolby Digital should be set at six milliseconds.
 - b. When setting the delay time for the Pro Logic mode, take the result of the subtraction and add 15 to obtain the optimal delay time. For example, if the front speakers are 3 m away and the surround speakers are 1 m away, the optimal delay time is figured as

System Configuration

$(3-1) \times 3 + 15 = 21$. Thus, in this example, the Pro Logic delay should be set at twenty milliseconds.

NOTE: The DTS, Logic 7, 5CH Stereo, Hall and Theater modes use a fixed, nonadjustable delay time.

The Dolby Digital Mode also includes a separate setting for the center channel delay mode, since the discrete nature of these signals makes the location of the center channel speaker more critical. To calculate the delay for the center channel, measure the distance from the preferred listening position in the center of the room to both the center channel speaker and either the left or right speaker.

If the distances are equal, no further adjustment is required and the center delay should be set to zero. If the distance to the front speakers is greater than the distance to the center speaker, you may wish to reposition the speakers by moving the front left and front right speakers closer to the listening position or the center speaker further away from the listening position.

If repositioning of the speakers is not possible, adjust the center delay time, adding one millisecond of center channel delay for every 30 cm closer to the listening position the center speaker is than the front speakers. For example, if the front left and front right speakers are each 3 m from the listening position and the center channel speaker is 2.4 m away, the delay is figured as $300 \text{ cm} - 240 \text{ cm} = 60 \text{ cm}$, suggesting an optimal center delay of 2 milliseconds.

To set the delay time, follow these steps:

1. To make the delay settings for the Dolby Digital mode (this will include the Center delay setting, and the surround delay for the Pro Logic mode will be set automatically), press the **Input Source Selector** **11** on the front or **5** on the remote and select any input now that is associated with a digital input and the Dolby Digital surround mode (the surround mode associated with each input selected will be indicated by the **Surround Mode Indicators** **28** in the front panel).
2. Press the **Delay** button **28/22** on the remote or front panel. The words **S DELAY TIME** appear in the **Main Information Display** **X**.
3. Press the **Set** button **15/20**.
4. Press the $\blacktriangle/\blacktriangledown$ buttons **13** on the remote or the **Selector** buttons **5** on the front panel until the desired rear delay time for the Dolby Digital mode, calculated using the formula for Dolby Digital above (item a.), appears in the display.
5. Press the **Set** button **15/20** to enter the setting into the AVR2000's memory.

6. Press the $\blacktriangle/\blacktriangledown$ buttons **13** on the remote once, so that **C DELAY TIME** appears in the **Main Information Display** **X**.

7. Press the **Set** button **15/20**.

8. Press the $\blacktriangle/\blacktriangledown$ buttons **13** on the remote until the desired delay time for the center channel appears in the display.

9. Press the **Set** button **15/20** to enter the setting into the AVR 2000's memory.

You have now completed the delay time settings for all surround modes and inputs.

Night Mode Settings

The Night mode is a feature of Dolby Digital that uses special processing to preserve the dynamic range and full intelligibility of a movie sound track while reducing the peak level. This prevents abruptly loud transitions from disturbing others, without reducing the sonic impact of a digital source. Note that the Night mode is only available when the Dolby Digital surround mode is selected.

To adjust the Night mode setting press the **Input Source Selector** **11** on the front or **5** on the remote and select an input that is associated with a digital input and the Dolby Digital surround mode.

Next press the **Night** button **11** on the remote. When the button is pressed, the words **D - RANGE** will appear in the **Main Information Display** **X**. Press the $\blacktriangle/\blacktriangledown$ buttons **13** within three seconds to select the desired setting:

OFF: When **OFF** is shown in the display, the Night mode will not function.

MID: When **MID** is shown in the display, a mild compression will be applied.

MAX: When **MAX** is shown in the display, a more severe compression algorithm will be applied.

When you want to use the Night mode feature, we recommend that you select the MID setting as a starting point and change to the MAX setting later, if desired.

When any Night mode is selected, the **NIGHT Mode Indicator** **N** will illuminate. To confirm the selection press the **Set** button **15/20** or wait for some seconds until the display returns to the normal mode.

Output Level Adjustment

Output level adjustment is a key part of the configuration process for any surround sound product. It is particularly important for a Dolby Digital receiver such as the AVR 2000, as correct outputs will ensure that you hear sound tracks with the proper directionality and intensity.

NOTE: Listeners are often confused about the operation of the surround channels. While some assume that sound should always be coming from each speaker, most of the time there will be little or no sound in the surround channels. This is because they are only used when a movie director or sound mixer specifically places sound there to create ambiance, a special effect or to continue action from the front of the room to the rear. When the output levels are properly set it is normal for surround speakers to operate only occasionally. Artificially increasing the volume to the rear speakers may destroy the illusion of an enveloping sound field that duplicates the way you hear sound in a movie theater or concert hall.

IMPORTANT NOTE: The output level can be adjusted for each digital and analog surround mode separately. This allows you to compensate for level differences between speakers, that may also vary with the surround mode selected, or to increase or decrease the level of certain speakers intentionally, depending on the surround mode selected.

Before beginning the output level adjustment process, make certain that all speaker connections have been properly made. The system volume should be turned down at first. Finally, make certain that the **Balance Control** **17** is set to the center "12 o'clock" position.

To adjust and calibrate the output levels, follow these steps. For accurate calibration, it is a good idea to make these adjustments while seated in your favorite listening position. As the adjustment must be made for each surround mode, it is best to select any input associated with Dolby Pro Logic, make the adjustment for that surround mode, then step through all inputs you're using (and thus through all surround modes associated with the inputs) and repeat the adjustment when any surround mode appears that has not yet been adjusted.

1. Select any input associated with the Dolby Pro Logic surround mode by pressing the **Input Source Selector** **11** **5** until the **Pro Logic Surround Mode Indicator** **28** on the front and **F** in the display light up.
2. Press the **Test Tone** button **8/27** on the remote. The words **T - T F L 0 dB** will appear in the **Main Information Display** **X**.

System Configuration

3. The test noise will immediately begin to circulate in the speakers in a clockwise rotation, pausing at each position for two seconds. As the test noise rotates the speaker positions **F L**, **C**, **F R**, **R S**, **L S** (Front Left, Center, Front Right, Right Surround, Left Surround) will be shown in the **Main Information Display X**. As an added assist, while the test noise is circulating, the proper channel position will also be indicated in the **Speaker/Channel Indicators P** by a blinking letter within the correct channel. Turn up the volume now until you can hear the noise clearly.

IMPORTANT NOTE: Because this test noise will have a much lower level than normal music, the volume must be lowered after the adjustment for all channels is made, but BEFORE you turn the test tone off.

NOTE: This is a good time to verify that the speakers have been properly connected. As the test noise circulates, listen to make certain that the sound comes from the speaker position shown in the Main Information Display. If the sound from a speaker location does NOT match the position indicated in the display, turn the AVR 2000 off using the **Main Power Switch 1** and check the speaker wiring to make certain that each speaker is connected to the correct output terminal.

After checking for speaker placement, let the test noise circulate again, and listen to see which channels sound louder than the others. Using the front left speaker as a reference, press the **▲/▼** buttons **13** on the remote to bring all speakers to the same volume level. Note that when one of the **▲/▼** buttons is pushed, the test noise circulation will pause on the channel being adjusted to give you time to make the adjustment. When you release the button, the circulation will resume after five seconds.

Continue to adjust the individual speakers until they all have the same volume. Note that adjustments should be made with the **▲/▼** buttons **13** on the remote only, NOT the main volume controls.

NOTE: The subwoofer output level is not adjustable using the test tone. To change the subwoofer level, follow the steps for Output Level Trim Adjustment on page 28.

When all channels have the same output level, turn the **Volume 19 32** down to about -40dB, otherwise the listening level may be too high as soon as the source's music starts to play. Afterwards press the **Test Tone Selector 27 6** button again to turn the test tone off and complete the process.

IMPORTANT NOTE: The Output level adjustment made will be effective for the surround mode currently selected, also when other inputs are selected using the same surround mode. To adjust the output level with all other surround modes used, step through all inputs you're using by pressing the **Source Selector** buttons **11** on the front panel or the appropriate **Input Selectors 5** on the remote. When the indicator for any surround mode for which the level adjustment has not yet been made lights in the **Main Information Display X** or its green LED lights in the **Surround Mode Indicators** field **28**, repeat the level adjustment described above. This will also allow you to compensate level differences between speakers, that may be different with each surround mode, or to increase or decrease the level of certain speakers intentionally, depending on the surround mode selected.

Note: Output level adjustment is not available for the VMAx or Surround Off mode, as no surround speakers are used (so level differences between the speakers in the room cannot occur). But to compensate level differences between stereo, VMAx and other surround modes (independently from the input selected) the outputs can be adjusted with the Level Trim Adjustment procedure, see page 28, also for the Surround Off (Stereo) and VMAx modes.

Once the settings outlined on the previous pages have been made, the AVR 2000 is ready for operation. While there are some additional settings to be made, these are best done after you have had an opportunity to listen to a variety of sources and different kinds of program material. These advanced settings are described on page 28 of this manual. In addition, any of the settings made in the initial configuration of the unit may be changed at any time. As you add new or different sources or speakers, or if you wish to change a setting to better reflect your listening taste, simply follow the instructions for changing the settings for that parameter as shown above. Note that any settings changed at any time, will be stored in memory in the AVR 2000, also if it's turned off completely, unless it will be reset (see page 46). The settings will either depend on the input (Speaker configuration, analog/digital input selection, surround mode) or on the surround mode selected (speaker output level), as described on previous pages. Having completed the setup and configuration process for your AVR 2000, you are about to experience the finest in music and home theater listening. Enjoy!

Operation

Basic Operation

Once you have completed the setup and configuration of the AVR 2000, it is simple to operate and enjoy. The following instructions should be followed for you to maximize your enjoyment of your new receiver:

Turning the AVR 2000 On or Off

- When using the AVR 2000 for the first time, you must press the **Main Power Switch 1** on the front panel to turn the unit on. This places the unit in a Standby mode, as indicated by the amber color of the **Power Indicator 3**. Once the unit is in Standby, you may begin a listening session by pressing the **System Power Control 2** or the **Source button 11** on the front panel or the **AVR Selector 6**. Note that the **Power Indicator 3** will turn green. This will turn the unit on and return it to the input source that was last used. The unit may also be turned on from Standby by pressing any of the **Source Selector** buttons on the remote **5 7**.

NOTE: After pressing one of the **Input Selector** buttons **5** (except VID4) to turn the unit on, press the **AVR Selector 6** to have the remote control the AVR functions.

To turn the unit off at the end of a listening session, simply press the **System Power Control 2** on the front panel or the **Power Off Button 4** on the remote. Power will be shut off to any equipment plugged into the rear panel **Switched AC Outlets 14** and the **Power Indicator 3** will turn amber.

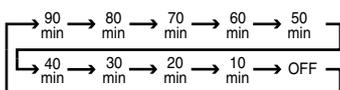
When the remote is used to turn the unit "off" it is actually placing the system in a Standby mode, as indicated by the amber color of the **Power Indicator 3**.

When you will be away from home for an extended period of time it is always a good idea to completely turn the unit off with the front panel **Main Power Switch 1**.

NOTE: All preset memories may be lost if the unit is left turned off with the **Main Power Switch 1** for more than two weeks.

