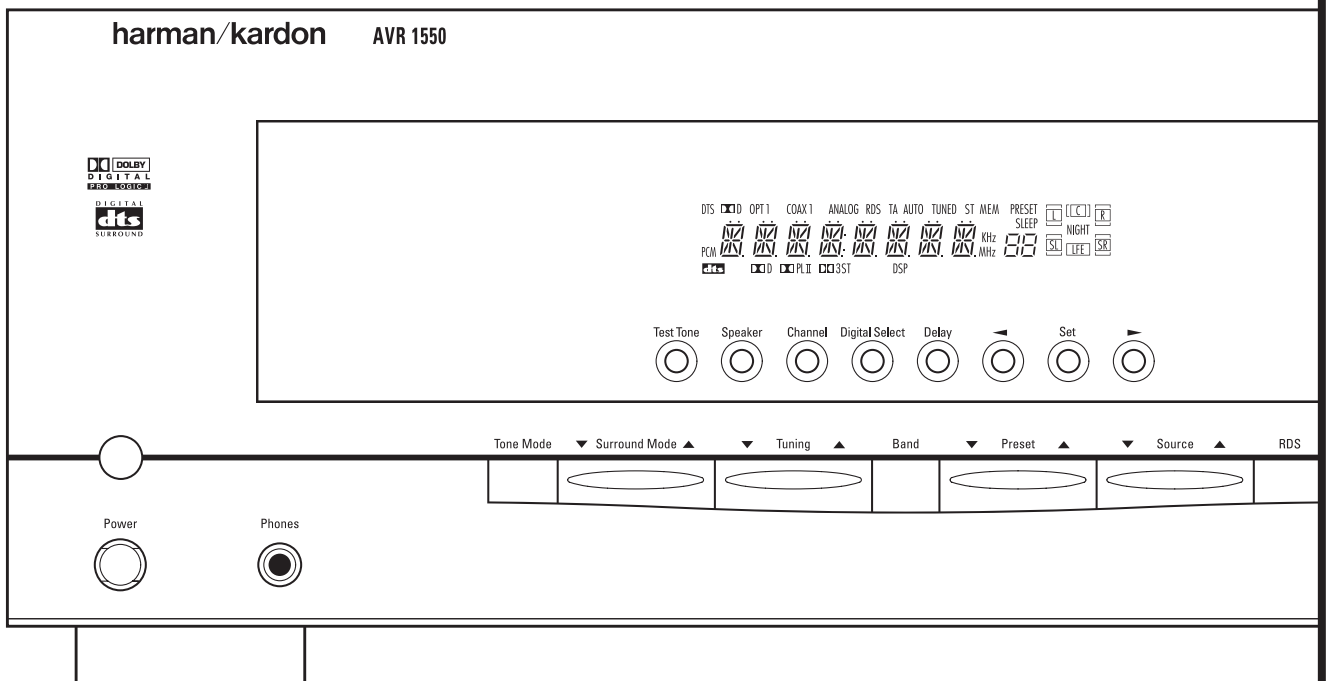


AVR 1550 Audio/Video Receiver

OWNER'S MANUAL



harman/kardon®

Power for the Digital Revolution™

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Declaration of Conformity



We, Harman Consumer International
2, route de Tours
72500 Château-du-Loir,
FRANCE

declare in own responsibility, that the product described
in this owner's manual is in compliance with technical
standards:

EN 55013/6.1990

EN 55020/12.1994

EN 60065:1993

EN 61000-3-2/4.1995

Carsten Olesen
Harman Kardon Europe A/S
09/02

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 1550 you are about to begin many years of listening enjoyment. The AVR 1550 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 1550 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.

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 1550 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 1550 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.

In addition to providing a wide range of listening options, the AVR 1550 is easy to configure so that it provides the best results with your speakers and specific listening-room environment.

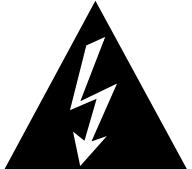



For the ultimate in flexibility, the AVR 1550 features connections for three video devices, partially with both composite and S-Video inputs.

Two additional audio inputs are available, and a total of two digital inputs make the AVR 1550 capable of handling all the latest digital audio sources. A coax digital output is available for direct connection to digital recorders.

The AVR 1550'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 1550 is one of the finest receivers ever offered by Harman Kardon within its price range.

- **Onboard Dolby Digital and DTS Decoding Using Crystal[®] Chip Technology**
- **Dolby Laboratory's latest ProLogic II decoding technology**
- **Multiple Digital Inputs and Outputs**
- **Front-Panel Inputs for Easy Connection to Portable Devices and the Latest Video Game Consoles**

	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 1550 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.

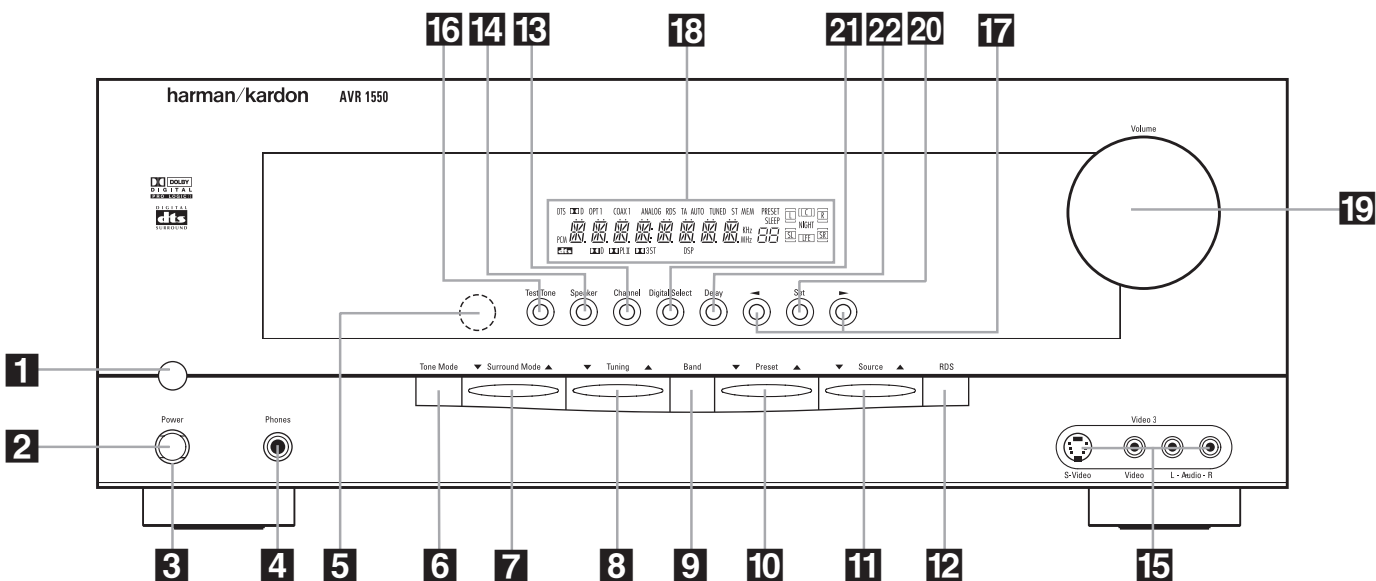
Unpacking

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** Remote Sensor Window
- 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** Channel Select Button
- 14** Speaker Select Button
- 15** Video 3 input jacks
- 16** Test Tone Selector

- 17** Selector Buttons
- 18** Main Information Display
- 19** Volume Control
- 20** Set Button
- 21** Digital Input Selector
- 22** Delay

1 Main Power Switch: Press this button to apply power to the AVR 1550. When the switch is pressed in, the unit is placed in a Standby mode, as indicated by the orange 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 1550; 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 orange 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 1550'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 headphones are connected.

