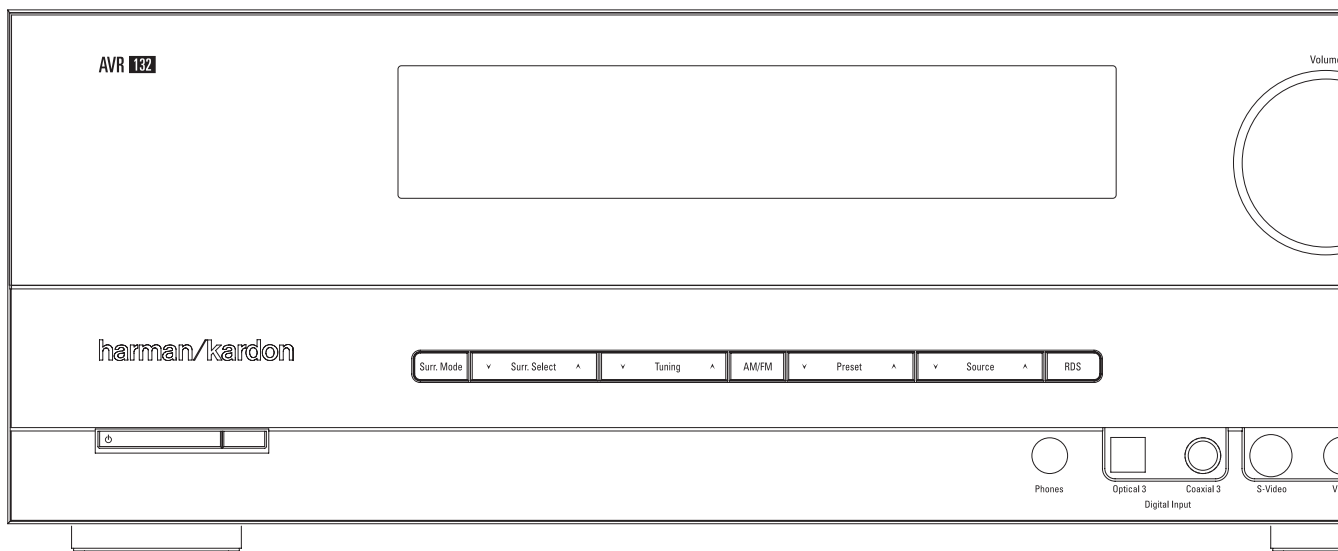


AVR 132 Audio/Video Receiver

OWNER'S MANUAL



harman/kardon®

Table of Contents

3	Introduction
4	Safety Information
4	Unpacking
5	Front Panel Controls
7	Rear Panel Connections
9	Remote Control Functions
12	Installation and Connections
12	Audio Equipment Connections
13	Video Equipment Connections
14	SCART A/V Connections
14	AC Power Connections
15	Speaker Selection and Placement
16	System Configuration
16	First Turn On
16	Settings to be Made With Each Input Used
16	Input Setup
16	Speaker Setup
17	Triple Crossover Setting
18	Surround Setup
18	Configuring the Surround Off (Stereo) Modes
18	Stereo-Direct (Bypass) Mode
19	Stereo Digital Mode
19	Delay Settings
19	Night Mode Settings
19	Output Level Adjustment
21	Operation
21	Basic Operation
21	Source Selection
21	Controls and Use of Headphones
21	Surround Mode Selection
22	Surround Mode Chart
24	Digital Audio Playback
25	Selecting a Digital Source
25	Digital Status Indicators
25	Surround Mode Types
26	Night Mode
26	Tape Recording
26	Output Level Trim Adjustment
27	6-Channel Direct Input
27	Display Brightness
27	Memory Backup
27	Tuner Operation
28	RDS Operation
29	Programming the Remote
29	Programming the Remote with Codes
29	Code Readout
30	Programmed Device Functions
30	Macro Programming
31	Volume Punch-Through
31	Channel Control Punch-Through
31	Transport Control Punch-Through
31	Resetting the Remote Memory
32	Function List
34	Troubleshooting Guide
34	Processor Reset
35	Technical Specifications

Declaration of Conformity



We, Harman Consumer Group 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 55013:2001 + A1:2003
EN 55020:2002 + A1:2003
EN 61000-3-2:2000
EN 61000-3-3:1995 + A1:2001
EN 60065:2002

Jurjen Amsterdam
Harman Consumer Group International
07/06

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.

Introduction

Thank you for choosing Harman Kardon!

With the purchase of a Harman Kardon AVR 132 you are about to begin many years of listening enjoyment. The AVR 132 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 132 delivers six discrete channels of audio that take advantage of the digital sound tracks from the latest DVD and LD releases and Digital Television broadcasts.

While complex digital systems are hard at work within the AVR 132 to make all of this happen, hookup and operation are simple. Color-keyed connections and a programmable remote control make the AVR easy to use. To obtain the maximum enjoyment from your new receiver, we urge you to take the time to read through this manual. This will ensure that connections to speakers, source playback units and other external devices are made properly. In addition, a few minutes spent learning the functions of the various controls will enable you to take advantage of all the power the AVR 132 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 132 is among the most versatile and multi-featured A/V receivers available, incorporating a wide range of listening options. In addition to Dolby Digital and DTS decoding for digital sources, a broad choice of analog surround modes are available for use with sources such as CD, VCR, TV broadcasts and the AVR's own FM/AM tuner. Along with the latest Dolby ProLogic II[®] decoding technology, Dolby 3 Stereo, 5 Ch Stereo and custom Hall and Theater modes, only Harman Kardon receivers offer Logic 7[®] to create a wider, more enveloping field environment and more defined fly-overs and pans.

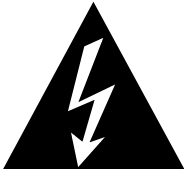



In addition to providing a wide range of listening options, the AVR 132 is easy to configure so that it provides the best results with your speakers and specific listening-room environment. A Stereo-Direct mode bypasses the digital processor to preserve all of the subtleties of older analog, two-channel materials, while bass management, available in the surround and Stereo-Digital modes, improves your ability to tailor the sound to suit your room acoustics or taste.

For the ultimate in flexibility, the AVR 132 features connections for four video devices, all with both composite and S-Video inputs, including the front-panel inputs. Two additional audio inputs are available, and a total of six digital inputs make the AVR 132 capable of handling all the latest digital audio sources. A video recording output and a six-channel input make the AVR 132 virtually future-proof, with everything needed to accommodate tomorrow's new formats right on board.

The AVR 132'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 fifty years ago. With state-of-the-art circuitry and time-honored circuit designs, the AVR 132 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**
- **Harman Kardon's exclusive Logic 7[®] processing, along with a choice of Dolby Virtual Speaker processing for use when only two speakers are available**
- **Dolby Headphone to create spacious, open sound fields when using headphones**
- **Dolby Laboratory's latest ProLogic II decoding technology.**
- **Stereo-Direct Mode for Two-Channel Sources Bypasses DSP Processing to Preserve the Integrity of Analog Materials**
- **Stereo-Digital Mode for Programmable Bass Management of Low Frequencies Between Main Speakers and Subwoofer**
- **Front panel digital inputs for easy connection to portable digital devices and the latest video game consoles**
- **Multiple Digital Inputs**
- **6-Channel Direct Input for Use With DVD-Audio or SACD Players and Other Products With Internal Surround Decoders**
- **Color-Coded Input, Output and Speaker Terminals Comply With CEA Standards for Easy Installation**
- **Remote with Internal Codes Capability**
- **High-bandwidth, HDTV-compatible component video switching**
- **Input titling for all input sources (except tuner)**

	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	
<p>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.</p>		
		
<p>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.</p>	<p>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.</p>	
<p>WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.</p>		

Safety Information

Important Safety Information

READ THIS BEFORE OPERATING YOUR UNIT.

Do not install this equipment in a confined space such as a case or similar – away from direct sunlight, heat sources, vibration, dust, moisture, and/or cold.

Avoid installing this unit where foreign object may fall onto this unit and/or this unit may be exposed to liquid dripping or splashing. On the top of this unit, do not place:

- Burning objects (i.e. candles), as they may cause fire, damage to this unit, and/or personal injury.
- Containers with liquid in them, as they may fall and liquid may cause electrical shock to the user and/or damage to this unit.

Do not cover this unit with a newspaper, tablecloth, curtain, etc. in order not to obstruct heat radiation. If the temperature inside this unit rises, it may cause fire, damage to this unit, and/or personal injury.

Install this unit near the AC outlet and where the AC power plug can be reached easily.

This unit is not disconnected from the AC power source as long as it is connected to the wall outlet, even if this unit itself is turned off. This state is called the standby mode. In this state, this unit is designed to consume a very small quantity of power.

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

Verify Line Voltage Before Use

Your AVR 132 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.

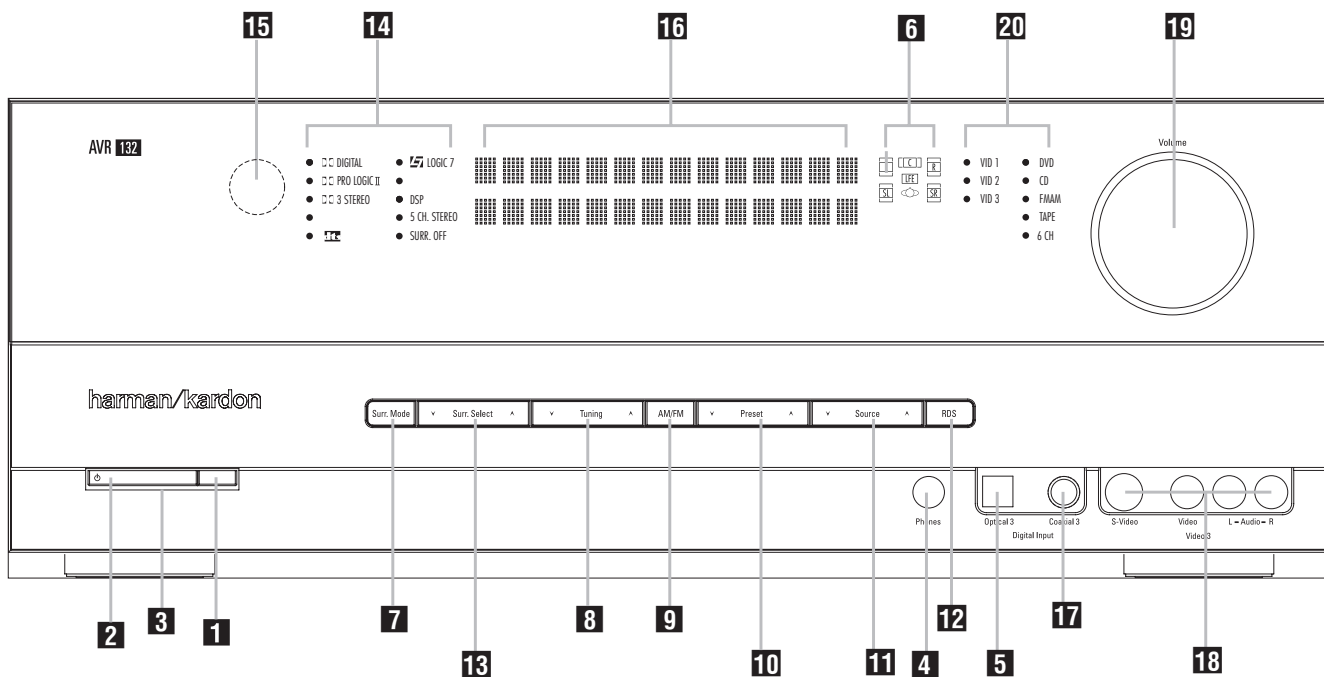
Unpacking

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** Digital Optical 3 Input
- 6** Speaker/Channel Input Indicator
- 7** Surround Mode Group Selector

- 8** Tuning
- 9** Tuner Band Selector
- 10** Preset Stations Selector
- 11** Input Source Selector
- 12** RDS Select Button
- 13** Surround Mode Selector
- 14** Surround Mode Indicators

- 15** Remote Sensor Window
- 16** Main Information Display
- 17** Digital Coax 3 Input
- 18** Video 3 input jacks
- 19** Volume Control
- 20** Input Indicators

1 Main Power Switch: Press this button to apply power to the AVR. When the switch is pressed in, the unit is placed in a Standby mode, as indicated by the orange LED **3**. 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; press it again to turn the unit off (to Standby). Note that the **Power Indicator 3** will turn blue 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 blue.