Using the Sleep Timer

- To program the AVR 2000 for automatic turn-off, press the **Sleep Button 9** on the remote. Each press of the button will increase the time before shut down in the following sequence:



The sleep time will be displayed in the **Preset Number/Sleep Timer Indicator 9** and it will count down until the time has elapsed.

When the programmed sleep time has elapsed, the unit will automatically turn off (to Standby mode). Note that the front panel display will dim to one half brightness when the Sleep function is programmed. To cancel the Sleep function, press and hold the **Sleep Button 9** until the information display returns to normal brightness and the Sleep indicator numbers disappear and the words **SLEEP OFF** appear in the **Main Information Display X**.

Source Selection

- To select a source, press any of the **Source Selector** buttons on the remote **5 7**.

NOTE: After pressing one of the **Input Selector** buttons **5** (except VID4) to turn the unit on, press the **AVR Selector 6** to have the remote control the AVR functions.

- The input source may also be changed by pressing the front-panel **Input Source Selector** button **11**. Each press of the button will move the input selection through the list of available inputs.

- As the input is changed, the AVR 2000 will automatically switch to the digital input (if selected), surround mode and speaker configuration that were entered during the configuration process for that source.

- The front-panel **Video 4 Inputs 15** may be used to connect a device such as a video game or camcorder to your home entertainment system on a temporary basis.

- When the input source is changed, the new input name will appear in the **Main Information Display X** and a green LED will light next to the selected input's name in the front-panel **Input Indicators 21**.

- When a pure audio source (Tuner, CD, Tape, 6 Channel direct inputs) is selected, the last video input used remains routed to the **Video 1 and Video 2 Outputs 20 23** (except from its own Video 1/ source) and **Video Monitor Output 11**. This permits simultaneous viewing and listening to different sources.

- When a Video source is selected, its audio signal will be fed to the speakers and the video signal for that input will be routed to the appropriate **Monitor Output** jack **11** and will be viewable on a TV monitor connected to the AVR 2000.

Controls and Use of Headphones

- Adjust the volume to a comfortable level using the front panel **Volume Control 19** or remote **Volume Up/Down 32** buttons.

- The **Balance Control 17** may be used to adjust the relative sound output between the left front and right front speakers.

- To temporarily silence all speaker outputs press the **Mute** button **34**. This will interrupt the output to all speakers and the headphone jack, but it will not affect any recording or dubbing that may be in progress. When the system is muted, the **MUTE** indicator **0** will light in the **Main Information Display 24**. Press the **Mute** button **34** again to return to normal operation.

- During a listening session you may wish to adjust the **Bass Control 16** and **Treble Control 18** to suit your listening tastes or room acoustics.

- To set the output of the AVR 2000 so that the output is "flat," with the Tone controls and the Balance control de-activated, press the **Tone Mode** button **6** once or twice so that the words **Tone Out** appear momentarily in the **Main Information Display X**. To return the tone controls to an active condition, press the **Tone Mode 6** button once or twice so that the words **Tone In** momentarily appear in the **Main Information Display X**.

- For private listening, plug the 6.3 mm stereo phone plug from a pair of stereo headphones into the front panel **Headphone Jack 4**. Note that when the headphone's plug is connected, the word **HEADPHONE** will scroll once across the **Main Information Display X** and all speakers will be silenced. When the headphone plug is removed, the audio feed to the speakers will be restored.

Operation

Surround Mode Chart

MODE	FEATURES	DELAY TIME RANGE
DOLBY DIGITAL	Available only with digital input sources encoded with Dolby Digital data. It provides up to five separate main audio channels and a special dedicated Low Frequency Effects channel.	Center: 0 ms – 5 ms Initial Setting – 0 ms Surround: 0 ms – 15 ms Initial Setting – 0 ms
DTS	Available only with digital input sources encoded with DTS data. Available on special DVD, LD and audio-only discs, DTS provides up to five separate main audio channels and a special dedicated low frequency channel.	Delay time not adjustable
DOLBY PRO LOGIC	The standard mode for analog surround sound decoding. It uses information encoded in a two channel stereo recording to produce four distinct outputs: Left, Center, Right and a Mono Surround channel. Use this mode for accurate reproduction of programs bearing the Dolby Surround, DTS Stereo, UltraStereo or other "Surround" logos. Surround-encoded programs include videocassette, DVD and LD movies, TV and cable programs, radio programs and audio CDs. Dolby Pro Logic processing may also be used to provide a pleasing surround effect with some stereophonic source material that does not carry surround encoding.	15 ms – 30 ms Initial Setting = 15 ms
LOGIC 7 C LOGIC 7 M	An advanced mode that extracts the maximum surround information from either conventional stereo material or surround-encoded programs. When used with encoded material, decoding is more accurate in terms of the placement of sounds, and fades and pans are much smoother and more realistic than with other decoding techniques. Logic 7 also delivers increased spaciousness and a wider sound stage when it is used with conventional natural stereo recordings and music programs through the use of the natural surround information present also in those stereo recordings. The Logic 7C or Cinema mode is tailored to provide an optimal sound field for movie soundtracks. The Logic 7M or Music mode uses a decoding formula that is best suited to music.	Delay time not adjustable
DOLBY 3 STEREO	Uses the information contained in a surround encoded or two channel stereo program to create center channel information. In addition, the information that is normally sent to the rear channel surround speakers is carefully mixed in with the front left and front right channels for increased realism. Use this mode when you have a center channel speaker but no surround speakers.	No surround channels
THEATER	This surround processing uses matrix surround decoding to simulate a standard movie or stage theater with stereo and even pure mono sources.	Delay time not adjustable
HALL	The Hall mode offers matrix surround decoding that simulate a medium-sized chamber hall or opera house with stereo and even pure mono sources.	Delay time not adjustable
VMAx Near VMAx Far	When only the two front channel loudspeakers are used, Harman's patented VMAx mode delivers a three-dimensional sound space with the illusion of "phantom speakers" at the center and surround positions. The VMAx N, or "Near Field" mode should be selected when your listening position is less than 1,5m from the speakers. The VMAx F, or "Far Field" mode should be selected when your listening position is greater than 1,5m from the speakers.	No surround channels
5-Channel Stereo	This mode takes advantage of multiple speakers to place a stereo signal at both the front and back of a room. Ideal for playing music in situations such as a party, it places the same signal at the front-left and surround-left, and at the front-right and surround-right speakers. The center channel is fed a summed mono mix of the in-phase material of the left and right channels.	No delay is available for this mode
SURROUND OFF (STEREO)	This mode turns off all surround processing and presents the pure left and right channel presentation of two channel stereo programs.	No surround channels

Operation

Surround Mode Selection

One of the most important features of the AVR 2000 is its ability to reproduce a full multi-channel surround sound field from digital sources, analog matrix surround encoded programs and standard stereo or even mono programs. In all, a total of thirteen listening modes are available on the AVR 2000.

Selection of a surround mode is based on personal taste, as well as the type of program source material being used. For example, motion pictures or TV programs bearing the logo of one of the major surround encoding processes, such as Dolby Surround, DTS Stereo or UltraStereo^{tt} should be played in either the Dolby 3 Stereo or Dolby Pro Logic surround modes depending on the source material and speakers in use.

However to create wider, enveloping sound field environments and more defined pans and flyovers with all analog stereo and surround recordings select Harman Kardon's exclusive Logic 7 mode, that creates a stereophonic left and right rear signal, just as recorded in real life (e.g. sound being recorded from left rear side will be heard from that side only) for a dramatic improvement in comparison to Dolby Pro Logic.

NOTE: Once a program has been encoded with matrix surround information, it retains the surround information as long as the program is broadcast in stereo. Thus, movies with surround sound may be decoded via any of the analog surround modes such as Pro Logic or Logic 7, when they are broadcast via conventional TV stations, cable, pay TV and satellite transmission. In addition, a growing number of made-for-television programs, sports broadcasts, radio dramas and music CDs are also recorded in surround sound. You may view a list of these programs at the Dolby Laboratories Web site at www.dolby.com.

Even when a program is not listed as carrying intentional surround information, you may find that the Pro Logic, Dolby 3 Stereo or Logic 7 modes often deliver enveloping surround presentations through the use of the natural surround information present in all stereo recordings. However, for stereo programs without any surround information the Theater, Hall and 5CH Stereo modes should be tried (5CH Stereo is effective particularly with old "extreme" stereo recordings) and for mono programs, we suggest that you try the Theater or Hall modes. And when you use only two front channel speakers you should select Harman's patented VMaX mode, delivering a virtually three dimensional sound space with two speakers only.

Surround modes are selected using either the front panel controls or the remote. To select a surround mode from the front panel, press the **Surround Mode Selector** **7** to scroll through the list of available modes. To select a surround

mode using the remote, press the **Surround Mode Selector** **10**, and then press the **▲/▼** buttons **13** to change the mode. As you press the buttons, the Surround mode name will appear in the **Main Information Display** **X**, and an individual mode indicator will also light up **C D F H I J K L M**. As the surround modes change, a green LED will light next to the current mode in the **Surround Mode Indicators** list **28** on the front panel.

Note that any time a surround mode is changed it remains associated with the input just selected until another choice is made.

Note that the Dolby Digital or DTS modes may only be selected when a digital input is in use. In addition, when a digital source is present, the AVR 2000 will automatically select and switch to the correct mode (Dolby Digital or DTS), regardless of the mode that has been previously selected. For more information on selecting digital sources, see the following section of this manual.

To listen to a program in traditional two channel stereo, using the front left and front right speakers only (plus the subwoofer if installed and configured), follow the instructions shown above for using the remote until **SURR OFF** appears in the **Main Information Display** **X**.

Digital Audio Playback

Digital audio is a major advancement over past systems such as Dolby Pro Logic. It delivers five discrete channels: left front, center, right front, left surround and right surround. Each channel reproduces full frequency range (20Hz to 20kHz) and offers dramatically improved dynamic range and significant improvements to signal-to-noise ratios. In addition, digital systems have the capability to deliver an additional channel that is specifically devoted to low frequency information. This is the ".1" channel referred to when you see these systems described as "5.1". The bass channel is separate from the other channels, but since it is intentionally bandwidth limited, sound designers have given it that unique designation.

Dolby Digital

Dolby Digital (originally known as AC-3[®]) is a standard part of DVD, and is available on specially encoded LD discs and satellite broadcasts and it is a part of the new high-definition television (HDTV) system.

Note that an optional, external RF demodulator is required to use the AVR 2000 to listen to the Dolby Digital sound tracks available on laser discs. Connect the RF output of the LD player to the demodulator and then connect the digital output of the demodulator to the **Optical** or **Coaxial** inputs **25 26 13 14** of the AVR 2000. No demodulator is required for use with DVD players or DTS-encoded laser discs.

DTS

DTS is another digital audio system that is capable of delivering 5.1 audio. Although both DTS and Dolby Digital are digital, they use different methods of encoding the signals, and thus they require different decoding circuits to convert the digital signals back to analog.

DTS-encoded sound tracks are available on select DVD and LD discs, as well as on special audio-only DTS CDs. You may use any LD, DVD or CD player equipped with a digital output to play DTS-encoded special audio-only CDs with the AVR 2000, but DTS-LDs can be played on LD players and DTS-DVDs on DVD players only. All that is required is to connect the player's output to either the **Optical** or **Coaxial** input on the rear panel **25 26** or front panel **13 14**.