5 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.

6 Tone Mode: Pressing this button activates the menu for setting the Bass and Treble controls.

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 20 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 **L** will illuminate in the **Main Information Display 18** (see page 24 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 24 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 24 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 1550's tuner. (See page 24 for more information on RDS).

13 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 23.)

14 Speaker Select Button: Press this button to begin the process of selecting the speaker positions that are used in your listening room. (See page 14 for more information on setup and configuration.)

15 Video 3 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 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 17.)

17 Selector Buttons: When you are establishing the AVR 1550's configuration settings, use these buttons to select from the choices available, as shown in the **Main Information Display 18**.

18 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.)

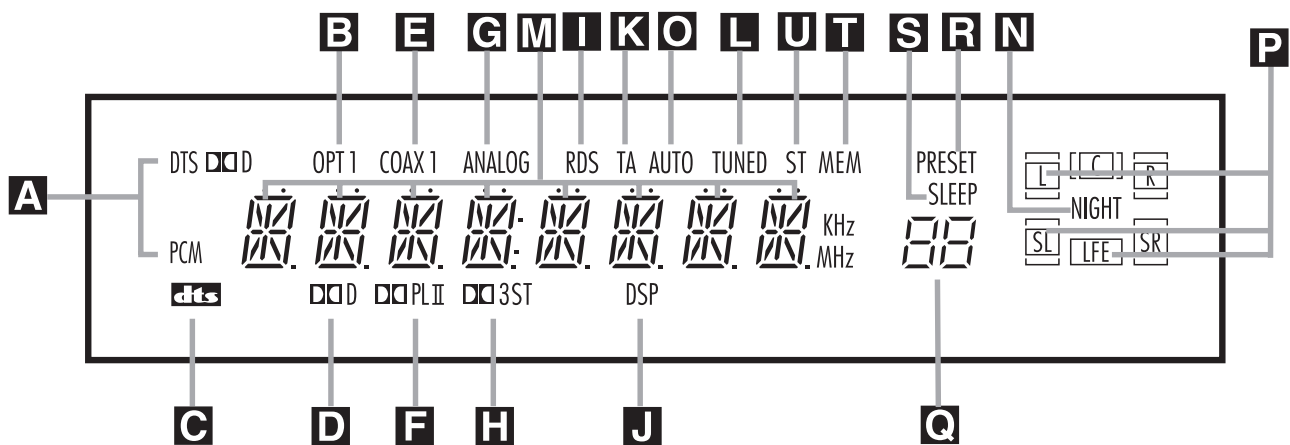
19 Volume Control: Turn this knob clockwise to increase the volume, counterclockwise to decrease the volume. If the AVR is muted, adjusting volume control will automatically release the unit from the silenced condition.

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 18** into the AVR 1550's memory. The set button may also be used to change the display brightness. (See page 23.)

21 Digital Input Selector: When playing a source that has a digital output, press this button to select between the **Optical 16** and **Coaxial 10 Digital** inputs. (See pages 21–22 for more information on digital audio.)

22 Delay: Press this button to begin the sequence of steps required to enter delay time settings. (See page 16 for more information on delay times.)

Front Panel Information Display



- | | | |
|---|------------------------------------|---|
| A Bitstream™ Indicators | H Dolby 3 Stereo Indicator | O Auto Indicator |
| B Optical Source Indicators | I RDS Indicator | P Speaker/Channel Input Indicators |
| C DTS Mode Indicator | J DSP Mode Indicator | Q Preset Number/Sleep Timer |
| D Dolby Digital Indicator | K Traffic Program Indicator | R Preset Indicator |
| E Coaxial Digital Input Indicators | L Tuned Indicator | S Sleep Indicator |
| F Dolby Pro Logic II Indicator | M Main Information Display | T Memory Indicator |
| G Analog Input Indicator | N Night Mode Indicator | U Stereo Indicator |

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

F Dolby Pro Logic II Indicator: This indicator lights when the Dolby Pro Logic II 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. Only **S T** (Stereo) will light when "Surround Off" has been selected. Then all Surround Modes are turned off and the unit will play in pure stereo mode.

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

J DSP Mode Indicator: This indicator lights when any of the surround modes created by Digital Signal Processing, or DSP are in use. These modes include Hall 1, Hall 2, Theater and 5 Channel Stereo.

K Traffic Program Indicator: This indicator illuminates if the RDS station tuned sometimes transmits traffic information (see page 24 for more information on RDS).

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

M 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.

N Night Mode Indicator: This indicator lights when the AVR 1550 is in the Night mode, which preserves the dynamic range of digital program material at low volume levels.

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

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. When the letters flash, the digital input has been interrupted. (See page 18 and 27 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 24 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.

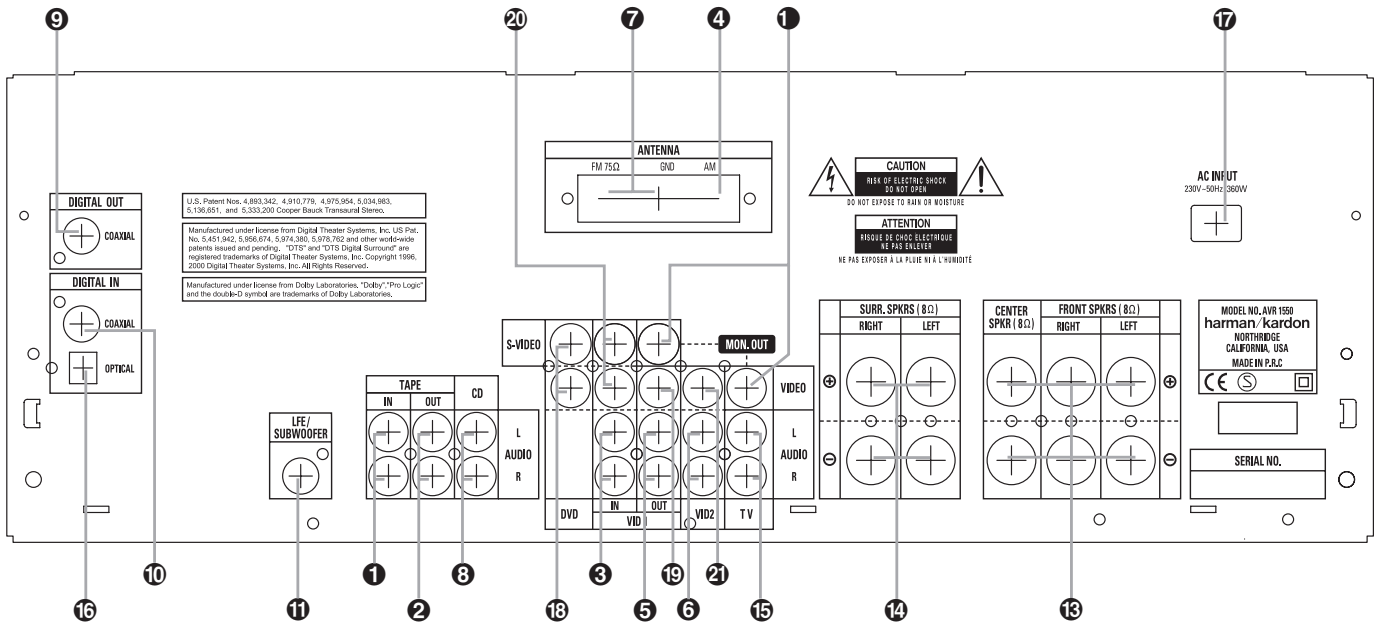
R Preset Indicator: This indicator lights when the tuner is in use to show that the **Preset Number/Sleep Timer Q** is showing the station's preset memory number. (See page 24 for more information on tuner presets.)