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

6 Speaker/Channel Input Indicators: These indicators are multipurpose, indicating either the speaker type selected for each channel or the incoming data-signal configuration. The left, center, right, right surround and left surround speaker indicators are composed of three boxes, while the subwoofer is a single box. The center box lights when a "Small" speaker is selected, and the two outer boxes light when "Large" speakers are selected. When none of the boxes are lit for the center, surround or subwoofer channels, no speaker has been selected for that position. (See page 16 for more information on configuring speakers.) The letters inside each of the center boxes display active input channels. For standard analog inputs, only the L and R will light, indicating a stereo input. When a digital source is playing, the indicators will light to display the channels begin received at the digital input. When the letters flash, the digital input has been interrupted. (See page 20 for more information on the Channel Indicators).

Front Panel Controls

7 Surround Mode Group Selector: Press this button to select the top-level group of surround modes. Each press of the button will select a major mode grouping in the following order:

Dolby Modes → DTS Digital Modes → DSP Modes → Stereo Modes → Logic 7 Modes

Once the button is pressed so that the name of the desired surround mode group appears in the **Lower Display Line 16**, press the **Surround Mode Selector 13** to cycle through the individual modes available. For example, press this button to select Dolby modes, and then press the **Surround Mode Selector 13** to choose from the various mode options.

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, **MANUAL TUNED** or **AUTO TUNED** will appear in the **Main Information Display 16** (see page 27 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 27 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 27 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's tuner. (See page 28 for more information on RDS).

13 Surround Mode Selector: Press this button to select from among the available surround mode options for the mode group selected. The specific modes will vary based on the number of speakers available, the mode group and if the input source is digital or analog. For example, press the **Surround Mode Group Selector 7** to select a mode grouping such as Dolby or Logic 7, and then press this button to see the mode choices available. For more information on mode selection, see page 21.

14 Surround Mode Indicators: Indicator will illuminate in front of the surround mode that is currently in use.

15 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.

16 Main Information Display: This display delivers messages and status indications to help you operate the receiver.

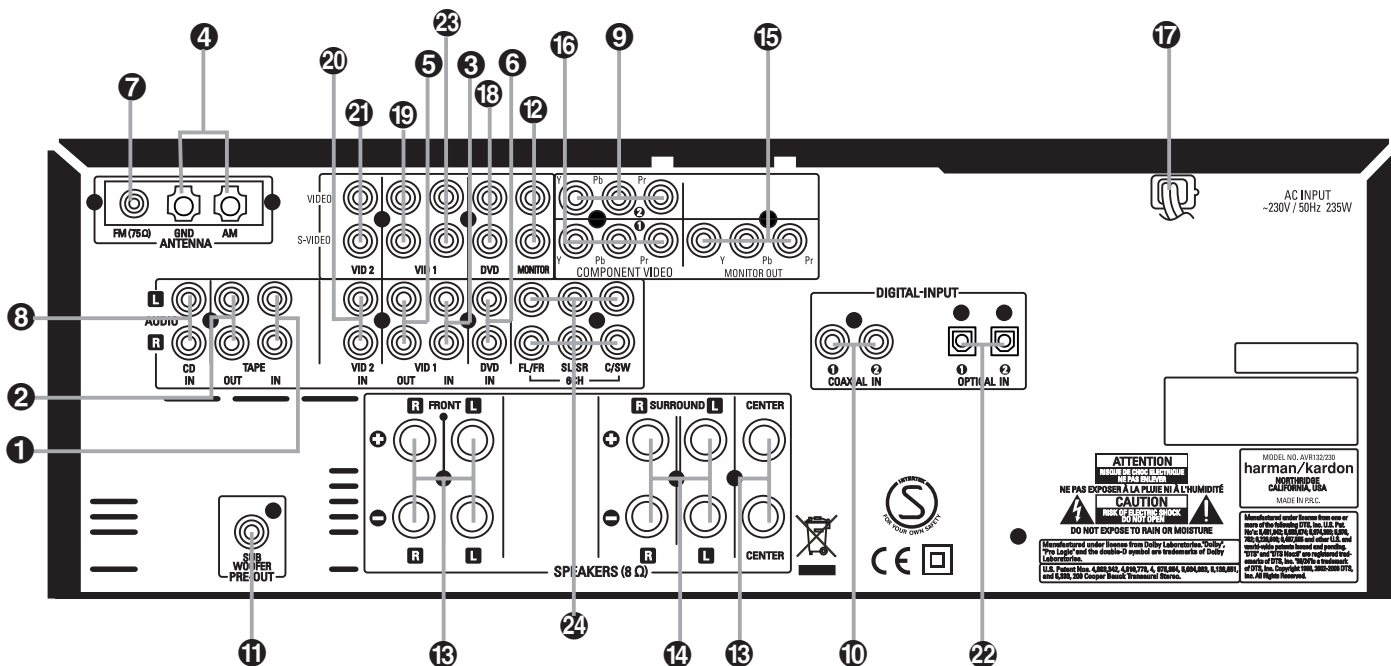
17 Digital Coax 3 Input: This jack is normally used for connection to the output of portable digital audio devices, video game consoles or other products that have a coax digital jack.

18 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.

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 Input indicators: Indicator will illuminate in front of the input that is currently being used as the source for the AVR.

Rear Panel Connections



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

- 10 Coaxial Digital Inputs
- 11 Subwoofer Output
- 13 Front/Center Speaker Outputs
- 14 Surround Speaker Outputs
- 15 Component Video Outputs
- 16 Video 1 Component Video Inputs
- 17 AC Power Cord
- 18 DVD Video Inputs

- 19 Video 1 Video Outputs
- 20 Video 2 Audio Inputs
- 21 Video 2 Video Inputs
- 22 Optical Digital Inputs
- 23 Video 1 Video Inputs
- 24 6-Channel Direct 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 DVD Audio Inputs: Connect these jacks to the analog audio jacks on a DVD or other video source.

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

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

9 Video 2 Component Video Inputs: Connect the Y/Pr/Pb component video outputs of an HDTV Set-top convertor, satellite receiver, or other video source device with component video outputs to these jacks.

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

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.

Rear Panel Connections

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 to the red (+) terminals on the speaker and the black (–) terminals on the AVR to the black (–) terminals on the speakers. (See page 12 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 to the red (+) terminals on the speakers and the black (–) terminals on the AVR to the black (–) terminals on the speakers. See page 12 for more information on speaker polarity.

15 Monitor Component Video Outputs: Connect these outputs to the component video inputs of a video projector or monitor. When a source connected to one of the two **Component Video Inputs** 9 16 is selected the signal will be sent to these jacks.

16 Video 1 Component Video Inputs: Connect the Y/Pr/Pb component video outputs of a DVD player to these jacks.

Note: All component inputs/outputs can be used for RGB signals too, in the same way as described for the Y/Pr/Pb signals, then connected to the jacks with the corresponding color. RGB connection is not possible if the source outputs a separate sync signal (see page 13).

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

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

22 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.

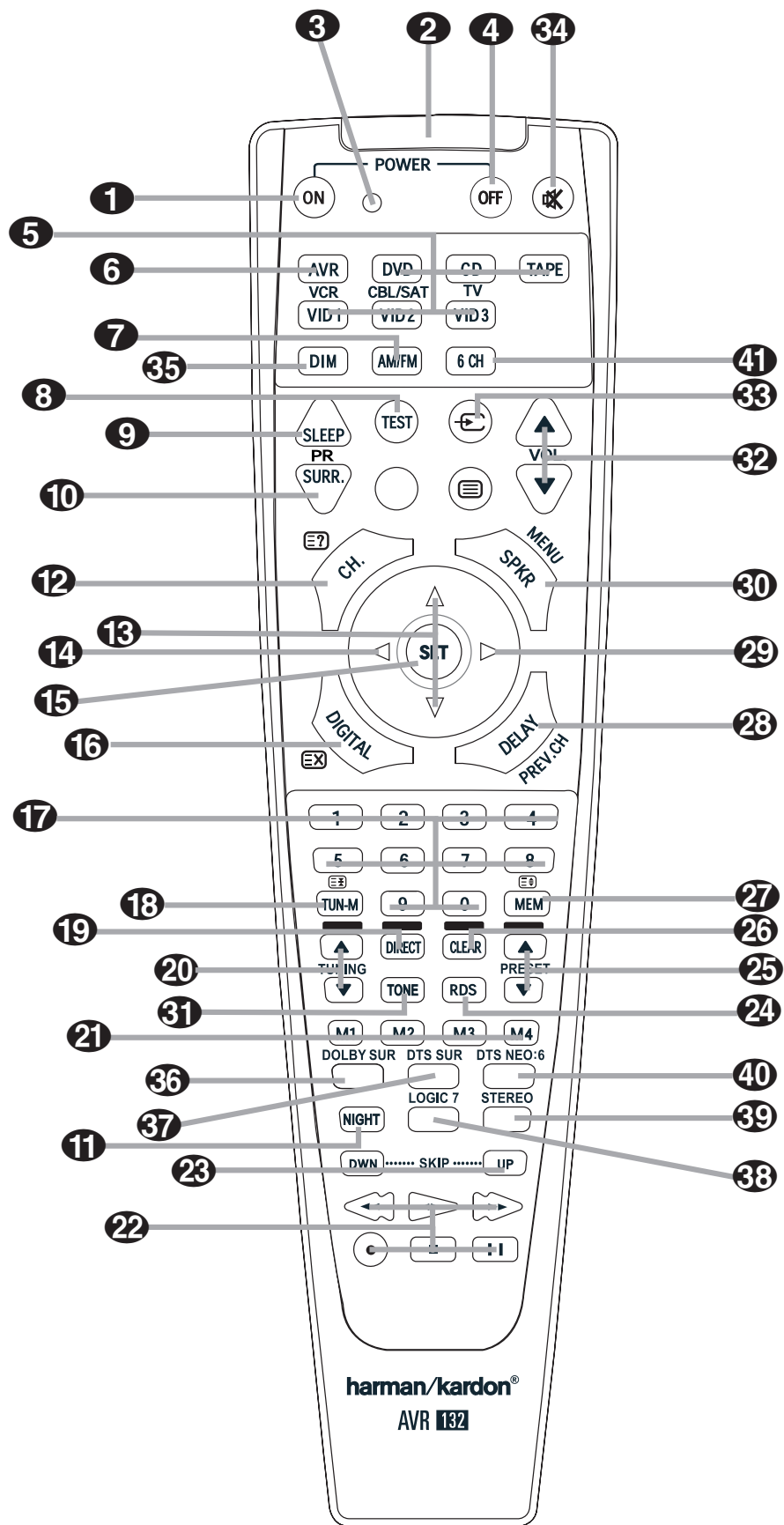
23 Video 1 Video Inputs: Connect these jacks to the **PLAY/OUT** composite or S-Video jacks on a VCR or other video source.