In order to listen to DVDs encoded with DTS sound tracks, the DVD player must be compatible with the DTS signal as indicated by a DTS logo on the player's front panel. Note that early DVD players may not be able to play DTS-encoded DVDs. This does not indicate a problem with the AVR 2000, as some players cannot pass the DTS signal through to the digital outputs. If you are in doubt as to the capability of your DVD player to handle DTS DVDs, consult the player's owner's manual.

PCM Audio Playback

PCM (Pulse Code Modulation) is the non-compressed digital audio system used for compact discs, Non-Dolby Digital/DTS Laserdiscs and some special PCM encoded DVDs. The digital circuits in the AVR 2000 are capable of high quality digital-to-analog decoding, and they may be connected directly to the digital audio output of your CD/DVD or LD player (LD only for PCM or DTS programs, for Dolby Digital laser discs an RF adapter is needed, see "Dolby Digital" above).

Connections may be made to either the **Optical** or **Coaxial** inputs **25 26** on the rear panel or the front panel **Digital Inputs** **13 14**.

To listen to a PCM digital source, first select the input for the desired source (e.g., CD) to feed its video signal (if any) to the TV monitor and to provide its analog audio signal for recording. Next press the **Digital Select** button **23 16** and then use the **▲/▼** buttons **13** on the remote, or the **Selector** buttons **5** on the front panel, until the desired choice appears in the **Main Information Display** **X**, then press the **Set** button **20 15** to confirm the choice.

When a PCM source is playing, the **PCM** indicator **A** will light. During PCM playback you may select any surround mode except Dolby Digital or DTS.

Playback from PCM sources may also benefit from the Logic 7. When playing a stereo or surround-encoded PCM source, such as an LD or CD

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or a PCM audio track from DVD, use the Logic 7 C or Cinema mode. For stereo or surround encoded pure music recordings use the Logic 7 M or Music mode for a wider front sound stage (see Surround Mode Chart page 24).

MP3 Audio Playback

The AVR 2000 is one of the first A/V receivers to provide on-board decoding for the MP3 audio format used on specific computer audio files and by portable MP3 players/recorders. In addition, some new CD and DVD players are capable of playing back optical discs that are recorded with MP3, rather than standard CD audio information. By offering MP3 decoding, the AVR 2000 is able to deliver more precise conversion of the digital signals to an analog output, along with the benefits of listening to the MP3 audio through the AVR 2000's high current amplifier and the speakers from your surround system, rather than the smaller speakers and low powered amplifiers typically used with computers.

To take advantage of the AVR 2000's MP3 capabilities, simply connect the PCM output of a computer sound card able to feed the MP3 format to its digital output, or the PCM output of MP3 compatible CD or DVD players or of a portable MP3 player with a digital output, to either the rear panel **Digital Inputs 25 26** or the front panel **Digital Inputs 13 14**. When the digital MP3 signal is selected, the **MP3 Bitstream Indicator A** will light, and the audio will begin playing.

NOTES:

- The AVR 2000 is only capable of playing signals in the MP3 (MPEG 1/Layer 3) format. It is not compatible with other computer audio codecs.
- The MP 3 DSP mode found in the new AVR 2000 requires an MP3 SPDIF stream. Presently, only a few units provide this but in the coming generations of motherboards and operating system updates this will follow, since SPDIF is the standard for audio & video hardware.
- The digital audio input signal may be either optical or coaxial, but the signal must be in the PCM format. Direct connection of USB or serial data outputs is not possible, even though the signals are in the MP3 format. If you have any questions about the data output format from your computer or a sound card, check with the device's Owner's Manual or contact the manufacturer's technical support area.

Selecting a Digital Source

To utilize either digital mode you must have properly connected a digital source to the AVR 2000. Connect the digital outputs from DVD players, HDTV receivers, satellite systems or CD players to the **Optical** or **Coaxial** inputs on the rear or front panel **25 26 13 14**. In order to pro-

vide a backup signal and a source for analog stereo recording, the analog outputs provided on digital source equipment should also be connected to their appropriate inputs on the AVR 2000 rear panel (e.g., connect the analog stereo audio output from a DVD to the **DVD** inputs **6** on the rear panel when you connect the source's digital outputs).

When playing a digital source such as DVD, first select its input using the remote or front panel controls as outlined in this manual in order to feed its video signal (if any) to the TV monitor and to provide its analog audio signal for recording. When the digital input appropriate with the DVD player is not selected automatically (due to the input settings made earlier during the system configuration, see page 18), select the digital source by pressing the **Digital Input Selector** button **16 23** and then using the **▲/▼** buttons **13** on the remote or the **Selector** buttons **5** on the front panel to choose any of the **OPTICAL** or **COAXIAL** inputs, as they appear in the **Main Information Display X** and **Display Indicators BE**. When the digital source is playing, the AVR 2000 will automatically detect whether it is a multichannel Dolby Digital, DTS source, MP3 or a conventional PCM signal, which is the standard output from CD players. A **Bitstream Indicator A** will light in the **Main Information Display 24** to confirm that the digital signal is Dolby Digital, DTS, MP3 or PCM.

Note that a digital input (e.g. coaxial) remains associated with any analog input (e.g. DVD) as soon as it is selected, thus the digital input need not be re-selected each time the appropriate input choice (e.g. DVD) is made.

Digital Status Indicators

When a digital source is playing, the AVR 2000 senses the type of bitstream data that is present. Using this information, the correct surround mode will automatically be selected. For example, DTS bitstreams will cause the unit to switch to DTS decoding, and Dolby Digital bitstreams will enable Dolby Digital decoding. When the unit senses PCM data, from CDs and LDs and some music DVDs or certain tracks on normal DVDs, it will allow the appropriate surround mode to be selected manually. Since the range of available surround modes depends on the type of digital data that is present, the AVR 2000 uses a variety of indicators to let you know what type of signal is present. This will help you to understand the choice of modes and the input channels recorded on the disc.

When a digital source is playing, a **Bitstream Indicator A** will light to show which type of signal is playing:

DOLBY D: When the DOLBY D indicator lights, a Dolby Digital bitstream is being received.

Depending on the audio track selected on the source player and number of channels on the disc, different surround modes are possible. Note that only one channel without subwoofer, called "1.0" audio, or all five channels with subwoofer ("5.1" audio) or all steps between can be recorded on digitally surround encoded audio tracks (see NOTE below). With all those tracks, except "2.0" audio, only the Dolby Digital and VMAX modes are available. When the Dolby Digital signal is only two channel ("2.0") these two channels (l and r) often contain Pro Logic surround informations. With those tracks the AVR 2000 automatically switches to the Pro Logic mode, but you may also select the Vmax mode.

D T S: When the DTS indicator lights, a DTS bitstream is being received. When the unit senses this type of data, only the DTS mode may be used.

P C M: When the PCM indicator lights, a standard Pulse Code Modulation, or PCM, signal is being received. This is the type of digital audio used by conventional compact disc and laser disc recordings. When a PCM bitstream is present, all modes except Dolby Digital and DTS are available. Note that the PCM signal format can be selected on the DVD player with any audio track, even with Dolby Digital tracks (but not with Dolby Digital decoding). So, if selected, even "2.0" D.D. audio tracks can be played with all surround modes, also with the most effective Logic 7.

M P 3: When the MP3 indicator lights, a compatible MPEG 1/Layer 3 digital signal is being received. This is the popular audio format used by many computer programs for recording compressed audio files. When an MP3 bitstream is present, the sound will automatically be played in the stereo (surround off) mode. The surround modes are not available during MP3 playback.

In addition to the **Bitstream Indicators**, the AVR 2000 features a set of unique channel input indicators that tell you how many channels of digital information are being received and if the digital signal is interrupted.

These indicators are the **L/C/R/LS/RS/LFE** letters that are inside the center boxes of the **Speaker/Channel Input Indicators P** in the front panel **Main Information Display 24**. When a standard analog stereo or matrix surround signal is in use, only the "L" and "R" indicators will light, as analog signals have only left and right channels, respectively, even surround recordings, carry surround information on the left and right channels only.

Digital signals, however, may have one to six separate channels, depending on the program material, the method of transmission and the way in which it was encoded. When a digital signal is playing, the letters in these indicators will light in response to the specific signal being received. It

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is important to note that although Dolby Digital, for example, is referred to as a "5.1" system, not all Dolby Digital DVD or audio tracks selected on DVD or other Dolby Digital programs are encoded for 5.1. Thus, it is sometimes normal for a DVD with a Dolby Digital soundtrack to trigger e.g. only the "L" and "R" indicators.

NOTE: Many DVD discs are recorded with both "5.1" and "2.0" versions of the same soundtrack, the "2.0" version often is used with other languages. When playing a DVD, always be certain to check the type of material on the disc. Most discs show this information in the form of a listing or icon on the back of the disc jacket. When a disc does offer multiple soundtrack choices you may have to make some adjustments to your DVD player (usually with the "Audio Select" button or in a menu screen on the disc) to send a full 5.1 feed to the AVR 2000 or to select the appropriate audio track and thus language ("2.0" audio tracks can be played with all surround modes, even with Logic 7, see indicator "PCM" on page 16). It is also possible for the type of signal feed to change during the course of a DVD playback. In some cases the previews of special material will only be recorded in 2.0 audio, while the main feature is available in 5.1 audio. As long as your DVD player is set for 6-channel output, the AVR 2000 will automatically sense changes to the bitstream and channel count and reflect them in these indicators.

The letters used by the **Speaker/Channel Input Indicators P** also flash to indicate when a bitstream has been interrupted. This will happen when a digital input source is selected before the playback starts, or when a digital source such as a DVD is put into a Pause mode. The flashing indicators remind you that the playback has stopped due to the absence of a digital signal and not through any fault of the AVR. This is normal, and the digital playback will resume once the playback is started again.

Night Mode

A special feature of Dolby Digital is the Night mode, which enables Dolby Digital input sources to be played back with full digital intelligibility while reducing the maximum peak level and lifting the low levels by 1/4 to 1/3. This prevents abruptly loud transitions from disturbing others without reducing the impact of the digital source. The Night mode is available only when Dolby Digital mode is selected.

The Night mode may be engaged when a Dolby Digital DVD is playing by pressing the **Night Button 11** on the remote. Next, press the **▲/▼** buttons **13** to select either the middle range or full compression versions of the Night mode. To turn the Night mode off, press the **▲/▼** buttons **13** until the message in the lower third of the video display and the **Main Information**

Display X reads **D - RANGE OFF**. When the Night mode is active, the **Night Mode Indicator N** will also illuminate.

The Night mode may also be selected to always be on at either level of compression using the options in the Surround setting. See page 21 for information on setting this option.

IMPORTANT NOTES ON DIGITAL PLAYBACK:

1. When the digital playback source is stopped, or in a pause, fast forward or chapter search mode, the digital audio data will momentarily stop, and the channel position letters inside the **Speaker/Channel Indicators P** will flash. This is normal and does not indicate a problem with either the AVR 2000 or the source machine. The AVR 2000 will return to digital playback as soon as the data is available and when the machine is in a standard play mode.

2. Although the AVR 2000 will decode virtually all DVD movies, CDs and HDTV sources, it is possible that some future digital sources may not be compatible with the AVR 2000.