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 1550 goes into the Standby mode. (See page 19 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.

Rear Panel Connections



- 1 Tape Inputs
- 2 Tape Outputs
- 3 Video 1 Audio Inputs
- 4 AM Antenna
- 5 Video 1 Audio Outputs
- 6 Video 2 Audio Inputs
- 7 FM Antenna
- 8 CD Inputs
- 9 Coaxial Digital Audio Outputs
- 10 Coaxial Digital Inputs
- 11 Subwoofer Output
- 12 Video Monitor Outputs
- 13 Front/Center Speaker Outputs
- 14 Surround Speaker Outputs
- 15 TV Audio Inputs
- 16 Optical Digital Inputs
- 17 AC Power Cord
- 18 DVD Video Inputs
- 19 Video 1 Video Outputs
- 20 Video 1 Video Inputs
- 21 Video 2 Video Inputs

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 Video 2 Audio Inputs: Connect these jacks to the **PLAY/OUT** audio jacks on a VCR 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 Coaxial Digital Audio Outputs: Connect this jack to the matching digital input connector on a digital recorder such as a CD-R or MiniDisc recorder.

10 Coaxial Digital Inputs: Connect the coax digital output from a DVD player. Do not connect the RF digital output of an LD player to these jacks.

11 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.

12 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.

13 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 1550 to the red (+) terminals on the speaker and the black (–) terminals on the AVR 1550 to the black (–) terminals on the speakers. (See page 11 for more information on speaker polarity.)

14 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 1550 to the red (+) terminals on the speakers and the black (–) terminals on the AVR 1550 to the black (–) terminals on the speakers. See page 11 for more information on speaker polarity.

15 TV Audio Inputs: Connect these jacks to the Audio Out jacks on a TV or other video source.

16 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.

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

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

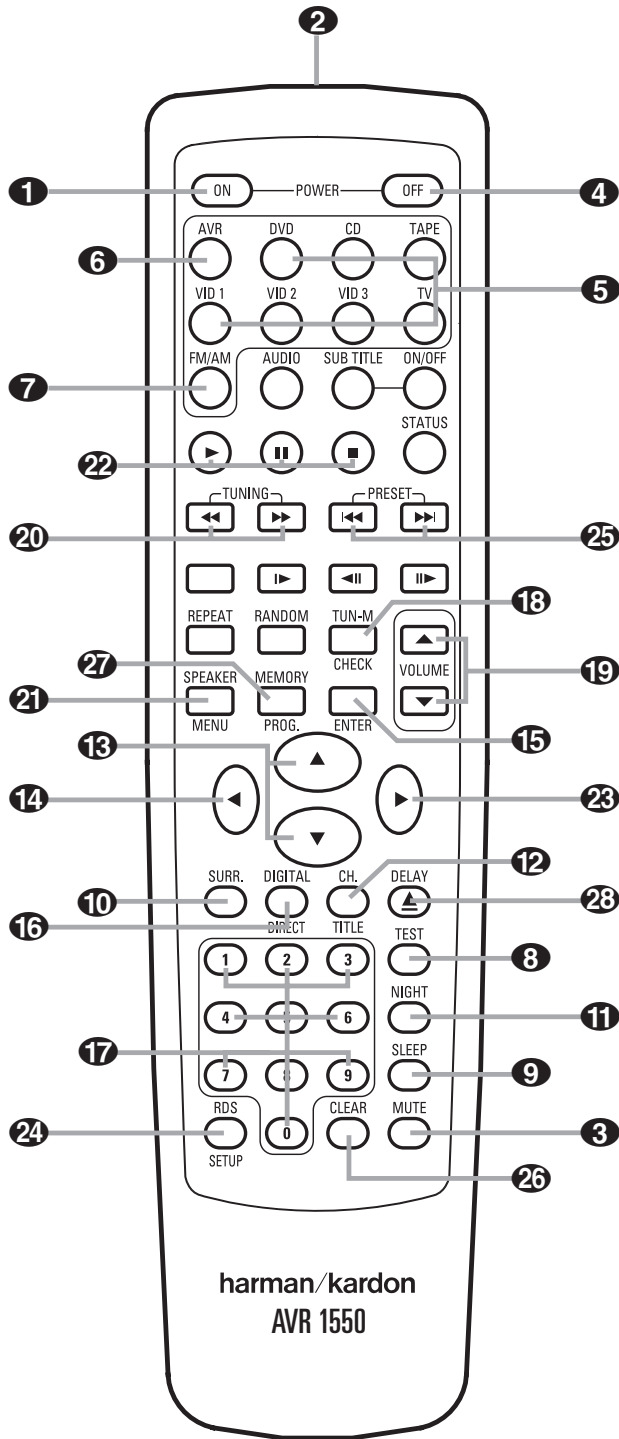
19 Video 1 Video Outputs: Connect these jacks to the **RECORD/INPUT** composite or S-Video jack on a VCR.

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

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

Remote Control Functions

- ❶ Power On Button
- ❷ IR Transmitter Window
- ❸ Mute
- ❹ Power Off Button
- ❺ Input Selectors
- ❻ AVR Selector
- ❼ AM/FM Tuner Select
- ❽ Test Button
- ❾ Sleep Button
- ❿ Surround Mode Selector
- ⓫ Night Mode
- ⓬ Channel Select Button
- ⓭ ▲/▼ Buttons
- ⓮ ◀ Button
- ⓯ Enter Button
- ⓰ Digital Select/Direct Button
- ⓱ Numeric Keys
- ⓲ Tuner Mode
- ⓳ Volume Up/Down
- ⓴ Tuning Up/Down
- ⓵ Speaker Select
- ⓶ Transport Controls
- ⓷ ▶ Button
- ⓸ RDS Select Button
- ⓹ Preset Up/Down
- ⓺ Clear Button
- ⓻ Memory Button
- ⓼ Delay



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 Harman Kardon devices. See page 26 for a list of these functions.