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

24 6-Channel Direct Inputs: These jacks are used for connection to source devices such as DVD-Audio or SACD players with discrete analog outputs.

Remote Control Functions

- 1 Power On Button
- 2 IR Transmitter Window
- 3 Program Indicator
- 4 Power Off Button
- 5 Input Selectors
- 6 AVR Selector
- 7 AM/FM Tuner Select
- 8 Test Button
- 9 Sleep Button
- 10 Surround Mode Selector
- 11 Night Mode
- 12 Channel Select Button
- 13 ▲/▼ Buttons
- 14 ◀ Button
- 15 Set Button
- 16 Digital Select
- 17 Numeric Keys
- 18 Tuner Mode
- 19 Direct Button
- 20 Tuning Up/Down
- 21 Macro Buttons
- 22 Transport Controls
- 23 Skip Up/Down Buttons
- 24 RDS Select Button
- 25 Preset Up/Down
- 26 Clear Button
- 27 Memory Button
- 28 Delay/Prev. Ch.
- 29 ▶ Button
- 30 Speaker Select
- 31 Tone Mode Button
- 32 Volume Up/Down
- 33 TV/Video Selector
- 34 Mute
- 35 Dim Button
- 36 Dolby Mode Select Button
- 37 DTS Digital Mode Select Button
- 38 Logic 7 Mode Select Button
- 39 Stereo Mode Select Button
- 40 DTS Neo:6 Mode Select Button
- 41 6-Channel Direct Input



NOTE: The function names shown here are each button's feature when used with the AVR. Most buttons have additional functions when used with other devices. See page 32 and 33 for a list of these functions.

Remote Control Functions

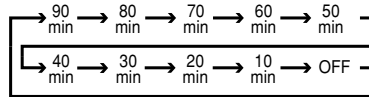
IMPORTANT NOTE: The AVR's remote may be programmed to control up to seven devices, including the AVR. Before using the remote, it is important to remember to press the **Input Selector** button **5** that corresponds to the unit you wish to operate. In addition, the AVR's remote is shipped from the factory to operate the AVR and most Harman Kardon CD or DVD players and cassette decks. The remote is also capable of operating a wide variety of other products using the control codes that are part of the remote. Before using the remote with other products, follow the instructions on page 29 to program the proper codes for the products in your system.

It is also important to remember that many of the buttons on the remote take on different functions, depending on the product selected using the Input Selectors. The descriptions shown here primarily detail the functions of the remote when it is used to operate the AVR. (See page 32 and 33 for information about alternate functions for the remote's buttons.)

- 1 Power On Button:** Press this button to turn on the power to a device selected by pressing one of the **Input Selectors 5** (except Tape).
- 2 IR Transmitter Window:** Point this window towards the AVR when pressing buttons on the remote to make certain that infrared commands are properly received.
- 3 Program Indicator:** This three-color indicator is used to guide you through the process of programming the remote. See page 29 for information on programming the remote.
- 4 Power Off Button:** Press this button to place the AVR or a selected device unit in the Standby mode.
- 5 Input Selectors:** Pressing one of these buttons will perform three actions at the same time. First, if the AVR is not turned on, this will power up the unit. Next, it will select the source shown on the button as the input to the AVR. Finally, it will change the remote control so that it controls the device selected. After pressing one of these buttons you must press the **AVR Selector** button **6** again to operate the AVR's functions with the remote.
- 6 AVR Selector:** Pressing this button will switch the remote so that it will operate the AVR's functions. If the AVR is in the Standby mode, it will also turn the AVR on.
- 7 AM/FM Tuner Select:** Press this button to select the AVR's tuner as the listening choice. Pressing this button when the tuner is in use will select between the AM and FM bands.

8 Test Tone: Press this button to begin the sequence used to calibrate the AVR's output levels. (See page 19 for more information on calibrating the AVR.)

9 Sleep Button: Press this button to place the unit in the Sleep mode. After the time shown in the display, the AVR 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). Note that this button is also used to tune channels when the TV, VCR and SAT receiver is selected using the **Input Selector 5**.

11 Night Mode: Press this button to activate the Night mode. This mode is available only with Dolby Digital encoded digital sources, and it preserves dialog (center channel) intelligibility at low volume levels (See page 26 for more information).

12 Channel Select Button: This button is used to start the process of setting the AVR's output levels with an external source. Once this button is pressed, use the **▲/▼** buttons **13** to select the channel being adjusted, then press the **Set** button **15**, followed by the **▲/▼** buttons again, to change the level setting. (See page 27 for more information.)

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

When the AVR remote is being programmed for the codes of another device, these buttons are also used in the "Auto Search" process (See page 29 for more information on programming the remote.)

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

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

16 Digital Select: Press this button to assign one of the digital inputs **5 17 10 22** to a source. (See page 25 for more information on using digital inputs.)

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

18 Tuner Mode: Press this button when the tuner is in use to select between automatic tuning and manual tuning. When the button is pressed so **MANUAL** appears in the **Main Information Display 16**, 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 **AUT** appears in the **Main Information Display 16**, pressing this button will change to monaural reception making even weak stations audible. (See page 27 for more information.)

19 Direct Button: Press this button when the tuner is in use to start the sequence for direct entry of a station's frequency. After pressing the button simply press the proper **Numeric Keys 17** to select a station (See page 27 for more information on the tuner).

20 Tuning Up/Down: When the tuner is in use, these buttons will tune up or down through the selected frequency band. If the **Tuner Mode** button **18** has been pressed or the **Band** button **9** on the front panel was held pressed so that **AUT** appears in the **Main Information Display 16**, pressing either of the buttons will cause the tuner to seek the next station with acceptable signal strength for quality reception. When the **MANUAL** appears in the **Main Information Display 16**, pressing these buttons will tune stations in single-step increments. (See page 27 for more information.)

Remote Control Functions

21 Macro Buttons: Press these buttons to store or recall a "Macro", which is a pre-programmed sequence of commands stored in the remote. (See page 30 for more information on storing and recalling macros.)

22 Transport Buttons: These buttons do not have any functions for the AVR, but they may be programmed for the forward/reverse play operation of a wide variety of CD or DVD players, and audio or video-cassette recorders. (See page 29 for more information on programming the remote.)

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

24 RDS Select Button: Press this button to display the various messages that are part of the RDS data system of the AVR's tuner. (See page 28 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's memory. When CD or DVD is selected using the **Input Selector** button **5**, these buttons may function as Slow Fwd/Rev (DVD) or "+10" (CD).

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

27 Memory Button: Press this button to enter a radio station into the AVR's preset memory. Two underline indicators will flash at the right side of the **Main Information Display 16**, you then have five seconds to enter a preset memory location using the **Numeric Keys 17**. (See page 27 for more information.)

28 Delay/Prev Ch.: Press this button to begin the process for setting the delay times used by the AVR when processing surround sound. After pressing this button, the delay times are entered by pressing the **Set** button **15** and then using the **▲/▼** buttons **13** to change the setting. Press the **Set** button again to complete the process. (See page 19 for more information.)

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

30 Speaker Select: Press this button to begin the process of configuring the AVR's Bass Management System for use with the type of speakers used in your system. Once the button has been pressed, use the **▲/▼** buttons **13** to select the channel you wish to set up. Press the **Set** button **15** and then select the speaker type (see page 16 for more information.)

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

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

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

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

When the AVR remote is being programmed to operate another device, this button is pressed with the **Input Selector** button **5** to begin the programming process. (See page 29 for more information on programming the remote.)

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

35 Dim Button: Press this button to activate the Dimmer function, which reduces the brightness of the front panel display, or turn it off entirely. The first press of the button shows the default state, which is full brightness by indicating **VFD FULL** in the **Main Information Display 16**. Press the button again within five seconds to reduce the brightness by 50%, as indicated by **VFD HALF**. Press the button again within five seconds and the main display will go completely dark. Note that this setting is temporary; the display will always return to full brightness when the AVR is turned on. In addition, both the **Power Indicator 3** and the blue accent lighting inside the volume control will always remain at full brightness regardless of the setting. This is to remind you that the AVR is still turned on.

36 Dolby Mode Selector: This button is used to select one of the available Dolby Surround processing modes. Each press of this button will select one of the Dolby Pro Logic II modes, Dolby 3 Stereo or Dolby Digital. Note that the Dolby Digital mode is only available with a digital input

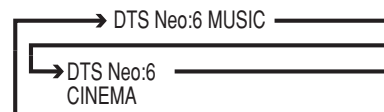
selected and the other modes only as long as a Dolby Digital source is not playing. See page 22 for the available Dolby surround mode options.

37 DTS Digital Mode Selector: When a DTS source is in use the AVR will select the appropriate mode automatically and no other mode will be available. Pressing this button will display the mode currently selected by the AVR's decoder, depending on the surround material played and the speaker setting.

38 Logic 7 Selector: Press this button to select one of the available Logic 7 surround modes. (See page 22 for the available Logic 7 options.)

39 Stereo Mode Selector: Press this button to select a stereo playback mode. When the button is pressed so that **DSP SURR OFF** appears in the **Main Information Display 16**, the AVR will operate in a bypass mode with true fully analog, two-channel left/right stereo mode with no surround processing or bass management as opposed to other modes where digital processing is used. When the button is pressed so that **SURROUND OFF** appears in the **Main Information Display 16**, you may enjoy a two-channel presentation of the sound along with the benefits of bass management. When the button is pressed so that **5 CHANNEL 0** appears, the stereo signal is routed to all five speakers, if installed. (See page 18 for more information on stereo playback modes).