3. Note that not all digitally encoded programs and not all audio tracks on a DVD contain full 5.1-channel audio. Consult the program guide that accompanies the DVD or laser disc to determine which type of audio has been recorded on the disc. The AVR 2000 will automatically sense the type of digital surround encoding used, indicate it in the **Bitstream Indicators A** and **Channel Input Indicators P** and adjust to accommodate it.

4. When a Dolby Digital or DTS source is playing, you normally may not be able to select some of the analog surround modes such as Dolby Pro Logic, Dolby 3, Stereo, Hall, Theater, 5CH Stereo or Logic 7, except with special audio tracks (see indication "Dolby Digital" on previous page) or data format selected (see "PCM" on previous page).

5. When a Dolby Digital or DTS source is playing, it is not possible to make an analog recording using the **Tape 2** or **Video 1** or **Video 2** or **5 29** record outputs, if the source is connected to any digital input of the AVR 2000 only. But the analog two channel signal of that source, the "Downmix" to Stereo or Dolby Surround, can be recorded by connecting its analog audio outputs to the appropriate analog inputs (e.g. DVD) of the AVR 2000, even if the digital input of the AVR 2000 remains selected. Additionally, the digital signals will be passed through to the **Digital Audio Outputs**.

Tape Recording

In normal operation, the audio or video source selected for listening through the AVR 2000 is sent to the record outputs. This means that any program you are watching or listening to may be recorded simply by placing machines connected to the outputs for **Tape Outputs 2** or **Video 1** or **2 Outputs 5 29 29** in the record mode.

When a digital audio recorder is connected to any of the **Digital Audio Outputs 9**, you are able to record the digital signal using a CD-R, MiniDisc or other digital recording system. Note that all digital signals will be passed through to both, coaxial and optical, digital outputs simultaneously, no matter which kind of digital input was selected.

NOTES:

- The digital outputs are active only when a digital signal is present, and they do not convert an analog input to a digital signal, or change the format of the digital signal (e.g. Dolby Digital to PCM or vice versa, but coaxial digital signals are converted to optical signals and vice versa). In addition, the digital recorder must be compatible with the output signal. For example, the PCM digital input from a CD player may be recorded on a CD-R or MiniDisc, but Dolby Digital or DTS signals may not.

- To make an analog recording of a Dolby Digital or DTS source is not possible, if the source is connected to a digital input of the AVR 2000 only. But the analog two channel signal of that source can be recorded (see item 5, "Important Notes on Digital Playback" above).

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Output Level Trim Adjustment

Normal output level adjustment for the AVR 2000 is established using the test tone, as outlined on pages 21 and 22. In some cases, however, it may be desirable to adjust the output levels using program material such as a test disc, or a selection you are familiar with. Additionally, the output level for the subwoofer and those for the Stereo and VMAX modes can only be adjusted using this procedure.

To adjust the output levels using program material, first select the surround mode for which you want to trim the speakers (see NOTE below) by selecting the appropriate input, associated with the desired surround mode, start your program material source and set the reference volume for the front left and front right channels using the **Volume Control** **19** **22**.

Once the reference level has been set, press the **Channel Select** button **12** **25** and note that **FRONT L LEV** will appear in the **Main Information Display X**. To change the level, first press the **Set** button **15** **20**, and then use the **Selector** buttons **5** or the **▲/▼** buttons **13** to raise or lower the level. DO NOT use the volume control, as this will alter the reference setting.

Once the change has been made, press the **Set** button **15** **20** and then press the **Selector** buttons **5** or the **▲/▼** buttons **13** to select the next output channel location that you wish to adjust. To adjust the subwoofer level, press the **Selector** buttons **5** or the **▲/▼** buttons **13** until **WOOFER LEV** appears in the **Main Information Display X**. (Only available if the subwoofer was selected during the speaker configuration, see page 18).

Press the **Set** button **15** **20** when the name of the desired channel appears in the **Main Information Display X**, and follow the instructions shown above to adjust the level.

Repeat the procedure as needed until all channels requiring adjustment have been set. When all adjustments have been made press the **Set** button **15** **20** twice, the AVR 2000 will return to normal operation.

NOTE: The output levels may be separately trimmed for each digital and analog surround mode. If you wish to have different trim levels for a specific mode, select that mode and then follow the instructions in the steps shown above.

Changing the levels using trim adjustment as described above will automatically change the level settings shown in the Output Adjustment (see page 21) correspondingly (and vice versa) and will remain in the AVR 2000's memory system, even when the unit is turned off. With Stereo and Vmax modes the adjustment procedure described above is the only way to trim the output level (e.g. to match the Vmax level with other modes).

Display Brightness

The AVR 2000's front panel **Main Information Display 24** is set at a default brightness level that is sufficient for viewing in a normally lit room. However, in some home theater installations, you may wish to occasionally lower the brightness of the display, or turn it off completely.

The display brightness may be changed by pressing and holding the **Set** button **20** on the front for three seconds until the message in the **Main Information Display X** reads **V F D F U L L**. Within five seconds, press the front panel **Selector** buttons **5** until the desired brightness display level is shown. At that point, press the **Set** button **20** again to enter the setting.

Once the desired brightness level is selected, it will remain in effect until it is changed again or until the unit is turned off.

Memory Backup

This product is equipped with a memory backup system that preserves tuner presets and system configuration information if the unit is turned off completely, accidentally unplugged or subjected to a power outage. This memory will last for approximately two weeks, after which time all information must be reentered.

Operation

Tuner Operation

The AVR 2000's tuner is capable of tuning AM, FM and FM Stereo broadcast stations and receiving RDS data. Stations may be tuned manually, or they may be stored as favorite station presets and recalled from a 30 position memory.

Station Selection

1. Press the **AM/FM Tuner Select** button **7** on the remote to select the tuner as an input. The tuner may be selected from the front panel by either pressing the **Input Source Selector** **11** until the tuner is active or by pressing the **Tuner Band Selector** **9** at any time.
2. Press the **AM/FM Tuner Select** button **7** or **Tuner Band Selector** **9** again to switch between AM and FM so that the desired frequency band is selected.
3. Press the **Tuner Mode** button **18** on the remote or hold the **Band Selector** **9** on the front panel pressed for 3 seconds to select manual or automatic tuning.

When the **AUTO** indicator **W** is illuminated in the Main Information Display the tuner will only stop at those stations that have a strong enough signal to be received with acceptable quality.

When the **AUTO** indicator **W** is not illuminated, the tuner is in a manual mode and will stop at each frequency increment in the selected band.

4. To select stations press any **Tuning** button **8** **20**. When the **AUTO** indicator **W** is illuminated, press the button to cause the tuner to search for the next highest or lowest frequency station that has an acceptable signal or hold the button pressed to tune more quickly and release it to start the auto search. In the Auto mode the tuner will play each station in stereo or mono mode, just as the program is transmitted. If the **AUTO** indicator **W** is not illuminated, tap the **Tuning** button **8** **20** to advance one frequency increment at a time, or press and hold it to locate a specific station. When the **TUNED** indicator **V** illuminates, the station is properly tuned and should be heard with clarity.

5. Stations may also be tuned directly by pressing the **Direct** button **19**, and then pressing the **Numeric Keys** **17** that correspond to the station's frequency. The desired station will automatically be tuned after the latest number is entered. If you press an incorrect button while entering a direct frequency, press the **Clear** button **26** to start over.

NOTE: When the FM reception of a stereo station is weak, audio quality will be increased by switching to Mono mode by pressing the **Tuner Mode** button **18** on the remote or holding the **Band Selector** **9** on the front panel pressed for 3 seconds until the **S T E R E O** indicator **U** goes out.

Preset Tuning

Using the remote, up to 30 stations may be stored in the AVR 2000's memory for easy recall using the front panel controls or the remote.

To enter a station into the memory, first tune the station using the steps outlined above. Then:

1. Press the **Memory** button **27** on the remote. Note that **MEMORY** indicator **T** will illuminate and flash in the **Main Information Display** **24**.
2. Within five seconds, press the **Numeric Keys** **17** corresponding to the location where you wish to store this station's frequency. Once entered, the preset number will appear in the **Preset Number/Sleep Time Display** **24**.

3. Repeat the process after tuning any additional stations to be preset.

Recalling Preset Stations

- To manually select a station previously entered in the preset memory, press the **Numeric Keys** **17** that correspond to the desired station's memory location.
- To manually tune through the list of stored preset stations one by one, press the **Preset Stations Selector** buttons **10** **25** on the front panel or remote.

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RDS Operation

The AVR 2000 is equipped with RDS (Radio Data System), which brings a wide range of information to FM radio. Now in use in many countries, RDS is a system for transmitting station call signs or network information, a description of station program type, text messages about the station or specifics of a musical selection, and the correct time.

As more FM stations become equipped with RDS capabilities, the AVR 2000 will serve as an easy-to-use center for both information and entertainment. This section will help you take maximum advantage of the RDS system.

RDS Tuning

When an FM station is tuned in and it contains RDS data, the **RDS Indicator AE** will illuminate and the AVR 2000 will automatically display the station's call sign or other program service in the **Main Information Display X**.

RDS Display Options

The RDS system is capable of transmitting a wide variety of information in addition to the initial station call sign that appears when a station is first tuned. In normal RDS operation the display will indicate the station name, broadcast network or call letters. Pressing the **RDS** button **12 24** enables you to cycle through the various data types in the following sequence:

- The station's call letters (with some private stations other information too).
- The station's frequency.
- The Program Type (PTY) as shown in the list below. The **PTY Indicator AD** will illuminate when this data is being received.
- A "text" message (Radiotext, RT) containing special information from the broadcast station. Note that this message may scroll across the display to permit messages longer than the eight positions in the display. Depending on signal quality, it may take up to 30 seconds for the text message to appear; in that time, the word **TEXT** will flash in the Information Display when RT is selected. The **RT Indicator AB** will illuminate when text data is being received and ready to be displayed.

- The current time of day (CT). Note that it may take up to two minutes for the time to appear, in that time the word **TIME** will flash in the information display when CT is selected. The **CT Indicator AC** will illuminate when time data is being received. Please note that the accuracy of the time data is dependent on the radio station, not the AVR 2000.

Some RDS stations may not include some of these additional features. If the data required for the selected mode is not being transmitted, the **Main Information Display X** will show a **NO TYPE, NO TEXT** or **NO TIME** message after the individual time out.

In any FM mode the RDS function requires a strong enough signal for proper operation. If you receive a partial message, or any of the **RDS, PTY, CT** or **RT Indicators AE AD AC AB** going on and off, try slowly adjusting the antenna or tune to another stronger RDS station.