IMPORTANT NOTE: The AVR 1550's remote is shipped from the factory to operate the AVR 1550 and most Harman Kardon CD or DVD players and cassette decks.

Before using the remote, it is important to remember to press the Input **Selector button** ❺ that corresponds to the unit you wish to operate.

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 1550. (See page 26 for information about alternate functions for the remote's buttons.)

❶ **Power On Button:** Press this button to turn on the power.

❷ **IR Transmitter Window:** Point this window towards the AVR 1550 when pressing buttons on the remote to make certain that infrared commands are properly received.

❸ **Mute:** Press this button to momentarily silence the AVR 1550 or TV set being controlled, depending on which device has been selected.

❹ **Power Off Button:** Press this button to place the AVR 1550 in the Standby mode.

❺ **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 compatible Harman Kardon product selected. After pressing one of these buttons you must press the AVR **Selector button** ❻

Remote Control Functions

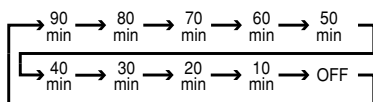
again to operate the AVR's functions with the remote.

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 1550's output levels. (See page 17 for more information on calibrating the AVR 1550.)

9 Sleep Button: Press this button to place the unit in the Sleep mode. After the time shown in the display, the AVR 1550 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 21 for more information).

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 22 for more information).

12 Channel Select Button: This button is used to start the process of setting the AVR 1550'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 **Enter** button **15**, followed by the ▲/▼ buttons again, to change the level setting. (See page 23 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 **28** has been pressed.

14 ◀ Button: This button does not have a function with the AVR 1550. When a DVD player or TV is selected, it may be used to navigate the menus of those devices.

15 Enter Button: This button is used to enter settings into the AVR 1550's memory. It is also used in the setup procedures for delay time, speaker configuration and channel output level adjustment.

16 Digital Select/Direct: Press this button to assign one of the digital inputs **10 16** to a source. (See page 22 for more information on using digital inputs).

In Tuner-mode, 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 24 for more information on the tuner).

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 compatible Harman Kardon CD, DVD or LD player.

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 **9** 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 **9** is on, pressing this button will change to monaural reception making even weak stations audible. (See page 24 for more information.)

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

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 **9** 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 **9** is NOT illuminated, pressing these buttons will tune stations in single-step increments. (See page 24 for more information.)

21 Speaker Select: Press this button to begin the process of configuring the AVR 1550'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 **Enter** button **15** and then select the speaker type (see page 14 for more information.)

22 Transport Buttons: These buttons do not have any functions for the AVR, but they may be used for the forward/reverse play operation of a wide variety of compatible Harman Kardon CD or DVD players, and audio or video-cassette recorders.

23 ▶ Button: This button does not have a function with the AVR 1550. When a compatible Harman Kardon DVD player or TV is selected, it may be used to navigate the menus of those devices.

24 RDS Select Button: Press this button to display the various messages that are part of the RDS data system of the AVR 1550's tuner. (See page 24 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 1550's memory.

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 1550's preset memory. After pressing the button the **MEMORY** indicator **1** will flash; you then have five seconds to enter a preset memory location using the **Numeric Keys 17**. (See page 23 for more information.)

28 Delay/Prev Ch.: Press this button to begin the process for setting the delay times used by the AVR 1550 when processing surround sound. After pressing this button, the delay times are entered by pressing the **Enter** button **15** and then using the ▲/▼ buttons **13** to change the setting. Press the **Enter** button again to complete the process. (See page 16 for more information.)

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.

Important Note : In order to clearly identify all connectors and simplify installation, as per the new EIA/CEA-863 standard, all connections are colour coded as follows:

For Speakers and Audio In/Outputs: White (Left, speakers front) and Red (Right, speakers front).

For Speakers: Green (Center), Blue (Left Surround) and Grey (Right Surround).

For Audio Output: Purple (Subwoofer).

For Composite Video In/Outputs: Yellow.

For Digital Audio In/Outputs: Orange.

1. Connect the analog output of a CD player to the **CD inputs** ③.

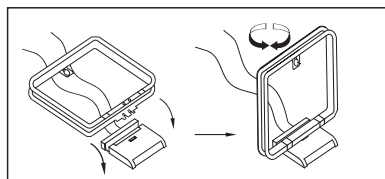
NOTE: When the CD player has both fixed and variable audio outputs it is best to use the fixed output unless you find that the input to the receiver is so low that the sound is noisy, or so high that the signal is distorted.

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 1550.

3. Connect the digital output of any digital device to the appropriate input connections on the AVR 1550 rear panel. Note that the **Optical** and **Coaxial** digital inputs ⑩⑬ 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 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 ⑬⑭ 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 the same terminals on the AVR 1550 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 have a different distance from the AVR 1550.

8. Connections to a subwoofer are normally made via a line level audio connection from the **Subwoofer Output** ⑪ 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 connected 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 ⑬ only rather than to the **Subwoofer Output** ⑪.

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 1550 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 ⑥ ②④ on the rear panel. The Audio and Video Record/In jacks on the VCR should be connected to the **Video 1** jacks ⑤ ⑩ on the AVR 1550.

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** ⑥ ④ (if not in use) or **Video 3** ⑮ jacks.

3. Connect the video outputs of a DVD or laser disc player to the **DVD** jacks ⑱.

4. Connect the **Video Monitor Out** ⑫ 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 with 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).