40 DTS Neo:6 Mode Selector: Pressing this selector button cycles the AVR through the various DTS Neo:6 modes, which extract a five-channel surround field from two-channel program material (from PCM source or analog input signal). The first press selects the last DTS Neo:6 surround mode that was in use, and each subsequent press selects the next mode in the following order:



41 6-Channel Direct Input: Press this button to select the component connected to the **6-Channel Direct Input 24** as the audio. Note that when you wish to use the Six Channel Direct Input in conjunction with a video source, you must first select the video source by pressing one of the **Input Selectors 5**. Then press this button to choose the **6-Channel Direct Input 24** as the audio source.

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.

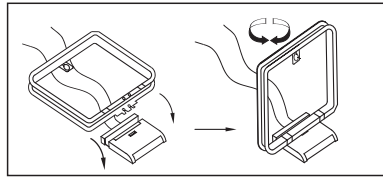
1. Connect the analog output of a CD player to the **CD** inputs **3**.

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.

3. Connect the output of any digital sources to the appropriate input connections on the AVR rear panel. Note that the **Optical** and **Coaxial** digital inputs **2/10 5/17** 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. Assemble the AM Loop Antenna supplied with the unit as shown below. Connect it to the **AM** and **GND** screw terminals **4**.



5. 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.

6. Connect the front, center and surround speaker outputs **13/14** to the respective speakers.

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

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

Cable with an area of 1.5 mm² may be used for short runs of less than 4 m. We do not recommend that you use cables with an area less than 1mm² due to the power loss and degradation in performance that will occur.

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

When connecting wires to the speakers, be certain to observe proper polarity. Remember to connect the "negative" or "black" wire to the same terminal on both the receiver and the speaker. Similarly, the "positive" or "red" wire should be connected to like terminals on the AVR and speaker.

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

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

7. 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**.

8. If an external multi-channel audio source with 5.1 outputs such as an external digital processor/decoder, DVD-Audio or SACD player is used, connect the outputs of that device to the **6-Channel Direct Inputs 24**.

Installation and Connections

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 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** ④ ②③ or **Video 2 In** jacks ②④ on the rear panel. The Audio and Video Record/In jacks on the VCR should be connected to the **Video 1 Out** jacks ⑤ ①③ on the AVR.

2. Although any video device may be connected to these jacks, we recommend connecting your video recorder to the **Video 1 Audio/Video Input Jacks** ③ ②③ so that you may take advantage of the fact that the remote control is preprogrammed with video recorder product codes for the Video 1 device.

For the same reason, we recommend connecting your cable TV converter or satellite receiver to the **Video 2 Audio/Video Input Jacks** ②④, and your television to the **Video 3 Audio/Video Input Jacks** ①⑧.

IMPORTANT: If you are only using the television as a display device (i.e., if you receive your television programs through a cable box or satellite receiver), do not connect the TV's outputs to the **Video 3 Audio/Video** and **S-Video Input Jacks** ①⑧, or to any other inputs on the AVR.

3. Connect the analog audio and video outputs of a DVD or laser disc player to the **DVD** jacks ⑥ ①③.

4. Connect the digital audio outputs of a CD, MD or DVD player, satellite receiver, cable box or HDTV converter to the appropriate **Optical** or **Coaxial Digital Inputs** ⑩②⑤ ①⑦.

Remember that the DVD source defaults to the **Coaxial 1 Digital Input** ②. All other sources default to their analog inputs, although any source may be assigned to any digital audio input on the receiver.

5. Connect the **Composite** and **S-Video** (if S-Video device is in use) **Monitor Output** ⑫ jacks on the receiver to the composite and S-Video input of your television monitor or video projector.

6. If your DVD player and monitor both have component video connections, connect the component outputs of the DVD player to the **Video 1 Component Video Inputs** ①⑥. Note that even when component video connections are used the audio connections must still be made to either the analog **DVD Audio Inputs** ⑥ or any of the **Coaxial** or **Optical Digital Input** jacks ⑩②⑤.

7. If another component video device is available, connect it to the **Video 2 Component Video Input** jacks ⑨. The audio connections for this device should be made to either the **Video 2 Input** jacks ②④ or any of the **Coaxial** or **Optical Digital Input** jacks ⑩②⑤.

8. If the component video inputs are used, connect the **Component Video Output** ⑮ to the component video inputs of your TV, projector or display device.

9. If you have a camcorder, video game or other audio/video device that is connected to the AVR on a temporary, rather than permanent basis, connect the audio, video and digital audio outputs of that device to the **Front Panel Inputs** ⑤ ①⑦ ①⑧. A device connected to the **Video 3 jacks** ①⑧ is selected as the Video 3 input, and connected to the digital jacks ⑤ ①⑦ it is selected as "Optical 3" or "Coaxial 3" input. (See page 16 for more information on input configuration.)

Video Connection Notes:

- Y/Pr/Pb Component, RGB (see page 14), or Composite video signals may only be viewed in their native formats and will not be converted to the other formats.
- All component inputs/outputs can be used for RGB signals too, in the same way as described for the Y/Pr/Pb signals, then connected to the jacks with the corresponding color. But this is only correct as long as only the three RGB video signals are output by the video source, with a sync signal in the "G" signal only, without any sync signal output separately by the source.

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).

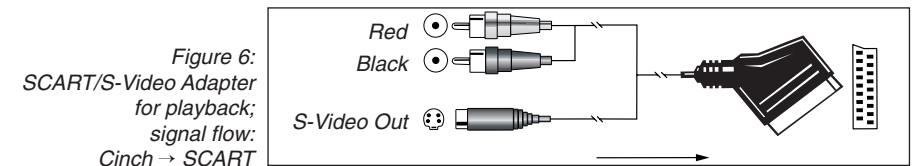
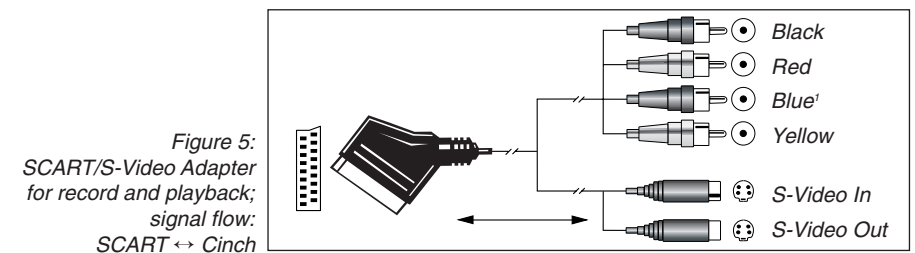
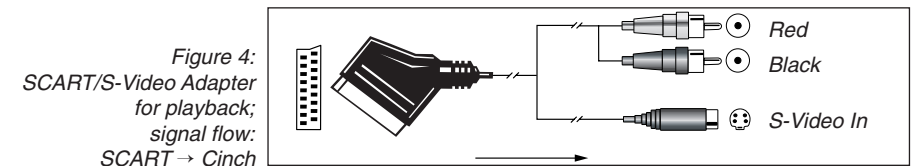
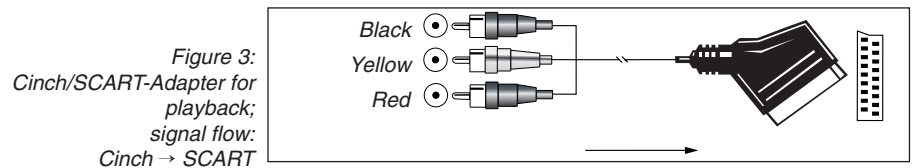
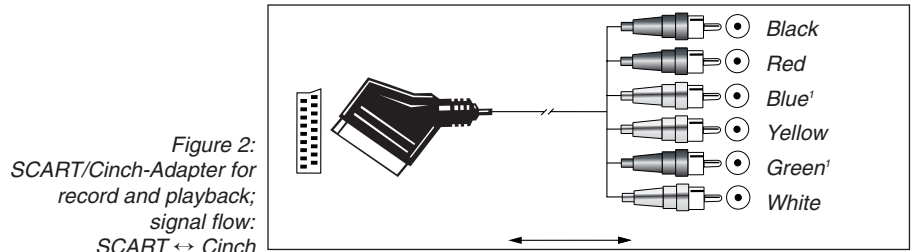
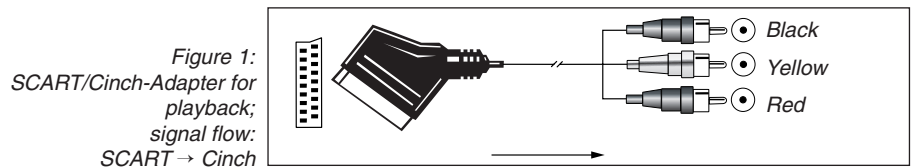
In that case the following Scart to Cinch adapters or cables are needed:

- 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 (and with a VCR connect the "Out" plugs to the "Out" jacks on the AVR). Note that with some adapter types it may be just turned around: If no signal is audible/ visible when the VCR is playing connect the "Out" plugs to the "In" jacks on the AVR and turned around. If the adapter plugs are not labeled in that way, pay attention to the signal flow directions as



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

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 does not convert the Video signal to S-Video or vice versa. Thus both connections must be made from the AVR 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.

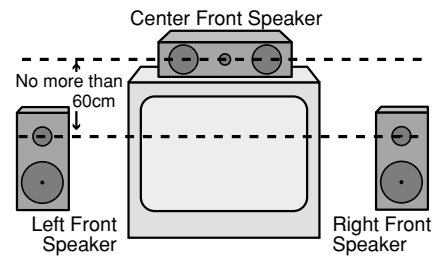
Depending on the specifics of your room acoustics and the type of speakers in use, you may find that imaging is improved by moving the front-left and front-right speakers slightly forward of the center-channel speaker. If possible, adjust all front loudspeakers so that they are aimed at ear height when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

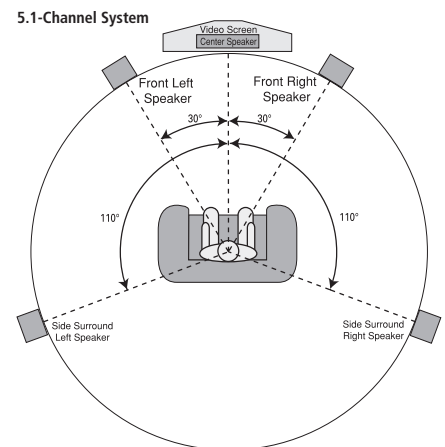
Surround speakers should be placed on the side walls of the room, at or slightly behind the listening position. The center of the speaker should face you.

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.

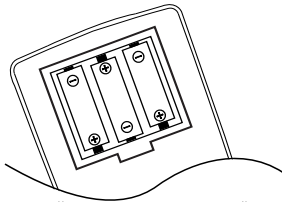
System Configuration

Once the speakers have been placed in the room and connected, the remaining steps are to program the system configuration memories. With the AVR 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 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 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 blue to confirm that the unit is on, and the **Main Information Display 16** will also light up.