Program Search (PTY)

An important feature of RDS is its capability of encoding broadcasts with Program Type (PTY) codes that indicate the type of material being broadcast. The following list shows the abbreviations used to indicate each PTY, along with an explanation of the PTY:

- **(RDS ONLY)**
- **(TRAFFIC)**
- **NEWS:** News
- **AFFAIRS:** Current Affairs
- **INFO:** Information
- **SPORT:** Sports
- **EDUCATE:** Educational
- **DRAMA:** Drama
- **CULTURE:** Culture
- **SCIENCE:** Science
- **VARIED:** Varied Speech Programs
- **POPM:** Popular Music
- **ROCKM:** Rock Music
- **M-O-R-M-:** Middle-of-the-Road Music
- **LIGHTM:** Classical Music
- **CLASSICS:** Serious Classical Music
- **OTHERM:** Other Music
- **WEATHER:** Weather Information
- **FINANCE:** Financial Programs
- **CHILDREN:** Children's Programs
- **SOCIAL A:** Social Affairs Programs
- **RELIGION:** Religious Broadcasts
- **PHONE IN:** Phone-In Programs
- **TRAVEL:** Travel and Touring
- **LEISURE:** Leisure and Hobby

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- **JAZZ**: Jazz Music
- **COUNTRY**: Country Music
- **NATIONAL**: National Music
- **OLDIES**: Oldies Music
- **FOLK M**: Folk Music
- **DOCUMENT**: Documentary Programs
- **TEST**: Emergency Test
- **ALARM**: Emergency Broadcast Information

You may search for a specific Program Type (PTY) by following these steps:

1. Press the **RDS** button **12 24** until the current PTY is shown in the **Main Information Display X**.
2. While the PTY is shown, press the **Preset Up/Down** button **10 25** or hold them pressed to scroll through the list of available PTY types, as shown above. To simply search for the next station transmitting any RDS data, use the **Preset Up/Down** button **10 25** until **RDS ONLY** appears in the display.
3. Press any of the **Tuning Up/Down** buttons **8 20**, the tuner begins to scan the FM band upwards or downwards for the first station that has RDS data that matches the desired selection, and acceptable signal strength for quality reception.
4. While the **PTY Indicator AD** flashes in the display, the tuner will make up to one complete scan of the entire FM band for the next station that matches the desired PTY type and has acceptable reception quality. If no such station is found, the display will read **NONE** for some seconds and the tuner will return to the last FM station in use before the search.

NOTE: Many stations do not transmit a specific PTY. The display will show **NONE**, when such a station is selected and PTY is active.

NOTE: Some stations transmit constant traffic information. To identify as traffic station, they transmit a specific traffic code constantly, which causes the **TA Indicator AA** to light in the display. These stations can be found by selecting **TRAFFIC**, the option in front of **NEWS** in the list. The AVR 2000 will find the appropriate station, even if it is not broadcasting traffic information when the search is made.

Programming the Remote

The AVR 2000 is equipped with a powerful remote control that will control not only the receiver's functions, but also most popular brands of audio and video equipment, including CD players, TV sets, cable boxes, VCRs, satellite receivers and other home-theater equipment. Once the AVR 2000's remote is programmed with the codes for the products you own, it is possible to eliminate most other remotes and replace them with the convenience of a single universal remote control.

Programming the Remote with Codes

As shipped from the factory, the remote is fully programmed for all AVR 2000 functions, as well as those of most Harman Kardon CD changers, DVD players, CD players and cassette decks. In addition, by following one of the methods below, you may program the remote to operate a wide range of devices from other manufacturers.

Note: The **Input Selector** button **Video 4** **5** cannot be programmed with codes as it functions as input selector for the AVR only. Moreover, only the default code "001" can be programmed on the **AVR Selector** button **6**.

Direct Code Entry

This method is the easiest way to program your remote to work with different products.

1. Use the tables in the pages 38-45 to determine the three-digit code or codes that match both the product type (e.g., VCR, TV), and the specific brand name. If there is more than one number for a brand, make note of the different choices.
2. Turn on the unit you wish to program into the AVR 2000 remote.
3. Press and hold both the **Input Selector** **5** for the type of product to be entered (e.g., VCR, TV) and the **Mute** **34** at the same time. When the **Program Indicator** **3** turns amber and begins flashing, release the buttons. It is important that you begin the next step within 20 seconds.
4. If the unit you wish to program into the AVR 2000 remote has a remotable Power on/off function, follow these steps:
 - a. Point the AVR 2000's remote towards the unit to be programmed, and enter the first three-digit code number using the **Numeric** buttons **17**. If the unit being programmed turns off, the correct code has been entered. Press the **Input Selector** **5** again, and note that the red light under the **Input Selector** will flash three times before going dark to confirm the entry.

- b. If the product to be programmed does NOT turn off, continue to enter the three-digit code numbers until the equipment turns off. At this point, the correct code has been entered. Press the **Input Selector** **5** again and note that the red light under the **Input Selector** will flash three times before going dark to confirm the entry.
5. If the Power function of the unit to be programmed cannot be remoted, follow these steps (max. 20 seconds after step 3 above, or else step 3 must be repeated first):

- a. Enter the first three-digit code number using the **Numeric** buttons **17** and press the **Input Selector** **5** again. Press the remote button of any transport function remotable with the unit, e.g. **Pause** or **Play** **22**. If the unit being programmed starts that function, the correct code has been entered.
- b. If the unit does not start the function whose button was pressed, repeat steps 3 and 5a above with the next three-digit code number listed in the setup code table for that brand and product type, until the unit reacts properly on the transport function transmitted.

6. Try all of the functions on the remote to make certain that the product operates properly. Keep in mind that many manufacturers use a number of different combinations of codes, so it is a good idea to make certain that not only does the Power control work, but that the volume, channel and transport controls work as they should. If functions do not work properly, you may need to use a different remote code.

7. If the unit does not react to any code entered, if the code for your product does not appear in the tables in this manual, or if not all functions operate properly, try programming the remote with the Auto Search Method.

Note on Using the AVR 2000 remote with a Harman Kardon CD Recorder.

As shipped from the factory the remote is programmed for controlling Harman Kardon CD players. But it is able to control most functions of the CD Recorder CDR2 and CDR20 (see function list on page 36) too after the code "002" is entered to the **CD Selector** button **3** as described above. For returning to the CD player control commands the code "001" must be entered.

Auto-Search Method

If the unit you wish to include in the AVR 2000's remote is not listed in the code tables in this manual or if the code does not seem to operate properly, you may wish to program the correct code using the Auto Search method that follows. Note that the Auto Search method works only

with units whose Power functions can be remoted:

1. Turn on the product that you wish to include in the AVR 2000 remote.

2. Press and hold both the **Input Selector** **5** for the type of product to be entered (e.g., VCR, TV) and the **Mute** **34** at the same time. When the **Program Indicator** **3** turns amber and begins flashing, release the buttons. It is important that you begin the next step within 20 seconds.

3. To find out if the code for your unit is pre-programmed, point the AVR 2000 remote towards the unit to be programmed, and press and hold the **▲** button **13**. This will send out a series of codes from the remote's built-in data base, with each flash of the red light under the **Input Selector** **5** indicating that a code has been sent. When the device to be programmed turns off, immediately release the **▲** button **13**. Note that it may take one minute or more until the right code is found and the unit turns off.

4. When the **▲** button was not released in time after the unit turned off, the proper code will be "overrun". That's why a function test should be made: Turn the unit on again and, while the **Input Selector** **5** still lights red, press the **▲** button **13** once, then the **▼** button **13** once too. When the unit turns off, the right code was found, when not, the code was "overrun". To re-find the correct, while the **Input Selector** **5** still lights red, press (not hold pressed) the **▼** button **14** repeatedly to step backwards through the codes available and observe the reaction of the unit at each press. As soon as the unit turns off the correct code is found.

5. Press the **Input Selector** **5** again, and note that the red light will flash three times before going dark to confirm the entry.

6. Try all of the functions on the remote to make certain that the product operates. Keep in mind that many manufacturers use a number of different combinations of codes, and it is a good idea to make certain that not only the Power control works, but the volume, channel and transport controls, as appropriate. If all functions do not work properly, you may need to Auto-Search for a different code, or enter a code via the Direct Code Entry method.

Programming the Remote

Macro Programming

Macros enable you to easily repeat frequently used combinations of commands with the press of a single button on the AVR 3000's remote control. Once programmed, a macro will send out up to 19 different remote codes in a pre-determined sequential order enabling you to automate the process of turning on your system, changing devices, or other common tasks. The AVR's remote can store up to five separate macro command sequences, one that is associated with the **Power On** button **1**, and four more that are accessed by pressing the **Macro** buttons **21**.

1. Press the **Mute** button **34** and the **Macro** button **21** to be programmed or the **Power-On** button **1** at the same time. Note that the latest selected **Input Selector** will light red, and the **Program Indicator** **3** will flash amber.

2. Enter the steps for the macro sequence by pressing the button for the actual command step. Although the macro may contain up to 19 steps, each button press, including those used to change devices, counts as a step. The **Program Indicator** **3** will flash green to confirm each button press as you enter commands.

NOTE: While entering commands for Power On of any device during a macro sequence, press the **Mute** button **34**. DO NOT press the actual Power ON button.

- Remember to press the appropriate **Input Selector** button **5** before functions are changed to another device. This is also needed for the **AVR Selector** button **6** itself, as long as it's not lit red and AVR functions shall be programmed.

3. When all the steps have been entered, press the **Sleep** button **9** to enter the commands. The red light under the **Input Selector** **5** **6** will blink and then turn off.

Example: To program the **Macro 1** **21** button so that it turns on the AVR 3000, TV and a Sat-Receiver, follow these steps:

- Press the **Macro 1** button **21** and **Mute** **34** buttons at the same time and then release them.
- Note that the **Program Indicator** will flash amber.
- Press the **AVR Selector** **6**.
- Press the **Mute** **34** button to store the AVR's power on command.
- Press the **VID 2 Input Selector** button **5** to indicate the next command is for "TV Power On."
- Press the **Mute** **34** button to store the TV Power On Command.

- Press the **VID 3 Input Selector** button **5** to indicate the next command is for "Sat-Receiver Power On."

- Press the **Mute** **34** button to store the Sat-Receiver Power On command.

- Press the **Sleep/Channel Up** button **9** to complete the process and store the macro sequence.

After following these steps, each time you press the **Macro 1** button **21**, the remote will send all Power On commands.

Erasing Macro Commands

To remove the commands that have been programmed into one of the Macro buttons, follow these steps:

1. Press the **Mute** button **34** and the **Macro** button **21** that contains the commands you wish to erase.

2. Note that the **Program Indicator** **3** will flash amber, and the LED under the **AVR Selector** **6** will turn red.

3. Within ten seconds, press the **Surround Mode Selector/Channel Down** button **10**.

4. The red LED under the **AVR Selector** will go out, and the **Program Indicator** **3** will turn green and flash three times before it goes out.

5. When the **Program Indicator** **3** goes out, the Macro has been erased.

Programming the Remote

Programmed Device Functions

Once the AVR 2000's remote has been programmed for the codes of other devices, press the appropriate **Input Selector** ⑤ to change the remote from control over the AVR 2000 to the additional product. When you press any of these buttons, it will briefly flash in red to indicate that you have changed the device being controlled.

When operating a device other than the AVR 2000, the controls may not correspond exactly to the function printed on the remote or button. Some commands, such as the volume control, are the same as they are with the AVR 2000. Other buttons will change their function so that they correspond to a secondary label on the remote. For example, the Sleep and Surround mode selector buttons also function as the Channel Up and Channel Down buttons when operating most TV sets, VCRs or Sat-Receivers.

For some products, however, the function of a particular button does not follow the command printed on the remote. In order to see which function a button controls, consult the Function List tables printed on page 36. To use those tables, first check the type of device being controlled (e.g., TV, VCR). Next, look at the remote control diagram on page 36. Note that each button has a number on it.