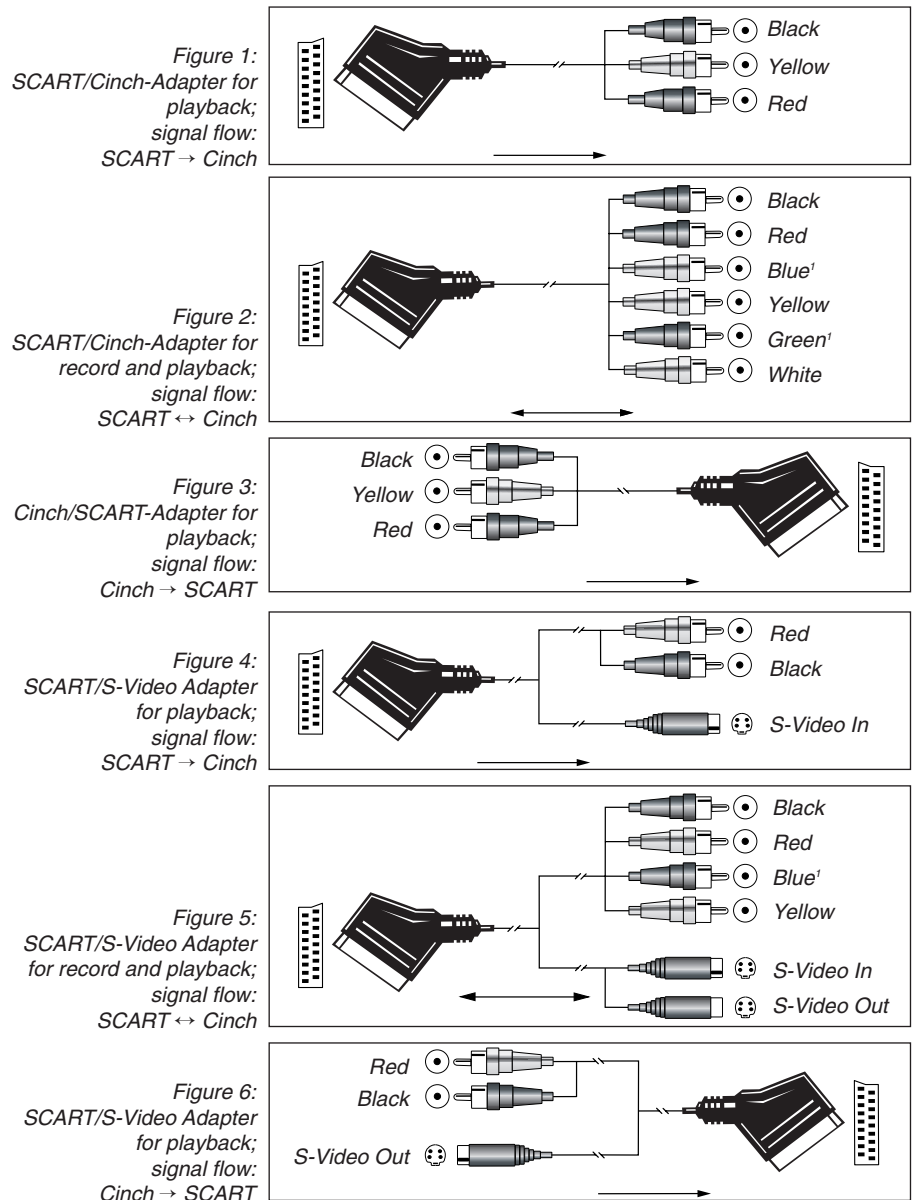
In that case the following Scart to Cinch adapters or cables are needed:

- 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.

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 1550 (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 direc-



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

tions 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 1550 does not convert the Video signal to S-Video or vice versa. Thus both connections must be made from the AVR 1550 to the TV if both, Video and S-Video sources, are used, and the appropriate input on the TV must be selected.

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 4:3/16:9 format (with 16:9 TVs or 4:3 TVs with 16:9 capability) 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.

Installation and Connections

Speaker Selection

No matter which type or brand of speakers is used, the same model or brand of speaker should be used at least 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.

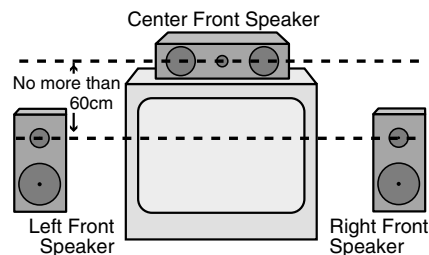
Depending on the specifics of your room acoustics and the type of speakers in use, you may find that imaging is improved by moving the front-left and front-right speakers slightly forward of the center-channel speaker. If possible, adjust all front loudspeakers so that they are aimed at ear height when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

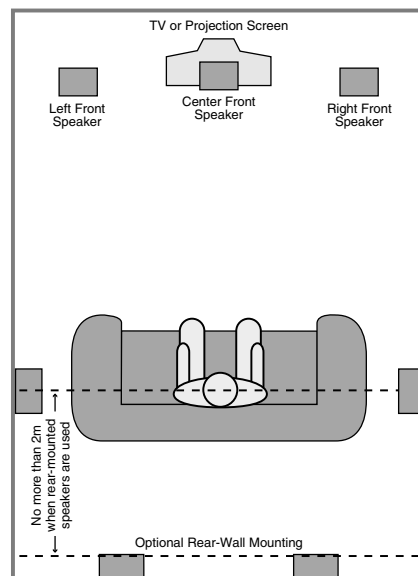
Surround speakers should be placed on the side walls of the room, at or slightly behind the listening position. The center of the speaker should face you.

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.

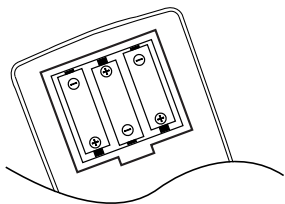
System Configuration

Once the speakers have been placed in the room and connected, the remaining steps are to program the system configuration memories. With the AVR 1550 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.

First Turn On

You are now ready to power up the AVR 1550 to begin these final adjustments.

1. Plug the **Power Cable 17** 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 orange, indicating that the unit is in the Standby mode.
3. Remove the protective plastic film from the front-panel lens. If left in place, the film may affect the performance of your remote control.
4. Install the three supplied AAA batteries in the remote as shown. Be certain to follow the (+) and (-) polarity indicators that are on the bottom of the battery compartment.



5. Turn the AVR 1550 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 18** will also light up.

Settings to be Made With Each Input Used

The AVR 1550 features an advanced memory system that enables you to establish different settings 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 1550 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 1550, as it is shipped from the factory, have all inputs set for an analog source (except for the DVD input, which has the **Coaxial Digital Input 1 10** as the default), 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 associated with the input. Remember, since the AVR 1550'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 1550 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 18**. 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 **21 16** on the front panel or the remote. Within five seconds, make your input selection using the **Selector** buttons on the front panel **17** or the **▲/▼** buttons **13** on the remote until the desired digital or analog input is shown in the **Main Information Display 18**. Then press the **Enter** 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 1550's memory system will keep the settings until they are changed again.

Speaker Setup

This setup tells the AVR 1550 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 in use.

It is best to select the Dolby Pro Logic II Movie mode for speaker setup. Then with the currently selected input all speaker 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 1550 turned on, follow these steps to configure the speakers:

1. Put the AVR 1550 in the Dolby Pro Logic II Movie mode by pressing the **Surround Mode Selector** button **7** on the front or **10** and then the **▲/▼** buttons **13** on the remote, until **DOLBY PRO LOGIC II MOVIE** appears in the **Main Information Display M** and the **PRO LOGIC II** indicator **F** lights.

2. Press the **Speaker** button **21 14** on the remote or front panel. The words **FNT SPKR** will appear in the **Main Information Display M**.

3. Press the **Enter** button **15** on the remote control, or the **Set** button on the front **20**.

4. Press the **▲/▼** buttons **13** on the remote or the **Selector** buttons **17** on the front panel until either **F-LARGE** or **F-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. This setting is not available with stereo mode to ensure purest sound by bypassing the crossovers of the DSP's.

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 13**, the fronts must be set for **LARGE**.

5. When you have completed your selection for the front channels, press the **Enter** button **15** on the remote control, or the **Set** button on the front **20**, and then press the **▲/▼** buttons **13** on the remote or the **Selector** buttons **17** on the front panel to change the display to **CEN SPKR**.