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.

Settings to be Made With Each Input Used

The AVR features an advanced memory system that enables you to establish different settings for the speaker configuration, digital input, surround mode, delay times and output levels for each input source. This flexibility enables you to custom tailor the way in which you listen to each source and have the AVR 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, 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 Logic 7 Music as the surround mode, all speaker positions set 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.

Input Setup

The first step in configuring the AVR 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 in the **Main Information Display 16**, and Indicator will illuminate next to the input's name in the front panel **Input Indicators 20**. 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 **16** on the remote. Within five seconds, make your input selection using the **▲/▼** buttons **13** on the remote until the desired digital or analog input is shown in the **Main Information Display 16**. Then press the **Set** button **15** to enter the new digital input assignment.

After the setting has been made with one input, repeat as described above with all inputs in use. The digital input associated with the input selected can also be changed at any time later and the AVR's memory system will keep the settings until they are changed again.

Speaker Setup

This setup tells the AVR 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 **LARGE** setting if the speakers for a particular position are traditional full-range loudspeakers that are capable of reproducing sounds below 100Hz. Use the **SMALL** 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.

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

1. Press the **Speaker** button **30** on the remote. The words **SPEAKER SIZE** will appear in the **Main Information Display 16**.
2. Press the **Set** button **15**.
3. When **FRONT SPEAKER** appears in the **Main Information Display 16** press the **Set** button **15** to continue.
4. Press the **▲/▼** buttons **13** on the remote until either **FRONT LARGE** or **FRONT 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 **Set** button **15**, and then press the **▲/▼** buttons **13** on the remote to change the display to **CENTER SPEAKER**.
6. Press the **Set** button **15** again, and use the **▲/▼** buttons **13** on the remote 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

System Configuration

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. Note that for the use of Logic 7C surround mode a Center speaker is needed, but Logic 7M works well without a Center too.

7. When you have completed your selection for the center channel, press the **Set** button **15**, and then press the $\blacktriangle/\blacktriangledown$ buttons **13** on the remote to change the display to **SURR SPEAKER**.

8. Press the **Set** button **15** again, and then use the $\blacktriangle/\blacktriangledown$ buttons **13** on the remote 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 **Set** button **15**, and then press the $\blacktriangle/\blacktriangledown$ buttons **13** on the remote to change the display to **S - W SPEAKER**.

10. Press the **Set** button **15**, and then press the $\blacktriangle/\blacktriangledown$ buttons **13** on the remote 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, press the arrow buttons **13** so that **SUB NONE** appears in the display. When this option is selected, all bass information will be routed to the front left/right "main" speakers.

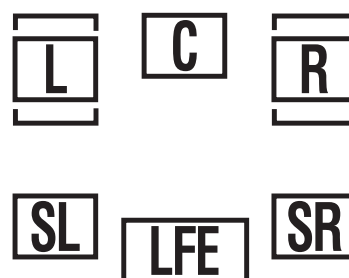
- If a subwoofer is connected to the AVR, you have the option to have the front left/right "main" speakers reproduce bass frequencies at all times, and have the subwoofer operate only when the AVR is being used with a digital source that contains a dedicated Low Frequency Effects, or LFE soundtrack. 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** 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** so that **SUB L/R+LFE** appears in the display. When this option is selected, a "complete" feed will be sent to the front left/right "main" speakers, and the subwoofer will receive the front left and right bass frequencies 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 **Set** button **15** twice or simply wait for three seconds until the display returns to the normal mode.

To assist in making these settings, the icons in the **Speaker/Channel Input Indicators 6** 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.



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 22 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, it is best to leave the default setting of Logic 7 Music 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 **7** on the front or **10** and the $\blacktriangle/\blacktriangledown$ buttons **13** on the remote until the desired surround mode's name appears in the **Main Information Display 16**.

As the modes are changed, Indicator will illuminate next to the mode names in the **Surround Mode Indicators 14** on the front panel.

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

System Configuration

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

Configuring the Surround Off (Stereo) Modes

For superior reproduction of two-channel program materials, the AVR offers two Stereo modes: an analog Stereo-Direct mode that bypasses the digital signal processing circuitry for a completely analog signal path that preserves the purity of the original signal, and a digital mode that is capable of providing bass management for optimal distribution of the low frequencies between smaller speakers and a subwoofer.

Stereo-Direct (Bypass) Mode

When the analog Stereo-Direct mode is selected by pressing the **Stereo Mode Selector** 39 until **SURROUND OFF** appears in the **Main Information Display** 16 and the **Surround Mode Indicator** 14 for Surround Off is lit, the AVR will pass the analog source material directly through to the front left and right speakers, bypassing the digital processing circuitry.

In this mode, the front left and right speakers will automatically be configured as **LARGE**; it is not possible to configure these speakers as **SMALL**.

When the AVR is in the Stereo Bypass mode you may still configure the subwoofer output so that it is either turned off, with a full-range signal going to the front left/right speakers, or you may configure it so that the subwoofer feed is activated. The factory default setting is to have the subwoofer turned off for this mode, but you may change that setting by following these steps:

1. Press the **Speaker Button** 30.
2. Press the **Set Button** 15 to activate the configuration menu.
3. Press the **▲/▼ Buttons** 13 on the remote to select the desired option. **SUB NONE** turns off the feed to the subwoofer, while **SUB <L+R>** turns it on.
4. When the desired setting has been entered, press the **Set Button** 15 to return to normal operation.

Stereo-Digital Mode

When the Stereo-Direct (Bypass) mode is in use a full range signal is always sent to the front left/right speakers. By its nature, that option does not pass the signal through the AVR's digital signal processing, creating the requirement for full-range speakers. If your front speakers are bandwidth limited, "satellite" speakers, we recommend that you do NOT use the Bypass mode, but rather use the **DSP SURROUND OFF** mode for stereo listening.

To listen to programs in the two-channel stereo mode while taking advantage of the bass management system, press the **Stereo Mode Selector** 39 until **SURROUND OFF** appears in the **Main Information Display** 16 and the **DSP SURROUND OFF Surround Mode Indicators** 14 both light up. When only the **SURR - OFF Surround Mode Indicators** 14 is lit you are in the Stereo-Direct (Bypass) mode.

When this mode is in use, the front left/right speakers and subwoofer may be configured to meet the requirements of your specific speakers using the steps shown in the Speaker Setup section on page 16.

Delay Settings

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

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 22) 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. Press the **Delay Button** 28.
4. When **FRONT DELAY** appears in the **Main Information Display** 16 press the **Set Button** 15.
5. Press the **▲/▼ Buttons** 13 on the remote to enter the distance from the front left/right speakers to your listening position. Press the **Set Button** 15 when this is complete.
6. Press the **▲/▼ Buttons** 13 on the remote so that **CENTER DELAY** appears in the **Main Information Display** 16 and press the **Set Button** 15.
7. Press the **▲/▼ Buttons** 13 on the remote to enter the distance from the center speaker your listening position. Press the **Set Button** 15 when this is complete.

System Configuration

8. Press the ▲/▼ **Buttons 13** on the remote so that **SURR DELAY** appears in the Lower Display Line and press the **Set Button 15**.

9. Press the the ▲/▼ **Buttons 13** on the remote to enter the distance from the surround speakers to your listening position. Press the **Set Button 15** when this is complete.

10. When all adjustments have been made, the unit will return to normal operation in five seconds.

Night Mode Settings

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

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

Next press the **Night button 11** on the remote. When the button is pressed, the words **D - RANGE** (Dynamic Range) followed by the current setting (MID, MAX, OFF) will appear in the **Main Information Display 16**. 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.

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, 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.

For the easiest set-up, follow these steps while seated in the listening position that will be used most often:

1. Make certain that all speaker positions have been properly configured for their "large" or "small" settings (as outlined above) and turn off the OSD system if it is in use.
2. Adjust the volume so that it is at **-15**, as shown in the on-screen display or **Main Information Display 16**.

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 Surround Mode Indicator 14** on the frontdisplay lights up.

2. Press the **Test Tone button 8** on the remote. The words **TEST - T F L D B** will appear in the **Main Information Display 16**.

3. The test noise will immediately begin to circulate in the speakers in a clockwise rotation, pausing at each position for two seconds. As the test noise rotates the speaker positions **F L, C, F R, S R, S L** (Front Left, Center, Front Right, Surround Right, Surround Left) will be shown in the **Main Information Display 16**. As an added assist, while the test noise is circulating, the proper channel position will also be indicated in the **Speaker/Channel Indicators 6** by a blinking letter within the correct channel. Turn up the volume now until you can hear the noise clearly.

System Configuration

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 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.

When all channels have the same output level, turn the **Volume 19 32** down to about -40dB, otherwise the listening level may be too high as soon as the source's music starts to play. Afterwards press the **Test Tone Selector 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 16** or its Indicator will illuminate in the **Surround Mode Indicators field 14**, 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 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 30 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, also if it's turned off completely, unless it will be reset (see page 34). Having completed the setup and configuration process for your AVR, 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, 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 On or Off

• When using the AVR 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 blue. 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 33**.

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.

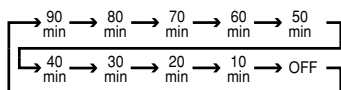
When the remote is used to turn the unit "off" it is actually placing the system in a Standby mode, as indicated by the orange color of the **Power Indicator 3**.

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 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:



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 OFF** message appears in the **Main Information Display 16**.

Source Selection

• To select a source, press any of the **Source Selector** buttons on the remote **5 6 7 33**.

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 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 18**, **Optical Digital 3 Input 5** or the **Coaxial Digital 3 Input 17** 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 16** and a green LED will light next to the selected input's name in the front-panel **Input Indicators 20**.

• When a pure audio input (CD, Tuner, Tape, 6/8 Channel Input) is selected, the last video input used remains routed to the **Video Outputs 5 19** 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. If a component video source is connected to the **Video 1 16** or **Video 2 9** **Component Inputs**, it will be routed to the **Component Video Outputs 15**. Make certain that your TV is set to the proper input to view the appropriate video signal (composite, S-Video or component video, see Notes for S-Video on page 13).

Controls and Use of Headphones

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

• To temporarily silence all speaker outputs press the **Mute** button **34**. This will interrupt the output to all speakers and the headphone jack, but it will not affect any recording or dubbing that may be in progress. Press the **Mute** button **34** again to return to normal operation.

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

• To set the output of the AVR so that the output is "flat," with the Tone controls and the Balance control de-activated, press the **Tone Mode** button **31** button once or twice so that the words **Tone Out** appear momentarily in the **Main Information Display 16**. To return the tone controls to an active condition, press the **Tone Mode 31** button once or twice so that the words **Tone In** momentarily appear in the **Main Information Display 16**.