To find out what function a particular button has for a specific device, find the button number on the Function List and then look in the column for the device you are controlling. For example, button number 50 is the Macro 2 button for the AVR 2000, but it is the "Favorite" button for many cable television boxes and satellite receivers. Button number 29 is the Delay button for the AVR 2000, but the Open/Close button for CD players.

Note that the numbers used to describe the button functions at the left for the purposes of describing how a button operates are a different set of numbers than those used in the rest of this manual to describe the button functions for the AVR 3000.

Notes on Using the AVR 2000 Remote With Other Devices.

- Manufacturers may use different code sets for the same product category. For that reason, it is important that you check to see if the code set you have entered operates as many controls as possible. If it appears that only a few functions operate, check to see if another code set will work with more buttons.

- Depending on the brand and product type used the functions listed in the Function List tables may not correspond with the function the unit reacts on the command. In these cases it's a good idea to edit the reaction of the unit into the corresponding line of the table or to set up a separate list.

- When a button is pressed on the AVR 2000 remote, the red light under the **Input Selector** ⑤ for the product being operated should flash briefly. If the Device Control Selector flashes for some but not all buttons for a particular product, it does NOT indicate a problem with the remote, but rather that no function is programmed for the button being pushed.

- The remote was pre-programmed with codes for units of the latest generation, but some codes may differ from those needed for earlier units.

Volume Punch-Through

The AVR 2000's remote may be programmed to operate the **Volume Control** ③② and the **Mute** ③④ from either the TV or the AVR in conjunction with any of the six devices controlled by the remote. For example, since the AVR 2000 will likely be used as the sound system for TV viewing, you may wish to have the AVR's volume activated although the remote is set to run the TV.

To program the remote for Volume Punch-Through, follow these steps:

1. Press the **Input Selector** ⑤ for the unit you wish to have associated with the volume control and the **Mute** button ③④ at the same time until the red light illuminates under the **Input Selector** ⑤ and note that the **Program Indicator** ③ will flash amber.
2. Press the **Volume Up** button ③② and note that the **Program Indicator** ③ will stop flashing and stay amber.
3. Press either the **AVR Selector** ⑥ or the **Input Selector** ⑤, depending on which system's volume control you wish to have attached for the punch-through mode. The **Program Indicator** ③ will blink green three times and then go out to confirm the data entry.

Example: To have the AVR's volume control activated even though the remote is set to control the TV, first press the **Video/TV Input Selector** ⑤ and the **Mute** button ③④ at the same time. Next, press the **Volume Up** button ③②, followed by the **AVR Input Selector** ⑥.

NOTE: Should you wish to return the remote to the original configuration after entering a Volume Punch-Through, you will need to repeat the steps shown above. However, press the **Video/TV Input Selector** in steps one and three.

Programming the Remote

Channel Control Punch-Through

The AVR 3000's remote may be programmed to operate so that the channel control function for either the TV, cable or satellite receiver used in your system may be used in conjunction with one of the other devices controlled by the remote. For example, while using and controlling the VCR, you may wish to change channels on a cable box or satellite receiver without having to change the device selected by the AVR 3000 or the remote. To program the remote for Channel Control Punch-Through, follow these steps:

1. Press the **Input Selector** button **5** for the device you wish to have the channel control associated with and the **Mute** button **34** at the same time until the red light illuminates under the **Input Selector** **5** and the **Program Indicator** **3** flashes amber.
2. Press the **Volume Down** button **32**. The **Program Indicator** **3** will stop flashing and stay amber.
3. Press and release the **AVR** **6** or **Input Selector** button **5** for the device that will be used to change the channels. The **Program Indicator** **3** will blink green three times and then go out to confirm the data entry.

Example: To control the channels using your TV while the remote is set to control the VCR, first press the **VID 1/VCR Input Selector** button **5** and the **Mute** button **34** at the same time. Next, release them and press the **Volume Down** button **32**, followed by the **VID 2/TV Input Selector** button **5**.

NOTE: To remove the Channel Control Punch-Through and return the remote to its original configuration, repeat the steps shown in the example above. However, press the **VID 1/VCR Input Selector** in Steps 1 and 3.

Transport Control Punch-Through

The AVR 3000's remote may be programmed to operate so that the Transport Control Functions **22** (Play, Stop, Fast Forward, Rewind, Pause and Record) for a VCR, DVD or CD will operate in conjunction with one of the other devices controlled by the remote. For example, while using and controlling the TV, you may wish to start or stop your VCR or DVD without having to change the device selected by the AVR 3000 or the remote. To program the remote for Transport Control Punch-Through, follow these steps:

1. Press the **Input Selector** **5** for the device you wish to have the channel control associated with and the **Mute** button **34** at the same time until the red light illuminates, under the **Input Selector** **5** and the **Program Indicator** **3** flashes amber.
2. Press the **Play** button **22**. The **Program Indicator** **3** will stop flashing and stay amber.
3. Press and release the **AVR** **6** or **Input Selector** button **5** for the device that will be used to change the channels. The **Program Indicator** **3** will blink green three times and then go out to confirm the data entry.

Example: To control the transport of a CD player while the remote is set to control the TV, press the **VID 2/TV Input Selector** button **5** and the **Mute** button **34** at the same time. Next, release them and press the **Play** button **22**, followed by the **CD Input Selector** button **5**.

NOTE: To remove the Channel Control Punch-Through and return the remote to its original configuration, repeat the steps shown in the example above. However, press the **VID 2/TV Input Selector** in Steps 1 and 3.

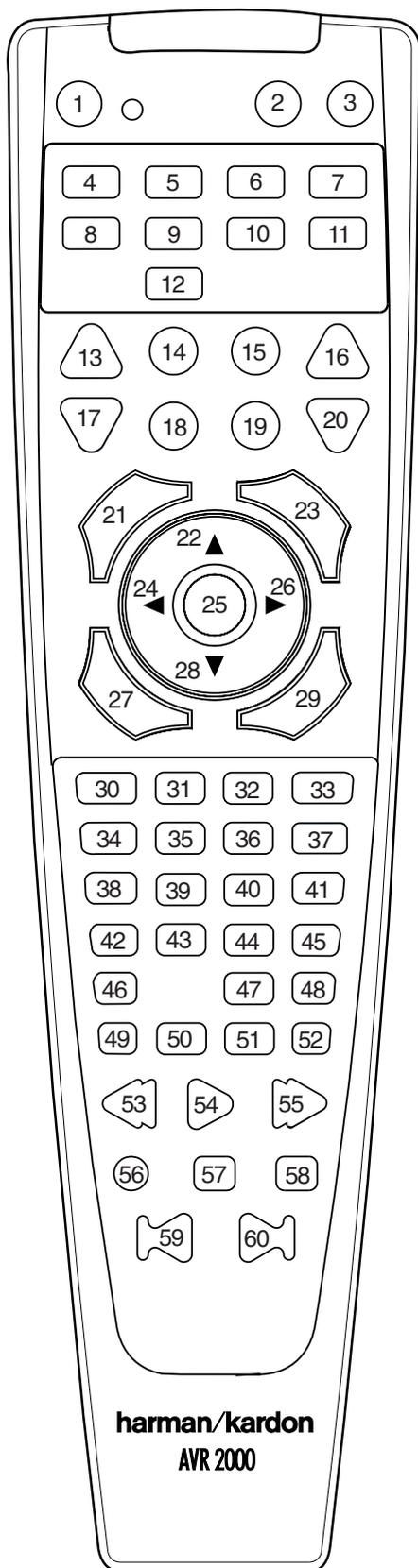
NOTE: Before programming the remote for Volume, Channel or Transport Punch-Through, make certain that any programming needed for the specific TV, CD, DVD, Cable or Satellite Receivers has been completed.

Resetting the Remote Memory

As you add components to your home-theater system, occasionally you may wish to totally reprogram the remote control without the confusion of any commands, macros or "Punch-Through" programming that you may have done. To do this, it is possible to reset the remote to the original factory defaults and command codes by following these steps. Note, however, that once the remote is reset, all commands or codes that you have entered will be erased and will need to be re-entered:

1. Press any of the **Input Selector** buttons **5** and the **"0"** button **17** at the same time until the **Program Indicator** **3** begins to flash amber.
2. Press the **"3"** button **17** three times.
3. The red LED under the **Input Selector** **5** will go out and the **Program Indicator** **3** will stop flashing and turn green.
4. The **Program Indicator** **3** will remain green until the remote is reset. Note that this may take a while, depending on how many commands are in the memory and need to be erased.
5. When the **Program Indicator** **3** goes out, the remote has been reset to the factory settings.

Function List



No.	Button Name	AVR Function	DVD	CD/CDR
1	Power Off	Power Off	Power Off	Power Off
2	Power On	Power On	Power On	Power On
3	Mute	Mute		
4	AVR	AVR Select		
5	DVD	DVD Input Select	DVD Select	
6	CD	CD Input Select		CD Select
7	Tape	Tape Input Select		
8	VID 1	Video 1 Select		
9	VID 2	Video 2 Select		
10	VID 3	Video 3 Select		
11	VID 4	Video 4 Select		
12	AM/FM	Tuner Select		
13	Sleep	Sleep		
14	Test	Test Tone		
15	TV		TV/DVD	-/Input Select
16	Volume Up	Volume Up	Volume Up	-/CDP Select
17	Surround Select	Surround Mode Select		-/CDR Select
18	Night	Night Mode Select	Subtitle on/off	
19	Spare			
20	Volume Down	Volume Down	Volume Down	
21	Channel/Guide	Channel Trim	Title	
22	▲	Move/Adjust Up	Up	
23	Speaker/Menu	Speaker Adjust	Menu	Intro/-
24	◀		Left	
25	Set	Set	Enter	
26	▶		Right	
27	Digital/Exit	Digital Input Select	Open/Close	
28	▼	Move/Adjust Down	Down	
29	Delay/Prev. Ch.	Delay Adjust	Return	Open/Close
30	1	1	1	1
31	2	2	2	2
32	3	3	3	3
33	4	4	4	4
34	5	5	5	5
35	6	6	6	6
36	7	7	7	7
37	8	8	8	8
38	Tun-M	Tuner Mode	Chapter	Repeat
39	9	9	9	9
40	0	0	0	0
41	Memory	Memory	Audio	Time/CDR Display
42	Tune Up	Tune Up		
43	Direct	Direct Tuner Entry	Angle	Random
44	Clear	Clear	Clear	Clear
45	Preset Up	Preset Tune Up	Slow Forward	+10/-
46	Tune Down	Tune Down		-/Track Increment
47	RDS		Disc Skip	Disc Skip
48	Preset Down	Preset Tune Down	Slow Rev	
49	M1			
50	M2			
51	M3			
52	M4			
53	Rewind		R. Search	R. Search
54	Play		Play	Play
55	Fast Forward		F. Search	F. Search
56	Record			-/Record
57	Stop		Stop	Stop
58	Pause		Pause	Pause
59	Skip Down		Skip -	Skip -
60	Skip Up		Skip +	Skip +