6. Press the **Enter** button **15** on the remote control, or the **Set** button on the front **20** again, and use the **▲/▼** buttons **13** on the remote, or the **Selector** buttons **17** 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 (except with the Pro Logic II Music mode) 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 and its bass will be sent to the subwoofer output too as long as **SUB L/R+LFE** is selected in the **SUBWOOFER** line in this menu (see below). This mode is needed if no Center speaker is used.

7. When you have completed your selection for the center channel, press the **Enter** button **15** on the remote control, or the **Set** button on the front **20**, and then press the **▲/▼** buttons **13** on the remote or the **Selector** buttons **17** on the front panel to change the display to **SUR SPKR**.

8. Press the **Enter** button **15** on the remote control, or the **Set** button on the front **20** again, and then use the **▲/▼** buttons **13** on the remote or the **Selector** buttons **17** 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, with all digital surround modes 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 the analog surround modes the rear bass feed depends on the mode selected and the setting of the sub and front speakers.

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 **Enter** button **15** on the remote control, or the **Set** button on the front **20**, and then press the **▲/▼** buttons **13** on the remote or the **Selector** buttons **17** on the front panel to change the display to **S-W SPKR**.

10. Press the **Enter** button **15** on the remote control, or the **Set** button on the front **20**, and then press the **▲/▼** buttons **13** on the remote or the **Selector** buttons **17** 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 1550, press the arrow buttons **13 17** 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 1550, 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 1550 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 17** 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 17** so that **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 under the crossover frequency 80 Hz, additionally to the LFE soundtrack (see above).

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

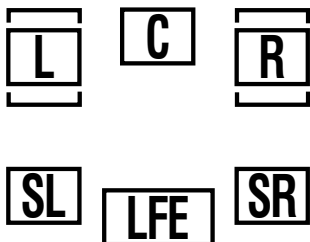
System Configuration

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 the Figure 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 will then 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 1550's memory system will keep these settings for the input selected, until they are changed again.



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 20 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 1550, it is best to select any Dolby Pro Logic II mode 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.

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** .

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 1550'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 II 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 II 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 20) 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, center 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 any Dolby Pro Logic II mode, take the result of the calculation above 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,

System Configuration

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

NOTE: The DTS, 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 left 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 II 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.
2. Press the **Delay** button **23/22** on the remote or front panel. The words **S DELAY** appear in the **Main Information Display** **M**.
3. Press the **Enter** button **15** on the remote control, or the **Set** button on the front **20**.
4. Press the **▲/▼** buttons **13** on the remote or the **Selector** buttons **17** 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 **Enter** button **15** on the remote control, or the **Set** button on the front **20** to enter the setting into the AVR 1550's memory.

6. Press the **▲/▼** buttons **13** on the remote once, so that **C DELAY** appears in the **Main Information Display** **M**.

7. Press the **Enter** button **15** on the remote control, or the **Set** button on the front **20**.

8. Press the **▲/▼** buttons **13** on the remote until the desired delay time for the center channel appears in the display.

9. Press the **Enter** button **15** on the remote control, or the **Set** button on the front **20** to enter the setting into the AVR 1550'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 - R** (Dynamic Range) followed by the current setting (MID, MAX, OFF) will appear in the **Main Information Display** **M**.

Press the **▲/▼** buttons **13** within five 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 **Enter** button **15** on the remote control, or the **Set** button on the front **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 1550, 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. Note that adjustments made for any surround mode are effective with all inputs associated with that surround mode.

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.

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 any Dolby Pro Logic II mode, 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 any Dolby Pro Logic II surround mode by pressing the **Input Source Selector** **11** **5** until the **Pro Logic II** **F** in the display light up.
2. Press the **Test Tone** button **8/16** on the remote. The words **TEST FL** will appear in the **Main Information Display** **M**.

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 **FL**, **CEN**, **FR**, **SR**, **SL** (Front Left, Center, Front Right, Surround Right, Surround Left) will be shown in the **Main Information Display M**. 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, 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 1550 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 23.

When all channels have the same output level, turn the **Volume 19 19** 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 16 8** 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 M**, 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.

Once the settings outlined on the previous pages have been made, the AVR 1550 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 23 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 1550, also if it's turned off completely, unless it will be reset (see page 27). 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 1550, 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 1550, 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 1550 On or Off

- When using the AVR 1550 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 orange 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 6 7**.

NOTE: After pressing one of the **Input Selector** buttons **5** 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.

To switch off both the AVR 1550 and compatible Harman Kardon DVD or CD Player, first press the **Input Selector button 5** and after press the **Power Off Button 4**. After that press the **AVR Selector Button 6**, followed by the **Power Off Button 4**.

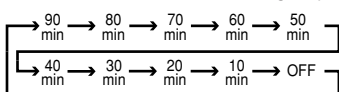
When the remote is used to turn the unit "off" it is actually placing the system in a Standby mode, as indicated by the orange color of the **Power Indicator 3**.

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 1550 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 return to "0" in the **Main Information Display M**.

Source Selection

- To select a source, press any of the **Source Selector** buttons on the remote **5 6 7**.

NOTE: After pressing one of the **Input Selector** buttons **5** you must 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 1550 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 3 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.

- As the input source is changed, the new input name will appear in the **Main Information Display M**.

- When a pure audio source (Tuner, CD, Tape) is selected, the last video input used remains routed to the **Video 1 Outputs 19** (except from its own Video 1/2 source) and **Video Monitor Output 12**. 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 **12** and will be viewable on a TV monitor connected to the AVR 1550.

Controls and Use of Headphones

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

- To temporarily silence all speaker outputs press the **Mute** button **3**. 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. Press the **Mute** button **3** again to return to normal operation.

- To set the output of the AVR 1550 so that the output is "flat," with the Tone controls deactivated, press the **Tone Mode** button **6** once or twice so that the words **Tone Out** appear momentarily in the **Main Information Display M**. 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 M**.

Once **Tone In** is shown in the Display, press the **Set Button 20** on the front panel to select the Bass Control. Adjustments can be made with the **Selector Buttons 17** on the front panel. Pressing the Set button again selects the Treble Control. Make your adjustments with the **Selector Buttons 17**.

- 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 M** 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 II	Dolby Pro Logic II is the latest version of Dolby Laboratory's benchmark surround technology that creates or decodes full range, discrete left, center, right, right surround and left surround channels from either matrix surround encoded programs and conventional stereo sources. The Dolby ProLogic II Movie mode is optimized for movie soundtracks that are recorded with matrix surround, by creating true rear left, center and right signals. The ProLogic II Music mode should be used with musical selections, that are recorded with matrix surround or with normal stereo mode, creating discrete rear left and right signals. The ProLogic II Emulation mode creates compelling five-channel surround from conventional stereo recordings.	Movie and Emulation: 10 ms - 25 ms, Initial Setting - 10 ms, Music: 0 ms - 15 ms, Initial Setting - 0 ms
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	The THEATER mode creates a sound field that resembles the acoustic feeling of a standard live performance theater, with stereo and even pure mono sources.	Delay time not adjustable
HALL 1 HALL 2	The two Hall modes create sound fields that resemble a small (HALL 1) or medium sized (HALL 2) concert hall, with stereo and even pure mono sources.	Delay time not adjustable
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 1550 is its ability to reproduce a full multichannel surround sound field from digital sources, analog matrix surround encoded programs and standard stereo or even mono programs. In all, a total of eleven listening modes are available on the AVR 1550.