• To change the Bass or Treble Control settings press the **Tone Mode Button 31** until the words Bass or Treble appear momentarily in the **Main Information Display 16**. Press the **Set Button 15** followed by the **Left/Right Buttons 14 29** to adjust the setting. When done, press the **Tone Mode Button 31** again to exit the Tone Mode Menu.

• 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 16** and all speakers will be silenced. When the headphone plug is removed, the audio feed to the speakers will be restored.

• When the headphones are in use, you may take advantage of the Dolby Headphone modes to bring added spaciousness to headphone listening. Press the **Dolby Mode Select Button 36** or the **Surround Mode Group Selector 7** to cycle through the three Dolby Headphone modes to select the one that you prefer.

Surround Mode Selection

One of the most important features of the AVR 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 fifteen listening modes are available on the AVR. 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 or with the Harman Kardon's exclusive Logic 7 Movie Mode, to create a full range discrete 5.1 channel surround signal from surround encoded programs with a stereophonic left and right rear signal, just as it was recorded in real life (e.g. sound being recorded from left rear side will be heard

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 5.1	When the speaker configuration is set for 5.1-channel operation, the DTS 5.1 mode is available when DVD, audio-only music or laserdiscs encoded with DTS data are played. DTS 5.1 provides up to five separate main audio channels and a special dedicated low-frequency channel.	
DOLBY PRO LOGIC II MOVIE MUSIC DOLBY PRO LOGIC	Dolby Pro Logic II is the latest version of Dolby Laboratory's benchmark surround technology that decodes full-range, discrete left, center right, right surround and left surround channels from matrix surround encoded programs and conventional stereo sources when an analog input or a digital input with PCM or Dolby Digital 2.0 recordings is in use. The Dolby Pro Logic II Movie mode is optimized for movie soundtracks that are recorded with matrix surround, by creating separate center, rear left and rear right signals. while the Pro Logic II Music mode should be used with musical selections that are recorded with matrix surround or even with normal stereo mode, creating separate rear left and rear right signals in any case. The Pro Logic II mode creates compelling five-channel surround sound from conventional stereo recordings.	
Logic 7 Cinema Logic 7 Music Logic 7 Enhance	Exclusive to Harman Kardon for AV receivers, Logic 7 is an advanced mode that extracts the maximum surround information from either surround-encoded programs or conventional stereo material. Depending on the number of speakers in use and the selection made in the SURROUND SELECT menu, the "5.1" versions of Logic 7 modes are available when the 5.1 option is chosen, while the "7.1" versions of Logic 7 produce a full sound field presentation, including back surround speakers when the "6.1/7.1" option is chosen. The Logic 7 C (or Cinema) mode should be used with any source that contains Dolby Surround or similar matrix encoding. Logic 7 C delivers increased center-channel intelligibility, and more accurate placement of sounds with fades and pans that are much smoother and more realistic than with former decoding techniques. The Logic 7 M or Music mode should be used with analog or PCM stereo sources. Logic 7 M enhances the listening experience by presenting a wider front soundstage and greater rear ambience. Both Logic 7 modes also direct low-frequency information to the subwoofer (if installed and configured) to deliver maximum bass impact. The Logic 7 E (or Enhance) mode is an extension of the Logic 7 modes that is primarily used with musical programs and is available with the 5.1 surround mode option selected only. Logic 7 E adds additional bass enhancement that circulates low frequencies in the 40Hz to 120Hz range to the front and surround speakers to deliver a less localized soundstage that appears broader and wider than when the subwoofer is the sole source of bass energy.	
DTS 96/24	DTS 96/24 is a high-resolution format that uses a 96kHz sampling rate with 24 bits to produce extended information that improves the harmonics of the source material. The AVR is capable of automatically detecting and decoding DTS 96/24 materials and delivering them as the artist intended.	
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

Operation

Surround Mode Chart

MODE	FEATURES	DELAY TIME RANGE
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) Surround Off (Bypass) DSP Surround Off	These modes turn off all surround processing and present the pure left- and right-channel presentation of two-channel stereo programs. The Surround Off (Bypass) mode may only be used with analog source inputs, as it preserves the analog format of the audio signal for its entire path of travel through the receiver to the speaker and subwoofer outputs, bypassing all digital processing. Digital bass management is not available in Surround Off mode. The DSP Surround Off mode can be used with either an analog or digital input, as the signal undergoes digital bass management to optimize the distribution of the low frequencies between the main speakers and a subwoofer.	No surround channels
Dolby Virtual Speaker Reference Wide	Dolby Virtual Speaker technology uses a next-generation advanced algorithm to reproduce the dynamics and surround sound effects of a precisely placed 5.1-channel speaker system using only front left and right speakers. In the Reference Mode, the apparent width of the sound across the front image is defined by the distance between the two speakers. The Wide Mode provides a wider, more spacious front image when the two speakers are close together.	No surround channels
Dolby Headphone DH	Dolby Headphone enables ordinary stereo headphones to portray the sound of a five-speaker surround-playback system.	No surround channels

Operation

from that side only, for more details see chart on page 22).

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 25).

To create wide, enveloping sound field environments and defined pans and flyovers with all analog stereo recordings select the Dolby Pro Logic II Music mode or Harman Kardon's exclusive Logic 7 Music mode for a dramatic improvement in comparison to the Dolby Pro Logic (I) mode of former times.

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 or Logic 7, when they are broadcast via conventional TV stations, cable, pay TV and satellite transmission. In addition, a growing number of made-for-television programs, sports broadcasts, radio dramas and music CDs are also recorded in surround sound. You may view a list of these programs at the Dolby Laboratories Web site at www.dolby.com.

Even when a program is not listed as carrying intentional surround information, you may find that the Dolby Pro Logic II, Dolby 3 Stereo or Logic 7 modes often deliver enveloping surround presentations through the use of the natural surround information present in all stereo recordings.

However, for stereo programs without any surround information the Theater, Hall and 5CH Stereo modes should be tried (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 Group Selector Button 7** to scroll through the list of available surround groups (for example, any Dolby mode or Logic 7 mode). Next press the **Surround Mode Selector Button 13** to choose the specific mode within the desired group (for example, within the Dolby mode group the options are Dolby Pro Logic, Dolby Pro Logic II Music, Dolby Pro Logic II Movies and Dolby 3 Stereo). To select a surround mode using the remote, any of the surround mode selector buttons **10 35 37 38 39 40** until the desired mode appears. As you press the buttons, the Surround mode name will appear in the **Main Information Display 16**. As the surround mode changes, a blue LED will light next to the current mode in the **Surround Mode Indicators list 14** on the front panel. 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 16** 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 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 16**.

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 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 22 5 17** of the AVR. 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, 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 **2 10** or front panel **5 17**.

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

Please note that some DVD players are shipped with their output set for Dolby Digital only. To insure that DTS data is being sent to the AVR, please check the setup menu system on your DVD player to make certain that DTS data output is enabled.

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 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).

Operation

Connections may be made to the **Optical** or **Coaxial** inputs **10** **22** on the rear panel or front panel **5** **17**.

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 **16** and then use the **▲/▼** buttons **13** on the remote until the desired choice appears in the **Main Information Display 16**, then press the **Set** button **15** to confirm the choice.

When a PCM source is playing, a brief message PCM will appear in the **Main Information Display 16**. During PCM playback you may select any surround mode as described on pages 21, 22 and 23 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. Connect the digital outputs from DVD players, HDTV receivers, satellite systems or CD players to the **Optical** or **Coaxial** inputs on the rear or front panel **10** **22** **5** **17**. In order to provide a backup signal and a source for analog stereo recording, the analog outputs provided on digital source equipment should also be connected to their appropriate inputs on the AVR rear panel (e.g., connect the analog stereo audio output from a DVD to the **DVD** inputs **6** on the rear panel when you connect the source's digital outputs).

When playing a digital source such as DVD, first select its input using the remote or front panel controls as outlined in this manual in order to feed its video signal (if any) to the TV monitor and to provide its analog audio signal for recording. When the digital input appropriate with the DVD player is not selected automatically (due to the input settings made earlier during the system configuration, see page 16), select the digital source by pressing the **Digital Input Selector** button **16** and then using the **▲/▼** buttons **13** on the remote to choose any of the **OPTICAL (OPT)** or **COAXIAL (COAX)** inputs, as they appear in the **Main Information Display 16**. When the digital source is playing, the AVR 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.

Digital Status Indicators

When a digital source is playing, the AVR 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 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, the AVR will display a variety of messages to indicate the type of bitstream received. These messages will appear shortly after an input or surround mode is changed, and will remain in the **Main Information Display 16** for about five seconds before the display returns to the normal surround mode indication.

Surround Mode Types

For Dolby Digital and DTS sources, a three digit indication will appear, showing the number of channels present in the data. An example of this type of display is 3/2/1.

The first number indicates how many discrete front channel signals are present.

- A 3 tells you that separate front left, center and front right signals are available. This will be displayed for Dolby Digital 5.1 and DTS 5.1 programs.
- A 2 tells you that separate front left and right signals are available, but there is no discrete center channel signal. This will be displayed for Dolby Digital bit streams that have stereo program material.
- A 1 tells you that there is only a mono channel available in the Dolby Digital bitstream.

The middle number indicates how many discrete surround channel signals are present.

- A 2 tells you that separate surround left and right signals are available. This will be displayed for Dolby Digital 5.1 and DTS 5.1 programs.
- A 1 tells you that there is only a single, surround encoded surround channel. This will appear for Dolby Digital bit streams that have matrix encoding.
- A 0 indicates that there is no surround channel information. This will be displayed for two-channel stereo programs.

The last number indicates if there is a discrete Low Frequency Effects (LFE) channel. This is the ".1" in the common abbreviation of "5.1" sound and it is a special channel that contains only bass frequencies.

- A .1 tells you that an LFE channel is present. This will be displayed for Dolby Digital 5.1 and DTS 5.1 programs, as available.
- A 0 indicates that there is no LFE channel information available. However, even when there is no dedicated LFE channel, low frequency sound will be present at the subwoofer output when the speaker configuration is set to show the presence of subwoofer.

An **UNLOCK** message may appear in the **Lower Display Line 16**. This is your indication that the digital audio data stream has been interrupted or is no longer present. When that occurs, the unit's digital signal processor has no signal to lock onto, and is thus "unlocked." You may see this message when a DVD is first started until the stream is playing and the processor determines which mode to apply; or any time the data stream is stopped or paused, such as when the menus of some discs are displayed or when the player is switching between the different sections of a disc. You may also see the message when a satellite receiver, cable set-top or HDTV tuner is in use if the digital audio is temporarily interrupted when channels are changed or when a cable box switches from a channel with a digital data stream to a channel with analog audio only. The **UNLOCK** message is normal, and does not indicate any problem with your receiver. Rather, it tells you that the incoming data has simply been paused or is not present for a variety of possible reasons.

When Dolby Digital 3/2/1 or DTS 3/2/1 signals are being played, the AVR will automatically switch to the proper surround mode, and no other processing may be selected. When a Dolby Digital signal with a 3/1/0 or 2/0/0 signal is detected you may select any of the Dolby surround modes.