Function List

No.	Button Name	Tape	VCR (VID 1)	TV (VID 2)	CBL (VID 3)	SAT(VID 3)
1	Power Off	Power Off	Power Off	Power Off	Power Off	Power Off
2	Power On	Power On	Power On	Power On	Power On	Power On
3	Mute			Mute		
4	AVR					
5	DVD					
6	CD					
7	Tape	Tape Select				
8	VID 1		VCR Select			
9	VID 2			TV Select		
10	VID 3				VID 3 Select	
11	VID 4					
12	AM/FM					
13	Sleep		Channel +	Channel +	Channel +	Channel +
14	Test					
15	TV		TV/VCR	TV/VCR	TV/Cable	TV/Sat
16	Volume Up		Volume Up	Volume Up		
17	Surround Select		Channel -		Channel -	Channel -
18	Night					
19	Spare					
20	Volume Down			Volume Down		
21	Channel/Guide				Info/Guide	Info/Guide
22	▲		Up	Up	Up	Up
23	Speaker/Menu		Menu	Menu	Menu	Menu
24	◀		Left	Left	Left	Left
25	Set		Enter	Enter	Enter	Enter
26	▶		Right	Right	Right	Right
27	Digital/Exit		Exit	Exit	Exit	Exit
28	▼		Down	Down	Down	Down
29	Delay/Prev. Ch.			Prev Channel	Prev Channel	Prev Channel
30	1		1	1	1	1
31	2		2	2	2	2
32	3		3	3	3	3
33	4		4	4	4	4
34	5		5	5	5	5
35	6		6	6	6	6
36	7		7	7	7	7
37	8		8	8	8	8
38	Tun-M					
39	9		9	9	9	9
40	0		0	0	0	0
41	Memory					
42	Tune Up					
43	Direct					
44	Clear		Clear	Clear	Clear	Clear
45	Preset Up					
46	Tune Down					
47	RDS					
48	Preset Down					
49	M1		Cancel	Sleep	PPV	Cancel
50	M2				Fav	Fav
51	M3				Bypass	Next
52	M4				Music	Alt
53	Rewind	Rewind	Rewind		Day -	Say -
54	Play	Play	Play			
55	Fast Forward	Fast Fwd	Fast Fwd		Day +	Day +
56	Record	Record/Rec.Pause	Record			
57	Stop	Stop	Stop			
58	Pause		Pause			
59	Skip Down		Scan -		Page -	Page -
60	Skip Up		Scan +		Page +	Page +

Setup Code Table: TV

Maker (Brand) Name	Code Number (3digit) List
AIWA	110
AKAI	011 020 022 042 053 056 089 093
ALBA	020 040
ARC EN CIEL	017 019 024 056 059
ARCAM	017
BANG & OLUFSEN	088
BEKO	022
BLAUPUNKT	011 075 076 077
BRANDT ELECTRONIQUE	017 019 024 056 059
BRION VEGA	023 088
BRUNS	023 088
BUSH	010 020 040 043 092
BUSH(UK)	044
CGE	105
DAEWOO	022
DECCA(UK)	038
DUMONT	023 088 096
DUMONT-FINLUX	012 044
DYNATRON	020 022
ELBE	095 105
EMERSON	023 088
FERGUSON	001 024 047 062 075 076 077 099
FIDELITY(UK)	099
FINLANDIA	018
FINLUX	012 044 088 096
GEC(UK)	061
GOLDSTAR	022
GOODMANS	010 022 043
GORENJE	124
GRANADA	010 018 022 029 033 104
GRANADA(UK)	043
GRUNDIG	011 075 076 077 096
HANSEATIC	010 020 022 043
HIFIVOX	017 019 024 056 059 080
HITACHI	010 012 015 018 024 026 035 043 055 056 058 059 061 066 069 080 082 085 093 094 101
IMPERIAL	105
INTERFUNK	020 022 023 024 033 056 088 104
INTERVISION	111 113 114 115 116 117 118 119 121
ITT	040 046 092 100
ITT-NOKIA	040 058 092 100
JVC	010 043 047 053 056 092
KARCHER	012 068
KATHREIN	124
KORTING	023 088
LOEWE	027
LOEWE OPTA	020 022 023 088
LUXOR	058
MAGNADYNE	023 088
MARANTZ	022
MARELLI	088
METZ	011 023 075 076 077 088
MINERVA	011 075 076 077 096
mitsubishi	007 010 011 013 020 022 023 029 124 038 039 043 046 050 057 075 076 077 079 082 089 090 091 092
NATIONAL	018

Setup Code Table: TV (continued)

Maker (Brand) Name	Code Number (3digit) List
NEC	010 043
NECKERMANN	023 078 088 102
NOKIA	040 046 092 100
NORDMENDE	009 017 019 024 053 056 059 069 080 093 094
ORION	038 040 091
OTTO VERSAND	010 020 022 043 075 076 077 078 092 102
PANASONIC	018 085
PATHE' MARCONI	017 019 024 056 059
PHILCO	023 088 105
PHILIPS	008 014 020 022 023 025 027 032 033 046 047 048 054 060 061 067 068 070 071 078 084 086 088 095 097 099 100 104 107 108
PHOENIX	088
PIONEER	020 022 024 056 069
PROLINE	020
PROTECH	022
QUELLE	011 012 020 022 038 044 075 076 077 096
RADIOLA	022 023 025 033 047 048 060 078 097
RADIOMARELLI	022 023 029 082 088
RBM(UK)	044
REDIFFUSION	029 082
REX	022 025
RFT	122 123 124 125 126 127
RTF	023
SABA	009 017 019 023 024 056 059 069 080 088 093 094
SALORA	018 058
SAMSUNG	022 068
SANYO	010 012 023 038 043 091 092
SBR	022 033 046 047 061 084 086
SCHNEIDER	022 023 025 033 047 048 060 078 086 097
SELECO	022 025 105
SHARP	010 043
SIEMENS	010 011 015 075 076 077
SINGER	023 088 105
SONY	006 010 016 038 043 062 064 065 091 102 103 106
SOUND WAVE	020
STERN	022 025
TANDBERG	023 056 080
TELEFUNKEN	024 056 059 069
TENSAI	022
THOMSON	003 005 009 017 019 024 040 044 053 056 059 069 072 074 080 082 093 094
THORN	047 099
THORN-FERGUSON	024 047 099 102 103
TOSHIBA	001 010 037 042 043 044 063 092 096 105
TRISTAR	099
TRIUMPH	044
UHER	044
ULTRAVOX	023 088
UNIVERSUM	012 075 076 077 102
VOXSON	023 088
WATSON	075 076 077
WEGA	010 043 088
WEGA COLOR	023
WELTBlick	022
WESTINGHOUSE	022
ZANUSSI	022 025

Setup Code Table: VCR

Maker (Brand) Name	Code Number (3 digit) List									
AIWA	039	044	055	073	112	116	121	148	152	
AKAI	044	053	090	092	103	149	150	155		
AKURA	112									
ALBA	061	073	121	144						
AMSTRAD	039	107	148							
ANITECH	155									
ARC EN CIEL	044	045	090							
ARISTONA	049	091	109							
ASTRA	148									
ASTRO SOUND	155									
ATLANTIC	155									
AUDIOSONIC	165	166								
BANG & OLUFSEN	044	155								
BAUR	054	155	156	157	158					
BLAUPUNKT	091	098	107	109	129	137	147			
BRANDT ELECTRONIQUE	044	045	090							
BRAUN	147									
BUSH	061	073	121	144						
CANON	147									
CONDOR	155									
CROWN	009	061	144							
CROWN/ONWA	148									
DAEWOO	009	061	063	064	068	069	144	155		
DECCA	039	044	048	148	155					
DECCA(UK)	054									
DEGRAAF	015	018	039	049	054	148				
DUAL	044	090	148	155						
DUMONT	015	039	054	148	155					
DYNATECH	039	148								
ELBE	036	148								
ELTA	148									
EMERSON	011	032	039	060	062	073	127	148	155	
FERGUSON	001	005	044	083	085	090	094	100	104	108
FINLADIA	015	054								
FINLUX	015	018	019	039	044	049	053	054	103	107
FISHER	015	019	032							
FUJITSU	148									
FUNAI	039	148								
GARANADA(UK)	107									
GBC(UK)	054									
GOLDSTAR	036	055	148	155						
GOODMANS	039	042	050	054	055	061	073	144	148	155
GRAETZ	044	045	090							
GRANADA	015	019	049	109	147	149	155			
GRANADA(UK)	018	054								
GRUNDIG	054	091	098	109	143					
HANSEATIC	054	155								
HARMAN/KARDON	036									
HIFIVOX	044	045	090							
HITACHI	018	025	039	044	074	087	090	138	149	
IMPERIAL	039	042	096	148	155					
INTERFUNK	054	155								
INTERVISION	148	155								
ITT	015	019	042	044	090	103				
ITT-NOKIA	015	019	042	044	045	090	103	149	150	155

Setup Code Table: VCR (continued)

Maker (Brand) Name	Code Number (3 digit) List
JENSEN	044
JVC	044 045 047 085 090 112 135
KARCHER	042 054 155
KENDO	103
KENWOOD	019 044 047 112
KOERTING	155
KUBA	147 148
LLOYD	039 148
LOEWE	065
LOEWE OPTA	054 082 091 109 155
MAGNAVOX	060 062
MARANTZ	036 050 054 073 091 109
MEMOREX	015 019 039 049 055 148
METZ	091 098 109
MINERVA	098 109
MITSUBISHI	047 053 054 076 098 123 154 155
MULTITECH	039 054 098 144 148 155
NATIONAL	107
NEC	036 044 047 090
NECKERMANN	011 019 042 044 054 090 109 127 155 156 157 158
NESCO	148
NOKIA	015 019 042 044 045 090 103
NORDMENDE	039 044 045 047 090
OPTONICA	049 050
ORION	011 032 073 127 148 155
OSAKI	039 055 148 155
OTTO VERSAND	054 098 147 155 156 157 158
PALLADIUM	148
PANASONIC	017 071 088 089 107 129 137 147 148
PATHE' MARCONI	044 045 090
PHILIPS	006 041 043 046 049 050 054 065 079 082 091 109 145 146 155
PIONEER	047 054 113 145
PROLINE	039 148
QUELLE	011 042 044 048 054 055 098 107 109 127
RADIOLA	049 091 109
RCA	060 062
REALISTIC	015 019 039 042 049 050 147 148
REX	044 045 090
ROADSTAR	042 055 148
SABA	009 044 045 047 090
SALORA	019 053
SAMSUNG	009 042 054 056 057 060 062 066 067 092 096 150 155
SANSUI	044 047
SANYO	015 019 073 149
SBR	054 079 082
SCHAUB LORENZ	044 045 090
SCHNEIDER	039 042 049 054 091 096 109 148 155
SEG	042 096 148
SELECO	044 045 090 155
SHARP	049 050 058 075 148
SIEMENS	019 091 098 109
SINGER	155
SONY	039 048 051 052 077 081 156 157 158
SUNSTAR	039 148
SUPERTEC	148 155
SYLVANIA	039 053 148

Setup Code Table: VCR (continued)

Maker (Brand) Name	Code Number (3 digit) List
TANDBERG	032 127
TEAC	039 044 148
TEC	148 155
TECHNICS	107 147
TELEFUNKEN	044 045 090
TELERENT	147 148
TENSAI	148 155
THOMSON	044 045 047 090
THORN	044 085 090 135
THORN-FERGUSON	044 083 085 090 094 100 104 108 130 131 135 149 155 156 157 158
TOSHIBA	009 044 045 053 080 090 153 155
TRANSONIC	155
UHER	042 044 096
ULTRAVOX	155
UNITECH	042
UNIVERSUM	147 148 149 155 156 157 158
WATSON	155
WELTBlick	155
YAMAHA	036 044
YOKO	042 098 148 155
ZANUSSI	044 045 090
ZENDER	090