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, CD's or TV programs bearing the logo of one of the major surround encoding processes, such as Dolby Surround should be played in either the Dolby Pro Logic II Movie (with movies) or Music (with music) surround mode.

When no rear speakers are in use, the Dolby 3 Stereo mode should be selected with all surround recordings.

Note that when Dolby Digital 2.0 signals (e.g. "D.D. 2.0" tracks from DVD), that are encoded with Dolby Pro Logic information, are received via any digital input, the Dolby Pro Logic II Movie mode will be selected automatically (in addition to the Dolby Digital mode) and will decode a full range 5.1 channel surround sound even from those recordings (see also "Dolby Digital" on page 22).

To create wide, enveloping sound field environments and defined pans and flyovers with all analog stereo recordings select the Dolby Pro Logic II Music or Emulation mode.

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 Dolby Pro Logic II, 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 Dolby Pro Logic II, Dolby 3 Stereo 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 (effective particularly with old "extreme" stereo recordings) and for mono programs, we suggest that you try the Theater or Hall modes.

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** **M**, and an individual mode indicator will also light up **C D F H J**. Regard that any time a surround mode is changed it remains associated with the input just selected until another choice is made.

NOTE: The name of each Surround Mode will scroll through the **Main Information Display** **M** while the modes are being selected. To avoid exiting from the surround mode selection process, be certain to push the **▲/▼** buttons **13** while a mode name is still visible.

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 1550 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** **M**.

Digital Audio Playback

Digital audio is a major advancement over older analog matrix surround systems. 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 1550 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 **10 16** of the AVR 1550. 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 1550, 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 **10 16**.

Operation

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 1550 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 **10** **16** on the rear panel.

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 **21** **16** and then use the **▲/▼** buttons **13** on the remote, or the **Selector** buttons **17** on the front panel, until the desired choice appears in the **Main Information Display M**, then press the **Enter** button **15** on the remote control, or the **Set** button on the front **20** 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 as described on pages 20 and 21 except Dolby Digital or DTS.

Selecting a Digital Source

To utilize either digital mode you must have properly connected a digital source to the AVR 1550. Connect the digital outputs from DVD players, HDTV receivers, satellite systems or CD players to the **Optical** or **Coaxial** inputs on the rear panel **10** **16**.

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 14), select the digital source by pressing the **Digital Input Selector** button **16** **21** and then using the **▲/▼** buttons **13** on the remote or the **Selector** buttons **17** on the front panel to choose any of the **OPTICAL** or **COAXIAL** inputs, as they appear in the **Main Information Display M** and Display Indicators **BE**. When the digital source is playing, the AVR 1550 will automatically detect whether it is a multichannel Dolby Digital, DTS source or a conventional PCM signal, which is the standard output from CD players. A **Bitstream Indicator A** will light in the **Main Information Display 18** to confirm that

the digital signal is Dolby Digital, DTS 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 1550 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 1550 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 DIGITAL: 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 mode is 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 1550 automatically switches to the Dolby Pro Logic II Movie mode (in addition to the Dolby Digital mode). When the D.D. 2.0 signal contains no Pro Logic information, the pure Dolby Digital mode will be selected automatically, but you may also select any Pro Logic II mode (only Music or Emulation should be used then).

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.

In addition to the **Bitstream Indicators**, the AVR 1550 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/SL/SR/LFE letters that are inside the center boxes of the **Speaker/Channel Input Indicators P** in the front panel **Main Information Display 18**. 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 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.

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 M** reads **D - R O F F**. When the Night mode is active, the **Night Mode Indicator O** will also illuminate.

Operation

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 1550 or the source machine. The AVR 1550 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 1550 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 1550.
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 1550 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 II, Dolby 3 Stereo, Hall, Theater or 5CH Stereo, 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** record outputs, if the source is connected to any digital input of the AVR 1550 only.

Tape Recording

In normal operation, the audio or video source selected for listening through the AVR 1550 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 Outputs 5 19** in the record mode.

When a digital audio recorder is connected to the Coaxial **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 the coaxial digital output, 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 optical digital input signals are converted to coaxial signals). In addition, the digital recorder must be compatible with the output signal. For example, the PCM digital output from a CD player may be recorded on a CD-R or MiniDisc, but Dolby Digital or DTS signals may not.

Output Level Trim Adjustment

Normal output level adjustment for the AVR 1550 is established using the test tone, as outlined on pages 17 and 18. 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 mode 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 19**.

Once the reference level has been set, press the **Channel Select** button **12 13** and note that **FL LEVEL** will appear in the **Main Information Display M** for five seconds. To change the level, first press the **Enter** button **15** on the remote control, or the **Set** button on the front **20**, and then use the **Selector** buttons **17** 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 **Enter** button **15** on the remote control, or the **Set** button on the front **20** and then press the **Selector** buttons **17** 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 **17** or the **▲/▼** buttons **13** until **SW LEVEL** appears in the **Main Information Display M** (only available if the subwoofer was selected during the speaker configuration, see page 14).

Press the **Enter** button **15** on the remote control, or the **Set** button on the front **20** when the name of the desired channel appears in the **Main Information Display M** and on-screen display, 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 **Enter** button **15** on the remote control, or the **Set** button on the front **20** twice, the AVR 1550 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 by the trim adjustment as described above will automatically change the level settings shown during the Output Level Adjustment (see page 17) correspondingly (and vice versa) and will remain in the AVR 1550's memory system, even when the unit is turned off. With Stereo mode the adjustment procedure described above is the only way to trim the output level.

Display Brightness

The AVR 1550's front panel **Main Information Display 18** 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 M** reads **V F D F U L L**. Within five seconds, press the front panel **◀/▶** buttons **17** until the desired brightness display level is shown. At that point, press the **Set** button **20** again to enter the setting.

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 1550'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 **0** is illuminated in the **Main Information Display** **M** the tuner will only stop at those stations that have a strong enough signal to be received with acceptable quality.

When the **AUTO** indicator **0** 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 **0** 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 **0** 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 **L** illuminates, the station is properly tuned and should be heard with clarity.
5. Stations may also be tuned directly by pressing the **Direct** button **16**, 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 1550'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** **18**.
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** **Q**.
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.

RDS Operation

The AVR 1550 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.

RDS Tuning

When an FM station is tuned in and it contains RDS data, the **RDS Indicator** **I** will illuminate and the AVR 1550 will automatically display the station's call sign or other program service in the **Main Information Display** **M**.

RDS Display Options

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.
- 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 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. Please note that the accuracy of the time data is dependent on the radio station, not the AVR 1550.

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** **M** 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 the **RDS Indicator** **I** going on and off, try slowly adjusting the antenna or tune to another stronger RDS station.