It is always a good idea to check the readout for the channel data to make certain that it matches the audio logo information shown on the back of a DVD package. In some cases you will see indication for "2/0/0" even when the disc contains a full 5.1, or 3/2/1 signal. When this happens, check the audio output settings for your DVD player or the audio menu selections for the specific disc being played to make certain that the player is sending the correct signal to the AVR.

In addition to the **Bitstream Indicators**, the AVR 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.

Operation

These indicators are the L/C/R/SL/SR/LFE letters that are inside the center boxes of the **Speaker/Channel Input Indicators** in the front panel **6**. 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.

NOTE: Many DVD discs are recorded with both "5.1" and "2.0" versions of the same soundtrack, the "2.0" version often is used with other languages. When playing a DVD, always be certain to check the type of material on the disc. Most discs show this information in the form of a listing or icon on the back of the disc jacket. When a disc does offer multiple soundtrack choices you may have to make some adjustments to your DVD player (usually with the "Audio Select" button or in a menu screen on the disc) to send a full 5.1 feed to the AVR or to select the appropriate audio track and thus language ("2.0" audio tracks can be played with all Pro Logic II or Vmax modes, see "Dolby Digital" on page 25). It is also possible for the type of signal feed to change during the course of a DVD playback. In some cases the previews of special material will only be recorded in 2.0 audio, while the main feature is available in 5.1 audio. As long as your DVD player is set for 6-channel output, the AVR will automatically sense changes to the bitstream and channel count and reflect them in these indicators.

The letters used by the **Speaker/Channel Input Indicators** **6** also flash to indicate when a bitstream has been interrupted. This will happen when a digital input source is selected before the playback starts, or when a digital source such as a DVD is put into a Pause mode. The flashing indicators remind you that the playback has stopped due to the absence of a digital signal and not through any fault of the AVR. This is normal, and the digital playback will resume once the playback is started again.

Night Mode

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

The Night mode may be engaged when a Dolby Digital DVD is playing by pressing the **Night Button** **11** on the remote. Next, press the **▲/▼** buttons **13** to select either the middle range or full compression versions of the Night mode. To turn the Night mode off, press the **▲/▼** buttons **13** until the message in the lower third of the video display and the **Main Information Display** **16** reads **D - RANGE OFF**.

The Night mode may also be selected to always be on at either level of compression as soon as the Dolby Digital mode is turned on using the options in the Night Mode settings. See page 19 for information on using this option.

IMPORTANT NOTES ON DIGITAL PLAYBACK:

1. When the digital playback source is stopped, or in a pause, fast forward or chapter search mode, the digital audio data will momentarily stop, and the channel position letters inside the **Speaker/Channel Indicators** **6** will flash. This is normal and does not indicate a problem with either the AVR or the source machine. The AVR 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 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.
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 will automatically sense the type of digital surround encoding used 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, 5CH Stereo or Logic 7, except with special audio tracks (see indication "Dolby Digital" on previous page) or data format selected (see "PCM" on previous page).
5. When a Dolby Digital or DTS source is playing, it is not possible to make an analog recording using the **Tape** **2** or **Video 1** **5** record outputs, if the source is connected to any digital input of the AVR only. But the analog two channel signal of that source, the "Downmix" to

Stereo or Dolby Surround, can be recorded by connecting its analog audio outputs to the appropriate analog inputs (e.g. DVD) of the AVR, even if the digital input of the AVR remains selected. Additionally, the digital signals will be passed through to the **Digital Audio Outputs** **9**.

Tape Recording

In normal operation, the audio or video source selected for listening through the AVR 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.

Output Level Trim Adjustment

Normal output level adjustment for the AVR is established using the test tone, as outlined on page 20. 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 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** **34**.

Once the reference level has been set, press the **Channel Select** button **13** and note that **FRONT LEVEL** will appear in the **Main Information Display** **16** for five seconds. To change the level, first press the **Set** button **15**, and then use the **▲/▼** buttons **13** to raise or lower the level. DO NOT use the volume control, as this will alter the reference setting.

Once the change has been made, press the **Set** button **15** and then press the **▲/▼** buttons **13** to select the next output channel location that you wish to adjust. To adjust the subwoofer level, press the **▲/▼** buttons **13** until **W O O F E R L E V E L** appears in the **Main Information Display** **16** (only available if the subwoofer was selected during the speaker configuration, see page 16).

Operation

Press the **Set** button **15** when the name of the desired channel appears in the **Main Information Display 16** 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 **Set** button **15** twice, the AVR 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 19) correspondingly (and vice versa) and will remain in the AVR's memory system, even when the unit is turned off. With Stereo modes the adjustment procedure described above is the only way to trim the output level.

6-Channel Direct Input

The AVR is equipped for future expansion through the use of optional, external adapters for formats that the AVR may not be capable of processing. When an adapter is connected to the **6-Channel Direct Input 24**, you may select it by pressing the **6-Ch Direct Input Selector 41**. The 6-Channel Direct Input may also be selected by pressing the **Input Source Selector** button **11** on the front panel until the words **6 CH DIRECT** appear in the **Main Information Display 16**, and a blue LED lights next to **6 CH** in the **Input Indicators 20**.

Note that when the 6-Channel Direct Input is in use, you may not select a surround mode, as the external decoder determines processing. In addition, there is no signal at the record outputs when the 6-Channel Direct Input is in use.

Display Brightness

The AVR's front panel **Main Information Display 16** 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.

You can also adjust the Display Brightness by pressing the **Dim Button 45** on the remote control. Note that the blue lighting inside the volume control and the **Power Indicator 3** will remain lit at normal brightness to remind you that the unit is still turned on.

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 1 week, after which time all information must be reentered.

Tuner Operation

The AVR'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 button is pressed so that **AUTO** appears in the **Main Information Display 16** each press of the **Tuning Selectors 8 20** will put the tuner in a scan mode that seeks the next higher or lower frequency station with acceptable signal strength. An **AUTO ST TUNED** indication will momentarily appear when the station stops at a stereo FM station, and an **AUTO TUNED** indication will momentarily appear when an AM or monaural FM station is tuned. Press the Tuning buttons again to scan to the next receivable station.

When the button is pressed so that **MANUAL** appears in the **Main Information Display 16** each tap of the Selector will increased or decrease the frequency by one increment. When the tuner receives a strong enough signal for adequate reception, **MANUAL TUNED** will appear in the **Main Information Display 16**.

4. Stations may also be tuned directly by pressing the **Direct** button **19**, and then pressing the **Numeric Keys 17** that correspond to the station's frequency. The desired station will automatically be tuned after the latest number is entered. If you press an incorrect button while entering a direct frequency, press the **Clear** button **28** 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 so that **MANUAL** appears momentarily in the **Main Information Display 16** and then goes out.

Preset Tuning

Using the remote, up to 30 stations may be stored in the AVR'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 two underscore lines will appear in the **Main Information Display 16**.
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 **Main Information Display 16**.
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.

Operation

RDS Operation

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

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

RDS Tuning

When an FM station is tuned in and it contains RDS data, the AVR will automatically display the station's call sign or other program service in the **Main Information Display 16**.

RDS Display Options

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

- The station's call letters (with some private stations other information too).
- The station's frequency (**FREQ**).
- 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.

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 16** 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.

Program Search (PTY)

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

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

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

1. Press the **RDS** button **12 24** until the current PTY is shown in the **Main Information Display 16**.
2. While the PTY is shown, press the **Preset Up/Down** button **10 25** or hold them pressed to scroll through the list of available PTY types, as shown above. To simply search for the next station transmitting any RDS data, use the **Preset Up/Down** button **10 25** until **RDS ONLY** appears in the display.
3. Press any of the **Tuning Up/Down** buttons **8 20**, the tuner begins to scan the FM band upwards or downwards for the first station that has RDS data that matches the desired selection, and acceptable signal strength for quality reception.
4. 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. These stations can be found by selecting **TRAFFIC**, the option in front of **NEWS** in the list. The AVR will find the appropriate station, even if it is not broadcasting traffic information when the search is made.

Programming the Remote

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

Programming the Remote with Codes

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

Note: The **Input Selector** button **Video 3** **5** cannot be programmed with codes as it functions as input selector for the AVR only. Moreover, only the default code "001" can be programmed on the **AVR Selector** button **6**.

Direct Code Entry

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

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

- b. If the product to be programmed does NOT turn off, continue to enter the three-digit code numbers until the equipment turns off. At this point, the correct code has been entered. Press the **Input Selector** **5** again and note that the red light under the **Input Selector** will flash three times before going dark to confirm the entry.

5. If the Power function of the unit to be programmed cannot be remoted, follow these steps (max. 20 seconds after step 3 above, or else step 3 must be repeated first):

- a. Enter the first three-digit code number using the **Numeric** buttons **17** and press the **Input Selector** **5** again. Press the remote button of any transport function remotable with the unit, e.g. **Pause** or **Play** **23**. If the unit being programmed starts that function, the correct code has been entered.

- b. If the unit does not start the function whose button was pressed, repeat steps 3 and 5a above with the next three-digit code number listed in the setup code table for that brand and product type, until the unit reacts properly on the transport function transmitted.

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

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

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

As shipped from the factory the remote is programmed for controlling Harman Kardon CD players. But it is able to control most functions of the Harman Kardon CD Recorders (see function list on page 32) too after the code "002" is entered to the **CD Selector** button **5** as described above. For returning to the CD player control commands the code "001" must be entered.

Auto-Search Method

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

with units whose Power functions can be remoted:

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

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

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

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

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

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

Code Readout

When the code has been entered using the Auto Search method, it is always a good idea to find out the exact code so that it may be easily reentered if necessary. You may also read the codes to verify which device has been programmed to a specific Control Selector button.

Programming the Remote

1. Press and hold both the **Input Selector** ⑤ for the device you wish to find the code for and the **Mute** button ③④ at the same time. Note that the **Program/SPL Indicator** ③ will initially turn amber and begin flashing. Release the buttons and begin the next step within 20 seconds.

2. Press the **Set** button ⑩. The **Program Indicator** ③ will then blink green in a sequence that corresponds to the three-digit code, with a one-second pause between each digit. Count the number of blinks between each pause to determine the digit of the code. One blink is the number 1, two blinks is the number 2, and so forth. Note that a rapid sequence of three blinks is used to indicate a "0."

Example: One blink, followed by a one-second pause, followed by six blinks, followed by a one-second pause, followed by four blinks indicates that the code has been set to 164.

For future reference enter the Setup Codes for the equipment in your system here:

DVD _____ CD _____
VID1/VCR _____ VID2/CBL/SAT _____
VID3/TV _____
VID4 _____
TAPE _____

Programmed Device Functions

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

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

For some products, however, the function of a particular button does not follow the command printed on the remote. In order to see which function a button controls, consult the Function List tables printed on page 32. To use those tables, first check the type of device being

controlled (e.g., TV, VCR). Next, look at the remote control diagram on page 32. Note that each button has a number on it.