Setup Code Table: CBL

Maker (Brand) Name	Code Number (3digit) List
BT CABLE	007
CABLETIME	008 011 012 016
CLYDE CABLE VISION	017
DECSAT CANAL	010
FILMNET	018 019 020
FRANCE TELECOM	013 021
GEC	017
JERROLD	001 022
PHILIPS	023
PIONEER	002
SAMSUNG	002 024
SATBOX	004
SCIENTIFIC ATLANTA	005 006 025 026
TELESERVICE	011
TUDI	027
UNITED CABLE	001
VISIOPASS	009
WESTMINSTER CABLE	007

Setup Code Table: CD

Maker (Brand) Name	Code Number (3 Digit) List
AIWA	072 111 118 156 170
ARCAM	217 221
AKAI	050 177 184
AUDIOMECA	127 221
BSR	044
CALIFORNIA AUDIO	015 109
CAPETRONIC	070
CROWN	042
DENON	187 188 213
FISHER	055 068
FUNAI	126
GOLDSTAR	016 087
GRUNDIG	217 221 225 226 227 228
HAITAI	099 214
HARMAN KARDON	001 002 025 054 190 218 219
HITACHI	093
JVC	176 195 196
KENWOOD	030 062 078 079 148 151 176 178 181
KYOCERA	012
LINN	217 221
LUXMAN	077 102
MAGNAVOX	039 113
MARANTZ	058 084 191 192 193
MBL	184 062
MCINTOSH	194
MITSUBISHI	032
MERIDIAN	217 221
MITSUMI	152
NAD	013 074 197 198
NAKAMICHI	199 200 201 229
NAIM	217 221
NEC	069
ONKYO	037 038 045 046 171 175 202 203
PANASONIC	015 075 109 119 158 183 204
PHILIPS	039 138 149 209
PIONEER	071 094 100 112 123 131 161 162 215
PRIMARE	059
PROTON	210
REALISTIC	058 093 095 104 105 108 164 166
REVOX	127 221
SAMSUNG	028
SANSUI	047 081 157 172
SANYO	033 068 082 095 168
SHARP	058 105 114 151 159 167 180 181
SHERWOOD	003 041 058 105 133 230 231 232 233 234 235 236 237 238 239 240 241 242 243
SIGNATURE	040
SONY	212 103 115 116 118 132 139 163 205 206 207 208 217
T&A	218 222
TEAC	011 058 085 086 106 107 110 121 137 146 154
TECHNICS	244 245 246 247 248 249 250
THETA DIGITAL	039
THOMSON	217 252
THORENS	217 221
TOSHIBA	013 074 097 151 155 173
UNIVERSUM(QUELLE)	217 219 220 221 223 224
YAMAHA	019 031 053 061 135 169

Setup Code Table: SAT

Maker (Brand) Name	Code Number (3digit) List									
AIWA	441									
AKAI	333									
ALBA	301	411								
AMSTRAD	432									
ANKARO	421									
ASTRO	476	477	478	479	480	481	482	483		
BLAUPUNKT	338	390								
BUSH	348	406								
BUSH(UK)	353									
ECHOSTAR	347									
FERGUSON	345	348	352	353	363	364	367	406	411	424
FINLUX	309	310								
FTE	380									
FUBA	314	347	421							
GOODMANS	411									
GRUNDIG	338	353	367	390						
HITACHI	406	411								
ITT	367									
ITT-NOKIA	367									
KATHREIN	301	333	380	390						
KOSMOS	380									
LOEWE	475									
LEMON	474									
LORENZEN	461	462	463	464	465					
MARANTZ	333									
MASPRO	353	406								
METZ	390									
MINERVA	390									
MITSUBISHI	390									
MULTISTAR	380									
NEC	330	336	346	373						
NOKIA	367									
NORSAT	346									
OTTO VERSAND	390									
PACE	348	353	363	364	367	424				
PACE MSS SERIES	367									
PANASONIC	331	424								
PHILIPS	319	332	333	353	421	424				
QUADRAL	466	467	468	469	470	471	472	473		
QUELLE	390									
RADIOLA	353									
RADIX	347									
SAMSUNG	380	427	432							
SAT	427									
SCHNEIDER	353									
SIEMENS	338	390								
SKY MASTER	433									
SKYLAB	421									
TECHNISAT	328	347								
TELECOM	341									
TELEFUNKEN	383									
THORN-FERGUSON	323	345	348	352	353	363	364	367		
VORTEC	432	442								
WISI	304	322	326	327	347	427				
ZEHNDER	380	427								
ZENITH	344									

Setup Code Table: DVD

Maker (Brand) Name	Code Number (3 Digit) List
CALIFORNIA AUDIO	040
DENON	002 019 022 034
GE	003 004
GOLDSTAR (LG)	005
HARMAN KARDON	001 032
JVC	006
KENWOOD	007
MAGNAVOX	009 033
MARANTZ	033
MITSUBISHI	023 036
NAD	010
ONKYO	015
PANASONIC	024 025 034 035
PHILIPS	033
PIONEER	012 020 038 041
RUNCO	027
SAMSUNG	031
SANYO	013
SHARP	021 028
SONY	029
TECHNICS	026
THOMSON	003 004 042
TOSHIBA	033
YAMAHA	016 017 030

Troubleshooting Guide

SYMPTOM	CAUSE	SOLUTION
Unit does not function when Main Power Switch is pushed	<ul style="list-style-type: none"> No AC Power 	<ul style="list-style-type: none"> Make certain AC power cord is plugged into a live outlet Check to see if outlet is switch controlled
Display lights, but no sound or picture	<ul style="list-style-type: none"> Intermittent input connections Mute is on Volume control is down 	<ul style="list-style-type: none"> Make certain that all input and speaker connections are secure Press Mute button 34 Turn up volume control
Sound is heard, but Front-Panel Display does not light	<ul style="list-style-type: none"> Display brightness is turned off 	<ul style="list-style-type: none"> Follow the instructions in the Display Brightness section on page 28 so that the display is set to VFD FULL
No sound from any speaker; light around power switch is red	<ul style="list-style-type: none"> Amplifier is in protection mode due to possible short Amplifier is in protection mode due to internal problems 	<ul style="list-style-type: none"> Check speaker-wire connections for shorts at receiver and speaker ends Contact your local Harman Kardon service depot
No sound from surround or center speakers	<ul style="list-style-type: none"> Incorrect surround mode Incorrect configuration Stereo or Mono program material Speakers not properly connected 	<ul style="list-style-type: none"> Select a mode other than Stereo Check speaker mode With (analog or digital) Dolby surround modes, the surround decoder may not create rear-channel information from nonencoded programs Check speaker-wire connections or use test tone to verify connections (see page 21)
Unit does not respond to remote commands	<ul style="list-style-type: none"> Weak batteries in remote Wrong device selected Remote sensor is obscured 	<ul style="list-style-type: none"> Change remote batteries Press the AVR selector Make certain front-panel sensor is visible to remote or connect remote sensor
Intermittent buzzing in tuner	<ul style="list-style-type: none"> Local interference 	<ul style="list-style-type: none"> Move unit or antenna away from computers, fluorescent lights, motors or other electrical appliances
Letters flash in the Channel Indicator Display and Digital Audio stops	<ul style="list-style-type: none"> Digital audio feed paused 	<ul style="list-style-type: none"> Resume play for DVD Check that Digital Signal is fed to the Digital Input selected

Processor Reset

In the rare case where the unit's operation or the displays seem abnormal, the cause may involve the erratic operation of the system's memory or microprocessor.

To correct this problem, first unplug the unit from the AC wall outlet and wait at least three minutes. After the pause, reconnect the AC power cord and check the unit's operation. If the system still malfunctions, a system reset may clear the problem.

To clear the AVR 2000's entire system memory including tuner presets, output level settings, delay times and speaker configuration data, first put the unit in Standby by pressing the **System Power Control** button **2**. Next, press the **Tone Mode** **6** and the **RDS** **12** buttons simultaneously.

The unit will turn on automatically and display the **R E S E T** message in the **Main Information Display** **X**. Note that once you have cleared the memory in this manner, it is necessary to re-establish all system configuration settings and tuner presets.

NOTE: Resetting the processor will erase any configuration settings you have made for speakers, output levels, surround modes, digital input assignments as well as the tuner presets. After a reset the unit will be returned to the factory presets, and all settings for these items must be reentered.

If the system is still operating incorrectly, there may have been an electronic discharge or severe AC line interference that has corrupted the memory or microprocessor.

If these steps do not solve the problem, consult an authorized Harman Kardon service depot.

Technical Specifications

Audio Section

Stereo Mode

Continuous Average Power (FTC)

50 Watts per channel, 20Hz–20kHz,
@ < 0.07% THD, both channels driven into 8 ohms

Five-Channel Surround Modes

Power Per Individual Channel

Front L&R channels:
40 Watts per channel,
@ < 0.07% THD, 20Hz–20kHz into 8 ohms

Center channel:
40 Watts, @ < 0.07% THD, 20Hz–20kHz into 8 ohms

Surround channels:
40 Watts per channel,
@ < 0.07% THD, 20Hz–20kHz into 8 ohms

Input Sensitivity/Impedance

Linear (High Level) 200mV/47kohms

Signal-to-Noise Ratio (IHF-A) 95dB

Surround System Adjacent Channel Separation

Analog Decoding 40dB
(Pro Logic, etc.)

Dolby Digital (AC-3) 55dB

DTS 55dB

Frequency Response

@ 1W (+0dB, -3dB) 10Hz–100kHz

High Instantaneous

Current Capability (HCC) ±25 Amps

Transient Intermodulation

Distortion (TIM) Unmeasurable

Rise Time 16 µsec

Slew Rate 40V/µsec**

FM Tuner Section

Frequency Range	87.5–108MHz
Usable Sensitivity	IHF 1.3 µV/13.2dB
Signal-to-Noise Ratio	Mono/Stereo: 70/65dB (DIN)
Distortion	Mono/Stereo: 0.15/0.3%
Stereo Separation	35dB @ 1kHz
Selectivity	±300kHz: 65dB
Image Rejection	80dB
IF Rejection	90dB

AM Tuner Section

Frequency Range	520–1611kHz
Signal-to-Noise Ratio	45 dB
Usable Sensitivity	Loop: 500µV
Distortion	1kHz, 50% Mod: 0.8%
Selectivity	±9kHz: 30dB

Video Section

Video Format	PAL/NTSC
Input Level/Impedance	1Vp-p/75 ohms
Output Level/Impedance	1Vp-p/75 ohms
Video Frequency Response	10Hz–8MHz (-3dB)

General

Power Requirement	AC 220-240V/50Hz
Power Consumption	72W idle, 470W maximum

Dimensions (Max)

Width	440mm
Height	167mm
Depth	435mm
Weight	14.0 kg

Depth measurement includes knobs, buttons and terminal connections.

Height measurement includes feet and chassis.

All features and specifications are subject to change without notice.

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Crystal is a registered trademark of Cirrus Logic Corp.

**Without input anti slewing and output isolation networks.

harman/kardon

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