Operation

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
- **POP:** Popular Music
- **ROCK:** Rock Music
- **M · O · R · M · :** Middle-of-the-Road Music
- **LIGHT:** Classical Music
- **CLASSICS:** Serious Classical Music
- **OTHER:** 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

- **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** until the current PTY is shown in the **Main Information Display**.
2. While the PTY is shown, press the **Preset Up/Down** button **10** or hold them pressed to scroll through the list of available PTY types, as shown above.
3. Press any of the **Tuning Up/Down** buttons **8**, 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. 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.

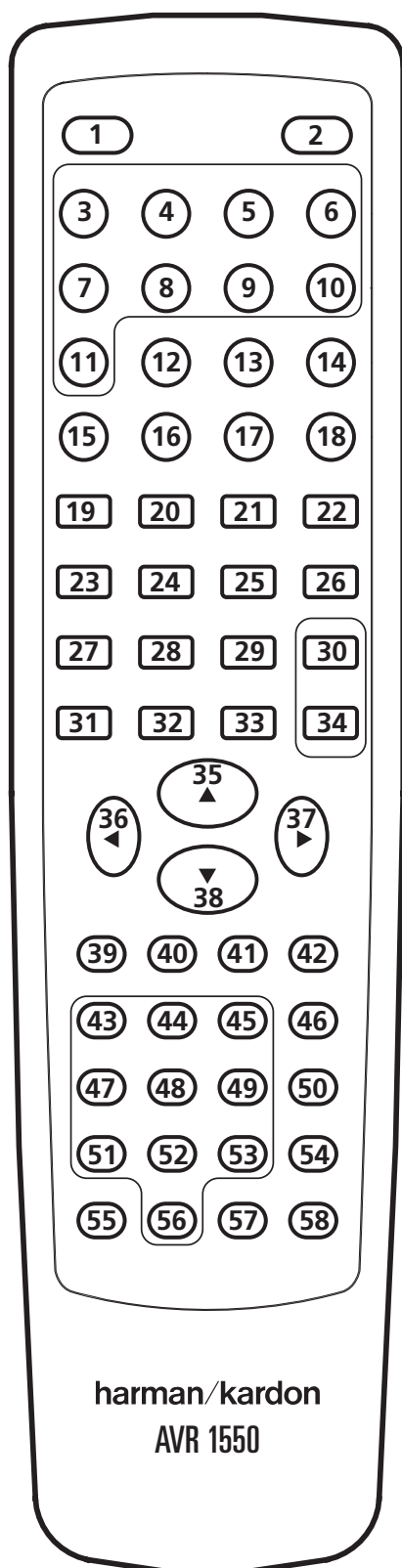
NOTE: Some stations transmit constant traffic information. To identify as traffic station, they transmit a specific traffic code constantly, which causes the **TA Indicator** to light in the display. These stations can be found by selecting **TRAFFIC**, the option in front of **NEWS** in the list. The AVR 1550 will find the appropriate station, even if it is not broadcasting traffic information when the search is made.

Remote

The AVR 1550 is equipped with a powerful remote control that will control not only the receiver's functions, but also compatible Harman Kardon CD and DVD players.

To switch between operating the AVR 1550 and compatible Harman Kardon products, press the **Input Selectors** to select either the AVR 1550 or a different source. Some of the remote control functions will work no matter if the AVR 1550 or compatible Harman Kardon DVD player is selected. (See page 26). Pressing another input source than DVD will change the AVR 1550's input to this source. After that press the **AVR Input Selector button** again to be able to control the AVR 1550.

Function List



No.	Button Name	AVR Function	DVD Function
1	Power On	Power On	Power On
2	Power Off	Power Off	Power Off
3	AVR	AVR Select	AVR Select
4	DVD	DVD Select	DVD Select
5	CD	CD Input Select	
6	TAPE	Tape Input Select	
7	VID 1	Video 1 Select	
8	VID 2	Video 2 Select	
9	VID 3	Video 3 Select	
10	TV	TV Input Select	
11	FM/AM	Tuner Select	
12	Audio		Audio Track Select
13	Subtitle		Subtitle Select
14	On/Off		Subtitle On/Off
15	Play		Play
16	Pause		Pause
17	Stop		Stop
18	Status		Status Select
19	Tune Down	Tune Down	R. Search
20	Tune Up	Tune Up	F. Search
21	Preset Down	Preset Down	Skip Previous
22	Preset Up	Preset Up	Skip Next
23	Slow Reverse		Slow Reverse
24	Slow Forward		Slow Forward
25	Step Reverse		Step Reverse
26	Step Forward		Step Forward
27	Repeat		Repeat
28	Random		Random Play
29	Tun-M/Check	Tuner Mode	Check
30	Volume Up	Volume Up	Volume Up
31	Speaker/Menu	Speaker Adjust	Menu
32	Memory/Prog.	Tuner Memory	Program
33	Enter	Set	Enter
34	Volume Down	Volume Down	Volume Down
35	▲	Move/Adjust Up	Up
36	◀	Move/Adjust Left	Left
37	▶	Move/Adjust Right	Right
38	▼	Move/Adjust Down	Down
39	Surround Select	Surround Select	
40	Digital	Digital Input Select/Direct	
41	Channel/Title	Channel Trim	Title
42	Delay	Delay Adjust	Open/Close
43	1	1	1
44	2	2	2
45	3	3	3
46	Test	Test Tone	
47	4	4	4
48	5	5	5
49	6	6	6
50	Night	Night Mode Select	
51	7	7	7
52	8	8	8
53	9	9	9
54	Sleep	Sleep	
55	RDS	RDS	Setup Menu
56	0	0	0
57	Clear	Clear	Clear
58	Mute	Mute	

Troubleshooting Guide

SYMPTOM	CAUSE	SOLUTION
Unit does not function when Main Power Switch 1 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 3 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 23 so that the display is set to VFD FULL
No sound from any speaker; light around Power switch 2 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 non-encoded programs Check speaker-wire connections or use test tone to verify connections (see page 18)
Unit does not respond to remote commands	<ul style="list-style-type: none"> Weak batteries in remote Wrong device selected Remote sensor 5 is obscured 	<ul style="list-style-type: none"> Change remote batteries Press the AVR selector 6 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 P 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 1550'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 **RESET** message in the **Main Information Display M**. 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) 90dB

Surround System Adjacent Channel Separation

Analog Decoding 40dB

(Pro Logic, etc.)

Dolby Digital (AC-3) 55dB

DTS 55dB

Frequency Response

@ 1W (+0dB, -3dB) 10Hz–65kHz

High Instantaneous

Current Capability (HCC) ±25 Amps

Transient Intermodulation

Distortion (TIM) Unmeasurable

FM Tuner Section

Frequency Range	87.5–108MHz
Usable Sensitivity	IHF 1.3 μV/13.2dBf
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	45dB
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, 580W maximum (2 channels driven)

Dimensions (Max)

Width	440mm
Height	166mm
Depth	435mm
Weight	11 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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