To find out what function a particular button has for a specific device, find the button number on the Function List and then look in the column for the device you are controlling. For example, button number 51 is the Macro 2 button for the AVR, but it is the "Favorite" button for many cable television boxes and satellite receivers. Button number 30 is the Delay button for the AVR, but the Open/Close button for CD players.

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

Notes on Using the AVR Remote With Other Devices.

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

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

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

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

Macro Programming

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

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

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

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

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

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

Example: To program the **Macro 1** ②① button so that it turns on the AVR, TV follow these steps:

- Press the **Macro 1** button ②① and **Mute** ③④ buttons at the same time and then release them.
- Note that the **Program Indicator** will flash orange.
- Press the **AVR Selector** ⑥.
- Press the **Mute** ③④ button to store the AVR's power on command.
- Press the **VID 2 Input Selector** button ⑤ to indicate the next command is for "TV Power On."
- Press the **Mute** ③④ button to store the TV Power On Command.
- Press the **Sleep/Channel Up** button ⑨ to complete the process and store the macro sequence.

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

Erasing Macro Commands

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

- Press the **Mute** button ③④ and the **Macro** button ②① that contains the commands you wish to erase.
- Note that the **Program Indicator** ③ will flash orange, and the LED under the **AVR Selector** ⑥ will turn red.
- Within ten seconds, press the **Surround Mode Selector/Channel Down** button ⑩.

Programming the Remote

- The red LED under the **AVR Selector** will go out, and the **Program Indicator** ③ will turn green and flash three times before it goes out.
- When the **Program Indicator** ③ goes out, the Macro has been erased.

Volume Punch-Through

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

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

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

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

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

Channel Control Punch-Through

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

- Press the **Input Selector** button ⑤ for the device you wish to have the channel control associated with and the **Mute** button ③④ at the same time until the red light illuminates under the **Input Selector** ⑤ and the **Program Indicator** ③ flashes orange.

- Press the **Volume Down** button ③②. The **Program Indicator** ③ will stop flashing and stay orange.

- Press and release the **AVR** ⑥ or **Input Selector** button ⑤ for the device that will be used to change the channels. The **Program Indicator** ③ will blink green three times and then go out to confirm the data entry.

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

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

Transport Control Punch-Through

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

- Press the **Input Selector** ⑤ for the device you wish to have the transport control associated with and the **Mute** button ③④ at the same time until the red light illuminates, under the **Input Selector** ⑤ and the **Program Indicator** ③ flashes orange.

- Press the **Play** button ②②. The **Program Indicator** ③ will stop flashing and stay orange.

- Press and release the **AVR** ⑥ or **Input Selector** button ⑤ for the device that will be used to change the transport function. The **Program Indicator** ③ will blink green three times and then go out to confirm the data entry.

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

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

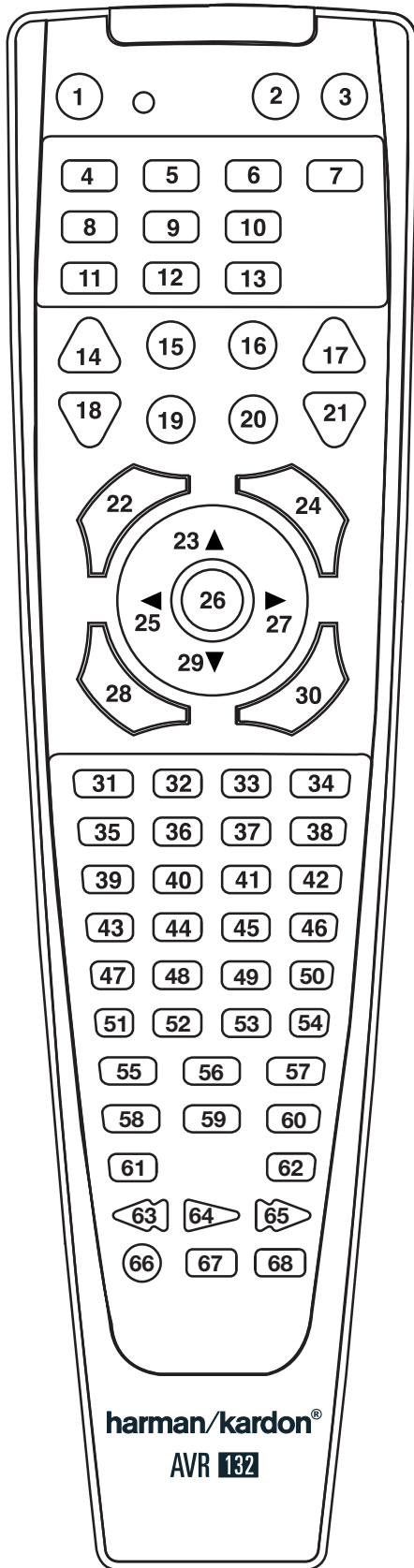
NOTE: Before programming the remote for Volume, Channel or Transport Punch-Through, make certain that any programming needed for the specific TV, CD, DVD, Cable or Satellite Receivers has been completed.

Resetting the Remote Memory

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

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

Function List



No.	Button Name	AVR Function	DVD	CD/CDR
1	Power On	Power On	Power On	Power On
2	Power Off	Power Off	Power Off	Power Off
3	Mute	Mute		
4	AVR	AVR Select		
5	DVD	DVD Input Select	DVD Select	
6	CD	CD Input Select		CD Select
7	Tape	Tape Input Select		
8	VID 1	Video 1 Select		
9	VID 2	Video 2 Select		
10	VID 3	Video 3 Select		
11	DIM	DIM		
12	AM/FM	Tuner Select		
13	6 CH Input Select	6 CH Input Selector		
14	Sleep	Sleep		
15	Test	Test Tone		
16	TV		TV/DVD	-/Input Select
17	Volume Up	Volume Up	Volume Up	-/CDP Select
18	Surround Select	Surround Mode Select		-/CDR Select
19	Night	Night Mode Select	Subtitle on/off	
20	Spare			
21	Volume Down	Volume Down	Volume Down	
22	Channel/Guide	Channel Trim	Title	
23	▲	Move/Adjust Up	Up	
24	Speaker/Menu	Speaker Adjust	Menu	Intro/-
25	◀		Left	
26	Set	Set	Enter	
27	▶		Right	
28	Digital/Exit	Digital Input Select	Open/Close	
29	▼	Move/Adjust Down	Down	
30	Delay/Prev. Ch.	Delay Adjust	Return	Open/Close
31	1	1	1	1
32	2	2	2	2
33	3	3	3	3
34	4	4	4	4
35	5	5	5	5
36	6	6	6	6
37	7	7	7	7
38	8	8	8	8
39	Tun-M	Tuner Mode	Chapter	Repeat
40	9	9	9	9
41	0	0	0	0
42	Memory	Memory	Audio	Time/CDR Display
43	Tune Up	Tune Up		
44	Direct	Direct Tuner Entry	Angle	Random
45	Clear	Clear	Clear	Clear
46	Preset Up	Preset Tune Up	Slow Forward	+10/-
47	Tune Down	Tune Down		-/Track Increment
48	Tone Mode			
49	RDS	RDS Select	Disc Skip	Disc Skip
50	Preset Down	Preset Tune Down	Slow Rev	
51	M1			
52	M2			
53	M3			
54	M4			
55	Dolby	Dolby Mode Select		
56	DTS Sur	DTS 5.1 Select		
57	DTS Neo:6	DTS Neo:6 Select		
58	Night	Night Mode Select		
59	Logic 7	Logic 7 Select		
60	Stereo	Stereo Select		
61	Skip Down		Skip -	Skip -
62	Skip Up		Skip +	Skip +
63	Rewind		R. Search	R. Search
64	Play		Play	Play
65	Fast Forward		F. Search	F. Search
66	Record			-/Record
67	Stop		Stop	Stop
68	Pause		Pause	Pause

Function List

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

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 34 Turn up volume control
Sound is heard, but Front-Panel Display does not light	<ul style="list-style-type: none"> Display brightness is turned off 	<ul style="list-style-type: none"> Follow the instructions in the Display Brightness section on page 27 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 20)
Unit does not respond to remote commands	<ul style="list-style-type: none"> Weak batteries in remote Wrong device selected Remote sensor 15 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 30 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'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 and hold the Surround Mode Button **7** for 5 seconds.

The unit will turn on automatically. 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)	
40 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:	
30 Watts per channel, @ < 0.07% THD, 20Hz–20kHz into 8 ohms	
Center channel:	
30 Watts, @ < 0.07% THD, 20Hz–20kHz into 8 ohms	
Surround channels:	
30 Watts per channel, @ < 0.07% THD, 20Hz–20kHz into 8 ohms	
Input Sensitivity/Impedance	
Linear (High Level)	200mV/47kohms
Signal-to-Noise Ratio (IHF-A)	95dB
Surround System Adjacent Channel Separation	
Analog Decoding (Pro Logic, etc.)	40dB
Dolby Digital (AC-3)	55dB
DTS	55dB
Frequency Response	
@ 1W (+0dB, -3dB)	10Hz–100kHz
High Instantaneous Current Capability (HCC)	
	±25 Amps
Transient Intermodulation Distortion (TIM)	
	Unmeasurable
Rise Time	16 µsec
Slew Rate	40V/µsec

FM Tuner Section

Frequency Range	87.5–108MHz
Usable Sensitivity	IHF 1.3 µV/13.2dBf
Signal-to-Noise Ratio	Mono/Stereo: 70/65dB (DIN)
Distortion	Mono/Stereo: 0.15/0.3%
Stereo Separation	35dB @ 1kHz
Selectivity	±400kHz: 70dB
Image Rejection	80dB
IF Rejection	90dB

AM Tuner Section

Frequency Range	522–1620kHz
Signal-to-Noise Ratio	45dB
Usable Sensitivity	Loop: 500µV
Distortion	1kHz, 50% Mod: 0.8%
Selectivity	±10kHz: 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	165mm
Depth	382mm
Weight	9.6 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.

Harman Kardon is a registered trademark.

*Manufactured under license from Dolby Laboratories.

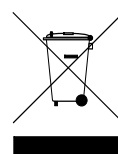
"Dolby", "Pro Logic", and the Double-D symbol are trademarks of Dolby Laboratories, Inc.

Confidential Unpublished Works. ©1992–1999 Dolby Laboratories, Inc. All rights reserved.

† "DTS" and "DTS Neo:6" are registered trademarks of DTS, Inc. "96/24" is a trademark of DTS, Inc.

Logic 7 is a registered trademark of Lexicon, Inc.

harman/kardon®



H A Harman International Company
250 Crossways Park Drive, Woodbury, New York 11797
www.harmankardon.com
Harman Consumer Group International:
2, route de Tours, 72500 Château-du-Loir, France
© 2006 Harman Kardon, Incorporated
Part No.: CQX1A1154Z